

The Plant Press

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PLANT LISTS AS TOOLS FOR PROTECTION AND RESTORATION

BILL KENDALL

I became interested in developing species distribution listings by township as a hobby and as a tool for individuals and developers so they would have appropriate information for plant salvage. I hope this will increase the number of protected native plants being salvaged on land being cleared for development. The information can also be used to protect sensitive species and their areas of occurrence. As this information is updated we will be able to monitor the changes in plant distribution over long periods of time.

In the listings, a distribution of protected native plants by township and section is presented following the species distribution listings for the township. Originally I had planned to list both protected native plants and non-protected native plants considered useful in landscaping by section, but that took too much time. The listings are compiled based on my observations, or on the observations by others. I attempt to keep the records as accurate as possible. All my information has been entered in a database.

A township consists of 36 sections (36 square miles) except for the "correction" sections that are slightly different. The recording of the distribu-

tion of the plants by legal description enables us to create more accurate maps of the distributions.

In some situations historic records of plant distribution are available. These can provide interesting comparisons of past and present conditions. Knowing what plant used to grow in an area now occupied by humans is especially useful for people or groups interested in returning their landscaping to a more native or natural state. The planting of native plants back into an area will also encourage the return of native animal species and improve the general ecology of the area.

Currently no one institution keeps detailed information on the distribution of plant and animal species. Having a single source for information would simplify the dissemination of this information to land use planners, environmental consultants and conservation organizations.

I hope the Arizona Native Plant Society will consider becoming the lead institution for this information and post relevant materials on its web site. By surveying and research we can begin to establish records of plants and animals that occur, or occurred, in a township area.

On page 6 is a list of only the protected plant species in one particular area, along with notations about the laws under which they receive protection. On page 9 is a list of the exotic species found in the same area.

The species included in this listing are from the area covered roughly by Tumamoc Hill, west of downtown Tucson, down to the Santa Cruz River. The original database separates this material by section, but here it has been

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PRESIDENT'S MESSAGE

BARB SKYE

Dear Native Plant Folks -

The shock of world events has left us dazed and confused. One might wonder, "What's the point in caring about native plants?" It is important to remember what makes humans not just survive, but thrive. Health in mind, body, and spirit collectively gives us the energy to reach beyond ourselves to care about the welfare of other beings - human and non-human.

Our native plants contribute to healthy desert habitats, and create the unique spirit and "signature" of southwest America. Habitat restoration not only restores habitats, but it also restores spirits. I smiled last night at the lengthening saguaro shadows coaxed by the moonlight. It is a powerful and serene setting that surrounds my Tucson Mountain home. Healthy habitats give inspiration to take on significant challenges.

A major step of strength for our organization has been the hiring of George Virtes as our ANPS Administrative Assistant. George and with his wife Gail, the ANPS State Treasurer, are the "dynamic duo!" They are assisting with core operations such as accounting, marketing, and membership services. ANPS hired Deena Fishbein, MBA, CPA, who completed our tax and corporation reports this year. Attorney Peter Goldman is generously donating pro bono services to advise the ANPS Board as we strengthen the infrastructure of our organization. We have the structure now in place to make significant strides for ANPS.

The next solid step is to update our by-laws. ANPS needs a clear blueprint to guide our organization into the next decade. Our newest board member, Barry McCormick, has fearlessly offered to chair our By-laws Committee. Barry has extensive experience in transforming by-laws into truly effective operational tools. Our past President, Mima Falk, has given us a huge boost by creating our first electronic version of the by-laws. Mima took on the daunting task of leading several Board meetings that clarified ANPS by-laws. Our Board can now finalize this important document.

Horace Patrick Miller would take care of business no matter what obstacles he faced. The Arizona Native Plant Society is following his lead to broaden knowledge and appreciation of plants and habitats native to Arizona. Yes, progress is well underway!

Warm regards, Barb Skye

REMEMBERING AN OUTSTANDING BOTANIST: JACK KAISER



The Arizona Native Plant Society and local plant enthusiasts lost a dedicated botanist when Jack Kaiser died in mid-October 2001 after a long period of illness. He was undoubtedly the preeminent botanist for Santa Cruz County for the past half century or so.

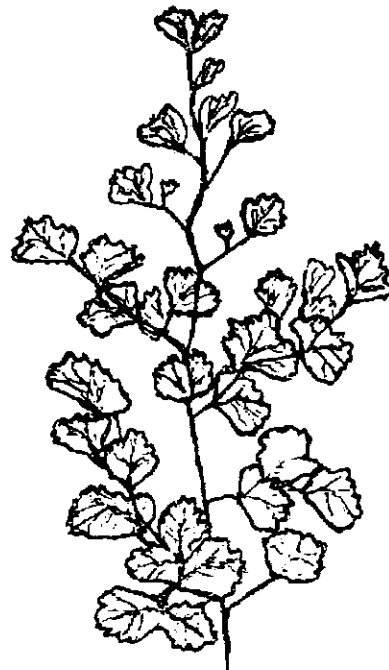
His profession for many years was plant pathologist/botanist for United States Department of Agriculture in Nogales where he had many duties including inspection of plants at the border crossing. Matt Johnson recalls how helpful Jack was to botanists such as himself. He left a great collection of seeds, records of plant diseases, and pressed plants in the collection there.

He went with Howard Gentry to Mexico on field trips and together they discovered several new species plants. He led many field trips in Santa Cruz County for the Arizona Native Plant Society and other groups. People who went on his field trips often recalled not only his incredible in-depth knowledge of the plant, but his willingness to share that knowledge with participants. Jack was a member of the Arizona Native Plant Society state board until his health made it too difficult for him to go to meetings.

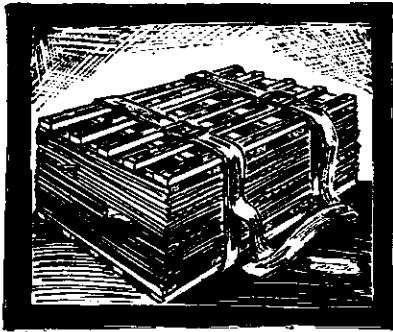
Joel Floyd recalls: "He had a bad knee from a fall off his roof, and in the last years of his hiking, I was able to go with him to Sycamore Canyon where he was interested in finding ferns. There were some plants in side canyons he wanted to see, but just couldn't reach. It was after dark when we got out of the canyon because he was slow with that bum leg. But he persisted in hunting plants anyway. He drew pictures of the ferns and they were published in the Plant Press in summer 1994"

His life-long project was to produce a flora of Santa Cruz County and as people who went on field trips with him know well, he knew every plant, common and rare in that area. He had incredible recall about when and where he had seen plants and also documented those plants with photos and descriptions. Many people tried to get him to publish his list of Santa Cruz County plants, but he was always trying to find one or two more rare plants in some remote canyon or hilltop. Publication was difficult because color printing for a book of such a limited market would have been very expensive. People familiar with his work are hoping that some means can be found to publish his extensive plant list and illustrations which he so painstakingly assembled.

Just before his death he donated his manuscript with all the photos and his plant collection to the University of Arizona herbarium where they can be studied by anyone interested in the plants of Santa Cruz County.



Adiantum capillus-veneris Maidenhair fern.
Drawing by Jack Kaiser.



ARIZONA HERBARIA III: THE DESERT BOTANICAL GARDEN HERBARIUM

WENDY C. HODGSON

When E.R. "Jim" Blakely, the Desert

Botanical Garden's Assistant Botanist, assembled the Garden's first set of herbarium sheets in 1950, he was not only putting together the initial pieces of an herbarium, but also a comprehensive research program. In 1953 two important gifts were added - the George B. Hinton collection of north and central Mexico specimens, donated by Mrs. Walter Douglas, and the Rose Collom collection of Arizona native plants she collected from 1930 to 1938. From this modest start of approximately 2200 specimens, the herbarium continues to focus on the flora of arid regions of the world, with particular emphasis on the southwestern U.S. and northern Mexico, and all plant communities within Arizona. Taxonomic specialties include Cactaceae and Agavaceae.

The herbarium was originally in a closet in a room (a former bedroom) off Webster Auditorium, according to Blakely. After putting in some shelves they were able to get enough money for two herbarium cases. Spurred on by small donations from members who knew the importance of these collections and the growth of this tiny herbarium, which soon filled three metal cases and one wooden replica case. Blakely left the Garden in 1956 to become Superintendent of the Santa Barbara Botanical Garden, and until 1970, the collections lay dormant. In a discussion with Mr. Hubert Earle, then Garden director in June 1970, Mr. J. Harry Lehr, a retired banker from New York State, offered to contribute one day a week for the purpose of reorganizing the herbarium. If Lehr's work proved satisfactory, he would become a paid member of the Garden staff. He began the tedious work of replacing the scotch tape on Hinton's collections and retrieving data for Mrs. Collom's specimens. The following year he joined the Staff as Curator of the Herbarium, coming into the Garden a half-day, twice a week.

Also in 1970, Earle received a rough sketch of a 48 by 25 foot building from a friend, Dr. Howard S. Gentry. Earle had told Gentry that the Garden had hopes of building an herbarium to house the Garden's growing collection of preserved plants and to provide space for plant scientists. Gentry had spoken to his friends at the

Garden about retiring from the Department of Agriculture in order to complete his research on the agaves of North America. With encouragement by his friends, Gentry took up residence at the Garden as Research Botanist in January 1972.

In 1971 the Board of Trustees approved the construction of a herbarium building. This building would not only provide office space for the Curator and Research Botanist but, of course, house the continually growing number of specimens, as well as Gentry's own numerous collections (Although the Garden Herbarium received many of Gentry's duplicate specimens, Gentry's herbarium was never integrated into the Garden Herbarium, having always remained a separate entity until his collections were later given to the University of Arizona herbarium). The new herbarium was dedicated to the memory of Lois Porter Earle, the late wife of Garden Director Earle. It was a fitting tribute as she had taken a profound interest in the Garden and its activities (she set up the first bookkeeping system) and was an avid desert enthusiast.

In March 1972 Lehr and Gentry moved into the herbarium with their respective specimens. Soon Lehr had managed to build the total number of specimens in the collection to more than 6,000 and had initiated the first exchange program with the University of California at Riverside, an institution with which the herbarium continues to exchange. In 1973 ten additional herbarium cases were purchased to contain the 9,000 specimens present at year's end. By 1976 the number of specimens had grown to 15,000 and more herbaria joined the program. Lehr also initiated the use of a taxonomic file for the purpose of reducing unnecessary handling of herbarium sheets. In 1976 the herbarium was one of only 105 herbaria in the nation to be designated as a National Resource Collection. In 1978 Lehr published "A Catalogue of the Flora of Arizona" with the purpose of providing a current checklist of Arizona flora. By the time he retired in 1984, Lehr had built up the herbarium collection to more than 26,000 specimens and had also added 11 new taxa to the flora of Arizona.

While enrolled in the Masters Program in Botany at Arizona State University, Wendy Hodgson joined the staff in 1974 as an illustrator

for Gentry. She later started collecting herbarium specimens at the encouragement of Lehr, Rodney Engard and Dr. Donald Pinkava, her major professor. Hodgson was named Lehr's successor as Herbarium Curator in 1984. She has continued to build the collection, emphasizing the documentation of plants from those areas, particularly in Arizona, that have received little botanical attention. She has made hundreds of collections, including cacti, from the Grand Canyon, and with Jon Rebman, San Diego Museum of Natural History, has made numerous noteworthy collections from south central Baja California. In 1990, with money awarded from an IMS grant, Hodgson was able to incorporate a compact storage system with additional herbarium cases, which would accommodate additional specimens over the next five years.

In the mid-1990s Hodgson and Edward "Ted" Anderson, Senior Research Botanist and Cacti Specialist, initiated a very large program to document the Garden's living collection with herbarium specimens by staff and a small group of dedicated volunteers. Hodgson continues to actively collect and manage the herbarium and is now focusing on the flora of the newly developed 780 mile Arizona Trail with the help of Liz Slauson. She also continues floristic work on the Colorado Plateau and other regions.

Today the number of specimens is approaching nearly 50,000. The herbarium continues to exchange specimens with more than a dozen other herbaria, and has an active loan program. Specimens continue to provide the basic, necessary taxonomic information for the evolving Vascular Plants of Arizona, The Flora of North America, and numerous other publications. Lehr's taxonomic file has been replaced by a data management system, in collaboration with the other large herbaria in the state: Arizona State University, University of Arizona, Northern Arizona University, and Navajo Nation. Not only will the Garden's herbarium collections be entered into a database to be retrievable by a variety of informative ways, they will be accessed over the internet, thereby increasing their usefulness as

well as increasing the community's awareness of the herbarium.

In addition to Blakely, Gentry, Lehr, and Hodgson, the herbarium has benefited tremendously from the collections or expertise of previous research staff members or associates, namely Rodney Engard, Russell Haughey, Bruce Parfitt, Alan Zimmerman, Gary Nabhan, Rick DeLamater, Fred Katterman, Liz Slauson and Ted Anderson. The Herbarium is also home to a number of Leonora Curtin's ethnobotanical vouchers cited in her classic work, *By the Prophet of the Earth* on the Salt River Pima Indians.

Wendy Hodgson is the curator of the Desert Botanical Garden Herbarium and the author of the book reviewed on page 10 of this issue.

A Fly Called Iyaiyai and other true stories of scientific name-calling.

For an amusing and eye-opening article about scientific nomenclature, see the May 26, 2001 issue of Science News. The author documents some pretty amazing stories of how species got their names. For example, here are some actual names of insects: *Verae peculya*, *Heerz lukenatcha*, *Dysop irae*, and *Agra vation*. One scientist knew that his name would not be accepted by the powers that be if he published it in an English journal, so he sent *Phthiria relativitae* to a Polish journal who did not get the joke and the name was approved. Often species are named for famous people such as the midge that was named *Dicrotendipes thanatogratus* (Latin for "Grateful Dead").

There is also an owl louse named *Strigiphilus garylerson*, after an artist who drew his share of louse-like critters. Botanists seem to have a less developed sense of humor than the invertebrate guys.



Agra sasquatch

Cont. from page 1

combined for publication purposes and to protect the locations of certain highly sensitive species.

In my database for this area there is a species distribution listing for the area, a distribution listing for protected native plants, and a historical record. The list presented here includes only the plants protected by the the Arizona Native Plant Law, the Endangered Species Act, and local ordinances.

The Arizona Native Plant Law (NPL) protects many of the plants on this list, and certain restrictions may apply. The Arizona Department of Agriculture encourages the protection and salvage of these plants to the greatest extent feasible. In most cases the Arizona Revised Statutes requires that the Arizona Department of Agriculture be

notified prior to the destruction of protected native plants in land clearing activities. For more information on the Arizona Native Plant Law, see page 14. Other plants are protected in various ways by the Federal Endangered Species Act and by local ordinances, as noted.

The following listing of plants includes all of the protected plants reported as occurring in this township. Protection status granted by the Arizona Native Plant Law (NPL), as well as by city, county, town, and federal laws has been included. This listing is not complete, and government agencies should be contacted concerning changes in the protection status of plants. See page 8 for an explanation of the abbreviations.

PROTECTED PLANTS IN TOWNSHIP 14 SOUTH,
RANGE 13 EAST, PIMA COUNTY, ARIZONA
WILLIAM KENDALL

BOTANICAL NAME	COMMON NAME	NPL	ESA	LOCAL
Agavaceae. Agave Family				
<i>Yucca elata</i> Engelm. var. <i>elata</i> ,	soaptree yucca	SR		S,T,P,O,M
Apiaceae. Parsley Family				
<i>Lilaeopsis schaffneriana</i> (Schltdl.) Coult. & Rose ssp. <i>recurva</i> (A.W. Hill) Affolter (<i>Lilaeopsis recurva</i> A.W. Hill)*	Huachuca water umbel		E	
Bignoniaceae. Bignonia Family				
<i>Chilopsis linearis</i> (Cav.) Sweet var. <i>arcuata</i> Fosberg	western desert-willow	SA		S,T,P,M
Cactaceae. Cactus Family				
<i>Carnegiea gigantea</i> (Engelm.) Britt. & Rose (<i>Cereus giganteus</i> Engelm.)	giant saguaro	SR		S,T,P,M,O
<i>Carnegiea gigantea</i> (Engelm.) Britt. & Rose (<i>Cereus giganteus</i> Engelm.)	saguaro - crested form	HR		S,T,P,M,O
<i>Echinocereus fasciculatus</i> (Engelm. ex B.D. Jackson) L. Benson var. <i>fasciculatus</i> (<i>Echinocereus fendleri</i> (Engelm.) Rümpler var. <i>fasciculatus</i> (Engelm. ex B.D. Jackson) N.P. Taylor, <i>Echinocereus fendleri</i> (Engelm.) Rümpler var. <i>robusta</i> L. Benson; <i>Mammillaria fasciculata</i> Engelm.),	bundle hedgehog cactus	SR		
<i>Ferocactus wislizenii</i> (Engelm.) Britt. & Rose	fishhook barrel cactus	SR		S,T,P,M,O
<i>Ferocactus wislizenii</i> (Engelm.) Britt. & Rose <i>forma cristata</i> ,	fishhook barrel cactus - crested form	SR		S,T,P,M,O
<i>Mammillaria grahamii</i> Engelm.	Graham pincushion cactus	SR		
<i>Opuntia engelmannii</i> Salm-Dyck ex Engelm. var. <i>engelmannii</i> (<i>Opuntia</i> <i>phaeacantha</i> Engelm. var. <i>discata</i> (Griffiths) L. Benson & Walkington), Engelm	prickly-pear cactus	SR		M,O

BOTANICAL NAME	COMMON NAME	NPL	ESA	LOCAL
<i>Opuntia fulgida</i> Engelm. var. <i>fulgida</i>	chain-fruited cholla	SR		M,O
<i>Opuntia fulgida</i> Engelm. var. <i>mammillata</i>	smooth chain-fruited cholla	SR		
<i>Opuntia kleiniae</i> DC. var. <i>tetracantha</i> (Toumey) W.T. Marshall (<i>Opuntia tetrancistra</i> Toumey)	four-spined cholla	SR		
<i>Opuntia leptocaulis</i> DC.,	desert Christmas cholla	SR		
<i>Opuntia phaeacantha</i> Engelm. var. <i>major</i> Engelm.,	major prickly-pear	SR		
<i>Opuntia santa-rita</i> (Griffiths & Hare) Rose (<i>O. violacea</i> Engelm. ex B.D. Jackson var. <i>santa-rita</i> (Griffiths & Hare) L. Benson	Santa Rita prickly-pear	SR		
<i>Opuntia spinosior</i> (Engelm.) Toumey	cane cholla	SR		
<i>Opuntia versicolor</i> Engelm	staghorn cholla	SR		
<i>Peniocereus greggii</i> (Engelm.) Britt. & Rose var. <i>transmontanus</i> Engelm.	desert thread-cereus	SR		S,T,P,M
Caprifoliaceae. Honeysuckle Family				
<i>Sambucus mexicana</i> Presl.,	desert elderberry			M
Chenopodiaceae. Goosefoot Family				
<i>Atriplex canescens</i> (Pursh.) Nutt.,	four-winged saltbush			M
<i>Atriplex polycarpa</i> (Torr.) S. Watson,	desert saltbush			M
Cucurbitaceae. Gourd Family				
<i>Tumamoca macdougalii</i> Rose, MacDougal	Tumamoc globeberry	SR		MO
Fabaceae. Pea Family				
<i>Acacia constricta</i> Benth.	whitethorn acacia			S,T,P,M
<i>Acacia greggii</i> A. Gray var. <i>arizonica</i> Isely (A. <i>greggii</i> A. Gray)	catclaw acacia			S,T,P,M
<i>Cercidium floridum</i> Benth.,	blue paloverde	SA		S,T,P,O
<i>Cercidium microphyllum</i> (Torr.) Rose & Johnst.,	foothill paloverde	SA		S,T,P,M,O
<i>Olneya tesota</i> A. Gray	desert ironwood	HR,SA		S,T,P,M,
<i>Parkinsonia aculeata</i> L.	prickly Jerusalem thorn			
<i>Prosopis pubescens</i> Benth.	screwbean mesquite	HR,SA		S,T,P,M,O
<i>Prosopis velutina</i> Woot., (<i>Prosopis juliflora</i> (Swartz) DC. var. <i>velutina</i> (Woot.) Sarg.)	velvet mesquite	HR,SA		S,T,M,O
Fouquieriaceae. Ocotillo Family				
<i>Fouquieria splendens</i> Engelm.	coachwhip ocotillo	SR		S,T,P,M,O
Juglandaceae. Walnut Family				
<i>Juglans major</i> (Torr.) Heller	Arizona black walnut			T,M
Lilaceae. Lily Family				
<i>Allium macropetalum</i> Rydb.,	large-petaled onion	SR		
<i>Calochortus kennedyi</i> Porter var. <i>kennedyi</i>	desert mariposa	SR		
<i>Dichelostemma pulchellum</i> (Salisbi) Heller var. <i>pauciflorum</i> (Torr.) Hoover	few-flowered covena	SR		
Oleaceae. Olive Family				
<i>Fraxinus pennsylvanica</i> Marsh. var. <i>velutina</i> (Torr.) G.N. Miller	Arizona ash			T,M

BOTANICAL NAME	COMMON NAME	NPL	ESA	LOCAL
Rhamnaceae. Buckthorn Family				
<i>Condalia warnockii</i> M.C. Johnst. var. <i>kearneyana</i> M.C. Johnst.	Kearney condalia			T,M
<i>Ziziphus obtusifolia</i> (Hook. ex Torr. & A. Gray) Gray var. <i>canescens</i> (A. Gray) M.C. Johnst. (<i>Condalia lycioides</i> (A. Gray) Weberb. var. <i>canescens</i> (A. Gray) Trel.)	greythorn			T,M,O
Salicaceae. Willow Family				
<i>Salix gooddingii</i> Ball (incl. var. <i>variabilis</i> Ball)	Goodding willow			T,M
Sapindaceae. Soapberry Family				
<i>Sapindus drummondii</i> H.&A. (<i>S. Saponaria</i> L. var. <i>drummondii</i> (H.&A.) L. Benson)	western soapberry			T,M
Zygophyllaceae. Caltrop Family				
<i>Larrea divaricata</i> Cav. ssp. <i>tridentata</i> (Sesse & Moc. ex DC.) Felger & Lowe (<i>L. tridentata</i> (Sesse & Moc. ex DC.) Cov.)	creosote bush			M

* Once occurred in the Santa Cruz River Valley near Tucson, being considered for reintroduction

** Introduced ornamental, native to the Castle Dome Mountains (Yuma County) and the foothills of the Coyote and Baboquivari Mountains (Pima County) in Arizona

KEY TO THE ABBREVIATIONS

NPL: Arizona Native Plant Law

HR = Harvest Restricted, HS = Highly Safeguarded, SA = Salvage Assessed, SR = Salvage Restricted

ESA: E. Plants listed for protection in the Endangered Species Act as Endangered

Local Ordinances

S: Plants listed for protection by the City of Scottsdale in Article V.

T: Plants listed for protection by the City of Tucson in Article III,

P: Plants listed for protection in the Pima County Native Plant Preservation, Chapter 18.72,

M: Plants listed for protection in the Town of Marana Title 20,

O: Plants listed for protection in the Town of Oro Valley Article 14 – Addendum “H” Oro Valley Protected Native Plant List

ACKNOWLEDGMENTS

The following works were crucial in preparing the complete list which includes both of the lists printed here:

A Revised Vascular Flora of Tumamoc Hill by Janice E Bowers and Raymond M. Turner, 1985

Vegetation Groups in the Desert Laboratory Domain by J. J. Thornber, , 1909.

The author thanks Philip D. Jenkins, Assistant Curator, University of Arizona Herbarium and Matt Johnson, Director of the Desert Legume Project for reviewing the complete list.

Bill Kendall is a Special Investigator with the Office of Review and Investigations at the Arizona Department of Agriculture. He was for many years an Enforcement Officer for the Enforcement Office for the Native Plant Law and Cultural Resources. In the 1980s he was President of the South Central Chapter of the Arizona Native Plant Society.

EXOTIC PLANTS IN TOWNSHIP 14 SOUTH, RANGE 13 EAST, PIMA COUNTY, ARIZONA

WILLIAM KENDALL

This list includes the exotic plants known to be naturalized in the area. It does not include species growing in landscapes. Species noted by J.J. Thornber in 1909 are indicated by*. Species controlled by the Arizona Weed Laws are indicated by**

Agavaceae, Agave Family

Agave americana L. century plant

Amaranthaceae, Amaranth Family

Amaranthus graecizans L. prostrate pigweed*

Anacardiaceae, Sumac Family

Rhus lancea African sumac

Asteraceae, Sunflower Family

Anthemis cotula L. dog fennel*

Centaurea melitensis L. Malta starthistle*

Conyza canadensis (L.) Cronq. horseweed*
(*Erigeron canadensis* L.)

Dimorphotheca aurantiaca DC. African daisy

Helianthus annuus L. common sunflower*

Helianthus petiolaris Nutt.

ssp. *fallax* Heiser prairie sunflower*

Hemizonia kelloggii Greene Kellogg starweed*

Hemizonia pungens

(H.&A.) T.&G. spikeweed

Lactuca serriola L. prickly lettuce

Matricaria matricarioides (Less.) pineapple weed*

Porter

Sonchus asper (L.) Hill spiny sowthistle*

Sonchus oleraceus L. annual sowthistle*

Verbesina encelioides (Cav.) golden crownbeard

Benth. & Hook. var.

exauriculata Robins & Greenm.

Xanthium strumarium L. common cocklebur*

(*X. saccharatum* Wallr.)

Cactaceae, Cactus Family

Opuntia ficus-indica (Linnaeus) Indian fig

Miller

Opuntia lindheimeri Engelmann cow's-tongue

var. *linguiformis* (Griffiths) prickly-pear cactus

L. Benson

Caryophyllaceae, Pink Family

Herniaria cinera DC. burst-wort

Silene gallica L. forked catchfly*

Chenopodiaceae, Goosefoot Family

Chenopodium album L. common lambsquarter*

Chenopodium murale L. nettleleaf goosefoot*

Salsola iberica Sennen & Pau

(*S. kali* L. var. *tenuifolia*

(Tausch.) Aellen) Russian thistle

Convolvulaceae, Morning Glory Family

Convolvulus arvensis L. field bindweed*,**

Ipomoea purpurea L. morning glory**

Cruciferae, Mustard Family

Brassica nigra (L.) Koch. black mustard*,**

Brassica tournefortii Gouan. African mustard

Capsella bursapastoris (L.) shepherd's purse*

Lepidium oblongum small peppergrass

Matthiola bicornis evening stock*

(Sibth. & Smith) DC.

Rorippa nasturtium-aquaticum water-cress*

(L.) Schinz & Thell

Sisymbrium altissimum L. tumble mustard

Sisymbrium irio L. London rocket

Sisymbrium orientale L. Sisymbrium

Cupressaceae, Cypress Family

Cupressus sempervirens Italian cypress

Cyperaceae, Sedge Family

Cyperus alternifolus umbrella plant

Cyperus esculentus L. yellow nutsedge*,**

Euphorbiaceae, Spurge Family

Euphorbia supina Raf. prostrate spurge

Fabaceae, Pea Family

Caesalpinia gilliesii Wall. bird of paradise*

Medicago hispida Gaetn. California bur clover*

Medicago polymorpha L. medic

var. *vulgaris*

Melilotus indicus (L.) All. sour clover*

Geraniaceae, Geranium Family

Erodium cicutarium (L.) L'Her. redstem filaree*

Hydrophyllaceae, Waterleaf Family

Phacelia parryi Torr., Parry phacelia

Lamiaceae, Mint Family

Marrubium vulgare L. horehound

Molucella laevis L. bells of Ireland

Malvaceae, Mallow Family

Malva parviflora L. cheeseweed*

Meliaceae, Melia Family*Melia azedarach* L. Chinaberry**Onagraceae, Evening Primrose Family***Gaura parviflora* Dougl. velvet leaf gaura*
(incl. forma *glabra* Munz and forma
lachnocarpa Weatherby)**Plantaginaceae, Plantain Family***Plantago major* L. common plantain***Poaceae, Grass Family***Agrostis semiverticillata* (Forsk.) C. Chr. water bentgrass**Arundo donax* giant reed*Avena fatua* L. wild oat**Bromus diandrus* ripgut brome* grass**Bromus rubens* L. red brome**Bromus tectorum* L. downy brome*Bromus willdenowii* Kunth.*(B. catharticus* Vahl.) rescue brome**Chloris virgata* Swartz. feather fingergrass**Cynodon dactylon* (L.) Pers. Bermudagrass**Digitaria sanguinalis* (L.) Scop. common crabgrass**Echinochloa colonum* (L.) Link. jungle rice**Echinochloa crusgalli* (L.) Beauv.(incl. var. *zelayensis* (H.B.K.) Hitchc.and var. *mitis* (Pursh) Peterm.) barnyard grass**Eragrostis barleri* Daveau. Mediterranean lovegrass*Eragrostis ciliannensis* (All.) Mosher. stink grass**Eragrostis echinochloidea* Stapf. lovegrass*Eragrostis lehmanniana* Nees. Lehmann lovegrass*Eragrostis pilosa* (L.) Beauv. Indian lovegrass**Hordeum leporinum* Link **(Critesion murinum* (L.)Love ssp. *leporinum* (Link) Love wild barley*Lamarkia aurea* (L.) Moench golden top*Lolium temulentum* L. darnel**Panicum capillare* L. var.*occidentalis* Rydb. witch-grass**Pennisetum ciliare* (L.) Link buffelgrass*Pennisetum ruppelii* Steud. fountain grass*Pennisetum setaceum* (Forsk.) Chiov. fountain grass*Phalaris minor* Retz. Littleseed Canary grass*Poa annua* L. annual bluegrass**Polypogon monspeliensis* (L.) Desf. rabbitfoot grass**Schismus arabicus* Nees. Arabiangrass*Schismus barbatus* (L.) Thell Mediterraneangrass*Sorghum halepense* (L.) Pers. Johnsongrass**Vulpia myuros* (L.) Gmel.*(Festuca myuros* L.) raitail vulpia***Polemoniaceae, Phlox Family***Eriastrum diffusum* (A. Gray) miniature starflower

Mason

Gilia achilleaefolia Benth.ssp. *multicaulis* (Benth.) V.&A. grant gilia***Polygonaceae, Buckwheat Family***Polygonum aviculare* L. prostrate knotweed**Polygonum lapathifolium* L. willow smartweed**Rumex crispus* L. curly-leaf dock*,****Portulacaceae, Portulaca Family***Portulaca oleracea* L. common purslane**Solanaceae, Nightshade Family***Nicotiana glauca* tree tobacco***Tamaricaceae, Tamarix Family***Tamarix pentandra* Pall. saltcedar**Verbenaceae, Vervain Family***Lantana horrida* H.B.K. lantana**Zygophyllaceae, Caltrop Family***Tribulus terrestris* L. puncture vine*

HYDRILLA INVASION

ED NORTHAM

Monsters are expected to have strange names like Godzilla, Darth Vader or Dracula. Thus, a name like Hydrilla should conjure up a vision of some terrible organism that is capable of ruining human life. In reality, an invasive biomonster like Hydrilla is far more expensive for human affairs than Darth Vader or Godzilla, if you ignore the cost of movie tickets.

Hydrilla (*Hydrilla verticillata* (L. f.) Royale) is a non-native aquatic weed that was recently discovered in a golf course pond and a museum fish pond in the Tucson area.

A possible source for the golf course infestation may have been fragments of Hydrilla stems from an aquarium or backyard fishpond. Hydrilla plants normally produce whorls of 4 to 6 leaves on a structure called a stem node. A single 12-inch portion of stem can have 10 to 30 nodes. Furthermore, those nodes can also produce roots. Thus, new populations of Hydrilla can start from single stems by a biological process called vegetative reproduction.

If people dump Hydrilla stems into ponds, lakes or reservoirs, they are planting new colonies of this botanical invader. Likewise, boats or boat trailers can transport this weed.

Shortly after Hydrilla plants establish, they produce small potato-like tubers. These organs are another way the plant reproduces vegetatively without seeds. Dormant (but viable) tubers can persist in mud several years before they begin growing new shoots. Tubers in dried mud of empty ponds endure for years then resume growth when water returns. This means that simply removing Hydrilla stems from a pond does not eliminate the pest.

Before noxious weed regulations came into being, pet stores were primary sources of several aquatic weeds. After Hydrilla escaped into natural aquatic habitats, recreational activities became the predominant mechanism that disperses Hydrilla. Beginning in 1960, Hydrilla spread from Florida across the southern US, Texas, Iowa, California and Arizona.

Since new Hydrilla plants grow from short pieces of stems, boat owners must take special care to inspect for aquatic plants that become attached to boats, fishing gear and boat trailers. When Hydrilla-contaminated equipment moves from infested water, any attached weeds are biological pollutants that will contaminate non-infested streams, ponds, lakes and reservoirs.

Hydrilla's adverse environmental effects include (1) clogging irrigation canals and municipi-

pal water systems, (2) destroying native aquatic plant communities, (3) ruining recreational water activities and (4) creating flood hazards.

Arizona's best and cheapest method of eliminating Hydrilla problems is to prevent the plant from entering our waters. Diligent and frequent searching of typical sites where Hydrilla invades (such as out-state-boats, pet stores, bait shops, aquatic nurseries, etc) are essential to stopping aquatic invaders. Detection of new infestations while they are small and easily managed requires careful inspections of park ponds, lake/reservoir swimming areas, public fishing docks, bridges crossing perennial streams, public boat ramps, irrigation drainage canals and everywhere recreation sites are near water. Please report any locations of Hydrilla colonies (including retail sales outlets) to Arizona Department of Agriculture, 1688 West Adams, Phoenix, AZ 85007 or call 602/542-3309.

Dr. Ed Northam is a weed biologist in Phoenix, AZ and is serving as the Noxious Weed Program Coordinator for the Arizona Department of Agriculture.

Leaves are arranged in whorls around stem nodes. These nodes are capable of producing roots.

Leaf margins and midveins on undersides of leaves normally have small spines.

Stem strands can become entangled on boat trailers or water fowl feet and be transported to non-infested waters.



Hydrilla verticillata. Drawing provided by the Arizona Department of Agriculture

NATIVE PLANT LAWS IN ARIZONA

BARBARA TELLMAN

THE ARIZONA NATIVE PLANT LAW

In the 1920s cacti were becoming popular for landscapes and collections and the amount of loss was alarming. Some Arizona botanists and plant lovers became concerned about increasing theft of native cacti and other plants from public and private lands. They managed to convey their concern to the legislature and in 1929 Arizona passed one of the first native plant protection laws in the nation.

This first law was designed specifically to prevent theft of certain plants. The drafters of the law did not foresee that the major problem in the future would not be theft, but mass bulldozing of plants. The first law had penalties for people who removed native plants from property they did not own, unless they had a permit. Not only did this make it difficult to protect the plants, but it also discouraged plant salvage, as a permit had to be bought for each plant that someone wanted to save from the bulldozer.

By the 1980s it had become clear that the law was not protecting plants from destruction. People could buy property and bulldoze the plants on it quite legally under Arizona law. The Arizona Native Plant Society and other groups united to amend the law to encourage plant salvage. They believed that a law that would prohibit bulldozing of plants on private property would never pass the legislature, but if salvage procedures were made easier, more plants would reach the market and the impetus for cactus theft would decrease. This was needed more and more as the demand for low water use plants increased. In most cases the statutes require that the Department of Agriculture be notified prior to destruction of native plants, opening up the possibility of salvage.

In 1989 the Arizona legislature substantially amended the law to include most of the provisions the coalition wanted. A procedure was set up to categorize plants according to the kind of protection needed. An advisory committee assisted in this. There are four categories of plants:

1. Harvest restricted: permitting is required on firewood, cordage and fibers.
2. Highly safeguarded: permitting is required for both plants and seed, scientific collection only, no commercial collection or export allowed.

3. Salvage assessed: permitting is required for trees.

4. Salvage restricted: permitting is required for plants and plant parts, excluding seed.

For a list of the plants in each category and more information about the law, see www.agriculture.state.az.us/PSD/native_plants.htm. The ANPS web site maintains a list of plants available for salvage at www.aznps.org.

CHANGES IN THE NATIVE PLANT PROGRAM

The plant theft and vandalism program

The Arizona Department of Agriculture has reorganized its native plant protection program, with a goal of more efficiently managing the cactus theft portion of the program and to gather evidence for more successful prosecution of legal cases. Previously, the native plant program was a separate unit that dealt just with native plant related issues. A new Office of Review and Investigations has been formed to deal with both plant and animal program enforcement. Two plant experts and two animal experts are cross-trained to work on enforcement matters jointly, under the direction of Ken Davis. The staff will not conduct surveillance activities, a task that is nearly impossible in a state the size of Arizona, but will rely on citizen reports of suspected violations. In cases that warrant investigation, the staff will concentrate on collecting evidence that will lead to winning lawsuits or criminal convictions. The native plant people will still largely deal with native plant investigations, but may be called upon to assist in livestock investigations where appropriate. Similarly, the livestock experts will assist the native plant experts as needed. One goal is to get people to spend more time in the field investigating native plant violations and less time doing paperwork, i.e. issuing permits, tags, seals, etc. in the office. This means that citizen vigilance is more important than ever. Native Plant Society members who are out in the field should be alert to possible plant theft or other illegal plant destruction activity and report immediately to Ken Davis's office at 602-542-0964.

The salvage program

The plant salvage program has been largely managed by the district offices and will continue to be managed by them. People looking for salvage permits and for notices of salvageable plants should contact their local Department of Agriculture Office. The Advisory Committee that used to recommend changes in the protected plant lists has been disbanded but will be reformed this year. To make suggestions on committee members or plants that should be changed/added to the list, people should contact Jim McGinnis at 602-364-0907.

This section was written with the assistance of Jill Davis, Public Information Officer for the Arizona Department of Agriculture.

OTHER NATIVE PLANT PROTECTION PROGRAMS

The Arizona Noxious Weed Regulations are directed towards preventing the spread of plants deemed "noxious" by the Arizona Department of Agriculture. This program will be discussed in the winter issue of the Plant Press.

The U.S. Department of Agriculture regulates the introduction of plants considered "noxious" by the Department. This law deals primarily with import of plants into the U.S. and with interstate commerce in plants.

At least four Arizona cities and towns and one county have landscape ordinances that deal in varying ways with native plants (Marana, Scottsdale, Oro Valley, Tucson, and Pima County). These ordinances generally encourage the planting of native species in commercial landscaping and some protect native species in situ by requiring that a certain percentage of the species or the land area containing the species be left "natural" in the case of large developments.

The editor invites people from other communities to provide information about native plant laws in their area and invites people from the cities and towns with laws to provide information about how they are being implemented locally. Please send information to Barbara Tellman, 127 E. Mabel St., Tucson AZ 85705 or bjt@ag.arizona.edu.

Barbara Tellman is editor of the Plant Press and a long-time member of the Arizona Native Plant Society.



Peniocereus greggii from John Torrey's Botany of the Boundary, from Emory's Survey of the United States and Mexican Boundary, 1859.



CONSERVATION NEWS

JEFF KREAMER

UPDATE ON THE PIMA COUNTY NATIVE PLANT NURSERY

In the last issue of the Plant Press, Gary Bachman wrote about Pima County's plan to create a native plant nursery to help meet the ambitious goals of the Sonoran Desert Conservation Plan. At this time, the nursery is being developed and should be in operation within the next few months.

The nursery is designed to provide native plants for the re-vegetation of degraded public lands, for habitat mitigation, for conversion to native landscaping, and other projects requiring a significant number of native plants. In addition, the nursery concept was expanded to include the care, and eventual re-planting of native plants salvaged from County projects.

The nursery project is a cooperative effort between the Pima County Wastewater Management Department, and the Pima County Natural Resources, Parks, and Recreation Department. Nursery construction is underway on approximately six acres at the Roger Road Wastewater Treatment Facility in northwest Tucson. Treated wastewater effluent will be utilized to irrigate the nursery. The site will include the salvage nursery, and a propagation nursery which will supply native plants that are difficult to find, or are not available in sufficient numbers for County projects. Various other County departments are participating in the project as potential users of the nursery. A Board of Directors was developed to oversee basic nursery operations, and insure its success.

A significant effort was taken to avoid any conflict with private sector nurseries. The County nursery will not be open to the public, and will generally avoid growing plants and trees that are readily available at local nurseries. Initially grown, will be plants that are extirpated or endangered within the County, as well as certain "keystone" species. These would include screwbean mesquite (*Prosopis pubescens*),

Huachuca water umbel (*Lilaeopsis schaffneriana*), ironwoods (*Olneya tesota*), and others. The propagation nursery will also provide plants that characterize the many desert biomes within Pima County, so that adequate varieties are available for habitat re-vegetation projects. The salvage nursery will include a detailed inventory process, and ongoing plant health and survivability studies. These efforts will further our understanding of proper salvage techniques.

It has been a delight watching this project progress. Of significance is the noticeable increase in native plant appreciation by County employees, and the recognition of human impacts to native ecosystems. Many people involved in this project have become new members of our Society!

CHAPTER INVOLVEMENT NEEDED

Since taking the position as Conservation Chair for the ANPS, I have been involved in many projects. Unfortunately, most of these efforts have been in Southern Arizona. The position is time consuming, and my ability to respond to conservation issues "state wide", has been nearly impossible. I am seeking volunteers to serve as conservation officers for each ANPS chapter. These volunteers can monitor conservation issues within their areas, and provide information for consideration at the state board level.

I am hoping to implement a bi-annual "native plant" conservation newsletter for ANPS membership. People who wish to submit conservation articles, announcements, or news briefs, are encouraged to do so. It is very helpful if they can be forwarded to me using E-Mail addressed to biomap@the.river.com, or sent to me via the ANPS post office address. People who want to volunteer their services can contact me for further information or for a copy of the guidelines established for ANPS conservation activities.

Jeff Kreamer is Conservation Chair for the Arizona Native Plant Society and leader of the Pima Exotic Species Council. He is a professional surveyor who works for the Pima County Wastewater Department.

BOOK REVIEWS

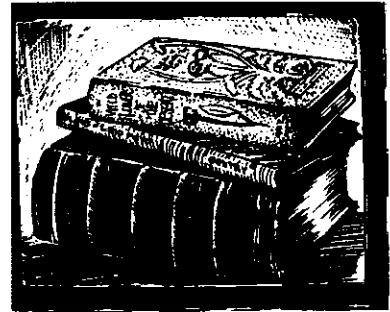
Food plants of the Sonoran Desert by Wendy C. Hodgson. University of Arizona Press. 2000. 313 p. \$75.

Blood, sweat, tears, and ethnobotanical passion for plants are what Wendy's extensively researched book truly represents. In 1995, I had the incredible good fortune to make Wendy Hodgson's acquaintance. She responded to my knock at the Herbarium door at The Desert Botanical Garden in Phoenix. Wendy welcomed me to use the Herbarium, then politely excused herself explaining that she was in the midst of writing her "almost book" on desert food plants. At that time, I believe she had written 400+ pages. Through the late 1990's, Wendy wrote several hundred additional pages, only to be slashed back by cost-conscious editors. The final 313 pages are packed with fascinating stories that highlight plan- to-people connections.

Food plants of the Sonoran Desert is an A-Z catalogue of plants by family, based on Wiggins (1964) and Turner et al. (1995) floras of the Sonoran Desert. The book gives a thorough overview of the Sonoran Desert biological and cultural communities providing an effective context for the hundreds of edible plant stories to follow. Wendy has omitted botanical descriptions, and dives right in to describe how plants have sustained Sonoran Desert peoples. The heart of the book explores how, where, and when plants have been grown in the past, and in the present. Beautifully detailed illustrations and black and white photographs acquaint readers with the plants and invite them to witness the harvest. Descriptions give habitat information and highlight ways foods were grown, gathered and prepared. A healthy dose of opinions are included of humans' perceptions of the plants - from flavor to symbolism. The Appendices summarize plant parts used, fruiting periods of selected species that provide edible fruit and seeds, and common (non-English) names.

Readers will be impressed and entertained by Wendy's storytelling. Ms. Wendy Hodgson, Curator of the Desert Botanical Garden, is a legend before her time - a true shamanette! She is a walking-talking encyclopedia who unselfishly has produced this treasure of a book for the benefit of plants and people alike.

Barb Skye



The San Pedro River: A Discovery Guide by Roseann Hanson. University of Arizona Press. 2001. 205 pp. \$19.95.

This wonderful new guide to the San Pedro River is full of information for the visitor to the area. It is arranged by river section, starting with the international border and ending at the Gila River near Winkelman. Each chapter contains information about the prehistory and history of the area, vegetation and wildlife likely to be encountered there, and directions for reaching the area. In many cases the author has added interesting information about related topics such as bird migration to and from the river, and life cycles of local and migrating bats.

The final chapter is a check list of the flora and fauna, although the flora is handled in a very different way from the traditional check list. Typical plants are listed by the kind of vegetative community they occupy, preceded by a discussion of that community, such as "Chihuahuan desert grassland."

Anyone planning a trip to the San Pedro River would benefit greatly by taking this guidebook along.

Barbara Tellman



LANDSCAPING TIPS III: TWO NATIVE JUSTICIAS

MARY F. IRISH

Wander along any desert wash, look out over any gully in the rough, stony hills of

the low deserts of Arizona and you will undoubtedly see billows of red among the rocks. When you look closer you see that these are the best places to see hummingbirds in the desert. They find this plant, chuparosa, irresistible. It is currently known in botanical texts as *Justicia californica*. Look for it in Kearney and Peebles by its obsolete name *Beloperone californica*.

This charming perennial has small heart-shaped leaves that are usually sparse on the plant. In some seasons, they can be so scarce you might imagine there are none at all. Chuparosa stems are thin, brittle and green and create a maze of twists and turns that give the plant an illusion of density and mass. Capable of growing over 6 feet tall in certain conditions, chuparosa is generally between 3 to 4 feet tall and just as wide.

But the flowers are the thing. Tubular and very thin, the delicate red flowers have a small lip at the end and are full of nectar. Take one off and try it. It tastes of cool cucumbers and is delicious in salads. Flowers are abundant on the plant and blooming may begin as early as October and continue through March. In gardens, plants may be kept in bloom a bit longer, but they take a rest in the summer, losing a good number of leaves while waiting for the cooler temperatures of fall when they start growing and blooming again.

Although flowers are typically red or orange-red, yellow forms are also known. Most of them are a pale faded yellow that has no garden interest for me. But a couple of poorly known selections are worth hunting for. 'Tecate gold' which I found through Rancho Santa Ana Botanic Garden and was their find, has a beautiful bi-colored flower of pale gold and deep burnt orange. The Thomas Payne Foundation selected a bright, clear yellow they call 'Tilden' that is one of the best yellows I have seen out of this species.

In the garden, chuparosa works best in extremely well drained soils in either full sun or partial shade, although in Phoenix the partial shade seems to be preferred. It is sometimes slow to begin from a transplant, but patience and plenty of

winter water usually help it settle in. If the plant becomes unruly, cut it back in the fall. And be sure to put it in a place where the devoted following of hummingbirds that it attracts can be watched and enjoyed throughout the desert winter. The closely related red justicia is another native perennial that blooms throughout the winter, is very attractive to hummingbirds and is even more effortless to grow in the garden than chuparosa. Known now as *Justicia candidans*, it can be found under the names *Jacobinia ovata* and *Justicia ovata* in older texts. Call it what you will, this is a superb garden perennial.

Slightly fuzzy leaves are arrayed thickly up each of the numerous erect stems. The top third of each stem is full of red to red-orange tubular flowers arising from the leaf bases in clusters. The lower lip of the flowers is split into three parts, giving the flowers a more open appearance than chuparosa flowers. Hummingbirds do not seem to care, they harvest the nectar.

As a garden plant, red justicia is hard to match. It blooms almost all year, taking a short breather in the hottest part of the summer. Bloom becomes increasingly prolific as the weather cools and peaks in late winter and early spring.

Red justicia will grow in almost any soil but gets larger and blooms longest if grown in fertile, well drained soil with at least weekly watering in the summer. If the plant gets out of hand, it can be pruned almost anytime, but late summer or fall is best. This species does well in large containers.

Both chuparosa and red justicia are hardy only to the mid-20s and may receive tip or leaf damage at somewhat higher temperatures. Cold damaged parts should be pruned in the early spring after all danger of frost is past.

As the glorious days of the desert winter begin, think of putting one or both of these charming natives into your garden. They blend well with other perennials. Chuparosa, in particular, is well suited to a naturalistic garden design or outer natural area. You and the hummingbirds, will be delighted.

Mary Irish is a freelance writer who specializes in writing about plants. Her book on agaves and succulents was reviewed in the Fall 2000 issue of the Plant Press.

ETHNOBOTANY III: DESERT HACKBERRIES

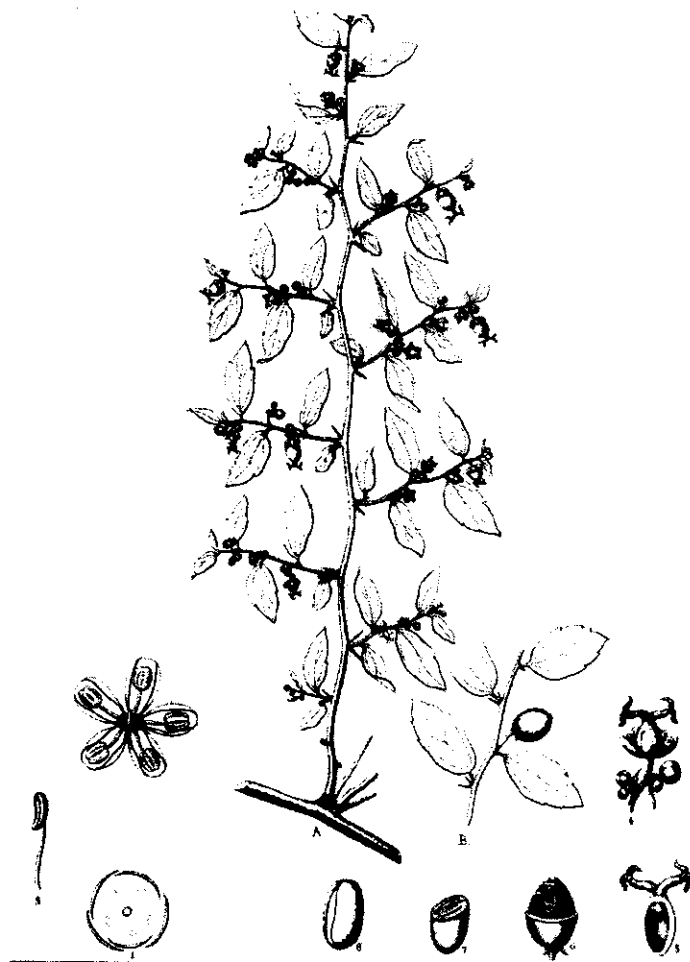
JEFF KREAMER

If you have never tasted the plump ripe berries of a desert hackberry shrub, then you will never truly understand why they were appreciated by the indigenous people of the southwest, as well as a vital food source for birds and mammals. The berries ripen in early fall. They are orange when ripe, and small, yet packed with flavor. What a great trailside snack once we emerge from the cool shelter of our homes, and again explore the beauty of the Sonoran Desert!

Arizona has two native hackberry plants, both of which are members of the Elm family (*Ulmaceae*). Desert hackberry (*Celtis pallida*), is a shrub seldom exceeding 10 feet in height. They have oval leaves of varying size, and straight, paired spines. Within Arizona, they are often found in desert scrub plant communities below

3,500 feet in elevation, particularly along washes. This plant is distributed throughout the southwest, extending into Central and South America. Of the two native hackberry plants, only the desert hackberry produces fruits that are tasty to people. They can be enjoyed fresh, or dried into a small crunchy snacks.

The netleaf hackberry (*Celtis reticulata*), is a hardy tree with a graceful, yet unpredictable growth habit which adds to its unique use in landscaping. Netleaf hackberry trees are mainly found along riparian areas where adequate moisture exists. They are deciduous with deeply veined leaves, and very small orange fruits. The berries lack the flavor and moist pulp of the desert hackberries. As a result, they are seldom eaten by people. If you want a hardy tree with an interesting shape, along with great food and cover for birds, then its a good choice. It is fast growing, and can easily be obtained at most larger nurseries.



Celtis pallida from John Torrey's Botany of the Boundary, from Emory's Survey of the United States and Mexican Boundary, 1859.

BOARD AND STAFF PROFILES

Marilyn Hanson - Corresponding Secretary

Marilyn is the newly appointed recording secretary. She is a retired high school biology teacher who taught in Madison, Wisconsin for 33 years. Since her arrival in Tucson she has become a docent and volunteer in the Botany Department at the Arizona-Sonora Desert Museum, an active volunteer in the Tucson Mountain Weedwackers, and a member of the Tucson chapter of the Arizona Native Plant Society.

George Virtes - Administrative Assistant

George retired to Tucson slightly more than 3 years ago, attracted to Arizona by many things including the native plants, which have become a major interest and hobby.

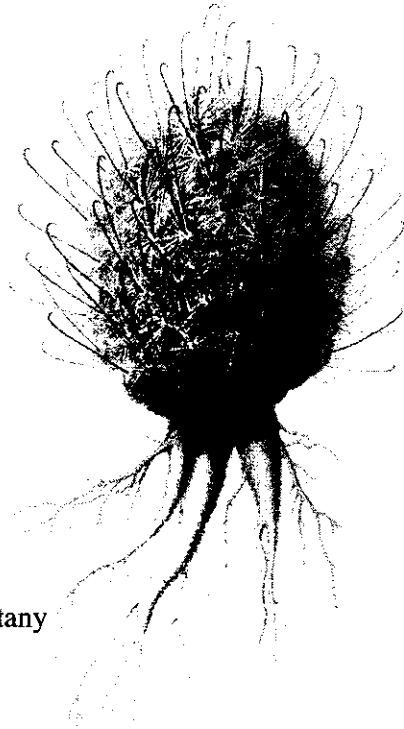
He spent 33 years teaching high school chemistry on Long Island, New York and has an MS degree in Chemical Education. He also worked at an accelerator complex at Brookhaven National Laboratory which made it possible to work with the students just starting their academic lives and to also keep in touch with nuclear research in a hands on way. Both careers required extensive inventory, record keeping and computer related work. Communication and keeping up to date were a way of life for him. Little did he realize all of this was going to prepare him for this newly created ANPS position which will give him an opportunity to improve ANPS communication and business operations.

George can be reached at azgvandv@aol.com.

SONORAN IV CONFERENCE

Tucson's Cactus & Succulent Society presents the Sonoran IV Conference, May 17 - 19, 2002 in Tucson at the Inn Suites Hotel with educational workshops, field trips, living displays, cactus and succulent sales. For more information call Sheila McGinnis at (520) 749-9717 or e-mail sheila@pikusa.com.

Mammillaria grahamii from John Torrey's Botany of the Boundary, from Emory's Survey of the United States Mexican and Boundary, 1859.



The Plant Press is published three times a year and is a benefit of membership in the Arizona Native Plant Society. Barbara Tellman, editor, welcomes suggestions of articles and book reviews, especially if accompanied by suggestion of an author. Contact her at bjt@ag.arizona.edu or 127 E. Mabel, Tucson 85705.