Native Plant Society of New Mexico

NATIVE PLANT SOCIETY OF NEW MEXICO NEWSLETTER

March/April 1994 Volume XIX Number 2

Flora Neomexicana:

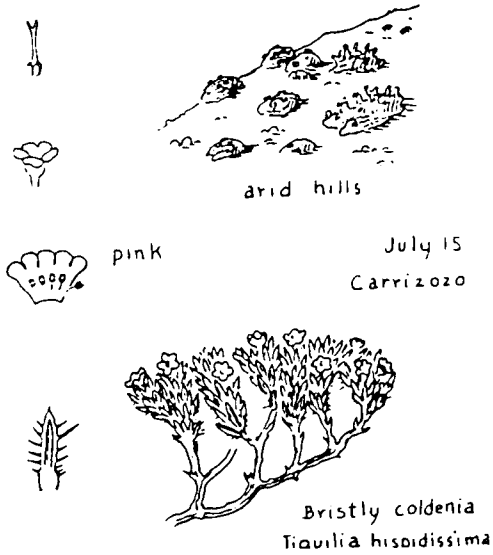
Gypsophilous Plants

by Robert Sivinski, NM Forestry Division

New Mexico is a gypsum-rich state. This mineral has many commercial uses such as sheetrock, plaster of Paris, and agricultural soil amendment, but to a botanist, gypsum habitats are exciting areas to look for many unusual and endemic plants. Plants that occur predominantly on gypsum outcrops are classified as gypsophilous (gypsum-loving) species. Most gypsophilous species will grow in a greenhouse without gypsum in the potting soil. However, in their natural habitats they are usually confined to gypseous substrates. Therefore, these plants are not necessarily dependent upon the chemical composition of their gypsum habitat, but have adapted to the unique physical properties (hard surface crust) and physiological difficulties (high sulfates) present in gypseous soils.

Gypsum is the hydrous form of calcium sulfate ($CaSO_4 \cdot 2H_2O$) that is a chemical precipitate resulting from the evaporation of ancient seas. Most of the gypsum habitats in New Mexico are weathered, earthy substrates of dissolved and recrystallized gypsum (called gypsite) that is mixed with varying amounts of silt, sand or clay. Gypsite surface crusts are easily distinguished by their cellular structure which gives a characteristic hollow ring when kicked or struck with a hammer. This crust is usually almost barren of vegetation, but is often covered with a dark cryptogamic veneer of bluegreen algae and small lichens. The gypsum deposits of New Mexico are mostly Permian age members of shallow sea deposits interbedded with dolomitic limestone, sandstone, and siltstone. The predominant formations are the Yeso (spanish for gypsum) in central and south-central New Mexico and the Rustler and Whitehorse Group in the southeastern part of the state. These formations can be up to 400 meters thick and cover large areas of gentle topography in the Pecos River Basin. They also occur in several mountain ranges in south-central New Mexico and produce steep, gypseous outcroppings on hillsides. Another important deposit is the Jurassic age Todilto Formation which is a relatively pure gypsum that outcrops as broad benches in several scattered locations in north-central and northwestern New Mexico. Other significant gypsum habitats are the large lake basins that accumulate gypsum eroded from adjacent upland formations. The largest of these are the Tularosa Basin (Lake Lucero) in south-central New Mexico and the Estancia Basin (Laguna del Perro) in central New Mexico. These are centrally drained basins which are mostly dry, but still have a few areas of playa with shallow saline lakes. The dry precipitates are wind scoured and form large, leeward dune deposits with high gypsum content. The most famous of these recent eolian dunes occur at the White Sands National Monument in the Tularosa Basin.

There are several common gypsophilous plants which are very faithful to gypsum habitats and will always indicate gypseous soils when found in the field. The New Mexico gypsum flora is often dominated by *Tiquilia hispidissima* (gyp coldenia), *Sporobolus nealleyi* (gyp dropseed), *Bouteloua breviseta* (gyp grama), *Nerisyrenia linearifolia* (no common name) and *Calylophus hartwegii* subsp. filifolius (one of the yellow evening primroses). Other common, but less abundant, species include *Anulocaulis gypsogenus* (gyp ringstem), *Selinocarpus lanceolatus* (gyp moonpod), *Nama carnosum* (n.c.n.), *Dicranocarpus parviflorus* (pitchfork) and *Centaurium maryannum* (Maryann centaury).



Inside...

Among this community of strictly gypsophilic plants are several other species that occur predominantly on gypsum, but can occasionally be found on other nongypsum substrates. These are *Gaillardia multiceps* var. microcephala (small-headed gaillardia), Pseudoclappia arenaria (pseudoclappia), *Haploesthes greggii* var. texana (Texas haploesthes), *Sartwellia flaveriae* (n.c.n.), *Cryptantha pustulosa* (San Juan cryptanth), *Mentzelia humilis* (one of the blazing stars), *Anulocaulis leisolenus* (n.c.n.) and *Stipa curvifolia* (curl-leaf stipa).

When you find an assemblage of the above plants on gypsum, you should begin looking for the several rare, gypsophilous species that are endemic to New Mexico. On the Todilto gypsum you may find *Abronia bigelovii* (gypsum sand verbena), *Townsendia gypsophila* (gypsum Townsend aster) or *Astragalus micromerius* (Chaco milkvetch). There is also a species of *Mentzelia* and a *Phacelia* on the Todilto that are recently discovered and not yet described in the scientific literature. *Tetradymia filifolia* (threadleaf horsebrush) and *Mentzelia perennis* (gypsum blazing star) occur on the Todilto gypsum, but also range further south to the Yeso Formation. In the Sacramento and San Andres Mountains, the Yeso gypsum outcrops on steep mountain sides where small colonies of the rare and endangered *Hedeoma todsenii* (Todsen's pennyroyal) occupy a few north-facing slopes. In the adjacent gypseous playa bottoms, you may find the unusual *Lepidospartum burgessii* (gypsum scalebroom) which has its closest living relative in the Mohave Desert of California and Nevada. To the east, in the Pecos River Basin, the rare *Astragalus gypsodes* (gypsum milkvetch) and the endangered *Eriogonum gypsophilum* (gypsum wild buckwheat) are found only on gypsum hills in the vicinity of Carlsbad. Further up in the adjacent Guadalupe Mountains is the rare *Sophora gypsophila* var. guadalupensis (Guadalupe mescal bean). This beautiful shrub is interesting because it grows on a pink sandstone and not on an obvious gypsum substrate like its relative (var. gypsophila) in Mexico. However, it does grow in association with *Tiquilia hispidissima* (a highly gypsophilic species), and when I analyzed the pink sandstone substrate, I found it to contain 1-2% gypsum.

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.

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.

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 Apr. 1.

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There are several common plants on gypsum outcrops which occupy a variety of other habitats and are often called gypsum-tolerant species. Some of these so-called gypsum-tolerant plants are particularly interesting because they have populations on gypseous substrates which appear to be gypsophilous rather than gypsum tolerant. These populations are strictly confined to gypsum outcrops that lie outside the normal distribution or ecological amplitude for the species. For instance, typical *Cryptantha fulvocanescens* (plateau cryptanth) is a Great Basin species and is predominantly associated with shale and clayey sands in the central portion of its range in northern Arizona and northwestern New Mexico. As this plant reaches the eastern limits of its range, it becomes completely restricted to an isolated Whitehorse gypsum outcrop south of Santa Rosa and the silty gypsum dunes of the Laguna del Perro on the western edge of the shortgrass prairie. At its extreme southern limit, *C. fulvocanescens* occurs as a single isolated population on the more stabilized, peripheral gypsum dunes of White Sands - well within the Chihuahuan desert. Another example is the Pinus flexilis (limber pine)- *Pinus edulis* (pinon pine) woodland on the Cerro Blanco outcrop of Todilto gypsum near Gallinas in Rio Arriba County. These two species are not normally associated and the adjacent nongypsum plant community is mostly pinon-juniper woodland, which is common at this elevation. This lower, gypsum restricted population of *P. flexilis* represents an unusual elevation nonconformity for a species typically found 1,500 feet higher in a more moist, mixed confer forest. These separate gypsum populations of common species illustrate the ability of gypsum substrates to isolate populations, which is one of the necessary conditions for further speciation. Perhaps there are a few more undiscovered plant species just waiting to be found on New Mexican gypsum deposits.

EDITOR'S MESSAGE

The NPSNM Board Meeting was held on Sunday February 13 at the Bosque del Apache NWR. It was a time for work in addition to saying farewell to the 1993-94 wintering birds. Some of the business discussed included.

1. Members please note the **expiration date** on your *Newsletter* mailing labels. It will save the society money and you delays if you renew on time.
2. **Call for Nominations.** All of the officer and board positions are open for nomination. The election will be held before the annual meeting in August. The nominating committee consists of Jean Heflin, Tom Wootten, and Tim McKimmie. Please direct any nominations to them or any board member. You may nominate yourself or any other NPSNM member.
3. The plans for the Annual Meeting are well under way. Santa Fe chapter will host the meeting in Las Vegas. The Silver City chapter has requested that they host the 1995 annual meeting.

In other news, Kelly Allred, professor of Range Science at NMSU is currently working on a **listing of the vascular plants of New Mexico.** He requests that NPSNM assist him by forwarding any recently published reports that would add to the knowledge of the flora of New Mexico. If you know of any such reports (such as the one on page 8 of this newsletter) please send to:

Kelly Allred, NMSU
Animal and Range Science Dept.
Box 30003, Dept. 3-I
Las Cruces, NM 88003-0003

I know that some of you are now using electronic communication on an everyday basis. If you want to communicate by e-mail my e-mail address is: tmckimmi@lib.nmsu.edu.

In the 'thank you column" should go the names of all of the chapter contacts. These folks keep the calendar up so that our members know what is happening when, and what they missed. A major thanks also to Paul and Betty Shelford who do the *Newsletter* mailings.

TM

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

'ALENDAR

OTERO

20 March. 'Sense and Nonsense about Natives" by Lisa Johnston. 2:00 P.M. Tularosa Elementary School. Higuera and First. Books will be for sale.

22 April. "Slides of San Andres Canyon" by Roger Peterson. 7:00 p.m. Tularosa Elementary School.

23 April. Field trip to San Andres Canyon. 9 a.m. Alamogordo Holiday Inn. South end of parking lot.

LAS CRUCES

9 March. "Cactus" by Bob Reeves. 7:30 p.m. Southwest Environmental Center, 1494 S. Solano.

14 March. Field trip to Aden Crater. 9 a.m. Pan Am Lot.

13 April. "The Australian Desert" by Rich Spellenberg. 7:30 p.m. Ag. Building, Room 200.

17 April. Field trip to the Jarilla Mtns. 8 a.m. Pan Am lot.

CARLSBAD

9-10 April. Plant Sale. Living Desert Park. 9 a.m. -4 p.m.

ALBUQUERQUE

3 March. "Harvesting Water in the Home Landscape" by George Radnovich. 7:30 p.m. Albuquerque Garden Center, 10120 Lomas.

7 April. "Relating Architecture and Solar Electric Concepts to the Garden" by Holiday Baer and Bruce Davis. 7:30 p.m. Albuquerque Garden Center.

30 April. Albuquerque Garden Fair, Plant Sale, and Book Sale. Ted Hodoba, chair.

GILA

6 March. Field trip to Cottonwood Canyon. 8 a.m. WNMU Fine Arts Parking Lot.

18 March. "Constructed Wetlands for Waste Water Treatment" by Nancy Gordon. 7 p.m. Harlan Hall Herbarium, WNMU

SANTA FE

16 March. "Lilies of the Field" by Bob Sivinski. 7:30 p.m. Evans Science Bldg. Rm 122, St. Johns College.

20 April. "Trees: Myths and Misconceptions" by Richard Atkinson. 7:30 p.m. Evans Bldg. Rm 122, St. Johns College.

30 April. Plant Sale at DeVargas Mall. 10 a.m. to 1 p.m.

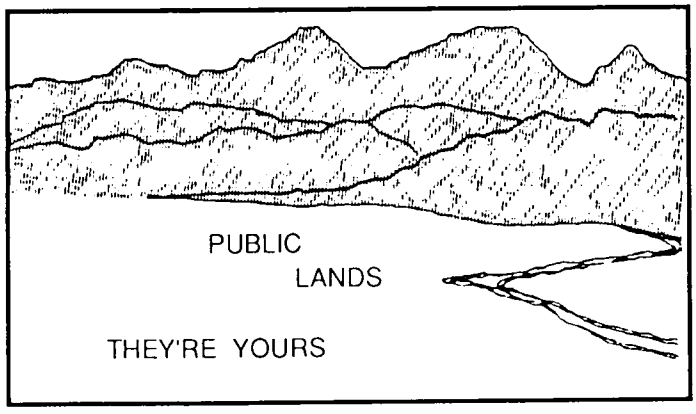
CHAPTER REPORTS

Albuquerque - Lu Bennett

About 35 people attended our Christmas potluck and heard Jean Heflin's presentation "On the Trail fo Gladys Nesbit and the New Mexico Penstemons".

Jean Witherspoon, Albuquerque Water Conservation Officer, spoke at our January meeting. A recent U.S. Geological Survey report stated that Albuquerque does not have as high quality groundwater as was previously believed. A proposed water conservation landscaping ordinance should be ready for the Environmental Planning Commission by June.

Albuquerque chapter dues ($2) will be collected on a calendar year basis. If you have not paid for 1994 please send $2 to Judy Jaeger, 4917 Calle del Cielo N.E. Albuquerque, 87111.



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A REPORT on the ANNUAL MEETING AND SYMPOSIUM NATIVE PLANT SOCIETY OF TEXAS

by Dean Ricer

It was a real pleasure to attend the annual meeting of the NPSOT in San Angelo, Texas last October 15-17. San Angelo is a pretty place on the "Rolling Plains" of Texas. The North Concho River runs through the middle of town and is joined by the Middle and South Concho before emptying in to the Colorado.

The city made the river a thing of beauty with gardens, trails, recreation sites and cultural buildings nestled along it banks. The Holiday Inn, where the meeting was held, is also next to the river. Walking among the trees along the river was a pleasant break from the meetings. The predominate trees are the Mesquite (*Prosopis glandulosa*), Chinquapin Oak (*Quercus mhulenbergia*), and Live Oak (*Quercus virginiana*).

Many growers displayed their offerings of native plants. The pallet of plants and the number of native plant growers continues to increase as the use of native plants in the landscape gains in popularity. There were many exhibits set up demonstrating numerous uses of native plants; from dried arrangements to culinary delights.

A reception on Friday evening was highlighted with an old fashioned revival led by Sally and Andy Wasowski. The music was the same old hymns we are all familiar with but the words were a little different. Some of the titles were; "Gimmie that old time Vegetation, "Nature Loves Me", "Onward Conservationists", and "Amazing Grass". Andy led the singing while Sally accompanied him on the piano.

The programs were all very interesting and all focused on the "Rolling Plains' of Texas". The most interesting ones for me related to restoration projects by various ranches and Land agencies.

Burr Williams and Dalton Maddox really opened our eyes when they talked about Holistic Range Management and species diversity on the Joe Maddox Ranch.

The best part of these meetings is always the renewing of friendships and conversing with old friends. Dorothy Matiza (Gunsight Mountain Ranch), Benny Simpson (Texas A & M Research, Renner, TX), John Carpenter (Ft. Stockton) and other members of the "Texas" branch of the NPSNM were there.

Benny Simpson is President of the Society in 1994. He announced that the next annual meeting will be held in Corpus Christi and topics will focus on the "Costal Plains". The 1995 meeting will be about and in the "High Plains" (Panhandle). Benny said that the 1996 meeting will be about the "Trans Pecos Region" and that he would like to see a joint meeting of the Texas and New Mexico Societies in El Paso that year. Sound like great fun to me! Lets start "Talking it up" now and it will be sure to come about.

A REPORT on a FIELD TRIP TO THE GYPSUM DUNES EAST OF DELL CITY, TEXAS

by Dean Ricer

In mid November I received a call from John Carpenter from Ft. Stockton, Texas. He asked me if Mark Rosacker and I would like to visit the Gypsum Dunes east of Dell City, Texas on November, 15 with Benny Simpson and Wayne McKay. Without hesitation, I said we would pe pleased to join them.

We got up very early on the 15th and headed for Dell City. We had to stop several times and check out plants along the way. I managed to collect seeds from some Tick Bush (*Mortonia scabrella*) near the Guadalupe Mountains National Park. We met the fellow travelers at the ranch headquarters where we obtained the key necessary to get through the gate to the dunes. The weather was a little chilly with some ominous clouds along the southwestern horizon.

The north end of the dunes lies inside the ranch property, but is being monitored by the Nature Conservancy. The north end of the dune field has by far the largest dunes. The vegetation on the north end is much more sparse (less diversity) than those further south. In fact, the further south we traveled in the dunes the more diversity in vegetation we encountered.

The predominant plants on the north end consisted of basically five (5) plants: Gyp Gramma Grass (*Bouteloua breviseta*), Big bluestem Grass (*Andropogon gerrardi*), Indian Ricegrass (*Oryzopsis hymenoides*), Hoary Rosemary-mint (*Poliomentha incana*) and Broom Dalea (*Dalea scoparia*).

The most surprising plant to Benny and I was the *Poliomentha*. We were accustomed to seeing the plant in the Yeso Hills and other gypseous sites in the trans-pecos , where the plant is only about 12' tall and wide. The rosemary- mint at this location is over three feet tall and spreads up to six feet. I took some cuttings and have them growing in the greenhouse now; just in case they are something different.

The further south we went on our trip the smaller the dunes and the more diverse the vegetation. The rosemary-mint again became the minuscule plant we are more familiar with, there was no more Ricegrass to be found, and many other plants were in evidence that could not be found to the north. It is easy to formulate many hypotheses as to why the change in vegetation; but, we will leave that to other investigators. Needless we had an enjoyable day.

We wandered around in our shirtsleeves most of the day. Late in the day the clouds that were on the horizon earlier were now overhead and there was a strong smell of rain in the air. We decided to go back to Dell City and have dinner at the excellent restaurant there. By the time we got back to town it was raining. The Mexican cuisine was excellent; but, we did not tarry long since the temperature was falling rapidly. When we arrived on the highway and headed toward the Guadalupes, the rain had turned to snow. At the top of the pass we were in a blizzard which made driving difficult. Looking back; we would do it again at the drop of a hat.

Wildflowers in Your Landscape: Problems and Solutions

by John S. Snowden
reprinted from *Native Plant Society of Texas News*
July/August 1992

People in Texas and elsewhere see large swaths of wildflowers on roadsides. They then want to grow this beautiful swath of color in their yards or fields. They read that it's simple: prepare a seedbed, sow seeds in September-October, water the seeds in and wait. In the spring, beautiful wildflowers are supposed to grow, and be the same for years to come with minimal input. After all, they're native plants and well-adapted!

It doesn't always work that way, and the failures and changes from expectations can bring a lot of frustration and anger. There are many reasons why this happens. These reasons can be divided into 6 themes: I) seed characteristics; 2) whether the individual species is annual or perennial, and competition between them; 3) mulch accumulations on the soil surface; 4) soil suitability; 5) "weeds" on-site; and 6) lawn and/or native grass competition.

First, the seed itself can determine whether or not you will see a given species at all or in quantity the first year of your wildflower planting. This applies more to annuals. Annual wildflowers are usually plants adapted to disturbed sites. The soil is bare, lots of sun hits it. Many wildflower seeds need light to germinate. Planted too deeply, or in shade, they won't germinate. Others, like bluebonnets, have a hard, impenetrable seedcoat. It can take years for natural processes to break this coat, allowing water in and germination to occur. Be patient! Lastly, if there is very little soil-seed contact, the seed may not be able to absorb enough water quickly enough to germinate. Packing the soil during installation may help with this problem.

Annual plants live out their lifespan in a year. They live to reproduce, which means more flowers and more seeds per plant than with perennials, per year. You will see them quickly in the lifespan of your plot, if they can do well there. Perennials take their time. They grow a good root system to support flowering. You will see more of them in the second and later years. They tend to occupy and take over sites they are well adapted to. They can choke out desirable annuals. Become familiar with the leaves of overabundant perennials. Thin them periodically to allow more annuals to germinate and grow. Mulch accumulations, such as old leaves, tree leaves (Post oaks are really bad about this!), stems. grass clippings, etc., will cut off sunlight to the soil, preventing germination of annuals. Large accumulations will overwhelm a perennial's ability to grow through covering layers, and will kill it.

Individual species may not he well-suited to your soils. They may germinate, but always be weak and sickly, dying without performing properly. This can he due to poorly drained soils or, less commonly. a lack of appropriate, supportive soil microbes, such as rhizobial bacteria and certain fungi, currently being researched at the National Wildflower Research Center and at A & M. On poorly drained soils, rootrot commonly appears to be the ultimate cause of death, but the plant perhaps was weakened by excessive wetting and water residues after rain. Shady sites will also kill or inhibit most wildflowers. Corollary to this, some species will not readily selfseed in many areas of Texas. You see them the first year and never after.

Competition with weeds is a serious problem. A weed is simply a plant growing where it is not desired. Look at the soil around your wildflowers. It is bare, with lots of sunlight. Wildflowers simply do not densely cover ground with leaves and stems like prairie grasses do. Seeds of other plants adapted to disturbance will germinate to occupy this vacant space. They then compete with wildflowers for sun, water and nutrients. In the case of broadleaf weeds, there is little you can do to prevent this seed germination without hurting your wildflowers. First, recognize that the weeds were there long before you came. There's a tremendous reservoir of seeds in the soil. Treatments such as heavy mulching with hay will only prevent a single-year's germination of weed seeds, but they also prevent your annual wildflowers from germinating! This effect applies to both broadleaf and grassy weeds, such as rescuegrass. Remove the mulch and the weeds and annual wildflowers again germinate. Selective poisoning can help. A preemergent herbicide, applied to the soil before seed germination events, forms a soil barrier to kill germinating seeds. Be sure to use one specific to grasses, or you'll kill wildflowers, too! I know of no preemergent herbicide to selectively save wildflowers but kills seeds of broadleaf weeds. If you are growing wildflowers in a lawn or prairie, you must be more careful and not use a grass preemergent herbicide. Wait until the desirable grasses are fully dormant to apply selected foliar herbicides. Apply grass herbicides in January-February to kill cool-season weedy grasses. This is most commonly done against Cheatgrass, Rescuegrass, Perennial Rye and Japanese Brome. If you have desirable, cool-season, native grasses present, such as Canada Wildrye, you may have to use a wick applicator. If drifting spray hits the desirable grasses, they, too will die. Hand weed weedy grasses in the summer if you don't want to poison desirable lawn or prairie grass that your wildflowers are growing in. Hand weed all broadleaf weeds, or spot-treat with hand-held poison shooters.

Native grass competition is very difficult to work against. Most wildflowers are prairie plants. Native prairies in "good condition" (that is, close to climax prarie) are 85-90% covered by grasses. Wildflowers appear to be more numerous than they are, because they produce so many flowers per plant. If you are trying to grow wildflowers in a native prairie, you will have to recognize this limitation. You will be unable to have a prepared seedbed, or you will uproot and kill your grasses. First mow the area closely, removing all mulch and clippings. You must work seeds into the soil by hand, or by drill-seeder on larger areas. Try using a heavy rake, chopping it over the soil, seed and grasses to lightly tear things up, but not uproot grasses. You can also lightly disc an area after broadcasting the seed. Most of the site will be occupied by grass, which will also produce shade on the soil and a lot of mulch accumulation. Rake off the mulch yearly around Thanksgiving, or mow the area and collect the clippings. Mulch the clippings elsewhere. Perennial wildflowers, once germinated, do better in praries than do annuals. Nearly all the wildflowers seen on a climax tallgrass prarie are perennial. They are usually well-adapted to the competition. Annuals get mulched and crowded out.

If you install your wildflowers and manage properly, you can enjoy a changing wildflower prairie plot for years. Good Growing.

Views From the South
(One Member's Opinion)

by Tom Wootten

Recently I received notice and a request for input into the proposed revision of the Inventory of Rare and Endangered Plants of New Mexico being prepared by Robert Savinski and Karen Lightfoot of the New Mexico Energy, Minerals, and Natural Resources Department. When completed this will be a resource each of our chapters, as well as interested individuals, should have. Please contact either of the two above individuals at P.O. Box 1948, Santa Fe, New Mexico 87504. I assume a limited number of the booklets are available at no charge. Included in the booklet will be lists of plants in New Mexico that are: threatened or Endangered as a result of excessive collection; plants that are rare or sensitive to long term land use impacts; and a review list, which is a list of plants where more information about numbers and locations are needed. Many of our members have heard me speak to the need of being observant on our outings, recording information about sensitive plants, and passing this information on to Bob or Karen. Please do.

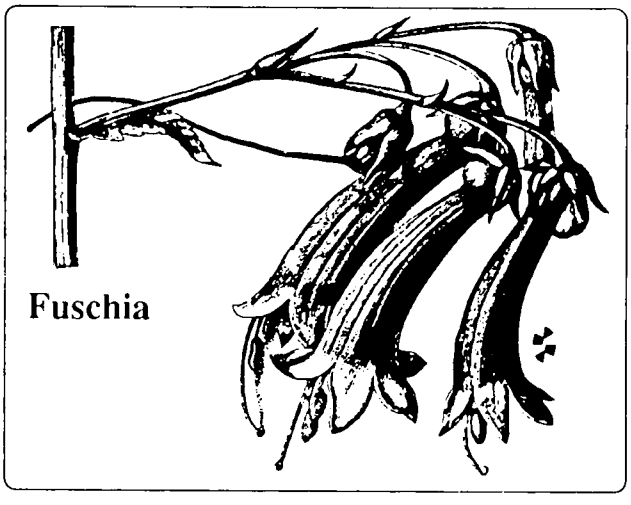
While certainly endorsing this activity on the part of our State botanists, I can not help but confess to my dissatisfaction that only the first list of plants above are protected by New Mexico law(ie. certain plants are protected from collection). These same plants can be bulldozed, graded up, stomped out by livestock or run over by off road vehicles with no enforceable punitive action available. In years past our State was not unusual in offering poor protection for its rare plants. Now, however, I believe we are being left at the gate. Both California and Arizona Native Plant Societies have taken very active and aggressive roles in developing more protective laws for rare plants and both have been very active in making recommendations for listing of certain species.

Endangered species are a controversial subject in some quarters outside our organization, but I believe our membership is totally supportive of protection of our native plants, especially on public lands. Our organization should take an active role in working to complement our existing state law with more protective standards. I welcome comments from any members interested in this project.

As a participant in the grazing reform hearings and as a panelist meeting with Secretary of Interior, Bruce Babbitt, I can only report disappointment and frustration with the complete capitulation Sec. Babbitt has made to a few ranching interests. To my disappointment, the current administration has just put its priorities on other issues and true grazing reform is dead for the time being. I challenge all of our members to join with me in bringing to light those special allotments where grazing privileges are being abused. We must continue to insist that our Federal agencies address these wrongs.

Speaking of one of these, I recently had the privilege of hearing a presentation by Dr. Bob Omart of Arizona State University and seeing some slides of the Diamond Bar allotment on the Gila National Forest and largely within the Aldo Leopold and Gila Wilderness Areas.. The slides confirmed for all, what I had seen personally. Can you believe rubber rabbit bush browsed by domestic livestock almost to ground level ? I would not have, but after the grass, willows and cottonwoods are all gone, what·'·s a poor cow to do. By the time this is published, the comment period for the Draft EIS for this allotment will have passed. Unfortunately the US Forest Service did not even examine the best alternative for the area which would be to rest the area from livestock grazing at lest until the riparian areas have recovered their natural functions. I fear that this is going to be a long and litigious time before a final decision is made , and all the while livestock will continue to degrade the area.

All this is disconcerting and frustrating. On a positive note, however, I am aware of the efforts of some within the Federal and State agencies who really do care and are trying to be good stewards. More power to them.



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CYPERUS SETIGERUS (CYPERACEAE), NEW FOR NEW MEXICO

Cyperus setigerus Torr. & Hook. is a robust perennial 6-10 dm tall with stout creeping rhizomes, few leaves situated on the lower third of the culm, and inflorescences usually composed of 9-13 unequally pedunculate spikes bearing pinnately arranged spikelets. The inflorescence is usually subtended by the same number of conspicuously unequal bracts as there are peduncles. The fertile scales are reddish-brown and envelop a trigonous achene.

This species was not reported in New Mexico by Correll and Correll (1972) nor by Martin and Hutchins (1980). There are now three rhizomatous *Cyperus* with trigonous achenes in New Mexico. A key is provided to separate them.

KEY TO RHIZOMATOUS, TRIGONOUS ACHENED, *CYPERUS* OF NEW MEXICO

1. Inflorescence subtended by (2-)3-4(-5) bracts; fertile scales dark-reddish, dark-purplish, or dark-purplish-brown; mature achenes 0.9-1.0 mm wide; tubers rough and in chains with wire-like rhizomes occurring between several tubers ..... *C. rotundus*
1. Inflorescence subtended by 5-13 bracts; fertile scales golden-yellow to reddish-brown; mature achenes 0.4-0.8 mm wide; tubers smooth, not in chains,terminating fleshy rhizomes which do not occur between tubers.
   2. Mature achenes 0.4-0.5 mm wide; inflorescence usually subtended by 9-13 bracts; fertile scales reddish-brown ..... C. *setigerus*
   2. Mature achenes 0.6-0.8 mm wide; inflorescence usually subtended by 5-10 bracts; fertile scales golden-yellow to stramineous ..... C. *esculentus*

Voucher specimen:NEW MEXICO.Guadalupe Co.:ca.2.7 km (1.7mi) SE on US 84 from its jct.with NM 119 in Dilia; NWside of US 84 and the Pecos River, 27 JUl 1992,S.& *G.Jones* 9636 BRIT/SMU,ctb=CharlesT.Bryson's pers.herb.,MICH,vem =Vern E.McNeilsus's pers. herb., VSC, WARM).

Cyperus setigerus was locally frequent growing along an open mesic disturbed roadside in red sandy clay soil with igneous rock outcrops. The elevation of the site is ca. 1550 m (5090 ft) with the geology being of the Triassic Rocks Formation (TR) (Triassic). Associated species include: *Conyza canadensis* (L.) Cronq., *Bouteloua gracilis* (Kunth in H.B.K.) Lag., *Melilotus indica* L.) All., *Aristida sp.*, and *Cirsium* sp.

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