NATIVE PLANT SOCIETY OF NEW MEXICO
NEWSLETTER

July/October 1997 Volume XXII Number 4

The Endangered Species Act and Plants:
Cutting Through the Confusion

By Walter Fertig
reprinted from Castilleja: The Newsletter of the Wyoming Native Plant Society 16(1):3, March, 1997.

Awareness and concern for endangered animals has grown tremendously since the passage of the Endangered Species Act (ESA) nearly 25 years ago. This is especially true in a state like Wyoming, where such high profile threatened and endangered species as the black-footed ferret, gray wolf, grizzly bear, bald eagle, and peregrine falcon all occur. Discussion and debate over the ESA and its ramifications on everyday life have become commonplace today. A very different situation exists in the botanical world. Threatened and endangered plants receive far less attention than their vertebrate kin, even though they make up nearly 60% of the current roster of Endangered species nationwide. A lot of confusion exists regarding the degree of protection that plants receive under the ESA. Such misunderstandings are especially dangerous because they can erode society's support for the Act. Public support is critical if the conservation goals of the ESA are to be achieved at the local level where rare species actually occur.

The most common "myth" regarding plants and the ESA is the idea that rare plants receive the same amount of protection as animals under the ESA, especially on private lands. In reality, the ESA's Section 9 rules on "take" and habitat protection on private property apply primarily to animals. Landowners are not prohibited by the ESA from harming listed plants or destroying their habitat on their own property, unless they are receiving federal money for a development project. This follows a long legal tradition, dating to Roman law, in which plants are viewed as the property of the landowner. By contrast, animals have historically been considered property of the monarchy or society, but not of the private citizen on whose property they might reside.

Amendments to the original ESA do provide a few protections for listed Threatened and Endangered plants on private lands. Plants are protected from illegal harvest or take by people trespassing on private land and are protected from interstate trade. These provisions were enacted primarily to protect commercially valuable species, such as rare cacti, from overharvest. The use of certain herbicides that are hazardous to listed plants may also be restricted on private lands under rules adopted by the Environmental Protection Agency.

The main protection for listed plants under the ESA comes on public lands. Under Section 7 of the Act, federal agencies are required to consult with the US Fish and Wildlife Service to ensure that government actions do not negatively impact a listed species. The use of public lands by private citizens, industry and agricultural leaseholders may be restricted under the ESA if such uses are not compatible with the needs of an endangered species.

The protection of the ESA applies only to plants that are officially listed as Threatened or Endangered (or have been formally proposed for listing). It does not apply to the hundreds of "candidate" species, many of which should be listed, but the proper documentation has yet to be completed. Most federal land management agencies have adopted internal policies to protect these candidate species and to ensure that agency actions do not contribute to the need to list them under the ESA. This proactive approach has been useful in providing needed management attention for a number of rare species on BLM and Forest Service lands, without invoking the ESA.

The second major source of confusion regarding endangered plants is the lack of information on the management needs of these species. Both proponents and opponents of the ESA often assume that drastic management changes must be made when a species becomes listed, or when a previously listed plant is discovered at a new site. The management needs of a given species often vary from site to site, and are dependent on a number of factors, including the species' life history characteristics and dependence on natural disturbance. In many situations, the best management may be the continuation of

Inside...

current activities (with or without slight modifications). People often fail to realize that rare species are fairly sensitive indicators of habitat condition, and their presence at a site may suggest that existing management activities have been compatible with them. One final mistake regards the fear of additional information on the locations and natural history of endangered plants. There is often a common feeling that information can only be used against landowners and other users. In reality more and better information can vastly improve management actions and prevent our limited conservation resources from being used inappropriately. In Wyoming, there are a number of cases in which additional field research has resulted in the removal of plant species from consideration for listing under the ESA due to the discovery of many additional populations. Research can also clarify the management needs of a species, resulting in improved practices and the elimination of unneeded land-use restrictions.

The key to overcoming current misunderstandings about the ESA and plants is through improved education and outreach. This is especially important in order to address the concerns of private landowners, public land users, and other"stakeholders" who are (or perceive that they are) negatively impacted by endangered plants. Better outreach is needed to make people aware of what rare species may be present in their local area and their actual level of protection and management needs. Without education, the long-term survival of many of our rarest plants will remain in jeopardy.

The *Newsletter* is published six times per year by the Native Plant Society of New Mexico. The Society is composed of professional and amateur botanists and others with an interest in the flora of New Mexico. Original articles from the *Newsletter* may be reprinted if fully cited to author and attributed to the *Newsletter*.

Membership in the Native Plant Society of New Mexico is open to anyone supporting our goals. We are dedicated to promoting a greater appreciation of native plants and their environment, and to the preservation of endangered species. We encourage the use of suitable native plants in landscaping to preserve the state's unique character and as a water conservation measure. Members benefit from chapter meetings, field trips, publications, plant and seed exchanges, and educational forums. A wide selection of books is available at discount. The society has also produced two New Mexico wildflower posters by artist Niki Threlkeld. Contact our Poster Chair or Book Sales representative for more information. Call chapter contacts for local information.

Advertising Schedule

Approved advertisements will cost $50 per year.

Membership Fees

Dues are $12.00 annually for individuals or families. "Friends of the Society" include organizations, businesses, and individuals, whose dues of $25.00 or more provide support for long range goals. To join us, send your dues to Membership Secretary, NPSNM, POB 5917, Santa Fe, NM 87502-5917

Newsletter Contributions

Please direct all contributions for the newsletter to Tim McKimmie, editor. See address below or email to tmckimmi@lib.nmsu.edu

Deadline for the next newsletter is October 1.

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Facilitating Container Production of Native Texas Small Trees for Urban and Suburban Landscapes

by David Creech

reprinted from Native Plant Society of Texas News, 14(3):8, May/June 1996.

Researchers and extension personnel at Texas A&M University are working to identify small trees (10' to 20') suitable for use in Texas urban and suburban landscapes that will be amenable to conventional container nursery production technology. Many of the popular small tree species sold in retail outlets were originally selected for use in the eastern United States. They are marginally adapted to Texas' challenging environments. While numerous small trees are native to various regions of Texas, relatively few of these trees are widely available in the nursery trade. Leaders in the nursery/landscape industry and academic/horticultural community were surveyed to identify under-utilized small tree species that had commercial potential but were not widely available in the nursery trade. Participants were asked to consider ornamental attributes as well as potential adaptability to urban sites and conventional container production systems. Numerous species were suggested by survey respondents. From this group fourteen species were identified for further study. All but three species are Texas natives. Species not selected for initial studies will remain candidates for later propagation/production/establishment studies and clonal selection work as time and resources permit.

Acceptance and wide-spread use of new taxa requires that the new product resemble or exceed in overall quality and appearance conventional products (small trees) currently on the market, that plants can be readily established in the landscape and that plants be available when promoted for use at a comparable price to conventional alternatives. For nursery professionals to add new taxa to their product mix, they need to know how it will fit into their production systems and what associated costs and rotation times will be required. While adaptability to the various landscape regions in Texas can be estimated from natural distributions and/or previous landscape plantings, the remaining questions are unanswered.

The first objective is to determine what modifications to conventional production practices will be necessary to produce acceptable wholesale/retail quality container nursery stock with the selected species. The second objective is to determine how costs of production compare to those of conventional substitute plants already in the trade. As finished stock becomes available comparative field establishment with conventional, small landscape trees will be investigated.

Studies evaluating propagation were initiated in the fall/winter/spring of 1994-1995. A popular, easily produced small trees species, *Fraxinus velutina* (Arizona Ash), was included as an industry standard for comparison. The general goal is to produce a salable one gallon tree in one growing season and salable 3 gallon plants in 18 to 24 months (comparable to present industry practices with many small trees). In addition to the species adaptability to conventional container production regimes, we are investigating the use of some environmentally friendly, renewable alternative container media and fertility requirements. Kenaf stalk core *(Hibiscus cannabinus)* and coconut coir pith or dust *(Cocos nuncifera)* are being evaluated as alternatives to pine bark and sphagnum peat, respectively.

Preliminary results suggest that *Acacia wrightii, Chilopsis linearis, X Catalpa tashkentensis,* and *Rhus lanceolata* might be comparable to *Fraxinum veluntina* in growth rates. Some refinement of media requirements, IPM practices, and pruning practices may be required. A few thornless (or nearly so) selections *of Acacia wrightii* have been identified, but propagation methods to preserve the thornless trait are untested. *Cotinus obovatus* showed excellent potential but refinement of clonal propagation techniques is needed. *Prosopis glandulosa* exhibited acceptable responses to container production but was eliminated from further study until a thornless selection can be identified and propagated. *Sophora affinis* and *Pseudocydonia sinensis* have slower growth rates but plants remained attractive during production. *Ungnadia speciosa* makes an adaptable landscape plant but did not respond well to container production, suffered from repeated defoliation and was susceptible to root rot.

Plans are to continue investigations on production and market potential of the most promising species and expand the project to include other species, methods of production and to access establishment potential if funds can be obtained. This project is one of several being developed at the newly renovated TAMU Nursery/Floral Crops Research and Education Laboratory in the TAMU Department of Horticultural Sciences in conjunction with the Texas Agricultural Extension Service's Target 2000 Program (an integrated environmental plan for the Texas nursery and floral industries).

We would like to thank our industry cooperators in the project and recognize the advice and assistance of Prof. Benny Simpson (Dallas), Dr. Yin-Tung Wang (Weslaco) and Dr. Wayne Mackay (El Paso). A special thanks to Mr. Todd Kinney and Mr. Gary Kenney of Kenney Bonded Warehouse (Texas) for the donation of supplies and materials needed for initial stages of this project and to Scotts of Marysville (Ohio) for donation of coconut coir.

CALENDAR

LAS CRUCES

July 9 "Show and Tell". SW Environmental Center. 1494 S. Solano, 7:30 pm.
July 13 Field trip to Achenback Canyon. 4 pm. Pan Am Lot

August 13 "Fruits" by Alice Anderson. SW Environmental Center. 1494 S. Solano, 7:30 pm.
August 17 Field trip to Jornada. 7 am. K-mart Hwy. 70.

Sept. 10 "Ethnobotany in South NM" by Harold Hiles. SW Environmental Center. 1494 S. Solano, 7:30 pm.
Sept. 13 Highway Cleanup. 10 am. St. James Church, Main St.
Sept. 12-14 NPSNM State Meeting, Gallup NM
Sept. 21 Field trip to Dona Ana Mtns. 8 am. K-mart, Hwy 70.

Oct. 8 Regular Meeting. SW Environmental Center. 7:30 pm.
Oct. 12 Field trip to Blue Mesa. 8 am. Fairacres Post Office, W. Picacho

Nov. 5 Potluck. SW Environmental Center. 6:30 pm.

Dec. 3. Annual Planning Mtg. SW Environmental Ctr. 7:30 pm.

ALBUQUERQUE

Aug. 16-17 Plant Sale. Albuquerque Garden Center. 10120 Lomas

Sept. 4 "Fruits" by Louise Lewis, 7:30 pm, Albq. Garden Center
Sept. 6 "Field trip to Perea Nature Trail, 275-7211
Sept. 12-14 NPSNM State Meeting, Gallup NM

OTERO

July 19 Field trip to Benson Ridge. 8:30 am. Cloudcroft Ranger Station Parking Lot

Aug. 9 Field trip to White Sands Missile Range. La Luz school, 7:30 am. call John Stockert 585-2546 for details
Aug. 13-16 Booth at Otero County Fair

Sept. 6 Field trip to Three Rivers. 9:30 am. Three Rivers store
Sept. 12-14 NPSNM State Meeting, Gallup NM
Sept. 27 Native Potluck at Claypools, noon

Oct. 18 Field trip to Sabinet Canyon. 9 am. Alamorosa Hwy 54-70

Nov. 1 Potluck and 1998 Planning Meeting. Gordons, noon

SANTA FE

July 9 "Butterflies of the Santa Fe area" by Steve Cary. 7 pm. St. Johns College, 122 Evens Science Bldg.
July 12 Sixth annual Santa Fe Butterfly Count. PERA lot west end 8:30 or Glorieta Baptist bike shop 9 am
or
Gascon Trail field trip. 454-0683
July 19 Field trip to Black Lake. 454-0683
July 26 Field trip to Sugarite Canyon St. Park. 454-0683

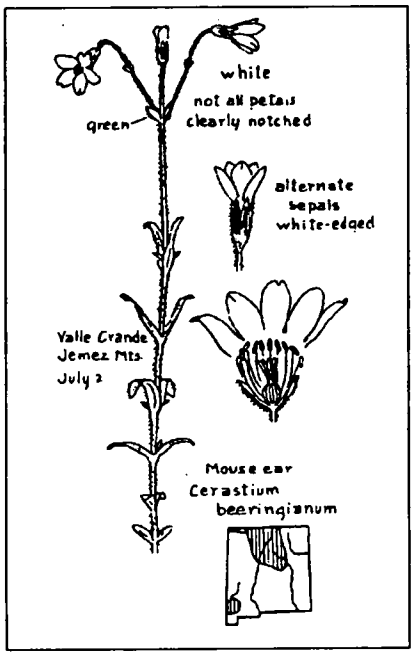
Aug. 2 Field trip to Edi Klingners, La Tierra, and potluck. 3:30 pm. DeVargas mall

Sept. 12-14 NPSNM State Meeting, Gallup NM

Oct. 15 Fall meeting. 7:30 pm. St. Johns College, 122 Evens Science Bldg.

NPSNM 1997 Annual Meeting Update

The 1997 Annual Meeting will be held in Gallup, New Mexico Sept. 12-14. Registration materials and information on all activities will be sent to members in July. The meeting begins on Friday and ends Sunday and there will be field numerous field trips from which to choose. The meeting will feature music and dance as well as plant use by native Americans of the four corners area. Bill Dunmire and Gail Tierney will present a talk about their new book on the flora and peoples of the four corners area. The Plateau Science Society of Gallup has been working with the NPSNM to produce an excellent conference.



CHAPTER REPORTS

Otero-Jean Dodd

FOLLOWING IN THE FOOTSTEPS OF E.O.WOOTON was presented 3-14-97 at NMSVH Auditorium in Alamogordo by Dr. Kelly Allred. Wooton was the first state resident botanist at the Las Cruces College of Agriculture and Mechanic Arts in the New Mexico Territory. He enjoyed white tie events in music, drama, soirees, and literary gatherings. The Wootons presented vocal renditions. At this point in the program Allred entertained us with a piece on the harmonica! We saw a slide of the "college" as it was then and were amazed that Wooton didn't turn around and leave upon seeing it. There were three extremely unattractive buildings and, even to a native plant person,a lot of scruffy weeds outside. Wooton was in fact "the science department", teaching many subjects. Nearly every student took a class from him. At that time there were no plant specimens at the College. When Wooton left, the College had 35,000 plant specimens. Plants from New Mexico found their way into museums throughout the world. One of Wooton's students was Paul Carpenter Stanley who went on to become a distinguished botanist. He finished his BA and MA under Wooton. He and Wooton wrote the *Flora of New Mexico* which is still used today.

Allred got interested in botanical history and so went through cartons of Wooton memorabilia in the NMSU archives which included "Notes of 1904 trip". Allred decided to follow in Wooton's footsteps albeit in an air conditioned 4 wheel drive in the summer of '91. Most of his program deals in comparison of the land now and then. There was a lot of discussion of the causes of the changes in land conditions. Allred said it is hard to really tell unless you have data on the land over time. Another thing Wooton did was to be instrumental in establishig the Jornada Experimental Range in 1912 and it is still an important tool in solving today's problems. If you are interested in more information, the Spring 1993 issue of "Resources" devotes the whole issue to the two trips. Write Agricultural Communications, Box 30003, Dept. 3AI, College of Agriculture, NMSU, LasCruces, N.M. 88003-0003 or call 1-505-646-2701.

The April 25-27 Otero trip to the Chiricahua Mountains turned out to be a big surprise to those of us who had not paid attention to the weather forcasts for the weekend. By the time we arrived at the meeting place some who had planned to camp got room reservations and we all stopped at the Portal Peak Lodge for lunch. As it turned out all meals but breakfast were there just to get warm-the food is very good,too. We froze especially those who didn't bring winter clothing. The first day for campers along Cave Creek was an exploration of the area-not recommended in cold weather.

The Chiricahuahua Mountains are a truly spectacular "fantasy world of extraordinary rock sculptures that were created by the forces of nature over millions of years". This was especially evident at the campground where "boulder" is a word way too puny to describe the enormous rocks in the there. The Chiricahua fox squirrel was new to us with its many colors and large bushy tail. One giant tree in camp had a thin layer of live growth three quarters around the tree trunk with the rest open and empty. Yet about half way up it turned into a healthy,vigorously growing tree! Saturday the first order of business was to look for the birds migrating from Mexico,especially the Elegant trogons. The Chiricahuas are a special mix of life more like the Sierra Madres in Mexico. Trees, wildflowers, birds, and animals cross over to this place. The month of May is especially good for birders. All along the hike "Did you see one?" We didn't see the trogon but the Hendzels stayed over Sunday and took an extensive hike. They were rewarded by seeing more than one of the birds. We did see some beautiful lush country looking for the bird.

Over to the Forest Office where we were advised to go to VISTA POINT. They provide you with a map. Saw Buckbrush,Ceanothus fendleri, Arizona white oak, Silver Leaf Oak, Mexican Blue Oak, Madrone, Manzanita,Rocky Mtn. Maple, Birchleaf Buckthorn, Desert Ceanothus, Ceanothus greggi, Chokecherry, Cliff Fendler Bush,Agave parryi, and rock ferns. In other words a lot of variation in one place full of dense growth. The Monument Office has "A Checklist of Trees and Shrubs" same format as the ones at the White Sands Monument. In Wilcox they have a pamphlet listing wildflowers of the area. On to a more desert area where we saw many familiar plants-Desert hyacinth, Waterleaf phacelia, desert holly in bloom,globe mallow-very orange, Aloysis Wrightii, red Indian Paintbrush, Gaillardia, twist flower-mustard family,Cowania mexicana-Rose Family,Leucelene ericoides-Baby aster, wire lettuce- Stephanomeria pauciflora, Mt. Mahogany, evening primrose, Mormon tea, little leaf sumac. Saturday afternoon we took a welcome break at a home near Portal where benches were placed in a large circle in the back yard so that people could watch birds come to the many feeders there. There was evidently nobody home. A book was there so you could sign your name and leave a donation to pay for the birdfood. Saw lots of birds we would not have seen otherwise.

Sunday the weather was back on track and we started to warm up. Saw more magnificent scenery on the way to the Chiricahua National Monument where you can learn more about how the various rock shapes were formed over the years and buy books to take home and learn more.

The Chirachuahuas are certainly highly recommended as a great place to go. Looking at license plates in the parking lot at the Monument and hearing where people had come from it would seem that word has gotten out at least from Alaska to Massachusetts.

CHAPTER REPORTS

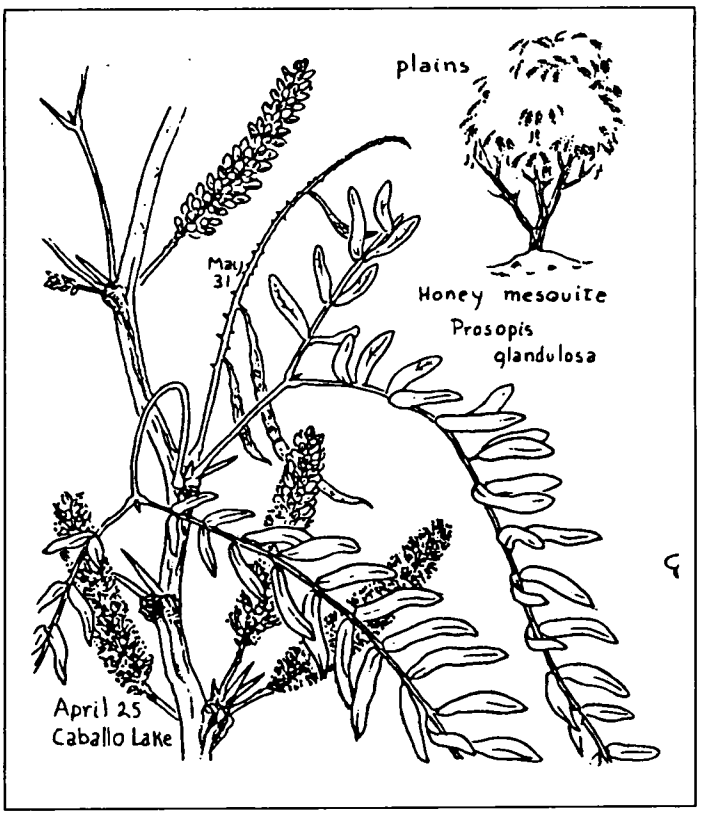
Las Cruces-Paul & Betty Shelford

Our guest speaker for the April 9th meeting was Kevin Bixby, Director of the Southwest Environmental Center. Mr. Bixby is one of the prime movers toward restoration of the Rio Grande ecosystem. The river originally meandered through a lush riparian area of willows and cottonwoods. It contained from 17 to 27 species of fish, including six-foot shallow-nose sturgeon, long nose gar,and eels. The desert Indians of this area regularly harvested fish for food, and the Spanish Conquistadors were amazed at this valuable source of protein as they advanced up the Rio Bravo del Norte. Despite all the claims of farmers and the City of El Paso, the Elephant Butte water impoundment dam was originally constructed by the Corps of Engineers for the primary purpose of assuring that sufficient river flow would be available to fulfill the international water compact between the United States and Mexico. By international law, Mexico receives the first 10% of all water. Agricultural claims come after Mexico. This is administered by the International Boundary Water Commission (IBWC). It is important to realize that much of the river flows as an underground water table which is tapped by pumping by all the cities along the way as well as by individual property owners. If the City of El Paso were to be allowed a concrete channel as they have suggested from Caballo Lake down to El Paso, the water table would be greatly depleted.

No one is suggesting that the river again be allowed to meander, the current channelization is part of neccessary flood control. If the agricultural block would change to controlled sprinkler systems instead of flood irrigation, much of the current water supply would be conserved. Then if the IBWC could be convinced that clearing a wide swath of land from the each side of the river is counterproductive, willows and cottonwoods could planted so that natural foliage would be allowed to restore the health of the river. It would again become a place of beauty and habitat as a natural ecosystem.

The April 13th field trip was scheduled to be led by Lisa Mandelkern to the Three Rivers area. However, because it was so cold and because of the recent snow storm in the Sacramento Mountains, Lisa suggested they go elsewhere. The group of seven members finally agreed on the Robledo Mountains a few miles north of Las Cruces. After driving to the base of the west slope, the group climbed to the main north-south ridge. John Freyermuth reports that the group saw 71 different plants of which 32 were in bloom. In the cactus family they found flowering pink tangled fishhook cactus, flowering red claret cup cactus, flowering greenflowered pitaya, flowering pink golf ball cactus, flowering pale-pink button cactus, and flowering brownish red with yellow center catclaw cactus; they also observed Englemann's prickly pear, fishhook barrel cactus, haystack or strawberry hedgehog cactus, pencil or Christmas cholla, eagle's claw or Turk's head cactus, and big needle cactus. Of 14 species of the Aster family, they noted seven in bloom: yellow desert marigold, white blackfoot daisy, yellow spiny dogweed, yellow threadleaf groundsel, yellow sageleaf bahia, white spreading fleabane, and yellow bitterweed. Other plants of interest included red sage, blue bowls, shaggy narrowman, banana yucca, Fendler's bladderpod, palmate globemallow, trailing four o'clock,New Mexico olive, Apache plume, hoptree, Southwestern paintbrush, dingy chamaesaracha, and a flowering brownish-purple plant which was finally identified a few days later with the help of Alice Anderson, Kelly Gallagher and Carolyn Gressitt as Texas desert rue.

Our May 14th meeting featured a talk by Mike Morrison, publications director of the Chihuahuan Desert Nature Park here in Las Cruces. Formerly known as the Las Cruces Nature Park on 460 acres, its name was changed when their site was increased to a thousand acres located between the Dona Ana Mountains and the NMSU Journada Experimental Range. Quoting from their descriptive brochure: "Impressive rock formations exist along a ridge and in the saddle between the ridge and a knoll. The area supports a diverse collection of plants because of the range of elevations and differing water collecting sites. Prickly pear, ocotillo, barrel catcti, yucca, live oak and numerous other species grow in the steeper and rockier areas." A number of biotic sites and habitats will be created along with interpretive trails and discovery walks. There will be indoor and outdoor displays. Wild creatures will not be sought for zoo-like displays; however, they hope to have a facility to care for injured or wounded birds and animals. Those which make a full recovery will be released back into the wild; those which are healed but handicapped will be retained in an aviary .



Albuquerque - Leta Porter

Our annual potluck was held on December 12, 1996. Following a festive time of warm fellowship and the sampling of a variety of delicious foods, the election of new officers was held. The 1997 officers for the Albuquerque Chapter are: President - Lucy Beals; Vice-President - open; Secretary - Susan Cook; Treasurer - Bill Dodson;. We have been unable to fill the position of vice president. We would appreciate any member interested in becoming vice president to volunteer for this position by contacting the chapter president. He/she would automatically move up to the office of president of the chapter in 1998.

At the annual meeting an honorary lifetime membership in the Society was awarded to Robert Dewitt Ivey in recognition of his many contributions to the Native Plant Society of New Mexico in bettering our understanding, appreciation and enjoyment of the flora of New Mexico. Sandra Lynn and Carolyn Dodson gave glowing testimonials as to why Dewitt is so deserving of this recognition. His work as a scientist, artist and advocate of the conservation of New Mexico native flora is documented in his book, "Flowering Plants of New Mexico." We appreciate his generosity in allowing his drawings to be used in our "Society News Letter." George Duda from NM State Forestry, Bernalillo Division, was the speaker for this annual meeting. Mr. Duda is in charge of the NM Re-Leaf Program and spoke on the subject of "Forestlands and Fire, Past, Present and Future." He encouraged members to take advantage of the Backyard Tree Farm Program where participants can gain quality information and experiences which will enable them to manage their property toward a goal of forest health, personal and property safety and wildland fire pre-suppression. He emphasized that a community forest is only as healthy and safe as each member of that community makes it. Forest health is a direct result of a community effort. Understanding the dynamics of the forest ecosystem which surrounds us allows a positive partnership between the land owner and his/her land. One can benefit the other. The very powerful economic base of the forest setting in which we live is the health and beauty of that forest in itself. Preserving that beauty and health is the responsibility of each resident.

Baker Morrow, author of "Historic Landscapes, Historic Plants", was scheduled to speak at our January 9, 1997, meeting. Since it was necessary for him to cancel this engagement, we are hoping to reschedule him in the future. We are extremely grateful to Carolyn Dodson (assistant professor, wildflower instructor and librarian at UNM) for her willingness to substitute for Mr. Morrow on a very short notice. She chose as her topic "The Co-Evolution of Plants and Insect Pollinators". She presented a beautiful slide show while explaining how flowers have evolved to attract the important insect pollinators (bees, butterflies and moths). Likewise, these insects have evolved special features to enable them to pollinate certain flowers. For example, moths have long tongues which are useful in pollinating long-throated flowers:and bees can see bright colors which cause them to be attracted to brightly-colored flowers. Flowers have evolved uniquely colored guidelines to aid bees in finding their nectar.

Greg Senschel, manager of the Los Lunas Plant Materials Center, was the guest speaker at the April 3rd meeting. he discussed his native plant materials field studies and the efforts being made to revegetate the Souyhwest riparian areas (the rich,green zones along the banks of streams, rivers lakes, ponds and bogs).Obviously, riparian areas are valuable for many reasons. they offer food, water and protective cover for wildlife and livestock. They are important to water quality, flood control and to maintaining groundwater supplies. And they have scenic value and offer many recreational opportunities. Many major Southwest flodplains no longer sustain healthy riparian communities. Drainage and channelization, flood control structures and irrigation diversions have all changed water flow patterns. reservoirs have drowned some riverside plant communities under permanent water. Poorly managed livestock overgraze and trample vegetation and destroy streambanks. Also, invasion by salt cedar has reduced the diversity and stability of many native plant communities. Restoring and stabilizing damaged riparian areas is not as easy as restoring damaged upland plant communities. It usually requires re-establishing and maintaining their dense and often multi-story plant communities with a complex array of plants which include grasses, forbs, shrubs and trees. On April 4th, Greg led a tour of the Los Lunas plant Materials Center. It was interesting to view the 200-plus irrigated acres and to learn how the center evaluates crop performance and adaptabiity and related cltural practices such as irrigation, pest management, plant growth and regulation and propagation techniques. Dr. Clifford Crawford, Proffessor Emeritus and Research Proffessor of Biology At UNM spoke at our May 1st meeting. His topic was "Changing Plant Communities In The Rio Grande Bosque". Lucy Beals led a field trip to the Corrales Bosque on May 3rd.

Dr. Clifford Crawford spoke on "Changing Plant Communities in the Rio Grande Bosque." His presentation included numerous slides of the continually evolving riparian ecosystem, past and present. One notable slide showed the drastic decline in wetlands which includes bogs and marshes, in the l;ast 30 years. He presented data from leaf litter studies in which the biomass of fallen leaves is measured annually. A trend suggests a steady decline of cottonwood leaves produced over the last 10 years. Without passing judgement, Dr. Crawford summed up the anthropogenic changes of the last 100 years and made some projections of future change if current bosque management practices ar4e maintained. The following Saturday, Lucy Beals led a field trip to the Corrales. Participants used a plant checklist for the area, ticking off numerous native and introduced species. Notable bloomers included Rhus trilobata, Salix amygdaloides, Astragalus sp., and Dimorphocarpa wislizenii. The area is characterized by several large native cottonwoods and participants measured the largest one they saw. The BDH (diameter at breast height) measured about 557 cm. The riparian theme will be continued in June with a talk on the San Antonio oxbow followed by a hike through the area.

Ancient Agaves have Rich History

By J. Joseph Pearl
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With over 300 species of Agaves, it would be impossible to single out one particular species to discuss in this article. Agaves come in so many sizes and colors it is best to discuss the entire plant genus. It is a fantastic ornamental plant that has a rich history and pre-history. Included with the Agave family are the Hesperaloe, Dasyliron, Nolina, and the Yucca families. That makes for one of the largest plant families available to the landscaper. So, knowing that so many plants can be used from this family, Agavaceae, we shall go into some of the specifics of these plants.

Most of this article shall be on the Agaves that grow throughout Arizona, Baja California and the Sonoran desert in Mexico. The Agaves that grow in these regions cover a broad spectrum in size. *Agave americana* reaches heights of up to six feet while *Agave victoriae-reginae* usually grows to heights of less than one foot.

Agave leaves differ in size, color and spine shape(s). According to Gentry in *Agaves of Continental North America* (1982), the size and form of Agave leaves and armature usually vary a great deal according to the age of the plant."

An asset to using the wide range of Agaves in the landscape is the plant's ability to be free of disease and almost all insects. Although some fungi do attack the Agave, it is not a major problem. A borer is perhaps the largest pest problem that confronts these plants. Once the borer is located, treat with Diazinon. If one notices that the "mother" plant has been attacked by these pests, simply remove it and let the small offshoots take over. Treat the area of infestation with diazinon .

Perhaps the most interesting factor of the Agave famlly is its history and prehistory. Pre-historically, Agaves have been dated back nine thousand years in Mesoamerica. These plants were used as a food source, utility tool, medicinal tool and a source for a spiritual drink.

Historically, the plant has been used as livestock food and a distilled beverage. As a food source, the Agave hearts were collected and roasted in deep plts. These pits or "hornos" were lined with rocks, a fire made in the pit and the rocks heated. The Agave hearts were either cut up into chunks or cooked whole. Once cooked the hearts were eaten in a variety of ways. The chunks sometimes smashed into cakes and the juice from the cakes was made into a syrup, then made into a candy for children. The flower of the Agave was and is still cooked with eggs.

Two beverages are produced from the Agave. "Pulque" and "mescal" are the drinks produced from the Agave, pulque being produced pre-historically for religious ceremonies due to its mind altering abilities. Mescal was not produced until the Spaniards arrived in the new world. The native Americans did not have the knowledge of distilling, so it was not until after 1521 when tequila was first introduced .

Presently, the states of Oaxaca and Jalisco are the tequila-producing capitals. *Agave augustfolia* is the species that is used for this product, along with *Agave tequiliana.*

In Northeastern Mexico, *Agave salmiana* is used as a source of food for cattle. Although the Agave grows rampant, the cattle do not eat Agaves in the wild. This must be due to the pointed leaves which naturally protect the center to the plant which is most tender.

The practical and not-so-practical uses of Agaves are endless. Depictions in prehistoric etchings show pictures of young boys being punished with the points or Agave leaves. Practically, the Agave is and was used for a source of fiber. *Agave sisalana* was transported from Florida to the old world for the manufacturing of sisal or rope. Musical instruments, hairbrushes, paintbrushes, and even woven blankets are byproducts of this plant. The dried flower stalks are used to reach the fruits on certain cacti.

Medicinally, the leaves were used as a poultice for lumbago and rheumatism. Some of the Agaves produce juices that will supply relief for itching and bruises, while *Agave lechuguila* is used as a poison for arrows and used in fishing.

In the modern day landscape, Agaves can be planted as an excellent barrier hedge. No one in their right mlnd is going to attempt to pass through a hedge of this nature. Planted alone, they make an excellent specimen plant. As most desert plants go, there is no special soil requirement needed for these plants. Simply dig a hole large enough for the existing rootball and bury it. What a carefree plant for the landscape.

Otero Co. Noxious Plant Control Program

A diverse group of concerned organizations and individuals have joined forces to establish and promote a voluntary noxious weed control program for Otero County. Among the organizations represented are the NPSNM, Otero Chapter (Jean Dodd), the Cattleman's Association, BLM, Irrigation Co., Holloman AFB, BIA, NCRS, and others. The county commission funded the initial efforts with $10,000.

Among the goals of the program are to educate the public about the problem of noxious weeds, how to recognize and control them, and the consequences of not controlling them. Among the targeted species are African rue, dalmation and yellow toadflax, diffuse and spotted knapweed, teasel, leafy spurge, musk thistle, and purple loosestrife. Salt cedar and chinese elms may also be included.

Several organizations including the NM Highway Dept. are already targeting several of these weeds. County roads, for example, are being sprayed when infestations are noted. The "voluntary" part of the program will come into play when targeted plants are noted to extend onto private land. In this case landowners will be contacted and provided with the option to participate in the program. They may be assisted with funds to purchase herbicides as well as application of herbicides. The program will be evaluated and modified as needed.