DEDICATED TO THE PRESERVATION OF THE CALIFORNIA NATIVE FLORA

The California Native Plant Society

Bristlecone Chapter

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July Chapter Banquet

Come join us for the Bristlecone Chapter's Semi-annual Summer Banquet, Wednesday, July 28, at 6:00 pm at the Crowley Lake Community Center. The writer/photographer team of Sia and Emil Morhardt will talk about their book, "California Desert Flowers," published by UC Press in 2004. Sia, Adjunct Professor of Environmental Studies at Pitzer College, and Emil, Roberts Professor of Environmental Biology at Claremont McKenna College, will also talk about the flora of California's Channel Islands, and show photos from their recent trip to San Nicolas and other rarely visited Channel islands.

The banquet will be catered by Linda Dore Food Service and will feature a choice of two entrees, delicious appetizers, summer vegetables, organic green salad, dinner rolls, and mixed berry cobbler with ice cream for dessert. The entree options are Moroccan style saffron chicken over couscous, or sweet peppers filled with quinoa, edamame, and sun-dried tomatoes with a roasted red pepper/coconut milk sauce. Iced tea and lemonade will also be provided, and you are welcome to bring your own wine or beer.

Reservations must be made no later than Friday, July 23. To make reservations, send a check for $30 each payable to "CNPS Bristlecone Chapter," along with your entree choice of chicken or vegetarian, to Stephen Ingram, 140 Willow Road, Swall Meadows, CA 93514. For more information call Stephen at 760-387-2913.

September Bristlecone Chapter Board Meeting
7:00 pm Wednesday, September 15, 2010. Details in the September newsletter. Members are welcome.

PRESIDENT'S MESSAGE

Sustainable mining?

The Bodie Hills are home to one of the highest concentrations of rare plants in our area. These include eight List 1B species: Bodie Hills rock cress (*Arabis bodiensis*), Long Valley milk vetch (*Astragalus johannis-howellii*), Lavin's milk vetch (*Astragalus oophorus* var. *lavinii*), Bodie Hills cusickiella (*Cusickiella quadricostata*), Mono County phacelia (*Phacelia monoensis*), William's combleaf (*Polyctenium williamsiae*), intermountain milkwort (*Polygala intermontana*) and Masonic Mountain jewel-flower (*Streptanthus oliganthus*). Another seven CNPS List 2 species occur in the Bodie Hills.

And the Bodie Hills are likely to soon be the focus of many local and national conservation groups. The main reason is that gold is now selling at over $1200 an once. Cougar Gold LLC would like to develop a mine near the site of the old Paramount Mine in the Bodie Wilderness Study Area. Both the highest concentration of rare plants and the proposed mine site are in the Bodie WSA.

Proponents of mining in the Bodie Hills claim that it will create 300 jobs, which is likely to sound very attractive to many Mono County residents and politicians. They also claim that the mining business has changed, with modern methods causing much less damage to the environment. These claims bring up a number of important questions. Efficiency in mining, as in most other industries, is achieved by increased mechanization, which results in fewer, more technical jobs. Will it be more economical for companies to bring in skilled workers from their other operations than to train unemployed or underemployed workers from the local labor pool? And how many of these 300 jobs would be involved in ore extraction at the mines in Mono County, as opposed to ore processing jobs in Nevada? What the direct economic benefits might be for Mono County are far from clear.

While the benefits of mining mostly accrue to outside investors, the costs are clearly local. The highest cost of mining is the reclamation of environmental damage, not just the obvious surface scars, but also contaminated surface and ground waters. One study of the Paramount area found that acidity, sulfate concentrations, and arsenic concentration were all highest in surface waters immediately downstream from mine spoils. The proposed mining project could easily contaminate the Rough Creek drainage. Historically in the West, hardrock mining companies have often found it most economical to walk away from mine reclamation projects, leaving the costs of cleanup to taxpayers.

Press releases from Congressman Buck McKeon's office have characterized the proposed Bodies Hills gold mines as "sustainable." His office is seeking a release of the Bodie WSA. But is hardrock mining *ever* sustainable? I wish we could ask former miners at Aurora, Ballarat, Bend, Bennettville, Beveridge, Bodie, Cerro Gordo, Chrysopolis, Darwin, Dogtown, Fish Springs, Greenwater, Harrisburg, Kearsarge, Lundy, Masonic, Modoc, Monoville, Panamint City, Resting Spring, San Carlos, Skidoo, Swansea, or Wildrose about the "sustainability" of hardrock mining.

What would be helpful now is a rigorous study of the comparative costs and benefits to the local economy of mining *versus* other potential non-extractive economic opportunities, such as businesses catering to hunting, fishing, camping, backcountry hiking, birding, historical tourism, cross-country skiing, or sustainable grazing. The well-established short-term benefits and long-term costs of hardrock mining should make us skeptical before we sacrifice many of the significant natural values of the Bodie Hills.

Steve McLaughlin

FROM THE EDITOR

If you haven't already contacted me, please leave a message stating your preference as to whether you would accept an electronic version of this newsletter or would prefer a hard copy. So far 69 people receive the newsletter electronically. The Bristlecone Chapter Board encourages members to choose the electronic option to save energy, trees, and money. Contact me at: 760-873-8943 or email: newsletter@bristleconecnps.org.

Next Newsletter Deadline: August 26, 2010
Send articles to: newsletter@bristleconecnps.org

REPORTS

Field Trip: Eureka Valley, April 24-25

Michelle Slaton led 18 participants on a weekend trip to the Eureka Valley and Dedeckera Canyon. Michelle provided us with a detailed plant list for the area, which helped to focus our observations. The area contains many rare plants, and we had the opportunity to observe several of these. After our arrival on Saturday, we took a long hike up Dedeckera Canyon. Right away we found several individuals of Gilman's cympoterus (*Cymopterus gilmanii*, CNPS List 2.3). While walking up a side canyon to find *Dedeckera eurekensis* (CNPS List 1B.3), six people walked right past a large Panamint rattlesnake before it finally decided to buzz vigorously at Jan Bowers. Plants that were most interesting to me in the

canyon, besides the *Dedeckera*, of course, were Panamint butterfly bush (*Buddleja utahensis*), sunray (*Enceliopsis nudicaulis*), and Shockley's prickle-leaf (*Hecastocleis shockleyi*).

After a relaxing happy hour, we took a sunset walk out onto the Eureka Dunes. These dunes are well known for their endemic and rare plants, and I think we saw them all: dune broom (*Chaetadelpha wheeleri*, List 2.2), shining milkvetch (*Astragalus lentiginosus* var. *micans*, List 1B.2), Eureka Dunes evening primrose (*Oenotherea californica* ssp. *eurekensis*, List 1B.2), and Eureka Valley dune grass (*Swallenia alexandrae*, List 1B.2).

On Sunday morning we hiked from our campsite east of the dunes to explore the mouths of a couple of canyons in the Last Chance Range. We were hoping to find the cliff-loving Death Valley monkeyflower (*Mimulus rupicola*), and we did find several individuals. Of special interest to me were a few individuals of hairy-leaved bluestar (*Amsonia tomentosa*) found up on the rocks. Throughout most of its range to the south this plant occurs in sandy washes.

Steve McLaughlin

Field Trip: Owens Valley Eastside, May 1, 2010

The wind seemed to be a factor on this beautiful spring morning but luckily for our group of 8, it calmed down as the day progressed. The Manzanar area is a bit of a maze with the new highway construction and leader Sally Manning decided to make a circle; down to Lone Pine, out to the east side via Lone Pine Narrow Gauge Rd and back around via the Eastside Rd and Manzanar Reward Rd. We stopped first under the main power transmission towers on the east side; the snap crackle and pop was rather disconcerting but did not seem to deter the stable plant community of *Atriplex canescens*, Shadscale, Burro Brush, Budsage and Winterfat interspersed with *Lepidium*, white Chicory, *Camissonia*, *Malacothrix* and Desert Plume just starting to bloom.

Further up on the fan towards the start of Long John Canyon, we stopped amid some of the northernmost reaches of the Creosote Bush (*Larrea tridentata*) to admire the view and speculate on the future effects of proposed solar projects put forward by LADWP. Steve McLaughlin filled us in on some of the details on a couple of scenarios which could impact the view corridor of the southern Owens Valley. One is a pilot project consisting of a photovoltaic array (solar panels) on 80 acres of Owens Lake which the City hopes will be a form of income generating dust control! They also hope to develop and lease portions of the eastside (of the Owens River) below us to power developers who will generate somewhere in the neighborhood of 5 gigawatts on nearly 25,000 acres of their land. That is a lot of land that is now occupied by saltbush communities and potential dust since underneath lies old lakebed sediments. Also, new solar technologies such as concentrating solar energy utilize a 377 foot (40 story) tower with a steam turbine, surrounded by a field of mirrors which concentrates the solar energy in the tower. Such towers would dwarf the high voltage towers under which we stood that morning and would certainly impact the beautiful views everywhere in the Valley.

Continuing, we ate lunch at the site of the former town of Owenyo which is now marked by several *Tamarix parviflora*, the "good" kind, as well as a plant community consisting of *Atriplex polycarpa*, Greasewood, *Chrysothamnus nauseousus* ssp, *Lycium andersonii*, and *Suaeda*. After our repast, we headed west on Manzanar Reward Rd back to the parking lot. Thanks to Sally Manning for another interesting field trip.

John Gorham

Field Trip: Badger Flat, June 19

Four of us joined Inyo National Forest Botanist Kathleen Nelson on a "rare plant treasure hunt" in the Inyo Mountains. It was a beautiful day, and the timing couldn't have been better, with the wildflowers at their peak. We were specifically hoping to find limestone daisy (*Erigeron uncialis* var. *uncialis*, CNPS List 1B.2) but there were several other rare plants we were also looking out for. Ros Gorham found the first of these, little cutleaf (*Hymenopappus filifolius* var. *nanus*, List 2.3), while we were walking across the southern end of Badger Flat. You had to be careful where you stepped because flowering plants of bitterroot (*Lewisia rediviva*) were everywhere–I've never seen this species so abundant. In the same area were many plants of a small, attractive onion, *Allium atrorubens*. Also present was the rare plant Inyo milkvetch (*Astragalus inyoensis*, List 4.2).

We made our way along the top of the ridge separating Mazourka and Al Rose canyons. Among

the plants seen on this ridge were ground daisy (*Townsendia scapigera*), Westgard penstemon (*Penstemon scapoides*) and the little-gray milkvetch (*Astragalus calycosus*)–all species apparently restricted to limestone sites. The sharp eyes of Steve Matson spotted a species of threadplant (*Nemacladus* sp.). This is a very high-elevation site (over 8600 feet) for a *Nemacladus*, and we could not key it to species in the field. It could be something interesting. Just before stopping for lunch near the south end of the ridge, John Gorham found a very good specimen of a trilobite fossil.

We completed our survey of the ridgetop, and carefully made our way down into the bottom of Mazourka Canyon. Going up the canyon we found populations of another rare plant, the Inyo mountain abronia (*Abronia nana* ssp. *covillei*, List 4.2). While we never did encounter any plants of the limestone daisy, it was a great hike with many interesting finds.

Steve McLaughlin

FEATURES

Birch Creek Journal

I say this at least once a month, I suppose, but this is my favorite time of year along Birch Creek. Steve and I have been eating zucchini from the garden for two weeks now, and another two weeks should have us gorging on ripe tomatoes and snap beans. We open our windows after sunset and hear nighthawks and running water. By morning the house is cool, and the plaintive cry of the Say's phoebe greets us when we waken. Black cottonwood (*Populus balsamifera* subsp. *trichocarpa*) and water birch (*Betula occidentalis*) are heavy with leaf, casting shadows deep enough to retain the cool of early morning into the middle of the day. Wild rose (*Rosa woodsii*) is done flowering, and wild licorice (*Glycyrrhiza lepidota*) is at its peak. Both grow close to the creek in a sunny space cleared by an earlier owner to make a bathing beach. He even brought in some sand, I think, but nature had other ideas as she always does, and now the proposed beach is a mass of wild licorice and wild rose with a few young and vigorous sagebrush. I love the roses and regard the licorice as a weed, but just as I did last year and the year before, I grant the licorice a reprieve for the sake of the swallowtail butterflies that come to the flowers for nectar.

Most of the snow on the high peaks is gone, having rushed down neighborhood creeks in what seemed like record time. For a while there, Birch Creek was rising by six or eight inches a day. At crest stage, Sydney and Dennis, our downstream neighbors, woke up to find that the irrigation ditch had overflowed and flooded their back yard. This ditch, known locally as Indian Ditch, heads on Birch Creek at the east end of our lot and runs parallel to the creek for about a quarter mile. I believe that it dates back almost to the earliest days of Anglo settlement in the Owens Valley. A rickety footbridge crosses the ditch at its head and serves as a backstop for the board that controls how much water goes down the ditch. The day the ditch overflowed, Sydney plunged into the creek to shove the board against the bridge, thus cutting off most of the flow. Water swirled above her knees as she fumbled on the creek bed for rocks heavy enough to hold the board in place. Dennis, meanwhile, tried to break up a log jam that was channeling a strong jet of water toward the head of the ditch. Standing knee-deep in the creek, he pushed on a log with the blade of a shovel. The log resisted, then suddenly shot away, and Dennis and his shovel almost followed it downstream.

But he caught his balance in time and, with a helping hand, clambered back onto the bank. That's when (a botanist to the core) I noticed that stream orchids (*Epipactis gigantea*) along the ditch had started to flower. Until we moved to Birch Creek and discovered that our parcel of land came with two dozen stream orchids, I could have counted on the fingers of one hand the number of times I had seen this species in the wild. With some thought, I could probably still name each occasion. Despite its rarity in much of the West, stream orchid is reasonably common throughout California. In our neighborhood it grows here and there along Indian Ditch and other ditches, too, competing for space with horsetail (*Equisetum arvense*) and mugwort (*Artemisia douglasiana*) as if it were a plebian in the bleachers instead of a VIP in box seats.

The flowers are rather large for a wild orchid, about the size of a man's thumbnail. (For a close look, go to http://calphotos.berkeley.edu/ and search for *Epipactis gigantea*.) Like other monocots with showy flowers–lilies, say, or irises–each flower has three sepals and three petals. As befits a true orchid, however, this simple template has been

complicated to such an extent that botanists use a specialized vocabulary to describe it. I'll spare you as much of the terminology as I can. The outermost parts of the flower are of course the greenish-yellow sepals, which flare outward like the blades of a windmill. Inside the sepals are the petals, and inside the petals is a short, green cylinder–the *column*–that combines stamens and style in a single structure. The two upper petals hunch over the column and are ovate with pointed tips. Although they are often described as rosy or deep pink, to my eyes they appear ochroleucous (a botanical term that means dingy yellowish-white) with closely spaced veins the color of dried blood. The single bottom petal, known as the *labellum* or *lip*, forms a deep cup underneath the column. It too is ochroleucous with blood-colored veins, but the veins are more widely spaced than on the upper petals. At the front of the cup is a little flap that tips up and down on a kind of hinge. Inside the cup is a narrow strip of blood-red tissue roughened with tiny bumps. The strip looks moist, as if dotted with minuscule drops of nectar.

Highly specialized flowers often go along with highly specialized pollination mechanisms. Certain tropical orchids, for instance, are pollinated by male wasps that mistake the orchid flower for a female wasp and attempt to copulate with it. In arranging its body for the act of copulation, the wasp picks up one or more tiny packets of pollen, then deposits the packets on the stigma of the next flower it visits. Other tropical orchids attract pollinators by exuding a fragrance that male bees use in courting female bees. Stream orchid, at least in parts of its range, also relies on scent to attract pollinators. According to Edward Ross, an entomologist who studied pollination of stream orchid at far-flung locations in the West, hover flies visit the flowers because the sweet odor smells like the honeydew secreted by aphids. Hover flies normally lay their eggs among aphids, and when the eggs hatch, the fly larvae eat the aphids. Tricked by the odor of honeydew into entering a stream orchid flower, the hover fly feeds on the nectar, then lays her eggs on the blossom. In the process, the fly pollinates the flower. The fly's larvae will have nothing to eat when they hatch, but this after all is not the flower's problem.

It's not my problem, either, except that I have sat near our stream orchids at various times of day for fifteen or twenty minutes at a stretch without ever seeing a hover fly or indeed any kind of insect at the flowers. Flies, gnats, and mosquitoes were not lacking, I assure you, but all of them were far more interested in me than in any flower in the vicinity. And yet, despite the apparent absence of activity at the blossoms, our stream orchid population always seems to produce a good number of fruits filled with the dustlike seeds so typical of orchids. Do the flowers pollinate themselves? Or do they employ a different pollination mechanism in this part of their range?

I can't answer either question, but I have noticed that our flowers differ in several respects from those that Ross described. First, ours do not smell like honeydew. Their odor is faintly unpleasant like rotting meat sniffed at a great distance. Second, our flowers *appear* to produce nectar, but when you sample the moisture with a Q-tip or with the tip of your tongue, nothing sweet comes away. (Kids, don't try this at home.) Third, our flowers are not really rosy or deep pink but ochroleucous with veins the color of dried blood. Fourth, the hinged flap on our flowers is not yellow as Ross reported but dried-blood red. This combination of characters suggests to me that the flowers attract flies not with a nectar reward but by mimicking the odor and appearance of meat. One final point. If you hold a flower so that light shines through the labellum, the ochroleucous tissue between the veins appears translucent, almost like windows. This is relevant because flies, like many insects, are attracted to light.

I am guessing that inexperienced flies occasionally enter the flowers looking for meat on which to lay their eggs. Activated by the weight of the insect inside the labellum, the hinged flap tips upward and temporarily traps the fly between the bottom of the cup and the arching upper petals. The dense veins on the upper petals allow little light to penetrate from above, so the fly goes back and forth between the windows on the labellum as she searches for a way out. In doing so, she rubs against the column, depositing a pollen packet on the stigma and thereby pollinating the flower. I'm assuming that she picked up the pollen packet from another flower on her very first encounter with stream orchid, and that by the time she escapes from the second flower, she will be well educated in the vile deceits practiced by this species.

All this is just a guess, of course. But it can be tested along Birch Creek every year in the month of June by anyone with abundant patience, a sturdy

campstool, and a good supply of insect repellent.

Jan Bowers

CONSERVATION

RIP
Inyo County Water Commission: 1980 -2010?

The first time I applied for appointment to the Inyo County Water Commission (ICWC) was in 2000. My application was rejected by Inyo County Supervisors. I consoled myself with the thought that I was in good company -- Bristlecone Chapter founder and first Conservation Chair, Mary DeDecker, had also applied to serve on the ICWC and also been turned down by Inyo County Supervisors.

The next time there was an opening on the ICWC I again applied, and again Inyo Supervisors rejected my application. I consoled myself with the thought that I had now surpassed Mary DeDecker! She had only applied to serve on the ICWC and been rejected once, while I had applied and been rejected twice.

The next time there was an opening on the ICWC, I again applied, and again Inyo Supervisors rejected my application. I consoled myself with the thought that, not only had I surpassed Mary DeDecker, I had probably surpassed everyone in the world. Has there ever been anyone besides me who applied to serve on the ICWC three times and was rejected three times?!

In May, I learned that two of the current Water Commissioners' terms had expired and that they did not plan to re-apply. They were continuing to serve only until Inyo Supervisors found replacements. Finally, I thought, my chance has come! I immediately sent a letter to Inyo County Supervisors offering my services to serve on the ICWC.

What are the ICWC's powers that I should have tried so many times to secure an appointment? Although it was established under Inyo County's 1980 Groundwater Ordinance, the ICWC's objectives were updated in a 1999 ordinance which gave the ICWC's purpose as (among other things) informing and educating the public about water issues; soliciting public opinion about such issues; reviewing implementation of the Inyo-LA Long Term Water Agreement (LTWA) and the Inyo County Groundwater Ordinance (Ordinance 1004), and presenting written recommendations to the Inyo Supervisors at least every six months.

Quite a mandate! You might think the two commissioners who are not re-applying were burnt out from such a heavy workload (for which they receive virtually no compensation). To the contrary, ICWC has been largely dormant in recent years and has had difficulty getting quorums of its five members to attend meetings. It certainly has not been educating the public, nor has it been reviewing implementation of the LTWA, nor presenting written recommendations to the Inyo Supervisors. In fact, it is not clear that ICWD has been doing anything at all.

Back to the story. How did Inyo Supervisors respond to this, my fourth offer to serve on the ICWC? Rather than appointing me to one of the two vacancies, the Supervisors discussed abolishing the ICWC entirely! Eliminating the ICWC would show me! It would also consolidate the Supervisors' power by eliminating the only commission which might actually tell them things they didn't want to hear regarding water policy.

Please contact your Inyo County Supervisor and tell him/her that the ICWC should not be abolished but strengthened, by the appointment of people with the knowledge and energy to carry out ICWC's mission. Contact information for Inyo Supervisors is at http://www.inyocounty.us/county_directory.htm . The 1999 ordinance outlining the duties of the ICWC is on the Inyo County Water Department website at http://www.inyowater.org/Water_Resources/icwaterpolicy9943.html

Daniel Pritchett

MEMBERSHIP

The Bristlecone Chapter heartily welcomes the following new members:

Connie Henderson - Lee Vining
Penelope Lepome - Ridgecrest
Joann Lijek - Bishop
Martin Oliver - Bridgeport
Amity Wilcek - Providence, RI

Membership Application

The California Native Plant Society is an organization of lay persons 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. Varied interests are represented. To join, please see back of newsletter

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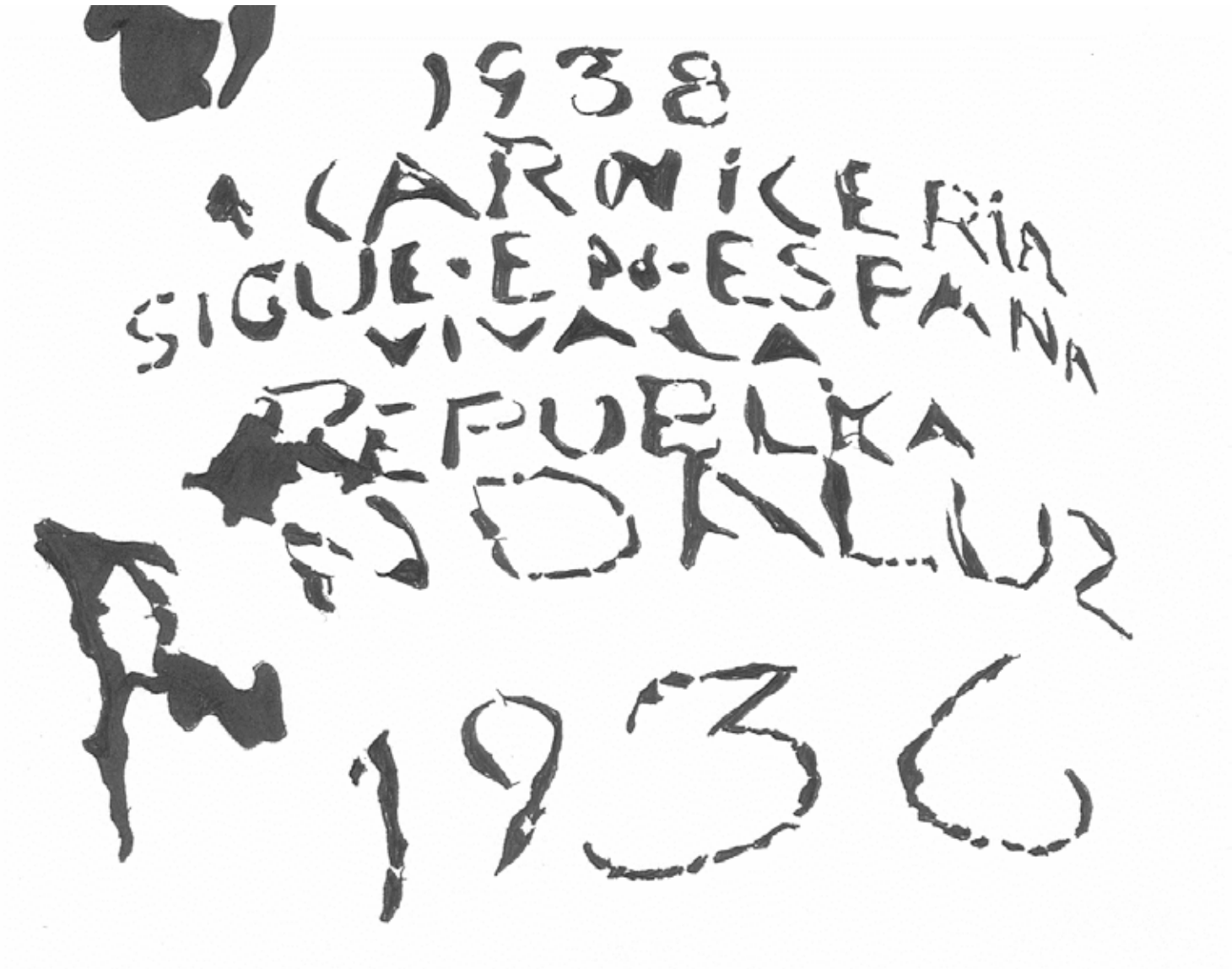

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Please make membership checks payable to and send to:
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Gift Contribution: Where most needed_____.
Conservation_____

Bristlecone Chapter Directory

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