

The Plant Press

THE ARIZONA NATIVE PLANT SOCIETY

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SIGNAL PEAK GARDENS GONE

Shirley Weik

On Saturday, May 9th, 1998, ground was broken on the Central Arizona College campus between Coolidge and Casa Grande starting the first major expansion since the campus was established at this site 28 years ago.

Plans call for two new buildings to be located in what have been until now demonstration gardens featuring desert plants from the U. S. and Mexico and other arid regions.

The gardens were planned and developed by former ANPS president, Bill Kinnison, who had originally been hired to landscape the campus in the 1970s and is who now a teaching Professor of Biology at the College.

With his help, the new landscape firm, Native Resources International of Phoenix, identified trees and shrubs and cacti to be salvaged from the gardens and used elsewhere on the campus or to be replanted around the new buildings after they are finished. \$80,000 was budgeted by

the contractor, D. I. Withers Construction Company, for the cost of salvaging 130-140 individual plants. Most of the salvaged plants are Arizona natives, including many saguaros (some of which are being moved for the second time) ironwood and palo verde trees, and even at least one of the creosote bushes that dominate the area.

Other Arizona natives, such as Arizona rosewood, netleaf or canyon hackberry, organ pipe cactus and the feathery fairy duster are from very different parts of the state and were included in the garden in part to test their adaptability for use in home or commercial landscapes - to provide an alternative, as Bill often pointed out, for the over-used oleander.

This Arizona-natives section of the gardens was the first to be planted, and by now many species were considered to be well past their prime. Since younger, more vigorous specimens are generally available in nurseries throughout the state, those thought not worth bothering with were simply pushed over by the bulldozer and carted away with the trash. Practical perhaps but heart-wrenching to watch!

Two other sections of the gardens featured plants native to Mexico. These were planted a few years later than the Arizona natives, so the

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1998 MEMBER SURVEY: A SUMMARY

Marcia Tiede and Barb Skye

Last January, as you may recall, ANPS conducted a survey of its membership. A primary motivation for the survey was to learn more about our members - their opinions about how well ANPS works toward its mission areas, and how the professional and personal interests of members overlap with those of the Society. We received excellent input from over 170 members. Thanks to everyone who took the time to respond. Your input provides a foundation for strengthening the effectiveness of our organization. In a nutshell, here is what we learned from this initial survey:

1. We need more practice in designing survey questions. It became readily apparent that some of them were too ambiguous or misleading. This was especially true of the section dealing with our mission and how it fits with members' own concerns and interests. Look for a short follow-up survey in the next year to complement information we have already received.

2. Overall, members feel that the three main components of ANPS's mission - to broaden knowledge and appreciation of plants native to Arizona and their habitats; to work to protect native plants and their habitats; and to encourage landscaping with native plants and other plants appropriate to Arizona - are all of great importance. Several commented that in the area of landscaping we should focus more narrowly on native plants, rather than including non-natives that are tolerant of our growing conditions and may cross over the line to become invasive. Many believe we need to do more in the area of conservation; others feel that our efforts in the areas of education and landscaping (especially through our plant pamphlets) are our strength, and contribute to public awareness and support for preservation of habitat. Most said we should do more to support all three goals. We can't rest on our laurels, there is room for improvement in all areas - this was the basic sentiment of most responses.

3. We discovered that many members are not familiar with some of our activities or services, such as our website and the annual state meeting. Members want more educational programs and a

wider range of volunteer opportunities—from representing ANPS for an hour at an event, to doing botanical surveys, to salvaging plants from construction sites. Members in smaller or less active chapters have less opportunity to participate in field trips or attend educational events, or even hear about what's going on across the state. In some cases *The Plant Press* is the only source of information about happenings in ANPS. The leadership of ANPS should pursue ways of providing more support and guidance for smaller chapters.

4. The membership profile was an especially fruitful area of the survey. Members were extremely generous in their offers of volunteer support, especially in areas related to conservation and botanical expertise. Our challenge now is to take advantage of this information and make it accessible in productive ways. Responses to the survey have been inputted into a database, and results have been distributed to the leaders of the various chapters to let each group know what its members have to say and to permit them to utilize their own network of volunteers in their region. But full utilization of these responses requires greater coordination at the chapter and state levels.

We are hampered in part by our ongoing lack of a membership coordinator to oversee this information. We are beginning to offer support to non-profit organizations with similar concerns, such as The Nature Conservancy and The Audubon Society, by communicating their need for volunteers to our members who have expressed willingness to help in those areas, thus connecting our members with more opportunities to act on their interests.

Overall we learned how fortunate we are to have such dedicated and knowledgeable members. Volunteer support and communication are central to improving our ability to support our mission areas. Thanks again for contributing your opinions and offering your expertise. We hope to make constructive use of both.

OUR UNIQUE FLORA

II. *Sapium biloculare*

Sue Rutman

While hiking in Organ Pipe Cactus National Monument many years ago, a visitor was disoriented and tired. Thinking that a walking stick would help his weary bones, he cut a branch from a nearby shrub and rubbed his tired eyes. Hours later a rescue party found the hapless man, who was blinded by the poisons in his walking stick. He regained his sight and probably his dignity in a few days.

Sapium biloculare is a poisonous but attractive shrub that reaches its northern limits in the Sonoran Desert of Arizona. Its range extends to the tip of Baja California Sur and southern Sonora, Mexico. In the U.S., *Sapium* is known only from Pima and Maricopa Counties, Arizona, where it occurs on rocky and gravelly slopes and along sandy washes of the lower bajadas and flat plains. The species is a relative newcomer to Arizona; Tom VanDevender found that it arrived in the Puerto Blanco Mountains of Organ Pipe Cactus National Monument about 3,400 years ago.

Sapium plants usually have many stems arising from the base. They can grow to a height of 15 feet or so, but in harsh growing sites plants will remain less than a few feet tall. The bark is smooth and light to medium gray.

The evergreen leaves are bright green during the summer monsoon, fading to dark green during the dry seasons. The underside of the leaf is a lighter green than the upper side. When the weather becomes cold, the leaves turn a bright red, heralding the Christmas season. The fine-toothed leaves are leathery, narrow (1/2 ") and long (1 - 3").

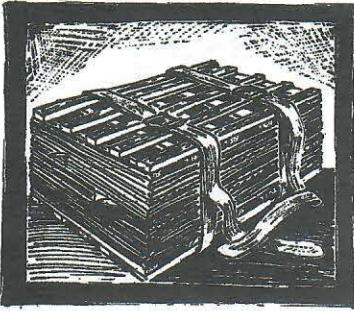


Plants flower in the spring and summer after sufficient rainfall. The flowers are inconspicuous, but the pollen fluoresces. The species name describes the fruit, which has two locales, or compartments. The seeds are grey-speckled, fairly large, and germinate readily. When infested with the larvae of a small moth (*Carpocapsa saltitans*), the seeds twitch and move, giving the species its common name, Mexican jumping bean. A mathematician from Syracuse, New York, has used the movements of these seeds to study chaos theory.

Although modern occupants of the Sonoran Desert might not be familiar with its poison, indigenous peoples used the plant to their benefit. The Seri and Apache used the toxic sap as an arrow poison. In Baja California Sur, the chopped branches were thrown into streams, stunning the fish, which were then harvested.

THANK YOU JOEL!

Many thanks to Joel Floyd for the wonderful drawings that serve as logos for the various regular columns in this issue and in the future.



FLORAS OF ARIZONA NATIONAL PARKS AND MONUMENTS

II. Montezuma Castle National Monument

Steve McLaughlin

provided along with Latin binomials that may be more familiar to most ANPS members.

This is the second plant checklist in our series of floristic species lists for various national parks, monuments, and historic sites in Arizona. These lists were obtained from the World Wide Web at <http://ice.ucdavis.edu/nps>, an online database created and maintained by the Information Center for the Environment (ICE) at the University of California at Davis. This useful website, provides lists of plants and animals from parks throughout the United States. Names appearing on these lists, however, have not been verified by ICE and may have some nomenclatural problems. Each list will be edited by ANPS member Steve McLaughlin, a professor at the Office of Arid Lands Studies, University of Arizona.

The lists will be edited for synonymy (the same plant species occurring under two or more Latin names), exotic species will be identified by an asterisk (*), and updated nomenclature will be

The Species list

The list available from the ICE website is based on a publication by W. B. McDougall and H. S. Haskell, "Seed plants of Montezuma Castle National Monument" (1960, Museum of Northern Arizona Bulletin 35). The checklist of McDougall and Haskell includes plants from both subunits of the park, Montezuma Castle at 3200 feet (975 m) elevation and Montezuma Well at 3600 feet (1100 m) elevation. The ICE list includes many species not listed by McDougall and Haskell, which is to be expected (updated species lists always contain additional records), but it also omits several species from the earlier list, including all Euphorbiaceae and more than half of the Fabaceae. It seems most likely to me that these plants were inadvertently excluded, and I have included them in the checklist. *Amsonia peeblesii*, included in the ICE list, is known only from north of the Mogollon Rim and is unlikely to be a member of this flora.

Montezuma Castle National Monument

It's not a castle and Montezuma was never there, but it's definitely an interesting place! The 5-story 20-room cliff dwelling was home to Sinagua Indians who occupied the area from about 1000 - 1300 A.D. It was designated a National Monument in 1906. Montezuma Well, a detached unit of the Monument is eleven miles away.

The Monument is located along Beaver Creek which has a rich riparian habitat. Its fine cottonwood-sycamore-willow riparian gallery forests house hundreds of plant and animal species.

The monument is located near Camp Verde about fifty miles south of Flagstaff. To reach the Monument, take I-17 to exit 293 and follow the signs. It is open from 8:00 - 5:00 p.m. every day in the winter and until 7:00 p.m. the rest of the year. There is no camping at the Monument, but plenty of camping nearby along the Verde River. For information, call 520 567-3322 or visit the Web Site at www.nps.org.

II. MONTEZUMA CASTLE NATIONAL MONUMENT

Introduced species are indicated by an asterisk (*); species in parentheses are included in the list of McDougall and Haskell (1960) but do not appear on the ICE list.

I. Gymnosperms

Cupressaceae

- Cupressus arizonica* Arizona cypress
Juniperus monosperma oneseed juniper
Juniperus osteosperma Utah juniper

Ephedraceae

- Ephedra viridis* Mormon tea

Pinaceae

- Pinus edulis* twoneedle pinyon
Pinus mono phylla singleleaf pinyon

II. Dicots

Aceraceae

- Acer negundo* var. *interius* boxelder maple

Amaranthaceae

- Amaranthus powellii* Powell's amaranth

Anacardiaceae

- Rhus trilobata* skunkbush sumac
Toxicodendron rydbergii western poison ivy

Apiaceae

- Berula erecta* cutleaf water' parsnip
Cymopterus multinervatus purple-nerve spring parsley
Cymopterus purpurascens widening spring parsley
Daucus pusillus American wild carrot
Hydrocotyle verticillata whorled marshpennyroyal

Apocynaceae

- Amsonia peeblesii* Peeble's bluestar
**Vinca major* bigleaf periwinkle

Asclepiadaceae

- Asclepias asperula* ssp. *capricornu* antelope horns
Asclepias engelmanniana Engelmann's milkweed
Asclepias subverticillata whorled milkweed
Sarcostemma cymanchoides fringed twinevine

Asteraceae

- Acourtia wrightii* brownfoot
Agoseris glauca var. *laciniata* false agoseris
(Ambrosia confertiflora)
Ambrosia psilostachya Cuman ragweed
Artemisia ludoviciana Louisiana sagewort
Aster praealbus
 var. *coerulescens* willowleaf aster
Aster subulatus

- var. *ligulatus* annual saltmarsh aster
Baccharis emoryi Emory's baccharis
Baccharis salicifolia [*B. viminea*] mule's fat
Baccharis sarothroides desert broom
Baileya multiradiata desert marigold
Brickellia atractyloides spearleaf brickellbush
Brickellia californica California brickellbush
Brickellia eupatorioides
 var. *chlorolepis* false boneset
**Centaurea melitensis* Maltese starthistle
Chaetopappa eriocoides
 [*Leuceline ericoides*] rose heath
**Cichorium intybus* chicory
Cirsium arizonicum Arizona thistle
Cirsium wheeleri Wheeler's thistle
Conyza canadensis
 var. *pusilla* Canadian horseweed
Encelia frutescens button brittlebush
Erigeron concinnus Navajo fleabane
Erigeron divergens spreading fleabane
Erigeron flagellaris trailing fleabane
Gaillardia pinnatifida reddome blanketflower
Gutierrezia microcephala threadleaf snakeweed
Gutierrezia sarothrae broom snakeweed
Helianthus annuus common sunflower
Heliomeris multiflora
 [*Viguiera multiflora*] showy goldeneye
Heterotheca subaxillaris camphorweed
Hymenoclea monogyra singlewhorl burrobush
Hymenobrix loomisii Loomis' thimblehea
Lactuca tatarica var. *pulchella* blue lettuce
Layia glandulosa whitedaisy tidytips
Machaeranthera canescens
 var. *incana* [*M. tephrodes*] cutleaf goldenweed
Machaeranthera gracilis slender goldenweed
Malacothrix fendleri Fendler's desert dandelion
Melampodium leucanthum plains blackfoot daisy
Microseris lindleyi
 [*M. linearifolia*] threadleaf microseris
Parthenium incanum mariola
Senecio flaccidus var. *flaccidus*
 [*S. longilobus*] threadleaf groundsel
Senecio neomexicanus New Mexico groundsel
Senecio quercetorum Oak creek groundsel
Solidago velutina
 [*S. sparsiflora*] threenerve goldenrod
Solidago wrightii Wright's goldenrod
Sonchus asper spiny sowthistle
Stephanomeria pauciflora
 brownplume wirelettuce
Stephanomeria spinosa thorn skeletonweed
Stephanomeria tenuifolia
 var. *tenuifolia* narrowleaf wirelettuce
**Taraxacum laevigatum* rock dandelion
Thymophylla acerosa

[*Dyssodia acerosa*] pricklyleaf dogweed
Thymophylla pentachaeta var. *belenidium*
 [D. *thurberi*] fiveneedle pricklyleaf
Townsendia annua annual townsend daisy
Townsendia strigosa hairy townsendia
 **Tragopogon dubius* yellow salsify
Verbesina encelioides golden crownbeard
Xanthium strumarium rough cocklebur

Berberidaceae
Mahonia haematocarpa [*Berberis b.*] red barberry

Betulaceae
Alnus oblongifolia Arizona alder

Bignoniaceae
Chilopsis linearis desert willow

Boraginaceae
Amsinckia intermedia intermediate fiddleneck
Cryptantha crassipala thicksepal catseye
Cryptantha nevadensis Nevada catseye
Lappula occidentalis
 var. *occidentalis*
 [L. *redowskii*] desert stickseed
Lappula occidentalis var. *cupulata*
 [L. *texana*] flatspine stickseed
Lithospermum incisum narrowleaf gromwell
Tiquilia canescens
 [*Coldenia canescens*] woody crinkleemat

Brassicaceae
Arabis perennans perennial rockcress
 **Capsella bursa-pastoris* shepherd's purse
 **Chorispora tenella* crossflower
Descurainia pinnata western tansymustard
 **Descurainia sophia* herb sophia
Draba cuneifolia wedgeleaf whitlowgrass
 (*Erysimum capitatum*)
Lepidium lasiocarpum shaggyfruit pepperweed
Lepidium montanum
 var. *montanum* mountain pepperweed
Lepidium montanum
 var. *glabrum* mountain pepperweed
 (*Lesquerella gordonii*)
Lesquerella intermedia mid bladderpod
Lesquerella tenella Moapa bladderpod
Rorippa nasturtium-aquaticum
 [*Nasturtium officinale*] watercress
 **Sisymbrium irio* London rocket
Streptanthus carinatus
 ssp. *arizonicus* Arizona jewelflower
Thelypodium wrightii Wright's thelypody

Cactaceae
Coryphantha vivi para
 var. *arizonica* Arizona spinystar
 (*Echinocereus fendleri* var. *boyce-thompsoni*)
Opuntia engelmannii

[*O. phaeacantha* var. *discata*] cactus apple
Opuntia leptocaulis desert Christmas cactus
Opuntia violacea
 var. *macrocentra* redjoint pricklypear

Campanulaceae
Lobelia cardinalis
 ssp. *graminea* cardinalflower
Nemacladus glanduliferus
 var. *orientalis* glandular threadplant

Capparaceae
Cleome lutea var. *jonesii* Jones spiderflower
Polanisia dodocandra
 ssp. *trachysperma* sandyseed clammyweed

Caryophyllaceae
Silene antirrhina sleepy silene

Celastraceae
Canotia holacantha crucifixion thorn

Chenopodiaceae
Atriplex canescens fourwing saltbush
Chenopodium fremontii Fremont's goosefoot
Krascheninnikovia lanata
 [*Ceratoides lanata*] winterfat
 (**Salsola kali*) tumbleweed

Convolvulaceae
 **Convolvulus arvensis* field bindweed
Convolvulus equitans Texas bindweed
Evolvulus nuttallianus
 [E. *pilosus*] shaggy dwarf morningglory

Cucurbitaceae
Cucurbita foetidissima Missouri gourd
Marah gilensis Gila manroot

Euphorbiaceae
 (*Chamaesyce albomarginata*) [*Euphorbia a.*]
 (*Chamaesyce capitellata*) [*Euphorbia c.*]
 (*Chamaesyce fendleri*) [*Euphorbia f.*]
 (*Croton texensis*)
 (*Euphorbia lurida*)

Fabaceae
 (*Acacia greggii*)
 (*Amorpha fruticosa*)
 (*Astragalus amphioxys*)
 (*Astragalus calycosus*)
 (*Astragalus lentiginosus* var. *diphysus*)
 (*Astragalus nuttallianus*)
 (*Astragalus subcinereus*)
 (*Astragalus tephrodes*)
 (*Astragalus wootonii*)
Caesalpinia drepanocarpa
 [*Hoffmannseggia d.*] sicklepod holdback
 (*Dalea formosa*)

<i>(Dalea searlsiae)</i> [<i>Petalostemum</i> s.]		<i>Ribes aureum</i>	golden current
<i>(Desmanthus cooleyi)</i>		Hydrophyllaceae	
<i>Lotus humistratus</i>	foothill deervetch	<i>Eucrypta chrysanthemifolia</i>	
<i>(Lotus mearnsii)</i>		var. <i>bi pinnatifida</i>	spotted hideside
<i>(Lupinus brevicaulis)</i>		<i>Eucrypta micrantha</i>	dainty desert hideside
* <i>Medicago lupulina</i>	black medick	<i>Phacelia crenulata</i>	cleftleaf wild heliotrope
* <i>Medicago minima</i>	burr medick	<i>Phacelia cryptantha</i>	hiddenflower scorpionweed
* <i>Medicago polymorpha</i>	burclover	<i>Phacelia distans</i>	distant phacelia
* <i>Medicago sativa</i>	alfalfa	<i>Phacelia ivesiana</i>	Ives' phacelia
* <i>Melilotus albus</i>	yellow sweetclover	<i>Phacelia rotundifolia</i>	roundleaf scorpionweed
* <i>Melilotus indicus</i>	annual yellow sweetclover		
* <i>Melilotus officinalis</i>	yellow sweetclover	Juglandaceae	
<i>Mimosa aculeaticarpa</i> [<i>M. biuncifera</i>]	mimosa	<i>Juglans major</i>	Arizona walnut
<i>Phaseolus angustissimus</i>	slimleaf bean		
<i>Prosopis velutina</i>	velvet mesquite	Krameriaceae	
<i>Rhynchosia senna</i> var. <i>texana</i>	Texas snoutbean	<i>Krameria erecta</i>	
<i>Senna baubinioides</i>		[<i>K. parvifolia</i>]	littleleaf ratany
[<i>Cassia baubinioides</i>]	twinleaf senna		
* <i>Trifolium repens</i>	white clover	Lamiaceae	
<i>Vicia ludoviciana</i>	Louisiana vetch	<i>Hedeoma drummondii</i>	Drummond's false pennyroyal
Fagaceae		<i>Hedeoma nana</i>	false pennyroyal
<i>Quercus dumonii</i>	Palmer oak	<i>Hedeoma oblongifolia</i>	false pennyroyal
<i>Quercus turbinella</i>		* <i>Marrubium vulgare</i>	horehound
var. <i>turbinella</i>	shrub liveoak	* <i>Mentha spicata</i>	spearmint
		<i>Salvia reflexa</i>	lanceleaf sage
Fumariaceae			
<i>Corydalis aurea</i> ssp. <i>aurea</i>	scrambled eggs	Linaceae	
<i>Corydalis aurea</i>		<i>(Linum lewisii)</i>	
ssp. <i>occidentalis</i>	scrambled eggs	<i>(Linum puberulum)</i>	
Geraniaceae		Loasaceae	
* <i>Erodium cicutarium</i>	redstem stork's bill	<i>Mentzelia albicaulis</i>	whitestem blazingstar
<i>Erodium texanum</i>	Texas stork's bill	<i>Mentzelia multiflora</i>	dwarf mentzelia
Grossulariaceae			

To be continued in the Winter 1998 issue

TOHONO CHUL PARK INVITES SAGUARO ART ENTRIES

Tohono Chul Park is planning an exhibit to run from Feb. 3 - March 29 at the park. Everyone is invited to contribute art in any media that deals with the saguaro and its role in the Sonoran Desert Ecosystem. Drawings, photos, 3-dimensional works and paintings are all welcome. Images may be literal or philosophical in nature. Even if you don't submit, be sure to visit the exhibit!

Submissions accepted through Dec. 15, 1998. Slides, photos or proposals for exhibits should be submitted with a resume or artist's statement and stamped return envelope. Send to Peggy Hazard, Tohono Chul Park, 7366 N. Paseo del Norte, Tucson AZ 85704.

PAGES FROM GINNY'S NOTEBOOK II: The Euphorbiaceae - Spurge Family

Virginia Saylor

EUPHORBIACEAE - SPURGE FAM.									
Pg No	Genus Common Name	Form	Inflorescence & Cops.			Leaf cm	G LWF	K CF	TX RK
			♀	♂	FR				
○	<i>Acalypha</i> Three-seeded Mercury	A/Phrb Shrb D/M	2mm ± 	2mm ± 	2mm ± 	A 1-6 5-8 	961 121	507 164	943 —
	<i>Adelia</i>	Shrb D	12mm 			A-F 2-3 	— —	— BC 116	942 —
	<i>Agalama</i>		Listed as <i>Euphorbia</i> in all other books				— —	— —	— RF 200
	<i>Andrache</i> Maidenbush	Shrb D/M	2mm ± 	2mm ± 		A 1-3 	963 —	— —	925 —
	<i>Argythamnia</i> Wild Mercury	Phrb D/M	Listed as <i>Ditaxis</i> in all other books			A			939 RN 219
	<i>Bernardia</i>	Shrb D/M	T 5-R 8-10mm 			A 5-3 	— —	506 163	942 —
○	<i>Caperonia</i> *	A/Phrb M	S 4mm 			A 5-15 	— —	— —	942 —
	<i>Chamaesyce</i> + Prostrate Spurge	A/Phrb M	CY-50 			O 1-1 	— —	JM 571	RF 202
	<i>Cnidocolus</i> Bull-Mala; Nettle-mujer	Phrb M	wh 10-12mm 			A 3-15 dia 	959 116	509 —	954 —
	<i>Croton</i> Croton	A/Phrb Shrb D/M	A-T-R 4-7mm 			A 1.5-1 -B 	959 116	503 161	929 308
	<i>Crotonopsis</i> Rush-foil	L/Phrb M	A-T-CR 			O 1-4 	960 —	— —	937 —
○	<i>Ditaxis</i>	A/Phrb Shrb M	A-R 			A 1-6 	— —	505 162	939 308
	<i>Eremocarpus</i> Dove Weed	A/Phrb M	A CY 			A 1-6 	121	* 162	— 308
	<i>Euphorbia</i> + Spurge	A/Phrb M				A 1-3 	963 116	515 167	956 309

Family of 300 genera = 7500 spp world-wide

Key to Abbreviations and FORM: Ahrb = Annual herb; SuSh - Sub-shrub; = Deciduous M - Monoecious
INFLORESCENCE: A = Cyme; IS = Interrupt; = Minute; P = Panicle; R = LEAF: A = Alternate; F = FLOWER: Generally 3-lo

GENUS EUPHORBIA

K: Kearney & Peebles - was split into Poinsettia Euphorbia. However, in Plants, Vol. 12 #2, all a
JM: Jepson Manual - Split Euphorbia
NC: Britton & Brown, Ill. U.S. and Canada, is a re Chamaesyce, Poinsettia Tithymalopsis, Tithymal but not Euphorbia.

Book Notes:

The last three columns r species is described in sta
G: M.L. Fernal, ed. 1988. Botany 8th ed. Diosc
K: Thomas Kearny and I Arizona Flora. Unive 1032 pp.
TX: Donovan Correll an 1970. Manual of Vasc Texas Research Foun
WF: Harold Rickett et al the United States, Vo York Botanic Garden
CG: Philip Munz. 1959. Rancho Santa Ana B
RK: John Coulter and A Manual of Botany of Mountains. Americ 646 pp.

Notes
 erb; Phrb = Perennial
 Shrb = Woody shrub; D
 ous
 Auxiliary; CR = Cluster;
 oted Spike; S = Spike; MI
 = Raceme; T = Terminal.
 = fascicled; O = Opposite
 bed capsule

through catalog changes it
 Chamaesyce and
 a plant list in Desert
 e now Euphorbia.
 into Chamaesyce and

strated Flora of Northern
 l splitter, listing
 Dichroophyllum,
 us, and Zugophyllum

fer to pages in which the
 ndard books.
 G: Gray's Manual of
 orides Press. 1632 pp.
 Robert Peebles. 1951.
 sity of California Press.

Marshall Johnson.
 ar Plants of Texas .
 ation. 1881 pp.
 1970. Wild flowers of
 4 the Southwest New

California Flora .
 tantic Garden. 1681 p.
 en Nelson. 1902. New
 the Central Rocky
 n Book Company. 1902.

EUPHORBIACEAE - SPURGE FAM.									
Pg No	Genus Common Name	Form	Inflorescence & Coos.			Leaf cm	G WF	K CF	TX RK
			♀	♂	FR				
○	<i>Hura</i> Sand box Tree	Tree M				11-20	—	— MX 154	—
	<i>Jatropha</i>	PHrb SbSh M				A-F	— 115	508 —	953 —
	<i>Manihot</i>	PHrb M					— 116	509 —	955 —
	<i>Mercurialis</i> * Mercury	A/Phrb M	IS	2 lobes		O	— 960	— 165	—
	<i>Pedilanthus</i> Red Slipper Bird Flower	Shrb M	brt red			Ephem.	—	— BC 127	—
○	<i>Phyllanthus</i> Leaf flower	A/Phrb SbSh M	A-MI			A	— 963 122	K* —	925 —
	<i>Poinsettia</i>	A/Phrb M	Sub-genus of Euphorbia			A	— 118	515 (167)	968 RF 202
	<i>Reverchon</i>	AHrb M	CY	7-10 mm		A	— 122	502 —	929 UT 303
	<i>Ricinus</i> * Castor-bean	AHrb M	P-T	15-25 cm.		A	— 962	508 164	953 —
	<i>Japim</i> Mx Jumping Bran	Shrb SmTr M		6-8 mm		A	— 26	511 —	951 —
	<i>Sebastiana</i> Sebastian Bush	Shrb M	3 mm ⁺			A	— 3-7	— BC 132	951 —
○	<i>Stillingia</i>	A/Phrb M	2 mm ⁺	4-5 mm		A	— 963 121	510 165	951 —
	<i>Tetracoccus</i>	Shrb D		3-5 mm		A-O-W	— —	503 160	— —
	<i>Tragia</i> Noseburn	PHrb M		3-4 mm.		A	— 962	507 164	947 308

Continued from page 1

trees and shrubs are somewhat younger. Some species were not then, but are now, readily available in U.S. nurseries. Among those that are not, and which were salvaged, are the sharp needled evergreen *Jacquinia pungens* which never seems to stop blooming, some palms - the delicate leaved *Braves armata* and wide-spreading *Sabal uresana*, and the tall and fine-foliated Mexican ebony *Pithecellobium mexicanus*. This one may be a good lawn tree since its open branches allow sunlight to filter through to plants beneath them. Birds like to perch in its branches.

All these trees have demonstrated a remarkable ability to survive, and to grow, though admittedly slowly, in this setting without supplemental watering. They survived through several seasons of record-setting temperatures (up to 122o F) and prolonged drought. It wasn't intended that they be put to such an endurance test. The maintenance department perhaps knowing that new buildings would someday replace the gardens, did not repair the irrigation system once it started to wear out.

Regrettably, some survivors were overlooked in the salvage plan because they were mistakenly supposed to be safe from destruction since they were not directly where buildings would go. One of these was the natural hybrid *Cercidium sonorae* which had been painstakingly rescued from a smothering mistletoe invasion (it didn't need that on top of everything else!) and which was showing such good recovery. Luckily, most (if not all) the Mexican species are being field-tested elsewhere in the state, at the Desert Botanical Garden, Tucson Botanical Garden, the Arizona Sonora Desert Museum, The University of Arizona and the Boyce-Thompson Arboretum.

But there are losses, such as two rare eucalyptus trees developed at the Plant Materials Center in Tucson. They were too large to be moved conveniently. An even greater loss, especially to us in the neighboring communities who would occasi-

onally visit the gardens just to walk through them, is that of the natural habitat which had developed over the years. Those plants provided a home to many animals and birds and insects, invading wildflowers and grasses. This one small section of the campus, criss-crossed with footpaths created by faculty, staff, and students going from one building to another, was surprisingly full of life. Since most desert creatures are out and about only at night, probably only those with night classes were even aware of it. My own visits to the campus were usually in early morning, on weekends when few other

Goodbye Velma Adams. ANPS lost an ardent enthusiast this summer with the death of Velma Adams, stalwart of the Central Arizona chapter. She played an important role in developing the Gardens.

humans were around. The still fresh tracks, piles of dung, freshly dug holes of ground squirrels, once even an unidentified pelt, gave evidence of earlier activity. Now everything between the Administration and Business

buildings and from the Science Building to the traffic circle has been flattened. An underground network of water-pipes and electrical and telephone lines fills the area. A large culvert lies buried in what was once a deep arroyo south of the Science building, and a wide wash has been precision leveled for the foundations of the new Student Center and Computer Building.

The philosophy that 30 years ago dictated that this particular location at the base of a mountain be selected because of its natural beauty for our new Community College has given way to a now-felt need to get ready for the demands of a new century. The next test of the salvaged plants will be to see how well they can adjust to an (assumed) abundant supply of water, and a new setting of artificial mounds and river-washed rock-filled depressions and raked-gravel surfaces - the generally accepted elements of desert landscaping today. Whether the plants will be labeled or not remains to be seen.

Bill Kinnison and Warren Jones who collaborated on the gardens project may now feel like parents seeing their children off to take their final exams. How will they do? If you became familiar with the campus you may be interested in coming back to see it in the autumn of 1999.

OUTSTANDING ARIZONA BOTANISTS

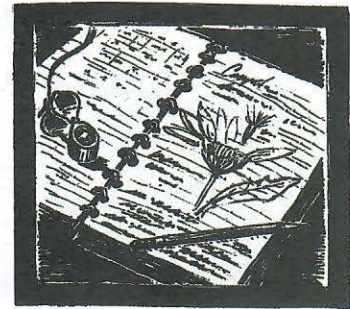
II. Edward Palmer 1831-1911

Distichlis palmeri, *Penstemon palmeri*, *Yucca palmeri*), and the genus *Palmerella* may be familiar to plant lovers, but the botanist himself is not well known.

Palmer was one of the most avid collectors of American plants in the late nineteenth century. Many of his collections were made in Arizona and Mexico at a time when travel was difficult and dangerous. Unfortunately, many of his collections were labeled and identified by others far from where they were collected and it was not until his biographer, Rogers McVaugh, located Palmer's original notes and extensive correspondence that they were properly annotated and collection locations identified.

Little is known about Palmer's early life in England, except that he described his father as a "gardener." He tried various occupations and trained as a doctor, but what he really wanted to do was to go to distant places and find new things. He wrote to various people asking to join expeditions, but never organized one himself.

His first collecting trip was to Paraguay. In 1852 he sailed south as a hospital steward on the *Water Witch*, under the command of Capt. Paige who wrote a lively account of the expedition, but gave Palmer no credit for collecting for the Smithsonian Institution, although later evidence proved most of the specimens were indeed collected by Palmer. He left two years later with malaria which bothered him for years. He studied at the Cleveland Homeopathic College and practiced off and on as a surgeon. While he worked as a doctor he collected "anything except minerals and fossils" in Kansas and Nebraska. When the Civil War began he was in the Gold Rush Country of Colorado and collected almost anything but gold. The fate of those collections is unclear although the notes and some of the specimens were found in the National Herbarium. He joined the Union side as a surgeon. This allowed him to collect specimens, as he was assigned to the frontier, not the front lines.



After the Civil War, he was assigned to Fort Whipple, near Prescott, Arizona where he joined 23-year old military surgeon, Eliot Coues, an avid collector of zoological specimens. They collected together in the Prescott area, in the Graham Mountains and other locations and sent more than 600 plant specimens to the National Herbarium. Some of his collections were lost when he languished for many months with fever and the someone in the military threw the collections away. His 1867 collections from Mt. Graham are in the Missouri Botanical Garden and the Torrey Herbarium at the New York Botanical Garden.

After trips to Arkansas, and other points in the Midwest, Palmer returned to the Southwest in 1869-70. His travels took him along the Virgin River, down the Colorado River to the Delta and south to the Yaqui River. The specimens from these travels ended up at the National Herbarium, inadequately labeled.

He collected plant and ethnological materials for the Bureau of Ethnology in the 1880s. In spite of age and frail health, he took more trips to the Southwest and Mexico. He returned from his last Mexican collecting trip in 1910 at the age of 79 and died a few months later. Among other things mentioned in his will were "nine boxes and two trunks, containing miscellaneous papers and pictures which are in part the result and fruits of my said observations and discoveries." He left \$2,000 to publish his notes and papers.

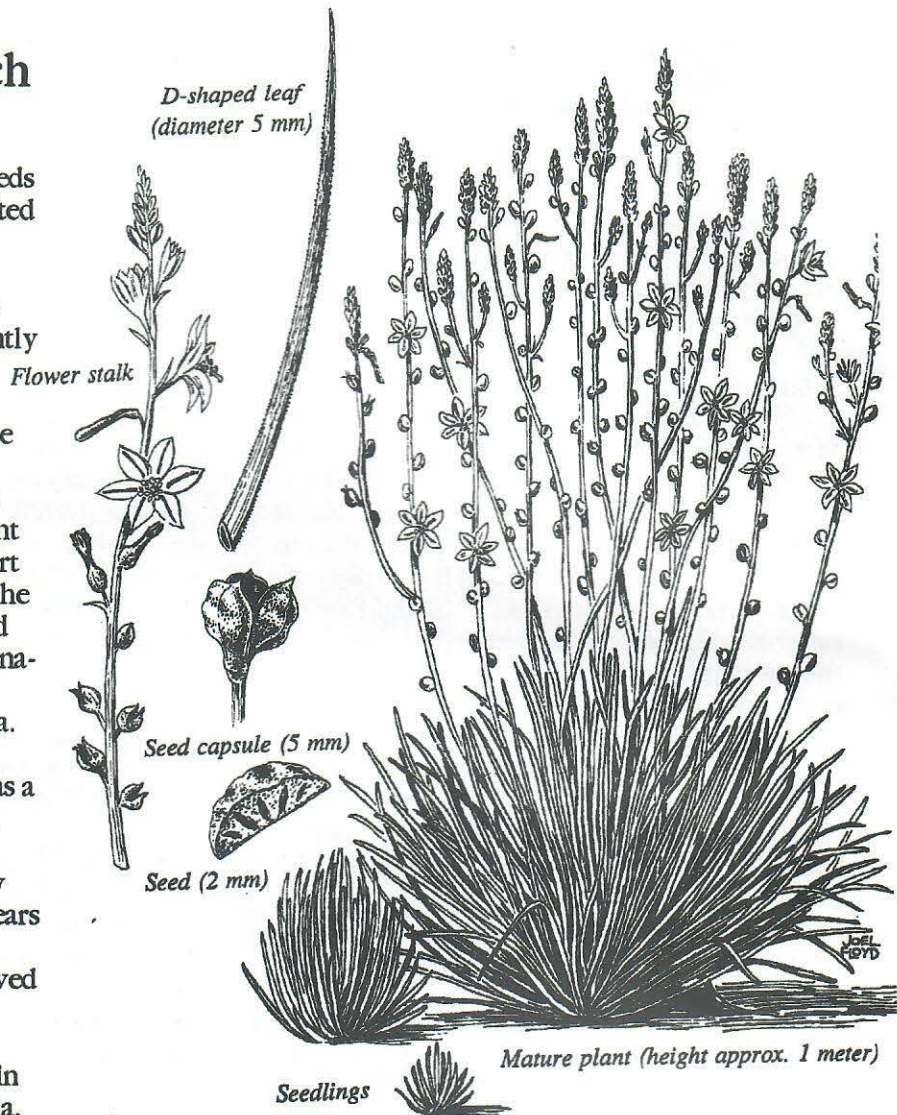
Palmer wrote too many articles to list here on archaeology, ethnology, mammals, arthropods, shells, and botany. For a complete list of his works and works based on his collections, see Edward Palmer: *Plant Explorer*. R. McVaugh. U. of Oklahoma Press. 1956. 430 pp

Exotic Weed Watch

Joel Floyd

One of the Federal Noxious Weeds known to be established in limited areas of the Sonoran Desert is onionweed, *Asphodelus fistulosus*. Originally from the Mediterranean area, it is frequently intercepted in plant shipments from Mexico and in spice shipments from India. It has become highly invasive in Australia. In 1984, onionweed was imported from Southern Mexico by a plant and seed collector through a port of entry on the Texas border. The seed was not correctly identified and because it is an attractive ornamental plant, it was introduced into the nursery trade in Arizona.

Once it was designated in 1989 as a Federal Noxious Weed, control efforts were initiated and have been ongoing in Texas and New Mexico where onionweed appears to prefer stream habitats. In Arizona, the plant was removed from the nursery trade by the Arizona Department of Agriculture, but infestations remain in certain areas of Southern Arizona, including on home landscapes where it was planted before the problem was recognized.



Asphodelus fistulosus.
Drawing by Joel Floyd.

SYMPOSIUM COMMEMORATING
THE REPLICATION OF GENTRY'S RIO MAYO PLANTS
OCTOBER 21, 1998 8:00 A.M. - 5:00 P.M.
ARIZONA SONORA DESERT MUSEUM

Speakers: David Yetman, Paul Martin, Robert Scarborough,
Tom Van Devender, Mark Fishbein, Cynthia Lindquist, George Ferguson,
Richard Felger, and Robert Schmidt

For information contact the Southwest Center 520 621-2484
1052 N. Highland, Tucson AZ 85721

BOOK REVIEWS

Rio Mayo Plants

Rio Mayo Plants by Howard Scott Gentry ranks with Shreve and Wiggins and Kearney and Peebles when it comes to plant books coveted by southwesterners. For decades photocopies have circulated among those interested in the tropical deciduous forest. Anyone fortunate enough to own an original copy views it as an heirloom or museum piece.

Now the book is again available. *Gentry's Rio Mayo Plants: the Tropical Deciduous Forest and Environs of Northwest Mexico*, revised and expanded by Paul Martin, David Yetman, Mark Fishbein, Phil Jenkins, Tom Van Devender and Becky Wilson has been published by the U. of A. Press.

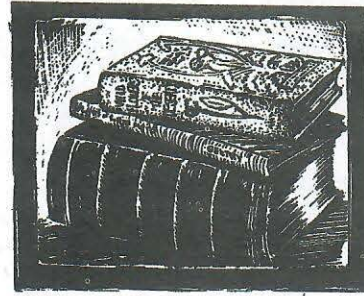
Paul Martin, Professor Emeritus of Geosciences at the U. of A, saw the need for republication more than two decades ago. He used the book in his ecological studies of the Sierra Madre Oriental. He was so intrigued that he decided to follow Gentry's routes and expand Gentry's collections. For nearly twenty years Paul led what he called "week-long Sunday drives" into the Rio Mayo region, from the arid thornscrub of the coastal plains to the mixed-conifer forests of the Chihuahua sierras. Others caught the "Rio Mayo fever" and joined the project. The number of species cataloged exceeds 2,800, more than double what Gentry found.

Gentry's Rio Mayo Plants includes not only the plant list, but ethnobotanical descriptions, habitat, distribution and collection localities of the species noted. It also has expanded descriptions of the geography of the Rio Maya and photographs of key species and plant communities of the region. The map of gives an excellent idea of the topography and locates the most prominent locations. Most of Gentry's original text is included .

This book is invaluable for anyone interested in the natural history of the area - cost \$75. For more information call 520 621-2484.

David Yetman

Plant Press, Autumn 1998



Dune Country

Good news! The University of Arizona Press has reissued Jan Bowers' *Dune Country: A Naturalist's Look at the Plant Life of Southwestern Sand Dunes*. This book contains a wealth of information about life in the various dunes of Arizona, Nevada, Utah, and California, and is written in a lively and interesting style. \$15.95 in paperback.

Beyond the Ponderosa: Successful Landscape Trees for Higher Elevations in the Southwest.

This information-packed book on landscape trees for higher elevations should be an excellent resource for people living in places such as Flagstaff and could also be of interest to desert dwellers.

Each tree is described according to form, trunk, foliage, flowers and fruit, cultivars, site suitability and cultural considerations. Symbols highlight features such as trees that have parts known to be toxic or dangerous and note water and shade requirements, maintenance level, pruning needs, and longevity. Both scientific and common names are given. Photographs of the entire tree as well as features such as leaves and seeds make this book especially useful for aspiring tree-planters.

The book was published by the Flagstaff Community Tree Board, with financial support from many sources, including ANPS. It is available in bookstores or by contacting Flagstaff Clean and Green, 211 West Aspen, Flagstaff 86004. \$10.



CONSERVATION UPDATE

Julia Fonseca, Conservation Chair

Feds Release Documents on *Dalea tentaculoides*

ANPS is seeking to protect *Dalea tentaculoides*, a rare legume from only a few places in Sonora and Arizona, under the Endangered Species Act. (ESA) The plant is known from only a few locations in the world, principally in Sycamore Canyon near Nogales.

Your Conservation Chair, under the Freedom of Information Act (FOIA), has twice requested copies of documents relating to the decision not to protect the plant. I wish to ascertain why legal protection was denied this rare plant. After two months of delay, U. S. Fish and Wildlife Service responded that they were compiling the documents, but other priorities prevented a lawful (10 day) response. In July, I contacted Congressman's Ed Pastor's Office to request assistance in getting the agency to comply with the FOIA. In September, USFWS finally responded with some of the requested documents.

Based on my reading of the files and the list of withheld documents, it appears that last year, after many years of being on the "candidate"

list for ESA protection, USFWS was planning to list this legume. In early December 1997, it appears that USFWS had prepared a draft Federal Register notice proposing to protect the plant, as threatened under the ESA. On December 19, 1997, the agency appears to have reconsidered the draft proposal. By January a document was written giving official reasons for not protecting the plant under the ESA, and by April the agency published a notice stating that the "available information indicates that the degree of the threats to *D. tentaculoides* does not warrant issuance of a proposed rule nor continuance of candidate status for this species."

Reasons given for the sudden reversal include discovery of new populations by Tom Van Devender and Jefford Francisco, bringing known locations back up to three in the world. Perhaps more important, USFWS said that the Forest Service was taking actions in the watershed for Sonoran chub that would reduce the threats to *Dalea tentaculoides*. However, there is evidence that USFWS knew these facts in November 1997, when it was planning to protect the plant.

Several documents which were described as released were not included in the mailing from USFWS. Also, there are documents from the U. S. Forest Service that need to be considered in conjunction with the USFWS record. So stay tuned for further information.

PLANTS OF THE LOWER SONORAN DESERT
ARIZONA NATIVE PLANT SOCIETY ANNUAL MEETING
AJO, ARIZONA - NOV. 7 - 8, 1998
MANY INTERESTING TALKS AND EXCITING FIELD TRIPS ARE PLANNED!

Flyer with full details will be in the mail soon. If you don't receive one in the mail, check the ANPS Website <http://www.azstarnet.com/~anps/> or write ANPS, Box 41206, Tucson AZ 85717

ANPS 1998 PUBLICATION GRANTS PROGRAM: CALL FOR GRANT PROPOSALS

The Arizona Native Plant Society has available through its Publication Fund \$3,000 to assist with funding of publications or communications-related projects during the 1998 grant cycle. The grant program is open to individuals, groups or organizations. Individual membership in the Society is not required, nor does it preclude application. Proposals from ANPS chapters or committees are not eligible for this program and should be submitted to the Publication Committee for consideration separately. Awards will be made on a competitive basis by the Publications Committee of the ANPS and will be announced by Dec. 15, 1998. The \$3,000 available may be awarded as one or more grants.

Proposals should consist of a brief presentation (one or two pages) outlining:

- ▲ the project's subject, audience and relevance to the purpose of the ANPS: "To increase awareness and appreciation of Arizona's native plants; to work towards protection and restoration of native plants and their habitats and to promote the use of low water use landscaping, with emphasis on the use of native plants."

- ▲ the applicant's background and a statement of qualifications or resume.

Examples of projects funded in previous years were grants to help with the publication of the journal *Desert Plants*, and the book *Beyond the Ponderosa* (See review on page 13).

Proposals should be submitted by November 15, 1998 to: Arizona Native Plant Society,
1998 Publication Grants Program,
Box 41206, Sun Station, Tucson Arizona 85717

ARTISTS WANTED

The Flagstaff ANPS chapter is seeking illustrations for its new poster: *Plants of the Colorado Plateau*. For information, contact David Hammond, Adjunct Curator of Botany at the Museum of Northern Arizona. 520 556-9427

OUTSTANDING ACHIEVEMENT AWARDS CALL FOR NOMINATIONS

Once again the Arizona Native Plant Society is asking for nominations of people, groups, or businesses to receive the annual "Outstanding Achievement Award." The purpose is to recognize Arizonans who have contributed to increasing appreciation of or knowledge about native plants, to preserving native plants, or to increasing the use of native plants in landscaping. Nominees need not be members of ANPS.

Please provide complete information about the nominee - name, address, phone number, etc. Then describe in no more than two pages the contribution(s) which you believe render the nominee deserving of the award. You may include newspaper articles, copies or reviews of publications and other relevant material.

Previous awardees include Paul Martin (University of Arizona) for increasing knowledge, Kent Newland (Phoenix Water Conservation Office and ANPS) for promotion of water-conserving and nativeplants, and Peter Gierlach (Desert Survivors) for increasing availability of native plants for landscaping.

Send your nomination by November 1, 1998 to
Arizona Native Plant Society,
1998 Achievement Award,
Box 41206, Sun Station, Tucson Arizona 85717

TUCSON BOTANICAL GARDEN SPRING FLOWER PHOTO CONTEST

If you took great photos of the bountiful wild-flowers last spring, you can enter them in a photo contest. Entries welcomed from all parts of the state or even from visitors from elsewhere. For information, contact Meg Quinn at TBG, 2150 N. Alvernon, Tucson 85712. 520 326-9686

NEW MEMBERS WELCOME

People interested in native plants are encouraged to become members. People may join chapters in Flagstaff, Phoenix, Tucson, and Yuma or may be members only of the statewide organization. For more information, write to ANPS at the address below, visit the Website <http://www.azstarnet.com/~anps/> or contact one of the people below.

State co-presidents: Sue Rutman 520 320-1032 Mima Falk 520 387-6281
Flagstaff President: Beverly Loomis 4716 E. Hightimber Lane, Flagstaff 86001
Phoenix President: Wendy Hodgson 602 276-0760
Tucson President: Jared Shortman 520 882-7060
Yuma President: Pat Callahan 520 627-2773

Membership Form:

Name

Address

City

State

Zip

Phone Number

Chapter preferred: State Flagstaff Phoenix Tucson Yuma

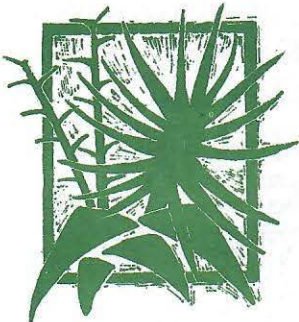
Enclosed: \$15 Individual or Family \$25 Organization
 \$ 50 Commercial/Sponsor \$!00 Patron

Mail to: Arizona Native Plant Society
P.O. Box 41206, Sun Station
Tucson AZ 85717

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