

the  
PLANT PRESS



L.B.H.

*Antennaria marginata* (Pussy-toes)  
drawing by Lucretia Hamilton  
courtesy of Univ. of Arizona Herbarium

The Plant Press is a quarterly newsletter published by the Arizona Native Plant Society. Volume 6, Number 1/2 (Spring/Summer 1982) was printed in August 1982. The editors are Judy Conger, George Yatskievych and Margaret Kurzius.

TABLE OF CONTENTS

Cacti of the Southwest (W. Hubert Earle)..... 1  
A review of the book by G. Yatskievych

Desert Landscaping..... 3  
Continuing column by Greg Starr

Fern Talk..... 5  
More fairy tales by Yatskievych

Native Plant News..... 8  
What's happening with native plants  
in our state capitol, by Tom VanDevender

Society News and Miscellany..... 9  
To keep you up to date

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Juniperus deppeana  
(alligator juniper)  
drawing by Margaret Kurzius

Review of: Cacti of the Southwest,  
Revised with Color. Written  
and published by W. Hubert  
Earle. review by G.Y.

Upon examining Cacti of the Southwest it is immediately obvious that this is a work of love on which the author has lavished many hours of time and study. Those who know the earlier edition of this book also tell me that this revision is a big improvement over the original.

Keeping these facts in mind, it is indeed a pity that the work is not all that it could be. Most of the errors and inconsistencies present could have been avoided or corrected through a measure of proper editing and proofreading. One might ignore the various grammatical errors, but mistakes and inconsistencies in the construction of the whole are of more serious import.

While the book should be examined by all cactologists I think that its main use is to the large body of amateurs with a more aesthetic interest in the native flora. Keys (presumably for use in plant identification) are confusing and poorly constructed and should be ignored. Further, the author combines chollas, club chollas, and prickly-pears under the genus Opuntia in the keys, but lists them as separate genera (Cylindropuntia, Corynopuntia, and Opuntia, respectively) in the species descriptions.

A lack of proofreading is also apparent in the species descriptions. For example, Coryphantha orcuttii is separately described under both the genera Coryphantha and Escobaria. Some of the author's taxonomic opinions are also not common in current usage, so readers might look elsewhere for both the taxonomic and identification aspects of native cacti. To the books credit, the included synonyms for each taxon are good and very useful in correlating Earle's accepted names with those in other

references.

Having stated some of the more obvious problems with Cacti of the Southwest, it is now time to explain why I think that it should be at least examined anyway (in fairness to the author, to whom I am indebted for providing a complimentary copy for this review). Why buy the book? Foremost for the photographs. While the line drawings and Black & White photos in Lyman Benson's The Cacti of Arizona (the standard local reference) are generally more useful than the B & W's in Cacti of the Southwest, the large number of color plates in the latter (131, not counting the cover) are of great value. This book is the only volume on local cacti wherein flower and fruit colors are unambiguously detailed for a wide variety of species. Almost all of the photos are correctly identified.

The species and varieties included also make this book valuable to the Arizona cactophile. Several new varieties have been described since the last edition of Benson's The Cacti of Arizona and some new species have also since been recognized for the state. Only in this volume can the reader find all of these taxa included. Further, because the book treats species in areas adjacent to Arizona, in addition to the indigenous taxa, the reader will still find descriptions and photos of them if these species are found to grow in Arizona.

The descriptions and distributions for species in the book are generally adequate and useful, although having some distribution maps, or a more detailed introductory map, would have been nice. Some minor portions of the descriptions can also be a little confusing. At the end of the book are a useful glossary and two indices.

The general index is good, although the genus names are not adequately separated from the accepted species names (a minor point). The common name index is difficult to use, because the

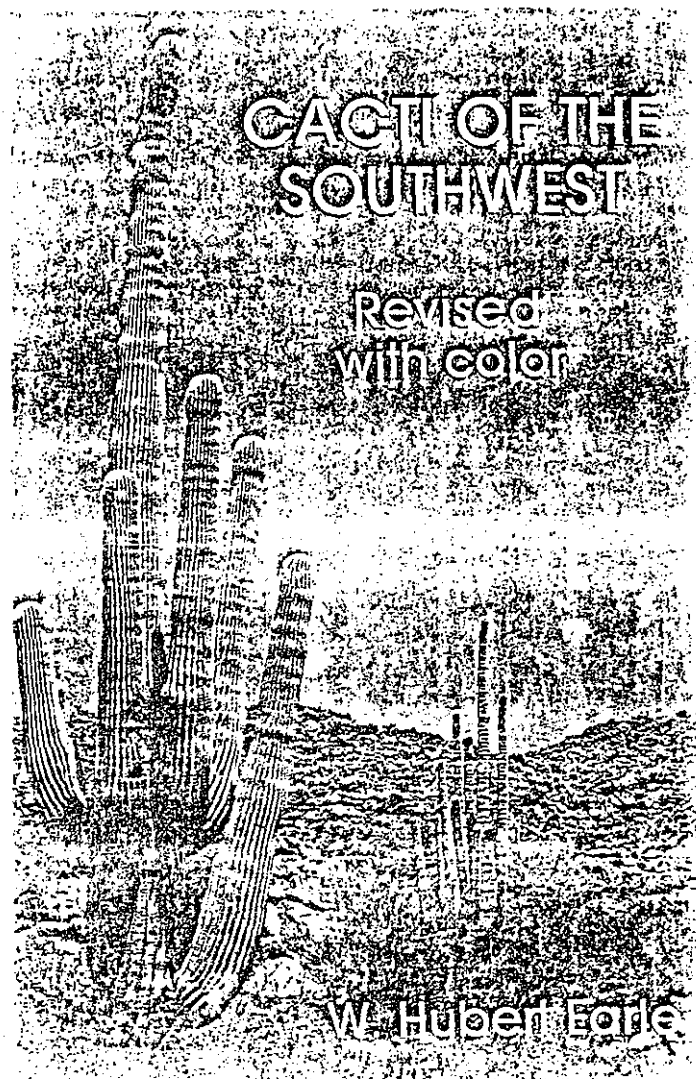
reader must know the proper key word to find a given species. For example, all species which the author calls cereus (common name) in the text are listed under "Night Blooming (Cereus)" in this index. Familiarity with the common name index would follow continued use of the book.

On the minus side, we now come to one of my "pet peeves". Near the end of the book are two sections entitled "Bibliographies of Authors" and "Plants Named by, or for Persons". The former is poorly researched and should have been included in the form of a "Literature Cited" section. As a bibliography this section is neither complete enough to include all important publications by authors nor specific enough to omit irrelevant titles. Thus the list includes "A Report on Several Species of *Lycium* from the Southwest Deserts", by Ira Wiggins, but the important publications of David Hunt on *Mammillaria* and related cactus genera, of which one is cited in the text, are omitted. Further, many of the bibliographic citations are incomplete, and are therefore useless because they cannot be easily traced by the reader.

The section entitled "Plants Named by, or for Persons", due to its brevity, gives the reader a false impression of many of the people involved and tells the reader essentially nothing about others. This entire section should have been omitted, with biographical comments limited to the text portion of the book. In fairness, it should be pointed out that neither of the above supplementary sections decreases the usefulness of the book on a general level.

To summarize, Cacti of the Southwest will be of differing use to various readers, depending on specifically what the particular person hopes to learn from the work. While the reviews and assistance of several prominent botanists, cactophiles, and institutions is acknowledged at the book's beginning, it is obvious that this help was of

relatively little impact on the final product, which was crafted in total by Mr. Earle. In conclusion, this book is hesitantly recommended because of the reservations and disagreements expressed in this review. As previously mentioned, this book should at least be examined by everyone interested in native cacti, but should be taken with a liberal grain of salt in practical use.



Desert Landscaping  
by: Greg Starr

In my last article, we discussed trees that have been grown commercially for some time, but have generally been neglected for both commercial and residential landscapes. Now I want to introduce you to some of the colorful flowering shrubs which will add some contrast to your landscape design.

The object of my work is to consider drought resistant material from all the arid regions of the world for possible use in landscaping, but to please the hardcore "native planter" I will here discuss only plants native to the Sonoran Desert. Some of these shrubs actually grow at slightly higher elevations that receive more rainfall than the desert, but through regular watering the first few seasons these will become established and require very little supplemental water.

A few words on proper watering: After planting, turn the hose on to a slow drip and allow the water to run until the soil is moistened thoroughly to several feet deep. Generally this takes several hours or overnight. Proper watering will encourage the roots to grow downward and this will give the plant a greater resource base to later draw from. Afterward always water deeply, as shallow irrigation can do more harm than good. Other articles in past and future issues of this Newsletter will go into more detail on proper watering, so we will now discuss the shrubs themselves:

Calliandra californica  
(Cabello de Angel)

This is a fairy-duster with bright green leaves that provide a good background for the showy red flowers. It can grow to 3 feet in both height and width and flowers appear almost continuously in warm weather (although the best dis-

plays are from late spring to early fall). A related species is C. peninsularis, which is similar in appearance, but is probably less hardy.

Encelia farinosa  
(Brittle bush)

Common throughout the southwest, this plant is usually seen as a rounded shrub 3 to 5 feet tall. From the woody base grow woody stems which die out after a few years, making occasional heavy pruning a necessity, to promote new growth. The bright yellow flowers are produced on tall stalks above the striking grayish-white foliage, and can appear as early as late fall, with the best show in late winter or early spring.

Jacobinia ovata  
(Red Jacobinia)

This is a shrub reaching 6 feet tall in frost-free locations, but is generally kept to about 3 feet by periodic frosts (hardy to 25 - 29 degrees Fahrenheit). It is evergreen and produces branches from below the ground, with bright green leaves to 2 inches in length and 1½ inches in width. The brilliant red flowers appear in late fall, and flowering may continue through the winter if the weather is mild. Established plants recover quickly from frost damage.

Penstemon eatonii  
(Eaton's Penstemon)

This "beardtongue" is an herbaceous perennial which grows to 2 feet tall, with reddish-purple stems and leaves. The funnelform scarlet flowers are displayed on foot long stalks from spring through summer. The species is very hardy and adds a splash of color to the best of landscapes.

Ruellia californica  
(Rama parda)

Rama parda is a compact, rounded, evergreen shrub to about 3 feet tall and 4 feet wide. Leaves are about 1 inch long and ¾ inch wide. Purple funnelform flowers occur singly

on short axillary peduncles from late summer through winter. The hardiness of rama parda varies with microclimate but plants will generally tolerate temperatures to the mid 20°F and frost damaged plants recover quickly in the spring. A related species is Ruellia peninsularis, also known as rama parda. This species is very similar but tends to grow more upright and less spreading than R. californica, and has slightly darker flowers.

Tecoma stans  
(Yellow trumpet bush)

This is a 6 to 10 feet tall shrub, but may become a larger tree in frost-free areas. It is cold deciduous, but is hardy to about 25°F. The showy, bright yellow trumpet flowers are in clusters up to 8 inches long. Blooming occurs in response to warm weather and water.

Verbena ciliata  
(Mexican vervain)

An herbaceous perennial with a bushy, spreading form, this plant can obtain mature size in a single growing season. It prefers partial shade and loves cold weather. The short, dense spikes of rich, purple flowers can bloom nearly year-round, but the best displays seem to be in the spring and fall. Verbena gooddingii, a related species, is very

similar in appearance, but the flowers tend to be a lighter pinkish lavender.

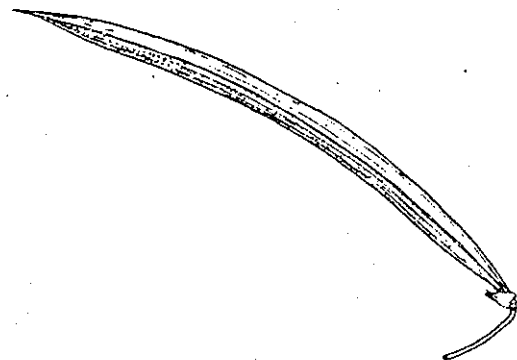
Zauschneria californica  
(Hummingbird trumpet bush)

This perennial herb is best kept pruned to 1 or 2 feet tall. Proper care rewards the gardener with a very attractive display of numerous bright red flowers in the fall. Plants spread by underground runners and can become invasive in formal gardens. They will also soon dominate a container or raised-bed planting, and prefer the filtered shade that many leguminose trees will provide.

Zinnia grandiflora  
(Prairie Zinnia)

This showy subshrub forms dense clumps 8 to 10 inches tall. Inch broad yellow flowers splash across the plants from April to November. Mass plantings make a colorful addition to informal desert landscapes within a single season.

All of the above species are commercially grown at one time or another throughout the year and should be available in most native plant nurseries. Groups or mass plantings of a single species are most striking and many gorgeous combinations of groups can be achieved through careful planning. Almost all of the plants discussed are compatible with each other and with common desert trees that are available, so with some careful thought you too can add a splash of color with native desert shrubs.



Tecoma stans  
drawing by Lucretia Hamilton

Fern Talk (And Now For Something Completely Different). G.Y.

This is a story of botanical investigation, from which several lessons may be learned. To tell these now, however, would give away the ending, so let us begin at the start:

Once upon a time there lived in Prague, Czechoslovakia, a man named Karel B. Presl. Presl was a botanist who spent a great deal of time working with the many plant collections that his friend, Thaddeus Haenke, a pioneer plant collector, had made in the western half of North America. One such collection Presl described as a new fern species, Notholaena incana (1825). Although only part of the original collection was actually this new species, the name was shown to be valid, and has persisted.

Now, as it happened, this interesting fern was later found to grow in scattered locales over a broad area, from northern Mexico to Central America. The plants themselves were pretty, with deeply divided fronds; bright green on the upper surface and covered with a striking white farina below. These same characters, however, also made the species somewhat nondescript, as several related species looked superficially very similar, and could be distinguished by contrasting relatively minor characters. Thus, while Notholaena incana was known from a broad geographic area, it was also easily confused.

Let us, then, turn our attention closer to home and focus, some 56 years later, on John G. Lemmon. Lemmon and his wife, Sara (for whom Mt. Lemmon, near Tucson, was named), were pioneer plant explorers in the southwest and are particularly remembered for their botanical discoveries in southern Arizona. In 1881, without realizing its identity, Lemmon collected a specimen of Notholaena incana from the Santa Rita Mountains of Santa Cruz County.

Eventually, this single specimen found its way to the herbarium of the Royal Botanic Gardens at Kew, England, where it rests today.

Something else should be known about John G. Lemmon. It was common knowledge that he would stuff his plants into his pack, in the field, and press his collections later. Occasionally, a plant might remain unpressed in the bottom of the bag for several weeks, before it was pressed along with collections from a totally different area. This presumed occasional error caused botanists to distrust the locality data from those Lemmon collections which could not be recollected in the following years. Some of these doubtful collections persist unverified to this day.

It was on the basis of this distrust that later workers such as Rolla Tryon (1956) and Conrad Morton (1960) excluded Arizona from the distributional range of Notholaena incana. Our saga is not yet complete, however, and is actually just beginning to get interesting.

We now skip to 1978, when this fern was first brought to my attention. Allan Zimmerman, a botanist working on the flora of Guadalupe Canyon, brought to me for identification a specimen of what turned out to be Notholaena incana (Guadalupe Canyon is in the Guadalupe (Peloncillo) Mountains, which straddle the state line in southeasternmost Arizona and adjacent New Mexico). This New Mexico collection was exciting, as it marked the first recent U.S. collection of an interesting species. Because Allan retained the specimen, however, the collection passed from my mind until later on.

In 1979, another specimen was sent to me by Dave West, an amateur botanist working in southern Arizona. Dave knew that his specimen, from the Patagonia Mountains in Santa Cruz County, was not any of the commonly recognized species for the state. My curiosity finally aroused, I decided to do 2 things: first to publish a

Figure 1: *Notholaena incana* Presl: a. habit, X1; b. undersides of fertile segments, X9; c. rhizome scale, X13. All drawn from Windham & Yatskievych 81-93.





report of the species in Arizona (1981) and second to begin a thorough investigation of the species in the United States.

My second course of action developed into an ongoing study, to analyze the distribution and characteristics of Notholaena incana, which I am coinvestigating with Mike Windham, a serious Pteridologist who is also working on a fern flora of Arizona. Figure 1 shows a drawing for an article in preparation on this subject. That is another story, however, and we should finish this one first.

Jack Kaiser, agricultural inspector, amateur botanist, and the most knowledgeable person on the plants of Santa Cruz County, has since discovered 3 new localities, Dave West found an additional population, and Mike and I discovered 2 on our own. Additionally, 3 localities, dating as far back as 1880, were found through the discoveries of previously misidentified herbarium specimens (by Mike and I at the Univ. of Arizona herbarium, and by Tim Reeves, a prominent Pteridologist, at the herbarium of the New York Botanical Garden).

Thus we see that a fern which was neglected for so long a time has finally found its place in the southwestern flora. There are lessons in this for all of us, both as botanists and as native planters. First and foremost, this story shows us the importance of the amateur botanist in modern botanical exploration. Too often, the amateur sees himself as unable to directly contribute to the storehouse of botanical knowledge and makes no serious attempt to share the occasional unusual or interesting discovery. Everyone interested in the native flora should make it their personal business to be on the lookout for

oddities or interesting plants.

One way to develop proficiency at spotting out-of-the-ordinary plants is to pick a group (family, genus, etc.) and to pay special attention to it when out in nature. Try to look for all local examples of this group and either collect small samples or keep records each time any member is found. This will not only aid in showing the natural variation in appearance, but will also serve to give an intuitive feeling of how the members are related.

Another lesson which may be learned from this story is the need for cooperation among workers making similar discoveries. Without the valuable input of several people our knowledge of Notholaena incana would not nearly be as complete as it is today. In fact, this little saga would never have been written.

Finally, a word on John G. Lemmon. It appears that Lemmon was somewhat misjudged during his lifetime, and thereafter. He was distrusted as a moody and unpredictable person and sloppy botanist by many of his contemporaries, and this feeling has persisted through the years. While no one can argue the greatness of Lemmon's exploratory accomplishments, as evidenced by all of the new species described from his collections, it is only in recent years that the authenticity of many of his geographically doubtful specimens is being established.

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NATIVE PLANT NEWS -  
Additions to Arizona Native Plant Law Denied

At a public hearing at the December 10, 1981 meeting of the Arizona Commission of Agriculture and Horticulture in Phoenix, 18 plants were proposed by the Arizona Natural Heritage Program for addition to the Arizona Native Plant Law. Letters of support were received from 19 people representing a variety of native plant societies, botanical gardens, universities, conservation groups and federal agencies.

Terry Johnson testified that these plants were proposed for protection by the State as a result of the data gathering activities of the ANHP under a contract from the State of Arizona. He stressed that the additions would not be an enforcement and economic burden on the Commission because the succulents are already protected generally and the non-horticultural plants are mainly the responsibility of federal land managers. Listing them would give administrative support from the State for the land managers. Tom Van Devender (ANHP), gave a brief summary of the distribution, ecology and threats of each of the 18 plants. Rusty Kologiski, regional botanist, U.S. Fish and Wildlife Service, presented an official statement from the FWS supporting the addition. He stressed that the State should take an active role in protecting Arizona's threatened and endangered plants and that there are federal monies available to use for state listed plants. Mary Butterwick, Bureau of Land Management, Phoenix District Office, presented the BLM's official viewpoint on protecting rare plants. They are particularly interested in Cowania subintegra (Burro Creek Cliffrose) and Echinocactus horizonthalonius var. nicholii (Nichol Turks Head). Listing the plants would give the BLM additional impetus to concentrate on the plants in inventory and monitoring efforts and consideration in management plans. BLM has some monies for protection projects.

John Olson, Executive Vice-President of the Arizona Cattle Growers Association spoke against the plant additions because the cattlemen do not need any further restrictions on their activities and do not want any additional land removed from grazing. He stressed that the additions would be an economic burden on the Commission. Jim Klinker of the Arizona Farm Bureau also spoke against the addition of plants to the Arizona Native Plant Law because it would encourage the federal government to list more threatened and endangered plants. He cautioned listing plants without careful study and economic analysis. He appeared unaware that an economic analysis is a part of the listing package used by the FWS. Again, he stressed economic burdens for the Commission.

General views expressed by Chairman Lynn Anderson and Commissioners Embree and Behan were concern for increased costs of enforcement and duplicating protection efforts by the federal government. The proposed addition was taken under advisement and a decision not reached. At the January 14, 1982, meeting of the Commission, Commissioner Behan moved that the listing of the plants be denied with the understanding that the Arizona Natural Heritage Program, the Cattle Growers, the farm group and others work on revising the list of protected plants in the Arizona Native Plant Law. This is a positive step toward improving our plant law although the proposed additions were denied.

Tom Van Devender  
Arizona Natural Heritage Program

## SOCIETY NEWS AND MISCELLANY

### Yuma Chapter Started

A new chapter of the Society was started in Yuma in February. Since then membership has grown to 40 and interest has been high.

Programs this spring have included presentations on "Desert Landscaping" by Charles Sacamano, "Plant Adaptations to the Desert Environment" by Paul Shaw, "Underutilized Plant Materials for Landscape Use in Arizona" by Carl Wilson, "Yuma Area Wildflowers" by Dallas Porter Ferguson and Pat Callahan, and "Parasitic Desert Plants" by guest speaker George Yatskievych.

Chapter activities have included several plant hikes--to the eastern foothills of the Gila Mountains, Antelope Hill, and Dripping Springs.

The Yuma chapter is geographically isolated, and needs the support of the Society's other chapters. The Yuma chapter hopes that any potential speakers travelling to the Yuma area will contact them and plan to talk. Write Carl Wilson (chapter President), at Yuma Extension Office, 1047 Fourth Av., Yuma, AZ 85364, or call 783-8338.

### Yuma Chapter FALL PROGRAM

October 11: Potluck dinner at Pat Callahan's (16880 Ave A, at the N.W. corner of the County 17 intersection, in Somerton). Slides of the Labor Day Native Plant Society visit to the Chiracahua Mountains will be shown. 6:30 or 7:00.

November 8: "Plants of Baja California". Presentation by Kent Newland of the Boyce Thompson Arboretum.

December 13: "Jojoba and Arizona". Talk by Dr. David Palzkill of the U of A, Tucson.

All meetings are held at 7:30 pm in the Yuma Extension Office conference room at 1047 Fourth Av., unless otherwise indicated.

### DEADLINE

Last date for receipt of news, articles and events for Volume 6, No. 3 of THE PLANT PRESS is September 30, 1982. GET IT IN SOON.

### CALENDAR OF FALL EVENTS OF INTEREST

October 16: Friends Day (for members only of Friends of the Arboretum). Special Program devoted to desert plants. Boyce Thompson Southwestern Arboretum, Superior.

October 16-17: Harvest Festival at Tucson Botanical Gardens.

October 30: Annual Native Plant Workshop. Sponsored by Tucson chapter of ANPS and held at Porter Gardens, 2150 N. Alvernon Way, Tucson, 10 am to 3 pm).

November 13: Annual Fall Landscaping Festival at Boyce Thompson Arboretum, Superior.

November 20-21: Desert Harvest Bazaar (including sale of cactus and succulents). Arizona Sonora Desert Museum, Tucson. (Tucson chapter of ANPS will have information table.)

### Seeds Sought

The Biological Control of Weeds Laboratory is looking for the seeds of several plants that grow in Arizona. The laboratory is researching the use of arthropods to control weed species, and need to work with closely related native plants to determine how specific the arthropods are in controlling the targeted weeds.

Plant seeds needed:

Cuscuta gronovii Willd.  
Evolvulus pilosus Nutt.  
Evolvulus sericeus Swartz  
Evolvulus alsinoides L.  
Evolvulus arizonicus Gray  
Cressa truxillensis H.B.K.  
Jacquemontia palmeri Wats.  
Jacquemontia pringlei Gray  
Convolvulus linearilobus Eastw.  
Ipomoea coccinea L.

If you know of sources for any of these seeds or can collect seeds from these species please contact:  
Catherine Geyer, Staff Research Assoc.  
U.S.D.A. Agricultural Research Western  
Region Service  
Biological Control of Weeds Laboratory  
1050 San Pablo Av.  
Albany, CA 94706