



A Brief History of Botanical Illustration

From *Codex Vindobonensis* to California by Doris Kretschmer

The history of the Western tradition of botanical illustration goes back about 2000 years, and this survey can of course only hit the highlights. Various social and cultural trends have impacted the topic, among them the need to share medical information, the invention of printing, and the Age of Exploration. One phenomenon that resonates today is the

progressive development of botanical illustration as a women's pursuit. We will see that happening especially in the nineteenth century, but let's begin at the beginning.

Scholars agree that the oldest surviving illustrated botanical manuscript, the *Codex Vindobonensis* (also known as the *Vienna Dioscorides*), dates from 512 AD. It is an herbal, illustrating a medical text compiled by the ancient Greek physician Dioscorides in about 60 AD. Before Carl Linnaeus established a systematic nomenclature for plants in 1735, illustrations ensured that physicians were prescribing the correct plant. The illustrations of the *Codex Vindobonensis* are prized for their naturalism, and both they and the pharmaceutical information provided by the text remained unmatched for a thousand years.

That takes us to the Renaissance, when artists in Flanders, Germany, France, and Italy turned their attentions from life in the hereafter to life on earth. We begin to recognize some famous names among botanical artists. The van Eyck brothers included a realistic portrait of a lily in their great Ghent altarpiece (1432). Leonardo da Vinci made naturalistic drawings of flowers and plants, showing plant structure and habit. Even more notable is Albrecht Dürer's much-cited watercolor on paper, *The Great Piece of Turf* (1503). It depicts all the humble plants growing together on a square foot of meadow from a worm's perspective and in almost photo-realistic detail. For this painting he has been called the original ecologist.

Three major developments in the Renaissance revolutionized the art of botanical illustration. Woodblock printing, which originated in ancient China, reached Europe in the mid-fifteenth century. Its popularity for botanical illustration was soon eclipsed, however, by engraving and etching on metal. And when in 1440 Johannes Gutenberg invented the printing



Albrecht Dürer, *The Great Piece of Turf*, watercolor on paper, 1503. Graphische Sammlung, Albertina, Vienna.

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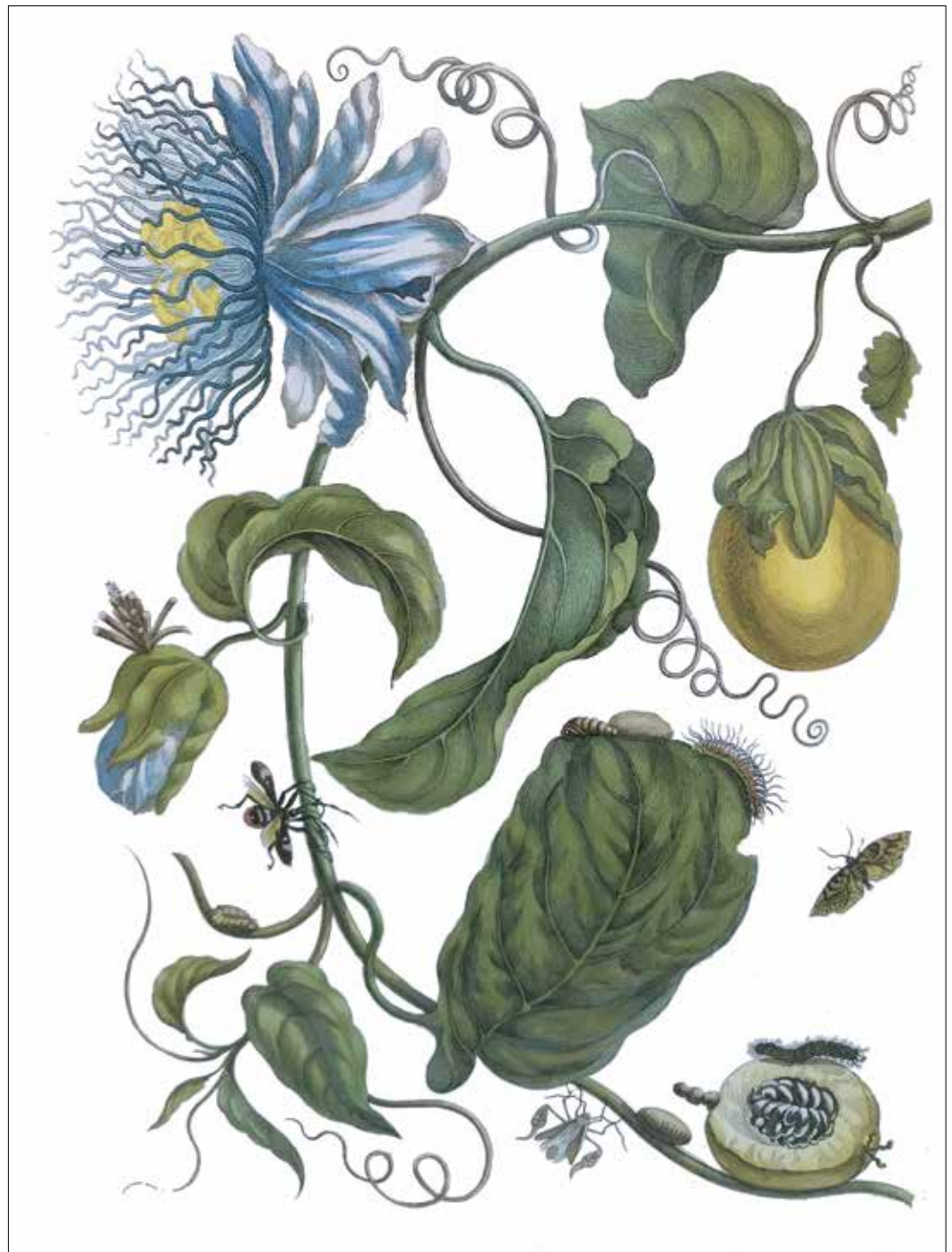
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press, botanical illustration became available to the masses. It seems the earliest engravings of flowers were on the backs of German playing cards.

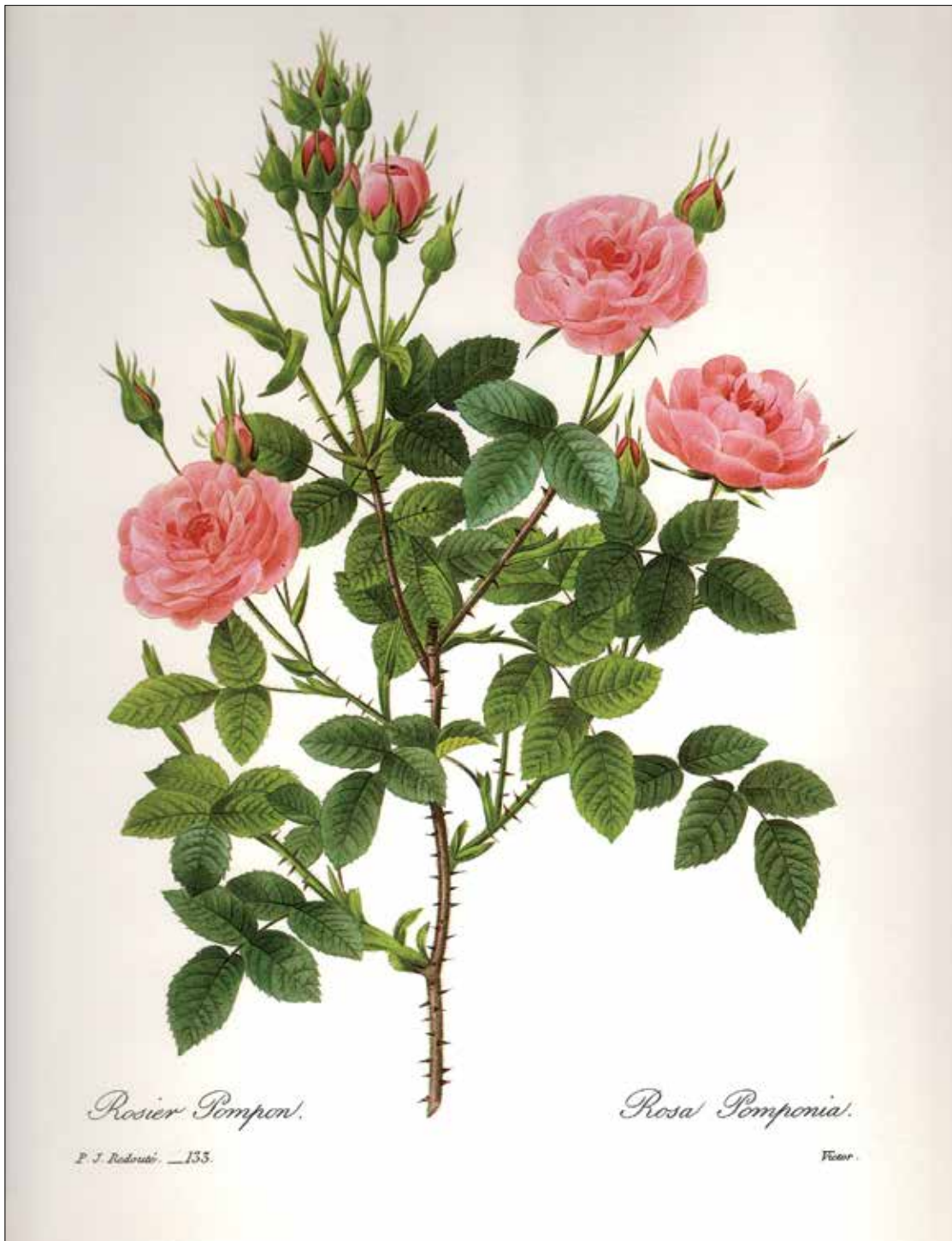
The sixteenth century saw the invention of the microscope, which opened new worlds of study for scientists and artists alike. And finally, on the macro level, the sixteenth and seventeenth centuries were the Age of Exploration. Europeans of means went mad for exotic plants. The small medieval garden gave way to the formal, often royal, Renaissance garden; plants began to be prized not so much for their usefulness as for their beauty. Holland, England, Spain, and Portugal launched expeditions around the world, and every expedition included a naturalist and an artist. Seventeenth-century Dutch painting, an expression of the confidence and prosperity of that great sea-faring nation, has been called “the greatest school of flower painting in the history of art.”

According to the historians, botanical illustration was an almost exclusively male domain until the 1800s. But in the seventeenth century a woman finally joins the ranks of her brethren in the history books. Maria Sibylla Merian (1647–1717) was born in Frankfurt, Germany, and died in Amsterdam. From an early age she was interested in insects, especially moths and butterflies, and with the encouragement of her artist stepfather, she painted the cycles of their metamorphoses along with their host plants. Merian was married in 1665 and raised two daughters, but she and her husband lived apart much of the time and they eventually divorced. She continued her entomological studies and painting throughout, first publishing a series of engravings of popular flowers (combined into one volume in 1680); then publishing a two-volume work (1679 and 1680) on the metamorphosis of caterpillars, each volume featuring 50 of her engravings. The fame and



Maria Sibylla Merian, hand-colored engraving of her painting of a *Passiflora* species and various insects, from *Metamorphosis Insectorum Surinamensium*, Amsterdam, 1705.

respect achieved by this pioneering woman of science enabled her to raise the funds for a projected five-year trip with one of her daughters to Dutch Surinam. The expedition was cut short after less than two years due to Merian’s illness, but it resulted in her masterpiece, *Metamorphosis Insectorum Surinamensium* (1705). This work depicts the insects of Surinam along with their host plants and is one of the earliest natural history treatises focused on South America.



Pierre-Joseph Redouté, *Rosier Pompon* (*Rosa pomponia*), from *Les Roses*, three volumes, 1817–24.

In late eighteenth- and early nineteenth-century Europe, botanical artists moved in the highest ranks of society, securing wealthy patrons who sponsored the publication of their work. Two artists stand out as giants in the field. Georg Dionysius Ehret (1708–1770) was born in Germany but eventually settled in England. His first major work was in collaboration with Linnaeus as the latter was developing his plant

classification and binomial naming. In England, Ehret was sought out by the likes of Sir Hans Sloane, whose natural history collection provided the foundation of the British Museum; and Sir Joseph Banks, who took part in Captain Cook's famous first voyage and was a patron of the natural sciences.

The Frenchman Pierre Joseph Redouté (1759–1840), probably the most popular flower painter in the history of botanical art, was equally well connected. As a young itinerant painter, Redouté moved from his home country of Luxembourg to Paris, where he was taken in hand by botanist Charles Louis L'Héritier de Brutelle. L'Héritier had connections at the court at Versailles, and on the eve of the French Revolution, Redouté was appointed Draughtsman to the Cabinet of Marie-Antoinette. After the Revolution he became the official painter of Empress Josephine, the first wife of Napoleon Bonaparte.

But by the nineteenth century, the floodgates had opened for women botanical artists. Floral decoration appeared everywhere: wallpaper, embroidery, porcelain. Women became avid gardeners, and painting flowers was all the rage.

And botanical illustration became more than a genteel

diversion for middle-class ladies. Many women, most of them forgotten today, were employed as illustrators. The transition to women is nicely seen in *Curtis's Botanical Magazine*, founded in 1787 by William Curtis, who held a position in Kew Gardens in London. The first volumes were illustrated by Sydenham Edwards, and Walter Hood Fitch was the lead botanical illustrator from 1826 to 1866. When Fitch resigned due to

a dispute, his student Harriet Hooker Thiselton-Dyer kept the journal afloat with 100 illustrations until 1880, when Matilda Smith took over as illustrator. Between 1878 and 1923, Smith drew over 2300 plates for the magazine. Her successor, Nellie Roberts, using a photomechanical process rather than hand-coloring the plates, completed more than 5000 illustrations of orchids. *Curtis's Botanical Magazine* is still being published, with Christabel King as the lead botanical artist. She has worked as an illustrator at Kew for 40 years.

Among the many fine female botanical artists of the twentieth century, one who stands out for the quality of her work and the adventurous way she pursued it is Margaret Mee (1909–1988). Born in England, Mee moved with her second husband to Brazil in 1951. There she devoted more than 30 years to painting the plants of Amazonia and lobbying for environmental protections for the region. She hired boatmen and guides to explore the deepest reaches of the Amazon Basin, where she painted plants in the field. At age 79 she took the last of her fifteen expeditions to paint the night-blooming cactus *Selenicereus wittii* by flashlight. Mee died in a car crash while in England for an exhibition of her paintings at Kew Gardens. Sixty of her paintings and many sketchbooks reside at Kew. Other paintings hang in major collections worldwide.

Obviously Europe has a longer history of botanical illustration than does North America. Even our state flower, the California poppy (*Eschscholzia californica*), was first scientifically described, named, and illustrated by Europeans. It's a rather complicated story. Though early explorers surely admired our golden poppy, it wasn't until 1792 that Archibald Menzies, ship's surgeon and naturalist aboard the British ship *Discovery* under Captain George Vancouver, collected specimens of the poppy for the British Museum. But the flower was not officially named and illustrated for another 28 years. In 1816, a Russian expedition led by

Captain Otto von Kozebuge in the ship *Rurik* spent a month in the San Francisco area. On board were Adelbert von Chamisso, the official botanist, and Johann Friedrich von Eschscholtz, the 22-year-old ship's surgeon and fellow naturalist. It fell to Chamisso to name the California poppy, and he named it in honor of his young colleague Eschscholtz. The ship's artist, Louis Choris, was charged with painting the landscape and native peoples of the region rather than the plants, so the first illustration of *Eschscholzia californica* was made back in Europe. In 1820 Friedrich Guimpel prepared a hand-colored engraving of the poppy for Chamisso's formal description of the plant in a scientific journal. Guimpel's illustration was of a pressed specimen.



Margaret Mee, *Neoregelia margaretae*, 1979. © The Board of Trustees of the Royal Botanic Gardens, Kew.

Let's end this history with a nineteenth-century California story—one that didn't come to light until the twenty-first century! Clara Mason Fox (1873–1959) was the daughter of a homesteading family that moved from Illinois to Silverado Canyon (eastern Orange County) in the 1880s. As an artist, poet, and author of a local history, she contributed to the early arts scene of the Laguna Beach area. She was not widely known in modern times; however, all of her botanical artwork was filed at Rancho Santa Ana Botanic Garden with pressed herbarium specimens of matching plants. Over the years these watercolors and works in pencil and tempera were gathered in a single file, and in 2010 an intern discovered that they numbered more than 150. Forty-six of her paintings were

included in an exhibition of botanical art at The Huntington Library, Art Museum, and Botanical Gardens in 2013.

Letters and sketchbooks inherited by Fox's great-great-nephew, Jon Seeman, became the basis of a biography of Clara, *Distant Indigo*, by Seeman's wife, Lorraine Passero. We learn that at age 18, Clara became perhaps the first schoolteacher in Silverado Canyon, later traveling to New York to study art at Cooper Union. Upon returning, she became friends with British-born botanist and nurseryman Theodore Payne, who was instrumental in designing the Rancho Santa Ana Botanic Garden (recently renamed California Botanic Garden). In his own memoir, Payne writes of dressing up in clean overalls to visit “the pretty school teacher,” but Passero says there is no evidence of a romance between them, that more likely Payne was the source of Clara's knowledge of botany. In 1905, Clara married local rancher George Fox. Did she continue her botanical art after she married? We don't know for sure. The last painting in the Rancho Santa Ana collection is dated 1902.

Today, most practitioners of botanical art and illustration are women. For some insights into this phenomenon, see the article on the careers of contemporary artists Linda Ann Vorobik and Kristin Jakob, beginning on page 10. 🌿

Doris Kretschmer is a recently minted docent at the Regional Parks Botanic Garden and a long-time art docent at the Oakland Museum of California. She is retired as Executive Editor at the University of California Press.

Further reading:

Three first-rate histories of botanical art, handsomely illustrated, are *The Golden Age of Botanical Art* and *The Art of Botanical Illustration* by Martyn Rix and *The Art of Botanical Illustration* by Wilfred Blunt and William Stearn (revised edition, 1994).

Today's Botanical Artists, by Cora B. Marcus and Libby Kyer, is a beautifully illustrated short introduction to contemporary American artists.

Women of Flowers: A Tribute to Victorian Women Illustrators, by Jack Kramer, sheds light on many little known practitioners.

Distant Indigo: Clara Mason Fox, Pioneer, Painter, Poet of Orange County, California, (second edition, 2017) by Lorraine Passero, is an illustrated biography of the early California artist.

Excellent information and lots of illustrations are available at the home pages of the American Society of Botanical Artists, www.asba-art.org, and the Guild of Natural Science Illustrators, www.gnsi.org.



Clara Mason Fox, *Eschscholzia californica* (California Poppy), watercolor on paper. Silverado Canyon, 1899. Reproduced with the permission of the Archives of California Botanic Garden, Claremont, California, USA.

What's in a Name? Botanical Illustration, Botanical Art, and Flower Painting

by Cheryl Perko

The gorgeous colors, compositions, and subject matter of botanical renderings can easily catch your eye and pique your interest. That vibrantly orange California poppy looks so realistic, you can almost feel the gentle spring breeze in its form and touch the chalkiness of its blue-green foliage. That instructional chart hanging in your first botany class—depicting not only flowers, stems, and leaves, but details of sepals, tepals, petals, filaments, and a cross section or two of the reproductive elements—held a ton of useful information, yet your eye was often drawn to its charm and organized beauty. And that oil painting of parrot tulips spilling out of their vase would look ridiculous with so much information, but certainly would look perfect hanging above your mantelpiece. Clearly, each of these images is a piece of art with botanical subject matter, composed with artistry and skill, yet curiously, they are quite different.

So, what exactly is this difference?

Essentially, the difference lies in the artist's intent and purpose. Although artists may describe their work with stylistic terms, such as flower portraiture or botanical painting, botanical artwork is normally classified into one of three distinct categories: botanical illustration, botanical art, and flower painting.

Botanical illustrators' primary focus is to accurately document a species for identification purposes or to educate. Typically, an illustration created as a document will be based on the most perfect specimen of that species, lacking flaws or abnormalities, and will contain information as complete as necessary to enable a botanist or plant enthusiast to use as an identifying tool. The illustrator will usually work from live plant material or a dried specimen. Each component of the plant will be accurately measured, drawn, and color-matched. Ideally, elements from each phase of the plant's life cycle will be included within the composition. The botanical illustrator also creates technical drawings for educational purposes, such as the detailed black and white drawings in *The Jepson Manual* or the line drawings identifying plant parts in a botanical textbook. The illustrator will likely have considerable training in botany or will work closely with a botanist.



Ferdinand Bauer, hand-colored illustration of *Grevillea banksii* from *Illustrationes Florae Novae Hollandiae*, 1813.

Can a botanical illustration be a work of art? Perhaps by examining this 1813 illustration by Austrian botanical illustrator Ferdinand Bauer, you can form your own conclusion. Has he achieved compositional balance, color mastery, and a strong aesthetic appeal in this thoroughly documented illustration of a *Grevillea banksii*?

Botanical artists will place equal emphasis on botanical accuracy and artistry. As in botanical illustration, the drawing or painting must be botanically correct and precisely measured, yet there is freedom to include abnormalities or imperfections of a plant for artistic interest. The artist can be selective in choosing components of a plant, creating a pleasing composition while maintaining the authenticity of the species. There is less concern for completeness, and often the plant is



Molly Stone, *Papaver somniferum*, watercolor on paper, 2020.

depicted at a particular moment in its life cycle. The artist has some knowledge of botany and has acquired the tools of accurate depiction through training. Botanical art pieces can be individual works of art, such as this *Papaver somniferum* by local botanical artist Molly Stone, or may be part of a *florilegium*, a compilation of plant renderings from a specific location or plant collection. *Banks' Florilegium*, an anthology of renderings of the 743 plants collected by botanist Joseph Banks during Captain Cook's first voyage around the world, is a well-known example. More recently and closer to home, members of the Northern California Society of Botanical Artists completed a florilegium of the plants of Alcatraz Island and are currently working on their next compilation, the native plants of Mt. Tamalpais.

Flower painters' focus is artistry, using botanical material as the primary subject matter. Although a flower painting may appear realistic, the plant material may or may not be accurately represented, as the primary purpose of the painting is artistic expression. Most often, representation of the plant form is derived from the artist's keen observation rather than from accurate measuring. Although there are exceptions, the artist will not likely have a background or training in botany. It would be a mistake to draw any botanical conclusions from a flower painting. The well-known flower paintings by Georgia O'Keefe and this painting of a Sarah Bernhardt peony by contemporary artist Mark Devlin, are just two examples of the diverse styles within the flower painting genre.



Mark Devlin, *Paeonia lactiflora* 'Sarah Bernhardt', study, oil on canvas, 2019.

As you explore botanical artworks, you will find artists may make decisions that blur the lines and push the boundaries of classification, whether intuitively or as a deliberate choice. You may find some pieces hard to classify, or perhaps they seem to fall into two, maybe even all three categories. For example, how would you classify this painting by 20th-century British artist Margaret Mee? At first glance it might seem to be a flower painting, as not all components appear accurately measured, there is a strong emphasis on artistry, and additional elements, such as a hummingbird and water, appear in the composition. Yet, in the foreground, a flower sprig of *Gustavia pulchra* is rendered with precise botanical detail. Had this sprig alone been painted on a white background, it could be classified as botanical art. Further complicating classification is the knowledge that Mee was an avid environmentalist and spent many years exploring the Amazon. She possessed a passionate drive to document and inform the public about the vegetation of the disappearing rain forest. Therefore, painting a plant species within its natural habitat seems a deliberate choice to educate. So, how do we classify this complex work? Botanical illustration, botanical art, or flower painting? Although Mee's work is most often referred to as a botanical art, you can be the judge. 🌿

Following work in museum exhibition design, architecture, and education, Cheryl Perko has returned to her roots in the plant world, where she happily propagated cuttings as a preschooler at her parents' nursery in Florida. She now volunteers at the Garden in the potting shed, as a Seedy Friend, and has most recently joined the Manzanita staff. Cheryl has studied botanical art locally with Catherine Watters and through the Filoli Botanical Art Certificate Program.



Gustavia pulchra
amazonica

Margaret Mee

Margaret Mee, *Gustavia pulchra*, 1977. © The Board of Trustees of the Royal Botanic Gardens, Kew.

Two Careers in Botanical Illustration

Conversations with Linda Ann Vorobik and Kristin Jakob

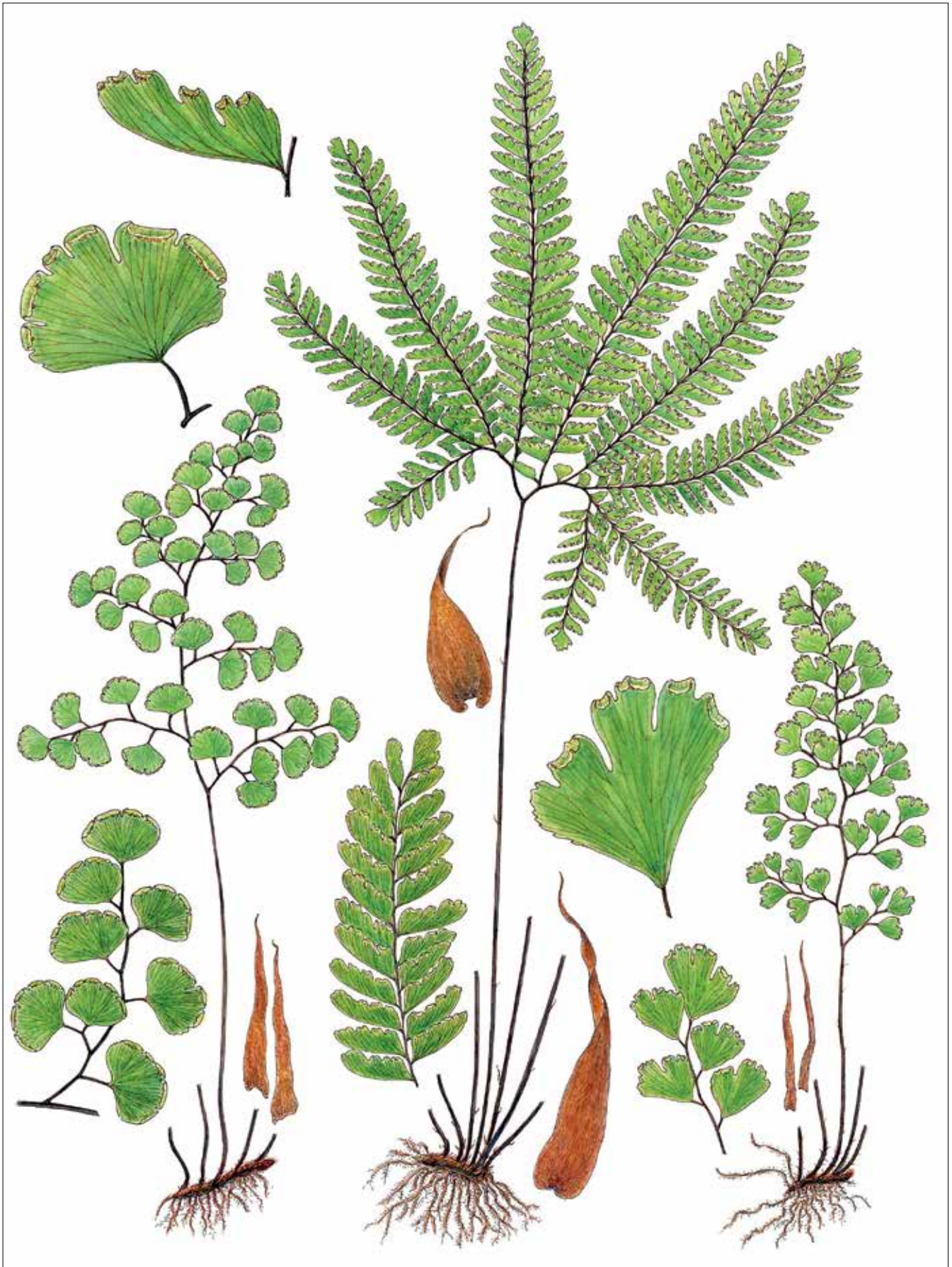
by Doris Kretschmer

How much do most of us know about botanical illustration? We have admired the botanical prints on the walls of the Botanic Garden's visitor center; perhaps we even have our own print collection. If we have consulted that bible of California native plants, *The Jepson Manual*, we have benefitted from its meticulous technical drawings. Perhaps we know someone who is taking classes in botanical art or are painting flowers ourselves; and if we are, chances are very good that we are women. This article is an attempt to delve a bit deeper into the subject with the help of two esteemed artists with strong ties to California native plants, Linda Ann Vorobik of Lopez Island, Washington, and Kristin Jakob of Mill Valley.

The work of both these artists spans the continuum between scientific botanical illustration and botanical art for a more general audience, but it is safe to say that Vorobik leans to the scientific and Jakob to the general. Vorobik has a PhD in biology (you may know her from her years as Editor of *Fremontia*, journal of the California Native Plant Society), but she was largely self-taught as an artist. She began her illustration career while a student at Western Washington State College (now Western Washington University), in Bellingham, doing scientific drawings for Professor Ron Taylor, author of *Sagebrush Country*. She is perhaps best known as Principal Illustrator (along with Emily Reid) of *The Jepson Manual* (1993, edited by James C. Hickman et al.; second edition, 2012, edited by Bruce G. Baldwin et al). That weighty identification tool with meticulous line art for most of California's approximately 6500 native plants is now also available online. In addition, Vorobik is the sole illustrator for *A Flora of Santa Cruz Island* and *A Flora of San Nicolas Island*, both written by S. Junak et al.; and she is completing illustrations for *A Flora of Santa Catalina Island*, by S. Junak and M. Guillems.

Asked what for her represented the Golden Age of botanical illustration, Vorobik answered with a laugh: *The Jepson Manual!* She also cited *Vascular Plants of the Pacific Northwest* (five volumes) and *Intermountain Flora* (seven volumes), both edited by Cronquist et al. and illustrated with line art primarily by Jeanne Janish (VPPNW) and Bobbi Angell (IMF). In fact, Janish's work was an inspiration for Vorobik, who considers her the best of the botanical illustrators.

While Vorobik approaches her art from years as a professional botanist and teacher of botany, Kristin Jakob was largely self-taught both as a botanist and an artist. Having lived most of her life in Mill Valley, Jakob learned plants largely through taking field trips with the Marin chapter of the California Native Plant Society. Already in high school she was doing illustrations for CNPS's journal, *Fremontia*. This led to her first commission, illustrating a book for young people called *Poison Plants!* by Alan Eshleman. With her parents, Jakob spent two years in Paris and shuttled back and forth to London to study and draw plants in Kew Gardens as preparation for the Eshleman book. She then applied to the Royal College of Art in Kensington, where she received an MA in Natural History Illustration. Asked what she considered the Golden Age of botanical art, Jakob turned to the late eighteenth and early nineteenth centuries. She was especially inspired by French artists Pierre-Joseph Redouté and Pierre Jean François Turpin and English artists Sydenham Edwards and James Sowerby, all of whom combined beautiful color work with scientific accuracy. As for her own proudest accomplishment, Jakob cited three projects: the book she illustrated in pen and ink for Nora Harlow entitled *Wild Lilies, Irises, and Grasses: Gardening With California Monocots*; the poster she painted for CNPS, *Wildflowers of the Sierra Nevada*; and the poster and set of place mats, also for CNPS, *California Native*



Maidenhair fern triad (*Adiantum jordanii*, *A. aleuticum*, and *A. capillus-veneris*) © Linda Ann Vorobik



Linda Ann Vorobik at the Santa Barbara International Orchid Show, 2016.

Grasses. All are aimed at the general public.

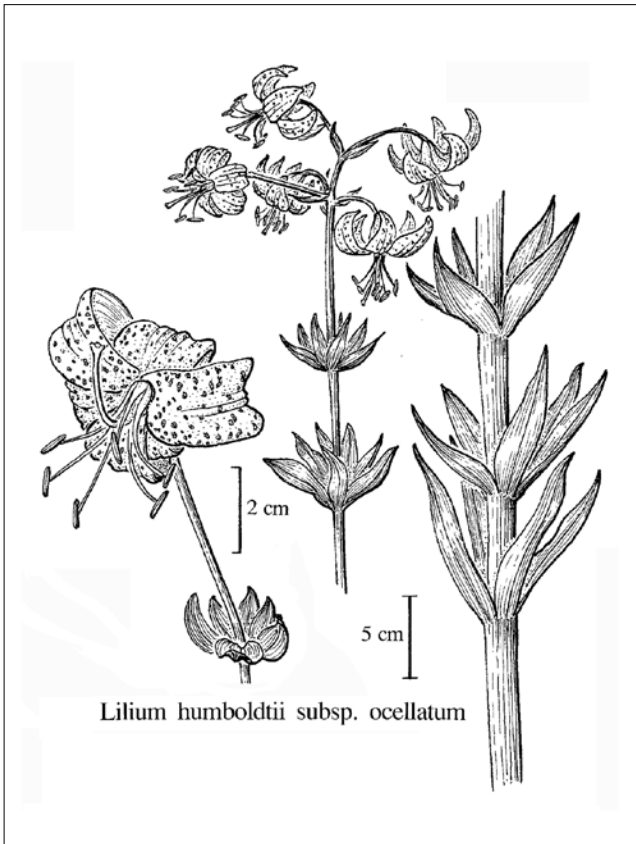
In their careers Vorobik and Jakob have both diversified beyond botanical illustration. Vorobik teaches several classes in botany and botanical art every year. And while selling original prints and cards at local farmers' markets, she saw friends selling handmade jewelry and decided she would do some wearable art. That resulted in her elegant silk scarves and wall hangings, hand painted with botanical and other nature motifs. In this technique, colors are created with dyes rather than paint. Jakob also sells original prints and cards. From 1985–1990, she did catalogs, cards, and packaging design for the Smith & Hawken garden company.

She also works as a garden consultant and designer. As Vorobik put it, "In the modern world it's very difficult to rely on botanical illustration as your sole source of income. I tell aspiring young people in my workshops, 'It is unlikely that you'll be able to make a living purely as a botanical artist. Couple it with another skill. Best to keep your day job.'"

What artistic media do botanical artists use? It depends, of course, on the intended audience and whether the client wants a drawing or a painting. "If I'm illustrating for scientific journals or a flora," Vorobik explains, "I'll use technical drawing pens and paper that takes ink smoothly. But things are changing. Some people use archival felt pens. Some people now use a synthetic stylus with a [computer] tablet. I have absolutely no interest in the latter; I like the sensuality of drawing, how the paper feels." In her scientific illustration, Vorobik almost always works from museum specimens. "I had an advantage when I started—I was a botanist.



Sierra mariposa lily (*Calochortus leichtlinii*) © Linda Ann Vorobik



Humboldt lily (*Lilium humboldtii* subsp. *ocellatum*) from *A Flora of Santa Cruz Island*, S. Junak et al. © Linda Ann Vorobik

I used museum specimens along with my own memory and my huge photographic collection. But nowadays everyone has access to lots of images, from CalPhotos (University of California Berkeley’s online site), for example. So now, museum specimens, yes, but supplemented with field work and images. For scientific illustration I rarely get to work from live specimens.”

Vorobik uses several styles for her watercolor botanical art pieces. Some of her color works are what she calls “plant portraits,” (images of flowers or plants that are botanically accurate but lack detailed individual identification characters); some are scientifically accurate botanical illustrations but expressed in full color. Many of her works are executed with watercolor and line, and she teaches this and other techniques in her workshops. “I do color work ‘for the people,’” she says; she is rarely commissioned for scientific illustrations in color but creates many that are sold as originals, prints, and cards to the general public.

Kristin Jakob usually creates two types of botanical illustrations: detailed pencil drawings, over which she paints in watercolor; and detailed pencil drawings, over which she draws in pen and ink, erasing the pencil at the end. She favors hot-pressed watercolor paper over cold-pressed, because of its smoother surface. Now and then she will use vellum, the prepared calfskin or “membrane” that has been used by artists for centuries. Jakob always works from live plant specimens, either from the field or potted. What is her goal when she works? “To represent a good average specimen, with no extreme variability, and then to make it an attractive composition.” She feels it’s important to see plants in the field, to see how they grow, to see the diversity of a species and get a good average to portray.

Can we talk about style in botanical art? “Style has not really been defined for botanical art as it has for the rest of art history,” said Jakob. “I am simply always trying to merge scientific accuracy with an aesthetically pleasing composition, however



Doris Kretschmer

Kristin Jakob



Coast Silktassel (*Garrya elliptica*) © Kristin Jakob

subjective that may be.” She explained that the teaching at the American Society of Botanical Artists (ASBA), of which she is a member, is geared toward accuracy, though some members do much freer work. “From botanical illustration to flower art is a continuum, and there is a greater diversity in styles and technique today.” As an unusual example of “flower art,” she mentioned the work of East Bay artist Aimée Baldwin, who makes intricate trompe l’oeil

flower sculptures of paper. Vorobik leans to the other end of the continuum. “A botanist recognizes when you know plants,” she says. “Does the illustration look like the plant? It’s hard to get away from style, but to me a good botanical illustration has minimal stylistic characteristics. It’s very straightforward. The drawings are easy to use.”

So is there a difference between botanical illustration and botanical art? Vorobik and Jakob seem to agree that the terms exist on a spectrum. Is botanical illustration art? Jakob had no hesitancy there: “Good botanical illustration can be great art! Just like photography, it is a craft and a skill, but it can definitely achieve the status of art.” (See also Cheryl Perko’s article on this topic, page 7.)

Finally, what do these artists have to say about the topic of women and botanical art? It does seem to be the case that today this is very much a women’s field. Vorobik reports that when she teaches a botany workshop, it’s 50/50 men and women, but when it’s a botanical art workshop, “we’re lucky to get one man.” Thinking back on her days as a botany student, Vorobik speculates that the gender imbalance in the scientific illustration field may reflect the fact that the vast number of botany professors were male while the illustrators of their papers and books were female. Did these men seek out young female illustrators? Did these young women fall into a kind of handmaiden role? Food for thought.

Jakob agrees that there are definitely more women than men in the botanical art field today. The vast majority of ASBA members are female, and though men are better represented in the Guild of Natural Science Illustrators, and many of them are professionals, women are in the majority there also. She speculates that it’s still hard to make a living at botanical illustration. “It tends to be either part-time work or a hobby. And it’s primarily women who are financially able to do that. You see a regional variation; these are mostly women from the wealthier parts of the country.” Jakob concludes, “All this is an echo of the past, when flower art was a genteel pastime for women.”

But Vorobik and Jakob are professionals, known for their botanical illustration, to which they bring expertise from related fields. Both are deeply in love with and knowledgeable about plants, and both are energetic champions



Melica torreyana © Kristin Jakob

of native-plant preservation. “California natives were my first love,” said Kristin Jakob as we finished our interview in her Mill Valley home, “and I can use those illustrations in many ways. I will often waive reproductions rights for non-profits. It’s good to be able to give back to environmental organizations.” Linda Ann Vorobik, who was reached by phone at her family home on Lopez Island, Washington, has just turned 65 and is finishing her illustrations of Channel Island floras for the Santa Barbara Botanic Garden. And after retirement? She already has plans for seven books she will write, among them a memoir, *Drawing and Painting Wildflowers Throughout the West*. It promises to be an inspiration for everyone who loves native plants as well as those who love to paint them. 🌿



Chanterelle (*Cantharellus californicus*) © Kristin Jakob

Further reading:

Excellent information and lots of illustrations are available at the home pages of the American Society of Botanical Artists, www.asba-art.org, and the Guild of Natural Science Illustrators, www.gnsi.org.

Good discussions on the relationship between the terms botanical illustration and botanical art can be found at www.botanicalartandartists.com/what-is-botanical-art.html.

And do visit the websites of Linda Ann Vorobik, www.vorobikbotanicalart.com, and Kristin Jakob, www.kristinjakob.com.

The Garden's own...

After deciding to devote this issue to botanic illustration we were pleasantly surprised to learn there are several people in our midst pursuing this craft. Here we proudly feature works from Docent-in-training Susie Wallenstein, Docent and member of Seedy Friends Dolores Morrison, and Garden volunteer plant propagator and *Manzanita* committee member Cheryl Perko. These individuals have kindly granted us permission to share their images so the entire Garden community can enjoy their talent and artistry.



Cheryl Perko, 2020, *Cornus florida*

*Early spring was exceptionally lovely this year, and this *Cornus florida*, growing on our local sheltering-in-place walk, was one of my favorites. I loved watching the early dogwood flowers come into bloom, their petal-like bracts so vibrant with color, curiously maturing into a soft creamy white. Silvery old-wood branches plus strong new stems of brown-green were still visible, contrasting with the supple new leaves which were just emerging, popping up and out towards the sun. It was this time of fresh awakening that I wanted to capture in this painting.*

Creating this composition and working with a primarily white subject on white paper was tricky. Shadows were particularly important to give shape and definition to the light and delicate blossoms, yet too much shadow could create dull, grey-looking flowers. By overlaying very light washes of tightly controlled watercolor, I aimed to build up just enough shadow for definition. I then used watercolor pencil to create the soft-smooth texture of the petals by gradually building up light layers of color and subtly blending where needed. This process of layering and blending took weeks. Once the bracts were completed, the rendering of the connecting branches and fine details brought the entire composition together. Adding a few spots of deep shading and enhancing some shadows made the pieces pop forth into a cohesive painting, a little like this early spring moment.

This piece is dedicated to my sister-in-law, Ann who loves dogwoods and for whom this piece was painted.

See page 8 for Cheryl Perko's biography.

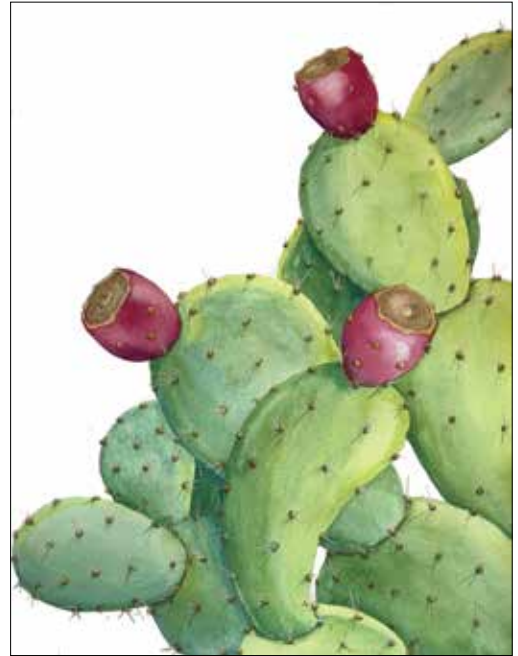


Susie Wallenstein, 2020, *Trillium* sp.

My first glimpse of a trillium astonished me. It seemed a magical flower, maybe from another planet. I've searched yet hardly ever seen them in the wild, but am so delighted to be able to visit them routinely in the Botanic Garden. They still are magical to me, unfolding so gloriously in the depths of the redwood grove. I painted them at their full huge size, trying to capture their wavy sensuousness, their indescribable color, and inner glow in the dark of the forest.

This Opuntia is one of the first plants you see when you enter the Botanic Garden. Opuntias never cease to amaze me: their particular adaptations to their varied and harsh environments, their somewhat cartoonish and charming appearance, the varied color of the paddles, and the surprisingly garish colors of the flower and fruit, standing out in the bright sunlight of their habitat.

I always mix my greens from various blues and yellows rather than using premixed green pigments. My challenge in this painting was to capture the multitude of greens found in this plant.



Susie Wallenstein, 2020, *Opuntia littoralis* var. *vaseyi*

There are so many interesting stories and details about almost every plant, once you get to studying it. The Aristolochia genus in particular has many intriguing stories, many of them including treachery and poisons! While studying the Aristolochia californica for this painting, I learned the fascinating story of this unique plant and its relationship as host to the pipevine swallowtail butterfly. The plant's toxicity actually helps protect the delicate insect.

The recurved structure of the flower was very challenging for me to draw, as much as it is a challenge for its oft-doomed pollinators to figure out! I tried to use this painting to show the lifecycle of the plant and the butterfly.

Susie Wallenstein is a retired civil engineer and architect, having spent most of her career in water supply planning for East Bay Municipal Utility District. A lifelong gardener, Susie worked at botanical gardens in her college years and became an Alameda County Master Gardener in 2008. She began studying watercolor and botanical illustration in 2016. Susie, a member of the Garden's 2020 Docent cohort, is teaching her two grandchildren about gardening.



Susie Wallenstein, 2020, *Aristolochia californica*

Artist's different styles can shine when they illustrate the same subject, such as these two *Fremontodendron* images by Susie Wallenstein (left) and Dolores Morrison (right).



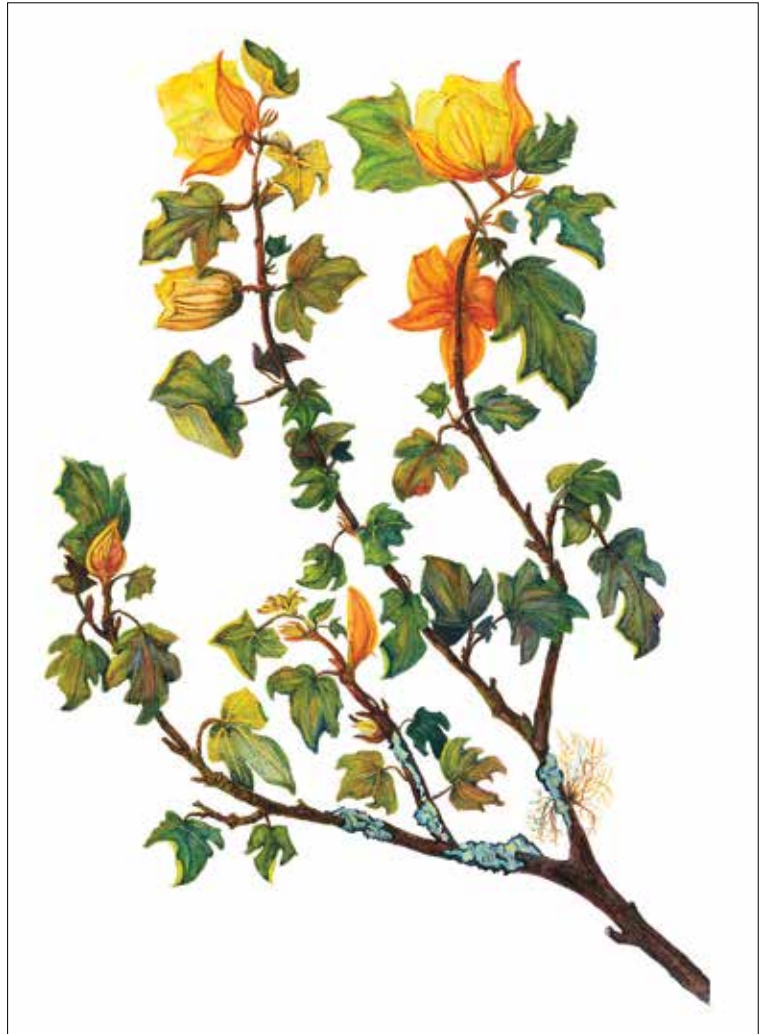
Susie Wallenstein, 2019, *Fremontodendron decumbens*

Drawing is a way of understanding. I was stopped in my tracks by a Fremontodendron in bloom in a Berkeley garden last spring. I photographed it to try to record its beauty, when the owner noticed me and offered me a branch to take home to paint.

Spending hours with it while drawing and painting, I tried to understand its rich and varied colors, its pollination system, its fuzzy prickly texture, its sprawling habit. For me the best part about botanical painting is the time spent with the plant thinking about it, asking it questions, and silently receiving the answers.

This painting was part of an art show at the Helen Crocker Library featuring plants in the San Francisco Botanical Garden. The garden let us take cuttings of our subjects and this Fremontia was growing in the native section of the garden. A fun part for me is adding the little details towards the end of the painting, the stipules, notches in the bark, and in this case the lichen growing on the plant.

See page 29 for Dolores Morrison's biography.



Dolores Morrison, 2011, California fremontia (*Fremontodendron californicum*)

This painting was part of an art show held at the Helen Crocker Library that focused on the plants of San Bruno Mountain. This is the only Dudleya species to grow on San Bruno Mountain, where very green and very glaucous specimens can be found. Dudleya farinosa can be variable and is known to hybridize with *D. caespitosa* and *D. cymosa*. Fortunately, the San Bruno Mountain Watch Mission Blue Nursery had the green form plants (propagated from mountain specimens) for sale so I was able to paint from a subject true to the plants on the mountain. I did many sketches to get the whorls right. Once satisfied, I transferred the drawing to tracing paper and then onto watercolor paper, thus saving the watercolor paper from a lot of erasing.

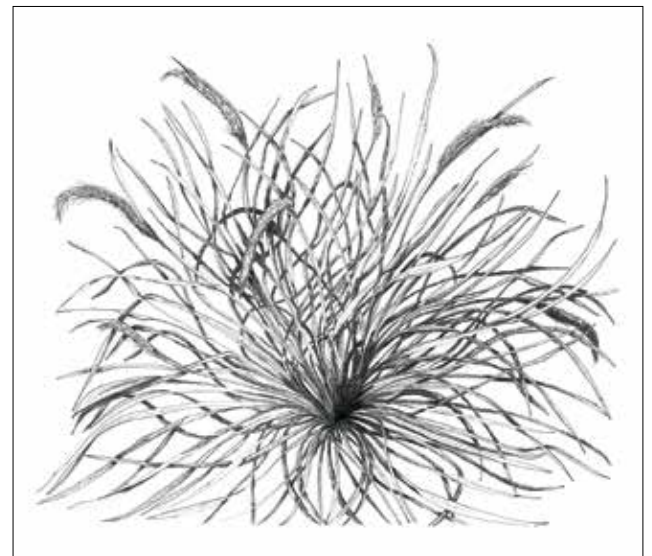


Dolores Morrison, 2020, North coast dudleya (*Dudleya farinosa*)



Dolores Morrison, 2018, Common manzanita (*Arctostaphylos manzanita*)

The subject for this painting grows in the Regional Parks Botanic Garden. I was struck by the near perfect white flowers against the bright, dark green leaves and the dark red brown bark. I didn't have this plant at home so I spent time in the garden, measuring, doing sketches, matching colors and taking lots of photos. No white paint for the flower, instead I used the white of the paper to create the flowers.

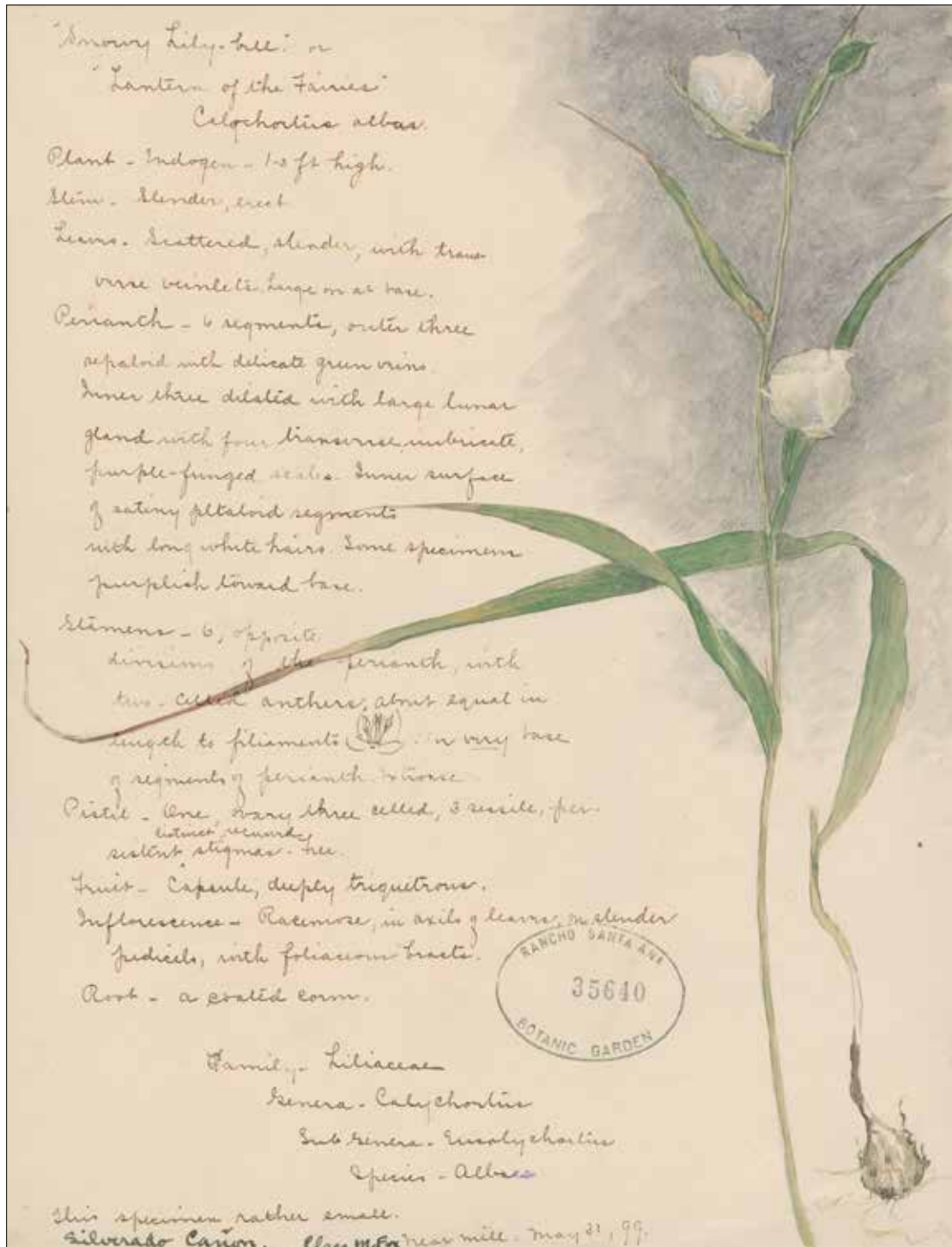


Dolores Morrison, 2012, Leafy reed grass (*Calamagrostis foliosa*)

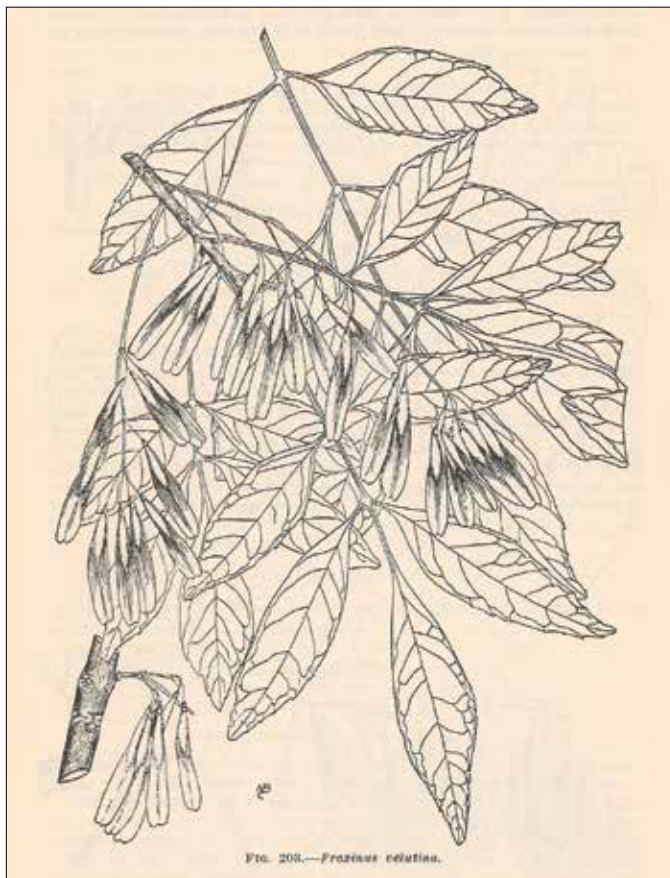
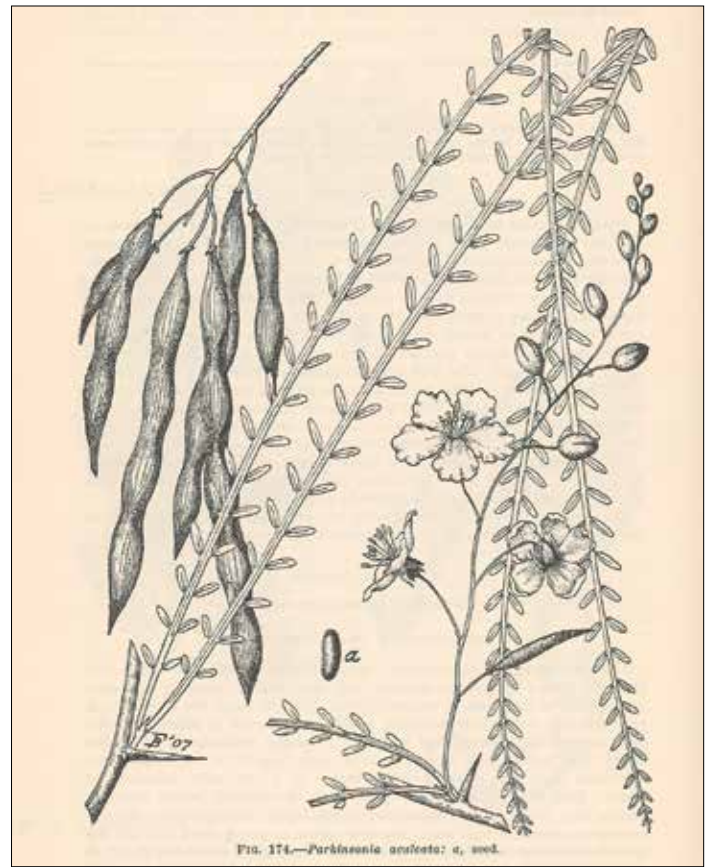
I love grasses in my garden and to paint them. This pen and ink is one of several studies I did to play with layout before starting a large painting of a non-native grass. I loved trying to capture the movement of the grass. The movement is one of the things I enjoy about grasses in the garden.

Historical Images from Californian Botanical Artists

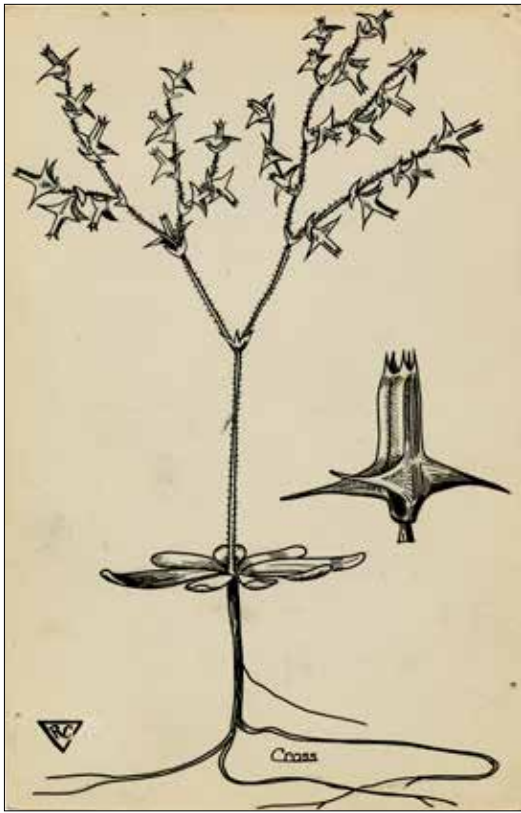
California's flora has inspired people for hundreds of years, and artists are no exception. Here we feature artists whose images provide a wide variety of styles and interpretations of our familiar native plants.



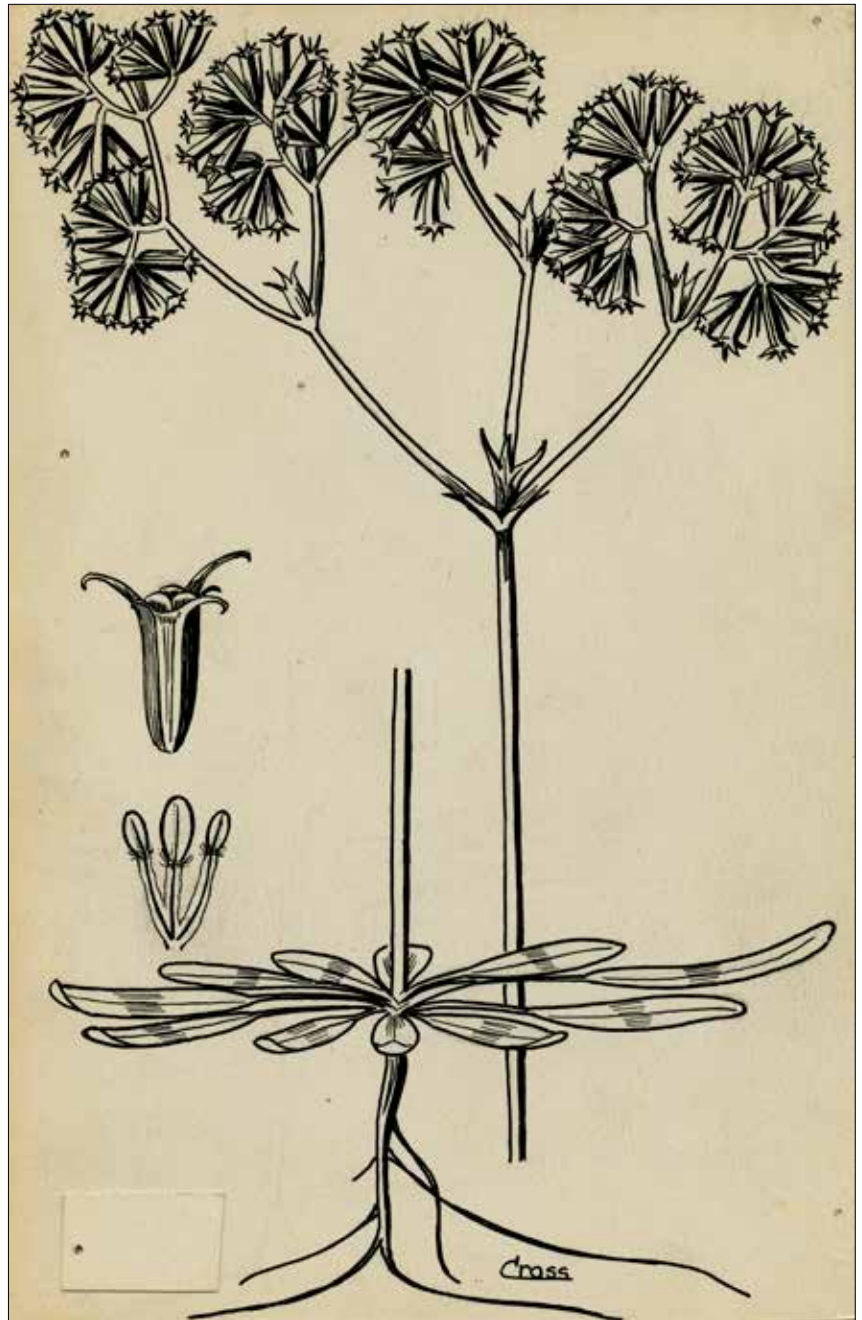
Clara Mason Fox, *Calochortus albus*. Reproduced with the permission of the Archives of California Botanic Garden, Claremont, California, USA.



These illustrations are from *Forest Trees of the Pacific Slope*, by George B. Sudworth, originally published by the Forest Service of the U.S. Department of Agriculture in 1908. They are roughly contemporaneous with the Clara Mason Fox illustration opposite.



Rodman K. Cross, *Centrostegia thurberi*



Rodman K. Cross, *Chorizantha staticoides*

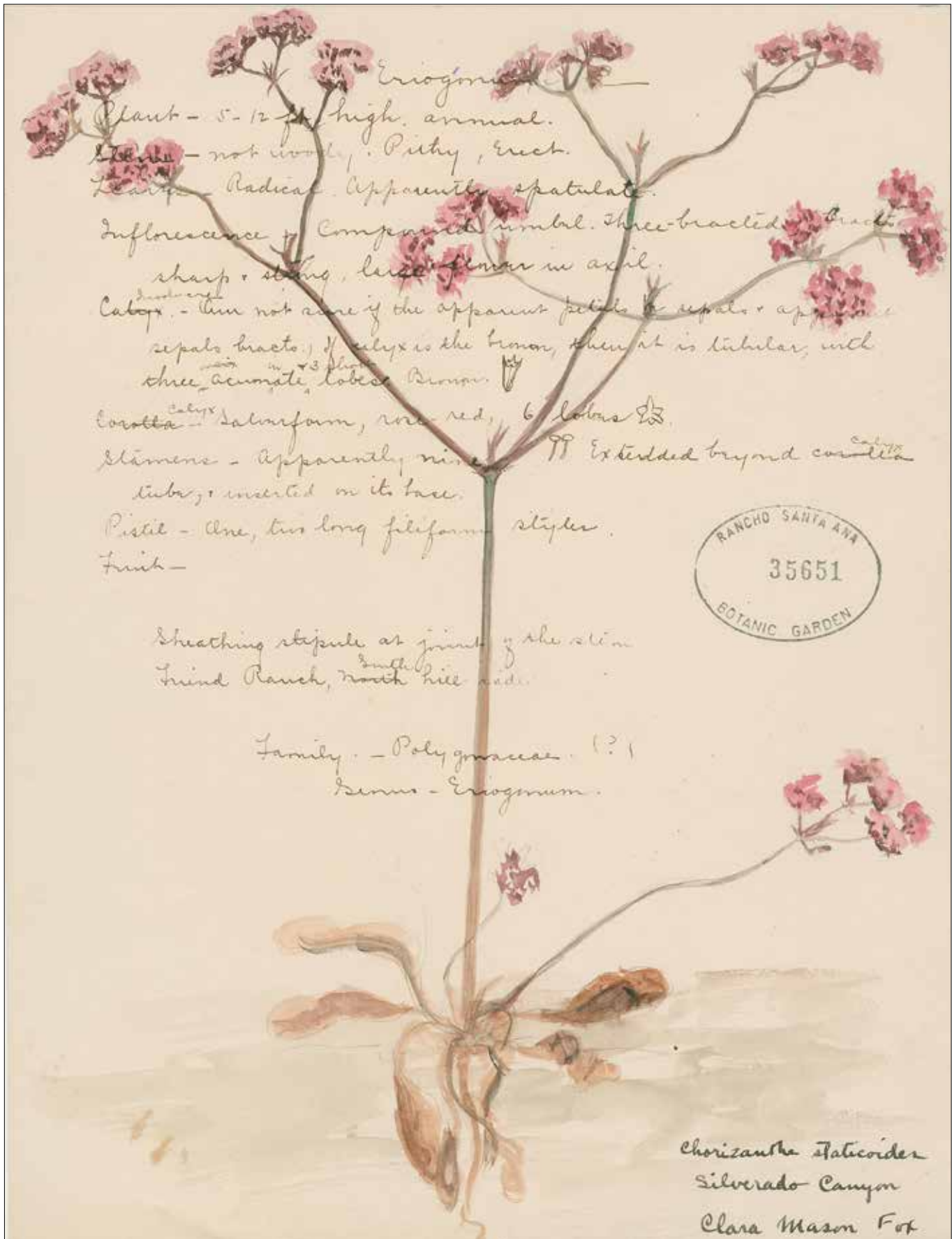


Rodman K. Cross, *Palafoxia arida*

In presenting *Chorizantha staticoides*, Rodman K. Cross deploys a bold monochromatic style compared to Clara Mason Fox's piece with her handwritten description (top and right, respectively).

There's nothing else quite like Clara Mason Fox's botanical artwork. I particularly like those that have her handwritten notes on them. The way that she incorporates the plant image and her notes on the Chorizantha making it a single piece is unique and exceptional. Many of her other artworks have the images pulled to the edge of the paper (all of her work is 8.5 x 11 inch paper), leaving room for future notes or comments makes them distinct and different from all the other native plant artwork that I've seen. After she did these, she went a completely different direction and never painted any other plants (as far as is known). Her later work was of seascapes in Laguna Beach and other subjects. RSABG obtained her entire collection in the mid to late 1940s – to date, no documentation of the purchase or gift has been found. –Bart O'Brien

Drawings on this page reproduced with the permission of the Archives of California Botanic Garden, Claremont, California, USA.



Eriogonum
 Plant - 5-12 ft. high, annual.
 Stems - not woody, pithy, erect.
 Leaves - Radical. Apparently spatulate.
 Inflorescence of compound umbel. Three-bracted. Bracts sharp & strong, large linear in axil.
 Calyx - ^{double} - ~~Am~~ not sure if the apparent petals & sepals & apparent sepals bracts, if calyx is the bract, then it is tubular, with three ⁱⁿ ³ ^{lobes} acuminate lobes. ~~Bract~~
 Corolla ^{calyx} - Salverform, rose red, 6 lobes.
 Stamens - Apparently nine. ^{calyx} Extended beyond corolla tube, & inserted on its base.
 Pistil - One, two long filiform styles.
 Fruit -

RANCHO SANTA ANA
 35651
 BOTANIC GARDEN

Sheathing stipule at joint of the stem
 Trinidad Ranch, ^{South} north hill side.

Family - Polygonaceae. (?)
 Genus - Eriogonum.

Chorizanthe staticoides
 Silverado Canyon
 Clara Mason Fox

Clara Mason Fox, *Chorizanthe staticoides*. Reproduced with the permission of the Archives of California Botanic Garden, Claremont, California, USA.



Yerba Santa - Mountain Balm.

Eriodictyon tomentosum.


Plant - Shrub - 4-7 ft. high. densely villous

Stem - woody, no erect. fuzzy

Leaves - Alternate, rigid coriaceous texture, densely villous, pale, veining conspicuous beneath on the woolly groundwork. Acute elliptical, edged with stiff teeth.

Inflorescence - cymes, in a panicle, naked

Calyx - Sepals 5-parted, very white-villous ^{2 or 3 lines}

Corolla - delicate purple, funnel-formy, ^{nearly tubular form} about half an inch long to ~~over~~ ^{3/4} inch long, about 4 times length of calyx. 5 lobes  rounded, about equal right stripes running down throat alternate with lobes. Involucel in bud. Occidense

Stamens, 5, unequally long, on cordula tube, included

Pistil - Ovary two-celled, brilliant orange, two styles, separate to the base.

Fruit - 2-celled capsule.



Family - Hydrophyllaceae

Tribe - Nemeaeae

Genus - *Eriodictyon*

Species - *tomentosum*.

Eriodictyon crassifolium
Silverado Canyon

Clara Mason Fox

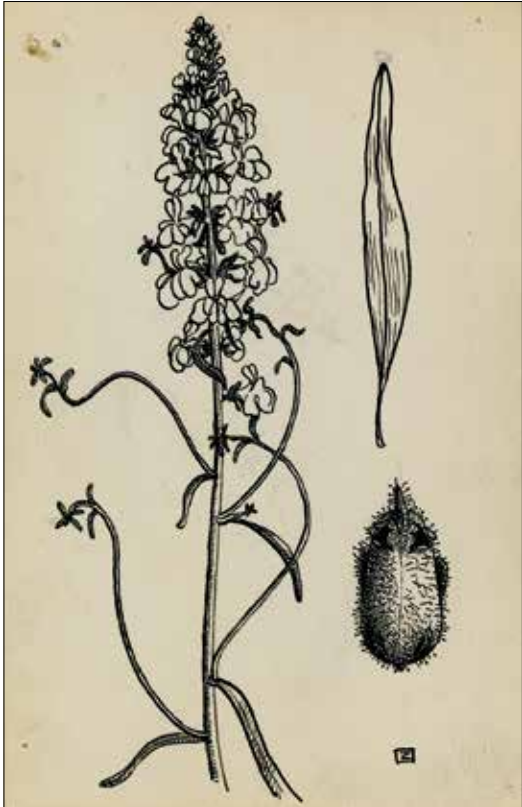
June 7, 99. Late in their season.



James Milford Zornes, *Salvia apiana*



James Milford Zornes, *Chilopsis linearis*



James Milford Zornes, *Antirrhinum coulterianum*

These pen and ink images by James Milford Zornes are quite different from his later artwork where he painted watercolor. The Zornes and Cross works were done when they were students at the Claremont Colleges, and were created for Philip Munz's four wildflower guidebooks that were published by University of California Press.



Abbie Williams, *Calypso bulbosa*. Reproduced with the permission of the Archives of California Botanic Garden, Claremont, California, USA.



Calochortus
venustus P. B. R. & G.

Carla Kulil, *Calochortus venustus*.
Reproduced with the permission of John Wickham,
Los Angeles, California.



Florence Mekeel Lambeth, *Oenothera elata*. Reproduced with the permission of the
Archives of California Botanic Garden, Claremont, California, USA.

The Challenge of Green *by Dolores Morrison*

Stand on the Visitor Center deck and look out at the Garden, especially in spring, and observe the many greens one can see across the Garden. Stand up close to a favorite plant and study the different shades of green in a single plant, the mature growth and the new growth, the top of a leaf in full sun and the underside of a leaf in shade. For botanical artists, it's not just

Stephen Joseph



Multiple variations of green in the Botanic Garden

about flowers. Botanical artists are observers who look at plants in fine detail. They often fall in love with a particular aspect of a plant, the way it looks when it emerges in the spring or dies in the fall, the way the calyx forms around the petals, or the bracts, or the fruits. Whatever qualities of the plant the artist wants to capture, the goal is always to be botanically correct. And that includes the colors. What color do we see most often in plants? Green, of course.

The green color of plants is caused by the balance of chlorophyll *a* and *b*, along with other pigments. Chlorophyll *a* is blue-green in color and is found in greater quantity in plants exposed to a lot of sunlight, while chlorophyll *b* is yellow-green and found more commonly

in plants living in lower light. The mix of the two chlorophylls give plants their green color. Our perception of the color is altered by the plant's adaptations for high UV or low water conditions, adaptations that include fine hairs and powdery or waxy surface coatings.

So why is it so challenging for an artist to capture the green of live plants? Bruce MacEvoy, an artist and watercolor paint expert, tells us that green is a color for which we don't have many descriptive words. Our color memory is not very accurate, so our idea of green and the actual green we need to capture the color of a plant often don't match. It's challenging. More words have been written about mixing greens than about any other color. There are very few pure green pigments available to paint manufacturers. Most green paints are mixes of two, three, or four pigments with different formulas by different manufacturers. Some very accomplished botanical artists will have a couple of green mix paints, also called "convenience paints," in their palette, to which they add a bit of a yellow or blue to get to the right green, while other artists would

never consider a green convenience paint for their palettes.

Botanical artists paint from live specimens whenever possible. Sometimes it's not possible to have a live plant in the studio, so the artist will spend time in the field making sketches, color swatches, notes, and reference photos. Even if the artist is able to get a cutting to bring to the studio, the colors can begin to change as soon as the plant is out of the sunlight, so seeing the plant *in situ* is very important. And because we all see color just a little differently, accuracy is subjective. Ferdinand Bauer, an 18th century scientist and botanical artist, did extensive documentation of the flora of Australia and other places in the world. He took to the field



Dolores Morrison

Artist materials

prepared colored charts to help document the colors as closely as possible for reference when back in his studio. His Australian color charts were reported to have nearly 1000 shades, 200 of which were green. Color charts consisting of little squares or circles of one pigment mixed with another in varying proportions are still used by many contemporary botanical illustrators and artists.

A story circulates in the botanical art world that paintings from California were rejected from British exhibitions because of inaccurate greens. Closer inspection revealed that indeed the greens were accurately rendered, but nature had produced a different green in the plant grown in California's climate and soil conditions than in the same plant species grown in the United Kingdom. And as Joseph Albers, the 20th-century artist, educator, and color theorist observed in his experiments with color, a perfectly mixed green on a white background looks quite different from the same green when the background color is different.

Now that you know more about greens, you can imagine the challenge of getting that perfect dark green of the redwood sprig—perhaps a carefully crafted mix of lemon yellow and violet blue—to flow seamlessly into the lighter green of the new spring growth. The next time you look at a botanical painting, pay special attention to the greens! 🌿

Dolores Morrison is a lifelong gardener and student of everything in the natural world. She took her first botanical drawing class in 2009, with Mary Harden at the San Francisco Botanical Garden, fulfilling a longstanding goal to pursue botanical illustration. Dolores is a Garden docent and member of the Seedy Friends. She also is an Alameda County Master Gardener.



Dolores Morrison

Dolores Morrison, 2019, Giant chalk dudleya (*Dudleya brittonii*)

Botanic Garden Receives its First National Award by Doris Kretschmer

On July 15 some 200 avid gardeners attended (via Zoom) the awards ceremony of the North American Rock Garden Society, where the Regional Parks Botanic Garden received The Francis Cabot Award for outstanding public rock gardens. Esteemed plantsman and garden designer Panayoti Kelaidis presented the award and praised the Garden as “one of America’s great gems. I would say that it is one of the most perfect gardens I’ve ever seen.”

In a slide show the Zoom audience was able to visit several of the Garden’s rock gardens, including the sea bluff, granite stairs, and serpentine areas, as well as the still-developing crevice garden, which Kelaidis felt would “certainly be one of the largest in the world.” Michael Uhler, gardener and curator of the Garden’s Sierra section, came in for special mention as the coordinator of the crevice garden and “an absolutely extraordinary plantsman.” Garden Director Bart O’Brien was part of Kelaidis’s Zoom audience, as were Kiamara

Ludwig, Interpretive Student Aide, Rodney Smith and Bill Surges of the East Bay Regional Parks District, and Michael himself.

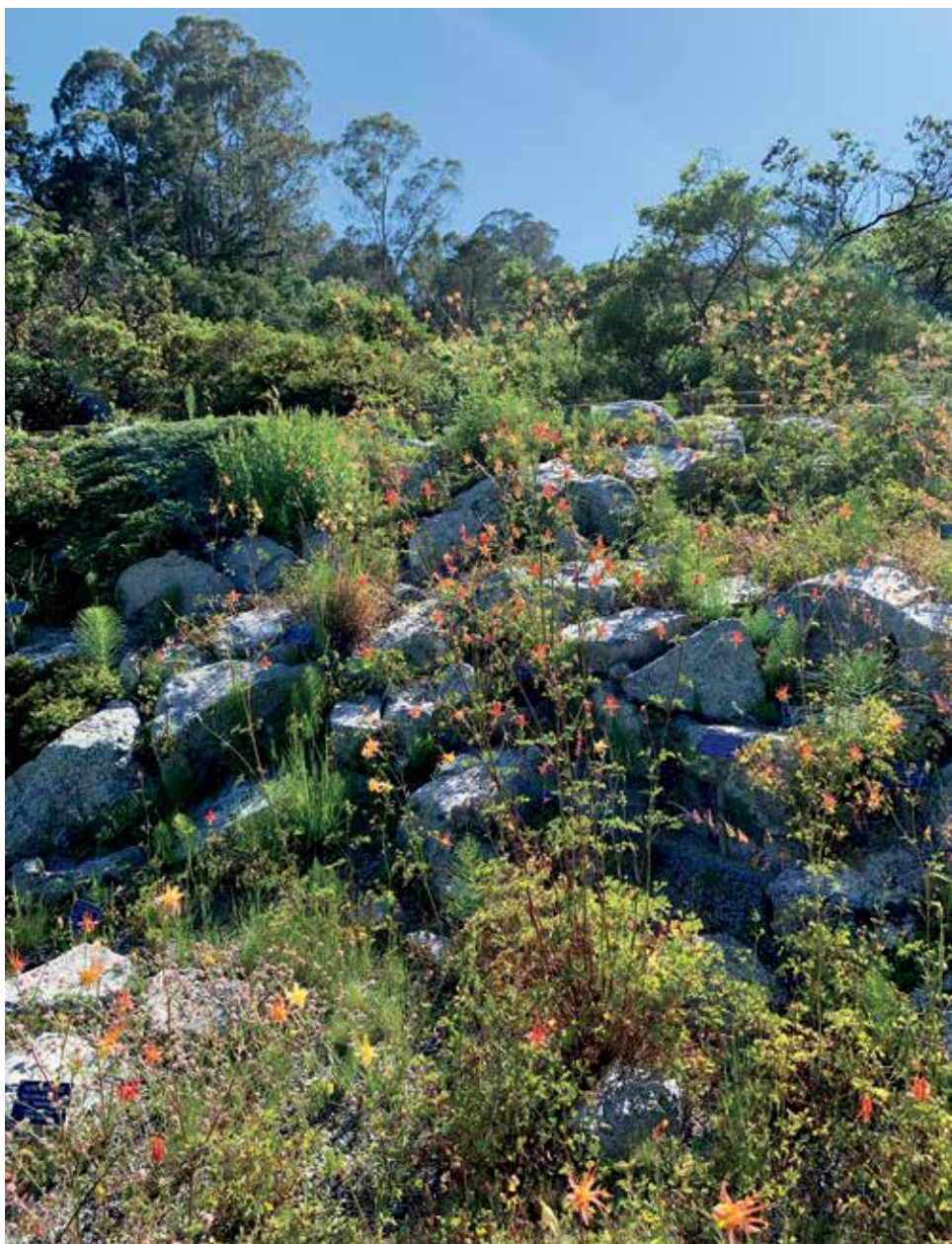
Kelaidis has visited the Garden several times and cited “the astonishing range of only native plants—native to California and Baja California—and many of them rare and endangered.... The artistry of almost everything throughout this garden is really over the top.”

The North American Rock Garden Society is an international association of individuals who have “an abiding love of gardening and the study of rare and unusual plants,” according to their website (<https://www.nargs.org>). The society publishes *The Rock Garden Quarterly*, and sponsors national meetings and study weekends, a seed exchange, speakers tours to their 38 local chapters in North America (including our local Western chapter), and several other benefits of membership. 🌿



Desert section rock garden, April 2020. Constructed by Phil Johnson with moss rock boulders from Tehama County in 2014.

Columbine (*Aquilegia*) species (*formosa*, *pubescens*, *shockleyi*) and hybrids, granite bed, June 2020. Michael Uhler built this section of the granite outcrop in 2009.





The Regional Parks Botanic Garden history with rock gardens dates back to 1983 near the end of director Wayne Roderick's tenure at the Garden. Under his long directorship at the Botanic Garden, Stephen Edwards greatly expanded the rock gardens and enabled many staff members to create, augment and rework the Garden's rock gardens over the years. This vital work continues to this day as rock gardens enable the Garden to grow and delightfully display more of California's native flora.

For more information about our rock gardens, see the following two articles:

Edwards, Stephen W. 2009. Outcrops along the way. *Manzanita* 13(4): 9-11.

Edwards, Stephen W. 1990. How to make naturalistic rock outcrops in the garden landscape. *The Four Seasons* 8(4): 5-17.

The center island—the tallest and largest piece of the new crevice garden. The crevice garden was created by Michael Uhler with critical construction assistance from Roads and Trails heavy construction operators Rodney Smith (supervisor) and Bill Surges (park craft specialist) during the summers of 2019 and 2020. August 2020.

Older rock gardens of the Desert section, June 2020. Joe Dahl and Al Seneres constructed this rock garden in 1995 with the assistance of Britt Thorsnes as the tractor operator for the project.

All photos by Bart O'Brien



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The Botanic Garden is currently open by reservation on Saturday, Sunday, Tuesday, and Thursday from 8:30am to 4:30pm, with the latest reservation for entry into the Botanic Garden being 3:30pm. Reservations can be made up to two weeks in advance for up to five people and should be made online by visiting www.nativeplants.org. Same day reservations are not available. Your reservation is not confirmed until you receive a confirmation email. Dogs are not allowed in the Botanic Garden.

The Botanic Garden's free E-Newsletter is a terrific source of information about the Garden, its plants and features, and its natural history. Visit nativeplants.org/publications/e-newsletter to subscribe.

Visit the Garden's website, nativeplants.org, for the latest information about Garden closures, classes, plant sales, and other activities.

Thank You to these Nurseries for Providing a Discount to *Friends* Members

Annie's Annuals and Perennials (510-215-3301), 740 Market Avenue, Richmond, www.anniesannuals.com

Bay Natives Nursery (415-287-6755), 10 Cargo Way, San Francisco, www.baynatives.com

Berkeley Horticultural Nursery (510-526-4704), 1310 McGee Avenue, Berkeley, www.berkeleyhort.com

California Flora Nursery (707-528-8813), 2990 Somers Street at D Street, Fulton (north of Santa Rosa), www.calfloranursery.com

Central Coast Wilds (831-459-0655), 336 Golf Club Drive, Santa Cruz, www.centralcoastwilds.com (please call before visiting)

East Bay Wilds Native Plant Nursery (510-409-5858), 2777 Foothill Boulevard, Oakland, www.eastbaywilds.com

East Bay Nursery (510-845-6490), 2332 San Pablo Avenue, Berkeley, www.eastbaynursery.com

Flowerland Nursery (510-526-3550), 1330 Solano Avenue, Albany, www.flowerlandshop.com

Larner Seeds (415-868-9407), 235 Grove Road, Bolinas, www.larnerseeds.com

Mostly Natives Nursery (415-663-8835), 54 B Street, Unit D, Point Reyes Station, www.mostlynatives.com

Oaktown Native Plant Nursery (510-387-9744), 702 Channing Way, Berkeley, www.oaktown@oaktownnursery.com