



The Plant Press

THE ARIZONA NATIVE PLANT SOCIETY

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The Role of Native Plants in the Management of Highway Vegetation

by Clifton R. Taylor

Management of natural resources on ADOT rights-of-way is predicated upon the needs for highway safety, for the stability of soil supporting highway structures and the aesthetic compatibility with the life zones and land uses through which the highway passes. In each of these three needs, native plants play a major role.

Highway safety is paramount to the operation of a modern highway system. It involves not only the pavement structures, drainages and bridges, but also the visibility of oncoming and crossing traffic, hazard-free highway shoulders and informational systems for motorists such as traffic control signals and signs, travel information signs, hazard marker and warning signs and reference markers for stranded or disabled vehicles.

Plants play a major role in the functionality of highway signing, sight distance designs and absence of fixed hazards on the shoulders. Non-native plant species by far generate the most negative impacts. Many

of these are all too familiar: tumbleweeds, saltcedar, Mexican palo verde, Johnsongrass, Siberian elm, Russian olive and numerous others. The natural pests and hosts that limit and retard the rapid spread of native species are not present to control the alien ones, allowing rank and rapid growth of non-natives. These can quickly hide traffic signs, interfere with breakaway sign posts, clog drainages and reduce visibility on curves and at intersections and wildlife crossings. Many non-natives are also ruderals that thrive in areas of soil disturbance (such as highway construction and maintenance sites) to the detriment of soil stability and recruitment of native plant populations. Native plants, by contrast, tend to grow more slowly and, when established, provide fierce and adaptive competition for non-native seedlings. Soil stability is a prerequisite for stable roadways and structures. It is here that the native species are vastly superior. Native perennial bunchgrasses such as the three-

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A Message from Your Co-Presidents

I feel that this is my first opportunity to converse with you, even though I have been co-president of ANPS for one year. I apologize for the delay in getting a message to you... things (life) have been hectic.

I believe that now, the beginning of the year, is a good time to reflect on our accomplishments of the past year and set the stage for our goals in this year. We have so much to be grateful for. Some highlights of the past year include:

1) A committee led by Julia Fonseca developed, organized and created a wildflower poster for ANPS. Margaret Pope is doing the illustrations and the work we have seen to date is beautiful. This poster will be a wonderful addition to our publications and we hope to sell many copies. My thanks to the committee for their dedication in making the poster a reality.

2) ANPS donated money in support of a bond issue in Tucson that would provide funds for the acquisition of Sonoran Desert parcels. Protection of native habitat is one of our goals and we were thrilled that the bond issue passed.

3) We had a successful annual meeting at the Desert Botanical Gardens in Phoenix. My thanks to DBG for providing the scenic backdrop and facilities and to the planning committee of Marcia Tiede, Sue Rutman, Julia Fonseca and Pam Davis.

4) Tucson chapter member Linda Brewer has created a new membership brochure. She donated her design and layout skills and the results are dramatic.

We also said goodbye to several members who have served us well. Nancy Stallcup has resigned as Vice-President and Balbir Backhaus as Newsletter Editor. I thank both of you for the dedication and insight you brought to your positions. I am happy to report that volunteers have come forward to step into these vacancies-- Lynn

Kaufman as Vice-President and Barbara Tellman as Newsletter Editor. I am looking forward to working with them... Welcome! Speaking of vacancies, the Board is in need of a corresponding secretary. If you are interested, please contact us.

The Board ended the year with a one-day retreat. It was a very productive day. Highlights of the meeting were: the start of a revision of ANPS bylaws, creation of executive, conservation and education committees and planning activities and projects for 1998. Barb Skye, Marcia Tiede and Antoinette Segade worked on a membership survey that is enclosed with your 1998 registration. Please take the time to fill it out and return it... we will use the information to design a program that meets our members' expectations and desires. I want to hear from you how ANPS can fulfill your interests.

ANPS flourishes because of your dedication and love of Arizona's rich and diverse flora. I am looking forward to a great year for the society. Remember, we are the voices for plant resources in our state. May our voices be ever strong!

Mima Falk
Co-president, ANPS

Browsing the ANPS Website

Thanks to Dave Sewell, the ANPS Website is up and running. Anyone who logs on can find information on membership in ANPS, how to order brochures, a calendar of events, information on many Arizona native plants and links to other native plant resources.

If you have any information that you would like added to the Web page, contact Sewell via anps@azstarnet.com.

(ADOT, cont'd from page 1)

awns, gramagrasses, *Stipa* and *Hilaria* spp. have extensive, fibrous root systems which serve not only as drought-resistance adaptations, but also are extremely efficient at stabilizing soils by reducing overland flow velocities, generating organic matter as micro litter dams, increasing percolation of water into underground water tables and reducing rainfall impact force on soil particles. Such plants also tend to lessen wind velocities at ground level, thereby reducing the likelihood of blowing dust. Native forbs, shrubs and trees are also major factors in wind velocity reduction, in stabilizing aggregate materials on cut and fill slopes and in providing species diversity necessary for a stable and healthy plant community.

To the non-engineering portion of the motoring public, the greatest value of native plants lies in the aesthetic qualities that they provide. Not known to many, ADOT is the publisher of *Arizona Highways* magazine, whose *raison d'etre* is the promotion of the natural beauty of the state. Obviously, tourists do not come to Arizona to admire European, Asian, African or Australian plants; they expect to see native plants, especially those so unique to the three deserts of Arizona. Resident Arizonans, as well as tourists, are provided an interesting motoring experience by the ebb and flow of various native plant communities and associations along the highways and byways. Such interesting scenery has the ancillary advantage of reducing driver fatigue generated by the dull sameness of endless monocultures of introduced or opportunistic alien plants.

The economic advantages of restoring our rights-of-way with native plants is enormous. These plants are adapted to the environment and do not require expensive artificial irrigation. Native plant communities tend to be relatively stable and require less input of maintenance dollars for soil stabilization, weed control and plant health than is required to maintain introduced species. Generally, native plants look better when left in their

natural growth form, are more resistant to disease and more tolerant of the adverse effects of roadside traffic.

For all of the above reasons, it is the policy of ADOT Natural Resources Section to use only native plant materials for revegetation projects and to suppress, as funds permit, the spread of non-native plants which pose a very real threat, not only to marginal and T & E species, but also to our state's wildlands and to our tourist and agricultural industries.

Clifton R. Taylor is a resource manager for the Arizona Department of Transportation

Editors's Comments

Shortly, I will be turning over the editorship of *The Plant Press* to Barbara Tellman. As many of you know, Barbara has long been an active and devoted member of ANPS. I feel sure the newsletter will build and thrive under her guidance. As editor, the last five years have been a wonderful opportunity for me to be involved with a very dedicated group of people who share the common goal of preserving and protecting our state's flora.

In this issue, Clifton Taylor of the Natural Resources Division of the Arizona Department of Transportation discusses the vital role native plants play in ADOT's vegetation management policy. Also, Alison Kocek, a sophomore at Dobson High School in Mesa, is testimony to how citizens from various segments of society can be involved in conservation efforts with her story on The Phoenix Zoo's program to save the Ramsey Canyon leopard frog. Speaking of conservation, Julia Fonseca fills us in with her usual, very informative grab-bag of topics and ideas for ways to get involved. Finally, my thanks to all those who helped keep the newsletter going, especially Horace Miller and Julia Fonseca, and the many other contributors!

—Balbir

One of a Kind Frogs

by Alison Kocek

In 1988, Dr. J.E. Platz from Creighton University discovered an amazing new species of leopard frog in southern Arizona. This frog was named *Rana subaquavocalis* (Ramsey Canyon leopard frog because of the male's unique way of croaking under the water instead of above. The Ramsey Canyon leopard frog is the only known frog species to possess such a strange way of communicating. Unfortunately, these frogs almost became extinct before scientists could learn why they do underwater croaking.

A 1996 census showed that there were only sixty adult Ramsey Canyon leopard frogs left alive. This made them one of the rarest known frogs in the world! They were originally thought to live only in Ramsey Canyon, a Nature Conservancy preserve in the Huachuca Mountains just north of the Arizona-Mexico border. Later though, it was discovered that they inhabit a few other small ponds, all of which can be found within a six-kilometer radius. This means that the Ramsey Canyon leopard frog has the most restricted range of any ranid frog species.

Although many of the existing frogs of this species are able to mate and lay eggs, none of the tadpoles have succeeded in surviving past infancy. This is because the areas these leopard frogs inhabit are infested with bullfrogs (*R. catesbeiana*, an introduced species that will eat almost anything), and exotic, predacious fish that feed on the tadpoles before they have a chance to mature. Fortunately, the Phoenix Zoo has started a program to bring up some of the *R. subaquavocalis* tadpoles in a safe environment on their grounds.

The zoo has set up two trailers with four large tubs in each for the tadpoles to live in. Air conditioning units were added to the trailers to give the tadpoles the same climate they would have in the Huachuca Mountains. Every day volunteers at the zoo clean filters, feed the tadpoles fresh, frozen spinach and devote their mornings to help the tiny tadpoles survive. I am one of those volunteers.

So far, the Phoenix Zoo has increased the Ramsey Canyon leopard frog population more than ten times! The new frogs raised at the zoo will be returned to their natural habitat sometime this fall. Unfortunately, most of the young frogs will not make it past their first season in the wild because they are still small enough for the exotic pests to eat. Hopefully, some will survive to keep these unique frogs off the extinction list.

I am a fifteen-year-old volunteer at the Phoenix Zoo and I was able to help clean the tanks and feed the Ramsey Canyon leopard frogs. It was really great to have a chance to do something so important for a wild creature. I have volunteered at the zoo for two and a half years now and have learned how important all of the Earth's creatures are to each other. We have to keep up our efforts to save *Rana subaquavocalis* and all of the other endangered species, or we might not be here to correct our mistakes.

Alison Kocek is a sophomore at Dobson High School in Mesa, Arizona, and a teen volunteer at the Phoenix Zoo.

Conservation Toolkit: The Letter (Fifth in the Series)

by Julia Fonseca

It's easy to feel cynical about politics. Every day we see decisions made that benefit the few at the expense of the many, the powerful at the expense of the powerless. Does this mean politicians and bureaucrats ignore letters and phone calls? No! On the contrary, calls and letters are closely monitored at their offices, and do influence decisions. Here are several recent examples:

Environmentalists recently got legislation introduced to protect millions of roadless acres on the Colorado Plateau. Years of successfully blocking bad legislation with letters and phone calls has shown Congress that the public will not stand for the paltry set-asides proposed by the Utah delegation. Each time the public has successfully slapped down wimpy wilderness legislation with their outcry.

In Colorado's Front Range, Forest Supervisor Gloria Flora (her real name) decided to block all future oil and gas leasing. She credited all of the people who had been working to protect the Rocky Mountain Front with giving her the strength to take a stand. "You look at them and say, 'My God, I'm breezing through for a short time, and these people have spent their whole lives protecting this place,'" she said in a recent *High Country News* article.

True, these hotly contested issues do take thousands of letters. But imagine how effective your letter or call could be if written to a small business owner, department head or lower-level bureaucrat. Often these people seldom hear from anyone representing a conservation viewpoint. They may be able to do something to protect plants or reduce damage, but won't "until it's an

issue." And if you actually go to their office to complain or support them a few times, you can really make an impact.

Sonoran Desert: Trashed or Treasured?

Some of the world's best-preserved desert, paradoxically, is found in an Arizona military zone known as the Barry M. Goldwater Range. The Range extends from the Tinajas Altas Mountains near Yuma to the Saucedo Mountains near Ajo, some 800,000 acres of classic Sonoran desert. Ancient ironwoods, elephant trees tucked into rugged stone niches, saguaro-studded bajadas, washes alive with hummingbirds at *Justicia* blossoms, wide plains that can erupt into fields of flowers-- these are some of my favorite memories of the area.

Though relatively unstudied, more than 400 species of plants have been identified in the Goldwater Range. Geographically isolated populations of chaparral and woodland species (e.g. red berry juniper, California rosewood, blackbrush) occur in the Sand Tank Mountains. Nearly all of the remaining U.S. habitat of the Sonoran pronghorn, an endangered species, lie within the Range. The desert bighorn sheep live here in relatively large numbers. The area was also home to the Hia Ced O'Odham (Sand Papago), whose tribal members still live around its periphery.

Beginning in the 1940's, portions of the land were bombed by the military. Bombing utterly destroys some areas, but fortunately the area of direct impact is limited. Today the biggest problem in the Range is controlling motor vehicles: the Marine Corps plays war games, Border

(Conservation-- Sonoran Desert, cont'd)

Patrol agents prowl the region, and citizens seeking solitude, sheep, or sun make tracks to distant places. Nominally, the Bureau of Land Management is supposed to caretake the place, but they have largely abdicated their role. They lack the funding, personnel, and organizational mandate to do the job.

"A coalition of environmental and scientific groups is trying to change that", says Gayle Hartmann, a spokesperson for the effort. The Sierra Club, Tucson Audubon, Friends of Cabeza Prieta, Sonoran Institute, Wildlands Project and Drylands Institute are trying to convince the military, the BLM, and Congress that time has come to care for the Goldwater Range.

"Congress must soon decide whether the Range will continue to be used by the military and how it should be managed", she says. The coalition is proposing that military use continue, but that there should be more effort to limit impacts from all users. A more protective land designation is being considered. Possibilities include national park status, wildlife refuge status, or a national conservation area.

If you would like more information, please call Gayle Hartmann at (520) 325-6974. You can also call or write Senator McCain and Congressman Pastor to tell them how important the area is to you:

Senator John McCain
241 Russell Senate Bldg.
Washington, D. C. 20510
(602) 491-4300

Congressman Ed Pastor
2465 Rayburn
Washington, D. C. 20515
(602) 624-9986

Exotic Plants in Wilderness Areas

The Aldo Leopold Wilderness Research Institute and University of Montana are

collecting data on the distribution of exotic species in wilderness and other protected areas. The project is thought to be the first of its kind in the world, and an important step toward dealing with exotic plant invasions in wild lands. The Institute has contacted ANPS to help distribute their survey to interested parties.

If you can provide a general list of exotic species found in one or more areas, distributional information on exotics, or a narrative regarding exotics in a particular wilderness area, please contact me at ANPS's general mail box (jfonseca@dot.pima.co.az.us). If you plan to visit a wilderness area over the next nine months, and would be willing take along their survey form, I will mail you one.

You can contact the Aldo Leopold Wilderness Research Institute directly at P. O. Box 8089, Missoula, MT 59807. Their phone is (406) 542-4190, FAX (406) 542-4196, or e-mail wildweed@selway.umt.edu.

Lower Colorado Delta Restoration Planning Begins

Like the Nile, the Colorado River delta supported an incredible abundance of wildlife and plant diversity in the midst of one of the most arid places in the world. Spurred by Mexico's creation of a biosphere reserve and the threat of a blanket habitat conservation plan for water-related activities on the Colorado River, conservation groups are contemplating how to restore the delta.

Defenders of Wildlife recently hosted conservation meetings on both sides of the border, and cooperated with the National Park Service to fund a report about "Opportunities for Ecological Improvement along the Lower Colorado River and Delta." After nearly 30 years of desiccation, several successive wet years in the 1980's and again in the 1990's

(*Conservation-- Colorado Delta, cont'd*)

have allowed scientists and residents of the delta to see what a flowing river can mean for the region. At the meeting, I heard that fishermen in San Felipe and El Golfo attribute restoration and improvement of certain fisheries to delta flows.

Water, of course, will be the key. Will the concept of permanently allocating water for habitat creation and maintenance ever be made reality? Changes in how dams are operated in the U. S. will be necessary to restore parts of the Delta in Mexico. Today we are seeing changes in dam operations across the country that no one dared to dream about fifteen years ago.

To find out more, you can contact Craig Miller at Defenders of Wildlife (520) 578-9334. Copies of the report are available from Miller or from Mark Briggs at the Sonoran Institute in Tucson.

Plant Conservation in Grand Canyon National Park

The second year of a native plant restoration project involving visitors in manually removing non-native plants and planting native species is underway. The work is funded by the National Fish and Wildlife Foundation and federal funds from the Native Plant Conservation Initiative. In addition, the park is inventorying three distinct varieties of the federally endangered Sentry milkvetch located on the rim of the Canyon.

Herbal Remedies May Impact Plant Populations

Increased use of herbal medications may be diminishing wild populations of certain plants in the U. S. Following the lead of practitioners such as Dr. Andrew Weil, mainstream America is beginning to look for and find plant-based remedies in the corner drugstore. With some 1,400 plant species regularly

traded in the \$1.6 billion market for medicinal plants, World Wildlife Fund, World Conservation Union and Nature Conservancy are beginning to ask whether plants are at risk from over collection. Goldenseal and echinacea are among the popular plant remedies collected in the wild in the U. S. Cota and osha are often collected here in the Southwest.

At the same time, it should be mentioned that certain traditions may have increased the distribution of some medicinal plants. One of the Conservancy's Preserve managers told me that he once found a Hispanic man collecting yerba mansa (*Anemopsis californica*) who said he had planted the roots in the Preserve many years before. Both Native American and Hispanic medicinal plant traditions incorporate measures to mitigate collection impacts, but their current effectiveness is unknown.

Symposium

Invasive Alien Species in the Sonoran Desert Region

held at

The Arizona Sonora Desert Museum

Tucson, Arizona

May 2-3, 1998

Regional biologists, including Richard Felger, Gary Nabhan and Tom Van Devender will discuss the impact of invasive plant and animal species on the Sonoran Desert.

Preregistration requested. For more information, please call (520) 883-1380.

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