Native Plant Society of New Mexico

NATIVE PLANT SOCIETY OF NEW MEXICO
NEWSLETTER

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A VISIT TO GRAY RANCH AND THE CORONADO NATIONAL FOREST

by Nancy Daniel

Sand dunes & cienegas, Pleistocene lakebeds, cattails & beargrass, antelope, tree lizards, roadrunners, deer, cottonwoods, coyotes, mallards & manzanita, petroglyphs, obsidian, ocotillo & owls, the Continental Divide . . . everyone is bound to come away with a different list of outstanding elements and even more disparate memories. The overall impression, though, will be the same - diversity. Something like putting most of the regions of New Mexico, the native grasses of the Great Plains and portions of northern Mexico together on over a million acres.

Gray Ranch alone encompasses 500 square miles or 321,000 acres. It sprawls below the Peloncillo mountain range on the west, includes the Animas Mountains to the east and meets the Mexican border to the south. It is definitely not just around the corner, and that's one more alluring factor. The vast area of Gray Ranch was acquired in 1990 by The Nature Conservancy. Under their custodianship limited areas have been opened to the public for guided tours. The guides refer to these areas simply as the Indian Ruins, the Oak Grove and the Cienega.

The former inhabitants of Gray Ranch left petroglyphs and rocks with deep holes worn smooth by the grinding of grain 600 to 800 years ago. These people are considered to be from the Animas Phase of the Casa Grandes culture, centered in Chihauhua, Mexico. An advanced culture, they were traders and weavers and engineers of elaborate systems to channel water. Eleven sites have been found so far on the Gray Ranch. If it is accurate to assume the plants we find today are representative of those growing between 1200 and 1425 AD, then the wealth of grasses and sedges could have served well as sources of sustenance as would have the four-wing saltbush, oaks, chokecherry, cattails and various buckwheats.

The Oak Grove is just that, growing next to a wide, rambling, dry riverbed (dry at least on this tour in October). The typical spiked leaves of the gray oak, Emory oak, and a few Arizona white oak were complemented by several species of juniper, including the feathery Rocky Mountain juniper, common juniper and the distinctly patterned bark of the alligator juniper. The birds in this grove were boisterous. Hermit thrushes scampered over the rocks, black-throated gray warblers and yellow-rumped warblers flirted and flitted between the trees and a Bewick's wren scolded us for trespassing. A barn owl stormed by to let us know we were on his turf as well. And an extensive turf it is. Out from under the cool respite of the Oak Grove, northern harriers, kestrels and red-tailed hawks could be seen above the grasslands that extend beyond.

Cienega literally means "hundred waters" or "hundred springs" but has come to refer to wetlands, and in the case of Gray Ranch cienegas, with a water table as little as three feet under the surface, it means swampy marshlands. The larger cienega was dry during our October visit, but several cienegas modified by early ranchers have become large ponds. These pristine riparian areas with cottonwoods, willows, sycamores and walnuts, support waterfowl such as mallards, American coots, and cinnamon teal in addition to kingfishers and black phoebes. The densely wooded cienegas open out onto gentle grassy slopes, not very different from the grasslands that encompass the Oak Grove.

In these flatlands there were a surprising number of flowers still in bloom and many dried seed heads with hints of vivid summer colors. But the vast expanse of grasses, distinguished in their fall colors of tans, blacks and browns with their distinctive seed heads

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catching the sunlight, were most spectacular. Sixty-four species of grasses have been identified so far. The majority can be found on the Gray Ranch's 44,000 acres of flats. These areas include a Pleistocene lakebed. At least 12,000 years ago, when the lake existed, a natural dike and sand dunes were formed. In more recent times these ranch grasslands were overgrazed, yet only two grass species of the 64 are introduced The overgrazing did allow snakeweed, cholla, and mesquite to encroach on these open areas. The Nature Conservancy has set aside 60,000 acres for natural reclamation, thus preserving the range for native wildlife including the antelope which graze there. Cattle grazing is restricted on the remaining acres. The goal of The Nature Conservancy is to balance land use and preservation. To fulfill this goal, they are now looking for partners with private funds to support their conservation efforts.

Within Gray Ranch, seven distinct plant communities subsist on 12" to 23" of precipitation a year and live between 5,000 and 8,500 feet. The lower alluvial slopes are distinguished by open areas between the numerous trees and shrubs which include Palmer agave, velvetpod mimosa, Scott's yucca, Mexican pinon, Emory oak and Arizona white oak. A chaparral of , manzanita, mountain mahogany and ocotillo, combined with distinctive rock formations, lies between 7,000 and 8,000 feet. Above is a pine and fir forest leading to the upper peaks of the Animas Mountains. These denser forests include silverleaf & netleaf oak, Douglas fir, Apache pine, limber pine and Chihauhua pine. The flowers at these elevations are numerous. On the upper slopes New Mexico raspberries, star sedum (*Sedum stelliforme*), whiplash daisy (*Erigeron flagellaris*), scarlet morning glory (*Ipomoea coccinea*), Berlandier's sundrops (*Calylophys berlandieri*) and Andean larkspur (*Delphinium andesicola*) can be found. On the lower slopes, among the oaks and grasses, are fingerleaf gourd (*Cucurbita difitata*), desert honeysuckle (*Anisacanthus thurberi*), antelope horns (*Asclepia asperula*), blue curls (*Trichostema arizonicum*) and Mocomb's gilia (*Ipomopsis macombii*), to mention only a few. In fact, over 700 plant species and 350 vertebrate species have been found to date on Gray Ranch.

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.

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.

Members benefit from chapter meetings, field trips, publications, plant and seed exchanges and a wide selection of books available at discount.

We encourage the use of suitable native plants in landscaping to preserve the state's unique character and as a water conservation measure.

We maintain a register of business and professional people who are members and can supply information and services related to native plants. To be added to this roster or to request information, contact the Membership Secretary.

Advertising Schedule

Approved advertisements will cost $40 per year.

Schedule of Membership Fees

Dues are $10.00 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, 443 Live Oak Loop NE, Albuquerque, NM 87122

Newsletter Contributions

Please direct all contributions for the newsletter to Tim McKimmie, editor.

Deadline for the next newsletter is Feb. 1

Though Gray Ranch is not just around the corner, it is right next door to 850,000 acres of the Coronado National Forest. So, what does that do for the diversity already encountered? Imagine adding coatimundi, collared pecarry (or javelina), Coue's white-tailed deer, white-sided rabbit, mountain skink, five species of hummingbird, Gould's turkey & whiskered screech-owl, Mexican long-nosed bats & New Mexico ridgenose rattlesnake, few-flowered rosewood (*Vaugulinia californica pauciflora*) and Arizona swallow-wart (*Cynanchum arizonicum*)! We too can only imagine. We didn't get to see all of these. What we found, though, was in no way disappointing. Large oaks and junipers, numerous sumac, agave, yucca, and beargrass formed densely vegetated areas. Large rocks covered with many types of lichen and moss line the river bank. Geodes cover areas of the Peloncillo mountain-sides. Owls cajole, coyotes serenade and woodpeckers add an early morning staccato. Camping in this splendor allows an easy drive to Gray Ranch. Camping and open fires are permitted in the Coronado National Forest, but there are absolutely no facilities and no water. Planning ahead is essential and leaving the forest clear of any litter is a responsibility. Dry weather makes for practical camping spots and a full moon makes them idyllic. Our trip in October allowed for both.

The combined areas of Gray Ranch and the Coronado National Forest offer a wealth of treasures to satisfy a multitude of interests. The staff at Gray Ranch is in the process of planning the 1993 season and a possible schedule for guided tours. The Nature Conservancy can be reached in Santa Fe at (505) 988-3867. For more specific information, the number at Gray Ranch is (505) 548-2225 or 548-2325.

Editors Message

Happy New Year. May your experiences outdoors this year be most enjoyable and educational. Best of luck to the Clinton administration in getting off to a strong start in protecting our natural resources.

To begin, I want to thank Rick Castetter, who has been co-editor of the *Newsletter* for the past two years. I came to know Rick only through NPSNM and our work together was most rewarding. Rick has that rare combination of understanding of both plant and animal natural history that few others share. I am glad that I can now count him as a friend. I hope that he might find time to contribute an occasional article to the *Newsletter*. Best of luck, Rick.

Thanks to Bob Sivinski whose second article appears in this issue of the *Newsletter*. Bob is a professional botanist from Santa Fe working for the state of New Mexico. He is currently also editing the proceedings from the endangered plant conference held last year. I am happy to have contributions of such high quality to enhance the *Newsletter*. I hope he will make "Flora Neomexicana" into a regular feature.

Thank you in additon, Nancy Daniel. There has been a lot of interest in Gray Ranch and in your article this month your delight with the area is apparent as is your keen interest and knowledge of native plants. I know that our readers want more New Mexico material and I want to encourage you in your writing.

Also thanks to Tom Wootten for taking the time to keep us informed about conservation issues. Your efforts on our behalf in monitoring public lands issues, Tom, are enormously valuable to us.

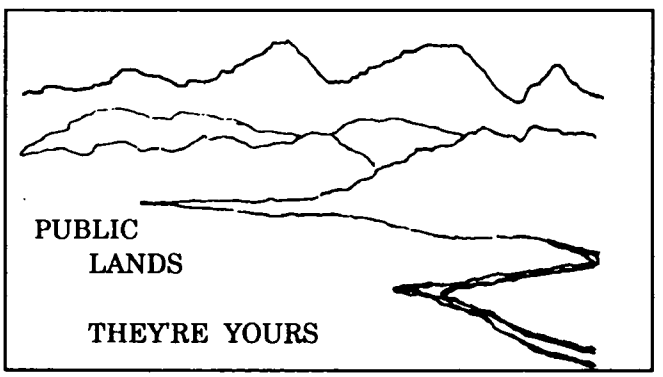
Finally a statement regarding submissions. I'll make it simple this year. Material should be typed (good quality) except for short statements. Send material on disk if possible indicating the word processor used (send hardcopy as well). Do not make any marks on the original. Note the deadline on p. 2. but send material anytime. If I can't fit it in I'll save it for next time. Editorial perogative on content, length, etc. will, of course, be exercised.

TM

Native Seeds Search in New Mexico

New Mexico now joins Arizona as a site for both office and cultivation of plants traditionally used by native Americans. Brett Baker is the coordinator of efforts for the New Mexico area. This group offers a wide array of seed as well as plant products for cooking and other uses. Brett can be reached in Albuquerque at 268-9233. This group deserves our support for several reasons. First, because it seeks to preserve genetic resources and biodiversity. Next, because it will preserve seed stocks that native cultures may be losing hold of as they practice less traditional forms of agriculture. In fact Native Seeds Search has been able to restore seed stocks to tribes that had "lost" them. Such native seed sources are able to produce crops on our soils and in our climates often with no supplemental irrigation.

TM



CALENDAR

OTERO

6 Feb. "Plans for BLM protection of the Sacramento Escarpment." Tom Wootten. Tularosa Elementary School. 2 p.m. Also seed exchange, book and poster sale.

20 Feb. "Cacti"; Slides by Wynn Anderson of El Paso. 2 p.m. Tularosa Elementary School. Books and posters for sale.

20 March. Field Trip. Desert Foothills Park, Alamogordo. East end of First St. Meet at 9 a.m. with lunch and water.

16 April. Robert DeWitt Ivey. "Gray Ranch". 7 p.m. Tularosa Elementary school.

17 April. Robert DeWitt Ivey will join us for a field trip. 9 a.m. at La Luz school.

SANTA FE

20 Jan. "*Senecio*'s of Colorado and northern New Mexico" by Chick Keller. 7:30 p.m. Evans Science Bldg., Room 122 St. Johns College.

17 Feb. "Plant Foraging" by Phyllis Hughes. 7:30 Evans Science Bldg. Room 122.

LAS CRUCES

10 Feb. "Weeds" by Alice Anderson. 7:30 p.m., NMSU Ag. Building, room 200.

10 March. "State Programs for Protection of Endangered Species" by Bob Sivinski. 7:30 NMSU Ag. Bldg. Rm 200.

14 March. Field trip to Mt. Riley. Leave Pan Am Center parking lot at 8 a.m.

9 April. "Plants of Gray Ranch" by Robert DeWitt Ivey. 7:30 NMSU Ag. Bldg. Rm 200 (note this is a Friday).

10 April. Field trip to the Organ Mountains with Robert Dewitt Ivey. Leave Pan Am Center lot at 8 a.m.

18 April Field trip to the Placitas. Leave Pan Am lot at 8 a.m.

ALBUQUERQUE

7 Jan. "Integrated Pest Control" by Susan Wachter. 7:30 p.m. Albuquerque Garden Center.

4 Feb. "Xeriscape: the Emerging Frontier". A video produced by the University of Arizona. 7:30 Albuquerque Garden Center.

CHAPTER REPORTS

Otero-Jean Dodd

9-30-92

Our many thanks to Sharon Yarborough for planning our trip to Big Bend, furnishing our itinerary, lots of printed information from the Big Bend History Association, and what to look for in wildlife, birds, and plants. A quote in the Big Bend Paisano describes the area as a "carpet of interacting plants and animals deftly woven on a geologic loom" from author Frederick Gelbach. There was a time when the word "awesome" was a perpetual part of teen vocabulary. At Big Bend it would be entirely appropriate for describing the rows of mountain ranges, the ever changing variety of geologic shapes and forms from a distance or close up. At the Burro Mesa Pouroff we stood at the end of the canyon to look up at a notch in the rock formations where the water pours down into the canyon leaving behind a smooth rounded path on the rocks. Large Texas Persimmons (Diospyros texana) with small, sweet, purple fruit were in the bottom of the canyon. Just sitting around the beautiful Chisos Basin Campgrounds you can admire the rock formations there as well as some of the wildlife -a skunk, a family of javelina, and over in the Lodge area a family of the small Carmen Mountain Whitetail Deer. Overhead a flock of white pelicans, vultures perched on the buildings showing off their plumage, red tailed hawk, cactus wrens, acorn woodpeckers, Wilson warblers, Bridled Titmouse, Great Horned owl, and further south the Vermillion Flycatcher. In these same areas you become conscious of the tourists being from many different countries as well as from difterent states. As you drive around from camp to amphitheater you find Texas Madrones growing along the roadsides in the basin as well as one of the showiest red flowering plants, Mountain sage, *Salvia regla.*

At Hot Springs several springs with a temperature of 150 F throughout the year are right next to the Rio Grande. Enormous clumps of palms grow along the path to the springs as do yellow Rocknettle and a pink gentian which grows in the rocks. A former motel and post office of beautiful stone construction still stand there. From Hot Springs we went through the tunnel to the tunnel overlook to find a desert environment containing Lechuguilla, Hechtia (which grows only in Big Bend), prickly pear, sotol, and many many clumps of Candelilla or Wax Plant (Spurge Family). Wax is extracted from the stems for commercial use. The Propeller Bush has 3-4 brownish wings on the fruit resembling propellers. At least part of the Rio Grande Village Nature Trail is just the opposite of the Tunnel Overlook. Here only a boardwalk keeps you from being in the water. A green tunnel of giant reeds creates an oppressive, hot, wet environment. Mosquito fish,found only in that place, swim in the water surrounding you. As you climb out of this wet place, you are back in a piece of the desert until you come to the Rio Grande. In this area Wynn Anderson of El Paso caught up with us on Friday morning and became our guide for the rest of the trip. Both the Window View Trail and the Lost Mine Trail are woodland of pine, juniper, and oak. Mexican Pinyon Pine, Alligator Juniper, Mexican Drooping Juniper (looks like it needs water), and fragrant Ash grow with a mixture ol desert plants such as: Ocotillo, prickly pear, agave, sotol, and beargrass (much wider leaves than ours). Other trees are one-seeded juniper, Mountain Mahogany, evergreen Sumac, Texas Madrone, Guayacan-*Porlieria angustifolia*-, spiny Hackberry, Wright's silk Tassel, and Tree Tobacco-*Nicotiana glauca*-. some of the flowers or shrubs were a blue salvia, *Tecoma stans*-yellow trumpet flower, *Hymenoxys* sp.,whiteeye phlox, and red flowered bouvardia which we had not seen for quite a long time.

Otero's last hike of the '91 season was on Oct. 17 south of Alamogordo walking through muted fall colors with very little blooming except for a few yellow composites. We did find a lot of *Choisya dumosa* growing along the path in high arid country in contrast to the usual large, more green growth along a big wash.A clump of handsome cattail grew in a riparian area where we stopped in the shade to rest. Our goal was to actually see the Big Yucca photographed by John McNelly some years ago and entered in the Forest Service Book of Big Trees. Pat and Floyd Nott had been out several times with copies of the McNelly slides to see if the terrain was right searching for that yucca, and finally they found it. Ted Hodoba and Horst Kunsler found it later too. Imagine a height of 23' and a circumference of 7'2"! Evidently this giant had been pushed or fallen over, however the remaining patch ranged in size from giant to a new crop of plants all healthy looking with very green leaves compared to surrounding plants. This is in a small draw where they evidently receive more water than usual from the drainage.

Santa Fe - Nancy Daniel

October Meeting
Ellen Wilde spoke of her experience growing native plants . She has been gardening in Santa Fe for 12 years and 4 years previously in White Rock. Her tips were: 1) Improve the soil, and mulch everything; 2)Always water to get established; 3) Experiment, if a plant doesn't work for you, try something else. She then showed slides of plants in her own garden (a few were from other gardens). 38 species were showcased, including 10 Penstemons, Perky Sue (Hymenoxis argentea) which always does better in a garden than the wild, Limoncillo (Pectis angustifolia) a low growing annual with lemon-scented leaves, Maximillian Sunflower (Helianthus maximillianus), and Skunkbush (Rhus trilobata).

After the show we had a seed exchange. Members brought identified seed and allowed anyone who was interrested to take samples. Our only problem was that there weren't enough envelopes to go around. People who want to organize seed exchanges are warned to bring lots of envelopes, return envelopes from junk mail work well, they are free, plentiful, hold lots and can be sealed.
(Submitted by Sean Houtman)

On 18 November 1992 our chapter hosted Robert DeWitt Ivey and his wife Vivian. A comprehensive slide presentation allowed us to learn about and even trespass on areas of the Gray Ranch not open to the public. The range of plant life through the zones from 5,000 feet to the heights of the Animas mountain range at 8,500 feet are not just extensive but, in part, quite rare. Please refer to the lead article for a fuller accounting of Gray Ranch.

Chapter Reports cont'd

Las Cruces-Paul & Betty Shelford

10-10-92

Tim McKimmie made reservations for our group to take a guided three-hour tour in the Conservation Management Area of the Gray Ranch. Several of us had already visited the ranch by driving through on public roads, but this was our first opportunity to have access to just a small portion of this 500-squaremile ranch now under the stewardship of The Nature Conservancy. We were joined by three volunteer guides. The four vehicles were driven first to an oak grove containing a fine stand of Emory Oaks. Walking through and along one edge of the grove, we were able to identify some 25 different native grasses out of the 67 varieties found on the ranch. We also saw a sparrow hawk (American Kestrel) and a cluster of five antelope grazing. From there we drove to the Cienega, a large pond and marshy riparian area of lush foliage totally unexpected in this high desert country. Cottonwoods, willows, reeds, and various marsh grasses predominated since the wildflower season was over. In addition to ducks, we were rewarded by the sight of a Ruby-crowned Kinglet. Several members of the group extended the trip by camping for the night in the nearby Coronado National Forest. While driving out of the area, we had to swerve to avoid hitting a pair of javalina which were more interested in some fresh road-kill than they were in avoiding becoming road-kill themselves.

10-14-92

At the October meeting it was announced that our chapter is to receive a national award from The Nature Conservancy for our volunteer work at the Cox Ranch Dripping Springs area. Dr. Marsha Conley, an environmental specialist with the El Paso Natural Gas Company, gave a talk and slide presentation entitled The Pallid Bat and the Agave. Bats are insectivores. We learned that Pallid Bats can be caught in netting over any body of water in the desert. On a recent bat-catching field trip to Goat Canyon in the San Andres Mountains, she was perplexed in that all the Pallid Bats caught in her net over the spring were covered with pollen from the nearby blooming agave plants, as if they had been feeding on the agaves. She finally observed that the agaves were infested with long-horned beetles, and the bats picked up the pollen while eating the beetles. We also saw slides of Townsend Bats, Brown Bats, the Mexican Freetail Bats from the Carlsbad Caverns, and the Western Tipistril which is a small bat about the size of a moth and is the first bat out in the evening.

10-18-92 Our chapter signed up along with the local chapter of the Audubon Society to pick up litter in the Mesilla Dam riparian area near Las Cruces. Four of us were joined by two of the birdwatchers on this beautiful fall day to keep our eyes on the ground when we weren't looking at native plants and birds. There were no wildflowers, but the cottonwoods, willows, salt cedars, reeds and marsh grasses provided a lovely swath of green along the Rio Grande. Vees of ducks were flying overhead and landing on the river. The presence of a Loggerhead Shrike kept most songbirds at a distance. The most prevalent litter proved to be of the species *Budweiseri seco* and *Millerae lightensis*.

11-11-92

We enjoyed our annual potluck dinner this year in the display room of the new Southwest Environmental Center, an action oriented clearing center for all environmentally concerned groups in the Las Cruces area.

Finding Flora: or Where is my Martin & Hutchins?

The publishing of Martin & Hutchins *Flora of New Mexico* was a bright spot floristically in 1980. Even then, it was a pricey tome, at around $200 for the two volume set. The Flora was published in Germany after the University of New Mexico declined, and the price rose as the German mark gained strength against the US dollar. It rose to an all time height this last year at $450 for the set. Not only has the price risen, but the supply has dwindled, and in September, 1992, the *Flora of New Mexico* has been officially declared OUT OF PRINT. Lubrecht and Cramer have been checking on republishing this in the United States, but at this point, there are no plans for a second printing. The demand for this book is still high — after all, it IS the Flora for our state. You can help us locate any existing copies that may still be out there — at new book stores or at used ones. If you run across a copy of the Flora, please drop me a line (Lisa Johnston, P.O. Box 1260, Artesia NM 88211) and let me know where you found it (include store's name, address, phone number) and the price. I will maintain a list of the potential leads for all seekers, and hopefully, someday it will be reprinted!!!!!

The University of New Mexico finally agreed in the early 1980's to publish the "popular" versions of Martin & Hutchins Flora of New Mexico as three short volumes: *Spring Wildflowers of New Mexico, Summer Wildflowers of New Mexico* and *Fall Wildflowers of New Mexico*. The books came out over a six year period. The first one to go out of print was the Summer Wildflowers. This wasn't too horrifying, as most everything was also covered in Spring and Fall. As of September 1992, all three books are considered OUT OF PRINT by the University, with no plans for reprinting. The other book that has recently gone out of print is the *Rare and Endemic Plants of New Mexico*. If you feel strongly that these books should remain in print, write to Dr. Beth Haddas, Director, UNM Press; 1720 Lomas, Albuquerque, NM 87131, and let her know your thoughts. Another alternative might be for the Society to research the possibility of acquiring the rights to these books and republish them.

Lisa Johnston

FLORA NEOMEXICANA

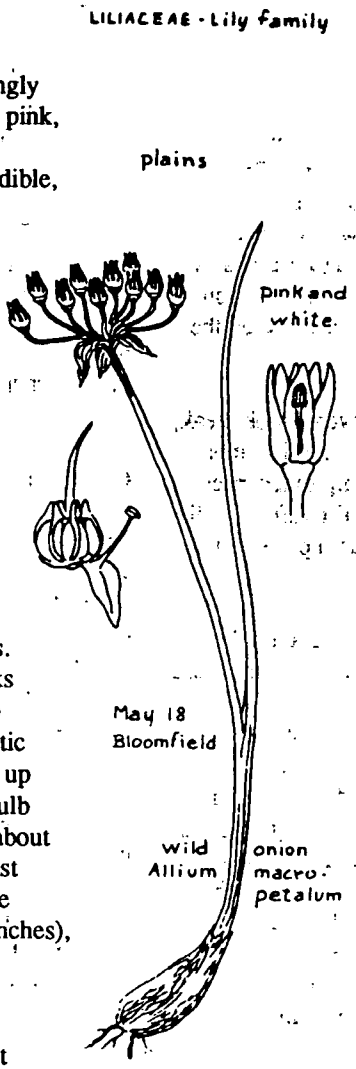
Flowers and Flavor

Robert Sivinski, New Mexico Forestry Division

If you're like me, the onion is an important ingredient of every salad and most entrees. Its zest and flavor are so appealing that we are willing to suffer burning eyes and blinding tears to grace our diets with the noble onion bulb. The poet Sydney Smith said it best:

> Let onion atoms lurk within the bowl
> And, half suspected, animate the whole.

Onions not only have a unique flavor, many are strikingly beautiful plants with dense bouquets of white, yellow, pink, red or purple flowers. There are more than a hundred species of native onions in North America. Most are edible, and many have landscaping potential.



Conventional taxonomy places the onion genus *Allium* in the Lily Family (Liliaceae), but it is sometimes segregated into its own family, the Alliaceae. The genus is easy enough to identify by holding a crushed leaf to your nose. All of New Mexico's onions smell like onions. As Euell Gibbons said "The nose knows when it has found a member of the onion tribe." The long leaves grow from bulbs and the flowers are borne in a terminal umbel on a leafless scape. An umbel is an inflorescence where all the flowers are connected to the scape at a single point. In onions this point of connection has dry floral bracts which are occasionally diagnostic of the species. The false onion *(Nothoscordum texanum)* and blueticks *(Dichelostemma pulchellum)* also have umbels, but do not smell like an onion. The bulbs can also be diagnostic of the species, which means you often have to dig one up to identify it (only do so in dense populations). That bulb can then become a trailside snack. If you are worried about inadvertently eating a death camas *(Zygadenus sp.)*, just remember that these have flowers arranged in a raceme (alternating up the scape) or panicle (several short branches), and lack the characteristic onion odor.

New Mexico is blessed with fourteen types of wild onions, each with its own habitat and season. The most common and abundant are *Allium cernuum* (nodding onion), *Allium macropetalum* (desert onion) and *Allium geyeri* (Geyer's onion). Our other species can be locally abundant, but you will not happen upon them as often as the three just mentioned. The nodding onion is, by far, the most common and easy to recognize. It has pink flowers from which the styles are exerted and the umbel bends down towards the ground. This summer-flowering onion occurs in every high mountain range in New Mexico and occasionally on our higher northeastern plains. The desert onion occurs in drier habitats. It is often confused with Geyer's onion because both have fibrous outer bulb scales and pink or white, urceolate (urn-shaped) flowers. There are several morphological differences that separate these two plants. However, the best diagnostic characters are simply that the desert onion occurs on dry hills and plains in the western half of the state and blooms in the spring while Geyer's onion occurs in most of our high mountain ranges and blooms later in the summer.

A camp cook can often round up enough wild onions to provide a tasty side dish for several people. Please be conservation minded and forage only in large populations. Another good rule of thumb is to leave five plants for every one you take. Beneath their fibrous coats, the desert and Geyer's onion have tender, garlicky bulbs that can be enjoyed fresh. The nodding onion has a tougher bulb that requires a little preparation. Remove the leaves and outer bulb scales retaining only the inner, white portion of the bulbs. Simmer them in salted water for half an hour, then serve hot with butter.

As landscaping plants, our native onions have been sadly neglected. The nodding onion is the only exception. Seed for this species is available from several commercial sources and should be a welcome addition to any native landscape at the pinyon-juniper zone and higher elevations. In lower and drier areas, it appreciates a little extra water. *Allium bigelovii* (Bigelov's onion) is another native onion that I feel is worthy of commercial cultivation and distribution. I say cultivation, because it is rather rare and *should not* be exploited from its natural habitat. This unique onion has a short scape, large umbel and showy pink flowers. It is a spring-flowering, desert plant of southwestern New Mexico and southern Arizona that should do well in dry, native landscaping.

Onion identification is relatively easy after you learn to recognize a few diagnostic characters. These include the type of bulb coat, presence or absence of rhizomes and ovary crests, and the number of leaves and nerves of the floral bracts. The *Allium* taxonomic key in Martin & Hutchin's (1980) Flora of New Mexico is useful if you have access to it. Its reference *to Allium brevistylum* can be ignored since this name was mistakenly applied to the Sacramento Mountain population of *Allium goodingii* (Gooding' s onion). You will also need to add *Allium acuminatum* (pink wild onion). This purplish red-flowered plant, with minutely fringed petals, was found in northwestern and southwestern New Mexico after the Flora had been published.

The only endangered species of onion in New Mexico is Gooding's onion. It occurs in moist, mixed conifer forests high in the Mogollon and Sacramento Mountains of New Mexico and adjacent Arizona, where some populations are threatened by logging and livestock grazing. It is readily recognizable by its flat, broad (5-10 mm) leaves. This species is protected by the New Mexico Endangered Plant Species Act and by the U.S. Forest Service, so *do not* dig the bulbs or collect seed from wild plants of Gooding's onion. Enjoy the deep violet-red flowers of this species, but not the flavor.

BIODIVERSITY: NO NET LOSS?

by David R. Longland
Excerpted from the *Newsletter: New England Wild Flower Society* 8(2), Fall 1992

All seemed well—another delightful summer evening on the Pacific. Most of the crew were off-duty, socializing in the lounge, as the ocean liner cruised along moonlit waters. The passengers were a solid and serious lot, interested as much in the issues of the day as in shuffleboard tournaments and casual romance. Spirited discussions about famine and hunger, disease, huge national deficits, urban decay, rising crime rates, government waste and fraud rang out in the lounge.

Meanwhile, a small crack opened in the ship's hull, and, imperceptibly at first, the liner cruised lower and lower in the water. For all their distraction by the "major issues" of the day, the passengers and crew noticed only too late that their very survival was at stake. Here they were, in the middle of the ocean, with not enough life boats on board. All the hundreds of discussions and worries converged on one collective realization: the only way to survive was to keep the ship afloat.

This story is without an ending; and even though events look bleak, we are free to imagine whatever conclusion we like. And so it is with the Earth and all it's biodiversity—the very ship that carries humanity through the ocean of space. We have no life rafts. Our life support system is beginning to collapse, as we remain preoccupied and distracted by more "immediate" problems.

Today, we are witnessing the greatest rate of plant and animal extinctions since the age of the dinosaurs 65 million years ago. And yet, the stability of our global ecosystem lies in the variety—indeed the very wealth of living creatures. Their myriad relationships form the strands of a vast and resilient biological safety net, that catches and absorbs shocks to our life support system. We don't even know how many ecological relationships exist, but if the actual number is anywhere near the possible number as expressed in the equation, we are hanging by a tattered safety net. Even within this context, the importance of plant conservation is dangerously under-recognized—since plant life, in all its splendid diversity, is the living foundation that permits our survival. Indeed. all animal life and humanity itself depend on the plant kingdom. Some 30 million species of animals depend on less than 300,000 species of plants. That means for every one kind of plant, there are over 100 kinds of animals dependent on sustenance that only plants can provide! Plants provide the air we breathe, our food, and much of our clothing, shelter, and tools. One quarter of prescription medicines are derived from wild plant species. And, as renewable resources, they are one of the keys to our future health and survival. In an age of dawning biotechnology, the extirpation of species is like burning a library before one learns to read.

But plants are more than just "resources." Our appreciation of natural diversity needs to transcend the exploitative usefulness of plants for people. This may be the very crux of our challenge—how can people learn to value something for which they have no perceived use?

If we saw a vandal tearing away assorted parts from the engine of our automobile, we would be upset even though we may not know the function of all the parts—because we know they are all necessary to make the car work. So it is with biodiversity—except that too few of us understand the causes and consequences of losing the parts. Without a known function or perceivable utilitarian value, the loss of species merits little of our attention, relative to the immediacy of our other daily concerns. Many older cultures not only accepted—but revered—the existence and role of *all* things in nature, so that all things were of special value. Every grain of sand, every insect and waterfall, every wildflower and grassy tuft held its own spiritual essence. Everything was known to be connected, so that the smallest happening to the tiniest creature affected all else—however imperceptible. Can this ability to revere the "useless" be restored to the fabric of our highly industrialized, exploitative culture? While scientific research into the utilitarian value and ecological function of wild plants must continue and increase, there simply is not enough time and money for science alone to lead us out of this global environmental crisis. We *are* more environmentally aware than 20 years ago, but we have yet to undergo the necessary cultural transformation in value judgments if we are to halt the erosion of plant diversity, and promote the recovery of vanishing species.

A plant need not be at the precipice of extinction throughout its entire natural range before it receives special attention, as from the federal Endangered Species Act or the national Center for Plant Conservation. By addressing plant extinction earlier in its process, at local levels, treatments or surgical interventions are much more cost-effective than eleventh hour, "national level' efforts: An ounce of prevention is worth a pound of cure. This is extremely important now that less public money is available for conservation. We are forced to protect more species more cost-effectively. Last June 15, the *New York Times* reported: "When the Earth Summit is over and nations face the task of putting promises to work, the people most likely to make a success of saving the planet will not be found in large international bodies, but in small, grass-roots organizations caring for their own land." Our continuing success will depend on raising the level of plant conservation awareness and importance not only on foundation agendas, but more importantly, in the hearts and minds of our own membership, as well as scientific and educational communities, and the general public.

Don't forget: It will soon be time to plant those native seeds you have collected.

WHY PLANT NATIVES?

Richard Hildreth
reprinted from the UNPS Sego Lily July 1991

Why plant natlves? The obvious answer is that plants native to a given region are more likely to do well when used for landscaping or reclamation improvements. Cold hardy, heat, wind and soil tolerant, natives tend to have fewer insect and disease problems. However, depending on their native habitats, many natives are not heat or drought tolerant; some will not tolerate full sun. Know the provenance of landscape plants and match it to the landscape setting.

Why plant natives? The visual quality of a created landscape will be more natural and appropriate within an existing native setting. Exotics may be discordant and a potential weed problem.

Why plant natives? Many woody species from the Utah flora are crown-sprouting, multiple trunked trees and shrubs which are able to withstand the annual prunings of hungry, browsing deer, elk and moose. They can however, be trained to fewer multiple stems or a single stem. Natives are also more likely to survive fire .

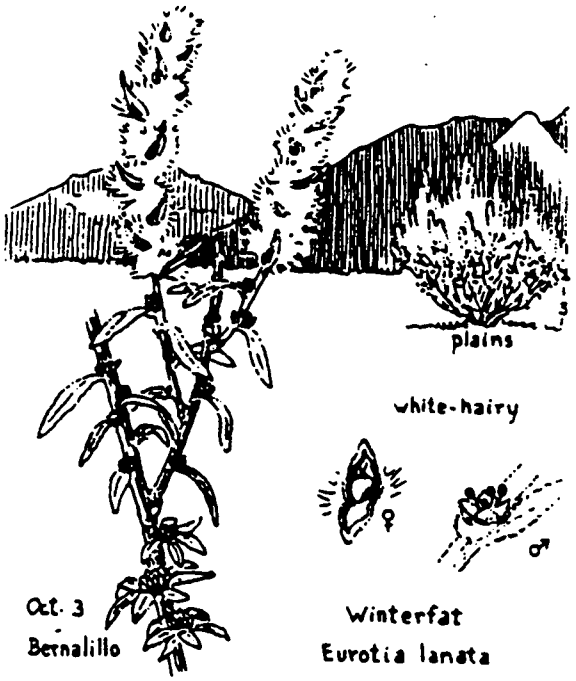
Why plant natives? Even a relatively small residential lot in an urban setting will have numerous microclimates or niches which will support a diversity of plant forms and types. Understanding the nature of these mini-habitats and coupling this information to a complementary native will ensure successful establishment in the new garden. Thus, riparian species are matched to wetter, cooler portions of the garden, with an irrigation system to match the needs of plants in that area. Don't mix riparian species with desert species. Plant desert species in hotter, sunnier, well-drained sites in the landscape. Consider seeding annuals, certain perennials, and bulbous plants. Alpine belly-plants may require planting in a trough garden, specially constructed dry wall, or scree. Drainage and careful irrigation are important.

Why plant natives? The gardener who selects a native landscape trades slave labor associated with the weekly chores of lawn maintenance and hard edges for a more relaxed, natural and enjoyable living space. Vast expanses of green water/fertilizer-guzzling lawn are replaced with a riot of new flowers, colors, textures, and seasonal interest. The gardener spends time exploring diversity and expands his appreciation of native plants in their special habitats. You will want to live in that newly created space, so provide relaxing benches, patios, decks and water-saving native grass areas.

POSTERS ARE READY

THE NEW POSTERS (SUMMER AND FALL) ARE IN. CONTACT ELLEN WILDE OR YOUR CHAPTER REPRESENTATIVE.

Many thanks to Robert Dewitt Ivey for permission to use his wonderful drawings from *Flowering Plants of New Mexico*, second edition, in our *Newsletter*.



Can Tamarisk Be Controlled?

By Stephen Johnson
Reprinted from the "Nature Conservancy News", Oct./Nov 1986

What uses five million acre-feet of water a year and has disrupted or destroyed more than a million acres of riparian vegetation? What threatens to eradicate the West's last remaining habitat for yellow-billed cuckoos and elf owls? What pulls water supplies for bighorn sheep, rare pupfish and salamanders, and desert palm groves? Answer, the tamarisk *(Tamarisk sp.)*.

In the arid West, where water is life the tamarisk tree has made few friends. Bill Neill, California's one-man war on this plant, describes the problem in uncharacteristically dispassionate terms: "Tamarisk is a virulent pest in desert riparian areas because it aggressively displaces native trees and shrubs... and it is a poor source of food and shelter for desert wildlife." What's more according to Neill, the plant extracts water from the ground at a high rate and transpires it at an equally high rate. This little tree has wrought a major economic and ecological disaster that must be reversed or an essential component of the West's natural diversity will be lost.

Sometimes called salt cedar, tamarisk is not native to the North American continent. The nursery trade brought several deciduous species of the genus *Tamarix* to this country from Eurasia in the 1850s for use as an ornamental, as a windbreak, and as a means of erosion control. This slight, feathery tree or large shrub with its stunning sprays of pink to almost white flowers was extolled for its hardiness in certain climates. Those claims weren't exaggerated. Virtually unknown in the wild at the turn of the century, by 1920 tamarisk had spread, on its own to some 100,000 acres of streamside and floodplain. Today it covers well over a million acres in fifteen states and is still spreading. In California it lays claim to roughly 16,000 acres .

The tamarisk has a bag of survival tricks unequaled by any of the West's native vegetation. One single plant can produce hundreds of thousands of pollen-sized seeds that are easily scattered by wind and water. They also cling to fur and feathers. As a result, they are carried upstream, downstream, and even to entirely new watersheds. Too small to be eaten by birds or rodents, the seeds germinate in a wide variety of conditions and sprout like lawn grass-especially on freshly floodscoured stream banks or along receding lake margins. Once established, salt cedar seedlings grow faster than native plants thereby crowding and outcompeting for sunlight-and mature trees will sprout back after fires that kill many of the native species. Tamarisk does not succumb to insect pests in this country; It can't be killed by foliar applications of herbicide: and its scale-like leaves are unpalatable to grazing animals. Moreover, removing the trees by cutting can result in regrowth of more than four feet in one month's time.

The tamarisk is a phreatophyte, a plant that survives in dry climates by extending its roots all the way down to the water table. With this virtually unlimited supply of moisture, the phreatophytes have never developed the water-conserving adaptations of other desert vegetation. But the exotic tamarisk uses far more water than do the native phreatophytes — more than any other native phreatophyte. One large tree can absorb 200 gallons of water a day. That's about the amount a small family uses. Given a conservative estimate of a million acres of tamarisk, this plant species consumes nearly twice as much water as do the major cities of southern California. The dollar value of this lost resource is huge, but the cost to natural diversity —which is concentrated in or near water in the arid West — is even higher. For example, native riparian vegetation in western states provides habitat for the greatest concentration of non-colonial nesting birds in all of North America. Springs and small desert pools support the West's rarest species, from pupfish to desert fan palms. But because of its prodigious water consumption, the tamarisk can desiccate springs, drain pools, and even dry up perennial streams. In the California desert, hundreds of fragile oases are affected. The loss of wildlife resulting from this depletion of water has not been systematically assessed, but it must be enormous. The damage caused by salt cedar in not limited to stilling the flow of western waters; it also poisons soil and ground water. Through glands in its leaves, tamarisk secretes salt, which falls to the ground in the form of crystals and creates an environment that few native plants can tolerate. Caught between the more vigorous tamarisk and the salt-laden soils, the native trees and shrubs rapidly disappear. In fact, a tamarisk-Infested site soon becomes a single-species thicket — poor habitat for native fauna as well.

Bertin Anderson and Robert Ohmart of Arizona State University conducted a major comparative study along the lower Colorado River to evaluate the extent to which birds use native vegetation versus tamarisk trees. They stated that "the value of salt cedar to birds was found to be minimal when compared with (that of) other vegetation." The problem was particularly acute in winter, at which time Anderson and Ohmart discovered that the portion of the study site bearing native flora sustained a density of 154 birds per hundred acres, while the rate for the tamarisk-dominated area was four birds per hundred acres. If you consider that at least a million acres are overrun by salt cedar, it is understandable why the yellow-billed cuckoo has declined from a population of tens of thousands of pairs on the lower Colorado to the tens of pairs currently found there.

Tamarisk is not solely responsible for the West's dwindling water supplies and the destruction of native riparian vegetation. Dams, levees, diversion projects, and agriculture have taken massive tolls on land and water. But what progress has left untouched, tamarisk is claiming. However, it is not winning everywhere.

Because of invading salt cedar, many of the desert pools at Death Valley National Monument had disappeared. After experimenting with numerous eradication techniques, the U.S. Park Service found the best method: crews using hand or chain saws cut the plants down to ground level and then applied a systemic herbicide directly to the stumps to inhibit resprouting. Although labor-intensive, this is the only technique currently known to be suitable for use in ecological sensitive areas. The pools in Death Valley are back. In California and other states, volunteers led by dedicated conservationists like Bill Neill also are using the above method to eliminate tamarisk from key sites on Nature Conservancy, state, and Bureau of Land Management holdings. Nonetheless, while it is effective in fragile areas, hand removal can be done only on a small scale. It can't be used to clear or even control a million acres of undesirable vegetation.

On major western rivers where tamarisk totally has replaced native vegetation, conservationists face a double challenge. First, how do they eradicate the trees? Second, how do they ensure the return of native flora? Working with the Bureau of Reclamation, Ohmart and Anderson have restored an area on the lower Colorado

River. Here, an impenetrable thicket of tamarisk was bulldozed, and the roots were cut below the soil surface using a massive root ripper pulled behind a bulldozer. The site was then carefully planted with appropriate native vegetation, and each plant was irrigated until its survival was assured. This project was most successful, but the price tag was high: more than $2,000 per acre, not including the cost of the clearing.

Although biological control is risky, it may offer the greatest potential for a large-scale solution to salt cedar. Fortunately, the genus *Tamarix* belongs to a small family of plants (the Tamaraceae) of which there are no native species in the United States and no significant agricultural products. Thus, with nothing botanically related to tamarisk, it may be possible to import a pest that will attack only salt cedar — not crops or plants native to this country. But the research to find such an insect or pathogen has not yet been seriously undertaken and would take years of experimentation and testing before control could be tried in the wild. Only the USDA has the authority and expertise to carry out biocontrol research programs; they need to be encouraged to undertake such a project. Meanwhile, the balance of natural diversity in the West cannot be restored unless tamarisk in controlled. Controlling tamarisk will take everyone's help — BLM, the National Park Service, the Department of Agriculture, an army of dedicated volunteers, and more.

editors note: NMSU scientists are currently researching the feasibility of chemical control of salt cedar.

CACTI

Reprinted from NPSNM Newsletter, December 1980

Cactophilia has more acute symptoms than does the less serious phytophilia that most of us share. Cactophiles tend to want not only views, photos, and memories, but also the plant itself, growing at home. Unprincipled dealers harvest by the truckload to supply this market. Yet another such horror story, from Texas, is in the current (Sept.-Oct.) *Cactus and Succulent Journal*. One-fourth of U.S. cactus species are already rare or endangered according to Lyman Benson in Extinction Is Forever (1977). And we threaten foreign species: some 7,000,000 cacti and succulents are imported each year according to the U.S. Dept. Agriculture.

Arizona has "cactus cops" to enforce its strong plant-protection laws. New Mexico has neither police nor good laws in this area. Bill Isaacs, the man in Santa Fe paid to worry about this prickly problem, says its solution lies in innovative cactus culture, not in field enforcement. If diverse cacti are inexpensive enough, rape of the landscape won't pay. Beside whole-plant and offset transplants, cacti are grown (1) from seed, (2) from stem cuttings, (3) from axillary buds, and (4) from tissue culture.

James Mauseth (1979; C & S Jour. 51: 186-187) points out difficulties with each method. Seeds may be rarer than plants, and for many species growth is unreliable. Cuttings of many species can't be made to root. Sterile cultures of cactus tissue are easy to establish, but making them produce buds (and thence, plants) is still chancy. He does cite success of Kola et al. in Czechoslovakia with Mammillaria woodsii (1976, *Experimentia* 32: 668-669).

Prof. Mauseth's article mainly concerns bud culture. Like other plants, cacti have buds at would-be leaf bases. But cactus buds develop into areoles, the leaves into spines. Areoles become inactive but with hormones—cytokinins—can be induced to grow again in sterile culture. The article details a method; write J. D. Mauseth, Dept. of Botany, University of Texas, Austin TX 78712.

Dian Petty and Jim Weedin detail a simple technique for growing cactus seed in the current issue (#8) of *Chihuahuan Desert Discovery* (Chihuahuan Desert Research Institute, P.O. Box 1334, Alpine TX 79830).

They say it is important to collect mature seeds; fleshy fruits (such as prickly pears) become soft as the seeds approach maturity. Hard-coated seeds can be separated from the fruit in a blender, straining off the seeds.

Seeds with especially hard coats (again such as prickly pear) need scarification —most simply, nicking or notching with pin or knife. A useful "mini-greenhouse" is a clay flower-pot with a piece of glass on top; or construct a polyethylene moisture chamber. The medium, whether artificial mix or native soil, should allow good drainage and aeration—pure soil seldom fills the bill. Suitable combinations include 1 part peat moss to 1 part blasting sand; or 1 part soil to 1 part sharp sand; or 1 part peat to 1 part soil to 1 part blasting sand; or a commercial potting mix.

To control damping off it is good to sterilize the medium in an oven at 180-200°F for half an hour. Fungicides such as Captan and Banrot can be used to drench the medium after sowing when damping off is a problem. Plant seeds at a depth twice their diameter. The soil should be kept moist but not soaked. Once seedlings are up, the glass or plastic cover should be opened progressively to allow greater air circulation and to prevent disease.

View From the South

(one members opinion)

Hip, hip, hurrah, and a big thanks to Robert Sivinski, author of last issue's lead article. Our society has done a remarkably good job of promoting use of native plants in landscapes under the guidance of experts like Judith Phillips, Ted Hodoba, Lisa Johnston, Ellen Wilde, Susan Wachter and with outstanding plant sales like Otero Chapter has held each year. Admittedly, however, we have been and still do fall far short in our knowlege of and efforts to protect rare and endangered plants, their habitats and natural areas in general. Bob Sivinski has said to me in the past that our organization is short on participation by professional botanists and conservation biologists. I agree with Bob's thoughts. Bob, your article on puzzle sunflower was so well written, informative, so welcome and represents a contribution from the professional ranks. I hope, as time permits, you will continue to contribute some of your expertise.

Speaking of such, is there anyone interested, who has not contacted Bob or Karen Lightfoot for a copy of "Inventory of Rare and Endangered Plants of New Mexico" ? You should. The booklet is very informative. Especially note the last page, which is a form for reporting rare plant occurences. Knowledgeable hikers should have copies of this form in their backpack or folded in their plant ID book. I copied the form, then reduced it to about 1/4 size for easier use in the field. We all need to be on alert for and report sightings of any T & E plants.

Recognition should also go to Bob, Karen and Greg Fitch who received The Leopold Conservation Award from The Nature Conservancy in November. All three individuals are employees of the N. M. Energy Minerals and Natural Resources Department. The awards were presented in recognition of their efforts to identify, and catalogue T & E plants and for their efforts working with the New Mexico Natural Lands Protection Act. The latter is a joint project between New Mexico and a not for profit manager (to date, The Nature Conservancy) to acquire and manage lands identified for their special natural resource values. Great program!

Congratulations to the Otero County Commission in their decision to table a decision to adopt a new County Land Use Plan until after consulting with the New Mexico Attorney General. I read the proposed plan, patterned after one adopted by Catron County, and believe it is fraught with unnecessary and illegal provisions that could cost the county large amounts in legal fees. Apparently the Otero County attorney has this same concern.

On a sour note, I continue to be distressed over the obvious attempts to keep interested members of the public from participating in public land planning and decisions. The September issue of the New Mexico Department of Agricultures newsletter contained an article refering to a meeting attended by department officials in Silver City, regarding the Diamond Bar allotment referred to in this section of our last issue. The article admitted the need for an exchange of ideas but continued with the following quote "... it is interesting to note how the Forest Service continues to allow individuals and groups who, although concerned with the conditions of public lands, have no education, background, or experience to qualify for involvement in management of public lands." Interesting. When an environmentalist asks for protection of an area, the cry is loud "multiple use, multiple use". Planning according to this newsletter can only be done by the allottee. Consistent ? You bet ! !

Tom Wootten
November 27, 1992

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