From the President
Lynn Miller, Volunteer President

It’s a crisp fall morning, and when I looked at today’s weather map, the Southland was covered in green dots. Excellent air quality everywhere—a rare sight and a good sign that it’s time to go out for a walk. If you go to the Garden, you can see that the Forest Pavilion is ready, short of fall planting, and great news—the restrooms are open. This long-awaited project is a stunning addition to CalBG. The creaky wooden deck alongside Emily’s Pond has been replaced by an attractive concrete deck and safety railing, all donated by Emily’s husband. Self-guided tour signs between Emily’s Pond and Benjamin Pond were made possible by donations in memory of Toni Clarke.

Bit by bit, volunteer opportunities are returning to the Garden. In late September, the Garden Guides met to walk the revised school tour course. Shortened from two hours to one-and-a-half hours, the group enjoyed their hot morning, and after reflection agreed that it would meet the students’ needs. Huge thanks again to Katy Douglass, Ann Morgan, Elene Kallimanis, and Marla White for organizing this important effort. We are hitting our stride again, so see our website for updates and information; login to Volgistics for future opportunities to serve at CalBG.
By now, the Grow Native Plant Sale will have come and gone. If you missed it, the GNN will be open Thursday through Sunday from 9:00 a.m. to 4:00 p.m. The great news is that many of you joined in on the fun and volunteered again! Kudos to Linda Prendergast and the Native Designers who created fifty gorgeous decorative wreaths that are sure to brighten many homes. Opportunity tickets for Barbara Nakaoka’s donation, a beautiful handmade quilt featuring the Matilija poppy, are available until December 15th. Contact Marla White (marlawhite1975@gmail.com) to order Katy Douglass’ garden plaques and coasters. Proceeds from all three sales go to the Volunteer Organization and we appreciate all this support for CalBG.

Be well, and enjoy a walk!

—Lynn

Greetings faithful volunteers!

First, thanks to all of you who participated in any and all ways at the opening of the Grow Native Nursery—including those of you who purchased plants! After 19 months it is good to be back to in-person shopping! Worthy of special mention are the Native Designs team who were doing a land office business – especially on Saturday at the sweet spot by the entrance to the Garden. They had a number of marvelous items for sale and did quite well by reports that I got. Didn’t get your wreath yet? Those that are unsold will make a new debut shortly—once we work the kinks out of the system by which we will take payment. I also want to single out Steve Bryant for commendation! Steve was especially helpful with providing information to GNN customers about our milkweeds (aka selling them!) but was active all across the sales floor as needs be. If you were there, you may also have noted some new faces, both staff and volunteers. If you have not met Sydney and Mariana yet—by all means say hello the next time you are at the GNN when one or both of them is there. Among volunteers, Amanda recruited a number of new-since-Covid volunteers and they were immensely helpful with the check-out line both days (as were many of you pre-Covid regulars!). We are all looking forward to getting to know these new volunteers better once we can have more ‘normal’ events.

Two things to share: we still have milkweeds! Bryce and his team succeeded in growing enough—mainly Asclepias fascicularis to meet demand on opening weekend—AND they really flew off the shelves. I was very happy to see quite a few people.
buying large numbers of white sage (*Salvia apiana*). Many of you will know that this sage—favored for smudging—has been the subject of poaching from wildlands. I am gratified to see that we have customers who are determined to do the right thing and grow it for themselves. And then I could tell you about the pitcher sages, the woolly bluecurls, the glorious ferns, on and on.

How did we do, you ask? We grossed right at $40,000 over the three days—TH (Acorn event), SAT (members only) and SUN (everyone). I am pretty sure that is a record but I have not had time to do the comps.

And on into the regular sales season—the GNN will be open Thursdays through Sundays, 9 am–4 pm, for the foreseeable future. If the weather does what the weather folks are currently predicting for early in the last week of October, it will indeed be *perfect* for planting.

I also want to make sure that you visit the new patio by Emily’s Magical Reflecting Pond (aka Upper Pond) next time you are at the Garden. First and foremost, it is now SAFE! No more warped boards with nails almost sticking out. It is also beautiful. Please take note of how it echoes the design of the California Courtyard, which in turn mirrors Johnson’s Oval. Specifically, like the Courtyard, there is a border of distinctive smooth (pinkish to me) concrete, a lovely entryway of natural stone, and the concrete which is treated with a top cast to yield a surface that is beautiful and slightly rough for safety. Also for safety, note the hand rail. I am *thrilled*! As we all know, this has needed to happen. I will always think of two people at the pond—well, one family: Emily was Eddie Lowe’s wife and mother of their two still young children. I am so happy that they have a beautiful place to enjoy nature and remember their mother and wife. Second is our own very special volunteer Toni Clarke whom we lost a few years back. Toni was a Garden Guide and she loved especially teaching the water ecology and chemistry parts of our curriculum consistent school tours. Hence, all who knew her especially treasure her memory at the pond.

The Forest Pavilion is *almost done*! The concrete has been replaced and just a few other things need to happen—most of which will be handled by us after the contractors and architects have—at long last—departed. It has been a process but we are getting there!

**A Very Happy November Birthday to:**
Amy Baumann        Virginia Herd
Edward Becaria     Chris Ilgen
Fred Brooks        Patricia Nueva Espana
Betty Butler       Anne Odgers
Donna Chadwick     Joan Presecan
Barbara Coates     Jean Rosewall
Yanai Feldman      Dean Shimek
Louise Gish        Tom White
Jeff Hanlon
And onward into fall! AND, I hope, more normal times—or new normal. I don’t know about you, but I think I’ll be wearing my mask into public places for a long time to come. Among other things, I have been quite happy not to have so much as a cold for the last 1.5 years. Stay safe everyone! Remember that the safest place to be is outdoors—see you on the paths of California Botanic Garden soon!

**VISITOR EXPERIENCE COORDINATOR**

Danielle Wildasinn

With fall comes the seasonal opening of the Grow Native Nursery. We weren’t sure what to expect since it was the first time GNN was open for in-person shopping since March 2020. But I am happy to report that the opening weekend was successful and exceeded our expectations! Thursday night’s Acorn Pre-Sale welcomed almost twice the number of shoppers we’ve had in previous years! Saturday’s Member Opening was excellent! Cars were lined up outside the front gate before we were even open. Luckily, staff and volunteers reported feeling safe even during the busiest hours on Saturday. Sunday’s Public Opening saw a calmer day in the nursery and a sold-out free admission day for the Garden. Shoppers were eager to peruse the plants in-person—some travelled to us from over an hour away!

The nursery’s plants are looking gorgeous, with most of them grown in-house. The new nursery layout had a checkout line along the fence that ensured shoppers were able to social distance. People also appreciated the cart service that delivered their purchases to their cars. New and seasoned volunteers were a great help by looking after plant orders in the holding area and making sure that purchased plants moved smoothly through the checkout tent. A special shoutout is in order for volunteer Steve Bryant who worked the sales floor on all three days. He gave planting advice, especially on milkweeds—a few of which were sold with monarch caterpillars on them! Native Designs was onsite on both Saturday and Sunday, selling unique handmade items at the Garden entrance.

Thank you to the staff from many departments and the volunteers who contributed to GNN’s Fall Plant Sale: we could not have done it without you! If there are any plants you missed this time around, the Grow Native Nursery is open Thursday through Sunday, 9 a.m. to 4 p.m.

P.S. We still have milkweeds left!

**THE CALBG WALKING GROUP**

From what we have gathered, the “walking group” was formed about ten years ago. According to Eric Garton, former Director of Visitor Services (2010–2015) at RSABG, it was a volunteer who came to him with the idea. He thought it would be both educational and good public relations. He had a few caveats: it must take place during normal Garden hours, be self-sufficient and volunteer run, and the walkers must be members or visitors with a paid admission. In return, the Garden would endorse it.

The group size hasn’t changed much since its inception. Today, the core group of walkers is about eight, but varies between three and twelve depending on the weather or occasional pandemic.

Ruth, a long-time member, says the group started in 2012. Initially, there was a log book at the kiosk where the walkers were encouraged to document what they saw during each walk, but the log only lasted a few years. Their goal was to walk three miles in an hour. There was no designated leader or staff. Many friendships grew from these weekly walks, leading to
meals, cultural events, and other outings among the
group. Ruth says, “We always welcome new walkers.”

Diane, another original member, joined because
she couldn’t afford a gym and wanted to meet new
people. She remembers using “dueling apps and step
counters” but settling on a twenty-minute mile. Over
the years some walkers have lost a step, so they now
divide into the original three-miles-per-hour group
and a slower one. Diane sees a different Garden each
week: frogs and mallards in Benjamin Pond, hawks
raising their young in spring, seasonal variation
among the many plants and animals, changes
in signage and hardscape, and the effects of this
persistent drought on the trees.

The group still has the same basic goal of spending
time with friends while viewing changes in the
Garden. They still meet weekly in the parking lot or
near the kiosk.

CARRIE KIEL, POST DOC RESEARCH SCIENTIST

(Re)place is a collaboration between artist Brandon
Lomax and the California Botanic Garden’s past,
present, and future. Sculptural works will be
shown at various stages of completion from fully
fired clay works that are as durable as stone as well
as unfired works that are more vulnerable to the
weather and elements of the Garden. With guidance
from the Garden’s horticultural specialists, Lomax
infused some works with seeds from native plants.
Throughout the duration of the exhibit, unfired clay
works will disintegrate and rejoin the soil—their
once solid forms replaced by new life.

The selected works suggest the transience of
population diversity within a given place. Some
lasting far longer than others, the fired works will
serve as monuments to sustainability, while others
represent the natural cycle of selection and species
dominance.

Referencing multiple meanings of place, the exhibit
becomes the site of restoration, substitution, and
belonging as it celebrates diversity in all forms:
class, race, gender, sexuality, religion, etc. The show
reminds us that we are here because we are vital
contributors. The artist’s hope is that we humans can
celebrate our own biodiversity and work together to
create a more symbiotic relationship with our earth in
this place, and every other.

(Re)place is on display at California Botanic Garden
from Saturday, November 13, 2021 through
Wednesday, June 1, 2022. The exhibition is free with
Garden admission.

Brandon Lomax is a sculptor and installation artist
whose immersive experiences transport viewers
through time and space, and then back into
themselves. His work is process-driven, informed by
ecology and artifacts, and rooted in anthropological
study.

Lomax engages with ideas of logic, inequality, and
empathy. He has exhibited in galleries and at art fairs,
both domestic and international. His works are in
many private and institutional collections. Lomax
was one of fourteen artists featured in California
Botanic Garden’s exhibition Clayifornia: Ceramic
Sculpture in the California Sunshine. He currently
resides on the West Coast of Ireland, where he studies
the formations, flora, and fauna of the glaciated karst
landscape of the Burren.

DA VINCI’S RULE OF TREES
by Fred Brooks

Leonardo da Vinci was an artist, scientist, engineer,
and consummate observer of all things. More than
500 years ago, he described a pattern of growth in
the natural world: arteries branched from the heart,
tributaries from a river, and trees from stems to
limbs to twigs to leaf veins. Now called da Vinci’s
rule of trees, it states the sum of the cross-sections of
all branches above a branching point is equal to the cross-section of the stem or branch just below the branching point.

Several scientists have tested this rule using modern theories and models. Christophe Eloy (2011) designed a tree on the computer with the lightest possible branch structure that would withstand wind stress and also keep the trunk from breaking. He tested these “trees” in a virtual wind tunnel, and then measured their proportionally decreasing branch diameters. His results held true at different wind speeds and branch heights, replicating da Vinci’s rule.

Minamino and Tateno (2014) measured the cross-sectional ratio of a “mother branch” to its “daughter branches.” Their calculations generally agreed with da Vinci’s rule when the weight and branching angles of the daughter/mother branches were small, but they deviated slightly with greater weight and branch angles. Their field tests with beech and fir trees also varied. A uniform distribution of stress along a beech tree branch was the major determinant of the number of daughter branches per mother branch. For fir, however, the major determinant was the elasticity of the branch, or da Vinci’s rule.

Carvalho and others (2017) assessed xylem and phloem conductivity in poplar leaves. As leaf veins divided from the petiole outwards, they were reduced (scaled) in size. Using this scaling, the researchers identified seven categories of major and minor veins. They found a one-to-one relationship between xylem- and phloem-conducting areas across all seven vein orders. These areas scaled proportionally to the branching area, as proposed by da Vinci’s rule. However, their results apply mainly to dichotomously, not reticulately branched veins.

Learning to observe, to see like Leonardo, will not give us his abilities, yet we may see patterns not visible before.

**A LOBSTER IN THE POND**

*by Patricia Brooks*

“. . . and I saw a lobster!” These words from a young visitor to the Garden drove me to look for the “lobster” whenever I visited Benjamin Pond.

Some weeks later, our walking group finally sighted the illusive lobster. We now know it was not a lobster, which lives in salt water, but a fresh-water crayfish. Crayfish are also known by other names: crawfish, crawdads, freshwater lobsters, mudbugs, et cetera.

Lobsters and crayfish are both classified as crustaceans and have an external skeleton. Their two front claws help them tear food: crayfish eat plants, insects, worms; lobsters eat small fish and snails. Their bodies are segmented and have eight legs. Both live near the bottom of ponds and streams—often under rocks—or in muddy ditches. As with lobsters, crayfish are also edible.

The only remaining crayfish native to California is the endangered Shasta crayfish (*Paciificus fortis*), found only in northern California. Its existence is threatened by the invasive signal crayfish (*Paciificus leniusculus*). As with other successful invasive species, the signal crayfish is more aggressive, outcompeting the Shasta crayfish reproductively and for food and shelter.
The most common nonnative crayfish on both coasts and in southern California is the red swamp crayfish (*Procambarus clarkii*). Adults are brown to red, juveniles gray. They are found in moving and nonmoving water, such as creeks, ponds, and ditches (and walking on the road near Benjamin Pond). They are known to feed on the larvae and juveniles of fish, in competition with other predators.

Next time you are at the Garden, stop by Benjamin Pond—you may be lucky and see a lobster.

**California’s Fabulous Fabs—Herbs and Subshrubs**

by Steve Bryant

California has both annual and perennial fabaceous herbs that require little or no supplemental water when grown in SoCal gardens. For more photos, see [https://calphotos.berkeley.edu/flora/](https://calphotos.berkeley.edu/flora/), [www.calflora.org](http://www.calflora.org) or through Jepson [https://ucjeps.berkeley.edu/eflora](https://ucjeps.berkeley.edu/eflora)

**Acmispon** spp. (formerly *Lotus*): all perennials, mostly under 1 m but may be taller in cultivation. *A. glaber* (Deerweed), with small yellowish flowers is locally common. *A. americanus* (Bird’s-foot Trefoil) with purple-white flowers, *A. argophyllus* (Silver-leaf Lotus) yellow to orange flowers, and *A. heermanii* (Southern Wooly Lotus) with yellow flowers are sometimes available. *A. glaber* fairly easy, others perhaps less so.

**Astragalus** spp.: All are perennial herbs. *A. coccineus* (Scarlet Milkvetch) to 0.3 m with vivid scarlet flowers, *A. pomonensis* (Pomona Milkvetch) to 1 m with light yellow flowers, *A. trichopodus* (Santa Barbara Milkvetch) to 1 m with whitish flowers, *A. palmeri* (Palmers’ Milkvetch) to 0.5 m with purple flowers, *A. douglasii* (Douglas Milkvetch) to 1 m with yellow flowers. Somewhat to quite fussy.
Lupinus spp.: *L. latifolius* (Parish’s Stream Lupine), is a local perennial to 2.5 m tall and wide with slightly fragrant purple and white flowers, best in part shade, dies to ground in late summer. Annuals include *Lupinus succulentus* (Arroyo Lupine) to 1 m with bluish and white flowers, *L. hirsutissimus* (Stinging Lupine) to 1 m with violet flowers and irritating hairs, *L. truncatus* (Collar Lupine) to 1 m with small purple flowers, *L. microcarpus* (Chick Lupine) <1 m, purple to yellow flowers, *L. arizonicus* (Arizona Lupine) to 0.5 m with violet flowers. The following are usually shorter than 0.5 m and have bluish flowers: *L. sparsiflorus* (Coulter’s Lupine), *L. nanus* (Sky Lupine), and *L. bicolor* (Miniature Lupine). *Uresiphita reversalis* (Genista Broom Moth) may defoliate any lupine still in leaf in spring to summer. All generally easy and volunteer freely.

Cultivation and acquisition: The perennials need winter water, with little in summer once established. The annuals need water starting in November to encourage germination, and then every few weeks. Generally available only from specialized nurseries (like GNN).

**Redwood Plank Boats**  
by Shaunna Gygli

The Chumash and Tongva people lived along the coast, inland from about Santa Barbara to Orange County, and on the Channel Islands. They made amazing redwood plank boats. What? Redwoods in Southern California? Let me back up. The cold California Current travels south from Alaska to Baja. The cold condenses the warm air into fog and rain along the central and northern coast, the perfect condition for redwoods. During rainy times, redwoods often fell into rivers and floated out to sea. The California Current brought them to the southern and island beaches where they were prized for making boats.

The logs were made into planks without a saw! An elk horn wedge looking much like a giant screwdriver was repeatedly pounded into the log, splitting it into boards. The planks were sanded using sharkskin and small holes drilled so the planks could be lashed to one another. Tar and pine pitch were melted together to caulk the seams and another coat of yop was used as waterproofing. This was followed by red ochre paint and often shell mosaics. These highly maneuverable boats were works of art.

The tomal (Chumash) and the ti’at (Tongva) were 10 to 30 feet long, 3 to 4 feet wide, and powered by a double-bladed kayak-like paddle. These plank boats were reportedly in use for hundreds of years and have been described as “the single most technologically complex boat built in North America” and as “being unique to the New World.”

Cindi Alvetre is a Tongva descendant, professor of American Indian Studies at Cal State Long Beach, and the first female chair of the Gabrielano/Tongva Tribal Council.

Thirty years ago, her ancestors came to her in a dream. They paddled across a lake, the mountains parted, and the canoe set forth onto the ocean. She had never seen this type of boat before. Two
weeks later, Jim Noyes of the California Indigenous Maritime Association asked if she would be interested in reviving her tribe’s naval culture by building a ti’at. They joined forces, started the Ti’at Society, and built Moomat Akiko (Breath of the Ocean). It is the first and only modern ti’at in Southern California.

It is being repaired in Long Beach and hopefully will once again sail to Catalina Island.

Book of the Month
Julie Scheuermann, Volunteer Library Committee


The author, Robin Wall Kimmerer, is a member of the Potawatomi Nation and a college botany professor with a passion for the environment. She feels that we must act now to prevent an environmental disaster.

The book is a collection of essays in which the author combines her native people’s knowledge with her knowledge as a trained botanist. Many of the essays discuss how native peoples view the world and their responsibility toward it in comparison to how most of society treats the earth today. She strongly believes that to avoid environmental disaster we need to learn to be grateful to the earth and respect the earth for all it gives us.

Many of her stories include personal recollections of her childhood, how she taught her own children to honor the earth, and lessons she taught as a college professor.

Her descriptions of places and events are detailed and beautiful. It is easy to feel that you are there.

Sweet grass is a theme through the book. When sweetgrass is braided, the three strands represent mind, body and spirit. That is what makes us whole. It is when one is whole that they can honor and protect the earth.

I strongly recommend this book.

Amy and Gene Baumann, Volunteer Library Committee


In this beautiful book Alan Salazar records an ancient Tataviam tribal story as a children’s tale. As with most important wisdom it is intended for children of all ages. TATA is a cautionary tale of a Towhee who thinks that the warnings offered by elders does
not apply to him. Thus, he lives carelessly and nearly looses his life when a hawk attacks. Does he learn his lesson, become more cautious, and perhaps even thankful for the advice of elders? Read it and see. The text is beautifully illustrated by Mona Lewis. This is a worthwhile book as a point of self-reflection and/or a beginning point for discussion with children.

The second half of the book shares information about the Tataviam territory, language, villages, and more. Directions for several hands-on activities are shared including the walnut dice game and how to paint a towhee. The book would be an excellent resource for Garden Guides at CalBG and make a wonderful holiday gift for children. It is available at Amazon and from Sunsprite Publications.

Hi, I’m Selena Vengco, a new master’s student at the California Botanic Garden! I grew up surrounded by the marsh wetlands of the California Bay Area. As a child, I was so mesmerized by the neighboring redwood forest that I pursued my undergraduate degree at UC Santa Cruz (UCSC). I studied Ecology and Evolutionary Biology with an emphasis in plant ecology. UCSC is my first botanical home and was fundamental to my botanical upbringing. After graduating in 2019, I found myself working in the Napa Valley as a research associate for the University of California Cooperative Extension under the direction of Dr. Monica Cooper. During my time in Napa, I interviewed viticulturists in California and Washington to try to assess gaps in their knowledge and implementation of two economically devastating grapevine diseases. I was able to bridge two of my interests, plant disease ecology and public education. I would spend days roaming through the vineyards looking for insect vectors and eating grapes during harvest. I knew my heart wasn’t in viticulture when I would constantly pull to the side of road and look at the wildflowers growing in the rural Napa County vineyards (especially in the burn zone, I had to find those fire followers!). Although my time in Napa was very rewarding, I was eager to get back to studying plants from a conservation perspective.

I have always been in love with plant-pollinator interactions. I love flowers. Bees love flowers. I love watching bees go to flowers. It’s a match made in heaven! I am most interested in how pollinators drive floral evolution. My master’s thesis will focus on the maintenance of flower color polymorphisms in *Erythranthe discolor* (*Phrymaceae*), the two-colored monkey flower. The two-colored monkey flower is appropriately named because it can be yellow or pink. When species have more than one flower color, they are known as flower color polymorphisms. The goal of my thesis is to assess if pollinators are helping to maintain the pink and yellow color differences we see in the field. I am most excited to do pollinator observations in the field during the spring and summer!
Around the Garden

Top left: Native Designs, Linda Prendergast, Susan Spradley, Donna Bedell, Shaunna Gygli
Bottom: Acorn presale, Amy Baumann, Dean Shimek, Gene Baumann, Shaunna Gygli, Val Cressy
Top right: Wreath sale, Linda Prendergast, Kathy Roth, Marian Swick
Bottom right: GNN potting shed, Val Cressy, Jack Rosenbach
**More Around the Garden**

Top left: Native Designs, Carol Petty, Ingrid Spiteri, Judy Moffett

Bottom: Claremont scarecrow competition

Top right: Acorn GNN sale,

Bottom right: Native Design, wreath sale