Mary Beal (1878-1964), Botanist of the Mojave Desert
by Nancy Nies

PART TWO
Contribution to Mojave Desert Botany

It is likely that Mary Beal and Willis Jepson met through a mutual friend in nearby Barstow, which was Jepson’s desert “retreat” and base for desert botanizing. They became friends, sharing botanical expeditions and keeping up a regular correspondence. She would send him plant specimens and photographs, taken with the three different cameras she always carried, each for a different purpose. As this was before the advent of color film, she colored many of her photographs by hand.

For his part, Jepson would identify the plants Mary sent, or confirm her identifications, and would also instruct her in proper methods of collection and tagging. In a letter dated May 5, 1932, he wrote that he enjoyed receiving the fresh plants, which still retained their smells — and which Mary called “desert whiffs.” On February 9, 1939, Jepson wrote her this advice on finding new species: “It is often the obscure things that are new species, not the showy things that everyone sees.” Whenever anyone asked Mary about her training in botany, writes Sizak, she would always reply that “she had learned everything she knew about plants from none other than Willis Linn Jepson.”

Mary was to earn Jepson’s praise for her excellent botanical specimens, and referred to her in his 1930s notebooks as “my botanical collector in the Mohave Desert.” This, Julia Sizak writes, “hints at the important role that she played in collecting and sending him more than 2,000 specimens . . . between 1930 and 1951, 1,041 of which continue to be in the collection today.” (The

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EVENTS
JUNE
10 – Zoom Program, 4 pm
24 – Zoom Program, 4 pm

JULY
No meetings
9-11 – Horse Meadow Campout

AUGUST
No meetings
rest — duplicates — were sent to herbaria around the world.) Several of Mary’s findings are now listed as rare species: *Mentzelia tridentata* (dentate blazing star), *Diplacus mohavensis* (Mohave monkeyflower) and *Xylorhiza cognata* (Mecca aster).

Today, some of Mary’s papers and plant specimens (“Mary Beal Papers, 1937–1943”) are held at UC Berkeley’s University and Jepson Herbaria. Others are held at the Mojave Desert Heritage and Cultural Association. The Mojave River Valley Museum in Barstow has some of Mary’s paintings of Mojave Desert wildflowers.

### Contribution to The Desert Magazine

From 1937 to 1985, *The Desert Magazine* “managed, impressively, to publish lively, intelligent writing about a very dry place, month after month,” writes Dan Piepenbring (“The Magazine of the Southwest,” The Paris Review, July 17, 2015). In 1939, Mary began writing a botany column for the magazine. Over the next fourteen years, she would contribute 56 plant profiles to the publication, accompanied by her photographs. Nowadays, back-issues of the publication may be obtained online.

A letter from reader Althea Hill, who had made Mary’s acquaintance by chance in Daggett, was published in the January 1940 issue. Hill writes: “Her next botany article was sticking out of the little red typewriter. She writes with such authority, and her articles are spiced with a sense of humor that attracts even a novice in the field of botany.”

Mary’s articles featured not only detailed descriptions of the plant’s identifying characteristics and where it occurred, says Sizak, but also folklore concerning it. She noted, for example, that *Salvia columbariae* (chia) — today recognized as a “superfood” — was used as food by the local Native Americans. According to Mojave National Preserve’s website, Mary herself spent long days in the desert, sustained by little more than chia-seed cake.

Her plant descriptions were sometimes poetic, such as when she likened the blooms of *Mohavea confertiflora* (ghost flower) to “a swarm of butterflies settled down to rest.” (The Desert Magazine, April 1948); and sometimes joyful, such as when she excitedly shared with readers a discovery, in the same issue: “I well remember my delight when I first came upon [the Mohaveas] in considerable numbers . . . But a deeper thrill was kindled when I encountered a superlative colony . . . in the Bullion mountains, where I was in quest of *Mentzelia involucrata*, which had eluded me for ten years. Along with an amazingly exuberant assemblage of them I found my old friend *Mohavea* in equal abundance.”

### Legacy

In “A scarlet bloom: Following the path of the women who saved the California deserts” (Angelus News, May 10, 2018), Heather King writes: “Unlike many better-known female desert rats of her day, [Mary Beal] was unmarried and lived far from any city. . . She was self-taught, had a sense of humor and was indefatigable in her search for, and lively descriptions of, unknown native species. . . She forged her own way, pursued her passion as a labor of love . . . and left the world a more beautiful and better place.”

In 1952, Jack and Ida Mitchell dedicated a monument and trail to Mary Beal near their remote resort at Mitchell Caverns, in what is today the Providence Mountains State Recreation Area. The self-guided, half-mile Mary Beal Nature Trail loop features many diverse plants. In the Mojave Desert Interpretive Association newsletter, state park interpreter Andy Fitzpatrick writes that the trail is to have new interpretive signage and a new trail brochure in the spring of 2021 (Trail Tracks, December 2020).

Mary Beal’s collections, photographs, drawings, paintings, and writings all served to increase the public’s awareness of the value of the desert, and thus played an important role in eventual protection of the Mojave. In 1980, a vast area was designated the East Mojave Scenic Area, to be administered by the Bureau of Land Management (BLM). When the US Congress passed the California Desert Protection Act in 1994, the area’s 1.6 million acres became the Mojave National Preserve, with...
almost half the land designated as wilderness, and it was placed under the jurisdiction of the National Park Service (NPS).

The preserve’s website points out that its seeps, springs, varying soil types and differing elevations make it home to a great diversity of plant and animal life. Wilderness Connect’s website offers this description of the place that captured Mary’s heart:

“Here is a meeting place for the Mojave, Sonoran and Great Basin deserts, where you’ll see strange volcanic features: cinder cones and dramatic lava beds, saw-toothed mountains rising in at least seven named ranges, flat-topped mesas, towering sand dunes, dry lake beds, and unique plant communities including the largest Joshua tree forest in the world. Most of the wildlife sensibly remains hidden during the daylight hours, but you may spot bighorn sheep, mule deer, bobcats and cougars in the rugged mountains, and rabbit, coyotes, foxes, ground squirrels, pack rats, desert tortoises, lizards and snakes in the washes and canyons. Raptors soar throughout the park. Much of this area is a desert wonderland, seldom visited by humans, and most of it is amenable to foot travel if you carry maps and plenty of water.”

Mary Beal’s legacy lives on! ✿

Thank You to:

... Nina House for sharing her study of the flora of the Manter and Salmon Creek Watersheds.

... Don Turkal for being part of the sometimes daunting planning for the Adobe House Project and sharing progress with us.

... Yvonne Turkal for her humorous, light-hearted columns on an aspect of native plants we seldom think of — eating them.

... Greg Warrick for sharing the little-known Sand Ridge Wildflower Preserve Natl. Natural Landmark with us.

... Bryant Baker for introducing us to places and plants of NE Los Padres Natl. Forest including Mt. Pinos.

... Zach Principe for bringing us up to date on restoration progress at Toll House Ranch, plus some new acquisitions. ✿

CNPS is the leader for providing reliable information on California native plants and plant conservation. Comprehensive information about California’s flora and vegetation communities is available throughout the state for conservation and educational purposes. CNPS’s leadership influences personal ethics and actions, as well as public policy for native plant protection.
President’s Message:
The BC Herbarium
by Rich Spjut

Recently I was contacted by one of the professors at the Bakersfield College (BC) who was looking for a public place in Bakersfield to re-locate their plant collection, since they “no longer have the room to keep it or courses that use it.” My initial expectation was a few hundred specimens bundled in newsprint and stored in a cabinet. However, upon seeing the collection I was surprised to find it was a well-organized herbarium, in standard herbarium cabinets, with a detailed accounting of contents, including the number of specimens (4,019) arranged alphabetically by families (108), genera (489) and species (1,199), each taxon in its own folder index — tagged by name, and even the number of specimens for each species.

It was believed that the collections dated back to the 1950’s; however, among the 53 specimens I photographed, one was collected as early as 1927. The specimens are well-preserved, and nicely laid out on herbarium mounting paper, appearing to have been pressed soon after collected. While specimens often lack details in the description of where they were collected, one should keep in mind the purpose of this herbarium — for students to learn plant families and genera.

The herbarium was started by professors who taught at BC as early as the 1920’s. Early collections have typeset labels titled, for example, “Herbarium of Kern County Union High School.” Today, it is unusual for a high school to have a herbarium — Wikipedia mentions only three for all of North America.

My first contact with an herbarium was not until I took an advanced plant taxonomy course at Humboldt State University. Since I had not heard about the BC “collection” and seeing that it is indeed a “herbarium” — with a long, unusual history — I suggest that it be kept intact in Bakersfield. The problem is finding space to accommodate the five herbarium cabinets. I have asked BC professors to allow our board members to see the herbarium, which appears to have been active up until 1996 when Professor Raymond Draper retired.

A complete list of the specimens will be placed on the Chapter website under checklists.

A Survey of the new extension to the Kern River Parkway Preserve.

This survey ties into plans for plants to be grown at the Adobe House. A list presented at the May 19 meeting included many species not known to occur in Kern County, although native to other California floristic regions. Nevertheless, Chapter Vice President Don Turkal has been leading the survey. He and wife, Yvonne have listed plants for each of our chapter field trips. I have photographed most of the species.

I have copied parts of Google Earth (following page) that show the preserve. Diane Mitchell has indicated that she may prepare a vegetation map. ✫

Left: Image of specimen in the BC Herbarium identified as Garrya fremontii, as it would key out in the 1925 Jepson Manual by the absence of hairs on the underside of leaves. I have collected this along the Mill Creek Trail near the 2,500-ft. elevation reported. I found it interesting that CCH2 did not generate records of any species of vascular for seven miles of trail between the Mill Creek trailhead at Kern Canyon Road and its end point on Breckenridge Mtn. Right: Labels for another specimen in BC accompanied by annotations, one by Lyman Benson, a professor well-known for his publications on cacti, who taught at BC during the 1930’s. Annotations are made in regard to the changes in taxonomy.
ADOBE HOUSE UPDATE
by Don Turkal

Hart Park Adobe Update - from Geoffrey Hill, Kern County Chief General Services Officer — April 22, 2021

• April 13, the Board of Supervisors approved the plans and specifications for the Adobe building rehab project. Will be receiving bids on May 18th.
• Have not been issued a building permit yet due to Central Valley Flood Protection Board review.
• This past Tuesday, (April 20, ed.) we held a mandatory pre-bid meeting on site.*
• Assuming final permitting is in place, I expect the construction contract to go to the Board of Supervisors in June.
• On the advice of our Historical Architect consultant, Chattel, we have added 15 working days to the construction duration (from 60-75 working days) We have also asked the contractors to review the timeframe for the project and welcome their feedback.

From reading Geoffrey Hill’s update, it is evident that the next step is for Kern CNPS to decide what exhibits and information we want to have inside the Adobe House. A primary purpose of this center is to educate school-age and adult visitors about the parkway and the Kern River (both cultural and natural).

What exhibits and information would you like to see when you enter the facility?

This is a wonderful opportunity to educate the public on the native plants of the Kern River Parkway. Please help us do that by submitting your thoughts/ideas/questions to: Richard Spjut, President Kern CNPS, P.O. Box 81145, Bakersfield, CA 93380-1145 richspjut@gmail.com

Circed are occurrences of species indicated. Clicking on the name underlined takes one directly to Calflora; where one or more images of the plant(s) appear at the location circled.

Editor’s ADDENDUM...
Subsequent to the previous report, Rich Spjut, Fred Chynoweth and Suzanne Weller attended a community meeting at the Peacock House Interpretive Center (formerly Adobe House) as representatives of Kern CNPS. The following is a summary of Eddy Laine’s notes of that May 19 meeting:

• Meeting was being held as part of the requirements of preparation for a grant proposal.
• 15 people were present, representing, variously, 5 organizations — Sierra Club, CNPS, Kern River Parkway Foundation, CSUB, Audubon.
• Background: Douglas Dodd, CSUB, helped obtain the “historical building” designation which rescued the building from demolition.
• Kern County allocated $500K in federal funding for building restoration with an additional $500K earmarked for the project.
• Steve Montgomery reviewed specific floor plans which include:
  • the conversion of a bedroom to an office,
  • widening a hallway,
  • conversion of a bedroom to a display area,
  • heating and cooling.
• Lia Mendez, who is overseeing the development of what is now called the Peacock House Interpretive Center, introduced herself and presented the “vision” for the center. The center will be key to reaching the many low-income students who cannot afford to attend Camp Keep. The following issues were acknowledged:
  • need for multimedia presentations,
  • collaboration between organizations,
  • seasonal exhibits,
  • possible outdoor exhibits due to limited indoor space,
  • highlighting Latinx history in Kern County
• need for curator and/or groundskeeper.

Due to space limitations these notes have been abbreviated. The complete version of these notes may be accessed here.
Part III – Twists & Turns of Dyeing with Oak Galls
by Sasha Honig

I HAVE BEEN INTERESTED IN NATURAL DYEING for several years. After Lucy Clark gave me oak galls from her land, I wanted to make dye with them. I began to read up on the biology and history of dyeing with oak galls.

The subject is complex and so my research path branched into several side trails. One path led to the biology of how oak galls are formed. Next, it occurred to me that if one is dealing with native plants then one should also find out what uses native peoples of California had for them. After all, California Indians had a use for every native plant in their territories, and oak galls were no exception.

An extra-long research path led to Europe. There, oak gall usage was primarily medicinal until the Middle Ages when iron gall ink and dye came into use. The recipes for these two are virtually identical and today are easy to find online, as I did.

Oak galls belong in the category of natural dyes, as contrasted with modern synthetic dyes. For most of human history, dyes came from natural sources, e.g. from plant roots, leaves, and fruits. Dyes can also be derived from lichens, fungi, insects (e.g. cochineal), and certain shells.

From ancient times, humans have found oak galls to be extraordinarily useful. Despite sometimes being called gall “nuts”, they are not edible. However they have many medicinal uses. Because of their high tannic acid levels, they were important for tanning leather, and for the same reason they are valuable in dyeing.

Blue —
Ancient peoples obviously sought ways to add color to their lives. A common source for blue was leaves from the woad plant; people dyed fabric with it and, in the case of Celtic warriors, dyed their naked bodies to confound the enemy as they charged into battle.  

Red —
The most important source of red came from roots of the madder plant. Madder probably went into the making of the legendary red carpet that Agamemnon’s wife rolled out upon his return from Troy. Setting aside the part where she and her lover killed the king, today “rolling out the red carpet” is for welcome and celebration, e.g. the Oscar awards.

Art from the Middle Ages and Renaissance gives us an idea of colors people wore. Peasants wore shades of brown and gray plus dashes of blue or red, — nothing fancy. Lords and ladies, on the other hand, wore elaborately patterned, beautifully dyed woolens, linens, silks and satins; basically every color the dyer could provide. Basic reds, blues, and yellows were mixed to get browns, greens, and purples which could be further modified with gall tannins to lighten the color; if iron was added, a darker shade resulted.

Black —
Black was always in demand, but was very difficult and expensive to make because of the number of ingredients, time and skill involved.

Demand heightened in the in the 14th century because black had come to symbolize power, authority, and the right to rule. Royalty, high clergy, and wealthy merchants wore their status on their backs and wanted the best-looking black they could get. The trouble was that the black cobbled together from other colors tended to decompose into non-aristocratic grays. Finding a colorfast black would be like an alchemist turning base metals into gold.

Enter the humble oak gall...
From at least the 1st century A.D. Europeans knew that mixing solutions of oak gall and iron would create a dense black liquid. In the 14th century an ink made according to this formula became the most commonly used ink in the world. Its indelibility was its great advantage over other ink. Making a dye by a similar formula was simple. Black colorfastness
seemed within reach.

Iron gall dye was expensive, but men and women of high status were willing to pay. The dye looked especially good on silk; raw silk originated in China, travelled the Silk Road to the eastern Mediterranean where European traders bought it and shipped it to their home cities. Once there, it was dyed and woven into luxury goods. The new dye had better be good to justify the expense; customers expected a true, permanent, and luxurious black.

Unfortunately, it was too good to be true, but not because it was not a good shade of black or that it was not indelible. The problem lay hidden in the chemical formula for the dye. It was inherently corrosive (although, not immediately.) Acids and iron ate holes in silk and made woolen fibers brittle and probably harsh to the touch. The interest of the day begin to fade.

Eventually the city fathers in Venice forbade its use; the city had grown rich importing raw silk, dyeing and weaving it into luxury goods. Its reputation was on the line. There was probably not even a black market for the dye.

Of course, other natural dyes remained because there was no alternative. That changed with the invention of the first synthetic dye in 1856.

Interest in natural dyeing has revived in recent years for a variety of reasons. In a class almost by herself is the Irish woman who re-enacts Celtic history; some re-enactors buy their costumes, but in her case, she buys woad dye and paints her body with it. She is her own costume. There were Celtic warrior women and they probably did paint themselves blue to go into battle. Their men wore nothing but paint, but did the women? Are Celtic Festival-goers ready for that degree of authenticity?

Making gall dye from the old recipe
My mission was simple: to follow the old iron gall dye recipe with Lucy’s galls and see what happened.

We do not know the tannin content of Lucy’s galls, which came from Qercus douglasii. In general, North American oak galls are said to have a tannin content of 45% to 55%. The most commonly used gall in Europe was the Aleppo gall whose tannin content runs between 65% and 75%. The higher the tannin level in a gall, the more likely will be a dense black dye. What Q. douglasii trees was a mystery, but here is how I made dye from them.

First, about 3 weeks in advance, I put a rusty nail in a mason jar of vinegar and put it aside. The vinegar slowly dissolves the nail.

Secondly, I crushed 8 galls into crumbs and put them in 4 cups of water to steep outside in the sun for about 3 days. I used strips of paper towel to test for color. When it seemed as dark as it was going to get, I combined it with the iron-vinegar solution.

What looked like a dark black liquid instantly appeared. At least I thought it was black, but that was not exactly true. I dyed two silk scarves and swatches of silk, cotton, and wool yarn. Silk took the dye well; the swatch is a very dark navy blue; shades of blue-gray are dominant on the two scarves. The cotton swatch is plain gray, and the wool yarn is a mottled gray. My dye was probably weak enough that holes will not appear in the scarves and that is good.

I conclude that making iron gall dye is a worthy experiment. It was my own dip into historic re-enactment and (with a nod to my Celtic ancestor) did not need need to paint myself all over blue. ✿
2021 Annual Campout, July 9 - 11
Horse Meadow Campground
by Lucy Clark

Our annual camping trip is planned for the weekend of July 9th, 10 and 11, so save the date! We will camp at Horse Meadow Campground, along Salmon Creek, as usual. This is the area that Nina House, one of our April program presenters, spoke about. A link to her program will be on our Kern CNPS website, so you can inspire yourself to join us up high in the Sequoia National Forest. You don’t want to miss this!

We usually arrive for Friday night, so we can start our explorations on Saturday, early. Everyone is responsible for their own food and gear, but we can try to work out stove sharing if you don’t have one.

Carpooling is encouraged, if you plan to camp with a friend, as the price of campsites rises with additional cars.

If you are interested, please contact Lucy Clark at lucyg391@gmail.com, to let me know. I will be sending further info, and we can try to work out cars, stoves, food planning for those of you coming alone, etc. if you want.

Ed. Note: Lucy forwarded note from Nina who indicates she will be able to join our group the morning of the 11th. Here is the link to her presentation.

Thank You, Cactus Weeders!
March 6, 2021
by Lucy Clark

Here are photos of our three hours + of cactus weeding and watering on March 6, 2021. Just the last one has a person included! That is Ellen Cypher, the “Expert on Bako Cacti”. The members who helped are listed, along with a wonderful guest, Erica Kelly.

Weeders List:
Zachary Principe
Frank Bedard
Bill Nelson
Fred Chynoweth
Clyde Golden
Erica Kelly
Ellen Cypher
Lucy Clark

Photos courtesy Erica Kelly

Ed. Note: Lucy forwarded note from Nina who indicates she will be able to join our group the morning of the 11th. Here is the link to her presentation.
yep, thorns love to wait for just the right moment to catch your clothing and/or bare arms. The yellow flowers are pretty cute since they remind me of fuzzy caterpillars. Unfortunately, the flowers usually only bloom from April through June. Pods contain their seeds and are flat and very long. You will be able to see every seed inside the pod because they look like they have been shrink-wrapped. The pods will ripen sometime in the fall.

While I am thinking negatively about this plant, Clarke, the book’s author, just informed me that every part of the honey mesquite was used in some way by the Yumans, Mohaves, Cocopas, Pimas, Papago and numerous other Indians of Arizona and the desert. They also used pods for bartering, so….maybe your neighbor would be willing to trade the beans for that cookie recipe you have always wanted. You could also make this Mesquite Punch recipe and tell your neighbor that it is from one of your ancestors.

**Mesquite Punch**

4 cups *mesquite pods*, dried

(Linked to google for more information about the correct use.)

1 tablespoon brown sugar

pinch of cinnamon

dash of ground cloves

Wash and break up the mesquite pods. Cover with water and boil for 2 hours, adding water if necessary. Mash frequently. Reserving liquid, wrist and break up pods by hand or put them through a blender or grinder. Return to liquid and simmer, tightly-covered for 1/2 hour. Strain off the liquid. To each cup of liquid add 1 tablespoon brown sugar, a pinch of cinnamon, and a sprinkle of ground cloves. Heat and stir until sugar is dissolved. Serve warm or chilled.

(Serves 4 neighbors.)

I have gained a new respect for deer, antelope, and mountain sheep. According to Clarke, they can maneuver their mouth and nose around the plant thorns to enjoy eating the pods.

**REALLY?**

PS. I am making this my last article for the *Mimulus Memo*. If any of your plants have grown to where you can make one or more of my recipes, please reread the Kern CNPS disclaimer. : )

**HAVE A WONDERFUL SUMMER ✿**

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**“I KNEW THAT”**

by Yvonne Turkal

HERE IS OUR DISCLAIMER: THIS COLUMN IS about edible plants and the basic information comes from the book *Edible and Useful Plants of California*, by Charlotte Bringle Clarke, Univ. of California Press, 1977. The Kern Chapter of the California Native Plant Society isn’t responsible for any of your results. Examples: Plant a suggested genus and species, and watch it outgrow your expectations or not grow at all; try a recipe and find it less than satisfactory or maybe get lucky and enjoy every last morsel.

This month the honey mesquite came to mind - *Prosopis glandulosa* var. torreyana formerly *P. juliflora*. Family: **Fabaceae**, which was formerly **Leguminosae**.

REALLY?

What a great way Charlotte Clarke moved us into this plant description. I already think I chose the wrong plant for this month. Let’s just call it “honey mesquite” and leave the rest to sort itself out.

To be honest — and you know I am — I can’t even say I like this plant. If you like small and very thin leaves that grow in pairs, but pair number one doesn’t grow right next to pair number two, you might like this shrub/tree. Oh, then there are the thorns.

Las Pilitas website states that the edible pods taste like “stringy carob pods.”
Inside this Issue:

- Mary Beal, Mojave Botanist (Part 2)
- Oak Galls (Part III)
- I Knew That (Edible Natives)
- The Bakersfield College Herbarium

The Kern Chapter of the California Native Plant Society meets the third Thursday of each month at:

California Native Plant Society
Kern County Superintendent of Schools
City Centre, Room 1A or 1B
1300 17th Street, Bakersfield, CA.
Chapter website: kern.cnps.org

The California Native Plant Society is a non-profit organization dedicated to the conservation of California native plants and their natural habitats, and to increasing the understanding, appreciation, and horticultural use of native plants. CNPS has 31 chapters throughout the state and membership is open to all persons — professional and amateur — with an interest in California's native plants. Members have diverse interests including natural history, botany, ecology, conservation, photography, drawing, hiking and gardening. As a Kern County resident, your membership includes Fremontia, a quarterly journal with articles on all aspects of native plants; the Bulletin, a statewide report of activities and schedules; and The Mimulus Memo, the newsletter of the Kern Chapter.

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