

ANPS ANNUAL MEETING

Central Arizona College, and Bill Kinnison, college horticulturist, were hosts to the Arizona Native Plant Society at its annual meeting January 19, 1980. About 40 members from Tucson, Phoenix and Superior attended.

The meeting began with a short business session, during which the election of Howard Gentry, F. Morgan Rayburn, and William Kinnison to the Board of Directors was announced. President Bill McGinnies then announced the award of Distinguished Fellow certificates to Lucretia Brezeale Hamilton and Larry Holzhuth. Mrs. Hamilton also received life membership in the society for her design of the society's logo.

Tom Van Devender, botanist with the Arizona Natural Heritage Program of The Nature Conservancy, spoke on Arizona's endangered plant species. He summarized the history of the various lists of endangered plants which have been prepared and discussed the difficulties of arriving at conclusions as to what species are in jeopardy. He showed slides of about 25 Arizona species endangered within the borders of the state, and concluded with mention of a list that he is completing of about 300 Arizona plants of special concern.

Following Van Devender's talk, McGinnies asked for an expression of opinion as to whether the society should make the endangered species a topic of major concern. A show of hands indicated full support of the proposal, and the Board

of Directors will consider specific means of implementing the decision.

After lunch in the college cafeteria Bill Kinnison opened the afternoon session with a brief history of the college landscaping, for which he has been largely responsible, and then led the group on a tour of the extensive plantings. There are four main areas: native Arizona, Sonoran desert, Chihuahuan desert, and exotic, each with a fascinating collection of species. Despite a steadily increasing rain, the members managed to see a fair proportion of the specimens, but eventually the downpour won and everyone took to cover. Bill Kinnison kindly invited the group to return for another, drier visit--an offer which will undoubtedly be taken up.

Hortense Miller

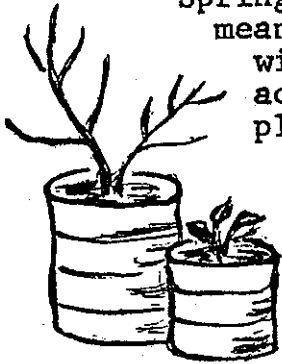
ANPS 1980 Directors and Officers

As a result of the general election prior to the annual meeting, the Board of Directors now includes: E. LeRoy Brady, L. Tim Clark, Frank Crosswhite, Ron Gass, Howard Scott Gentry, Russell Haughey, William Kinnison, William McGinnies, Barbara Olson, and Anne Rohde.

At a Board of Directors meeting following the annual meeting, officers were elected for 1980:

President: William McGinnies  
Vice-Pres.: L. Tim Clark  
Treasurer: Barbara Olson  
Recording Sec.: Anne Rohde  
Corresponding Sec.: E. LeRoy Brady

PLANT SALES



Spring is coming and that means annual plant sales will be tempting us to add to our arid land plants collections:

April 5 and 6

Boyce Thompson Southwestern Arboretum, US Highway 60 just west of Superior

April 12 and 13

Desert Botanical Garden Papago Park, Phoenix

April 19 and 20

Arizona-Sonora Desert Museum Tucson. Museum members will receive 10% discount on plants.

Tucson Chapter has been invited to provide volunteer help for the Boyce Thompson sale.

PUBLICATIONS OF INTEREST

Issue number 2 of DESERT PLANTS appeared in November 1979. Contents include an article on guayule by Bill McGinnies, a report on establishing vegetation on highway slopes, another on protecting Arizona's native plants, and one on stem inflation in wild buckwheat. A prototype arid vegetation information system was described as was also the conversion of sawmill wastes to garden products. A mini-symposium on soil mixes for desert plants should be of interest to all who have ever tried to grow such plants.

Order subscriptions, at \$10 per year, from Boyce Thompson Southwest Arboretum, P.O. Box AB, Superior, AZ 85273.

TUCSON CHAPTER

On March 12th at Porter Gardens (formerly Tucson Botanical Gardens) Dr. Phil Ogden, Range Management Professor at the Univ. of Arizona, will talk about the "Empire-Sonoita Grassland Area." 7:30 p.m.

Since the program after March 12th has been revised, Tucson chapter members will receive a revised schedule in the mail.

NEWS AND NOTES

The Audubon Institute of Desert Ecology will be held May 16-20 at the Boyce Thompson Southwestern Arboretum. For information, contact Mrs. Beth Morgan, Director, 1642 N. Westridge Avenue, Tucson, AZ 85705.

Presidents of the western native plant societies met in Reno February 23rd. Bill McGinnies represented ANPS.

NEWSLETTER PUBLICATION SCHEDULE

The following schedule has been proposed for this newsletter:

Publication dates:

March 1, June 1, September 1, December 1.

Deadline dates:

February 1, May 1, August 1, and November 1.

PLEASE NOTE the next news deadline is May 1, 1980.

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Contribute to the Newsletter  
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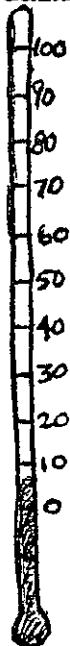
DECEMBER '78 FREEZE --  
--CAVE CREEK CANYON

[Many thanks to Alden C. Hayes, who has sent the following notes.]

My location is in the mouth of Cave Creek Canyon on the east side of the Chiricahua Mts. We are in the Upper Sonoran Zone at an elevation of 5000 feet at the edges of both piedmont and riverine ecosystems. On the 6th of December 1978 a seven-inch snowfall was followed by a night of 8° temperature. Lower minimums have been recorded here with less damage. What made this spell so severe was a period of four days in which the temperature never got above 28 degrees. High ridges on the east and west sides of the canyon limit the sunshine to seven hours at that time of year.

There was no damage to these common native species: Yucca schottii, Y. elata, sotol (Dasylirion), cottonwood, Emory oak, Arizona white oak, sycamore, desert willow, desert juniper, alligator juniper, Arizona cypress, walnut, elderberry, hackberry, ocotillo, mormon tea (Ephedra), cholla, and Opuntia phacacantha (a prickly pear). Neither was there damage to tamarisk, nor to temperate zone fruit trees (apple, pear, apricot, plum and peach).

There was some tip damage to new twig growth on the native mesquite and catclaw (Acacia greggii), and the tips of the leaves of mescal (Agave palmeri) were yellowed. Many of the upper and more exposed pads were killed back on Opuntia engelmannii, macrocentra, and chlorotica, and Santa Rita prickly pear--all natives. Surprisingly, beavertail



cactus (O. basilaris)--far above its native range--suffered little more. Exotics with twig damage were privet, pyracantha, euonymus and viburnum.

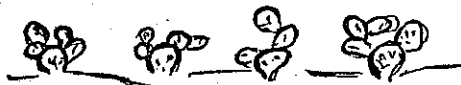
Several species--all exotic to this location--were killed back to the ground, but came back out of the root crown during the summer. These were fig, oleander, desert broom (Baccharis), bird of paradise (poinciana) and foothill paloverde. Though all of these made a vigorous regrowth, they didn't bloom in '79.

The only plants that were killed outright were cacti--two native and one imported species. Rainbow cactus (Echinocereus pectinatus) and hedgehog (E. triglochidiatus) that were in the open were killed. Plants growing under the protection of mesquite or catclaw survived without damage. Several transplanted beavertail and Santa Rita prickly pears were killed completely.

There is an unexplained phenomenon in the case of Engelmann prickly pear--our most abundant opuntia which grows commonly to five and six feet high. Some plants were pretty well melted down to the ground, while others only 8 to 10 feet away, in seemingly identical environments, were untouched.

Below the mouth of the canyon and out into the San Simon Valley there is a line roughly paralleling the 4400 foot contour below which all the mesquites were killed to the ground. Three hundred feet below that line in the valley bottom at Rodeo, NM, the December 6 low reading was 14° below zero.

Alden C. Hayes  
Portal, AZ 85632



## RELICT PLANTS IN THE SONORAN DESERT

It is strange that a plant which is abundant in one part of its range can be uncommon or even rare in another. Even stranger is that a plant can be common in a part of its range for the wrong reasons. That is to say, plants are usually common in a given area because that area meets the plants' requirements-- enough rainfall or protection from freezing or a certain kind of soil. However, there are plants that are common in spite of the fact that none of these requirements are met. These plants may be relicts, that is, holdovers from a different climate.

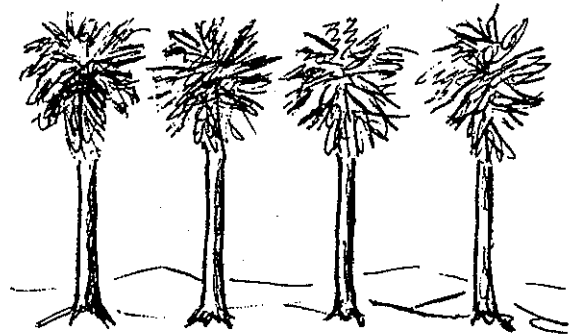
One-seed juniper (Juniperus monosperma) is one such plant out of place. This juniper is often common at or near the summits of many Sonoran desert mountain ranges, including the Ajo Mts., the Table Top Mts., and the Sand Tank Mts. An observation which suggests that this is a relict species is that populations of juniper in desert mountain ranges are not replacing themselves. Although junipers are common at the summit of the Ajo Mts., most of the trees are very old and there are few young trees. The climate is just too harsh for this woodlands species; junipers are scarcely surviving in the Ajo Mts. with 12 to 16 inches of annual rainfall and high summer temperatures of 100° F. or more.

Fossil evidence also supports the idea that one-seed juniper is a relict in the Sonoran desert. Nests of pack rats are sometimes preserved for tens of thousands of years and may contain ancient plant remains. Pinyon and juniper stems and needles found in pack rat nests in the Ajo Mts. were dated using radiocarbon techniques and found to be about 20,000 years old. This suggests that woodlands with pinyon and ju-

niper occurred nearly to the base of the Ajo Mts. in the Pleistocene about 20,000 years ago.

During the Pleistocene, the climate in southern Arizona was much cooler and moister than it is now. As the climate became more arid, pinyons disappeared from the Ajo Mts. and junipers retreated to the coolest and wettest places in the range. Even so, they are growing in a harsh environment which prevents regeneration of their populations. Thus, one-seed juniper is a relict species in the desert mountains.

The well-known California fan palms (Washingtonia filifera) in Palm Canyon in the Kofa Mts. of southwestern Arizona (and a recently discovered population at Castle Hot Springs near Wickenburg in central

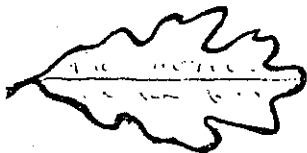


Arizona) are also relict plants, left over from a warmer and moister climate. The relict status of California fan palms is suggested by their habitat. They are restricted to permanent springs, seeps and moist arroyos at low elevations in the Sonoran desert. In addition, they can tolerate only light frost. Although the fan palms in Arizona are located in favorable situations, they are not replacing themselves, and this also suggests that they are relicts.

California fan palms and one-seed junipers are locally common in parts of Arizona. They occur in topographic situations which meet their

requirements as closely as possible, but not closely enough, since neither species is reproducing. Thus, California fan palms and one-seed junipers are common for the wrong reason in Arizona's Sonoran desert. They are left over from different climates.

Janice E. Bowers  
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Sensing Program  
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The Arizona Natural Heritage Program (ANHP), "a systematic inventory of the state's most sensitive species," is a joint venture of The Nature Conservancy and the Arizona Game and Fish Department. We thank Tom Van Evender and Frank Reichenbacher for the following reports. Both may be reached at the ANHP office, 30 North Tucson Blvd., Tucson AZ 85704.

### SPECIAL PLANTS OF ARIZONA

I am the botanist with the ANHP. Part of my job involves developing a list of plants that are special to the natural diversity of Arizona in one way or another. The list will be a large one--over 300 species. This is really no surprise in a state with a vascular plant flora of over 3400 species. Moreover, Arizona is the crossroads for floras from all directions. The deserts on the east and west have different plants. The mountains to the north have many Rocky Mt. plants while those of the south have many Sierra Madrean plants. A whole suite of Mexican and subtropical plants enters the U.S. along the Arizona border. In this column, I

will share information about a few of the special plants of Arizona.

### Lysiloma microphylla Benth (Feather Bush or Fern Bush)

This lovely shrub with feather-like leaves occurs in the U.S. only in Saguaro National Monument in the Rincon Mts. east of Tucson. It is locally common on rocky slopes in canyons. The Arizona population is disjunct from its center of distribution along the west coast of Mexico as far north as central Sonora. In warmer, more tropical areas in Mexico, it can become a large tree. To the north, occasional freezes shape the plant into a shrub. The scientific name has gone through a confusing series of changes. It was first described as Lysiloma thornberi--named for Dr. Thornber, an early botanist at the University of Arizona. Then Richard Felger, of the Arizona-Sonora Desert Museum, and Charles Lowe, of the Univ. of Arizona, placed it as a subspecies of the Mexican L. watsoni. More recently, Duane Isely, Univ. of Iowa, has put L. watsoni into the species L. microphylla, leaving the Arizona plant as L. microphylla, variety thornberi. Whatever its name, this plant is a lovely ornamental that is commonly used in Arizona landscaping [and ANPS members will recognize it as our logo].

### Endangered Cacti

By November 1979, five Arizona cacti were listed as endangered species by the U.S. Fish and Wildlife Service. These are the officially listed endangered or threatened plants in Arizona, although several hundred species that were formerly proposed have been dropped. The Fish and Wildlife Service is developing a new list of plants to be proposed as threatened or endangered. Echinocereus triglochidiatus var. arizonicus is a well-marked variety of the claret cup cactus that only

occurs in the mountains near Globe. Echinocactus horizonthalonius var. nicholii is a variety of eagle's claw or Turk's head cactus only found in a couple of areas west of Tucson and on the Papago Indian Reservation. It is a disjunct variety of a cactus common throughout the Chihuahuan desert east of El Paso and south onto the Mexican Plateau. The last three endangered cacti are species of Pediocactus found on the Colorado Plateau in northern Arizona. They are rare, small cacti that are rapidly approaching extinction. Some of the mature plants are the size of a half dollar. These cacti are endangered because they are prized by hobbyists and badly need all the protection that we can give them.

Spiranthes graminea Lindl. (Canelo Lady's Tresses Orchid)

S. graminea is a delicate little orchid with a stalk of tiny white flowers about a foot tall and grass-like leaves. It lives in a wet, marshy area with grasses, sedges and horsetails on the edge of the cienega in the Canelo Hills Cienega Preserve owned by The Nature Conservancy. The cienega is located in the Canelo Hills near Elgin between the Huachuca and Patagonia Mts. in Santa Cruz County. This is the only locality in the U.S. for it, and the nearest Mexican locality is in Durango, hundreds of miles to the south in the Sierra Madre Occidental. This orchid was not discovered until 1969 when Paul S. Martin, Univ. of Arizona, first noticed it. The numbers of plants in the marsh have fluctuated with the condition of the cienega. Rick Lamma, the preserve caretaker, is monitoring the population. He finds that controlled burning of the cienega edge may actually increase the numbers of orchids. The best time to see the orchids is from the beginning of the summer rains in mid-July to early August. Visitors are welcome at the preserve. Con-

tact Rick Lamma at Star Route 289, Elgin, AZ 85611; phone: 455-5556.

Tom Van Devender

## SPECIAL PLANT COMMUNITIES OF ARIZONA

I am the plant ecologist with ANHP. My work involves cataloguing the plant communities of Arizona. Our vegetation is unique in terms of the rest of the U.S. The Sonoran desert evolved from floras from the tropics and subtropics, and at the highest point in Arizona on Humphreys Peak, one may view a plant community, the alpine tundra, which comes from floras near the Arctic Circle. This remarkable diversity has engrossed scientists for over a century. In this column we'll look at some of the ways scientists have interpreted the vegetation that gives Arizona so much of its beauty.

### Arizona Cypress Forests & Woodlands

Arizona cypress (Cupressus arizonica Greene) is usually split into two varieties. Rough-bark Arizona cypress (var. arizonica) ranges from the mountains of southern Arizona, south of the Gila River, south to the central Sierra Madre and east to the Chisos Mts. of southwestern Texas. Smooth-bark Arizona cypress (var. glabra) is known only from central Arizona.

In the southwest both varieties are found only on north-facing mountain or canyon slopes or in canyon or valley bottoms. I know of only three or four stands of smooth-bark cypress, one in the Oak Creek-Sedona area, another in the Mazatzal Mts. along Highway 87, and one that I discovered in the southern Bradshaw Mts. Rough-bark cypress is more common and there are several extensive stands in the Santa Catalina Mts. (Bear and Sabino canyons), Galiuro Mts. (Rat-

attlesnake Canyon), Dragoon Mts. Stronghold Canyon) and the Chiriqua Mts. (Bonito Canyon). Nearly all are at elevations of 4500 to 6500 feet.

Their environment is notable for its moderation. Snowfall is minimal, winter temperatures are mild and summer temperatures are not too high. Precipitation at these elevations may be expected to vary from 15 to 22 inches, and on north-facing slopes where evaporation is low, the moisture sinks into the soil.

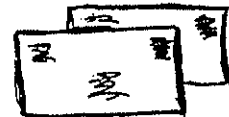
The geographical distribution of Arizona cypress leaves one with the unmistakable impression that the trees once were in a moderate moist climate and were a major feature of the landscape. Now they are found in mountain and canyon refuges.

Indeed, ecologists have suggested that this may be the case. Charles I. Lowe, in "Arizona's Natural Environment," calls them "relictual (post-climax) pockets." Elbert L. Little suggests "that they may be of great antiquity and relics of former widespread occurrence" (Southwestern Trees).

Some millions of years ago the climate of the southwest was milder and wetter than it is now. The landscape of central and southeastern Arizona was dominated by a distinctive flora which had its roots in the Sierra Madre of Mexico. It in turn was evolved from earlier floras which most resemble our tropical vegetation of today. The vegetation consisted of short trees and much subtropical savanna in the lowlands and rich mountain flora of conifers and broadleaf trees. Gradually our climates grew hotter and drier. Our Sonoran desert developed from this "Madrean flora." Arizona cypress represents this dessication and retreat, as seen in its mountain and canyon refuges.

Frank W. Reichenbacher, Jr.

LETTERS  
TO THE EDITOR



Editor:

I do not agree with you on solicited papers. Most of the items in the recent newsletter were submitted on the basis of assignments.

I think responsibility needs to be assigned for certain items, such as reports on meetings and fieldtrips, news from chapters, and special articles, for example, biographies of new VIP members, committee reports, etc.

I do not believe you can get enough material for four good newsletters a year by leaving it up to chance. I favor a compromise that will make assignments for basic items--reports from chapters, committees, meetings, fieldtrips, announcements, etc. and then have the publication open for unsolicited material.

W. G. McGinnies

Editorial Response

Dr. McGinnies makes some very valid points. As you will see, when you read this issue, Phoenix Chapter news is regrettably lacking. Tucson Chapter notes were provided by the editor from her files since no up-to-date news was available by press time. If chapters wish to have their activities announced, they will have to take the responsibility of getting reports to the editor by the deadline.

The president expects to propose an editorial committee at the next Board meeting. If it is established, let the question of newsletter assignments be its first matter of business.

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Eileen B. Ferguson, Editor  
6602 N. Cibola Av., Tucson, AZ 85718