



NEWSLETTER

of the

NATIVE PLANT SOCIETY OF NEW MEXICO

APRIL, MAY, JUNE 2011

VOL. XXXVI No. 2

Annual Meeting in Santa Fe: August 4–7, 2011 Honoring the Past, Preparing for the Future

Santa Fe is a city unparalleled in richness of history, heritage, arts, and culture. This summer it will also be home to the Native Plant Society of New Mexico's Annual Conference. You'll be nestled in the Sangre de Cristo Mountains, the foothills of the Rockies, and immersed in natural beauty.

In the U.S., Santa Fe is ranked #10 for Culture and Sightseeing, #9 for Great Food and Wine, #3 for Most Popular Travel Destination, #2 as a destination in the Relaxation and Spa category, and this summer #1 for Native Plants. Summer in Santa Fe conjures up throngs of people attending the International Folk Art Market, Indian Market, Spanish Market, and, this summer, the NPSNM Annual Meeting.

The conference opens with Dr. Scott Collins, president-elect of the Ecological Society of America, speaking on plant community response to climate variability in central New

Mexico. Geologist Dr. Kirt Kempter will then discuss ancient landscapes of New Mexico, followed by the uniquely titled presentation *Nanus, Gigantium Humeris Insidentes: The Making of Flora Neomexicana* by Dr. Kelly Allred, NMSU professor and long-time supporter of the Society.

There will be a panel discussion on the Santa Fe River, America's most endangered river, and a session on native pollinators with presentations by world experts on bees, butterflies, and moths. There will also be field trips to spectacular sites such as Cañada Bonito, the Sangre de Cristo Mountains, Valles Caldera National Preserve, and the Holy Ghost Canyon near Pecos. Come to Santa Fe for an amazing weekend of native plant science, conservation, scenery, history . . . and let's not forget the world-class food. ❖

See full details on pages 9–12. Registration form on page 13.

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From the President

by Tom Antonio

At the NPSNM meeting in January, the board voted unanimously to hire a part-time Administrative Coordinator. Details concerning the position can be found in this newsletter (see back page). Please help us find an energetic, qualified individual.

Folks have been busy in Santa Fe putting together the Native Plant Conference/Annual Meeting, to be held August 4–7 at the Institute of American Indian Arts, south of Santa Fe. I encourage all members to attend. With its wonderful speakers, interesting panels, and beautiful field trips, this is a conference you should not miss. I look forward to seeing many of you in Santa Fe, and I extend the board's thanks to the Santa Fe chapter for putting together an amaz-



ing program. Let us prove to you how incredible Santa Fe really is!

Two weeks after the annual meeting, we celebrate Native Plant Day. Governor Martinez will be issuing a proclamation naming August 20, 2011, as New Mexico Native Plant Day. Please start planning your celebrations and let us know what your chapter's activities will be on that day. I encourage each chapter around the state to celebrate this day with a special local event for the appreciation of native plants and to educate the public on the importance and desirability of utilizing native plants for landscaping and conserving and protecting the New Mexico flora.

See you in Santa Fe! ❖

Landscape Design Course with Native Plants: A Rip-Roaring Success

by Frances Robertson, Albuquerque chapter

In response to the City of Albuquerque's mantra to "save water," the Graveling of Albuquerque gallops forward as homeowners do their part to save water and leave some coins in their pocketbooks. Traditional landscapes with shade trees become gravelscapes overnight, marking the death of something green. Albuquerque seems to be drowning in a sea of gravel and concrete.

As we do that, we move towards becoming an "urban heat island." Our city temperature is now about seven degrees higher than the land surrounding us that still contains native plants, grasses, and natural cover. And the irony is that as we tear up anything green to save water, we increase water use in evaporative coolers, which now must run 24/7

to beat back the urban-heat-island effect we have created. There is a better way.

The Landscape Design Course with Native Plants was our chapter's response to that situation. We designed this two-weekend course (February 11–12 and 18–19) to show folks that lovely and sustainable landscaping is possible using native plants and natural mulches. Such a landscape not only saves water and provides shade; it also provides food and cover—habitat—for our vital pollinators.

The course took eleven months of planning and, during the final months, the combined efforts of about forty Native Plant Society members. It was a massive undertaking because we held it on two consecutive weekends. But the curriculum demanded time. And we wanted a hands-on session that allowed participants to work with NPS resource staff on their designs.

The course's tremendous success would not have been possible without the overwhelming support of members who organized registration, book sales, food and snacks, plant sales, flyer distribution, and publicity. The Albuquerque Academy facility limited our attendance to

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Left to right: Anne Marie Yaroslaski, Lisa Driscoll, and Bob Hass welcome participants to the Landscape Design Course with Native Plants.

2011 NPSNM Grant Awards

by Pam McBride, Recording Secretary, NPSNM

Every year the Society provides funds to grant \$500 to each of five major herbaria: University of New Mexico, New Mexico State University, Western New Mexico University, University of Texas–El Paso, and San Juan College. This year, besides the \$2500 that we set aside for herbaria, we had nine grant proposals to consider and \$5,000 with which to fund them. There were some tough decisions to be made and the board of directors rated grants based on whether they met NPSNM's goals and whether proposals clearly expressed how project outcomes would lead to the preservation of, increased knowledge of, or encouragement of the appropriate use of native plants. After careful consideration the board voted to fund the following grants:

William R. Norris, professor of ecology and evolutionary biology, Western NM University. **Flora Neomexicana III: Dichotomous Keys for Sedges in the Genus *Carex***. The \$1,000 granted to Dr. Norris will help him to pay for expenses accrued during research at New Mexico State University and the University of New Mexico herbaria as he prepares dichotomous keys for the 80 species of New Mexico *Carex*. The keys will be ready for insertion in *Flora Neomexicana III* by December 31, 2011. The book will hold keys to all known genera of vascular plants in New Mexico.

The Indian Pueblo Cultural Center. Pueblo House Living Landscape. The \$750 grant will help pay for the purchase of native plants and seeds to establish a living landscape that will be used to teach people about the use of wild plants as food and medicine and the role of native plants in the preservation of the cultures and environment of the Pueblos. Programming developed that focuses on the living landscape will be the focal point of the established foodways and agriculture program known as Field to Feast, as well as summer camps where children will work directly with the landscape.

Audubon New Mexico. Restoring Native Riparian Plants at Broad Canyon Ranch. This grant of \$700 will help purchase native trees for the restoration of riparian habitat at Broad Canyon Ranch, about 15 miles north of Las Cruces. The ranch was designated a New Mexico State Park in January 2009 and Audubon has partnered with New Mexico State Parks and has received another grant from Together-Green to remove invasive plants and barbed-wire fencing and to plant willows and cottonwoods in the wettest areas of the property. To complement these activities, NPSNM grant money will be used to plant natives like velvet ash and New Mexico olive on the edges of the former floodplain in areas that are not quite as wet. Each planting area will be secured

with fencing to exclude herbivores. Their goal is to engage 150 new volunteers to undertake the planting and other conservation efforts at the ranch.

Mare Nazaire, PhD candidate, **The Geographic and Ecological Basis of Species Richness: Diversification in Western NA *Mertensia* (Boraginaceae)**. The \$1,000 awarded to Ms. Nazaire will help cover costs of collecting voucher specimens of *Mertensia* and lab materials to extract and sequence DNA from collected plant material. Species richness is affected by evolution and ecological opportunities. The topographic, edaphic, and climatic complexity of the Rocky Mountains serves to create biotic niches, giving rise to a rich diversity of *Mertensia* species. This study will examine whether niche conservatism or niche evolution has played a greater role in diversity. It will potentially provide a better understanding of undescribed diversity in New Mexico, the dynamics that drive plant diversification, and the effects of anthropogenic climate change.

Upper Gila Watershed Alliance. Travel Planning on the Gila National Forest. The NPSNM has funded UGWA for the last two years to review motor vehicle use maps developed by the Gila National Forest that propose routes for both road and off-road vehicle use. UGWA has hired a Geographic Information System specialist who has found grave flaws in proposed routes because they would have adversely impacted threatened and endangered species habitat, streams, old growth forests, and more. The Gila National Forest released the draft Environmental Impact Statement in January of this year and UGWA will use the \$900 NPSNM 2011 grant money to analyze the four to five maps of proposed route system alternatives by contracting for further GIS services.

Parkview Elementary. Parkview Elementary Outdoor Classroom. As a host school for the U.S. Fish and Wildlife program "Schoolyard Habitat and Outdoor Classroom Course," and with help from Friends of the Bosque del Apache and their program, "Mapping the Rio," the school developed a model to create an outdoor classroom based on the Rio Grande watershed. The model in the school courtyard of the Rio Grande riverbed and its tributaries will serve to move water away from the school building and into a connecting retention pond during heavy rainfall. The NPSNM grant of \$650 will be used to purchase native plants for landscaping to replicate various New Mexico ecosystems. A pollinator garden is also part of the plans. The goal is to integrate outdoor activities with the district curriculum and make the outdoor classroom an integral part of daily lessons. ❖

The Newsletter of the NPSNM

April–June 2011. Vol. 36 No. 2. 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.

Original articles from the newsletter may be reprinted if attributed to the author and to this newsletter.

Views expressed are the opinions of the individual authors and not necessarily those of NPSNM.

Next deadline is June 1, 2011. Articles and high-resolution artwork are enthusiastically welcomed and can be submitted to the editor, Sarah Johnson, at sarita@wildblue.net, or PO Box 53, Gila, NM 88038.

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CONSERVATION CORNER**Where Have All the Botanists Gone?**

by **Jim McGrath**, *NPSNM Conservation Committee Chair*

Jack Carter's article in the last newsletter, "Botany: The Death of a Science in American Education," was a very disturbing appraisal of the decline of botany in academia. Jack reported that 24 credit hours in botany are required for employment as a federal botanist but that many university botany courses have been eliminated. Could it be that the federal botanist is, in fact, an endangered species?

Making a career in botany would be a tough decision for a student because there are simply not many jobs in the profession. I have worked as a contract botanist for much of the past decade, but I have to supplement my income doing wetland delineations and teaching.

Our society trivializes botany. The proper identification and ecological study of plants is perceived as the domain of wildflower and gardening enthusiasts. Botany is not consistently recognized as a serious profession by either the public, government agencies, nonprofit organizations, or the private sector. I have on several occasions mentioned to some agency official that I am a botanist. The official instantly assumes that I would just love to do some volunteer botanical work for that agency.

For the wildflower enthusiast, identification involves little more than flipping through a wildflower field guide until a match is found. But professional botanists must meet the standards set by their peers. Correct plant identifications require a lot of time and attention to detail. As a professional botanist, I use a microscope and several botanical manuals and sometimes compare specimens against correctly identified specimens in an herbarium. I once spent 118 hours identifying 155 plant species collected in a botanical inventory for a property owner.

I have found that the lack of respect for botany as a profession even permeates the professional work that I do. A client a couple of years ago told me, "It would be wonderful if clients would pay us to key plants out, but they won't." Hello? How is a botanist supposed to know what the plants are without keying them out? It would be like asking your auto mechanic to fix your car's engine without taking it apart. Very often projects are put up for competitive bid, and botanists have to maintain their professional standards by keying out plants on their own time in order to win the bid.

And I do not think there are enough professional botanists in government agencies like the BLM, USFS, and National Park Service. In 1994, while trying to get work in a National Forest in California, I found that nearly every Forest had a botanist or plant ecologist on staff, and sometimes

both. I knew that in New Mexico there was a regional ecologist (and later a regional botanist) stationed in Albuquerque, but of the state's six National Forests only one had a staff botanist. A high-level ecologist in California explained the difference between the two states as being due to powerful California environmental organizations rallying the public to demand that these National Forests have botanists or ecologists on staff. A high-level ecologist with the USFS in New Mexico concurred, saying that public pressure just wasn't as strong in New Mexico as in California.

Currently, the USFS has no professional botanists in any of the Forests in New Mexico. (However, one Forest has a vacant botanist position that is expected to be filled.) Often wildlife biologists take on the responsibilities that should belong to botanists. I recall a Forest Service hydrologist voicing frustration over not knowing grasses in her work area and a wildlife biologist who was interested in learning grasses from me. These professionals ought to have a professional botanist in their Forest to resolve their botanical questions. Consider how many thousands of acres are managed by the BLM and USFS in New Mexico. Each unit of these agencies ought to have a botanist to deal with threatened, endangered, and sensitive plant species and assist wildlife biologists, foresters, and range conservationists.

The state botanist, Bob Sivinski, told me recently that he feared the state might not fill his position if he were to retire. Such a result would be catastrophic. As it is, Bob is the *only* professional botanist New Mexico employs. Bob has been the most important player in researching the state's rare plants, maintaining the state endangered plant list, searching for the rare plants, monitoring listed endangered species, and providing spectacular photographs and taxon descriptions on the New Mexico Rare Plant website. Most, if not all, of these things would be impossible were Bob not employed by the state as a full-time professional botanist.

Returning to Jack Carter's article about the decline of botany in academia, I am reminded of the current number of professional botanists employed in our state. A degree in botany may not lead to a job. So there are fewer students on such a career path.

I believe that NPSNM members should be demanding that government agencies put professional botanists and ecologists on their staffs. When government agencies begin to do this, perhaps university students will take notice that there truly is a botanical career track available to them. And then perhaps we can reverse the trend of botany disappearing from university curricula. ♦

THE VOICE OF NATIVE PLANTS

Saving the San Juan Badlands

by George Miller, Albuquerque chapter

In 2009, the New Mexico Wilderness Alliance, Rio Grande chapter of the Sierra Club, and the Wilderness Society formed the San Juan Badlands Coalition with the goal of preserving six of the fourteen badland units west of Cuba. The immediate goal was to have them protected as Special Recreation Management Areas, with greater protection in the future. The Bisti De Na Zin Wilderness Area was the first BLM wilderness area in the nation.

As point man and tireless, passionate advocate, Mike Richie led more than a dozen hikes to the units last year to acquaint nature and outdoor organizations and political and public entities with the areas. The hike to Cajita Blanca Mesa resulted in a major BLM policy change.

One of the critical issues impacting the badlands is cutting old-growth juniper, piñon, and ponderosa for firewood, both for personal use and for selling. The BLM had opened the area to harvesting of dead and downed timber. On a hike to Mesa Chijuilla, I photographed two trucks pulling trailers loaded with firewood. Numerous stumps and slash revealed evidence of cutting of the limited number of living trees in the rugged area. I sent the photos to the BLM Rio Puerco office and others sent comments.

Cajita Blanca Badlands has several stands of one-seed juniper with two- to three-foot trunks and branches. Richie invited the BLM forester, Jack River, and we saw numerous examples of recently cut old-growth junipers. El Malpais National Monument, with similar extreme growing condi-



Members of the Albuquerque chapter of the Native Plant Society sit on a 30-foot-long petrified log in the Cajita Blanca Badlands.

Photos by George Miller

tions, has documented 2,000-year-old junipers, so the San Juan Badlands junipers could easily be hundreds if not thousands of years old.

During discussions, Richie asked who opened the badlands up for woodcutting. River said he had. With intense questioning, we discovered the BLM had conducted no analysis of existing timber resources or how much harvesting was sustainable, or the environmental impact of illegal cutting of live trees.

After the hike Richie and several members of the Native Plant Society made plans for opposing the new BLM woodcutting policy. But further protest was unnecessary. Jack River immediately reversed the policy and prohibited all woodcutting in the San Juan Badlands.

Continued next page



Erosion sculpts the hills in the Cajita Blanca Badlands.

(continued from previous page)

The Albuquerque chapter of the NPSNM offered to help post signs made by the BLM along roads into the various badland units, and the BLM began sending a ranger to patrol the area. One arrest was made and the BLM wants to make it a high-profile case to show it is serious about protecting the badlands.

The BLM has submitted its Resource Management Plan for the next decade to Washington. It contains three alternative plans for badland management: a conservative version; a multi-use, limited-protection version; and a status quo version. Meetings with the BLM indicated they favor protecting the badlands, but all interests must be considered, namely Indian, ranching, economic, mining, and local cultural issues.

Once the RMP is officially released, all parties have 90 days to voice their interests, then the official plan is developed. Stay tuned: The NPSNM will want its voice heard about protecting the fragile landscape of the San Juan Badlands. ❖



Right: Hoodoos and eroded hills of Cajita Blanca show how fragile the land is in the San Juan Badlands. Ancient one-seed junipers that grow here could be thousands of years old.

Below: Erosion exposes multi-colored strata in Cajita Blanca Badlands near Cuba, NM.



Do you have a story to share? "The Voice of Native Plants" is a space for news of chapter activities that express the principles of the Society. Send articles and photos to the newsletter editor at sarita@wildblue.net.

Biological (and Botanical) Science: The Pinnacle of the Sciences

by Jim Nellesen, *Albuquerque chapter*

Most of you are probably aware of the three main branches of science: Biology, Chemistry, and Physics. At least historically, this is how they have been subdivided in our educational system. Certainly, there are numerous specialties, off-shoots, and combinations of these main branches. Certainly, botany is a specialization in biology. Furthermore, there are numerous off-shoots from botany, including plant physiology, plant ecology, and the varied fields in agricultural science. Similarly, chemistry and physics can lead one into numerous sub-disciplines such as electronics and engineering, to name a couple.

I have often wondered why our public school systems have generally taught these three main sciences in a backwards order: beginning with biology, followed by chemistry, then finally physics. This is how they were doled out to me 40 years ago and this is how my high school daughter is taking them. I contend this order is backwards. Physics should come first, followed by chemistry, and thirdly by the most important science, biology.

Why do I say this? Think about it. Physics covers the most basic principles of motion, forces, and energy. One

does not need biology, per se, to understand and learn physical principles. Second is chemistry. Chemistry gets beyond basic physical principles and delves into how the elements function and interact, how compounds are formed and interact. Again, biology is not needed, per se, to understand basic chemical reactions.

This brings us to biology. Biology is the pinnacle of the sciences. Why? This is because biology is the study of life, and life makes use of all the chemical and physical principles. Biology is the most complex science, because living organisms operate and interact on a level above the other two sciences alone. Biology is the summation of all sciences. For example, the human brain functions on chemical and physical processes, but it becomes greater than the sum of its chemical processes. Think about it! Our brain is what interprets physics and chemistry.

Historically, chemists, physicists, engineers, even electronics gurus have seemingly gotten more recognition or "value" placed on them by society than people in biological fields. Sure, there are plenty of well-recognized biologists, but maybe you know what I am getting at. On average, bio-

Continued page 18

Landscape Design Course (continued from p. 2)

100 participants, but another 30 wanted to register, indicating the need.

The course featured knowledgeable speakers and a sequential curriculum: George Miller (Landscape Design Overview), Beth Herschmann (Bare Ground to Finished Landscape), Jim Brooks (Permaculture and Passive Irrigation), Judith Phillips (Companion Plantings), Virginia Burris (Creating Habitat), Carolyn Dodson (Attracting Pollinators), George Radnovich (Gravel or Grass), Wes Brittenham (Design Choices for Difficult Areas and Trees, Shrubs and Color). Not only did these incredible individuals present important information, they stayed throughout the course and engaged with participants



during breaks and lunches.

For information about setting up such a course in your community,

Lisa Driscoll looks at the Albuquerque chapter's Educational File of Native Plants on computer.



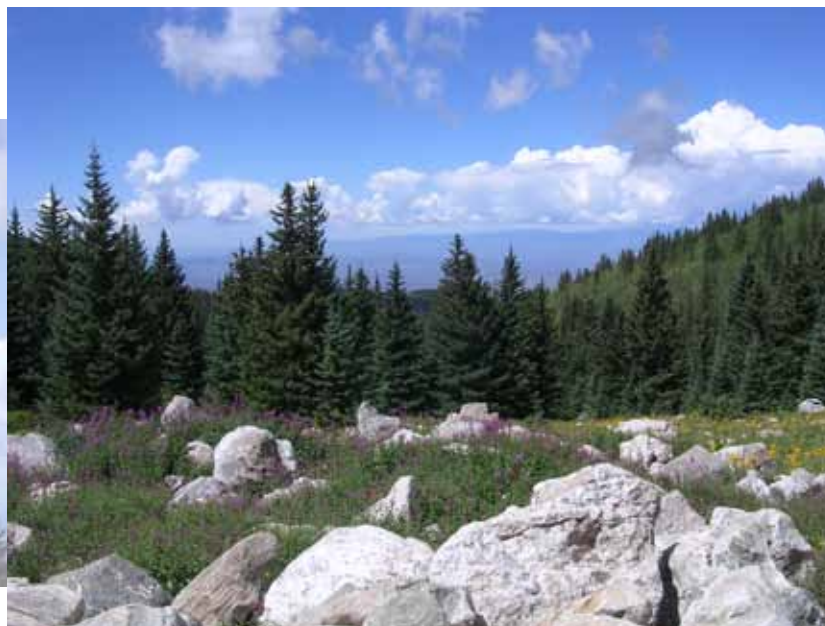
Course instructors George Radnovich, Beth Herschman, Virginia Burris, and Wes Brittenham.

please contact the headmistress of this affair, Frances Robertson, frobertson45@comcast.net, or call 505/828-4775.

Urban heat islands do not make New Mexico the Land of Enchantment. We still have a great deal of work to do! ♦

Native Plant Society of New Mexico
2011 Annual Meeting
Honoring *the* Past,

Thursday,
August 4
to
Sunday,
August 7



Institute of
American
Indian
Arts
Santa Fe

Preparing *for the* Future

Meeting Location: The meeting will be held on the campus of the Institute of American Indian Arts. IAIA is located at 83 Avan Nu Po Road in Rancho Viejo, approximately eight miles south of Santa Fe or a 15-minute drive from the Santa Fe Plaza.

Accommodations: **IAIA Dorm Rooms:** A *limited* number of single- (\$50/night) and double-occupancy (\$67) dorm rooms are available, first come, first served. These rooms are modern, with private bathrooms. Please contact Tom Antonio, tom@thomasantonio.org, to reserve a space *before May 31*. Upon confirmation, please submit a \$50 non-refundable check made out to the Santa Fe Chapter-NPSNM. ❖ **Inn at Santa Fe:** 8376 Cerrillos Rd. (approx. two miles from IAIA). Singles \$69, incl. breakfast. 888/871-7138, 505/474-9500, www.InnAtSantaFe.com. ❖ **Santa Fe Sage Inn:** 725 Cerrillos Road (nearer to downtown). Doubles \$89. 505/982-5952, 866/433-0335, www.SantaFeInn.com. (Mention "Institute of American Indian Arts Museum"; for online reservations, use Special Code XY0000 to receive this rate.) ❖ **Garretts Desert Inn:** 311 Old Santa Fe Trail (downtown). Doubles \$149 (mention Native Plant Society.) 800/888-2145, 505/982-1851, www.garrettsdesertinn.com. ❖ **Camping:** The NPSNM website (<http://npsnm.unm.edu>) lists camping sites in Santa Fe. ❖ There are many other accommodations in Santa Fe, which vary significantly in price. August is high tourist season in Santa Fe, so we urge you to make your reservations ASAP. For more information, please visit www.santafe.org, the official travel site for Santa Fe.

Registration: See page 13 of this newsletter for registration form.

Photo of Santa Fe Ski Basin by Gary Johnson

2011 Annual Meeting Program - Native Plant Society of New Mexico

Institute of American Indian Arts, Santa Fe, New Mexico

Thursday August 4

- 1:30–5:00 pm NPSNM board meeting
 3:00–6:00 pm Registration
 5:30–7:30 pm Reception for NPSNM board members

Friday August 5 Morning Session (LTC Auditorium)

- 7:30 am–3:00 pm Registration
 8:00 am–5:00 pm Book sales and silent auction
 8:45–9:00 am Welcome and Opening Remarks—Dr. Thomas Antonio, NPSNM President
 9:00–9:50 am Plant Community Response to Climate Variability in Central New Mexico—Dr. Scott Collins
 10:00–10:15 am Short break
 10:15–11:05 am Ancient Landscapes of New Mexico—Dr. Kirt Kempter
 11:10–Noon Nanus, Gigantium Humeris Insidentes: The Making of *Flora Neomexicana*—Dr. Kelly Allred
 12:00–1:30 pm Lunch at IAIA café (included in registration)

Friday August 5 Afternoon Session (LTC Auditorium)

- 1:00–5:00 pm Book sales and bid on items in the silent auction
 1:30–2:20 pm The Big Machine and the Much-Maligned Taxonomist—Dr. Donovan Bailey
 2:20–2:35 pm Short break
 2:35–3:25 pm The Brave New World of the Compositae: New Insights into Their Evolution and Classification—Dr. Timothy Lowrey
 3:25–4:15 pm Desolate to Some: Desert Plant Strategies and Curiosities—Gene Jercinovic
 4:30–5:30 pm Reception—Lobby outside LTC Auditorium
 4:45 pm 1st showing of *Tales of the Maya Skies*
 5:30 pm 2nd showing of *Tales of the Maya Skies*
 Dinner on your own in one of Santa Fe's world-class restaurants (see restaurant list)

Tales of the Maya Skies—Digital Dome Presentation at IAIA. With unprecedented realism, *Tales of the Maya Skies* immerses us in Maya science, art and mythology, using full dome digital technology to transport us back into the world of the Maya. **Location:** IAIA Science & Tech Bldg **Limit:** 45 participants each showing **Time:** 35 minutes

Saturday August 6 Morning Sessions—Concurrent Field Trips and Workshops

Registration is on a first-come, first-served basis. Sign up for field trips and workshops at registration. Please be prepared for your field trips. Bring water, food, sun screen, hat, hiking boots, etc. as needed. All field trips will leave precisely at the indicated time from the main parking lot on the IAIA campus! Participants are required to sign a release-of-liability form.

- 8:00 am–Noon Book sales and bid on items in the silent auction
 Noon–1:30 pm Lunch at IAIA café (included in registration)

1. Often-Overlooked Native Plants for Your Garden

Join Bob Pennington, purveyor and propagator of native plants for the last 35 years, as he discusses the Rodney Dangerfield plants. There was a time when all native plants more or less filled this category, at least in ornamental horticulture. Now many of our natives are superstars in the industry, yet others, equally deserving, still “get no respect.” **Limit:** none **Location:** Rm 120, IAIA Science and Tech Bldg **Time:** 9:00am–10:30am **Facilitator:** Bob Pennington

2. Plant Drawing Workshop

This is a basic, non-technical session on how to draw plants. The class will be hands-on drawing with few demonstrations. The goal is to have each participant leave the session with a nice drawing. Basic supplies—paper, pencil, and eraser—will be provided, as well as some plants to use for models. If you want to bring a special plant, put it in a Baggie with a few drops of water and store it in the refrigerator until needed. **Limit:** none **Location:** Rm 120 IAIA Science & Tech Bldg **Time:** 10:30am–noon **Facilitator:** Dorothy Hoard

3. Cañada Bonito

This hike passes through montane forest with many flowering plants such as death camas, several *Erigerons*, including pink *E.eximia*, pyrolas and sidebells, and much more. An open meadow with many blooming plants including sneezeweed, mariposa lily, Parry's lousewort, and two gentians. Pack lunch provided; rain gear recommended. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 9,500–9,800' **Distance:** 2 miles **Location:** Pajarito Mt. ski area, 40 mi N of Santa Fe **Time:** 7:30am–1:30pm **Leader:** Dr. Chick Keller

4. Diablo Canyon Butterfly Walk

Join us on a butterfly excursion in and around Diablo Canyon. The group will first climb an old volcanic plug to look for hilltoppers, then descend into Diablo Canyon in search of gully-dwellers, not far from the Rio Grande. Nets, cameras, field guides and binoculars welcome. **Difficulty:** moderate **Limit:** 15 participants **Elevation:** 5,900–6,250' **Distance:** 2–3 miles **Location:** N of Santa Fe via Old Buckman Rd **Time:** 8:00–noon **Leaders:** Steve Cary, Dr. Linda Wiener

5. Santa Fe Ski Basin

Englemann spruce and cork-bark fir forest, stream-side meadows and montane grassland. More than 215 plant species, including 5 orchids, 4 gentians, and many other montane species. August is the best season for seeing this flora. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 10,000' **Distance:** 1–2 miles **Location:** 16 mi from downtown on Hwy 475 (Hyde Park Rd) **Time:** 8:00–noon **Leader:** Dr. George W. Cox

6. Ethnobotany at Leonora Curtin Wetland Preserve

Join us for a unique tour of a rare natural 35-acre wetland, managed by the Santa Fe Botanical Garden. This is an ideal habitat of ethnobotanical significance. From cacti to cattails, this site is home to over 250 plant species. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 6,500' **Distance:** 1–2 miles **Location:** 5 mi S of IAIA campus **Time:** 8:00–noon **Leaders:** Nancy Daniel and Jim McGrath

7. Acequia Madre House

Visit the historic home of ethnobotanist Leonora S. M. Curtin, whose seminal book *Healing Herbs of the Upper Rio Grande* is still in print. Original art and furnishings collected by three generations of her family of prominent cultural figures and preservationists. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 7,000' **Location:** 614 Acequia Madre, Santa Fe **Time:** 8:00am–11:30am **Leader:** Bunny Huffman

8. Randall Davey Audubon Center

We will tour the historic home and art studio of Randall Davey, once the original mill building and now a museum. Tour includes a visit to the herbarium of the NM Natural History Institute, a collection of over 2,000 plants along with books and papers. Trip ends with a hike along the Center's trail to view birds (135 species) and native plants in habitats ranging from meadows to Ponderosa pine forests. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 7,500' **Location:** 3 mi from Santa Fe plaza **Time:** 8:00–noon **Leaders:** Carol and Gary Johnson, Dr. Roger Peterson (at the herbarium)

9. Santa Fe Botanical Garden at Museum Hill Tour

This future water-wise garden is located along Arroyo de Los Pinos, adjacent to Museum Hill. Join us as two experts instrumental in the design of this garden discuss the challenges and opportunities of this unique location. **Difficulty:** Easy–Moderate **Limit:** 15 participants **Elevation:** 7,000' **Location:** Museum Hill, about 2 mi E of Santa Fe Plaza **Time:** 8:30am–11:30am **Leaders:** Jan-Willem Jansens and Tracy Neal

10. Santa Fe River

Learn what is happening with this tour of America's most endangered river, downstream of the San Ysidro bridge. In the traditional village of Agua Fria we will look at river restoration and native plant projects. Just uphill from the river the hike will continue to the home and neighborhood of innovative landscape designer Christie Green, where problematic flooding and erosion have been transformed into forces creating mini-wetlands and gardens. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 7,000' **Location:** within city limits **Time:** 8:30am–11:30am **Leaders:** Barbara Fix and Santa Fe Watershed Association personnel

Saturday August 6 Afternoon Sessions

- 12:30–4:00 pm Book sales and final bids in silent auction
- 1:15–2:15 pm Panel Discussion—Rain and Rivers: Living in an Increasingly Arid Climate (LTC Auditorium)
Introduction/Moderator: Barbara Fix
Panelists: Nate Downey, Jeremiah Kidd, Miguel Santistevan, Craig Sponholtz
- 2:15–2:30 pm Short break
- 2:30–4:45 pm Native Pollinator Session (LTC Auditorium)
- 2:30–3:00 pm Sexual Behavior in Plants: Ménages à Trois, Autoeroticism, and Other Deviations—Patrick Alexander
- 3:05–3:35 pm Moths: Pollinators Extraordinaire—Dr. Eric Metzler
- 3:40–4:10 pm Native Bees of New Mexico—Karen Wetherill
- 4:15–4:45 pm Butterflies as Pollinators: Good News and Bad News—Steve Cary
- 4:30–5:30 pm Pick up silent auction items
- 6:30 pm Banquet served at 7:00 at Temple Beth Shalom, 205 E. Barcelona, 12 miles from IAIA campus.
Robert Sivinski, botanist with NM Forestry Division, “100 Great Photographs of New Mexico Plants.”

Sunday, August 7 Field Trips

Sunday field trips all leave from the main IAIA parking lot at the indicated time. Detailed maps provided in registration packet.

11. Holy Ghost Canyon

Take an easy walk along the crystal clear water of Holy Ghost Creek to a trailhead of the Pecos Wilderness. This riparian woodland in mixed conifer forest reveals a wonderful sample of the southern Rockies flora from the common to the unusual. Make a road stop on the return trip to see the endangered Holy Ghost *Ipomopsis* in full bloom.

Difficulty: Easy **Limit:** 15 participants **Elevation:** 8,230–8,360' **Distance:** 1 mile **Location:** 35 mi E of Santa Fe on I-25 and Hwy 63 to Terrero **Time:** 7:30am–noon **Leader:** Bob Sivinski **Fee:** possible parking fee

12. Cerrillos Hills State Park

Over the past 1,300 years, the Cerrillos Hills have been mined, grazed and tramped through, yet there is a remarkable variety of plants here. Join us for a hike through the hills showcasing the grasses and the history of the hills.

Difficulty: Moderate–Easy **Limit:** 15 participants **Elevation:** 5,800–6,100' **Distance:** 2–3 miles **Location:** Cerrillos Hills State Park, 16 mi S of Santa Fe via State Rd 14 **Time:** 8:00am–11:30am **Leader:** Sarah Wood, Park Manager
Fee: \$5 per vehicle (carpool to save money!)

13. East Placitas Open Space

Join dynamic leader Gene Jercinovic for a tour of the dry upland vegetation in this 560-acre Placitas Open Space preserve. The site is a pocket of natural beauty and cultural history. **Difficulty:** Moderate **Limit:** 15 participants **Elevation:** 6,500' **Distance:** 2 miles **Location:** 3 mi NW of the Village of Placitas **Time:** 8:00am–11:30am
Leader: Gene Jercinovic

14. Valles Caldera National Preserve—Dendroglyph Tour

Dendroglyphs are writings and drawings on Aspen trees. Most glyphs were done by sheepherders in the first half of the 20th century. In August the wildflowers are spectacular in this aspen/spruce/fir habitat. An optional extension is 1.5 miles to a canyon to see the only known occurrence of bog birch in NM. **Difficulty:** Easy **Limit:** 15 participants **Elevation:** 8,500' **Distance:** 2.5 miles **Location:** about 50 mi N of Santa Fe **Time:** 8:00am–11:30am **Leader:** Dorothy Hoard
Fee: \$10/person

15. Valles Caldera National Preserve

Meet at staging area, 2 miles into the Preserve. Vans take us to the northern side of the Caldera up Rito de Los Indios. Explore that upper riparian and montane area and then hike slowly down to the marshy area. The vans pick us up there. Total time from dropoff to pickup is 2½ hrs. Rain gear recommended. **Difficulty:** Moderate **Limit:** 20 participants **Elevation:** 8,700–8,500' **Distance:** 3 miles **Location:** about 50 mi N of Santa Fe **Time:** 8:00am–3:00pm
Leader: Dr. Chick Keller **Fee:** \$10/person

2011 STATE MEETING REGISTRATION FORM

Please send a *separate* form for each attendee. Checks should be made payable to Santa Fe-NPSNM.

Name			
Address	City	State	Zip
Phone	E-mail Address		

Please indicate NPSNM chapter you are a member of: _____

Register early; space is limited. Registration is on a first-come, first-served basis.

Field Trips/Workshops:

Saturday 1st Choice (#) _____ 2nd Choice (#) _____ 3rd Choice (#) _____

Sunday 1st Choice (#) _____ 2nd Choice (#) _____ 3rd Choice (#) _____

REGISTRATION

(Meeting program, two lunches, and banquet)

NPSNM Member

Non-Member

☐ Before 6/15/11 \$95

☐ Before 6/15/11 \$115

☐ After 6/15/11 \$115

☐ After 6/15/11 \$135

☐ Student with a valid school ID \$50 (enclose photocopy of your ID with registration)
—includes two lunches but not the banquet

☐ I wish to become an NPSNM member at the discounted rate of \$20

☐ Prefer vegetarian meals

Banquet Drink Preferences: ☐ Wine ☐ Beer ☐ Non-alcoholic beverage

☐ Check if interested in viewing *Tales of the Maya Skies* (first 90 registrants only)

Send registration forms and checks made out to Santa Fe-NPSNM to:

NPSNM/Meeting, c/o Thomas Antonio, PO Box 782, Cerrillos, NM 87010

Questions or concerns? Please contact

Tom Antonio at 505/690-5105 or tom@thomasantonio.org or **Carol Johnson** at 505/466-1303 or gcjohnson@comcast.net

For additional information on the Annual Meeting speakers,
please visit

http://npsnm.unm.edu/2011_SantaFe_Meeting.html

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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;

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 on programs contact Jim McGrath, sedges@swcp.com, 505/286-8745. For more info on field trips and forums contact Dana Price, dana_price@bicycleaustin.info, 505/872-2646 or (cell) 512/797-1986. For meeting places indicated [A] through [H] see website.

Apr 6 Meeting. The Urban Heat Island Effect and Its Implications for Landscaping in the Albuquerque Metropolis. Joran Viers, County Program Director for the Bernalillo County Cooperative Extension Service.

Apr 16 Field Forum. San Juan Badlands northwest of Cuba. High-clearance/4WD recommended. Meet Mike Richie 8:30 a.m. at Starbucks in Bernalillo; carpoolers meet 7:45 a.m. at [D].

May 4 Meeting. The Silent Invasion. Don Heinze, retired BLM botanist and NPSNM's representative to the State Noxious Weed Advisory Council.

May 7 Field Trip. Los Lunas Park. The Destruction of the Bosque by Noxious Weeds and River Channeling. Don Heinze, leader. Meet Don 9:00 a.m. at [H]; carpoolers meet 8:00 a.m. at [G]. Easy hike. Mosquito repellent, loose-fitting long sleeves, and long pants recommended.

May 13 Field Forum. Albuquerque Volcanoes. Gary Runyan, leader. Meet 8:00 a.m. at [E].

May 21–22 Overnight Field Trip. Largo Canyon. Sheila Williams, BLM botanist, leader. Joint trip with Four Corners San Juan Native Plant Society. Leave Albq early Sat. for rendezvous near Bloomfield, camp Sat. night. *Limited to 30 people*. Contact Dana Price to register. High-clearance/4WD recommended. Carpooling info to come.

May/Jun Field Trip. Cacti, agaves, yuccas, and other New Mexico succulents. Dave Ferguson, leader. Details TBA.

Jun 1 Meeting. Creating an Edible Landscape. Bard Edrington, landscape design consultant and owner of Living Edge Landscaping.

Jun 25–26 Overnight Field Trip. Early Summer Flora of the Pecos Canyon. Don Heinze, leader. Meet Sat. afternoon at Jack's Creek Campground (20 mi N of Pecos on Hwy 63; \$6–10/night). Or join trip 10:00 a.m. Sun. at road junction in Cowles (3 mi S of campground on Hwy 63). Sun. hike easy–moderate. Contact Don, dhhbotany@gmail.com or 505/565-1441, by 6/19 to confirm either Sat./Sun.

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.

El Paso

All programs are second Thursdays at 7 p.m. (coffee social at 6:30) at El Paso Garden Center, 3105 Grant Ave. All society events are free unless otherwise noted. Nonmembers are always welcome. Info: Jim Hastings, 915/240-7414.

Apr 14 Meeting. UTEP Chihuahuan Desert Gardens Plant Sale Preview. Gardens Curator John White.

May 12 Meeting. Success with Succulents. Virginia Morris.

May 14–15 Field trip. Cave Creek/Chiricahua Mountains.

Jun 9 Meeting. Ethnobotany. W. Warner Wood, PhD, director UTEP Centennial Museum.

Jun 11 Field trip. Cloudcroft China Canyon/Sunspot.

Gila (Silver City)

All programs and hikes are free and open to the public. Meetings are third Fridays at 7 p.m. at WNMU's Harlan Hall. Hikers meet at 8 a.m. in south parking lot of WNMU Fine Arts Theatre the morning of the hike to arrange carpooling. Participants must sign a release-of-liability form at that time, and will receive a list of native plants in the hiking area. For more info, call Deming Gustafson, 575/388-5192. Destinations may be changed due to weather. Activity updates posted on www.gilanps.org.

Apr 15 Talk. Medicinal Plants of New Mexico. Mark Donnell, chemistry researcher at WNMU.

Apr 17 Field Trip. C-Bar Ranch Rd., 32 mi S of Silver City.

May 15 Hike. Hoodoo Canyon, southern Burro Mtns.

May 20 Talk. Eponyms: Plants Named in Honor of People. John Dunne-Brady, herbalist, botanist, author, mathematician, and herbarium technician.

Jun 15 Hike. Deadman Canyon, along a portion of the Continental Divide National Scenic Trail.

Las Cruces

Meetings and workshops are second Wednesdays (unless otherwise noted) at 7 p.m. in the conference room of the Social Center at the University Terrace Good Samaritan Village, 3011 Buena Vida Circle, Las Cruces. (On the right, while traveling east on Buena Vida 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.

Apr 13 Meeting. Cacti of the Trans-Pecos. Ad Konings. *Cacti of Texas in Their Natural Habitat* by Ad and Gertrud Konings will be for sale (\$59.95).

Apr 16 Field Trip. Franklin Mtns. or Jarilla Mtns. Ad and Gertrud Konings, leaders. Medium-difficult hike, may be off-trail. Meet 8 a.m. at east end of Rio Grande Bank parking lot, corner University and Telshor.

May 11 Meeting. Flora of the Florida Mountains. Patrick Alexander.

May 14 Field Trip. Hike in the Florida Mtns (exact location TBD by flowering conditions). Medium-difficult hike. Meet 8 a.m. at parking lot of U.S. Post Office in Fairacres.

Jun 8 Meeting. Speaker TBA.

Jun 11 Field Trip. Three Rivers Petroglyph Site, as well as nearby Lincoln NF. Easy-medium (rough, rocky trail). Fee: \$3/car. Meet 8 a.m. at east parking lot of K-Mart on Hwy 70.

Otero (Alamogordo)

For field trip information, contact 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.

Apr 16 Plant Sale, 10th Street and Oregon in Alamogordo, 8 a.m.–1 p.m. Call Helgi to volunteer. Help needed!

Apr 30 Earth Day at the Alamogordo Zoo, 9 a.m.–4 p.m. Call Helgi to volunteer. Time slots 9–12, 12–2, 2–4.

May 14 Walk. Tularosa Creek, plants (and history) along the creek. David Greenwald, archeologist with Four Corners Inc., leader. Meet at the Y in Tularosa (where Hwys 54 and 70 meet) at 8 a.m. Bring snacks and water.

Jun 11 Walk. Giant yuccas on Westside Road. Meet 8:30 a.m. at NW corner of Highway 82/N. Florida Ave. Bring water and lunch.

San Juan (Farmington)

Meetings are third Thursdays at 7 p.m. at San Juan Community College. For more info, contact Donna Thatcher at 505/325-5811.

San Juan (Southwest Colorado)

The San Juan/Four Corners Native Plant Society, part of the San Juan chapter of the NPSNM, has 20 field trips listed on its Web page: www.swcoloradowildflowers.com/San%20Juan%20Four%20Corners%20Native%20Plant%20Society.htm. All trips are free and open to members and nonmembers. Please join us.

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.

Apr 21 Talk. Old Guard Botanist with a Botanical Potpourri by a Newcomer. Dr. Charlie King, former director of the Ohio Biological Survey.

May 19 Talk. Ancient Landscapes of New Mexico. Dr. Kirt Kempter, geologist and photographer. 6:30 p.m., Wild Oats Community Room.

Taos

Meetings are third Wednesdays at 7 p.m. in the Los Angeltos Room at the Taos Convention Center. Please check the NPSNM website for updates and information on upcoming field trips.

Apr 20 Talk. Jardín de Ríos: Wild and Cultivated Plants of the Acequia Systems of Northern New Mexico. Miguel Santistevan.

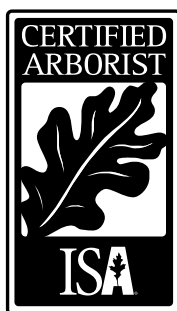
May 18 Talk. Hot Butterfly Happenings in Taos County. Steve Cary, author of *Butterfly Landscapes of New Mexico*.

Jun 4 Workshop. Beautiful Waterwise Design. Judith Phillips. Location TBA.

Jun 15 Talk. New Mexico's Rare and Endangered Plants. Bob Sivinski.

Jun 18 Native Plant Sale. Taos Farmers' Market.

Jun 24 Gardens in Progress Tour (members only). Details TBA.



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PROFILES OF THE IGNORED ENEMY

Musk Thistle (*Carduus nutans*)—Unwelcome Guest

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

The drive on State Highway 244 in the Sacramento Mountains from Ruidoso to Cloudcroft is very scenic year-round, from the snowy winter to the warm summer. The ride is arguably the most beautiful in late summer, when the deep green of the forest meadows is set off by a plethora of showy purple-pink thistles. Unfortunately, these thistles are trouble, big trouble.

They are musk thistles (*Carduus nutans* L.), uninvited and unwelcome guests from western Asia and southern Europe. They may be called nodding thistle, plumeless thistle (note that *C. acanthoides* L. is also called “plumeless thistle”), plumeless nodding thistle, and bristle thistle (Renz and Sholedice 2006; Allred 2010). This weed is problematic in both cultivated fields and livestock-wildlife ranges. It has stout, sharp spines on its heads and stems, which degrade the value of alfalfa hay drastically and make other crops require expensive weeding. It displaces native forage plants on wildland range and reduces the cattle, elk, and other herbivore carrying capacity significantly.

The New Mexico Department of Agriculture has declared musk thistle to be a Class B Noxious Weed. Class definitions of noxious weeds in New Mexico are open to interpretation, but my definition of Class B weeds includes these features: (1) the plant is too abundant to be extirpated from the state so we must learn to live with it, (2) the plant is limited to certain parts of the state, and (3) management of it should be designed to contain a given infestation and stop any further spread.

Musk thistle is easy to recognize. In New Mexico it is usually found high in the mountains or above 6500 feet on the plains in the northern part of the state. Meadows and disturbed areas are its favorite habitats. The plant is a biennial; only basal rosettes form the first year, and bolts shoot up and form stems during the second year. The plant has the aforementioned armament, bisexual composite floral heads with purple disk flowers, and no ray flowers. These heads are disk-shaped to half-hemispherically shaped. They are terminally mounted on a wingless stem that often is abruptly nodding. These stems branch only in their lower third and have a long stem space between the head and the highest leaves. This space is considerably longer than the space between each of the leaves themselves (Ditomaso and Healy 2007; Hickman 1993; Renz and Sholedice 2006).

Like most, if not all, noxious weeds of livestock range-land, musk thistle is nature's punishment for abuse of the

land. Most weeds, including musk thistle, cannot get into a site if the soil and vegetation are in heathy condition. Musk thistle is a poor competitor with native grasses that are in vigorous health. But there will always be gopher holes, abandoned ant mounds, and other disturbances where musk thistle can “get its foot in the door.” Here musk thistle can form seed sources that can cause large infestations if the health of the surrounding vegetation deteriorates. Therefore, it behooves ranchers and game managers to keep their grazing land in the best condition possible (Renz and Sholedice 2006; Sheley and Petroff 1999).

This is easier said than done. Large herbivores such as cattle, horses, and elk are herd animals that have a hereditary affinity to congregate, especially around water, salt, and shade. This behavior results in what range managers call “sore spots.” These are places where native perennial plants are severely weakened, reduced in abundance, or completely absent. Less desirable native plants that replace the natives also are weakened or absent, leaving the soil partially or completely denuded of vegetation or vegetated by undesirable alien plants. Abandoned farm fields likewise expose large denuded areas. Such situations are perfect for the extremely aggressive musk thistle to invade.

Then the rancher or farmer must resort to other means of weed control. These methods include hand tools, fire, mechanical control, herbicide, biological control, and range management systems that favor desirable species such as palatable grasses over the thistles. Often, if not usually, a combination of two or more of these methods is indicated.

Reseeding with the proper native plants for the site (e.g., the plants that were displaced by the weed) is a must if the site is partially or fully denuded. Otherwise, another stand of weeds, probably but not necessarily musk thistle, will result from controlling musk thistle. One must reseed at the proper time to avoid allelopathy (suppression of the growth of one plant species by another due to the release of toxic substances). Musk thistle produces the most allelopathic chemicals when (1) it is bolting (this is when the old rosette leaves are deteriorating and releasing allelopathic poison) and (2) the plant has completed its life cycle the second year and the entire plant is deteriorating.

Hand pulling or grubbing with hoes is only practical when the weed infestation is small or affordable hand labor is plentiful. It can be highly useful in situations

Continued next page

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where musk thistle is colonizing small places (e.g., gopher mounds, abandoned ant hills) or the weed is affecting a farm cropfield.

Fire can be useful, but it has grave disadvantages. Often, either the fire won't start or it will burn too well and get away, possibly starting a forest conflagration. Burning must be done early enough to destroy the seeds, but sufficiently late that the thistle is adequately dry to carry the fire. This is usually a narrow window that is easy to miss. Fire may denude a site and lay it open to a reinvasion that is worse than the original problem.

Mechanical control by tilling creates a perfect seedbed for the thistle and thus is inadvisable. Mowing before the seeds are ripe can be very effective if the terrain permits. The stems must all be severed completely when mowing.

No fewer than 418 herbicide formulations that can be used against musk thistle were registered for use in 2010 in New Mexico. They range from compositions of the broad-leaf selective 2,4 D to nonselective glyphosate formulations. Several are restricted-use chemicals, which means that only registered applicators may apply them (NPIRS n.d.). The Plant Conservation Alliance Alien Plant Working Group recommends a 2% solution of a glyphosate formulation and water plus a 0.5% non-ionic surfactant (sticker-spreader), which wets all leaves and stems at the rosette stage or before flowering (Plant Conservation Alliance n.d.).

Exotic biocontrol agents and musk thistle are a sad story. Predators and pathogens in foreign lands keep plants that live in these places in control. Therefore they are less troublesome there. Thus, people reasoned, it would be a good idea to import these agents (usually but not always insects) and release them. This could solve the problem quickly, permanently, and without the use of chemicals. Truly, biocontrols have done wonders at controlling several weed species. For example, one of the few statues in the world that is dedicated to an insect was erected to the Klamath Weed (St. Johnswort) beetle. St. Johnswort, poisonous to sheep, was killing large numbers of these animals and threatening to destroy the sheep industry in northern California. But the beetle reduced the amount of weed until it was no longer a problem (APHIS n.d.). *Eureka*, people thought, we have a panacea for noxious weeds!

Not so fast. This is not always the case. Biocontrols *must* be absolutely host specific, or they may attack nontarget, perhaps desirable plants. Two exotic weevils that control musk thistle were introduced in the 1970s from Europe to several states such as Montana, Colorado, Virginia, and Alabama. These insects were the thistlehead (feeding) weevil (*Rhinocyllus conicus*) and the rosette (feeding) weevil (*Tri-*

chosiocalus horridus; Kevin T. Gardener, pers. comm.). They swept Montana and other states clean of musk thistle in a few years. It is no longer a problem in these states (Noah Poritz, pers. comm.). But then the weevils started attacking native thistles. One such plant is the native Sacramento Mountains thistle (*Cirsium vinaceum* Woot. & Standl.). The only place in the world where this rare plant lives is in the Sacramento Mountains in south-central New Mexico. It has been listed as threatened by the U.S. Fish and Wildlife Service, and the U.S. Forest Service regards it as (fully) endangered, i.e., in danger of being rendered extinct (New Mexico Rare Plant Technical Council n.d.). No one knows how the thistlehead weevil got there; at least no one is saying. It is feared that the rosette weevil will soon reach the Sacramento Mountains also (Robert Sivinski, pers. comm.).

But the fight goes on. A musk thistle-attacking fungus rust (*Puccinia corduroy*) is being worked with in California. It may soon be released as a control agent in that state. Will it attack other plants? Nobody knows, but we must find out. We should never give up on biocontrol agents for any undesirable alien plant, or alien animal for that matter. "Nobody said that fighting noxious weeds would be easy!"

Acknowledgements

Grateful acknowledgment must be given to Robert Sivinski, Kevin T. Gardener, Jill Schroeder, James Wansell, Irene Wanner, Noah Poritz, and two anonymous reviewers.

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The Pinnacle of the Sciences (continued from p. 8)

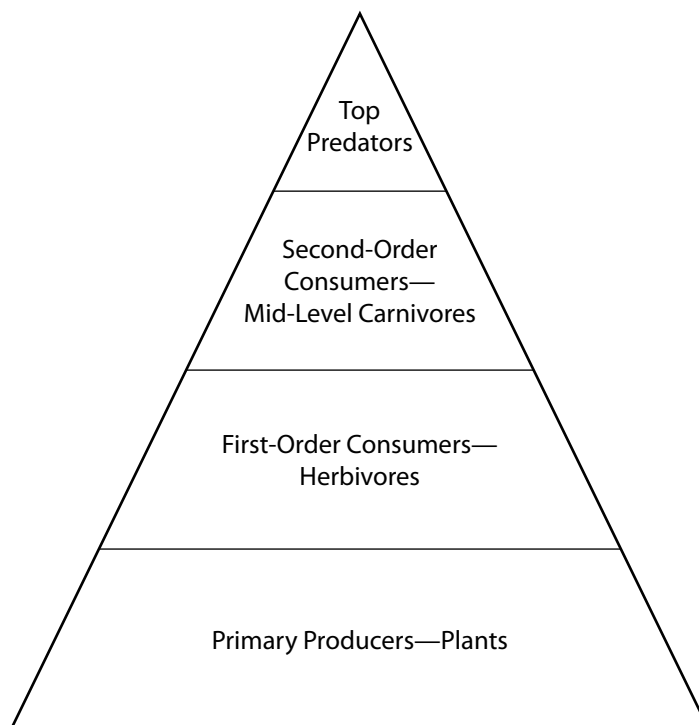
logical scientists are more marginalized than those in the other two primary branches of science. Perhaps if biology were at the forefront of our thinking, we would not be suffering all the environmental problems we face. It is when physical and chemical technologies take precedence, without proper consideration of their side effects, that we get air and water pollution, global warming, and endangered species, to name a few problems. This is why I believe the whole approach to science is backwards.

Do not get me wrong. I am all for physical and chemical technologies, advances in electronics, computers, engines, rockets, energy research, spacecraft, etc. I myself am a big science fiction fan, including the classic series *Star Trek*. Yes, let's move forward, but with each step forward, let us carefully weigh the biological consequences. And yes, some consequences may not be clear to us for years or decades. But we should never lightly brush off impacts to our natural environment. Some people question: Why do we have to protect this area? Or why do we need this species? Wouldn't it be refreshing to hear more people say: Sure, let's protect this area and that species! At the same time, we do not want to become fanatics. One can go overboard on restrictions and regulations. Carefully balanced scientific research and thought is always important. Conservation should come naturally, but in measured and balanced consideration.

Biology is all about life. Until life is discovered elsewhere in our solar system or galaxy, biology will be about life on this planet. Imagine . . . every agency, company, organization, and dot-com employing and/or utilizing biologists. Biologists are key to helping us sustain a functional understanding of life at all levels, from mammals to birds, reptiles and amphibians, insects, microorganisms, and of course plants. And plants should rank among the most important of these groups. Visualize the inverted pyramid of numbers and biomass (see below): plants are near the bottom—sustainers of other life forms. This is why we have many people working in various agricultural fields. Imagine . . . the plant sciences being one of the most common professions across the globe. Perhaps it was this way in the distant past; not so anymore.

Imagine . . . a world in which we were regularly paying attention to our impact on the biological world; we might not be dealing with all the environmental and ecological problems we have. Imagine . . . that we were focused more on the living things around us, rather than staring at our cell phones and iPods. With all their technology, what was one of the primary focuses of the *Star Trek* crew—seeking out new life! Conservation is what we should all be about. *Sustainability* is the buzzword these days, but it's just another word related directly to conservation. Maintaining a thor-

ough understanding of living things, most especially plants, must be a primary focus. Let us not let our gadgets and material possessions get the better of us. ❖



Typical biological pyramid of numbers and biomass

LETTER

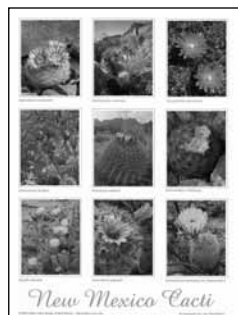
The Death of a Science?

Dear Editor,

This letter is in response to Jack Carter's article, "Botany: The Death of a Science in American Education," January–March 2011. I would like to alert interested readers to an opportunity available for botany education in young students. To celebrate the 200th anniversary of Charles Darwin's birth, the Kew Gardens prepared a botany program for distribution throughout the U.K. This program, called the Great Plant Hunt, is now available in the public domain. I was briefly in touch with some of the Kew staff when the program was being created. While they were very busy trying to get the program out to the schools in the U.K., they did indicate that they would be very happy to see the program picked up and used in New Mexico and the U.S. Some of the materials such as plant lists would have to be localized. Lesson plans, etc., would have to be adapted to the New Mexico education system. Still, a tremendous amount of work is portable. Anyone interested in promoting botany as a science should check out this program: www.greatplanthunt.org.

~Laura White, Albuquerque

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)

Cactus poster: \$5 (nonmembers, \$8)

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Annual Dues:

Individual	\$ 25
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Total: \$ _____

Remember that 25% of contributions are returned annually to the individual chapters!



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NEWSLETTER

of the
NATIVE PLANT SOCIETY
OF NEW MEXICO

is available online.

Download PDFs of this and
recently archived issues
at the NPSNM website:
<http://npsnm.unm.edu>

Just a reminder that we are still accepting items for the ***silent auction*** to be held this August at the annual meeting in Santa Fe. Anyone with an item to donate can contact the silent auction organizer, Jamie Douglass, at 505/690-7288 or jamiessson@yahoo.com.

HELP WANTED



Administrative Coordinator

The Native Plant Society of New Mexico (NPSNM) is a non-profit organization run by volunteers to educate members on native plant identification, ecology, and uses; encourage preservation of natural habitats; support botanical research; and promote use of native plants for conservation of water, land, and wildlife. We have around 800 members in eight chapters located throughout New Mexico plus El Paso, Texas. ■ The Board of Directors is looking for an enthusiastic person to bring order to our rapidly growing organization. This is an ideal job for a self-directed multi-tasker who loves New Mexico native plants. The qualified applicant must be computer literate and able to use word processing, spreadsheet, and email applications; must provide own computer, printer, internet connection, and software mentioned above; preferably has skill and knowledge in maintaining web sites, though this is not required. ■ The salary is \$500 per month

plus gross receipts tax. The successful candidate will determine how much can be accomplished within that amount. It is expected that some months will be much busier than others. ■ See the complete job description here: http://npsnm.unm.edu/whats_new.html. If this job fits your skills and interests, please e-mail a letter of interest and your résumé by April 15, 2011, to Hildy Reiser, hildyranger@msn.com.