

Native Plant Society of New Mexico
December Newsletter

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CAVE CREEK CANYON

I recently received an appeal from the CCCCC (Citizens Concerned about the Conservation of Cave Creek Canyon) via Myra McCormick of Bear Mountain Guest Ranch, Silver City, New Mexico.** I visited Cave Creek Canyon (at Myra's urging, following a delightful stay at the guest ranch) in October of this year and was duly impressed with the fantastic diversity of the flora and fauna. Many of our members have undoubtedly visited the area and are acquainted with its unique qualities. Those of you who have not yet visited the area should do so as it is truly of unusual interest to all naturalists, both professional and amateur. The following is liberally quoted directly from the appeal. ed.

The Cave Creek basin is the area drained by Cave Creek and its tributaries in the Chiricahua Mountains, Coronado National Forest, southern Arizona. It is within ten miles of the New Mexico border, and spans five life zones from Hudsonian at Chiricahua Peak with its Englemann Spruce and breeding Golden-crowned Kinglets, down through Canadian, Transition, Upper and Lower Sonoran desert with road-runners and cactus wrens. There are over 12 miles of tree-lined streambeds, with pine and oak woodlands on the surrounding slopes, and tall red rhyolite cliffs over all.

The diversity of life there is due to the mixing of northern forms with a number of Mexican species which are at the extreme northern limit of their ranges. Birders come here to look for the Mexican Chikadee, Painted Redstart, Zone-tailed hawk, and a dozen species of hummingbird. The most stunning of the Mexican exotics is the Coppery-tailed Trogon -- crimson breast, iridescent green body, long bronzed tail laced up beneath with white and black, and a big yellow bill. It personifies all the dazzle of the tropics. About 25,000 people visit Cave Creek annually just to see the Trogon.

Several other canyons in the Coronado share many of the features that make Cave Creek so important. All have some water year-round, good riparian vegetation, and cover a variety of vegetational zones and habitats. Cave Creek, however, has the best developed and most

**Don't miss the feature article on Bear Mountain Guest Ranch in the December issue of NEW MEXICO magazine.

diverse riparian vegetation, which is scarce in the southwest and of enormous importance to wildlife. The main canyon in Cave Creek is sycamore-dominated, with a few scattered cottonwoods, black walnut and willow, and its South Fork has a beautiful gallery of bigtooth maples and Arizona cypress, the best such association anywhere. An east branch of Cave Creek is filled with a stand of ancient madrone trees, relicts of a cooler geological period. Most of these trees occur in the other canyons, but in lesser numbers. The South Fork, a 3 mile long ecological masterpiece, is a deep, watered, shaded gorge through sharp rhyolite pinnacles on both sides. Its bottom is covered with a true forest of deciduous trees, wall to wall and never lumbered, homesteaded, overgrazed, or mined, and without significant developments. Of the 25 pairs of Trogons which nest in the United States, almost half (12) live in Cave Creek, mostly in South Fork.

The Coronado National Forest is going through what is called Land Use Planning for the entire forest. This means that they look at all the resources in the area, weigh their relative importance, and decide which will be emphasized in the future, and which are of secondary importance. The types of resources involved are mining, lumber, grazing, watershed protection, wildlife, and recreation. This year we will see the future of Cave Creek Canyon directed toward one or more of these uses. It could be any of them.

Right now, the main local pressures on Cave Creek are for continued grazing, hunting, and trapping, a paved and improved campground system, a paved trans-mountain highway, and perhaps even a fishing lake. If there is no other than local input from the public, this will probably be the future of the canyon -- at the expense of its enormous biological resources.

The Forest Service will hold hearings on these decisions in local communities around the Chiricahuas, in small towns like Douglas and Willcox. However, the majority of the Canyon's fans come from much further away! They are the thousands of birders and scientists who travel literally hundreds of thousands of miles altogether each year to visit Cave Creek, and who comprise the majority of the Canyon's visitors. Cave Creek Canyon is probably one of the most intensively studied land areas in the world. For many years, scientists have been studying the animals and plants in the canyon and the surrounding desert, and this knowledge is available and is valuable for management. The area is worth preserving just to protect the many long-term studies in progress there.

You are urged to write a letter to the Forest Supervisor in Tucson, and send a copy to the Douglas District Ranger in Douglas.

Some important points to make, in your own words:

(1) Point out the national significance of Cave Creek Canyon as a biological area, both for birding and research. If you come a long distance to visit it, mention this. (2) Ask that they designate the Cave Creek basin as a Wildlife Habitat Management Area. (3) Ask that the Management Plan (which Must be drawn up) emphasize the importance of managing for diversity of wildlife and especially the rarer forms such as the Trogon, the Zone-tailed Hawk, the Coati Mundi, and the Banded Rock Rattlesnake. Also mention the importance of maintaining the values and conditions that attract birders and scientists to the canyon. (4) Ask that the South Fork be designated a National Zoological Area. (6) Ask how they are complying with the Endangered Species Act, which requires Federal agencies to review their holdings for the presence of endangered and threatened wildlife and its habitat. (6) Request that they inform you of any action or proposed action regarding Cave Creek Canyon's future.

Write to:

Ken Weissenborn, Supervisor
Coronado National Forest
301 West Congress Street
Tucson, Arizona 85701

and

Bernard Brunner
Douglas District Ranger
1925 A Avenue
Douglas, Arizona 85607

The chances for positive action are very good -- if we write. The people in the Forest Service who will make these decisions are sympathetic and are becoming more aware of the tremendous importance of Cave Creek to birders and scientists, and of their own role in maintaining the attractiveness of the area. However, if they don't hear from anyone except a few local recreation groups, they can't make a case for managing for wildlife habitat. They need your support, please write!

Citizens Concerned about the Conservation of Cave Creek Canyon
c/o Spofford
Aguila Rancho, Portal, Arizona 85632

ps. You might also inquire whether a vegetation study has been done to determine if rare and endangered plant species occur in the area, as they undoubtedly must given the many rare species of animals. You might also suggest that mining, grazing, logging, and recreation are not truly compatible with the preservation of critical habitat for endangered plant species -- ed.

Last month's meeting:

Colonel Margaret Johnson began the meeting of 10 November by presenting a National Council of Garden Clubs award ribbon to the Native Plant Society for its exhibit at the Annual Flower Show held by Las Sembradoras Garden Club, summer, 1977.

Our speaker for the evening, George Kelley, a pioneer in native plant cultivation, entertained a gathering of forty people with both his slides and his accompanying humorous comments. An author and naturalist as well as a gardener, he maintains that gardening conditions in the Rocky Mts. are quite different from those of the eastern or western coastal states where the bulk of our gardening literature comes from. We have higher altitudes, colder winters, dry air and drought to contend with as well as a warm, dry spring. George maintains that the finest gardening and landscaping subjects available to us are the native plants which have adapted to our climate over thousands of years. He has extensive acreage near Cortez, Colorado where he has experimented with native plants for many years.

Of the more than sixty species he discussed, the following were rated "tops":

Ceanothus intermedia, very attractive although difficult to grow; needs well drained soil. Jamesia americana, has an "aristocratic" leaf shape, nice fall color; prefers rocky sites. Peraphyllum ramosissimum, an extremely attractive deciduous flowering shrub; difficult to transplant. Quercus turbinella, very valuable evergreen shrub-oak. Fraxinus anomala, small tree or shrub needing very little water, a very good street tree. Other street tree possibilities from the native flora which Kelley stressed were Celtis occidentalis (hackberry), Acer grandidentatum (big tooth maple - fabulous fall color!), and Acer negundo (box elder - as a last resort). Populus spp. (cottonwoods) were vetoed for city lots because of their large size, invasive, greedy roots, and brittle wood. He repeatedly emphasized the usefulness of the smaller trees - hawthornes, alders, birches - as street trees and specimen trees on small city lots.

This month's meeting:

Two of the feature articles in this month's newsletter deal with the environmental issues of pollution and the preservation of unique habitats while the third concerns the rediscovery of a rare (in N.M.) species. Bill Isaacs, our speaker for the next meeting, will tell us something about what the state of New Mexico is doing with regard to preserving and protecting rare, endangered, and threatened plant species and their habitats. Bill is the head of the New Mexico State Heritage Program of

the Dept. of Fish and Game. Bill and his staff are responsible for identifying which species of the flora of New Mexico should be considered rare, and of those, how many are in danger of extinction and need to be proposed for protection under the Endangered Species Act of 1973. The methods of protection involve the preservation of critical habitats, or where this is impossible, moving species to new areas with suitable habitats where they can be fully protected. Land is acquired for such purposes through the Nature Conservancy.

Bill and his staff recently produced (through monumental effort) a checklist of rare plants of New Mexico which they promptly took to a meeting in Las Cruces (17 & 18 Nov.) of 18 participating botanists from UNM, NMSU, and elsewhere. The participants formed several committees to address specific issues in more detail. We will probably find out about some of the decisions made at this meeting and see slides of some of the rare and endangered native wild flowers of New Mexico. The meeting will be held Wed., 14 Dec., at 7:30 pm, in Laboratory 118, St. John's College, Santa Fe. The laboratory building is the large building to your left as you enter the circular drive at the entrance to the campus of St. John's.



THE ARIZONA CYPRESS

Cupressus arizonica

A magnificent tree to 90 feet tall with a trunk diameter of 5 $\frac{1}{2}$ feet in the wild, the Arizona cypress is one of the most beautiful of our native evergreen trees and is one of the few native plants of the southwest which has gained widespread acceptance in the world of horticulture. The French have found it valuable for reclaiming waste land in France and Algeria and it is available in retail and wholesale nurseries from California and Oregon to Pennsylvania and New Jersey.

It is a member of the cypress family, the Cupressaceae, along with such familiar ornamentals as junipers (Juniperus spp.), Arbor-vitae (Thuja spp.), Chamaecyparis, Calocedrus, and Thujopsis. Almost all the members of this family are highly regarded ornamentals and all have minute, scale-like leaves, and small, globular, woody (berry-like in junipers) cones. These features set them apart from the only other family of conifers in the southwest, the pine family, which has needle-like leaves, and usually large, oval-shaped, woody cones. There is, however, another family of conifers which often also has scale-like leaves and small, round cones. This family, the Taxodiaceae, includes the Cali-

ifornia redwoods, Sequoia and Sequoiadendron, as well as Metasequoia, Taxodium, and others. One botanist has recently proposed that the Cupressaceae and the Taxodiaceae in fact constitute a single family, the Cupressaceae. If this proposal becomes widely accepted, we may find that our native cypress is more closely related than we might have thought to Sequoia sempervirens and Sequoiadendron gigantea, respectively the tallest and the most massive trees in the world. Unlike its enormous cousins, however, Arizona cypress never reaches such immense proportions and, under cultivation, usually reaches 40 ft -- rarely to 60 feet.

Like most of the other members of this family, Arizona cypress is extremely variable, two specimens seldom being exactly alike in height, shape, and foliage color. In nature, the most conspicuously variable feature is the color of the foliage which varies from green to silver, gray, or blue. The bark pattern is also variable, the typical specimens having rough, checkered, persistent bark while others have smooth, exfoliating, cherry-red bark. Specimens of the latter type are considered a distinct species, Cupressus glabra, by some taxonomists as the characters of the bark are very different and they are found only in a limited area of central Arizona; their geographic range never overlapping that of C. arizonica. Other taxonomists point out that the two species do not differ in critical features of the cones, the usual criterion for delimiting taxa in the conifers, and lump them into a single variable taxon, C. arizonica. Depending on your own taxonomic bent, whether you are a splitter or a lumper, you may recognize two species or one -- in any case, it pays to inspect nursery stock because both forms may be labelled C. glabra or C. arizonica in some nurseries. Smooth Arizona cypress, C. glabra, is the only species discussed in the Sunset Western Garden Book which notes that it is usually sold as C. arizonica. Cupressus arizonica is the only species discussed in the garden handbook series of the Brooklyn Botanical Garden which notes that the very attractive deep cherry-red bark of some examples suggests a closely related species, C. glabra. As the man says, you pay your money and you take your choice.

As a landscaping subject, the Arizona cypress is valuable for a fast growing wind-break or a tall screen. It tolerates pruning and shearing well and can be maintained as a hedge. It is at its best in regions of high summer heat and is unusually drought tolerant when established. It is not particular in regard to soil and situation, tolerating dry rocky areas very well, but growth is faster in deep, sandy to loamy soil. The various hardiness zone maps in garden literature indicate that it is not tolerant of enough cold to withstand winter weather in northern New Mexico and it is usually recommended for warmer regions. In spite of these recommendations, it does grow in Santa Fe! Specimens may be seen near Santa Fe Village.

As previously noted, these are highly variable taxa, especially when grown from seed (which germinates readily when sown in the spring). Plants obtained by vegetative propagation will be much more predictable in height, shape, foliage color, and bark characteristics. Vegetative propagation is usually through cuttings taken in late fall or early winter from mature wood. Grafting may also be done but dwarf forms may lose their dwarf habit when grafted. Cuttings are handled rather routinely: insert cuttings in damp sand, keep in a cold frame or greenhouse till spring, and provide bottom heat for faster, more generous rooting. Several selected varieties are available from nurseries and have been vegetatively propagated in order to maintain their desirable characteristics. 'Compacta' is globe shaped; 'Gareei' has rich, silvery blue-green foliage, deep cherry-red bark, pyramidal habit, and is more tolerant of cold than the typical species; 'Pyramidalis' is compact and symmetrical. Any of these varieties may be labelled C. arizonica or C. glabra in the nursery.

All of the older manuals and floras which treat the Arizona cypress indicate that it is found in southwestern New Mexico. Unfortunately, whenever the locations reported were checked for verification, there was no Arizona cypress present. No one in recent years has been able to find a bona fide natural population of Arizona cypress in New Mexico -- until two months ago! Bill Isaacs and John Hubbard verified a virgin stand of about 200 acres three miles due north of Cooks Peak in the tail end of the Black Range. The area is readily reached from Florida via thirteen miles of dirt road in a northwesterly direction. Drive to the windmill, park, and walk north about a half mile. Bill Isaacs and his staff, and Myra McCormick have all already made their pilgrimages to this site. So shall I as soon as I can.

David Deardorff

Note: Plants of the Southwest has two limited collections of seed of the Arizona cypresses. One collection is of Cupressus glabra from Oak Creek Canyon near Flagstaff Arizona. The second is of C. arizonica from Cave Creek Canyon in the Chiricahuas. Anyone who wishes a small amount of free seed of these taxa (specify which ones) send a self-addressed, stamped envelope to:

Plants of the Southwest
542 Camino del Monte Sol
Santa Fe, New Mexico 87501

Etymology: Cupressus is the name the Romans gave to the Italian cypress, Cupressus sempervirens. Glabra means smooth, and Arizonica is a place-name indicating the region in which the plant is native.

Edna Wilson King died in an automobile accident last month. She had been a member and the chairman of New Mexico Citizens for Clean Air and Water for many years. One of her recent interests was salt pollution. This article is dedicated to her.

The Use of Salt on Roads

The Ski Basin Road in Santa Fe is one of the areas which has alerted many people to the trouble caused by salt spread on highways for de-icing. The trees on the down hill side of that road are browning and dying. This is unsightly and a loss, and the prospect of salt entering ground water through seepage, not just here but everywhere salt is used, is frightening.

Saline water is a mammoth problem in the states. As our rivers are channeled in myriad irrigation ditches through arid lands which are naturally salty the water picks up the salt from these lands and carries it along. Agriculture may one day cease in the half million acre Imperial Valley which produces 1% of the nation's food output. Thousands of acres have been abandoned and the expense of keeping the remainder suitable by underground drainage systems needed to carry off the saline water is tremendous. The water for the Imperial Valley comes from the Colorado River. By the time its water reaches Mexico it is a dubious nurturer of plants; at times the salt content is so high the water is a plant killer. The Rio Grande (and the land it irrigates) is in similar trouble, so is land below the new Aswan Dam in Egypt where saline water is not a modern problem. The civilizations along the Tigris-Euphrates Valley and the Nile Valley suffered and collapsed in part because of increasing salinity in their agricultural land.

In this article the emphasis will be on the use of salt as a highway de-icer. Salt production in the U. S. is about 41 million tons annually. Approximately one fourth of that is used on highways. That is about nine million tons of salt poured into the ecosystem each year! The snow belt states of course use most of this, and many states have reported damage, but only a few have control laws. Minnesota enacted one in 1971 and salt use has substantially dropped. Vermont in the same year changed a "bare road" policy to a "safe road" policy. Connecticut is testing a catalytic additive to road salts that may cut its use by fifty percent. Cities, like Ann Arbor, have limited use to major roads. Massachusetts and Wisconsin are working with comprehensive bills based on the studies of Arthur D. Little Inc. researches. We will return to the studies and recommendations that have come from Massachusetts.

The following table is a summary of the use of salt by the N. M. State Highway Department (in Santa Fe, Los Alamos, Taos, Torrence, San Juan, and Rio Arriba Counties), the City of Santa Fe, and the City and County of Los Alamos.

Agency	Information Source	Lane miles or linear miles	Salt used in previous years	This year (est.)	Salt to sand or cinder ratio
N.M. State Highway Dept.	Joseph Phipps Coordinator, District 5	1,964 lane miles, in six counties*	5,775 tons used last year	7,500 tons	1/3
City of Santa Fe	Joseph Dunaway, street superintendent	120 lane miles	150 tons used last year	150 tons	1/5 salt/snd 1/7 slt/cnd
City and County of Los Alamos	Neil G. Seeley, Co. Manager	80 linear miles**	300-500 tons used a few yrs ago	200 tons	1/10 1/7 blow 25° 1/5 vry cold

*Santa Fe, Los Alamos, Taos, Torrence, San Juan, & Rio Arriba Counties
 **this includes some 4 & 6 lane sections, lane miles unavailable.

Los Alamos feels itself to be a leader in lowering the amount of salt used on highways. Its average of 1 to 7 salt to sand is in real contrast to the State Highway Department's 1 to 3 ratio. Los Alamos policy also includes having their Public Service Director encourage the use of snow tires, or chains being carried, as well as having sand and a shovel in the vehicle. At critical areas on their highways there is sand available at no cost. And they try to make people aware of these things with news releases. In regard to the Ski Basin Road, could the Highway Department, in order to be able to make use of a lowered ratio of salt to sand, insist on snow tires, or chains, carrying a shovel and sand, and have sand stations? Perhaps the only really viable alternative on this road is public transportation by a vehicle properly equipped to handle winter conditions; no salt would be needed then. The Highway Department has received pressure even from the Governor's Office when the Ski Basin Road is not clear enough. The users of this road expect a lot.

One often hears "People safety over tree safety" but these are not mutually exclusive alternatives. Dumping salt into the water supply is not safe for people or trees. In Massachusetts, three public and many

private wells have been closed, many more are threatened. Tens of thousands of people have been affected. Chloride levels were above the national recommended maximum of 250 milligrams/liter. About a hundred communities in Massachusetts have water supplies with sodium levels above the 20 milligrams/liter health maximum for people on low sodium diets. Excessive sodium affects hypertension, heart disease, and kidney and liver ailments. Salt is 60% chloride ions and 40% sodium ions by weight. A chloride level (chloride is what is usually monitored) of 250 mg/l can mean levels of sodium four to eight times the warning levels for people on low sodium diets. Perhaps not all this trouble can be laid at the door of highway salt use but according to Terry (1) "The fifteen year rise in salt contamination parallels the growing use of de-icing salts since about 1950." Terry, in his study with the Arthur D. Little Company has three short term recommendations, made for Massachusetts but valuable more generally:

1) Store salt safely. Remove open or bareground salt stockpiles and dumping areas from sites where the salt might seep into any water system. Cover salt piles in any location. (In New Mexico, all salt stockpiles are out in the open. There are no closed sheds or coverings used.)

2) Record and report all salt used. (In New Mexico there is no co-ordinated effort to do this)

3) Develop public policy and support through leadership and education. (Los Alamos, because of citizen pressure, has begun this)

A ban on salt as a de-icing compound is impractical just now. We have high speed highways, there are genuine driving hazards with snow and ice, people have tight schedules and there is increased public demand and pressure for clear roads. But, lowering salt use, storing it safely, and looking into alternatives is something we can ask of Councils and Departments involved in salt use. They are generally obliged by their own policies to protect their resources, or areas along roadways they are responsible for. They are often obliged to take "affirmative action", and in some areas, nuisance legislation or stream and ground water standards could be appealed to.

Persuasion is also a most effective tool. Those in charge of roads could examine Los Alamos' practices, and those of other states. The Governor's lack of concern might be changed if he hears more from people committed to sensible alternatives and moderation in salt use.

Salt pollutes. It pollutes water supplies for drinking, agriculture, natural areas, and industry. It corrodes automobiles, it eats away roads and sidewalks, it leads to various health problems, among them high blood pressure and hypertension. Alternatives to heavy use should be examined, it should be stored safely, and as little of it should be used as possible in the first place. People must drive more

slowly and carefully, not asking for "July travel in January". The streams, ground water, natural and agricultural areas must be protected for future generations. We have not been so hurt by excessive salt use as other states, but it is not too soon to address what is a problem today and, with accelerating contamination everywhere will be a much more severe problem all too soon.

Appreciation: Edward Grothus, Los Alamos; Denise Fort, Santa Fe; Dr. James Gosz, UNM, Albuquerque; and Arthur D. Little, Inc.

References:

- 1) Terry, Robert C. Jr. & Arthur D. Little, Inc. Road Salt, Drinking Water, and Safety. Ballinger Pub. Co. 1974.
- 2) Consumer Reports, Ice-Melting Compounds, Feb. 1973
- 3) Denver Post, Ice-Melt Salt Hazard to Drinking Water. Bruce Myles January 1974
- 4) The New Mexican, Salty Irrigation Threatens Verdant Imperial Valley December 31, 1969
- 5) Water Quality Control Commission Regulations, received from the Environmental Improvement Agency, Santa Fe

The author is responsible for any errors in this article.

Gail Haggard

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