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Desert Legumes

By Horace Miller

An interesting and ambitious program is underway to investigate an important and under-exploited bio-resource: desert legumes. This new effort is a joint program of the Arizona Agricultural Experiment Station of the University of Arizona College of Agriculture and the Boyce Thompson Southwestern Arboretum. The program became functional on July 1, 1988, and already some of ANPS members have lent a hand, in a small way, getting it started. On August 10, they joined a group called together by the Friends of the Arboretum and processed quite a mass of various legume seeds in the basement of the UA Agriculture Building. The Desert Legume program is off and running.

Directing the program is Dr. R.P. Upchurch, former associate dean and director of instruction in the College of Agriculture. He will devote fifty percent of his time to the program. Also joining the program is June Sullivan, who many of you know as a former member of the Boyce Thompson Arboretum's horticultural staff.

As we all know, the Leguminosae is a huge family, comprising about 550 genera and perhaps 13,000 species worldwide. How many of these genera and species will ultimately be included in "desert legumes" has not yet been determined, but certainly the taxonomic scope of the effort will be large. (As a matter of curiosity, I counted the number of shrub and tree legumes in my yard and found 20 species - with no effort having been made to create a legume collection. One is rarely out of sight of a legume in the Arizona desert.)

The Leguminosae is not only a large

family, but it is of enormous economic importance second only to the grass family. Just consider the large number of legumes already among the world's important food crops - beans, peas, lentils, soybeans, peanuts, alfalfa, clover, plus the many ornamentals - and the legumes will be seen to loom large in the world's economy. Certainly, there is no reason to believe that the potential of this family for food, medicinals, ornamentals, etc. has been more than touched.

As pointed out by Dr. Upchurch in a handout at the August 10 seed processing session, the nitrogen fixing ability of legumes make them of special interest in arid land situations since nitrogen does not have to be supplied in their propagation. For this and many other reasons, investigation of desert legumes gives promise of interesting and rewarding results.

It will require some time before all of the specifics of the program are worked out - largely because the field of possible inquiry is so open-ended. To a great extent, the individual projects to be undertaken will depend upon such practical considerations as which projects will attract grant-in-aid funds, or which will readily find sponsors who desire services and research to complement existing on-going investigations.

Despite such imponderables as to content and priorities, one can foresee that several broad categories of projects are almost certain to be implemented under the program. One prime area of activity will be seed collection, seed bank formation and measures to obtain seed increase. As mentioned

Continued on next page

Continued Desert Legumes

above, this effort is already started. Then the program is almost certain to undertake germplasm investigations and detailed studies of the attributes of promising individual desert legumes. Investigations related to endangered species will very likely be undertaken.

Detailed research will be conducted under laboratory, greenhouse and field conditions to identify genetically controlled resistance to extremes of high and low temperatures, as well as tolerances to disease, insects and herbicides. Out of all this we should see some interesting additions to the list of desert legumes useful as human food, animal feed, ground covers, range plants, ornamentals and as sources of medicinal and industrial products.

To implement the desert legume projects, the program has much to offer that is already in place. In addition to the personnel who are, or will be, specifically assigned to the program, there is the consulting availability of the extensive scientific staff of UA and other Arizona universities, plus the staff of the Boyce Thompson Southwestern Arboretum. As an initial step, several of these scientists will be organized on an informal basis into the Desert Legumes Working Group.

As to physical facilities, the following will be available to the program:

- The laboratory and gardens of the Boyce Thompson Arboretum at Superior, Arizona. The Arboretum is cooperatively managed by the University of Arizona, the Arizona State Parks Board and the Boyce Thompson Arboretum Board.

- Field facilities of the Arizona Agricultural Experiment Station, including sites at Safford, Maricopa, Marana, Yuma and Tucson.

- Laboratory and greenhouse facilities at the 2100-acre Maricopa Agricultural Center in Pinal County.

- Specifically assigned laboratory and office space in the Plant Sciences Building at the Campus Agricultural Center in Tucson.

With regard to geographical scope, while the primary emphasis will be placed upon taxa from the southwestern United States, it is planned that the desert legume collection to be assembled (seed, growing plants, germplasm, etc.) will be augmented with material collected throughout the world. The same applies to personnel. It is expected that scientific workers from other desert areas will join the program in one way or another. An important goal will be to work toward one

or more companion sites in other parts of the world where desert legumes are found.

As with any effort of this magnitude, there is room for willing, helping hands. Quite a few members of the Friends of the Arboretum (including several who are also members of ANPS) have already signed up to help in such activities as collecting and processing seed. If you want to join this group, call Dr. Upchurch at the University (621-7424) or write him addressed to: College of Agriculture, University of Arizona, Tucson, AZ 85721.



Acacia constricta var. *vernicosa*. The primary leaflets in only 1-2 or sometimes 3 pairs, the secondary in 6-16. (Lucretia Breazeale Hamilton in Kittie F. Parker, *Arizona Weeds*, Univ. Ariz. Press, 1972.)

1988 ANNUAL MEETING

The 1988 Arizona Native Plant Society Annual Meeting will be held Oct. 22 and 23 at Westcourt in the Buttes, 48th St. and I-10 Freeway in Tempe, and will be titled, "SONORAN DESERT REGIONALISM IN URBAN LANDSCAPES."

The meeting, hosted by the Phoenix chapter, will focus on urban landscape issues as they relate to the unique Sonoran Desert character of this region.

Conference topics will include: a panel discussion involving landscape, water and development issues in the Sonoran Desert; Arizona native plants and new arid region plant introductions for urban landscapes; and presentation and tour of the Buttes project. There will also be a social hour Friday night (Oct. 21) at the Buttes, landscape exhibits in conjunction with the Saturday meeting, an American-Indian dinner in Tempe Saturday night, and Sunday tour of Tatum Ranch project and the Nature Conservancy's Hassayampa River Preserve in Wickenburg.

The Buttes conference resort is an appropriate location for our meeting because of their attention to desert landscaping. Their company describes it in a press release:

"Berms with desert flora line the gently curving main entry to Westcourt in the Buttes, as it curves around the western butte and ascends to the lobby entrance. Guests are given the feeling of driving in the desert when in fact they are really in the heart of the city.

Trees, shrubs, and plants, which are indigenous to a Sonoran desert, were brought to the site from all over the state. Northern desert grasses were sown on both buttes and cacti from various parts of the state were brought to the site and lifted by crane into various locations.

The site is basically granite, which necessitated strong rooting trees such as Palo Verde varieties including Foothill, Mexican and Desierto. Mesquite and Ironwood also adapt very well. Wildflowers and shrubs like Mexican Gold Poppy, Plantago, Blue Bells, Desert Marigold, Brittlebush, Creosote, Lupines and Bur Sage were planted in profusion on the property. The trees, shrubs and rocky sites also act as natural people barriers, eliminating the need for fences, which would detract from the setting. Guests are encouraged to explore the paths and see the 'desert'."

Join us for a botanical weekend at the Buttes!! Registration information will be sent to you separately. For more information, contact Kent Newland, 261-8369 (W), 585-3630 (H).

Mark Your Calendar:

"Sonoran Desert
Regionalism in
Urban Landscapes"

October
22 & 23

Tempe, Arizona

Desert Seasons

By Tony Burgess

Late April, driving through the Vizcaino Desert of central Baja California.

Winter-spring rains have been patchy, as usual. Much of the country reflects a dry winter – a landscape of muted, leafless scrub. Even the scruffy spires of boojums and the fat, gnarled Baja elephant trees look stressed. But around Rosarito the hills are speckled with colors of waning activity: yellows and greens. Leaves of the Baja elephant trees and boojums are turning yellow, soon to fall before a drought which should last through the whole summer. It's 'fall' here, the transition into the season of hard times, dormancy, and for some, death.

First of May, through Sonora.

The hills of northern Sonora are also yellow, blanketed with small flowering trees. It's clearly spring here, the time Tohono O'odham call *uam masat* – yellow month – when the land goes yellow. There's a feast for birds and bees: hills and valleys full of palo verdes dusted with muted yellow flowers, small lavender clouds of ironwoods, bright yellow blooms on prickly pear and some cholla, reddish or orangish flowers on other cholla's,

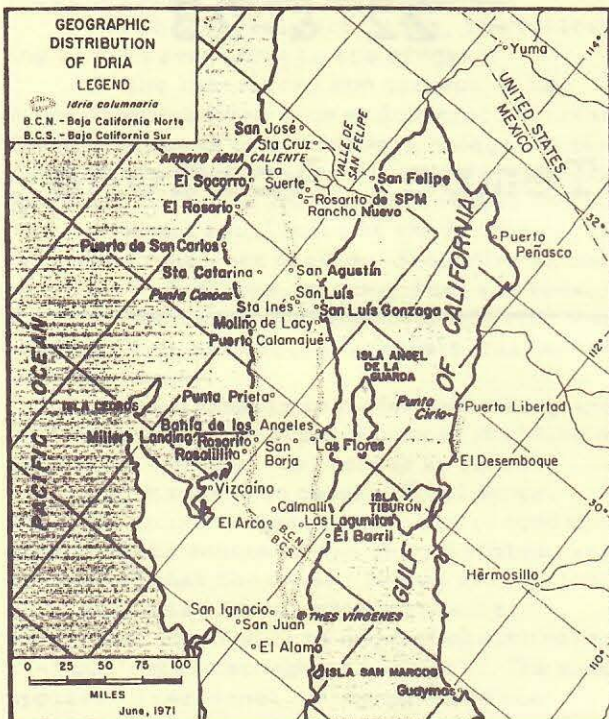
white funnels crowning saguaros, and waving scarlet clusters on tips of ocotillo branches. Farther south, and closer to the tropics, the palette can be even more complicated. Add the rose of palo adan, the neon-purple of guayacan, and the chartreuse yellow of palo brea, to name a few.

Early May, in Tucson.

Ocotillo flowers have faded, but the yellows of three kinds of palo verdes are everywhere in the desert hills and city streets. As in Sonora, prickly pears, chollas and saguaros add their advertisements. Perhaps in other places this spring finale of cactus and tree bloom would be celebrated by people other than naturalists and beekeepers, yet it passes without much comment. Maybe yellow isn't as celebratable as the gold of desert poppies or the blue of lupines. Then, too, spring is no longer fresh. The sun is high enough to glare off car windshields, and middays are warm enough to hint strongly of impending summer heat, when daytimes spent indoors become increasingly attractive.

Below the flowering canopy of palo verdes and saguaros are the drying remains of spring annuals, mostly gone to seed. Soon the hottest, and usually driest time of the year will begin in earnest. The uplands will parch and brown, contrasting more and more with the green strips along arroyos and the patchwork of suburban oases. Yet unlike the Vizcaino Desert where rainless summers are usual, this eastern part of the Sonoran Desert has a very good chance of midsummer relief in the form of thunderstorms. Indeed, the promise of summer storms is contained in the late spring floral finale: the tropically-oriented trees and cactus time their bloom to scatter their seeds just before or during the season of warm, moist soil. In Tucson there are two summers: the stressful "arid foresummer" – a term coined by ecologists – and the summer "mon-

Continued next page



Map from *The Boojum and Its Home*, Robert R. Humphrey, The University of Arizona Press, Tucson. Copyright 1974.

soons" which sometimes start in late June and sometimes last until September.

In the Vizcaino Desert the late spring peak of flowering woody plants and cactus is attenuated and prolonged. Several kinds of shrubby yellow daisies can be seen if rains have been good, and the large cardon cactus shows white flowers much like the saguaros across the Sea of Cortez. In the north the ocotillos bloom at about the same time as their eastern cousins. Farther south they are replaced by the related palo adan, but in the Vizcaino Desert these scruffy, shrubby trees may bloom almost anytime. Massive displays of large legumes are missing; the palo verde and ironwood are down in the southern part of the peninsula. Both the Baja elephant tree and the boojum delay blooming until midsummer, timing their seed maturity for the onset of autumn rains.

The Vizcaino Desert seems to have three seasons, similar to the three used by early Greeks. There is a more or less rainy, cool winter; a warming, drying transitional spring; and a dry summer, normally with September as the warmest month.

For most of us the springtime "fall" of the Vizcaino and the two kinds of Sonoran summers are unfamiliar seasonal perspectives. Our centers of power and culture remain in the temperate climates, the setting for much of our history. Our words and folklore reflect a yearly cycle in which large differences in temperature dominate everything. There is a cold (dormant) season, a warm (active) season, and two moderate connecting seasons. This four-season pattern shows clearly in the mountain forests above Tucson, but down here it's different. In our subtropics the temperature cycle is apparent, but winters can be more like temperate spring or fall; mild enough to keep some plants growing. Here the rhythm of growth and death is more complicated, driven by a counterpoint of rainfall and drought played against the yearly temperature swing. It's no surprise that spring, summer, winter, and especially autumn are harder for us to define in Tucson, and that our summer "monsoon" is borrowed from another subtropical civilization. We have not truly inhabited this place yet, and our strong preference for technology-based oases shows that most of us are in no hurry to do so. Still, I sense a lack of words to fit our yearly cycle, and I think that until the names are found, our perception of this land will be incomplete.

Wildflower Garden at Tucson Botanical Gardens

(This is the text of a handout given to visitors to the Arizona Native Plant Society Wildflower Garden, located at the Tucson Botanical Gardens.)

There is nothing quite so splendid as our desert in spring wildflower bloom time. The pleasure is doubled because the desert can be so unexpected in its display. At the Botanical Gardens, indigenous and acclimatized annuals and perennials are encouraged to pour forth their variety. These flowers are but a reflection of the colorful expanses which can be found in nature.

The environment for germination, growth and bloom of wildflowers is artfully specific. Wildflower seed is chemically coated to insure against germination if enough moisture is not present. The optimum condition is bi-weekly, ground drenching rains with warming trends between. The rains, which need to begin in late October, soak the upper soil, unbury seed, wash and abrade the seed coat and expose seeds to sunlight.

After gemination occurs, there must be soil moisture present to support seedling growth. If the soil dries out, emerged seedlings will quickly die. Peak spring bloom time usually lasts anywhere from six to eight weeks, beginning in early February.

Annuals and perennials are ephemeral in nature and last only until the temperature hits 90 degrees. The heat, sun extremes, and lack of moisture conspire to end the display. The wildflowers present in our garden include examples which are characteristic of all our Sonoran Desert regions: Woodland, Grassland, Chaparral, and Dunes. You will view verbena, bladderpods, marigolds, Mexican lily, creosote, globemallow, poppies and owlclovers to name but a few.

The grass present is a graphic example of the need to use only sterilized mulch in wildflower gardens. The grass seed has emerged, easily competing for moisture with the more finicky wildflowers. The wildflowers are perfectly adapted to an average organic matter content of 2%, so mulching is not necessarily warranted in home landscapes.

Slow perusing affords the searcher a myriad of colorful treasures. Wander slowly so as not to miss these spring gifts of delicate beauty. Then consider the artful precision of nature which has converged to paint the landscape.

Endangered vine on way to recovery

BOTANISTS KEEP STRIVING TO SAVE RARE GLOBEBERRY

By Douglas Kreutz
The Arizona Daily Star

If *Tumamoca macdougalii* were one of those big, hefty wild vines — the type that served so nicely as rapid-transit systems in the Tarzan movies — then there might have been no problem in the first place.

But it isn't.

Tumamoca macdougalii, which grows only in the Sonoran Desert, happens to be a rare, delicate and very vulnerable little vine.

With a population so meager that it has been listed as an endangered species, the stringy creeper was further threatened when botanists discovered five years ago that a cluster of the rare vines lay smack in the path of a planned Central Arizona Project canal south of Marana.

So far, so bad.

Ambitious, costly effort

But two years ago, the U.S. Bureau of Reclamation embarked on an ambitious and costly effort to save *Tumamoca* by transplanting surviving plants to special *Tumamoca* preserves.

And this summer, according to scientists in charge of the effort, there are signs that the vine, commonly known as globeberry, has begun crawling up the comeback trail.

"We've had some success, and right now we're hoping for the best," said Frank Reichenbacher, a botanist and biological consultant who in 1983 discovered a small population of globeberry vines flourishing in what was to be the right-of-way for the CAP canal.

"In terms of what can be done for the plant, nobody has dropped the ball; and in that sense, this is really a success story," said Reichenbacher, who now is under contract with the Bureau of Reclamation to study the vine.

"Lots more to learn about"

"But this is a plant with a long history that we know nothing about. We've got a lot more to learn about it," Reichenbacher said.

Said Sherry Barrett, a biologist with the Bureau of Reclamation: "These plants are definitely vulnerable. And as fast as the Avra Valley is developing right now, the preserves we've set aside could be the last remaining outposts for these species in years to come."

o o o

The globeberry vine, a member of the cucumber family, was discovered on Tumamoc Hill west of downtown Tucson in the early 1900s by botanist Daniel T. MacDougal.

It is described by botanists as an extremely delicate and "shy" plant trying to eke out a living in a desert of water-guzzling cactus giants and vine-chomping rodents.

Growing from a tuberous root, it twines itself into the branches of desert bushes and trees from about mid-July until October.

It produces a small gourd, about a half-inch in diameter, that turns bright red with the onset of the summer rains.

By October, the fruit dries up after producing a few seeds, and the 20-foot-long vine withers away, leaving only the underground root to sustain the plant until spring.

The vine, which grows in desert flatlands in Southern Arizona and northern Sonora, apparently is considered a tasty treat by javalinas and rodents.

The hearty appetites of such animals, along with increased bulldozing by developers in Southern Arizona, have contributed to the vine's endangered status, according to botanists.

No firm estimates are available on the number of the vines growing in Arizona and Sonora.

"Rough guess"

Reichenbacher says a "rough guess" might put the total at 5,000 plants, with perhaps 2,300 growing in the Tucson-Avra Valley area.

But he emphasizes that many of those plants are seedlings and that the viable adult population near Tucson may total no more than 500 plants.

Reichenbacher, after discovering 16 globeberry plants in the canal area in 1983, began working with Bureau of Reclamation officials to develop a plan for saving the vines.

Barrett said the bureau, which is overseeing construction of the CAP, purchased two parcels of land totaling 129 acres near the canal at a cost of \$270,000. Research expenses amounted to an additional \$241,065, and planned acquisitions of five more globeberry preserve parcels will bring the project's total price tag to about \$1 million, she said.

In 1986, Reichenbacher located 450 vines in the canal area, and "just moved them a few hundred yards and replanted them."

Seedling plantings

He later took several thousand seeds, collected from the plants, to the Arizona-Sonora Desert Museum, where museum plant experts Mark Dimmitt and Meg Quinn produced about 1,000 seedling plants.

The 2-year-old seedlings are being planted this summer by Stephanie Meyer of the Arizona Native Plant Society and volunteers from the group.

"We've put out 600 plants on the preserve site so far," Meyer said. "We did plantings in May, June and July of 200 plants at a time, and we'll do another planting at the end of August.

"We've taken this on as a project, and we plan to help with the plantings and to monitor the area for five years," she said.

Meyer lauded the Bureau of Reclamation for "investing a lot of money and effort in this project."

"I don't personally like the (CAP) canal, but I think this is something positive that has come out of it," she said. "I think the whole Tumamoca story is a success story because of the way the bureau has handled it."
Survival isn't guaranteed

Reichenbacher, whose contract with the Bureau of Reclamation calls for a study of the vine throughout its range in Southern Arizona, warned that all the well-meaning efforts at saving the vine don't guarantee its survival.

"It is still one of the few endangered plant species that grows not just in isolated areas, but in the path of a rapidly developing metro area - and that's presenting a lot of problems," he said.

"That's one of the main reasons it was listed (in 1986) by the federal government as an endangered species," he said. "But the Endangered Species Act still only protects it if federal lands or federal permits or federal funding is involved."

"Developers, by and large, are conscious of endangered plants and the need to protect them, but they are not required to do that," he said.

Time, effort, money

Reichenbacher and others involved in the project are asked why so much time, effort and money are being invested in saving a reclusive and not particularly useful little vine that wasn't even discovered until this century.

"There are some standard answers for this question of protecting endangered species," Reichenbacher said. "For example, you never know when you'll find a cure for cancer

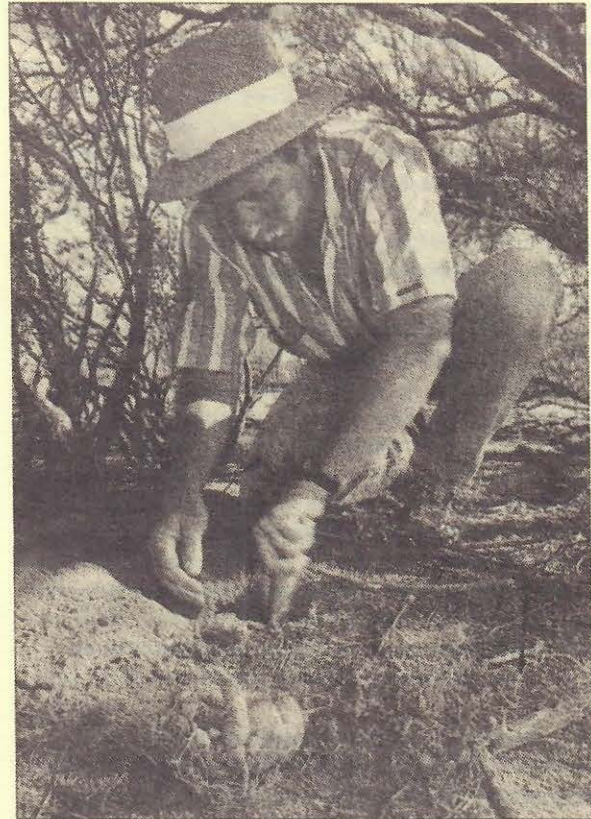
in a certain plant ... or maybe the genes in it could be used to create a race of perennial watermelons that would grow in the desert.

"But the other argument," he said, "has to do with the ever-accelerating rate of extinction of species. We don't want to end up with a world that's populated only by tumbleweeds and cockroaches."

Said Meyer, "We're talking about habitat when we're talking about endangered species. And we need to be responsible for the habitat."

Barrett said endangered plants "historically have gotten the least amount of protection of all the endangered species."

"Everybody has a different idea of what should be protected," she added. "Some think it is the very large animals, the 'glory species.' Others think it should be certain insects or rodents. But all these things, including this vulnerable vine, have their place in the big scheme."



Frank Reichenbacher plants a globeberry vine, an endangered plant. Photo by David Sanders, The Arizona Daily Star.

Palo Verde Removal

By Kevin Dahl

Along a 17-mile stretch of interstate highway 8 near Gila Bend, Arizona, a dense, mature stand of blue and foothill palo verde trees was in full and glorious bloom this last April. Stephanie Meyer saw them on a trip to Yuma and remembers how she was "elated by their beauty."

They're not there anymore.

Stephanie, as president of the Arizona Native Plant Society, received four phone calls just after the July 4th weekend from vacationers returning from San Diego who had seen highway workers removing the palo verdes. Not one to shun a call to action, Stephanie began a series of phone calls that led to the governor's office. While it was too late to save those trees, her response has changed how roadside landscaping decisions will occur in the future.

Stephanie describes the chain of events: "I called LeRoy Brady at Roadside Development (a section within the Arizona Department of Transportation - ADOT). He was aware of the project, seemed quite distressed about it, and informed me it was in the hands of Engineering. I then called Dave Schmitt, assistant to the State Engineer. We had a pleasant conversation regarding the project. He told me it was being done to meet ASHTO's safety regulations providing for thirty foot clearance on either side of the road of trees with trunk diameter of four inches or more. I asked him if a safety analysis had been done on that stretch of road and whether the funds being spent were state or federal. If they were federal, I wanted a copy of the EIS report. Mr. Schmitt could not answer those questions, but he said he would see that I received responses. I called Ed Ueste at Federal Highways who was not aware of the project but said he would mention it to Mr. Miller, Director of ADOT. I have been informed that in 1978-1979 this stand of trees was set aside by Federal Highways as significant. Having received no satisfaction from these calls, I decided to contact the Governor's office."

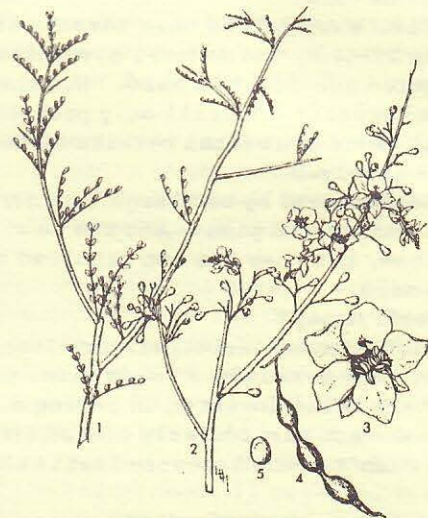
George Cunningham in the Governor's office was able to relay our complaint to the attention of James Creedon, ADOT's deputy director. Stephanie's correspondence and conversations with him has produced results: highway engineers will no longer decide to remove trees without consideration from land-

scape architects within the department. As Mr. Creedon wrote in a recent letter, "We have a new set of guidelines addressing vegetation management, which this situation has clearly expedited."

Stephanie points out that the trees were removed for safety regulations that should have taken into account the differences between hardwood and softwood trees. "One thing a botanist and an engineer will agree on is that a palo verde will topple upon impact with a vehicle while a comparable sized oak will not," she said.

In one letter to Mr. Creedon, Stephanie points out the value of native trees in roadside landscaping: "...they are not only visually pleasurable. They reduce headlight glare from oncoming traffic, the low hanging branches hold litter and remove it from public view. Trees absorb highway emissions, reduce dust and wind, and most importantly cool the atmosphere."

Promising to continue to monitor highway landscaping projects, Stephanie said, "Arizona possesses possibly the most diverse flora of all the states. Tourism is one of our most important economic concerns. What better place do we have than our highways to display our abundant beauty? Instead of playing havoc with our vegetation, I would like to see our taxpayers' dollars spent on beautification of our highways, for example, the Interstate from Tucson to Phoenix could do with much visual improvement."



Foothill palo verde, *Cercidium microphyllum*. 1, branch showing the bipinnate leaves with 4-7 pairs of secondary leaflets and with practically no petioles, with one thorn bearing a single small leaf; 2, flowering branch, practically leafless at this season; 3, flower, the white banner differentiated from the other four pale yellow petals.

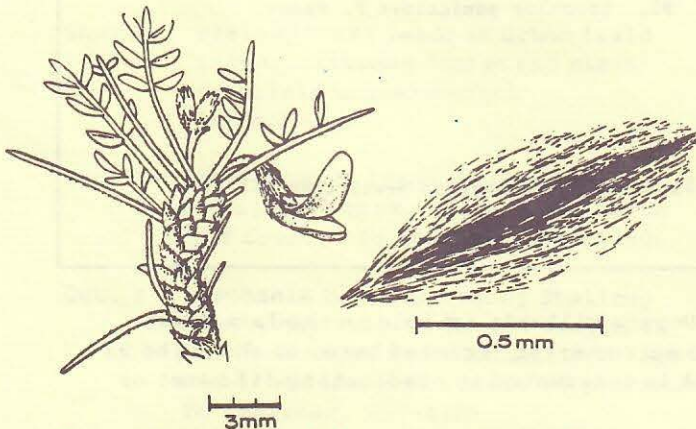
Sentry Milk Vetch

By Sue Rutman

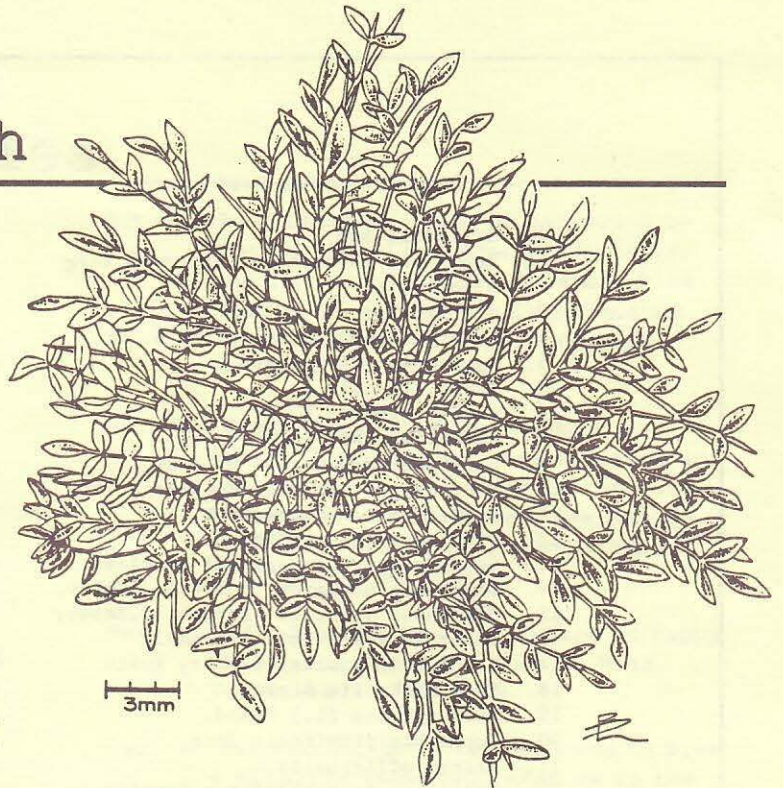
The sentry milk vetch (*Astragalus cremnophylax* var. *cremnophylax*) is a dwarf *Astragalus* that occurs on Kaibab limestone pavement on the very edge of the South Rim of the Grand Canyon. Other mat-forming plants, such as *Petrophytum caespitosum* and *Phlox astromontanus*, also occur on this barren-looking habitat. Fewer than 500 plants occur in a single population on a popular viewpoint at the canyon. The specific name beautifully describes the location of this species; *cremnophylax* means "watchman of the gorge."

Sadly, information indicates this unique species may be declining in its natural habitat. Many of the remaining plants are damaged by trampling by park visitors. Because this species has one small, restricted population that is threatened by human activities, the U.S. Fish and Wildlife Service is considering adding this species to the list of federally endangered species. It already receives the protection of Arizona's Native Plant Law.

In April, work began on increasing our understanding of this species. Seven members of the Native Plant Society helped the National Park Service and the Fish and Wildlife Service survey for new populations of this species. Although no new populations were discovered, we hope that additional surveys will be more fruitful. In addition to the surveys, the Fish and Wildlife Service and the National Park Service established permanent plots where the species will be monitored over the long term to evaluate its status. With the interest expressed by the Native Plant Society, the Fish and Wildlife Service and the National Park Service, the conservation outlook for this species is a positive one.



Astragalus cremnophylax var. *cremnophylax*



Letter

Editor:

I was sad to learn of vandalism on Mt. Graham.

Destruction and desecration of this once-sacred mountain are deplorable, whether by the University of Arizona or by un-named third parties.

There can be no doubt that UA scopes would do violence to Mt. Graham biota - both flora and fauna.

A lesson may be taken from the sad history of Mt. Hopkins in the Santa Rita Mountains south of Tucson. There, astronomical functions were given an original allotment of 53 acres. But the Forest Service, often forced by prior encroachment, made further concessions. As a result, "astronomical" activities now occupy over 47 HUNDRED acres, virtually all of Mt. Hopkins.

Suppose your friendly Congressmen and Senators pass a currently-entertained "legislative remedy" (a misnomer if there ever was one) mandating scopes on High Peak and/or Emerald Peak.

Is there any reason to suppose that the rape of Mt. Graham, from the top down, will be any better?

The Mt. Graham ANPS trip this August was both refreshing and educational. It seems a shame that our federal legislators would contemplate blocking us and succeeding generations from setting foot on these spots and trails.

-Harry Tate

Federal Noxious Weed List

1. ^a Aeginetia spp.
2. Ageratina adenophora (Spreng.) King & Robinson
3. Alectra spp.
4. Alternanthera sessilis (L.) R. Br.
5. Asphodelus fistulosus L.
6. Avena sterilis L.
7. Azolla pinnata R. Br.
8. Borreria alata (Aubl.) DC
9. Carthamus oxycanthus M. Bieb.
10. Chrysopogon aciculatus (Retz.) Trin.
11. Commelina benghalensis L.
12. Crupina vulgaris Cass.
13. Cuscuta spp. (except USA species)
14. Digitaria scalarum (Schweinf.) Chiov.
15. Digitaria velutina (Forssk.) P. Beauv.
16. Drymaria arenarioides Weddell
17. Eichhornia azurea (Swartz) Kunth
18. Emex australis Steinh.
19. Emex spinosa (L.) Campd.
20. Euphorbia prunifolia Jacq.
21. Galega officinalis L.
22. Heracleum mantegazzianum Sommier & Levier
23. Hydrilla verticillata (L. f.) Royle
24. Hygrophila polysperma T. Anderson
25. Imperata brasiliensis Trin.
26. Imperata cylindrica (L.) P. Beauv.
27. Ipomoea aquatica Forssk.
28. Ipomoea triloba L.
29. Ischaemum rugosum Salisb.
30. Lagarosiphon major C. E. Moss
31. Leptochloa chinensis (L.) Nees
32. Limnophila sessiliflora (Vahl) Blume
33. Lycium ferocissimum Miens.
34. Melastoma malabathricum L.
35. Mikania cordata Bum.
36. Mikania micrantha Kunth
37. Mimosa invisa Martius ex Colla
38. Mimosa pigra L.
39. Monochoria hastata Solms.
40. Monochoria vaginalis Presl.
41. Nassella trichotoma Hackel, ex Arech.
42. Opuntia aurantiaca Lindl.
43. Orobanche spp. (except USA species)
44. Oryza longistaminata A. Chev. & Roehr.
45. Oryza punctata Kotschy
46. Oryza rufipogon Griffith
47. Ottelia alismoides (L.) Pers.
48. Paspalum scrobiculatum L.
49. Pennisetum clandestinum Hochst. ex Chiov.
50. Pennisetum macrourum Trin.
51. Pennisetum pedicellatum Trin.
52. Pennisetum polystachion (L.) Schult.
53. Prosopis alata Philippi
54. Prosopis argentina Burkart
55. Prosopis articulata S. Watson
56. Prosopis burkartii Muñoz P.
57. Prosopis caldenia Burkart
58. Prosopis calingastana Burkart
59. Prosopis campestris Grisebach
60. Prosopis castellanosi Burkart
61. Prosopis denudans Benth
62. Prosopis elata Burkart
63. Prosopis farcta Macbride
64. Prosopis ferox Grisebach
65. Prosopis fiebrigii Harms
66. Prosopis hassleri Harms
67. Prosopis humilis Gillies ex Hooker
68. Prosopis kuntzei Harms ex Kuntz
69. Prosopis pallida H. B. K.
70. Prosopis palmeri S. Watson
71. Prosopis reptans Benth var. reptans
72. Prosopis rojasiana Burkart
73. Prosopis ruizlealii Burkart
74. Prosopis ruscifolia Grisebach
75. Prosopis sericantha Gillies ex Hooker
76. Prosopis strombulifera Benth
77. Prosopis torquata DC
78. Rottboellia exaltata L.f.
79. Rubus fruticosus L.
80. Rubus moluccanus L.
81. Saccharum spontaneum L.
82. Sagittaria sagittifolia L.
83. Salsola vermiculata Bieb.
84. Salvinia biloba Raddi
85. Salvinia herzogii Sota
86. Salvinia molesta D. S. Mitchell
87. Setaria pallide-fusca (Schum.) Stapf & C. E. Hubb.
88. Solanum torvum Sw.
89. Sparganium erectum L.
90. Stratiotes aloides L.
91. Striga spp.
92. Tridax procumbens L.
93. Urochloa panicoides P. Beauv.

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A list of plants that should have accompanied Horace Miller's article in the last *Plant Press*, "Botanical Illegal Aliens," was omitted due to editor error. Printed here, it shows the 93 noxious weeds found throughout the world that the USDA is interested in eradicating (if here) or keeping out (if not yet here).

Chapter Activities

Note: regular meetings may be changed after this was printed; check with chapter officials for actual meeting dates.

YUMA CHAPTER

Meetings take place the third Monday of each month at 7:30 p.m. at the University Farm, 6425 W. 8th Street.

PRESCOTT CHAPTER

Meetings are held every second Friday of the month at 7 p.m. at the Yavapai Rehabilitation Center, 436 N. Washington.

SOUTH CENTRAL CHAPTER

Regular meeting times are the first and third Saturdays of each month, through May, 10 a.m. to noon, at the Signal Peak campus of Central Arizona College, located at the intersection of Woodruff and Overfield Roads midway between Coolidge and Casa Grande. Business meetings and programs are held the first Saturday in the Community Room. Work sessions preparing clay name-plates to be used for marking campus plants are held on the third Saturday, in the Arts & Crafts Building. The name-plates are the first phase of a self-guided campus botanical walk.

PHOENIX CHAPTER

Meetings are held on the second Monday of each month at 7:30 p.m. at the Desert Botanical Garden's Webster Auditorium, located in Papago Park at 1201 N. Galvin Parkway.

TUCSON CHAPTER

Regular meetings are held on the second Wednesday of the month at 7:30 p.m. at the Tucson Botanical Garden, 2150 N. Alvernon Way.

Tucson field trips (open to all members):

- Sep. 24 Blainey Korff leads an urban field trip to critique design and plant materials in residential landscaping.
- Sep. 25 Mark Dimmitt leads an all-day trip to Pajarito Mtns., in western Santa Cruz County. To register, 883-1380.
- Oct. 2 Stephanie Meyer and Nancy Stallcup lead a day trip to Garden Canyon in Huachuca Mtns. for profusion of late summer wildflowers. Limit 25 people. To register, 296-4385

Oct. 16 Andy Laurenzi leads an excursion to Posto Quemada and Agua Verde Hills, south of Rincon Mtns., eastern Pima County, to survey for *Echinomastus erectocentrus* var. *erectocentrus*. To register, 622-3861.

Oct. 28- Otero Chapter of the New Mexico Native Plant Society has extended an invitation to join them in the Peloncillo Mtns. of southwest New Mexico. Write Jean Dodd, 1302 Canyon Rd., Alamogordo, NM 88310.

Nov. 5 Matt Johnson leads an outing to Happy Valley, east side of Rincon Mtns. To register, 886-6130.

Dec. 3 Sue Rutman, botanist with the US Fish & Wildlife Service, takes us to the Barry Goldwater bombing range, south of Gila Bend, for a survey of *Echinomastus erectocentrus* var. *acunensis*. Details, Andy Laurenzi, 622-3861.

MEMBERSHIP APPLICATION

Membership classes:

<input type="checkbox"/> Lifetime	\$1000.00
<input type="checkbox"/> Patron	100.00
<input type="checkbox"/> Sponsor	50.00
<input type="checkbox"/> Commercial	50.00
<input type="checkbox"/> Institution (including clubs & societies)	25.00
<input type="checkbox"/> General (including individuals & families)	15.00
<input type="checkbox"/> Senior Citizen & Student	10.00

Chapter affiliation:

<input type="checkbox"/> Flagstaff	<input type="checkbox"/> Phoenix
<input type="checkbox"/> Prescott	<input type="checkbox"/> South Central
<input type="checkbox"/> Tucson	<input type="checkbox"/> Yuma

Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Clip and mail this form together with proper remittance to:

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MEMBERSHIP INFORMATION

The Arizona Native Plant Society, incorporated as a non-profit tax-exempt organization in 1976, is recognized throughout Arizona for its leadership in promoting a better appreciation of our native flora, in protecting and preserving these plants and in encouraging their use for landscaping and improving our environment. Membership is open to any interested person, family, or other group. Please use the membership application located elsewhere in this newsletter.

NEWSLETTER CONTRIBUTIONS

Contributions of articles, artwork and letters to the editor are gladly received. Please direct all contributions to the newsletter to:

Kevin Dahl, editor
 1609 E. Spring
 Tucson, AZ 85719
 881-0807

NEXT DEADLINE IS:

December 1, 1988

Please direct all other inquiries regarding the Arizona Native Plant Society to the Secretary at our official address:

P.O. Box 41206 Sun Station
 Tucson, AZ 85717

The Arizona Native Plant Society
 P.O. Box 41206
 Tucson, Arizona 85717



If you move, please send us a card of address. Bulk mail isn't forwarded.

