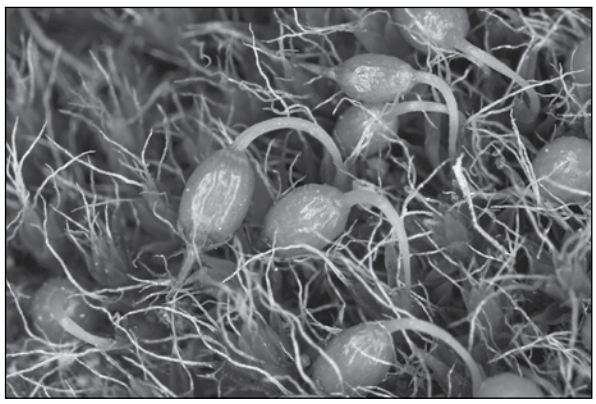
New Mexico's Voice for Native Plants

NEWSLETTER

of the

Native Plant Society of New Mexico

October, November, December 2010 Vol. XXXV No. 4



NPSNM's First Annual Native Plant Photo Contest winners! *Clockwise from left:* First Prize—*Silene scouleri* by Owen Williams (San Juan chapter); Second Prize—*Euphorbia davidii* by Gail Sorenson (Taos chapter); Third Prize—*Grimmia pulvinata* by Russ Kleinman (Gila chapter). A big thanks goes out to all 17 photographers who entered a total of 53 photos, which were judged by a panel of three local professionals.

Inside This Issue

From the President

by Tom Antonio

Let me begin by thanking the Gila chapter for putting together a spectacular annual meeting in Silver City. From the presentations to the field trips and workshops, it was a wonderful meeting. The amount of work that goes into planning and executing these conferences is enormous. Sincere thanks from the state organization to all the folks from the Gila chapter who worked so very hard in creating a great conference. Please mark your calendars for next year's annual native plant conference that will be held August 4–7, 2011, in Santa Fe at the Institute for American Indian Arts.

The Native Plant Society of New Mexico would like to extend thanks to the New Mexico Educators Federal Credit Union for their recent gift of $3,400. This gift from their Community Rewards program will assist us in our grants program. I would like to encourage all members of the Society to join this fine credit union, and when you do, please remember to check the Environment and Wildlife category on the Community Rewards form. This is a wonderful gift and we are all very appreciative of their continued support.

Jason Schmitt *(right)*, membership development officer at New Mexico Educators Federal Credit Union, presents Tom Antonio with a check for $3,400 from NMEFCU's Community Rewards program, in support of the activities of the NPSNM.

The results of the election of Society officers were announced at the annual meeting. I am pleased to report that I am staying on for another term as President, Renée West as Vice-President, Pam McBride as Recording Secretary, Lolly Jones as Membership Secretary, and Wynn Anderson is the new Treasurer.

In closing, I want remind all members that the deadline for grant applications is December 29, 2010. We award grants to individuals and organizations that further the goals of the Society. Please see the requirements for these grants on our website, http://npsnm.edu. ❖

2010 ANNUAL MEETING

Highlights from Silver City

by Sarah Johnson, Jack Carter, and Phoebe Lawrence, Gila chapter

Over 150 educators, writers, researchers, and native-plant enthusiasts attended the 2010 annual meeting, rolling in to Silver City from across New Mexico and from west Texas and southwest Colorado. Top-notch presenters—experts in their fields, some brought in from as far away as California and Wisconsin—led a wide range of lectures, seminars, and workshops at the Western New Mexico University campus. Field trips fanned out from there to Silver City gardens and into the nearby mountains and semidesert terrain. And indoors, throughout the weekend, meeting attendees placed bids on auction items, enjoyed the photographs entered into NPSNM's First Annual Native Plant Photo Contest, and browsed the Society's excellent book table.

Elsewhere in the newsletter, some annual meeting events and topics are described in more depth. What follows are highlights of just a few of the others.

Chloridoid Grass of New Mexico: Evolution and Classification

J. Travis Columbus, of Rancho Santa Ana Botanic Garden in Claremont, CA (as well as a Silver City native and graduate of NMSU), is the foremost authority on the evolution and classification of grasses worldwide. His lecture brought together traditional classification with the new phylogenetic approach to classification brought about by studies in molecular biology and DNA. The model for his talk was based on a single tribe of grasses, the Chloridoideae, best exemplified in New Mexico by the genera *Eragrostis, Muhlenbergia,* and *Sporobolus*. He touched on the gross morphology of the grasses and related it to various characters such as variation in the epidermis and C_4 photosynthesis. This is an extremely difficult subject for the layperson to understand, yet Travis

Continued page 3

Field trip leader Russ Kleinman discusses plant life in Aspen Grove.
Photo by Elroy Limmer

Highlights from Silver City *(continued from p. 2)*
skillfully gave his audience access to the important role of evolution in this most important plant family, the Poaceae.

Sedge-Identification Workshop

What is the difference between a grass, a rush, and a sedge? Workshop co-teachers Bill Norris, WNMU professor of ecology and evolutionary biology, and Danielle Walkup, recent WNMU graduate, offered a helpful mnemonic: "Sedges have edges, rushes are round, grasses are hollow from the top to the ground." Though most of us may not recognize a sedge even when it's staring us in the face, the sedge family, the Cyperaceae, is an important one. Within this family a single genus, *Carex,* has 80 species that occur in New Mexico alone. Distinguishing a sedge or rush requires close scrutiny; the differences are subtle. For example, while grass is two-ranked—the leaves come off a hollow culm (stem) radially in two directions—sedges are three-ranked, and most have triangular and solid culms. Sedges have flowers enclosed by one scale (bract); in grasses it is two (the palea and lemma); and in the Juncaceae, or rush family, flowers have tepals and resemble highly reduced, brown lily flowers. These details only hint at the wealth of material Bill covered in his PowerPoint lecture. He and Danielle also gave workshop attendees the valuable opportunity to dissect floral parts under microscopes.

The Vascular Flora of the Gila National Forest: A Database

Jack Carter, professor emeritus of Colorado College and author of *Trees and Shrubs of New Mexico,* and Chuck Huff, botanist and computer wizard, strove to impress upon their audience the need for long-term studies, herbaria, and databases of the earth's critical regions if we are to understand change over time. If we use the Gila National Forest as a model for producing a database that can stand the test of time, and if we could follow through with studies of other forests such as the Coronado, the Lincoln, and the Cibola, we could someday gather critical data that would identify climate change, available moisture, and variation in soils. Jack and Chuck's database contains information on 1,378 species of vascular plants that have been identified from the GNF. Of those total species, 135 are exotics and intruders into the forest, and 23 are rare, threatened, and/or endangered. Herbarium sheets tell us that more than 35 people have collected and studied in the forest since 1939. It is interesting to consider, as we travel through the Gila or Aldo Leopold Wilderness, that there are many species of which there exist only one or two herbarium records. And when we consider the fact that the GNF was established in 1905, it becomes clear that our knowledge of the vascular flora is extremely limited indeed.

Keynote Address

Conservation pioneer Aldo Leopold had the great gift of "combining the aesthetic sensitivities of a poet with the critical eye of a scientist to become a practical idealist." That quote comes from Curt Meine's *Aldo Leopold: His Life and Work,* considered by many to be the best book out there about the life and times of this seminal figure in conservation history. In his keynote address at Saturday's "cowboy dinner" banquet, Curt talked about how we need to return to developing a community committed to long-term conservation. He also screened a preview of a film currently in production that tells the story of Aldo Leopold's life and portrays his special gift of inspiring people to become part of a major conservation effort. ❖

Elroy Limmer

Keynote Speaker Curt Meine

The Newsletter of the NPSNM

October–December 2010. Vol. 35 No. 4. This newsletter is published quarterly by the Native Plant Society of New Mexico (PO Box 35388, Albuquerque, NM 87176) and is free to members. The NPSNM, a nonprofit organization, is composed of professional and amateur botanists and others with an interest in the flora of New Mexico.

Next deadline is December 1, 2010. Articles and high-resolution artwork are enthusiastically welcomed and can be submitted to the editor, Sarah Johnson, at ***sarita@wildblue.net.***

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2010 ANNUAL MEETING

Mesquite and Nipa: New Global Food Crops from the Americas

by Richard Felger,[1] Edward Glenn,[2] Neil Logan,[3] Susanna Pearlstein,[4] and David Hearn[5]

The majority of the hot arid zones of the world are beset with food shortages and poverty, and increasing drought and human population portend devastating food shortages, famine, and political instability. Modern food production in these arid regions is largely based on systems imported from more humid regions of the world. We propose fitting the crop to the environment, not changing the environment to fit the crop. For this purpose we are working to bring to the forefront two new major world food crops: mesquite (*Prosopis* spp., section *Algarobia*), a nitrogen-fixing legume, and nipa (*Distichlis palmeri*), a member of the grass family. Nipa produces rice-sized grain and thrives with pure sea water as well as fresh water. Both nipa and mesquite are drought resistant. These would be the first major aridland global food crops and the world's first major new food crops since the expansion of soy in the 20th century.

Most of the major food crops of the world are members of the grass family (wheat, rice, corn, etc.) and the legume family (beans and soy). After searching the world for new aridland food crops, including halophytes (plants that thrive with high salinity), we conclude that nipa and certain mesquites and are the best candidates. Furthermore, they appear complementary, with the potential for symbiotic intercropping. Both are high-yield and low-energy-input perennial non-tillage crops—the energy conservation from non-tillage agriculture has major global potential.

Nipa is the native name for the saltgrass species *Distichlis palmeri*. This unique grain is endemic to the delta region of the Colorado River in the heart of the Sonoran Desert. It thrives on pure seawater, including places with 10-m daily tides, as well as fresh or brackish water, and can survive drought. The nutritional content of the grain compares favorably with that of major economic grains.

Several species in the genus *Prosopis*, section *Algarobia*, are significant candidates. These species, native to arid regions of the Americas, are generally known as mesquite in North America and *algarrobo* in South America. Select species and trees produce high yields of edible pods and high-quality, clean-burning fuel wood. For many in the poorest regions of the world, daily struggles include finding cooking fuel. Millions of women in India's arid zones scavenge daily for scraps of wood from an invasive mesquite, *Prosopis juliflora,* which unfortunately has bitter, inedible pods.

We have decades of experience working with these plants and have formed a creative and dedicated core team, and our collaborations are international. We advocate new crops that can improve the quality of life and ecological conditions including energy and water conservation. World hunger can be addressed by matching the correct agronomic species with the appropriate environment. ❖

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[1]Associate Researcher, University of Arizona Herbarium, Tucson; Research Associate, San Diego Natural History Museum

[2]Professor, Department of Soil, Water and Environmental Science, University of Arizona

[3]Ethnobotanist and agroforestry systems designer, Kohala, Hawaii

[4]University of Arizona graduate student conducting research on *Distichlis palmeri* with Glenn and Felger

[5]Assistant professor, Towson University, Baltimore, MD; biodiversity informatics research associate, University of Arizona

2010 ANNUAL MEETING

Moonworts!

by Russ Kleinman, Gila chapter

The Gila chapter of the NPSNM sponsored a seminar on *Botrychiums* (moonworts) on the Wednesday and Thursday before the Annual Meeting in Silver City. *Botrychiums* are fernlike plants in the Ophioglossaceae that grow underground for about five years and then send one leaf each year above ground. The leaf consists of a spore-bearing part—the sporophore—and a more "leaflike" (foliaceous) part, the trophophore.

The world's experts in the genus *Botrychium* converged on Silver City for the two-day conference. These included Dr. Donald Farrar from Iowa State University, Dr. Cindy Johnson from Gustavus Adolphus University in Minnesota, and Steve Popovich from Colorado. All three have done extensive research on the genus *Botrychium.* Dr. Johnson is a Fulbright scholar and is currently studying ecology in Tanzania.

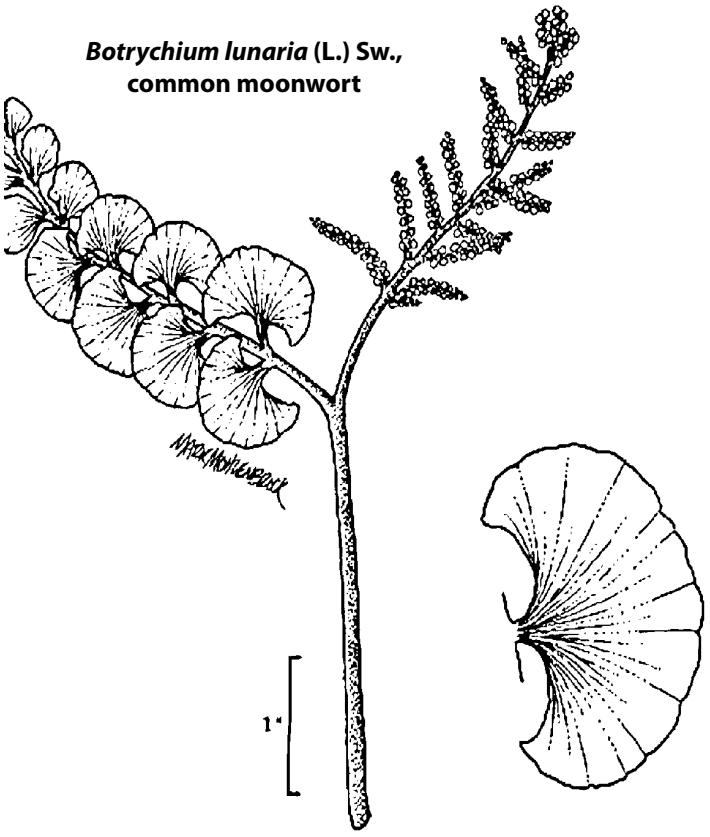
Dr. Donald Farrar
Photo by Russ Kleinman

The purpose of the *Botrychium* seminar was to train individuals in New Mexico to recognize moonworts and be able to identify them. Moonworts have been found in neighboring Arizona and Colorado, as well as northern New Mexico and as close as the Sacramento Mountains. None as yet have been found in the Gila National Forest even though suitable habitat seems to abound. After an initial day in the classroom, the participants went into the field for the second day of the seminar.

Dr. Cindy Johnson
Photo by Russ Kleinman

The field trip consisted of several stops looking for Moonworts along Bursum Road, ending at Willow Creek.

This was a world-class seminar and all the participants enjoyed the personal attention they received. Now we need to go out and find those moonworts! ❖



***Botrychium lunaria* (L.) Sw., common moonwort**

Image: USDA-NRCS PLANTS Database /USDA NRCS.
Wetland flora: Field office illustrated guide to plant species.
USDA Natural Resources Conservation Service.

2010 ANNUAL MEETING

Kelly Allred Honored

by Tom Antonio

At the Annual Meeting in Silver City, a plaque was given to Dr. Kelly W. Allred. It read as follows:

> In appreciation of your many years of dedicated service to the understanding and conservation of the flora of New Mexico, the Board of Directors of the NATIVE PLANT SOCIETY of NEW MEXICO hereby presents you with a lifetime membership.

Although many members of the NPSNM are familiar with Dr. Allred's many contributions to our understanding of New Mexico's flora, it is worth sharing comments from two of the nomination letters we received. The first is from Tim Lowrey and reads, in part:

> Dr. Allred has dedicated his professional career to botanical research and education focusing on the New Mexico flora. He is an enthusiastic teacher, mentor of a prodigious number of master's degree students in the Range Science Department at New Mexico State University, herbarium curator, author, student of mosses and grasses, flora writer, coach of the NMSU Range Plant Identification Team, plant collector, and enthusiastic supporter of the Native Plant Society. Many of his students have gone on to obtain PhD degrees and are now professors engaged in botanical research and education. Kelly has been dedicated for many years to writing a modern flora of New Mexico that will be the capstone of his career. The *Flora Neomexicana*, in its several parts, is part history of New Mexico botany and part modern flora. He is on the verge of completing this project that he has accomplished nearly on his own. He has enlisted a few botanists to help with family and genus treatments but most of the writing and research is his. It is an amazing and outstanding accomplishment.

Dr. Kelly Allred
Photo by Elroy Limmer

The next letter was from Bob Sivinski and reads, in part:

> Kelly has been a central figure in New Mexico botany for over 30 years. As a professor of agrostology, plant taxonomy, and phytogeography at NMSU he brought botany into the lives of thousands of students and inspired many to obtain a deeper understanding of the plants around them. Kelly has an abiding and infectious passion for all things botanical. Expertise in range grasses is essential to his university position, but he is also a serious student of all vascular plants, mosses, lichens, botanical Latin, regional botanical history, herbarium curation, and publication of botanical literature. He is by far the most knowledgeable person on New Mexico botany and is always finding new ways to give that knowledge to other people. He started the *New Mexico Botanist* newsletter in 1995 and published 50 editions over 15 years. This newsletter is the best vehicle for communication among New Mexican botanists and we would sorely miss it if it were ever to stop. Kelly has also maintained the official listing of New Mexico vascular plants and recently published it with the name *Flora Neomexicana I.* Anyone wanting to know what native or introduced plants have been reported to occur in New Mexico can easily find what they need in this handy reference, which took nearly two decades to develop. His published *Flora Neomexicana II* is an interesting and fun lexicon on the meaning of Latin names for New Mexico plants. His final *Flora Neomexicana III* is almost ready for publication and will be a collaboration with Dewitt Ivey to produce an illustrated identification key to the entire New Mexico flora. Of course Kelly is most famous right now for his publication of *A Field Guide to the Grasses of New Mexico* and the numerous public workshops he has taught on grass identification. Yet he is also well known to botanists for his many scholarly articles in scientific journals and is well known among the many landowners and agency land managers that use the NMSU Cooperative Extension Service for the numerous useful botanical tools Kelly offers through the university.

It is easy to see why the board was unanimous in their decision to present Dr. Kelly W. Allred with a lifetime membership in the Society. We congratulate Dr. Allred on his retirement from NMSU and wish him many more productive years studying the plants of New Mexico; we are all wiser for his brilliance and hard work. ❖

2010 ANNUAL MEETING

Garden Tour Report

by Charles Holmes, Gila chapter

During the course of the field trips, eleven of us took a tour of a few of the local gardens that are devoted mostly to native plants and that practice water storage and conservation. The first stop was the Silva Creek Botanical Garden, which was started nearly five years ago on a "brownfields" site that had been used for many years as a location and storage facility for road maintenance materials and vehicles. A local expert demonstrated to the group how a large quantity of rainwater is being collected and distributed to various sections of the garden, where it is preserved underground. There are over 100 local native species of trees, shrubs, and herbs on peripheral areas and eleven raised beds throughout the quarter acre of the garden complex that borders Silva Creek. This creek, incidentally, is the culprit that created the famous "Big Ditch" in Silver City over 100 years ago.

The second stop was the fully reconstructed backyard complex at a local residence that displays intricate contours among rock gardens with over 60 species of native shrubs, small trees, and herbs on many different levels. A large rainwater collecting receptacle is used for most of its irrigation needs.

The third stop, somewhat out of town, is especially noteworthy for the way in which native oaks have been pruned to present a very pleasing aspect for one's garden and to allow undergrowth to be more efficiently controlled. ❖

The annual meeting field trip to Signal Peak, led by Dale Zimmerman, enjoyed an extraordinary turnout. *Front row (kneeling):* Susan Williams, Ron Hartman, Bettie Hines, Gene Jercinovic, Jerry Buchholz, Russ Kleinman; *back row (standing):* Kelly Allred, Vivian Ivey, William Norris, Robert DeWitt Ivey, Don Farrar, Greg Popovich, George Miller, Mimi Hubby, Bob Sivinski, Tom Antonio, [unidentified], Dennis Beaver, Dale Zimmerman, Nancy Daniel, Jamie Douglass, Robert Powell, Mary Buchholz.

Photo by Danielle Walkup

CONSERVATION CORNER

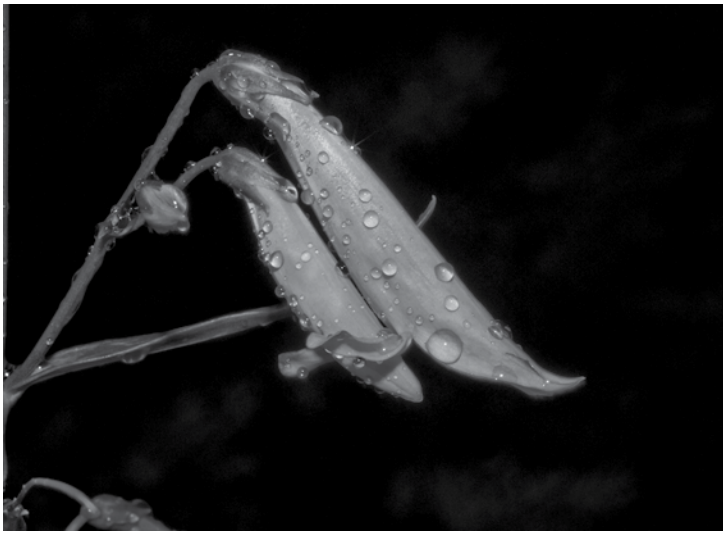
Botanical Knowledge and Experience

by Jim Nellessen, NPSNM Conservation Committee Chair

Over the years, botanical knowledge and capabilities have been declining in American society. There are studies to this effect (http://www.bgci.org/usa/bcap). My reason for addressing this topic is a recent article published in *National Geographic* magazine. The article is called "Restoring Tribal Lands" and begins on page 80 of the August 2010 issue. What struck me was the lead-in photograph (pages 80–81). The photo depicts some ruins on Santa Clara Pueblo. It is a beautiful photograph, no question, but is also an incongruous one given the context of the article.

The article discusses restoration on various tribal lands across the United States. One of the examples is from Santa Clara Pueblo in New Mexico. This segment focuses primarily on bosque restoration along the Rio Grande. The sentence on page 81 states that tribes are setting examples in how to restore the environment. This statement is fine; I applaud it. However, this particular photo is a glaring example of a nonnative invasive plant species. The grass dominating the scene of the old pueblo ruins is the nonnative cheatgrass (*Bromus tectorum*). To a trained botanist and plant ecologist this is a glaring misrepresentation of the topic of restoration. If the intent of this photo was to show this as a site needing ecological restoration, then this should have been mentioned. But cheatgrass (also known as downy brome) is not mentioned anywhere within this article. Consequently, average readers will think they are visualizing a pristine scene of an abandoned pueblo, while in reality a nonnative invasive plant species dominates the view. Not that cheatgrass is ugly; as I stated earlier, the photo is beautiful, cheatgrass or not. But I can better picture Indian ricegrass (*Oryzopsis hymenoides*), galleta grass (*Pleuraphis jamesii*), or some of the dropseed grasses (*Sporobolus* spp.) growing among the pueblo ruins.

This is another observation supporting the point that most people do not "know" the plants that surround them. This includes writers and editors of the National Geographic Society (NGS). I am not slamming the NGS. I love their magazine. I have been subscribing to it for 40 years! This is simply a sign that we all need to increase our awareness of the natural world around us, *most especially of the vegetation*. This emphasizes another point, that we enthusiasts of plants are unique indeed. Maybe that is a good thing—for us! ❖



(Above left) *Potentilla thurberi,* red cinquefoil; (above right) *Penstemon barbatus,* scarlet penstemon. Both were identified along the road during one of the annual meeting's field trips. Photos by Elroy Limmer

Chapter Activities & Events

For further information on the following events, notify the contact person listed, or visit the chapter's Web page: first go to http://npsnm.unm.edu; click on Local Chapters; then select the chapter. **Hikers** should always bring plenty of water, hat, sun protection, lunch and/or snacks, field guides, and wear sturdy shoes, suitable for rough, uneven ground.

Albuquerque

All scheduled monthly meetings are first Wednesday of the month at 7 p.m. in the NM Museum of Natural History, 1801 Mountain Rd. NW. For more info contact Frances Robertson, frobertson45@comcast.net, 505-828-4775, or Jim McGrath, sedges@swcp.com, 286-8745. For meeting places indicated [A] through [H] see website.

Oct 6 Meeting. Photo Forum. Participants will be limited to 15 min. each to make a presentation. Format may be slides, digital images, or PowerPoint. Only 4 or 5 presentations will be allowed. A notice will be sent out to the membership in early August to solicit presenters. The selected presentations with titles will be announced to the membership 2 weeks prior to the meeting.

Nov 3 Meeting. The Dark Side of Plants. Tom Antonio, president of the NPSNM, and Carol Johnson, vice-president of the NPSNM Santa Fe chapter, introduce us to poisonous plants: their biology, history, and folklore.

Dec 4 Annual holiday potluck. Frances Robertson's house. 11 a.m.–2 p.m.

El Paso

All programs are second Thursdays at 7 p.m. at El Paso Garden Center, 3105 Grant Ave. All society events are free unless otherwise noted. Nonmembers are always welcome. Info: elpasovlm@sbcglobal.net or jimhastings@elp.rr.com, or call 915/240-7414.

Oct 14 Meeting. Annual plant and seed exchange.

Nov 11 Talks. Pruning Native Trees. Oscar Mestas, Texas Forest Service. Getting Your Native Garden Ready for Winter. John White, UTEP Centennial Museum Chihuahuan Desert Gardens curator.

Dec 9 Winter potluck social.

Gila (Silver City)

All programs are free and open to the public. Meetings are third Fridays at 7 p.m. at WNMU's Harlan Hall, with refreshments following the program. Activity updates and further details will be posted on www.gilanps.org.

Oct 15 Talk. Herbalism in the Southwest. Kiva Rose, herbalist and curandera from the Reserve area and author of the forthcoming *The Medicine Woman's Herbal,* an in-depth guide to common nourishing herbs, traditional and wild foods, and healing the Medicine Woman way.

Nov 19 Talk. Manda Jost, of the Dept. of Natural Sciences at WNMU, will talk about an insect infestation in the Sacramento Mountains and how it was controlled. In addition to teaching biology and invertebrate zoology, Manda is restoring and expanding the existing entomology collection at Western. Her current research projects include ongoing systematic studies of Orthoptera.

Las Cruces

Meetings and programs are Wednesdays at 7 p.m. in the conference room of the Social Center at the University Terrace Good SamaritanVillage, 3011 Buena Vida Circle, Las Cruces. (On the right, while traveling east on BuenaVida from Telshor.) Field trips are Saturdays; most last into the afternoon. Participants must sign a release-of-liability form. Children must be accompanied by their parents. Programs and field trips are free; nonmembers always welcome. Contacts: Carolyn Gressitt, 575/523-8413; Al Krueger, 575/532-1036.

Oct 13 Talk. Response to Place: The Rock Art of Hueco Tanks and Surrounding Areas. Margaret Barrier.

Oct 16 Field Trip. Hueco Tanks. Margaret Barrier, leader. $5 entry fee for park. Meet 8:00 a.m. at east end of Rio Grande Bank parking lot, corner University and Telshor.

Nov 3 Planning meeting.

Nov 10 Talk. Penstemons of Western Chihuahua. Richard Spellenberg.

Nov 13 Field Trip. TBA.

December No meeting. Happy holidays!

Otero (Alamogordo)

For field trip information, contact William Herndon, laluzlobo@gmail.com, 575/437-2555; Eric Metzler, metzlere@msu.edu, 575/443-6250; or Helgi Osterreich, hkasak@netmdc.com, 575/585-3315. More info should be available by the beginning of each month.

Oct 16 Field trip. Valley of Fires, Carrizozo. Meet 9:00 a.m. at the Y in Tularosa. Bring water and lunch.

Nov 6 Annual meeting of NPSNM–Otero chapter and potluck. John and Beth Anne Gordon's house on Lower Cottonwood Tr. in Laborcita Canyon, noon. More information and directions will be sent to membership later.

San Juan (Farmington)

Meetings are third Thursdays at 7 p.m. at San Juan Community College. For more info, contact Les Lundquist at 505/334-8634 or Dalunk54@yahoo.com.

Santa Fe

Meetings are third Thursdays at 6:30 p.m. at the meeting room of the REI store, 500 Market Ave. For more information, contact Tom Antonio, tom@thomasantonio.org, 505/690-5105; or Carol Johnson, gcjohnson@comcast.net, 505/466-1303.

Oct 14 Talk. TBA.

Nov 11 Talk. Pass It On: The Intergenerational Transmission of Medicinal Plant Knowledge among the P'urhépecha of Michoacán, México. Jeremy McClain. This is his master's work from Northern Arizona University.

Dec 5 Holiday potluck. Jamie Douglass' house.

Taos

Meetings are first Tuesdays at 7 p.m. at the Kit Carson Electric Co-op Conference Room, 118 Cruz Alta Rd. Check Web link for this chapter to get updates. Chapter members will get e-mail or USPS mail notification.

Oct–Dec No programs confirmed by publication date.

Gateway *to the* Gila
Annual Meeting Field Trips

A number of annual meeting participants have asked that the plant lists and driving instructions be made available for return visits to the area. If you would like information on a field trip that you were unable to attend, contact Angela Flanders at aoflanders@gmail.com.

PROFILES OF THE IGNORED ENEMY

The Elm Family Skeleton

by Donald H. Heinze, NPSNM representative to the state Noxious Weed Advisory Commitee

The noble genus *Ulmus,* the elm tree, is a taxon of beautiful, beloved, and even historic trees. Luminaries in American history such as George Washington, Abraham Lincoln, Henry David Thoreau, and Daniel Boone admired and loved the trees. It follows then that these dendrological divas, especially American elms (*Ulmus americana* L.), were widely planted in the lawns of houses and parks, and to make living colonnades along streets and on the campuses of colleges, universities, and hospitals. Many of the approximately twenty species are native to the eastern and southern United States, but none was found west of the Great Plains. This situation was rectified when elms were transported to western Colorado by freight wagons and to California by sailing ships. Eastern elm trees were not, however, adapted to desert states like New Mexico.

But humankind had to ruin things. A deadly fungus called Dutch Elm Disease was introduced to the East Coast. It quickly spread from elm tree to elm tree by beetles. The eastern elms were devastated. Only isolated stands such as those that lived in high mountains (for the East) were spared.

Then, in the mid-19th century, a Dutch Elm Disease–resistant *Ulmus* was found. It was the Siberian elm (*U. pumila* L.), which can be either a tree or a shrub. It is native to the plains, mountains, and deserts of southeastern Siberia and northwestern China. The climate there is very severe: cold, dry and windy. There trees have to be super tough to survive. Being fast growing, hardy, resistant to cold, and able to live in both mesic and arid areas, Siberian elm was introduced to America in 1860. The foreign tree/shrub was planted along roads and in parks and yards like the less hardy elms. Siberian elm did well in New Mexico. Too well.

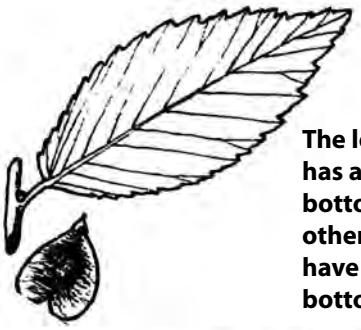
Siberian elm quickly escaped cultivation and became a problem. Like most elms, it is a prolific producer of highly viable seed, but unlike most elms, it is a root sprouter. Siberian elm displaced native vegetation because of the very vigor and strength for which the plant was imported. The foreigner deprived native vegetation of sunlight, mineral nutrients, and water. The alien elm spread to wetlands and bosques, and lined irrigation canal banks, evapotranspiring the canals' water into the atmosphere. Siberian elms did not use any more water than an equal biomass of native vegetation, but they are larger than the woody natives that they displaced such as coyote willow (*Salix exigua* Nutt.), seepwillow (*Baccharis salicifolia* [Ruiz & Pavon] Persoon), Texas mulberry (*Morus microphylla* Buckley), and indigobush (*Amorpha* sp.). Therefore, the net amount of water taken was more. Siberian elm also spread to open fields where woody plants do not normally grow and turned them to brush fields reminiscent of chaparral. The tree/shrubs' toughness worked against those who were trying to stop its spread. It soon became the black sheep of the elm family. As an old saying goes, "It happens in the best of families."

Therefore, even though it provides structure for bird nesting and perching where none existed before, Siberian elm was designated a New Mexico Class C Noxious Weed. The New Mexico Department of Agriculture defines a Class C species as "a weed that is wide-spread in the state and management decisions regarding them should be determined at a local level, based on feasibility of control and level of infestation." This approach allows us to eradicate only the trees that we don't want. Not only is it impossible to extirpate Siberian elms from the state, but we really don't want to get rid of all of them. It is highly useful as a tree for shade and aesthetics, i.e, as street liners, yard trees, and park trees. Often Siberian elm thrives where no other tree will live. Long ago I coined the phrase, "Halitosis is better than no breath at all."

Siberian elms are an easy tree/shrub to identify. They are the only elm confirmed to be in New Mexico, although three others have been reported: The American elm (*U. americana* L.), the Chinese elm (*U. parvifolia* Jacq.), and the slippery elm (*U. rubra* Muhl.). All elms have deciduous, alternate (look carefully, sometimes they are almost opposite!), toothed leaves that are pointed at their tips. They have prominent veins set at a 45-degree angle to the midvein. Siberian elm leaves are 30–85 mm long, elliptic to lance shaped, and are unique in the fact that they have symmetrical or almost symmetrical bases, All other species of elm have leaf blades that intersect the midvein at different locations. This arrangement gives the leaves of other species of elm an uneven appearance.

Like all noxious weeds, early detection is the best way to cope with this weedy woody. One should be cognizant of its habitats: waste places, alleys, and other areas that have been denuded of vegetation, as well as ditch banks, bosques, and near areas where Siberian elms have been purposefully planted.

Mechanical removal is effective for controlling small Siberian elms. Seedlings may be removed with a shovel, and larger plants with stems up to 3 cm in diameter can be



The leaf of the Siberian elm (left) has a mostly even, symmetrical bottom, while the leaves of all other species of elm (below left) have uneven, asymmetrical bottoms.

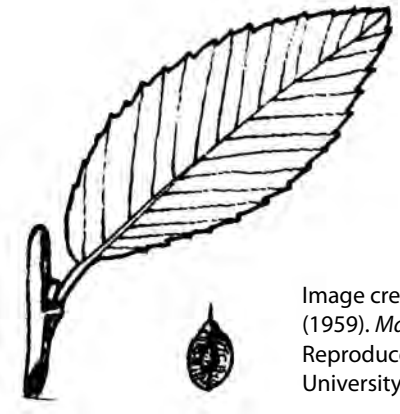


Image credit: McMinn & Maino. (1959). *Manual of Pacific Coast Trees.* Reproduced with permission from the University of California Press.

removed with a weed wrench. This is a leverage tool that grasps the bottom of the stem/trunk of a woody plant and pulls it out of the ground like a carrot. Care must be taken to remove all plant material because residual roots and stems can and will sprout. Simply cutting the stems will cause them to sprout vigorously.

Fire will not kill Siberian elm saplings and mature trees, but it will kill seedlings and destroy seed, especially that which is still on the tree. Care must be taken when using fire because it will kill desirable trees such as cottonwoods.

Girdling will kill mature Siberian elms, but it must be done properly. Only the phloem must be removed; the xylem must remain intact. If it is removed, the plant will sprout just as if the entire stem were severed. A strip of bark 3.5–5 cm wide should be taken from the plant to girdle it successfully.

Cutting and treating stumps with herbicide is the most effective way of dealing with Siberian elm with trunks thicker than 3 cm. Ten herbicides that are effective against Siberian elm have been registered for use in New Mexico. Some of these include Dupont Krenite Bush Control Agent, Poison Ivy And Brush Killer BK-32, and Spike 80 DF Specialty Herbicide. All herbicides *must* be applied exactly according to label specifications or the applier is begging for trouble!

All weed-control activities absolutely must be followed by careful monitoring for several years. This is to determine the effectiveness of the control activities and the need for more and/or a different eradication methods(s).

This "bad boy" of the elm family has a definite place in regions where more desirable trees will not grow or do not fare well, but, like all bad boys, it must be strictly controlled! ❖

Jack & Martha Carter Conservation Fund

by Jack and Martha Carter

In three short years the Jack and Martha Carter Conservation Fund has grown far beyond our wildest expectations. In less than three years it has moved beyond $20,000 and it continues to be recognized by a larger audience as a fund with potential for protecting the flora of New Mexico into a future of great uncertainty.

At the January 2011 meeting of the NPSNM, the board of directors will be doing everything possible to support the submitted proposals for grants to educate and conduct research involving the flora we all want to protect. And again the board, at the close of this meeting, will depart with some level of satisfaction that we are meeting a serious need, but with a high level of frustration that we cannot do more.

As state and federal funds for education and research continue to be limited and reduced, we all recognize we must locate other avenues through which we can support and protect the biota that surrounds us right here in New Mexico. Thankfully our laws have been written so that those who have a special interest in protecting the flora can make donations to not-for-profit organizations that they wish to support, and at the same time realize a reduction in their taxes each year. The Carter Conservation fund makes this all possible.

Please continue your support and contribute as you feel you can. As we have previously stated, each dollar contributed becomes a continuously growing dollar that will give long into the future.

Make your check payable to NPSNM-Carter Conservation Fund, and send to:

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Investigations on the Invasion Success of *Ulmus pumila* L. in North America and Argentina

by Heidi Hirsch,[1] Henrik von Wehrden,[1,2] Karsten Wesche,[3] Daniel Renison,[4] and Isabell Hensen[1]

Note: Heidi Hirsch visited New Mexico this past spring to study Ulmus pumila. *Many NPSNM members met her and assisted her with her research. Heidi continued from New Mexico into Colorado, Utah, Idaho, Oregon, and Washington, all states that do not have other species of elms that would hybridize with* U. pumila *and therefore provided Heidi with pure* U. pumila *to examine for her research.*

Humans play a decisive role in the dispersal of species due to globalization of trade, transport and emigration (Meyerson and Mooney 2007). As a consequence, many species have become introduced to areas which they had not reached before. Some of these species became so successful after establishment that they are regarded as being invasive in their new ranges. It is increasingly realized that invasive species have a tremendous impact on biodiversity and ecosystem functions. Therefore, understanding the invasion success of an alien species is a crucial step in order to develop effective control or management strategies.

Our project focuses on the invasion success of the Asian tree *Ulmus pumila* L. (Siberian elm) in North America and Argentina. The Siberian elm is a native of relatively moist regions of East Asia, but occurs westwards up to the dry Gobi desert, where it is bound to water surplus sites and oases (Wesche et al. in press). In North America, the Siberian elm was widely planted on the plains as a fast growing windbreak or shady tree, and naturalized populations can be found along river banks as well as on dry sites (Moore and Davis 2006). Furthermore, this species spreads in the Argentinean Pampa where it colonizes old field and grasslands (Facelli and León 1986; Ghersa and León 1999). *Ulmus pumila* produces huge quantities of wind-dispersed seeds and the seedlings can build dense stands. They can overgrow native vegetation, and this can lead to an additional invasion of shade-tolerant weedy species (Wieseler 2005). Once established, it is exceedingly difficult to get rid of these trees due to their ability to resprout after cutting.

To investigate the invasion success and the invasion history of *U. pumila,* we plan different experiments with elm material from the invasive ranges North America and Argentina as well as the native range. Genetic analyses will show if invasive populations are characterized by a reduced or otherwise different genetic diversity, e.g., due to genetic bottlenecks and founder effects during the introduction and establishment process. Furthermore, genetic analyses can provide valuable information about the introduction history and the native origin of invasive populations. Germination tests and a common garden greenhouse experiment under controlled growth conditions will allow us to test if invasive populations show a more successful germination and more vigorous growth than native populations (so-called "evolution of invasiveness" hypothesis). Information on site parameters, e.g., soil conditions and population characteristics, will be used to gain a more detailed insight into the spectrum of habitats colonized by the Siberian elm in North America.

To implement these studies, elm material (i.e. leaves, seeds and wood samples) was collected by cooperation partners in Argentina, China, and Mongolia. Furthermore, a three-month fieldtrip to New Mexico, Colorado, Utah, Idaho, Oregon, and Washington was used to collect elm material as well as soil samples and to record detailed population characteristics. We would like to thank all cooperating partners for providing research material and information. We also thank all colleagues and friends in the USA who helped us to point populations or providing hospitality during the field trip. ❖

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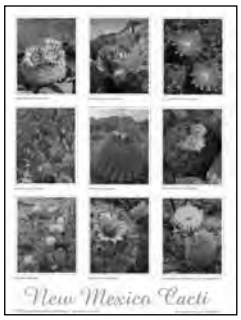
Membership in the NPSNM is open to anyone supporting our goals of promoting a greater appreciation of native plants and their environment and the preservation of endangered species. We encourage the use of suitable native plants in landscaping to preserve our state's unique character and as a water conservation measure. Members benefit from chapter meetings, field trips, publications, plant and seed exchanges, and educational forums. Members also qualify for membership in New Mexico Educators Federal Credit Union. A wide selection of books dealing with plants, landscaping, and other environmental issues are available at discount prices. The Society has also produced two New Mexico wildflower posters by artist Niki Threlkeld and a cactus poster designed by Lisa Mandelkern. These can be ordered from our poster chair or book sales representative.



New Mexico wildflower posters: $8 (nonmembers, $10)
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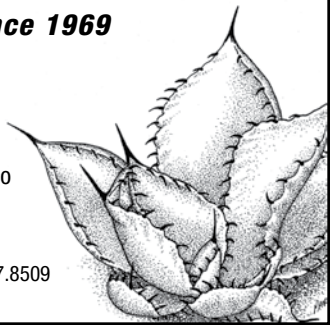

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3rd Annual **Natural History of the Gila** Symposium

October 14–16, 2010

on the campus of Western New Mexico University, Silver City

The Gila region is recognized as a unique and dynamic landscape and the waterways, forests, and wildlife that come together to form this region are the subject of the upcoming Natural History of the Gila Symposium. Come join us on the campus of WNMU at the Besse-Forward Global Resource Center, Silver City, NM—Thursday, October 14 (1:00 pm–5:00 pm), and Friday, October 15 (9:00–noon and 1:00–5:00 pm). The public is encouraged to attend any or all of the symposium sessions, which include topics such as geology, astronomy, fire, ethnobotany, wildlife, and watershed restoration. Presentations are aimed at a broad audience of students, the general public, scientists, and natural resource managers. Optional field trips highlighting the local flora and fauna will be held Saturday morning, October 16. ■ Highlights of this year's symposium are our keynote speakers: Benjamin Tuggle, Regional Director for U.S. Fish and Wildlife Service's Southwest Region, and Corbin Newman, Regional Forester for the Southwest Region U.S. Forest Service, both speaking on Thursday, and conservation biologist and author Dr. Exequiel Escurra, speaking on Friday morning. ■ The symposium is FREE! Registration is available the day of the symposium, or you can preregister by contacting Patrice Mutchnick at Western New Mexico University at mutchnickp@wnmu.edu or (575) 538-6642.

For more information, visit http://gilasymposium.org