



The Arizona  
Native Plant  
Society

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# The Plant Press

THE ARIZONA NATIVE PLANT SOCIETY

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Cora Cameron Mosher's eye for detail brought life to so many Arizona native plants.

## A Wildflower Art Introduction for Arizona Native Plant Lovers

by Ries Lindley, Arizona Native Plant Society, Tucson Chapter

We all pursue our interests in plants for a multitude of reasons. At some level we all have some of those reasons in common and that's what makes us who we are, the Arizona Native Plant Society. At some level of focus — wide, narrow, deep, or shallow — our interest in plants brings us joy. Here the meaning of the word *joy* is used in the older sense, meaning bliss, happiness, or exultation. It does not mean a surrogate for measuring the worth of some object or activity.

Some months back when Doug (Ripley) started talking to me about a man who had brought him images of plant drawings, I was a little too much in the thrall of my own joy to think deeply about his enthusiasm. Then he sent some of the images by email, probably to shake me out of my lethargy. I was intrigued by the story and the images were very nice. Yet what finally got my full, undivided attention was being asked to look at some of the plant identifications prior to publication. It was astonishing.

The artist, Cora Cameron Mosher, created these pieces as art; they were never intended to be used as botanical illustration. The medium, colored pencil on paper, would only work

*continued page 3*

# President's Note *by Douglas Ripley* jdougripley@gmail.com

Welcome to the Spring/Summer issue of *The Plant Press*. You will quickly notice that the content of this issue represents a departure from our usual presentations of individual papers on various Arizona native plant topics. Instead, we decided to devote most of this expanded issue to the presentation of a remarkable series of Arizona wildflower images drawn in the first half of the last century by the extremely gifted amateur artist Cora Estelle Mosher. Through a happy coincidence we learned of the existence of the drawings from Ms. Mosher's grandson who inherited the drawings and for many years was endeavoring to find a way to preserve them in a publication and thus make them available to a public audience. We therefore decided to publish them in their entirety in this issue with the hope that you will find their

attention to botanical detail and beauty a source of satisfaction and inspiration.

As with our entire country and, indeed, most of the world, the first half of 2020 has been dramatically impacted by the COVID-19 pandemic. The impact on the Arizona Native Plant Society has been similar to many other organizations. Mainly, it has meant a curtailment of all of our many in-person activities such as monthly chapter meetings, field trips, and other events requiring face-to-face assemblages. Unfortunately, with the future course of the infection currently unpredictable, we are unable to plan for our future traditional activities such as the annual Botany 2020 Conference or the September extended field trip/workshop to the Chiricahua Mountains. Since we anticipated that we would not be able to hold any of our traditional activities at least through the summer, we decided to forgo publishing the *Happenings* newsletter for the June-August issue. Hopefully, we'll be able to resume its publication in the fall. In the meantime our Society Administrator Pat Sanchez will issue Mail Chimp notices to the individual chapter members for updates on their chapter activities. And of course, our website will continue to be an excellent source of information on the Society in general and the individual chapters. Thanks to the initiative of several chapters we are taking advantage of the Zoom conferencing technology which may allow a number of our activities to occur remotely. We hope soon to have this capability functioning for all chapters and it's conceivable that we might even be able to hold our annual Botany Conference using Zoom. So, I think it's safe to say that we are coping as best we can under these remarkable circumstances.

A very exciting development late last year was the establishment of a new Chapter (our eighth) representing Graham and Greenlee Counties and known as the Upper Gila Chapter. The new chapter has a nucleus of very enthusiastic members headed by its president Kara Barron and is a welcome addition to the Society. At our last Board of Directors meeting we confirmed the new State Board and welcomed two new members, Lyn Loveless and Sue Carnahan.

In these uncertain and often troubling times, I wish to thank all our individual members, Board members, chapter officers, and committee members for their wonderful and significant support of, and participation in, the Arizona Native Plant Society.



## Who's Who at AZNPS

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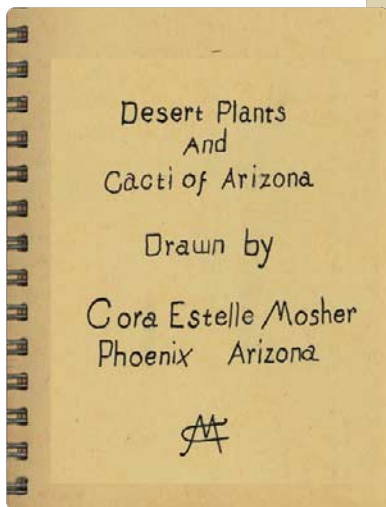
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From left: The cover from one of her many books. Illustration of *Aquilegia*. Cora Estelle Mosher, circa 1900.



## A Wildflower Art Introduction for Arizona Native Plant Lovers *continued*

well for botanical detail if the illustration were highly magnified. Yet Cora coaxed a great deal of detail out of a rather obscure, and not-often-used medium. It was done elegantly. Elegant is a word programmers use for a bit of software that is so simple, clean, and effective that it is beautiful. So here we have work that transcends the medium and speaks to other disciplines. It speaks to us all.

A close-up view of the *Aquilegia* in the image above reveals several hues of yellow in the anthers alone. A few pencil lines show through the corolla revealing the bare essential sketch used as a foundation for the colors laid on to reveal the whole flower. There are no wasted strokes, and all the curves are natural. It's easy to take that last for granted. So please, if you think that's easy, try drawing that long peduncle with a convincing continuous curve, and use enough colors along its very narrow diameter to give it depth and form and yet still communicate the actual color reflected to your eye.

The drawings have a pretty clear flavor of other art from the era. The paper is a soft manilla color or sometimes a cool gray, so there is never even a possibility of the high contrast a white paper would offer. White paper is often used in water colors to create brightness. Here the paper is used to create subtlety. The drawings are reminiscent of other Arizona desert scenes from that time, like the ones your grandmother had in her

living room with yuccas and saguaros. In this sense, they all share a common time stamp of art from the early to mid-twentieth century, and from the Southwest. There is also something much older here, a look back at early botanical illustration and Renaissance or Baroque still lifes. Some plates show very ordinary plants like dandelion and fleabane (page 64, image on right). It takes very little imagination to see this piece fitting right in with an old manuscript on early herb lore. Or it might hang on a wall next to a still life of cheese, fruit, a dead hare, and a brace of partridges strung up on a peg.

Oh yes, the plant identifications. It was indeed possible to identify most of the plants, although it seems pretty clear the artist cared more about the image and the process than the scientific binomial. The plant identification process for the drawings started long after Cora's death, and that process will go on as scientific names change. That's not important. What is important is that the joy Cora Cameron Mosher put into these drawings will not change, and it will continue to wash over all those who pause to look. For those of you who are less distractible than I am, you will benefit from this joy the first time you see them . . . and the next, and the next. Enjoy.



# Cora Estelle Cameron Mosher Floral Drawings

by her grandson, L. Cameron Mosher, Ph.D.

My grandmother, Cora Estelle Cameron, was born 28 June 1873 in a small village in upstate New York called Athol. She descended from Scottish immigrants who arrived along the Hudson River in the late 1700s and named their new town Athol after their home in Scotland. Without formal training in art or botany, she became an artist and worked as a fabric designer in New York City. There she met and married my grandfather, Loren A. Mosher, in 1902. He was an electrical engineer (Dartmouth, 1897) and worked for Western Electric. He was eventually assigned to Chicago where my father was born in 1910. Western Electric then moved Loren and his family to a wire factory in Montreal.

During the First World War, that wire factory was recommissioned to make ammunition. Basically a pacifist, my grandfather did not want to make ammunition for war so they moved again, this time to Warrensburg, back to the Adirondack region of New York near Cora's birthplace in Athol. A tragedy occurred during the move to Warrensburg when all of Cora's previous art was lost in a misplaced trunk. At Warrensburg, my grandfather Loren left engineering and bought a grocery store. My father spent his childhood in Warrensburg.

In the 1920s, the family traveled around the United States looking for a place where Loren and Cora could live out their lives and they fell in love with Phoenix. With none of her art to bring with them, the family moved to Phoenix from upstate New York in 1925 when my father was 15 and Cora was 52. Fascinated with the desert, Cora began to draw the wildflowers of Arizona using colored pencils, beginning with the desert cacti around Phoenix. She continued this pursuit for the rest of her life. Her lack of training in both art and botany did not diminish her eye for detail and her drawings reflect her amazing ability to capture nature in exactness.

After enduring the Phoenix summer heat for 13 years, Cora decided it did not agree with her, so she and Loren purchased a cabin in 1938 in the little town of Greer in the White Mountains of eastern Arizona near Springerville. They went early every spring to the cabin, often staying longer into the fall than they should after the snow began to cover the roads. I remember one fall when they had to be plowed out. At the cabin she continued her flower drawings, now adding mountain wildflowers and fungi. She later added watercolors for images and scenes around the cabin as well as some of the floral drawings.

I spent many summers with them at the cabin during childhood and remember many of the subjects of her Greer

scenes including the cabin and scenes of the valley from the mountain behind the cabin. Grandma Cora took me on wonderful walks in the woods and along the Little Colorado River whose headwaters flowed in front of the cabin, showing and explaining things to an eager boy. I attribute my lifelong love of nature to her influence. On occasional trips for groceries to Springerville, a favorite landmark to visit was the Indian Serpent Shrine, which stood in Springerville. That monument is included as a watercolor among her drawings.

I don't remember Cora sitting outside and drawing the flowers in nature. I do remember Cora gathering the stems in a vase and bringing them inside where she took out her pencils and drew them. If she ever needed to correct any details from flowers still in the ground, she went back outside and looked. My parents and I were constantly looking for flowers she had not drawn, and my mother finally said it got so they could not find any. Cora wisely placed her drawings in acid-free albums which have resided in a suitcase in the closet.

Cora passed away when I was 13. During her life some of her drawings had been given away to relatives and special acquaintances over the years. When Cora died in 1951, the flowers surrounding her casket at her private funeral were her drawings. John Howard Pyle, a radio personality at KTAR in Phoenix (and friend and colleague of my dad who had worked at KOY) and later governor of Arizona, spoke at her funeral, and John received one of the drawings.

My mother, Cora's daughter-in-law, moved to Pleasant Grove, Utah in 1984. She had taken it upon herself to curate Cora's drawings, and took the suitcase containing them to the Monte Bean Museum at Brigham Young University in Provo to see if they could put scientific names on any of the flowers. They were quite excited to see the drawings and told mom that Cora had such an eye for detail that they could not only put proper scientific names and authors on the flowers but they wanted to do an exhibit of them at the museum. Several of the drawings were selected and hung in the museum for a month-long exhibition in February of 1989.

In 2016, I took the collection to the PBS Antiques Roadshow during its Salt Lake City tour. It was selected for a mainstage interview, broadcast nationally on April 3, 2017. This interview can be viewed at a link on the website:

[www.CoraMosherFloralArt.com](http://www.CoraMosherFloralArt.com). In my opinion, the quality and detail of her flower drawings of Arizona flora stand equal to Audubon's drawings of birds.



## The Cora Estelle Cameron Mosher *Floral Drawings*

The individual plants represented in the 139 botanical drawings presented here consist almost entirely of native Arizona species. However, a few nonnative plants also in the collection and have been included as well. The plants in the drawings were not originally identified by the artist. In 1984, the artist's daughter-in-law had the entire collection reviewed by botanists at the Monte Bean Museum at Brigham Young University. Through that review, most of the plants were successfully identified to the species level. In preparation for this publication, the entire collection was again reviewed and updated to reflect changes that have occurred in scientific nomenclature since 1984. Because precise identification to the species level was occasionally difficult, some of the individual plants in these drawings are identified only to the genus level or are simply designated as "undetermined."



Blue Palo Verde — *Parkinsonia florida*



Desert Ironwood — *Olneya tesota*



Honey Mesquite — *Prosopis glandulosa*



Ocotillo — *Fouquieria splendens*



Saguaro — *Carnegiea gigantea*



Rainbow Cactus — *Echinocereus rigidissimus*



Soap Tree Yucca — *Yucca elata*

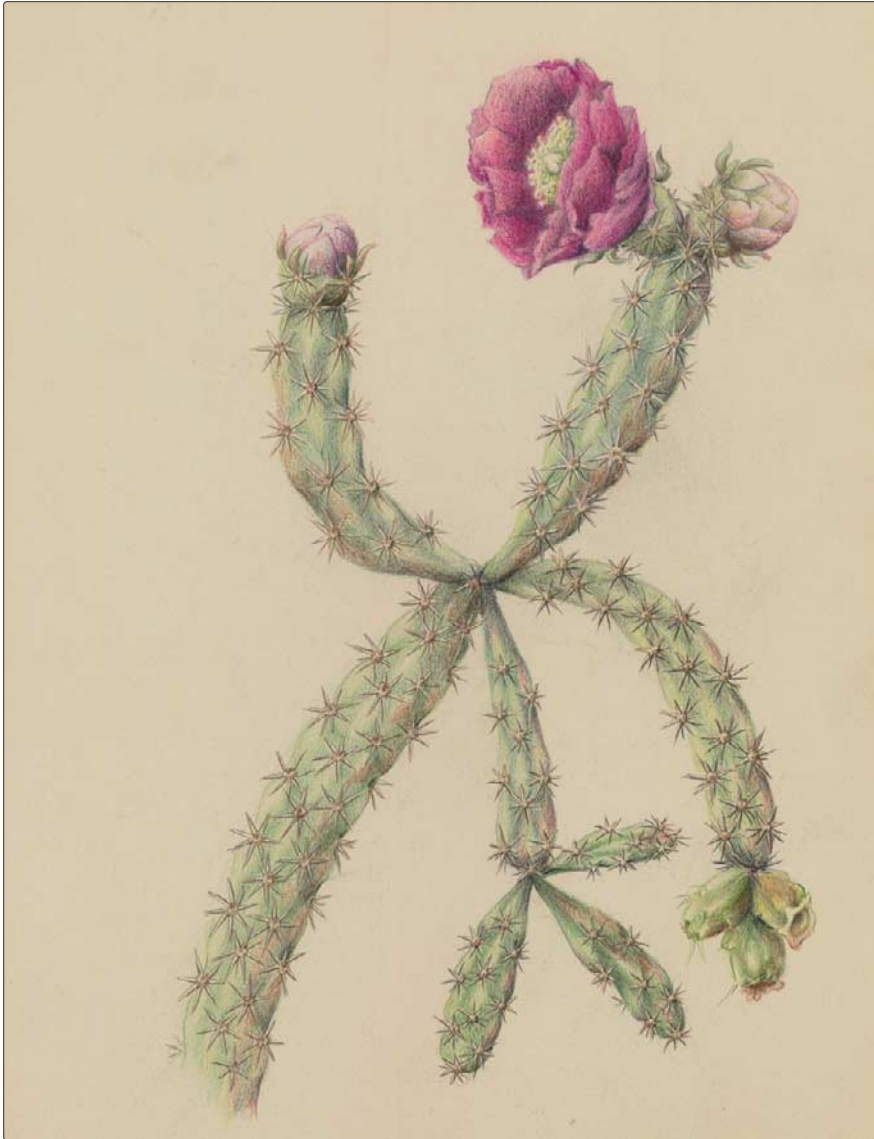




Fishhook Barrel Cactus — *Ferocactus wislizeni*



Staghorn Cholla — *Cylindropuntia versicolor*



Cane Cholla — *Cylindropuntia spinosior*



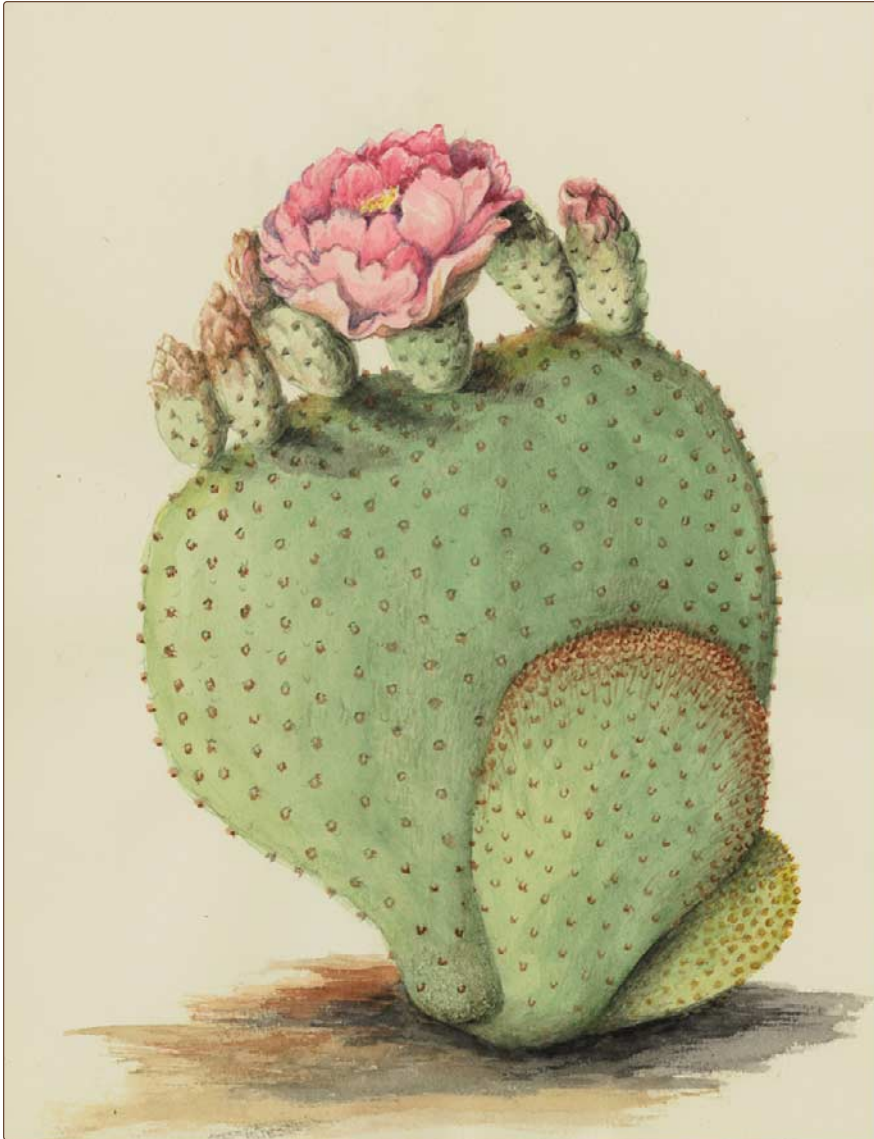
California Barrel Cactus — *Ferocactus cylindraceus*  
Christmas Cholla — *Cylindropuntia leptocaulis*



Staghorn Cholla — *Cylindropuntia versicolor*



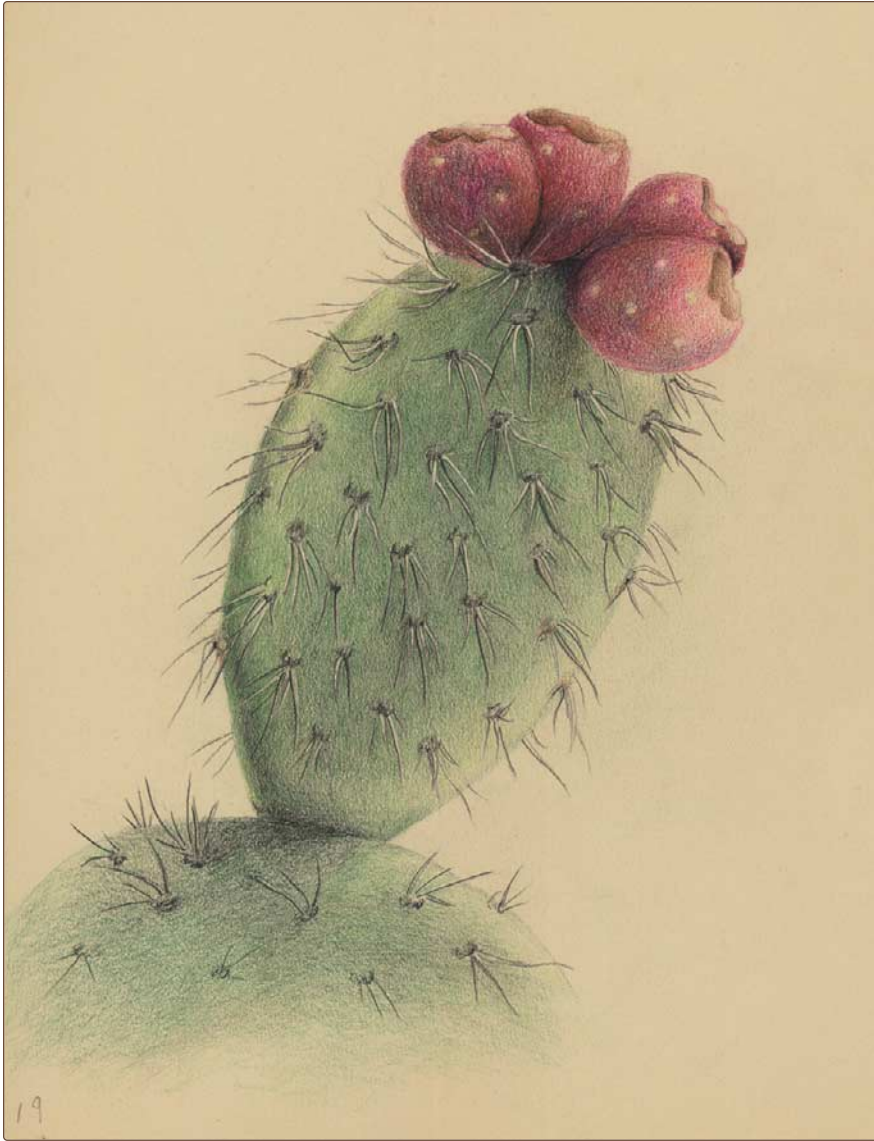
Teddy Bear Cholla — *Cylindropuntia bigelovii*



Beavertail Cactus — *Opuntia basilaris*



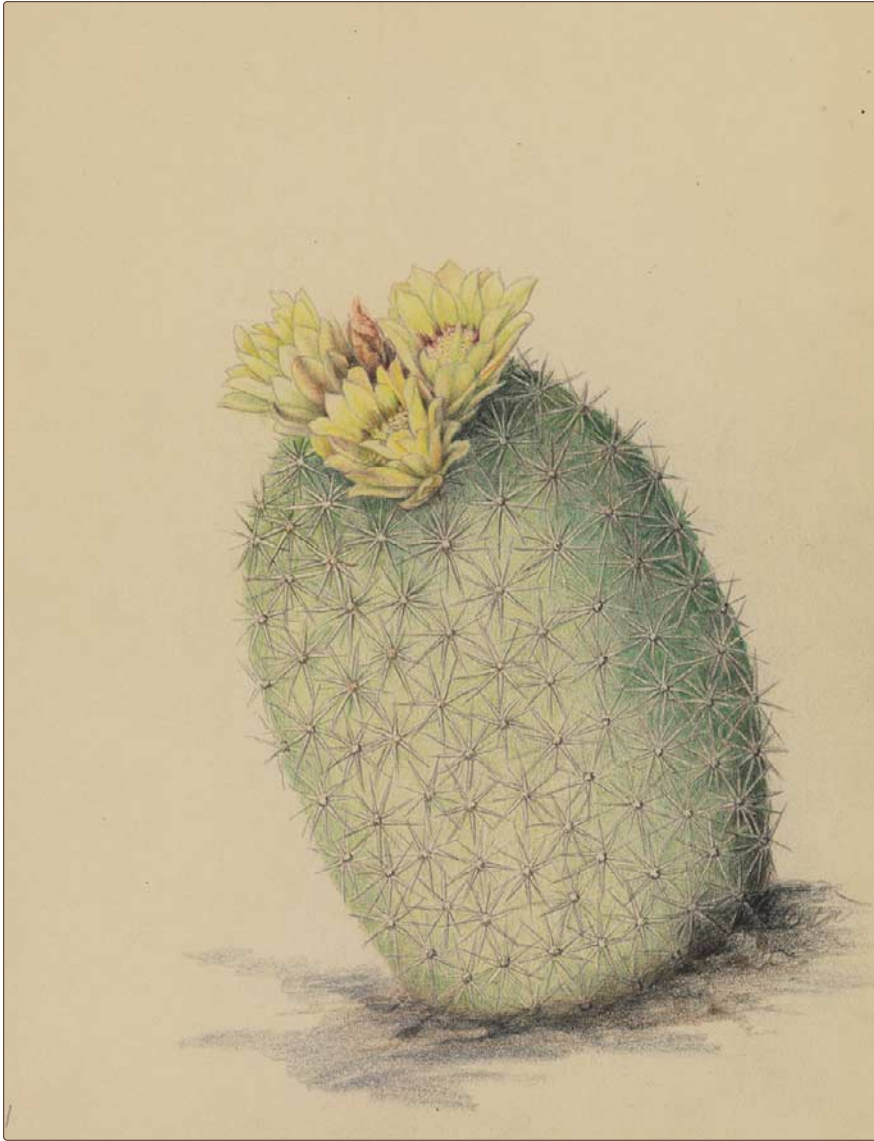
Dark Spined Prickly Pear — *Opuntia phaeacantha*



Prickly Pear Cactus — *Opuntia* species



Gila County Liveforever, Echeveria — *Dudleya saxsoa* subsp. *collomiae*  
Graham's Pincushion Cactus — *Mammillaria grahamii*



Pincushion cactus — *Mammillaria* species



Common Fishhook Cactus — *Mammillaria tetrandra*



Night-blooming Cereus, Arizona Queen of the Night — *Peniocereus greggii*



Golden-Flowered Agave — *Agave chrysantha*  
Common Sotol, Desert Spoon — *Dasylirion wheeleri*



Mistletoe — *Phoradendron serotinum* subsp. *tomentosum*



Chuparosa, Hummingbird Bush — *Justicia californica*  
Prairie Spiderwort — *Tradescantia occidentalis*





Cardinal Flower — *Lobelia cardinalis*  
Prairie Spiderwort — *Tradescantia occidentalis*



Birdbill Dayflower — *Commelina dianthifolia*  
Scarlet Gilia — *Ipomopsis aggregata*



Franciscan Bluebells — *Mertensia franciscana*  
Wooly Cinquefoil — *Potentilla hippiana*



Catchfly — *Silene* species.  
Pipsissewa — *Chimaphila umbellata*  
Scarlet Cinquefoil — *Potentilla thuberi*



Scarlet Cinquefoil — *Potentilla thuberi*  
Nuttall's Larkspur — *Delphinium geraniifolium*



Pale Evening Primrose — *Oenothera pallida*



Hooker's Evening Primrose — *Oenothera elata*  
Blue-Eyed Grass — *Sisyrinchium demissum*



Yellow Desert Evening Primrose — *Oenothera primiveris*



Trailing Windmills — *Alonia incarnata*  
Goldenrod — *Solidago* species  
Prairie Evening Primrose — *Oenothera albicaulis*



Cardinal Catchfly — *Silene laciniata*  
Hilltop Daisy — *Helianthella parryi*  
Lewis Flax — *Linum lewisii*



Spruce-Fir Fleabane — *Erigeron veximus*  
Prairie Wallflower — *Erysimum asperum*



Pink Lady's Slipper — *Cypripedium acaule*  
Yellow Lady's Slipper — *Cypripedium parviflorum*



Indian Paintbrush — *Castilleja* species  
Parry's Bellflower — *Companula rotundifolia*



Arizona Honeysuckle — *Lonicera arizonica*  
Wild Iris; Western Blue Flag — *Iris missouriensis*



Aspen Peavine — *Lathyrus laetivirens*  
Fine-Leaf Woollywhite — *Hymenopappus filifolius*



Mountain Deathcamas — *Zygadenus elegans*  
Fireweed — *Chamaenerion angustifolium*





Undetermined  
Rocky Mountain Bee Plant — *Peritoma serrulata*  
Limestone Hawk's-Beard — *Crepis intermedia*



Badland Mule's Ears — *Scabrethia scabra*



Desert Marigold — *Baileya multiradiata*



Thimbleberry — *Rubus parviflorus*  
Western Red Columbine — *Aquilegia elegantula*



Purple Cluster Geranium — *Geranium caespitosum* var. *eremophilum*  
Purple Cluster Crane's Bill — *Geranium caespitosum*  
Golden Columbine — *Aquilegia chrysantha*



Fendler's Deerbrush — *Ceanothus integerrimus*  
Scarlet Columbine — *Aquilegia triternata*



New Mexico Checkermallow — *Sidalcea neomexicana*  
Broom Deerweed — *Acmispon rigidus*



New Mexico Checkermallow — *Sidalcea neomexicana*



Palmer's Penstemon — *Penstemon palmeri*  
Twinberry Honeysuckle — *Lonicera involucrata*



Scrambled Eggs — *Corydalis aurea*  
Rocky Mountain Beardtongue Penstemon — *Penstemon strictus*



Showy Milkweed — *Asclepias speciosa*



Goodding's Verbena — *Verbena gooddingii*  
Eaton's Firecracker Penstemon — *Penstemon eatonii*



Torrey's Craglily — *Echeandia flavescens*  
Beard Lip Penstemon — *Penstemon barbatus*



Three Undetermined Thistles — *Cirsium* species



Bush Penstemon — *Penstemon ambiguus*  
Graceful Buttercup — *Ranunculus inamoenus*  
Smooth-Throat Stoneseed — *Lithospermum cobrense*



Desert Penstemon — *Penstemon pseudospectabilis*  
Common Fiddleneck — *Amsinckia intermedia*





Jimson Weed — *Datura wrightii*



Spreading Dogbane — *Apocynum androsaemifolium*

Four O'Clock — *Mirabilis* species

Sidebells Wintergreen — *Orthilia secunda*



St. John's Wort — *Hypericum formosum*  
Wild Bergamot — *Monarda fistulosa*



Western Whorled Milkweed — *Asclepias subverticillata*  
Shooting Star — *Dodecatheon pulchellum*  
Manyflowered Stoneseed — *Lithospermum multiflorum*



Seep Monkey-Flower — *Erythranthe guttata*  
Nodding Onion — *Allium cernuum*



Lance-Leaf Sage — *Salvia reflexa*  
Blazing Star — *Mentzelia longiloba*



Columbian Monkshood — *Aconitum columbianum*  
Mountain Parsley — *Pseudocymopterus montanus*



Giant Lousewort — *Pedicularis procera*



Northern Bog Violet — *Viola nephrophylla*  
Canadian White Violet — *Viola canadensis*  
Alpine Pennycress — *Noccaea montana*  
Willow — *Salix* species



Rose Heath — *Chaetopappa ericoides*  
Wood's Rose — *Rosa woodsii*



Silver-Stem Lupine — *Lupinus argenteus*  
Climbing Milkweed — *Funastrum cynanchoides*



Owl's Clover — *Castilleja exserta*  
Shredding Suncup — *Eremothera boothii* subsp. *condensata*



Currant-Leaf Globemallow — *Sphaeralcea grossulariifolia*



Winding Mariposa Lily — *Calochortus flexuosus*  
Desert Mariposa Lily — *Calochortus kennedyi*



Gunnison's Mariposa Lily — *Calochortus gunnisonii*



Spruce-Fir Fleabane — *Erigeron eximius*

Golden Aster — *Scabretina scabra*

Fleabane — *Heterotheca* species





Nightshade — *Solanum* species  
Autumn Dwarf Gentian — *Gentianella amarella*  
Mexican Hat; Prairie Coneflower — *Ratibida columnifera*



Golden Tickseed — *Coreopsis tinctoria*  
Marsh Aster — *Symphyotrichum lanceolatum* var. *hesperium*  
Pileated Gentian — *Gentiana affinis*



Parry's Gentian — *Gentiana parryi*



Huachuca Mountains Stonecrop — *Sedum stelliforme*  
Mt. Graham Spurred Gentian — *Halenia recurva*  
Star Gentian — *Swertia perennis*



Monument Plant — *Fraseria speciosa*



Golden Crownbeard — *Verbesina encelioides*

Desert Sand Verbena — *Abronia villosa*



Desert Mountain Phlox — *Phlox austromontana*  
American Purple Vetch — *Vicia americana*



White Prickly Poppy — *Argemone polyanthemus*



Chia Mint — *Salvia columbariae*  
Brittle Bush — *Encelia farinosa*



Clematis — *Clematis* species  
Field Mint — *Mentha arvensis*  
Heal All — *Prunella vulgaris*



Desert Thimbleweed — *Anemone tuberosa*  
Long-Bract Deerweed — *Acmispon oroboides*  
Many-Flower Skyrocket — *Ipomopsis multiflora*



86  
Creosote Bush — *Larrea tridentata*  
Bare-Stem Larkspur — *Delphinium scaposum*



Sand Wash Groundsel — *Senecio flaccidus* var. *monoensis*  
Ten-Leaf Wood-Sorrel — *Oxalis decaphylla*



Butterfly Milkweed — *Asclepias tuberosa*  
Blazing Star — *Mentzelia* species



Green-Leaf Manzanita — *Arctostaphylos patula*



Northern Bedstraw — *Galium boreale*  
Dakota Mock Vervain — *Glandularia bipinnatifida*





St. John's Wort — *Hypericum formosum*  
Two undetermined Borages (Boraginaceae)



Red Baneberry — *Actaea rubra*



Large-Leaf Avens — *Geum macrophyllum*  
Purple Locoweed — *Oxytropis lambertii*



Pinewoods Clover — *Trifolium pinetorum*  
Common Yarrow — *Achillea millefolium*  
Broom Groundsel — *Senecio spartioides*



Wild Oats — *Avena fatua*  
Western Poison Ivy — *Toxicodendron rydbergii*



Columbian Virgin's Bower — *Clematis columbiana*  
Undetermined



White Marsh Marigold — *Caltha leptosepala*  
Undetermined



Scorpion-Weed — *Phacelia* species  
Desert Chicory — *Rafinesquia neomexicana*  
Orange Caltrop — *Kallstroemia grandiflora*



Desert Lavender — *Hyptis emoryi*  
Frémont's Pincushion — *Chaenactis fremontii*  
Parish Goldeneye — *Bahioopsis deltoidea*



Creeping Barberry, flowers and fruit — *Berberis repens*  
Owl's-Claws — *Hymenoxys hoopesii*



Thistle — *Cirsium* species  
Serviceberry, flowers and fruit — *Amelanchier alnifolia*  
Giant-Trumpets — *Lithospermum macromeria*



Undetermined  
Pennyroyal — *Hedeoma* species



Mexican Gold Poppy — *Eschscholzia californica* subsp. *mexicana*  
Bigelow's Bristlehead — *Carphochaete bigelovii*



Distant Scorpion-Weed — *Phacelia distans*  
Nodding Ragwort — *Senecio bigelovii*



Starry False Lily of the Valley — *Maianthemum stellatum*  
Blue Dicks — *Dichelostemma capitatum*



Alkali Buttercup — *Ranunculus cymbalaria*  
American Speedwell — *Veronica americana*  
Featherly False Lily of the Valley — *Maianthemum racemosum*  
Long-Stalk Starwort — *Stellaria longipes*





Wild Buckwheat — *Eriogonum* species  
White-Stem Paper-Flower — *Psilostrophe cooperi*  
Desert Four O'Clock — *Mirabilis multiflora*



Cinquefoil Bush — *Dasiphora fruticosa*  
Beautiful Jacob's Ladder — *Polemonium pulcherrimum*



Desert Tobacco — *Nicotiana obtusifolia*  
Glandular Threadplant — *Nemacladus glanduliferus*



Orange Flower Goat Chicory — *Agoseris aurantiaca*  
Slimleaf Plainsmustard — *Hesperidanthus linearifolius*  
Trailing Fleabane — *Erigeron flagellaris*



Blue Wild Lettuce — *Mulgedium pulchellum*  
Silverweed Cinquefoil — *Argentina anserina*



Woodland Strawberry — *Fragaria vesca*  
Old Man's Whiskers — *Geum triflorum*



Marsh Grass of Parnassis — *Parnassia palustris*  
Goldenrod — *Solidago* species  
Pearly Everlasting — *Anaphalis margaritacea*  
Morning Glory — *Ipomoea* species



Hairy Evening Primrose — *Oenothera villosa* subsp. *strigosa*  
Queen Anne's Lace — *Daucus carota*  
Southwestern Cosmos — *Cosmos parviflorus*



Nevada Pea — *Lathyrus lanszwertii* var. *leucanthus*  
Tobacco Root (Pink & White) — *Valeriana arizonica*



Little Golden Zinnia — *Zinnia grandiflora*  
Charming Woody Aster — *Xylorhiza venusta*



Golden Head Coneflower — *Rudbeckia laciniata*  
Wound Wort — *Stachys palustris*



Parry's Lousewort — *Pedicularis parryi*  
MacDougal Verbena — *Verbena macdougalii*  
Marsh Meadow Indian Paintbrush — *Castilleja lineata*



Graceful Cinquefoil — *Potentilla gracilis*  
American Bistort — *Bistorta bistortoides*  
Scarlet Evening Primrose — *Oenothera suffrutescens*



Texas Toadflax — *Nuttallanthus texanus*  
White Tidy Tips — *Layia glandulosa*



Cream Cups — *Platystemon californicus*  
Eastern Mojave Buckwheat — *Eriogonum fasciculatum*



Shaggy Fleabane — *Erigeron pumilus*  
Common Dandelion — *Taraxacum officinale*  
Undetermined grass species





Fleabane — *Erigeron* species  
Bittercress — *Cardamine* species  
New Mexico Groundsel — *Packera neomexicana*  
Groundsel — *Packera* species



Night-Blooming Cereus, Arizona Queen of the Night — *Peniocereus greggii*



Fendler's Meadow Rue — *Thalictrum fendleri*  
Lindley's Silverpuffs — *Uropappus lindleyi*  
Fairy Duster — *Calliandra eriophylla*



Parry's Brook Primrose — *Primula parryi*



Bigelow's Four-O'clock — *Mirabilis laevis* var. *villosa*  
Cooper's Broomrape — *Orobanche cooperi*  
Elegant Cinquefoil — *Potentilla concinna*



Common Sow Thistle — *Sonchus oleraceus*  
Fetid Goosefoot — *Dysphania graveolens*



Sticky Goldenrod — *Solidago simplex*  
Undetermined



Longroot Smartweed — *Persicaria amphibia*



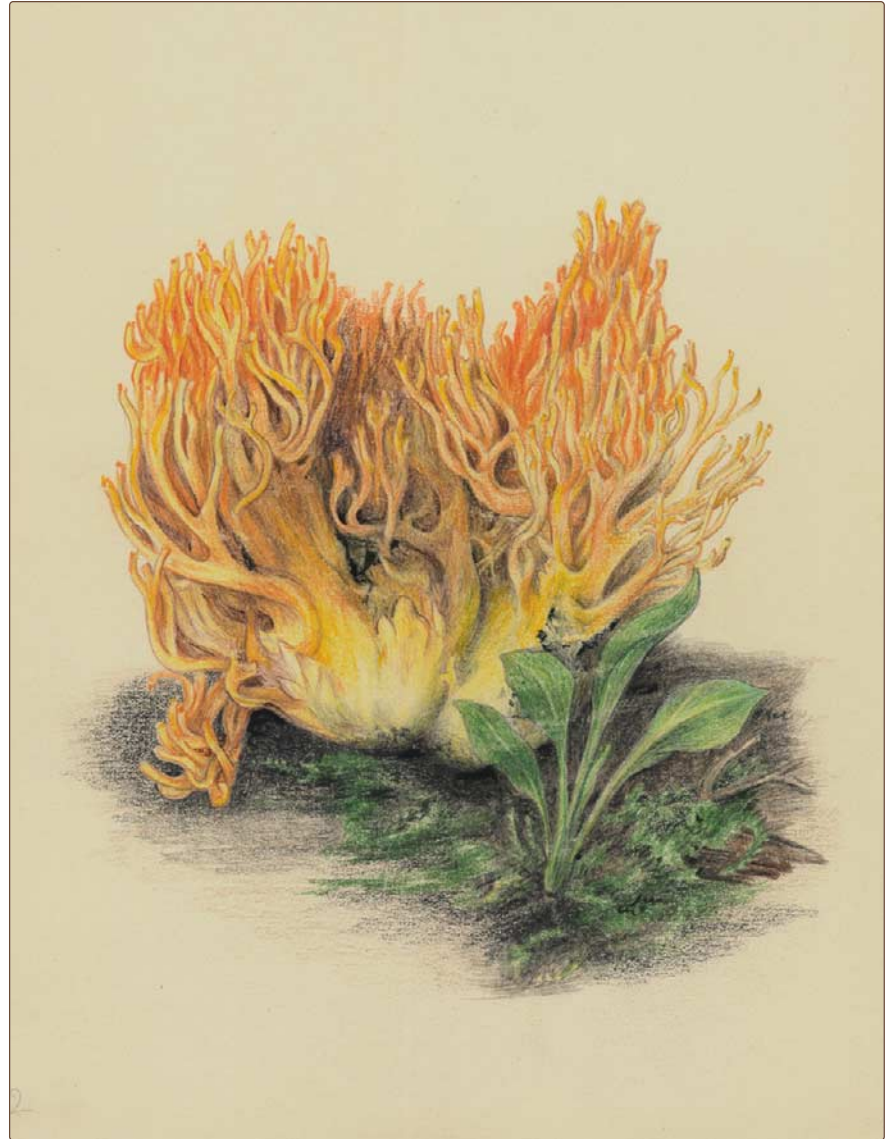
Devil's Claw, Unicorn Plant — *Proboscidea althaeifolia*



Giant Hyssop — *Agastache pallidiflora*



Waxycap — *Hygrophorus gliocyclus*  
Woodland Pinedrops — *Pterospora andromedea*  
Vetch — *Vicia* species



Golden Coral — *Ramaria larentii*



Red-Capped Scaberstalk — *Leccinum aurantiacum*  
Jellied False Coral — *Tremellodendron schweinitzii*



Egghead Mottlegill — *Panaeolus semiovatus*  
Crab Brittlepill — *Russula xerampelina*

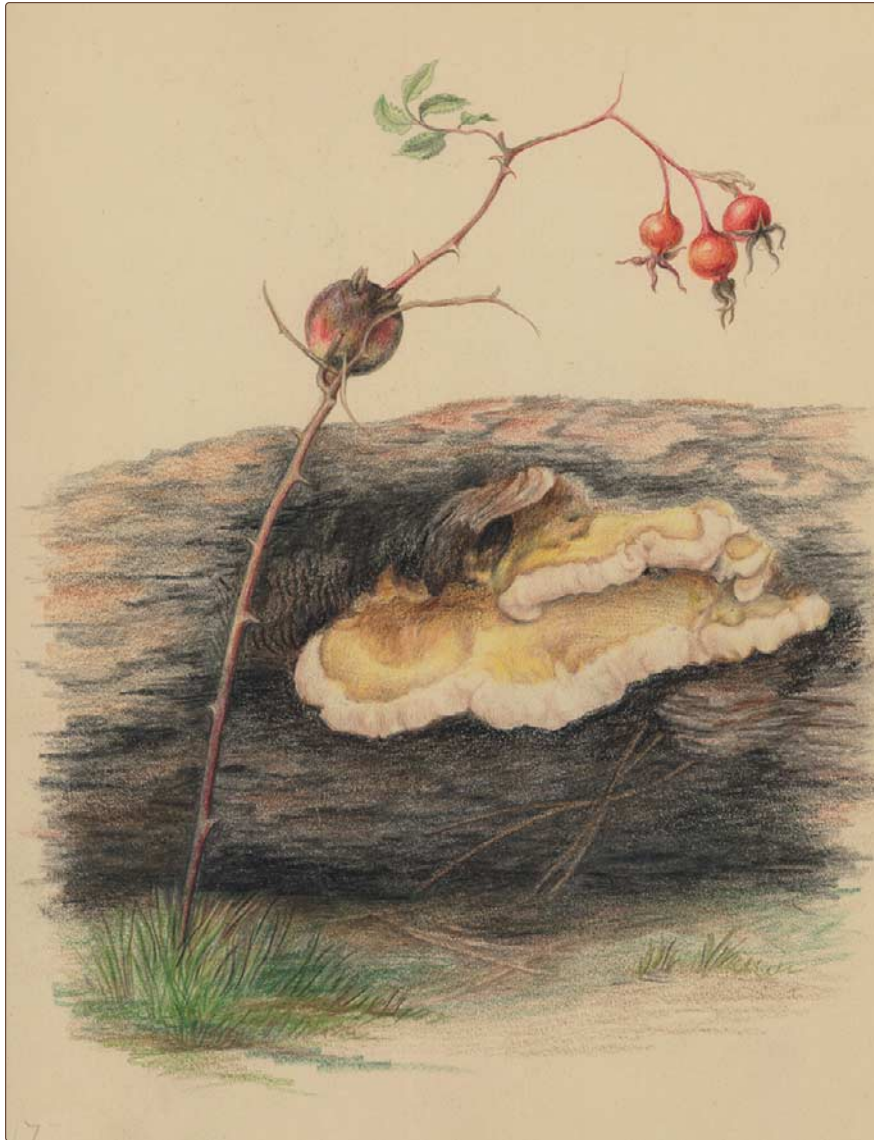


Old Man's Beard (Lichen) — *Usnea* species  
Fly Agaric — *Amanita muscaria*  
Engelmann Spruce — *Picea engelmannii*



Yellow Foot — *Cantharellus lutescens*

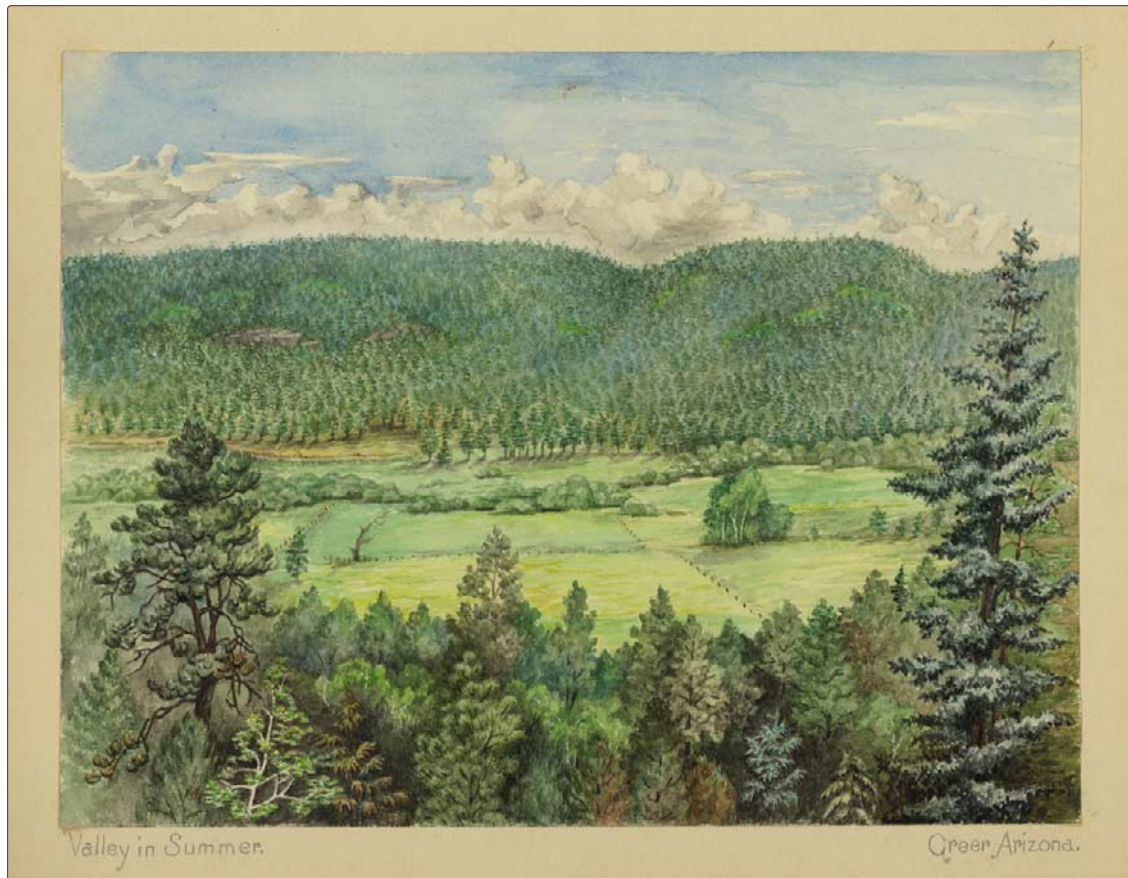




Wood's Rose — *Rosa woodsii*  
Crab-of-the-Woods — *Laetiporus sulphureus*



Agaric Fungus (undetermined species)  
Crab Brittlegill — *Russula xerampelina*  
Common Yarrow — *Achillea millefolium*  
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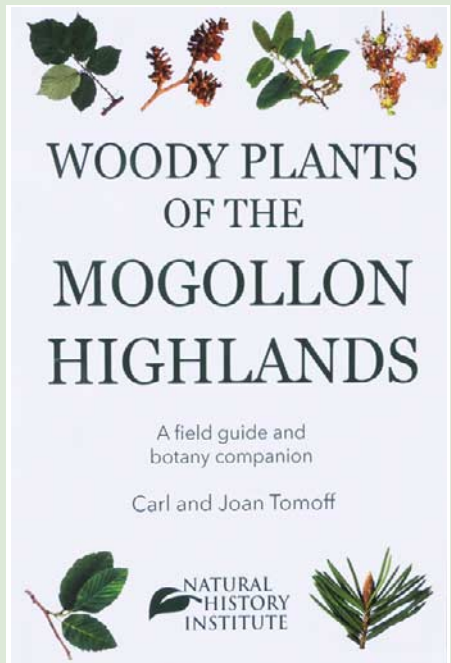
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**Claret Cup Hedgehog**  
*Echinocereus coccineus*



This highly variable mounding cactus has few to many green to blue-green stems. Growing in a crowded cluster about six inches (15 cm) tall, each stem reaches up to 2.5 inches (6 cm) across with nine to 10 ribs. Spines are pale gray to tan, up to 2.5 inches (6 cm) long, sometimes dense and sometimes sparse.



Usually growing in clusters about six inches (15 cm) tall, the stems are green to blue-green globes or cylinders, usually less than two inches (5 cm) across. Their surface is covered by tubercles, each bearing numerous white radial spines and fewer darker central spines.

Spinystars typically grow in clusters. To learn more about these formations, visit page 111.

**Spinystar**  
*Escobaria vivipara*



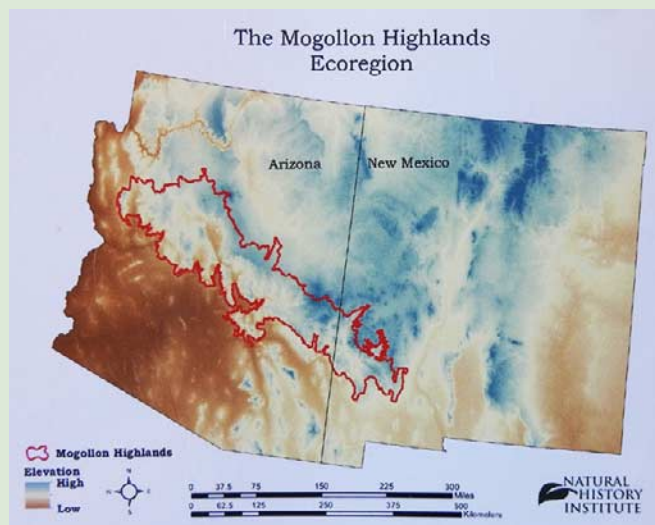
BOOK REVIEW *Ellen Dorn, University of Arizona Herbarium, Tucson; and Arizona Native Plant Society, Tucson Chapter*

## Woody Plants of the Mogollon Highlands: A Field Guide and Botany Companion

by *Carl and Joan Tomoff* with design by Melina Walling and technical editing by Bob Ellis and Thomas L. Fleischer 2019. The Natural History Institute. 167 pages, \$20.00. Available at bookstores or directly from the Natural History Institute, Prescott, Arizona. To order please call (928) 863-3232 or email [info@naturalhistoryinstitute.org](mailto:info@naturalhistoryinstitute.org)

*Woody Plants of the Mogollon Highlands*, by Carl and Joan Tomoff, is an affordable and packable field guide to over eighty woody and succulent species of plants occurring in that very interesting region of northern Arizona and New Mexico known as the Mogollon Highlands. The book is well-printed and well-bound. The authors bring years of experience to this book, living and teaching in the Prescott area. Carl Tomoff is an emeritus professor of environmental studies at Prescott College. Joan Tomoff is a retired math

and science teacher and is an avid and accomplished plant photographer whose excellent photographs are used to illustrate this book.



A look into this well-organized book should begin with the page entitled “How to Use This Book.” Following an excellent description of the physical and biological features of the Mogollon Highlands, the authors present a section entitled “Basics of Plant Biology,” a feature I have never seen before in a botanical field guide.

*continued next page*

## BOOK REVIEW **Woody Plants of the Mogollon Highlands** *continued*

That section consists of a very succinct discussion of many of the major aspects of plant biology, including descriptions of the major plant groups, the processes of photosynthesis and cellular respiration, plant growth and reproduction, and a number of other aspects of plant morphology and anatomy. It therefore adds a very informative perspective on how plants work and how they are studied which will be valuable to users without formal botanical training.

The authors identify and describe six separate plant communities in the Mogollon Highlands region — riparian deciduous woodlands, grasslands, interior chaparral, evergreen woodlands, Ponderosa pine forest, and mixed conifer forest. The discussions and illustrations of the individual plants identified are presented in the plant community section in which they most commonly occur. The illustrations are clear and beautifully presented so that many aspects of the individual plants are well-represented — flowers, fruits, leaves, stems, etc.

A particularly nice feature of this book is that some commonly confused plants are placed on opposite pages. For example, the cliffrose and the Apache plume are on opposite pages, as are the Engelmann prickly pear and the brownspine prickly pear. There is a group of pages on the willows, with a handy chart for comparison of individual characteristics.

Written in a clear style, this book is full of extremely useful information for anyone interested in learning more about the major native woody and succulent plants of the Mogollon Highlands as well as about many extremely interesting aspects of general plant science. In addition there are highlighted boxes on various topics throughout the text which are both informative and enjoyable to read.

This book will be a welcome addition to the field guide library of anyone with an interest in and love of Arizona native plants.



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#### SPOTLIGHT ON A NATIVE PLANT

*Douglas Ripley, Arizona Native Plant Society,  
Cochise Chapter*

## The Arizona Mesquites

Mesquite trees are a truly remarkable component of the Arizona flora. They are enormously well-adapted to the dry Southwestern climate by virtue of their extensive lateral and tap root systems for capturing typically limited rainfall. Members of the Pea Family (Fabaceae), they form a symbiotic relationship with nitrogen fixing bacteria in nodules on their roots which provide an important source of nitrogen fertilizer. As deciduous species, they shed their leaves in winter but may also drop leaves to conserve water in extreme drought conditions during the growing season. The importance of the mesquite trees for Southwestern Native Americans cannot be

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From top: Velvet mesquite. *Photo courtesy Doug Ripley.*  
Honey mesquite. *Photo courtesy Doug Ripley.*  
Screwbean mesquite. *Photo courtesy Arizona State University.*

## SPOTLIGHT ON A NATIVE PLANT *continued*

overstated as the plant's bean pods were historically a major food source which continues to be eaten to the present day. Many other uses of various mesquite parts were practiced by Native Americans for purposes ranging from producing intoxicating beverages, candy, dyes, material for basketry and coarse fabrics, and miscellaneous medicines for treating a variety of ailments. Mesquite flowers are an excellent source of honey and mesquite wood is prized for furniture construction owing to its dense tight grain and rich dark-reddish color. More mundane human uses include firewood and fence posts. Beyond their many uses by humans, the Arizona mesquites are of tremendous benefit to wildlife that use them as food, shelter, and habitat.

Described and named by Linnaeus, the genus *Prosopis* consists of 30–35 species found in warm temperate and tropical regions. There are three mesquite species in Arizona:

**Velvet Mesquite** (*P. velutina*). This is a very common tree or shrub occurring along washes, in bottomlands, slopes and mesas from 3,000–5,500 feet elevation. Its leaves are bipinnately compound and pubescent (hence its specific name *velutina*). It produces beautiful greenish yellow flowers in large spike-like racemes which in turn develop into pubescent, indehiscent legumes with a sweetish pulp. Its range is from Southern California, Arizona, New Mexico, to Northern Mexico. Since European settlement, velvet mesquite has expanded into grasslands due to livestock over-grazing and fire suppression. It was introduced to Africa and Australia where it is now a serious invasive species.

**Honey Mesquite** (*P. glandulosa*). This shrub to small tree is common in bottomlands and washes, on heavy soils in uplands and coarse soils of sandy flats. Its bipinnately compound leaves are glabrous or nearly so. Its flowers consist of spike-like racemes which produce large seeds born in linear indehiscent pods. As with the Velvet Mesquite, the seeds and other products of this plant were used extensively by ancient peoples in the Southwest. Its range is slightly larger than the velvet mesquite as it extends slightly farther north into Nevada and as far east as Oklahoma.



**Screwbean Mesquite** (*Prosopis pubescens*). The screwbean mesquite is a very distinct species that can readily be identified by its namesake fruits: tightly twisted seed pods which may serve to discourage predation by desert seed predators. Its greenish yellow flowers occur in spike-like racemes 2–5 inches long. Its range is very similar to velvet mesquite where it especially prefers playas and other areas of alkaline substrates. As with the other Arizona mesquites, it too has served for centuries as a tremendously valuable resource for Native Americans.



Flowers of screwbean mesquite. *Photo courtesy Doug Ripley*



Velvet mesquite. Photo courtesy Max Licher

## Desert Tree of Life *In the Beginning*

by Richard Stephen Felger, Herbarium, University of Arizona

DesertFoodPlants.org

Little mesquite grows a root down deep  
on through her ground sloth poop incubator  
or maybe it was an elephant and only 13,000 years ago

It is the end of the 19th century  
Apaches have been driven out and nobody knows  
how good mesquite tastes, or how to prepare it

It is 2040, hot and dry  
Half the world grows mesquite and big sacaton

Listen to Mesquite Talking-tree:

I am mesquite  
desert tree of life

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Flowers of velvet mesquite.  
Photo courtesy Doug Ripley



Pods of honey mesquite. Photo  
courtesy Elroy Limmer

## Desert Tree of Life *continued*

We evolved in South America

We are legumes, the Legume Family  
20,000 species around the world  
little ephemerals to giant trees  
tropics to the top and bottom of the world

We give the land bio-nitrogen  
with a little help from our associates  
the nitrogen fixer bacteria  
and spread even into nutrient deserts

We are legumes, we feed life  
we feed civilization

We served ancient desert people  
North and South America  
cradle to grave

food and fuel  
for low-population  
hunter-gatherers  
to cycles of civilization  
overpopulating towns to nations

500 years ago Spaniards likened us to their  
Andalusian Tree of Life

Carob tree, *el garrobo*, *algarobo*  
from ethnic cleansed Moors

They called us *algarobo* trees  
and *algarroba* pods

Old Carl von Linné so fond of French Horns  
named our genus *Prosopis*  
based on a tree from Pakistan

Old Word prosopi have small near worthless pods  
Here in the New World, our *Prosopis* have nice big pods  
well, most of them,  
named and set off as Section *Algarobia*  
by George Bentham in 1839  
based on a big *algarroba* from the Argentine desert

We evolved South American *Algarobia* ancestors  
into two dozen sister species  
Then one ran away north after the Panama land bridge  
but that Caribbean species has bitter pods

When did sweet mesquite get to Mexico  
and your southwest Deserts?

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## Desert Tree of Life *continued*

It's 19,000 years ago on a hard rock slope near Yuma  
a packrat gang hoards mesquite pods  
chews the sweet pulp  
and shoves husks, hard pits and seeds into a corner of their cave  
and pees on the garbage  
like their elders and grandkids

preserving trash for Paul Martin and students  
to discover in middens dated with carbon 14  
Mesquite is still here but down in the washes  
where deep roots tap soil moisture

It wasn't so dry then, when pinyons  
thrived with the mesquites  
lakes and cienegas  
and the Colorado ran river full

who else eats the sweet pods  
down along the river gallery floodplain  
before The People poured in from the North

It's the end of the Ice Age 12,500 years ago  
Fatty rock squirrel stuffs her cheeks with pod pieces  
for her babies  
dodging shrub-ox  
mammoth, camelops  
bear, coyote, javelina  
and 1,000-pound Shasta ground sloth  
smallest of North American sloths  
they all eat our fruit  
Over 50 species of eager bees  
pay no attention  
as doves and hummingbirds dive for floral nectar

It's 1828, our intrepid Father Alexis Bachelot  
brings *Prosopis limensis* from Peru to Hawaii  
The children call it *kiawe*  
to sway in breeze from the ocean sea  
all this as *Algarobia* ship out  
to Africa, Asia, and Oceania

Remember the one that ran away to the north  
so long ago  
evolving our Mesquite Tree of Life



Pods of screwbean mesquite. Photo courtesy Doug Ripley



# THE ARIZONA NATIVE PLANT SOCIETY

PO Box 41206  
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[www.aznativeplantsociety.org](http://www.aznativeplantsociety.org)



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For more information, please drop us a line, visit [www.aznativeplantsociety.org](http://www.aznativeplantsociety.org), or get in touch with one of the chapter contacts below:

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