

Mimulus Memo



JANUARY 2023

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EVENTS

JANUARY

- 19 – Annual Potluck
6:00 – 8:30 pm
(see *Upcoming Events*, p. 5)

FEBRUARY

- 16 – Chapter Meeting, 6 pm
Program, 7 pm

MARCH

- 14 – *Ditch Your Lawn* Workshop
Levan Institute., (Fee) 7 - 8:30 pm
- 16 – Chapter Meeting, 6 pm
Program, 7 pm
- 21 – (continuation) *Ditch Your
Lawn* Workshop, 7 - 8:30 pm
(see *Upcoming Events*, p. 5)

APRIL

- 20 – Chapter Meeting, 6 pm
Program, 7 pm

Hope Jahren's Musings — The Mysteries and Miracles of Plants

by Nancy Nies

GEOBIOLOGIST HOPE JAHREN HAS SPENT HER LIFE studying trees, flowers, seeds, and soil. *Lab Girl* is her revelatory treatise on plant life — but it is also a celebration of the lifelong curiosity, humility, and passion that drive every scientist."

So begins the book-cover description of Jahren's 2016 memoir. The author is not only a brilliant scientist, but also a gifted writer. Alternating chapters on the stages of a plant's life with chapters on the stages of her own personal story, the author uses imagery as a poet would, allowing us to see the world around us in a different way. Here are some examples. Whether or not you're already familiar with the fascinating plant facts Jahren presents, I hope you will enjoy her images as much as I do.

NOTE: In this article Jahren's words will be in this font.

On seeds . . .

"A seed knows how to wait."

Jahren tells us that a cherry seed can easily wait a century to germinate.

"Some unique trigger-combination of temperature-moisture-light and many other things is required to convince a seed to jump off the deep end and take its chance - to take its one and only chance to grow."

Even more incredible than a cherry seed's hundred-year wait is that of a **lotus seed** (*Nelumbo nucifera*) long buried in a peat bog in China. When scientists broke open the seed's coat and coaxed the embryo to grow, they carbon-dated the outer husk and discovered that the seed had been waiting two thousand years.

"The tiny seed had stubbornly kept up

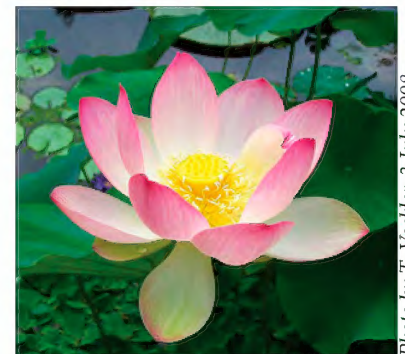
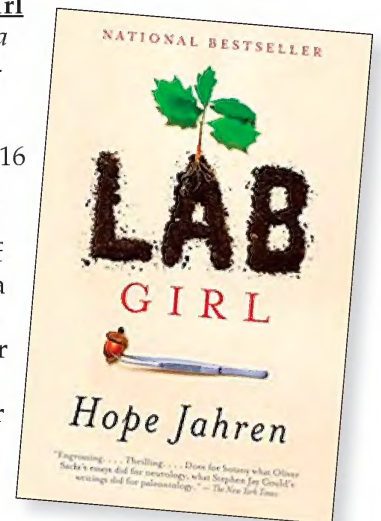


Photo by T. Voekler, 3 July 2008.
Wikimedia Commons.

the hope of its own future,...while entire human civilizations rose and fell. And then one day this little plant's yearning finally burst forth within a laboratory. I wonder where it is right now."

On leaves . . .

"Consider that there can easily be a hundred thousand lobed leaves on a single oak tree and that no two of them are exactly the same....The leaves of the world comprise countless billion elaborations of a single, simple machine designed for one job only--a job upon which humankind hinges. Leaves make sugar."

After the sun's light photons stimulate the pigments within the leaf, ...

"buzzing electrons line up into an unfathomably long chain and pass their excitement one to the other, moving biochemical energy across the cell to the exact location where it is needed."

Plants have been doing this for four hundred million years, Jahren tells us.

However, . . .

"Every once in a while a plant gets an idea to make a new leaf that changes everything."

It is likely that sometime in the last ten million years, a plant had the new idea of shaping its leaf into a spine rather than spreading it out. The spines, like those of today's cholla cactus, were sharp enough to dissuade animals looking for food, and also reduced evaporation. This new idea . . .

"allowed a new kind of plant to grow preposterously large and live long in a dry place where it was also the only green

thing around for miles - an absurdly inconceivable success."

On fungi . . .

It is incorrect, Hope Jahren tells us, to call a mushroom a fungus. A mushroom is only the reproductive organ . . .

"that is attached to something more whole, complex, and hidden. Underneath every mushroom is a web of stringy hyphae that may extend for kilometers, wrapping around countless clumps of soil and holding the landscape together."



Photo by Nancy Nies.

Cracked-cap mushroom, approx. six inches in diameter. Wooded area near Horse Meadow, Southern Sierra, August 2018.

The toadstool portion appears only briefly, while the web anchoring it lives for years in what Jahren calls

"...a darker and richer world."

She tells us that although a single group of fungi are the worst enemies of trees,

"...making its macabre living by rotting ligneous limbs and stumps of a forest"

— a small minority of this group have become trees' best friends, entering into a symbiotic relationship with them. These, by entwining their webbing through the tree's roots, help the tree by drawing water into the trunk, and,

"...also mine the soil for rare metals, such as manganese, copper, and phosphorous, and then present them to the tree as precious gifts of the magi."

On flowers . . .

"The vast majority of plants faithfully produce a new crop of flowers every single year,"

Jahren writes, though the odds are small that these flowers will be fertilized. She describes an extremely rare, nearly impossible occurrence, which she calls



Quercus lobata (valley oak) leaves. Caswell Memorial State Park, San Joaquin Valley, California, 24 October 2006. .



Cylindropuntia bigelovii (teddy-bear cholla cactus). Red Rock Canyon State Park, Kern County, California, 1 January 2021.

"...a feel-good example of symbiosis between ecological soul-mates"

— a wasp that can reproduce only inside a fig flower, which in turn can be fertilized only when the wasp lays her eggs inside it and deposits the pollen that coated her when she herself hatched in another fig flower. Unbelievably, the wasp and the fig

"...have enjoyed this arrangement for almost ninety million years, evolving together through the extinction of dinosaurs and across multiple ice ages."

She likens it to an epic love story.

Flowering trees and plants, of course, lure insect pollinators with brief sips of sweet nectar. Other trees release their pollen to be carried by the wind. Though an infinitesimal amount of all the pollen produced is actually used,

"[e]nough of it hits its target... to keep the world perpetually blanketed by the great conifer forests of Canada, the Giant Redwood groves of the Pacific, and the expansive spruce forests that stretch through Scandinavia and Siberia."

On words and actions . . .

If you're like me, and intrigued by the origins of words, you'll be interested in a tidbit that Jahren shares in her epilogue.

"In languages across the globe, the adjective 'green' is etymologically rooted in the verb 'to grow.'"

She goes on to say that participants in free-association studies

"linked the word 'green' to concepts of nature, restfulness, peace, and positivity," ... "a glimpse of green significantly improved the creativity that people brought to bear on simple tasks."

Hope Jahren points out, however, that seen from space, Earth looks less green every year. She attributes this to the fact that every year a tree is cut down in the name of each of its human inhabitants. This brings her to make what she calls a "personal

request" of each reader. — to plant one tree this year. She requests that it not be an ornamental.

"How about an oak?" she asks. "There are more than two hundred species and one is bound to be adapted to your specific corner of the planet."

She mentions several, including the live oak, which . . .

"can grow steadily on the hottest hills of central California, contrasting dark green against the golden grass."

We know, of course, that this is true of our own *Quercus lobata* (valley oak) and *Quercus douglasii* (blue oak).

I think Hope Jahren would approve of my ending this collection her musings with a concept attributed to French theologian **Hya-cinthe Loyson**, in a sermon he gave in Paris in 1866:

"Seen from space earth looks less green every year."

"Blessed are those who plant trees under whose shade they will never sit." ☀

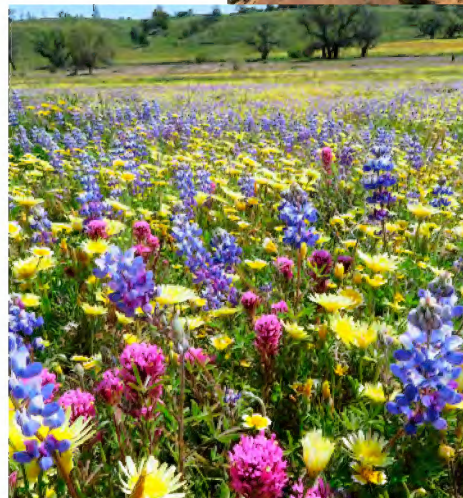


Photo by Mokkie, Wikimedia Commons.

Ficus variegata (common red-stem fig). Native to Asia. 17 July 2014. The figs grow in masses on the trunk, each containing hundreds of tiny flowers which are pollinated by minute wasps living in association with the fig.



Photos by Nancy Nies.

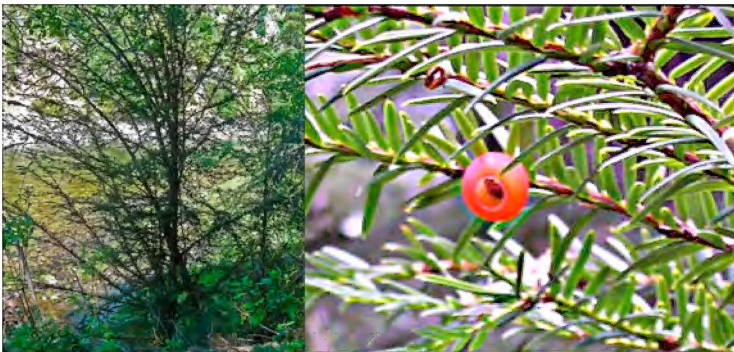


Left: Wildflowers along Shell Creek Road – Earth Day, 22 April 2020
Above: View from Old Ridge Route of dark-green oaks dotting golden hills – 20 January 2021, Los Angeles County.

**President's Message:
A Naturally-occurring
Self-pruning Yew native to
the Klamath Mountains**

by Rich Spjut

WE USUALLY THINK OF A CHRISTMAS TREE as having an overall conical shape with densely crowded branches and upcurved needles spreading uniformly all around its branches. Most commonly advertised are **fir trees** (*Abies* spp.), while **western** and **eastern white pines** are also sold. But how about a **yew** (*Taxus*), in particular a **Klamath yew**? **The Jepson Manual** (2012) describes the **Pacific yew**,



***Taxus brevifolia* var. *brevifolia*.** Left: Habit of tree. Right: Close-up of branch with mature berry-like cone, a red fleshy vase-like aril surrounding the seed with an apical opening through which one can see the seed inside.



Comparison of ovular shoots of *Taxus brevifolia* var. *brevifolia* with var. *polychaeta*. Above: var. *brevifolia* – a short ovular shoot (cone) with immature seed before aril has developed. Top Left: var. *polychaeta* from Sonoma Co., CA – immature seed cone with five ovular shoots. Top right: var. *polychaeta* from near Spokane, WA – twig-leaf specimen with three long ovular cone shoots (immature).

Taxus brevifolia, as having a trunk to 18(-25) m, noting also “*T. b.* var. *polychaeta* Spjut; *T. b.* var. *reptaneta* Spjut.” Then adds “See Spjut (2007)ⁱ for alternate treatment of *Taxus* in CA.” Here I report in more detail on the other varieties including an unrecognized **Klamath yew** (*Taxus brevifolia* var. *klamathensis* Spjut)ⁱⁱ.

Variety *brevifolia* (Pacific yew) would not be a suitable Christmas tree because of its irregular branching, especially the relatively long branches, which spread more upwards than horizontal. This yew occurs widely in the Pacific Northwest, reaching its



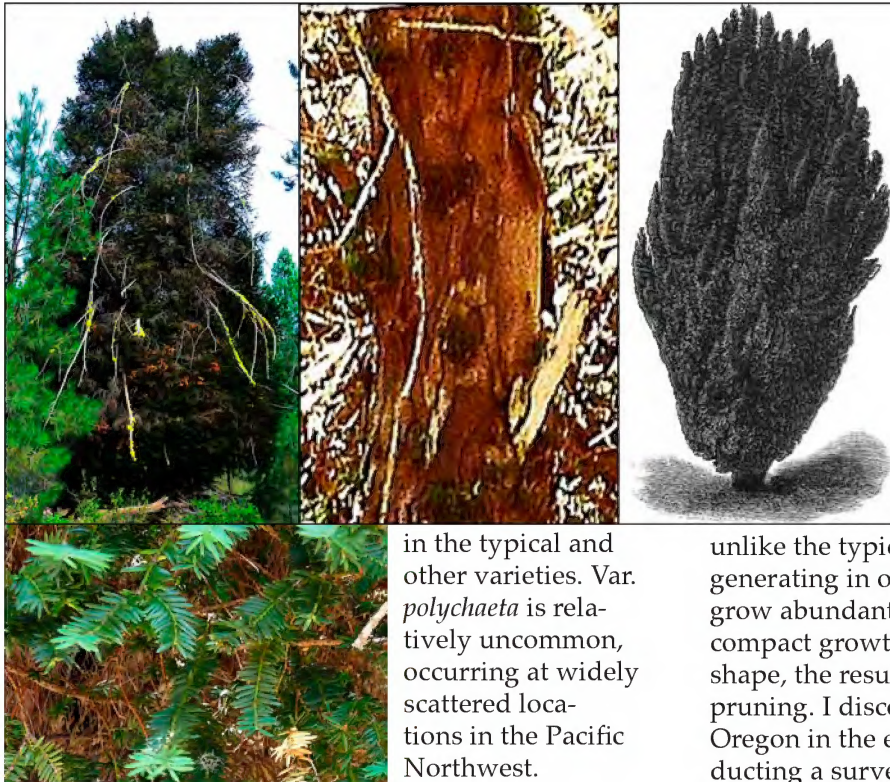
Three growth forms of *Taxus brevifolia* var. *reptaneta*. (At left) Top: Avalanche shoot Libby Mt. in MT with numerous ascending stems debarked in 1992 for isolation of the anticancer drug taxol. Middle: Stem of yew lifted off the ground among various yew branchlets, Flathead Natl. Forest, MT, Aug. 1992. Bottom: Ramet growing around the base of **Douglas fir** in the eastern Cascade Range of WA south of Leavenworth along Icicle Creek, Aug. 1992.

southern limits in California along the coast in the Santa Cruz Mountains and Yosemite Valley in the Sierra Nevada (Calflora). It has been reported as far south as Tulare Countyⁱⁱⁱ, but without support from herbarium specimens that could have been lost from the 1906 San Francisco earthquake fire. Its apparent disappearance from the southern Sierra Nevada is probably due to human activity; one might even speculate it was once in Kern County before the uplift of the Transverse and Coast Ranges (Spjut 2007).

Variety *polychaeta* (Worm cone yew) is a tree similar to var. *brevifolia* that differs by producing multi-ovular shoots, elongated and worm-like, or short branched near base, in contrast to the usual short 1 or 2 (often unequally developed) ovular shoots

continues to thrive and reproduce vegetatively as well as sexually. Two other growth forms of var. *reptaneta* are generally recognized. One primarily occurs in the understory of coniferous forests in which the ramets develop at more distant intervals, often in close mutualistic-like association with **Douglas fir**. A third, known only from northwestern Montana, is similar to the prostrate form of the Canada yew (*T. canadensis*) by its branches creeping along the ground for hundreds of meters without individual distinction of a plant. It remains to be determined whether this low branch form originates from a branch near the base of a tree that has since disappeared, or reproduces its prostrate form by seed.

Variety *klamathensis* (Klamath yew) is a tree—that



Klamath yew compared to **Irish yew**.

Top left: Solitary tree with old snag branches; these are the branches that persist after fire or other disturbance, the dark green is new growth of epicormic branches as a result.

Top center: Bole of Klamath yew within a dense forest of yew, the bole characterized by abundant dark knot-like shallow depressions (epicormic buds) from which epicormic shoots grow out of after disturbance.

Top right: Illustration of Irish yew at Florence Court, Ireland.

Lower left: Close-up of trunk of Klamath yew densely covered with very short epicormic leafy branches and old needles, completely obscuring the trunk.

in the typical and other varieties. Var. *polychaeta* is relatively uncommon, occurring at widely scattered locations in the Pacific Northwest.

Variety *reptaneta* (Thicket yew) is a shrub with ascending branch-like stems. The epithet *reptaneta* refers to plants forming impenetrable thickets — in open sunny north to east-facing drainages at mid elevations as seen in the type from Siskiyou County near the corner of Humboldt and Trinity counties. The plants reproduce asexually by layering — a rooting stem in contact with the ground from which a clonal plant develops and becomes detached from the parent through decay of the connecting root such as described for the **Canada yew**, *T. canadensis*. The individual clone, which is the same genotype, is called a **genet** or **ramet**. In these shrub yews, layering regularly occurs without injury to the parental plant. Both the parental and new clone (ramet) con-

unlike the typical variety — can survive fire. In regenerating in open areas, short epicormic^{iv} branches grow abundantly from the main trunk. Its overall compact growth form is columnar to conical in shape, the result of which may be referred to as self-pruning. I discovered this new variety in southern Oregon in the eastern Klamath Region while conducting a survey of **white corn lily** (*Veratrum californicum*) in the western United States in August 2011.

The appearance of the Klamath yew resembles those in European topiary. Its columnar form also appears similar to the **Irish yew**, which was discovered by a farmer in 1760,

George Willis, who



Young self-pruning Klamath yew. Natural growth, not likely from browsing by deer.



Topiary Klamath yew parkland in southern Oregon. Taller trees in the background are white fir (*Abies concolor*).

bearing (female) trees growing on a rock in northwest Ireland and transplanted them, one to his garden and the other he gave to his landlord, the **Duke of Enniskillen**. Willis' plant lived for about 80 years, while the other lived on to be the source of cuttings for the Irish yew cultivated in many areas of the world, even in such warmer places as Redding, CA. ^v Its similarity to columnar forms of Klamath yew is unusual when compared to the typical **Pacific**



Separate pollen (**top**) and seed plants (**bottom**) of Klamath yew, Aug. 2014. Pollen produced in August is unusual for yew in the Pacific Northwest. Yellow arils shown for seed cones are also unusual.



Yew topiary at Elvaston Castle, Derbyshire, Veitch & Sons, 1881 ^{vi}

yew; the Irish and Klamath yews can be distinguished by their branching, all upright in the Irish yew, spreading horizontal in the Klamath yew, and also leaf anatomy (Spjut 2007). Other distinctive features of the Klamath yew are swollen trunks, pollen produced in midsummer, and occasional yellow arils on some plants. Varietal status instead of species status is weighted on leaf anatomical character differences among species. As to commercial growing for Christmas trees, it would not be suitable because of its slow growth and high cost as seen advertised for similar European topiaries of *T. baccata*. ❁

REFERENCES

- i Spjut :RW, 2007. Taxonomy and nomenclature of *Taxus*. *J. Bot. Res. Inst. Texas* 1(1): 203–289. A phylogeographical analysis of *Taxus* (Taxaceae) based on leaf anatomical characters. *Ibid.*, 291–332.
- ii A new variety of *Taxus brevifolia* from the Pacific Northwest of North America. Abstract submitted to the IV International Yew Workshop: Management, conservation and culture of the yew forests in Mediterranean forest ecosystems. Poster presented at Paratge Natural d'Interès Nacional de Poblet October, 23-25, 2014. Accepted for publication in 2015. *Taxus brevifolia* var. *klamathensis* Spjut, http://www.worldbotanical.com/taxus_brevifolia_var_klamathensi.htm.
- iii Sargent, *Silva of North America* 1896. Jepson, *Silva of California*, 1910; Univ. Press, p. 164-168.
- iv *Epicormic shoots*, in contrast to adventitious shoots that develop spontaneously from buds lacking a vascular connection to the meristem, are a regular developmental pattern on the aerial system of the tree such as on the bole and/or branches. They originate from dormant buds in or beneath the stem-bark with a connection to the vascular tissue, and become activated—upon stress such as fire or sudden exposure to light—to produce new branches (Kormanik & Brown, 1967). Epicormic bud initiation is determined by the 'genetic growth plan' (Meier *et al.*, 2012). Both sequential and cauliferous shoots are recognized in *Taxus brevifolia* var. *klamathensis*. They are of two kinds (a) short branches 1–2 m long, and (b) leafy branchlets usually <30 cm in length.
- v Hageneder F, 2007. *Yew. A History*. Sutton Publishing Ltd., Thrupp-Stroud-Gloucestershire. Plants observed by Spjut growing along a shady side of a motel in Redding, CA.
- vi . Veitch and Sons, *A Manual of the Coniferae*, Publ. by the authors, Kings Road, Chelsea, 1881.



CALIFORNIA
NATIVE PLANT SOCIETY

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.

Chapter Meetings

upcoming TOPICS

Thursday, January 19, 2023

6 - 8:30 pm

Topic:

POTLUCK & SLIDE SHOW

Place: Larry E. Reider Education Ctr. at 2000 K Street, Room 201

BRING potluck items to share. Please bring your own dinner service as we try to minimize waste.

SHARE photos — Bring your flower and hike photos on a chip or thumb drive and share them with the group.



Please use the parking structure located east of the building and enter through the doors accessed from the parking structure. The front doors lock at 5 pm.

A short business meeting will follow. If you have topics to discuss please send to pgipe@igc.org.



Thursday, Feb. 16, 2023

6 - 8:30 pm

Topic: *The Flower Formula*

Presenter: *Dr. Maynard Moe*

Place: Larry E. Reider Education Ctr. at 2000 K Street, Room 201

Dr. Moe is the author of *Kern County Flora: A Key to Vascular Plant Species of Kern County*. We thought it would be good to offer this introductory program again.

Tuesdays, March 14 & 21, 2023

7- 8:30pm

Topic: *Ditch Your Lawn*

Presenter: *Monica Tudor*

Place: Room 222, Bakersfield College, Southwest Campus, 9400 Camino Media, Bakersfield, CA 93111.

How to get rid of your lawn and replace it with natives. — A Levan Institute Program
Fee: \$20



Thursday, March 16, 2023

6 - 8:30 pm

Topic: TBA

Presenter: TBA

Place: TBA



Thursday, April 20, 2023

6 - 8:30 pm

Topic: *The Blue Oak Nursery in Visalia*

Presenter: *Peyton Ellas*, owner,

Place: TBA

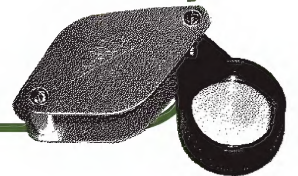
Find out what she's growing these days.

All in-person chapter meetings are held the 3rd Thursday of each month.



Meeting times:

6 -8:30 pm: 6 pm - Socializing, plant ID and gardening discussion groups, followed at 7 pm by program presentation and concluding with a short business meeting. ✿





Monica and a native plant customer confer in her yard on plant sale pick-up date — October 15, 2022.

2022 Kern Chapter CNPS Annual Plant Sale

by Monica Tudor

THANK YOU TO EVERYONE WHO HELPED AT the 2022 CNPS Annual Plant Sale. We did very well with very few glitches, less than a half dozen missed plants out of over 350 plants ordered.

I'm really liking the online format, since people can order what they want and because they pre-order it takes the guesswork out of the wholesale ordering process. The online format requires fewer volunteers and no hauling plants to Cal State and back. We also had a larger variety of plants available online this year than at last year's sale, which everyone seemed to appreciate.

Will we do it again?
Absolutely! 🌱

Update: Bakersfield Cacti Project

by Lucy Clark

LAST DECEMBER WE HAD AN EARLY REQUEST from **The Nature Conservancy** to help monitor the cacti we planted this year. This is a requirement **CA Fish and Wildlife** requirement that aims to prove we are taking care of this rare plant. Monitoring occurs annually for 5 years after planting. TNC's **Rachel Mason** once again herded us cats along Caliente and Tehachapi Creeks.

Thursday, December 15 was a cold, grey morning, but a hardy team gathered to measure the height of each plant, count its pads, and to rate it on a scale of 1 to 5 as to its health. Any notes of interest could be added also. Rachel will prepare the document for CFW, using this information.

We were so pleased to have **Ellen Cypher**, the expert on this plant, with us. She helped in this task, and said at the end of the morning that she thought our cacti looked very good! None were eaten by insects or critters, and most pads were plump with the very recent rain. Some of the original pads

had grown no new ones, but were larger. Some had 2, 3, 4 new pads, the max being 10!

A big thank you to the members who participated, and cheerfully: **Crystal Anderson, Frank Bedard, Ellen Cypher, Fred Chynoweth, Diane Farnsworth, Paul Gipe, Clyde Golden, Pat Mumford, Bill Nelson, Donna Rodriguez, and Libby Vincent**. It was so nice to be together again, to feel useful, out on the beautiful **Beard Ranch**, a part of TNC's new **Randall Preserve!**

If anyone would like to help in the future, just email **Lucy Clark** at lucyg391@gmail.com, and I will add you to the Cactus Crew! 🌱

Thank You to:

- ... **Antje Lauer, Professor of Microbiology at CSUB** for her presentation on BESA - Bakersfield Environmental Studies Area and plans to restore the area.
- ... **Arianne Chow-Garcia** of CSUB for presenting a program on the "Three Sisters Garden" highlighting indigenous practices of companion planting in the CSUB Edible Garden. .
- ... **Rich Spjut**, botanist, who in addition to many other contributions, maintained our previous website for years — a valuable resource for us all.
- ... **Paul Gipe** for mastering WordPress, enabling us to enjoy enhanced features on our attractive new chapter website 🌱.

Kern CNPS New Website Up

by Paul Gipe

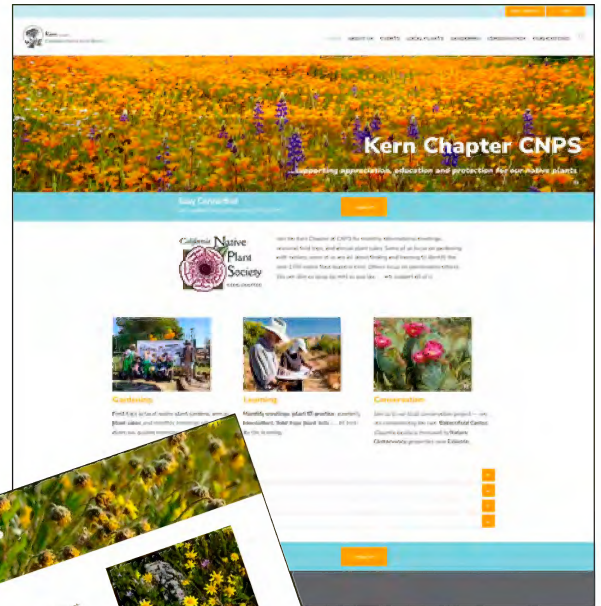
AS PART OF A STATEWIDE MOVE OF CNPS' websites to a new platform, the Kern Chapter has upgraded its website.

The new web site, <https://chapters.cnps.org/kern/>, incorporates the best features of the old site (plant lists, past field trips, and so on) while including several new features.

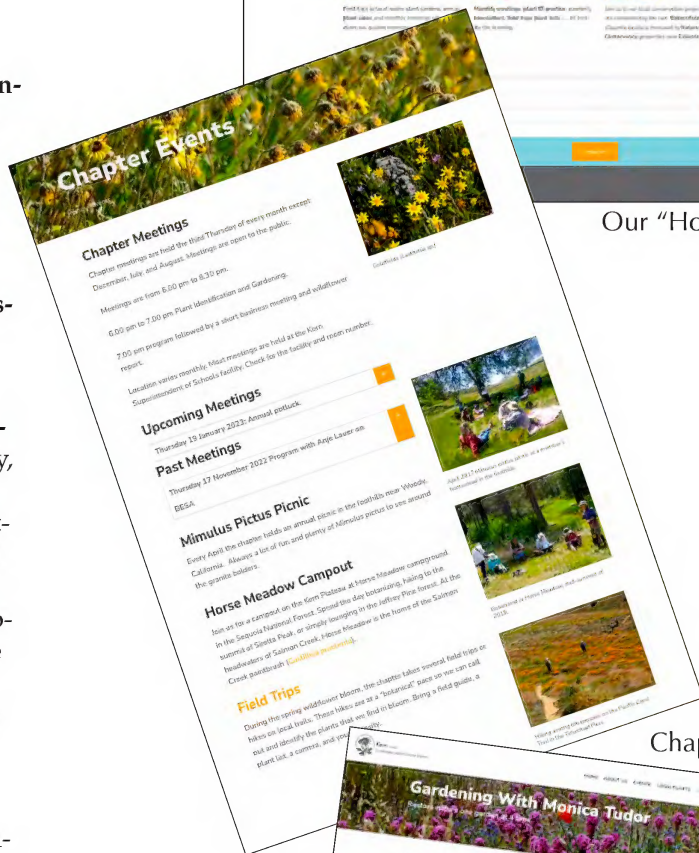
NEW & EXPANDED

- 1 The new web site EXPANDS on the chapter's contribution to habitat restoration** of the Bakersfield cactus and valley oaks with photos of members in action. It also features contributions to the *Mimulus Memo* by **Monica Tudor** on gardening, and **Nancy Nies** on unsung women botanists.
- Sections of the website on **plant lists, nearby nurseries, botanical gardens, and field guides** have also been updated and **EXPANDED**.
- Also NEW is a page on digital aids to plant identification.** Instead of relying on a dichotomous key, amateur plant lovers can use common features, such as flower color and the number of flower petals, with a digital database that presents a suite of images that meet the criteria. Users then sort the images to find the best match. This page also introduces **iSeek** that allows the user to snap an image of a plant with their smart phone. The app then searches an online database of images for the best match. While neither is perfect, both apps make identifying plants easier for the non-botanist.

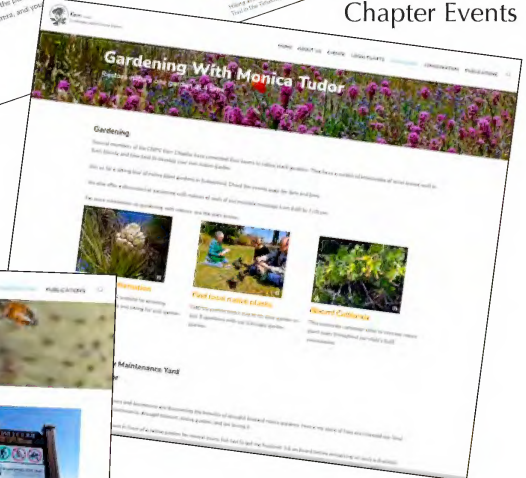
We thank professional botanist **Rich Spjut** for maintaining the old website for the past decade. Our new web team of **Rich Spjut, Dinah Campbell, Monica Tudor, Sabrina Mehtabuddin, and Paul Gipe** welcome your input. If you have ideas for the website, please contact one of them. 🌱



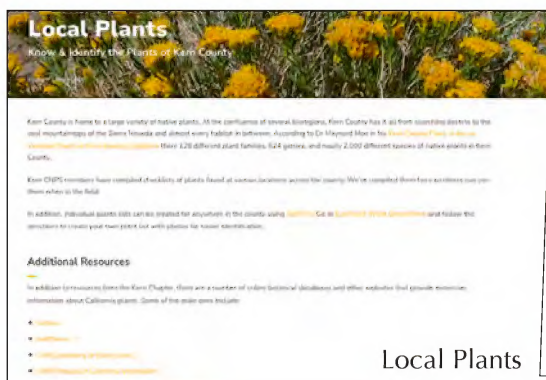
Our "Home" page.



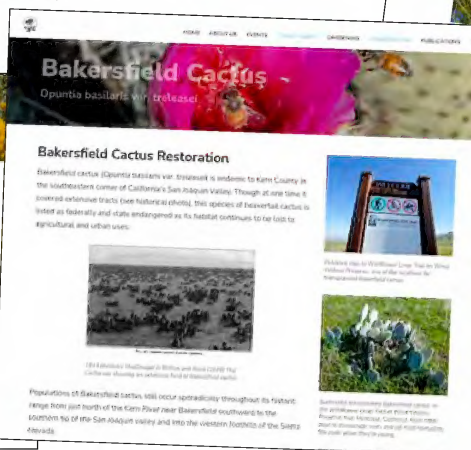
Chapter Events



Gardening with Monica



Local Plants



Bakersfield Cactus Restoration

Contacts:

- President – Rich Spjut richspjut@gmail.com
- Vice President – OPEN
- Coordinator – Paul Gipe pgipe@igc.org
- Treasurer – Monica Tudor..... dosportas@msu.com
- Secretary – OPEN
- Conservation – Fred Chynoweth..... rdnmnt18@gmail.com
- Council Delegate – OPEN
- Field Trips – Patty Gradek..... pattygradek@gmail.com
- Newsletter – Dinah Campbell..... mimulus.memo@gmail.com
- Plant Sale – Monica Tudor dosportas@msu.com
- Programs – Paul Gipe pgipe@igc.org
- Rich Spjut..... richspjut@gmail.com
- Publicity – OPEN
- Membership – Dinah Campbell dinah.campbell@gmail.com
- Rare Plants – Clyde Golden..... cgold666@hotmail.com
- Webmaster – Rich Spjut richspjut@gmail.com

The Kern Chapter of the California Native Plant Society currently meets the third Thursday of each month via Zoom:
 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 **Flora Magazine**, a quarterly journal with interviews, conservation updates, gardening advice. **Artemesia**, CNPS’s scientific journal and **The Mimulus Memo**, the Kern Chapter newsletter published quarterly.

Join CNPS or renew your membership online at cnps.org
Membership levels: \$25, \$50, \$120, \$500 (\$25 minimum)
 Go Perennial at \$5/ month

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CNPS-Kern Chapter
 c/o Dinah Campbell, Editor
 2100 Jason St.
 Bakersfield, CA93309-2949
mimulus.memo@gmail.com



Mimulus
 Memo



Inside this Issue:

- HOPE JAHREN’S MUSINGS
- A NATURALLY OCCURRING SELF-PRUNING YEW
- KERN CNPS WEBSITE NOW UP