Native Plant Society of New Mexico

NEWSLETTER

October-December 2000 Volume XXV Number 4

ROUNDUP UPDATE:

THE GLYPHOSATE GOLIATH VS. THE NORTHWEST COALITION FOR ALTERNATIVES TO PESTICIDES

The following excerpts are taken from the Fall 1998 issue of the Journal of Pesticide Reform published quarterly by NCAP. For the full text, log on to NCAP's web site www.pesticide.org.

Accounting for half of Monsanto Company's annual profits, the herbicide glyphosate is heavily marketed as environmentally and toxicologically benign. NCAP has compiled research that shows the hazards of glyphosate products.

Glyphosate is a broad-spectrum herbicide widely used to kill unwanted plants both in agriculture and in nonagricultural landscapes. Estimated use in the U.S. is between 38 and 48 million pounds a year. Most glyphosate-containing products are either made or used with surfactants, chemicals that help it penetrate plant cells.

Glyphosate-containing products are acutely toxic to animals, including humans. Symptoms include eye and skin irritation, headache, nausea, numbness, elevated blood pressure, and heart palpitations. The surfactant used in a common glyphosate (RoundUp) is more acutely toxic than glyphosate itself; the combination of the two is yet more toxic.

Given the marketing of glyphosate as benign, it is striking that laboratory studies have found adverse effects in all standard categories of toxicological testing. These include medium-term toxicity (salivary gland lesions), long-term toxicity (inflamed stomach linings), genetic damage (in human blood cells), effects on reproduction (reduced sperm counts in rats; increased frequency of abnormal sperm in rabbits), and carcinogenicity (increased frequency of liver tumors in male rats and thyroid cancer in female rats).

Glyphosate has been called "extremely persistent" by the E.P.A., and *(continued on page 7)*

INSIDE

The Prez Sez:

As the gavel is passed to a new president and board of directors, I wish to express my thanks to the members of the board, the many chapter officers, chairs of programs, book sales manager, and other members who contribute so much to the success of the NPSNM. I have enjoyed the challenge of the presidency and doing the day-to-day work of our organization because I recognized from the onset that I was not alone — there were many friends out there who would step up and do the work the organization requires at any particular time.

There are three members of the board to whom I wish to express my special thanks. **Bob Sivinski**, vice president, who will now become president, has performed yeoman service for the NPSNM over the past two years. He was always ready to take on difficult assignments and he could be counted on to complete these tasks. Bob will be an outstanding president.

There are two other retiring board members who have given of their time and talents to fill key positions for six years. **Babs Peck**, treasurer, has served through the good times and the bad, and has always kept the NPSNM on the straight and narrow. I never had to be concerned about money matters because I knew we were in good hands. If I had questions, she either had the answers or she quickly found them.

Over the same period, **Mary Goodman**, membership secretary, has done her job extremely well working with the total membership and board to keep them all informed through an important period of rapid growth, while at the same time computerizing our records. Every organization must have these kinds of people who, with little recognition, contribute so much to the total program. The NPSNM is much stronger because these people were willing to serve.

Looking Back

What have we accomplished over the past several years? As we have discovered a much larger cadre of people in New Mexico who are interested in conserving the flora of our state, we have begun to develop new and better methods of communication. Our annual meetings are improving each year, as is our Newsletter. We are developing a web site that will help us reach our membership much faster and with greater efficiency. Our short courses and workshops are providing for the education of our members and at the same time developing a strong *esprit de corps* within our organization.

We are learning how to put our income to work for all New Mexicans. As funds become available, we are investing them in educational and research activities, and in publications that are important to a much larger segment of our citizens. During each of the past three years we've made grants of $1,000 to support three to five such programs.

Looking Forward

In the future, 25 percent of the income received through regular dues will be returned directly to the chapters to strengthen local programs and field trips. As part of the revision of the by-laws, we have reduced the number of board members that will be elected at-large from seven to five, with each chapter now electing one member to represent them on the board. This means we now have all nine chapters represented. The NPSNM is in excellent condition.

Still, I have serious personal concerns. At a time when the future of the NPSNM looks very good, humankind is rapidly destroying the flora of our state and planet Earth. We devote billions of dollars to extend the lives of *Homo sapiens*, yet we live on a planet where the vital signs are crumbling. Asphalt, cement, malls, and housing developments are crowding out our native flora, and our aquatic flora is in horrible condition as we draw down our aquifers. Perhaps we should forgive a segment of our population, including chambers of commerce, developers, ranchers, loggers and much of the industrial world, for they know not what they do.

All the more reason for NPSNM to continue the struggle to educate and work with all citizens, and support the basic research that will delineate the alterations in the path humankind must follow if future generations are to enjoy the bounties that were once ours. Based on our very best scientific evidence, green plants are still the most important organisms ever to evolve on planet Earth. As has always been true, our future is tied to the green mantle that surrounds us. We must continue our efforts to protect it.

Jack Carter

POINT...*COUNTER POINT*

"You've got to ask the question, is the air cleaner since I became governor? The answer is yes."

George W. Bush
May 1999

"In 1999, Houston overtook Los Angeles as the city with the most violations of federal health ozone standards."

Houston Chronicle
10/12/99

This **NEWSLETTER** is published quarterly by the Native Plant Society of New Mexico, a non-profit organization, and is free to members. The NPSNM 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 NPSNM. Manuscripts and artwork are welcome and should be submitted to the editor:

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andrzej@laplaza.org

Deadline for next issue is Dec. 1st, 2000

Membership in the NPSNM is open to anyone supporting our goals, i.e., promoting a greater appreciation of native plants and their environment, and to 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. In addition, a wide selection of books dealing with plants, landscaping, and other environmental issues is available at discount prices. The Society has also produced two New Mexico wildflower posters by artist Niki Threlkeld which can be ordered by contacting our Poster Chair or Book Sales representative.

NPSNM Membership Application

Name(s) _____

Address _____

City _____ **State** _____ **Zip** ____

Telephone _____

E-Mail/Fax _____

I (we) wish to affiliate with the checked chapter

__ **Albuquerque**
__ **Carlsbad**
__ **Gila (Silver City)**
__ **Las Cruces**
__ **Otero**
__ **Sacramento Mts (Ruidoso)**
__ **San Juan (Farmington)**
__ **Santa Fe**
__ **Taos**

I am interested in forming a new chapter in

_____

Annual Dues:

Individual or family	$12.00
Friend of the Society	$25.00
Endowment contribution	$_____
Total	$_____

Please enclose your check payable to:
Membership Secretary NPSNM
P.O.Box 2364, Las Cruces NM 88004

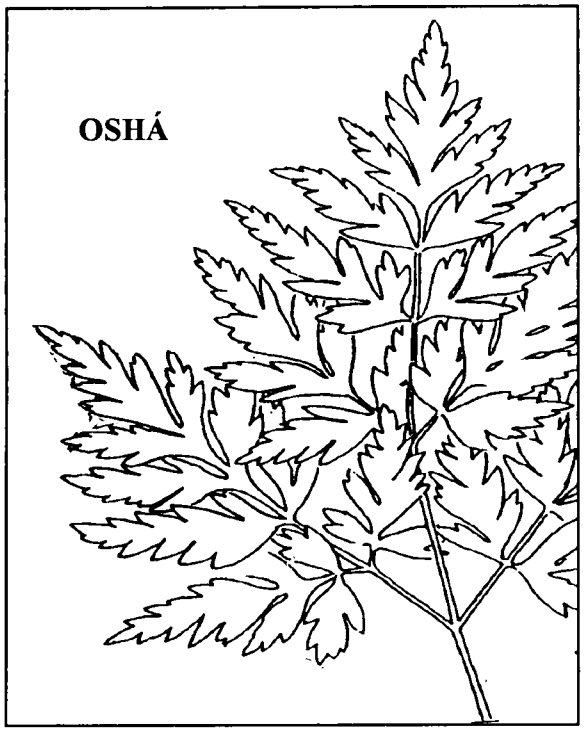
Sally and Andy Wasowski invite you to visit their new web site:

www.botanicalmissionaries.com

Versatile Oshá

by Kathyrn Jones

The family Apiaceae contains over 3,000 spp. It is found primarily in the tropics, with many species cultivated for food or spice, e.g. *Carum*, caraway, *Daucus*, and *Petroselinium*. Other species are highly toxic, e.g. *Conium* and *Cicutra douglasii*. Four hundred species occur in North America, with 56 species found in New Mexico.



Drawing by Robert Dewitt Ivy

The genus *Ligusticum L.* (named for Liguria, Italy, home of the related *Levisticum* or lovage) consists of about 25 species found in Eurasia and 11 species in North America. One species, *Ligusticum porteri*, occurs in New Mexico, and is called oshá.

Ligusticum species have been used as edible and medicinal plants for centuries by the ancient Greeks, as well as the Aztecs, and Tarahumara peoples of Mexico, and were also widely used throughout the Southwest. Oshá's pre-Hispanic use may be inferred from its vernacular names in Mescalero Apache, Zuñi, Paiute, and Tarahumara peoples. The Zuñi used an infusion of the root externally for body aches. Shamans and their patients chewed the root for a variety of illnesses and used the crushed root, mixed in water, as a gargle for sore throats, while the Yaqui used the root to ward off rattlesnakes. The Chiricahua and Mescalero Apache included it in their diet, and either ate it raw, or cooked it with chile and meat or animal bones.

A Variety of Uses Reported

The earliest reports of Spanish uses of oshá date to the 18th century. A manuscript dating to 1777 refers to boiling the roots to make a tea to treat "pain from cold." In 1776, Spanish missions in the Sierra Madre, in what is now Mexico, recorded that "chuchupate" (a folk name for *L. porteri*) was an important medicinal root.

Historically, native and Hispanic people in New Mexico collected oshá in the fall after the plants produce seed, but before they drop their leaves. The roots, stems, leaves and seeds were generally dried before using. *

There is lingering dispute between Native Americans and Hispanics as to the origins of the name, oshá. The Spanish word for bear is 'oso' or 'osa.' Plains Indians refer to the plant as "bear medicine" because bears have been observed eating the root, and the bear is a sacred source of healing. Native American legends also contend that bears taught them how to use the plant. Ethnobotanist Shawn Sigstedt observed that when he gave the root to bears in the Cheyenne Mountain Zoo in Colorado Springs, they chewed the root and rubbed it over their bodies.

Despite oshá's status as one of the most widely used plants in the Southwest, it remains a mysterious species in many regards. Little is known of its reproductive process, and native peoples found that it resists cultivation. While scientific studies are beginning to shed light on oshá's chemical makeup, more are needed before this plant and its long-reputed healing powers are fully understood.

Kathyrn Jones is a graduate student at Southern Methodist University. This paper was submitted to Dr. John Ubelaker, Chair of Biology Dept at SMU.

*** Editor's note:**
Today, collecting *L. Porteri* is frowned upon for several reasons: Over-collection has threatened its existence in the western U.S., and Jane Mygatt at the UNM Herbarium reports that a number of deaths have occurred as a result of mistaking Poison Hemlock for Oshá.

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Taos	Robert Hilton 587-1609

Membership Dues and Changes of Address should be sent to:
Membership Secretary NPSNM
P.O.Box 2364, Las Cruces NM 88004

"I, too, want to preserve the environment just as it is: acid rain, holes in the ozone layer, lots of crap in the air."

"Nature's laws affirm instead of prohibit. If you violate her laws, you are your own prosecutor, judge, jury, and hangman." *Luther Burbank*

Chapter Activities & Events

ALBUQUERQUE

Programs held Thursdays at Albuquerque Garden Center, 10120 Lomas Blvd. Meetings at 7:30 p.m. For further information contact Carolyn Dodson (268-7889) or Betty Herschman (296-0763).

October 5th: *"Ancient Seeds for Modern Needs,"* program by Brett Bakker, New Mexico Field Manager, Native Seeds SEARCH.

November 2nd: *"Rare and Endangered Plants of New Mexico,"* by Bob Sivinski, Botanist.

December 14th: *"Native Plants in Sculpture,"* by Basia Ireland, artist. The annual potluck dinner will precede talk at 6:30 p.m.

CARLSBAD

No Scheduled Events

GILA (Silver City)

October 15th: Field trip to Mogollon Mountains to view aspen. Meet at WNMU Fine Arts parking lot, 8 a.m. Contact Bill Davis at 534-2038.

October 20th: *"Sharing the Land with Native Plants,"* program given by M. H. "Dutch" Salmon, 7 p.m., Harlan Hall, WNMU. For more information, contact Martha Carter at 388-9221.

November 17th: *"Remembering Ralph Fisher Through Botanical Photographs,"* program given by Jack Carter, 7 p.m., Harlan Hall, WNMU.

LAS CRUCES

September 29th through October 1st: NPSNM Annual Meeting. Location: Holiday Inn. See previous newsletter for details.

November 11th: Annual Potluck Supper at 6:00 p.m. To be held at the home of Rosemary Maddox. Call 532-1428 for further details.

December 6th: Annual Chapter Planning Meeting on activities for 2001. 7:00 p.m. at Southwest Environment Center, 1494 S. Solano. All welcome.

OTERO

Past events: The July 29th hike in the Sacramento Mts was led by John Stockert. Eight members followed a rounded ridge for 2.3 miles, more or less level (although some participants might disagree), before dropping down the last 0.9 mile of sometimes steep trail to its lower end. Most of the route passed through Douglas fir, white fir, and ponderosa pine, plus some meadows. Approximately 40 kinds of wildflowers were noted between elevations of 8,050 to 9,100 ft.

October 7th: Field trip to Valley of Fires near Carrizozo with botanist Charlie Past. Meet in Tularosa (Y intersection of Hwys 54 & 70) at 8 a.m. Bring lunch and water. Contact Don Tribble at gecko@netmdc.com.

November 4th: Annual planning meeting/potluck at Gordon home. For details contact chapter president John Stockert at jstoc30330@aol.com. Other NPSNM members welcome.

SACRAMENTO MTS (Ruidoso)

No scheduled events reported. For updated information contact Cynthia Trujillo at 378-1902

SAN JUAN (Farmington area)

October: Presentation by Bob Pennington, owner of Agua Fria Nursery in Santa Fe. Date, time and place TBA. Contact Nancy Dunning 334-0196. This past June, Pennington gave a program for the Taos chapter which was very well received.

Past activities: Last month the chapter's weed clean committee met and tackled many weeds at the Aztec Ruins National Monument, but it was decided to wait for rain before returning.

SANTA FE

Meetings third Wednesday of the month at the Evans Science Laboratory Building, Rm 122, Saint John's College, 7:30 PM.

October 18th: *"Penstemons and Sex,"* Bob Pennington, Agua Fria Nursery/

November 15th: *"Aliens Land in New Mexico: Noxious and Exotic Plants,"* George Cox. Botanist.

TAOS

Programs held 2nd Wednesday of each month at the San Geronimo Lodge, 1101 Witt Rd, at 7 p.m.

October 11th: *"Interior Floral Arrangements"* given by Claudia Miller of Blossoms Nursery.

November 8th: *"Meet the New Prez"* A program given by Bob Sivinski, looking ahead to the next year of NPSNM activities, as well as some fascinating info on our native flora.

Taos Reports Bumper Sticker Sales Success

Introduced last spring, the Taos Chapter's "I Brake For WILDFLOWERS" bumper sticker seems to be finding an appreciative market, not just in New Mexico but all across the country. Besides sales to other NPSNM chapters, Taos reports they've received orders from The Wild Ones, a 40 chapter natural landscaping organization headquartered in Wisconsin; Moore & Moore Native Nurseries in Nashville, Tennessee; Inspirations, a new age boutique in Taos; and a re-order from the Lady Bird Johnson Wildflower Center in Austin, Texas. The stickers are sold in lots of 25 for $25 plus shipping and handling and have a suggested retail price of $2 each.

To order, email *silverkey@juno.com*

We still need someone to be Ad Manager for this Newsletter!

Call the editor at 776-1498 for job description.

"Die when I may, I want it said of me by those who knew me best, that I always plucked a thistle and planted a flower where I thought a flower would grow."

Abraham Lincoln, 1842

(Glyphosate cont'd)

half lives of over 100 days have been measured in field tests in Iowa and New York. Glyphosate has been found in streams following agricultural, urban, and forestry applications.

In California, glyphosate-containing herbicides were the third most commonly reported cause of pesticide illness among agricultural workers.

Glyphosate treatment has reduced populations of beneficial insects, birds, and small mammals by destroying vegetation on which they depend for food and shelter.

Glyphosate's manufacturer reported that drift from a ground application in Minnesota damaged 25 acres of corn, and the Washington Department of Agriculture reported damage to 30 acres of onions from a ground application of a glyphosate herbicide.

In laboratory tests, glyphosate increased plants' susceptibility to disease and reduced the growth of nitrogen-fixing bacteria.

Because many plants are susceptible to glyphosate, it can seriously impact endangered plant species. The U.S. Fish and Wildlife Service has identified 74 endangered plant species that it believes could be jeopardized by glyphosate.

Although many weed specialists argue that "it is nearly impossible for glyphosate resistance to evolve in weeds," others argue that "there are few constraints to weeds evolving resistance." The second group of scientists appears to be correct. In 1996 an Australian researcher reported that a population of annual ryegrass had developed resistance to glyphosate and tolerated five times the recommended field application use.

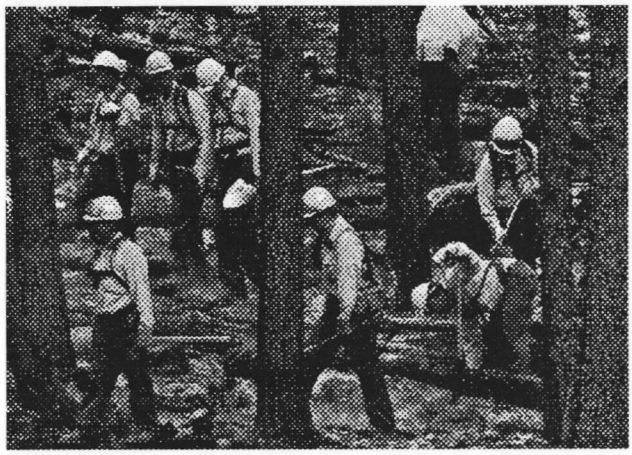
"I think we are all willing to have a little bit of crud in our lungs and a full stomach rather than a whole bunch of clean air and nothing to eat. And I don't want a bunch of environmentalists and communists telling me what's good for me and my family."

Billy Williamson
Texas State Rep from Tyler
(died of lung cancer)

Fireproofing Your Home Landscape

by Charles Ferguson

This has been the worst year for U.S. forest fires in half a century. Because many of us live in or near forests, we invited Charles Ferguson, owner of Cañon Forestry in Taos, to share his thoughts on lessening our risk.



For those who live in a wild setting, the possibility of fire should not be ignored. The forests currently have an overabundance of trees and shrubs, making eruption of wild fire a mere matter of time.

Cutting down all the trees creates damage through soil erosion during heavy rains, so that is not a solution. What does help is the creation of a defensible zone around your home, which includes weeding your forest so that the natural ecosystem continues to be intact, while directing the path of a wild fire away from your home. Although each property is unique, certain rules of thumb apply to the development of a defensible zone.

One consideration is the slope of the property. Fire burns faster moving uphill, so if your home is at the top of a slope, heavier thinning at a greater distance below your house might be required. Also, take out diseased trees and get rid of their slash (the debris left after trimming) so the disease cannot find new quarters in your healthy trees. In figuring out how many trees to remove, keep in mind that providing shade keeps underbrush from taking over. In eliminating underbrush, focus on oaks, chokecherry, cedar, and any low growing, waxy leafed shrubs. Aspens, cottonwoods, and elms are all heavy in moisture and can slow a fire down, so they're valuable in defensible landscaping.

Ladder fuels literally feed a fire. Ladder fuels are low growing and fast burning shrubs, any growth or accumulation directly beneath a tree, and branches that come too close to the ground. Get rid of these fuels; cut tree branches to 12 feet above the ground, trim any downward growing branches and twigs, and direct the shape of the tree upward. At the same time, remember to take no more than 1/3 of the crown; taking more is too traumatic for your tree. Finally, cut any branches that hang over a roof.

Defensible landscaping is a gradual process. If you take too much at once, young trees get too much sun and can be sunburned. When shrubbery grows back it must be cut again. Overall, your trees will be healthier, more beautiful, and more fire resistant as a result of defensible landscaping. And your efforts can save your home in case of wild fire.

LOCAL FIRE BEHAVIOR

Here are five types of vegetation common to New Mexico with computer-generated estimates of burn speeds under these conditions: wind speed of 20 mph, flat terrain, typical moisture contents of living and dead vegetation in the summer. (Source: New Mexico State Forestry)

Grasslands: Flame length 8 ft. Travels at 4-1/2 mph. 3,000 acres can burn after one hour

Bosque: Heavy brush (cottonwood, native shrubs) along riparian areas. Flame length 55 ft. Travels at 8-1/2 mph. 100 acres can burn in an hour.

Piñon-Juniper Woodlands: On slopes 3000-7000 ft elevations. Flame length 16 ft. Travels at 3 mph. 500 acres can burn in an hour.

Ponderosa Forest: Flame length 10 ft. Travels at 1-1/2 mph. 150 acres can burn in an hour.

Mixed Conifer: White fir, Douglas fir, blue spruce. Flame length 8 ft. Travels at 1-1/2 mph. 10 acres can burn in one hour.

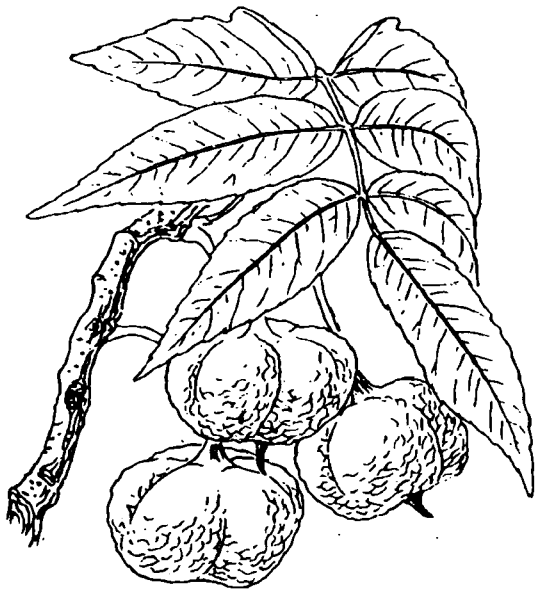
Mexican Buckeye

Falling in Love for a Sound Reason!

by Wynn Anderson

I was first attracted to Mexican Buckeye for the wrong reason. It had a botanical name that seemed to roll sweetly off my otherwise linguistically challenged tongue: *Ungnadia speciosa*. Go on, try it. Ung-NAH-dee-ah spee-see-OH-sah.

Ah, but trying it in my own dry garden provided the right reason, and I have since remained enamored with this very attractive native of the Chiuhuahuan Desert region. Culturally, it is a winter-hardy, heat-loving, drought-tolerant shrub that is adaptable to part shade or full sun. Aesthetically, it has gorgeous spring flowers, lush summer foliage, and an unusual winter display of interesting, persistent seed pods.



Drawing by Robert DeWitt Ivey

Once only available from seed, and tagged by growers as just another troublesome, slow growing desert shrub, Mexican Buckeye is now commercially available in a range from one-gallon containers to boxed specimens, and is increasingly recognized for its landscape values. Designer and author Sally Wasowski describes it as one of our most beautiful native ornamentals.

A member of the *Sapindaceae* or Soapberry family, Mexican Buckeye joins two other family members valued in Southwestern landscapes: the Western Soapberry and the non-native Golden Rain Tree. It is not, however, related to the trees that are traditionally called "Buckeye," which are native to the central and eastern U.S. (of the genus *Aesculus* in a family of their own, *Hippocastanaceae*). Their hard nuts only bear a passing resemblance to the hard, glossy seeds of the Mexican Buckeye, which was named by early Texas settlers. A wide-ranging plant, Mexican Buckeye occurs in scattered populations along the banks of bayous near Houston; in the limestone hills of the Edwards Plateau in central Texas; across the dry mountains of the northern Chihuahuan Desert of west Texas, southeastern and south central New Mexico, and southward into Mexico.

In early spring, the worth of the plant is evident when all but leafless stems burst with colorful clusters of pale to rose pink 1" blooms. The irregular blossoms, with 4 to 5 petals nestled among 5 sepals, have noticeable cherry-red anthers and 5 to 10 stamens extending from the protective corolla. When seen from a distance, the blooming shrub strongly resembles the Mexican Redbud, although closer examination of the flowering panicles arising amid graceful, naked brown stems, reveals a distinct oriental quality unmatched by any other native spring display. Leaf buds emerge during or shortly after flowering. By early summer, the large leaves, consisting of 3 to 7 odd pinnate, ovate to lanceolate leaflets, provide a lime-green lushness uncharacteristic of most desert-adapted plants.

Don't Eat The Seeds

Unusual pale green 3-celled seed capsules slowly enlarge and darken over the summer, turning hard, tan and woody by autumn. After a brief display of yellowed, deciduous fall foliage, the 3-chambered hanging pods, now up to 2" wide, split and reluctantly drop their seeds, yet persist to appropriately resemble hanging Christmas ornaments adorning the bare winter stems of this plant. The pods contain 3 hard, dark brown, glossy seeds as much as 1" in diameter and which are reportedly moderately toxic, causing nausea and abdominal discomfort to those ill-advised enough to crack the hard seed coat and consume any quantity of the bitter interior. Luckily, as is the case with the even more toxic Mountain Laurel, an intact seed is hard enough to normally pass ***(continued on page 12)***

FROM THE HERBARIUM

Jane Mygatt, Collections Mgr. UNM Herbarium

The UNM Herbarium is one of seven divisions of the Museum of Southwestern Biology (MSB), which currently is housed within the Department of Biology at the University of New Mexico. The herbarium contains more than 97,300 preserved plant specimens, providing researchers and students with a thorough representation of the floristic diversity in our state and the Southwest. The majority of our holdings consist of flowering plants from the Southwest, with an emphasis on the vascular plants of New Mexico.

New Location

The growth of all divisions of the MSB has necessitated the move to a new location adjacent to the Department of Biology. Formerly the UNM Bookstore, the space has been under renovation since October 1999 and we are scheduled to move in January, 2001. The improved facility will be equipped with movable compactor storage units that will provide enough space to double our collection holdings. With more than 500 visits per year by researchers, students, agency botanists, botanical consultants, and the public, the additional space and updated facilities will be welcomed.

Because it will take some time to pack the collection securely for the move, the Herbarium will be closed from September 15th to sometime after January of next year.

Current NPSNM-Related Activities

The NPSNM recently donated $1,000 to the UNM Herbarium to assist in our efforts to continue the capture of plant specimen label information in our database. We are very thankful for the donation, and have recently hired a student employee to continue the much-needed effort. The funds are being well spent; thanks to the donation we expect 17 families will be added to the database.

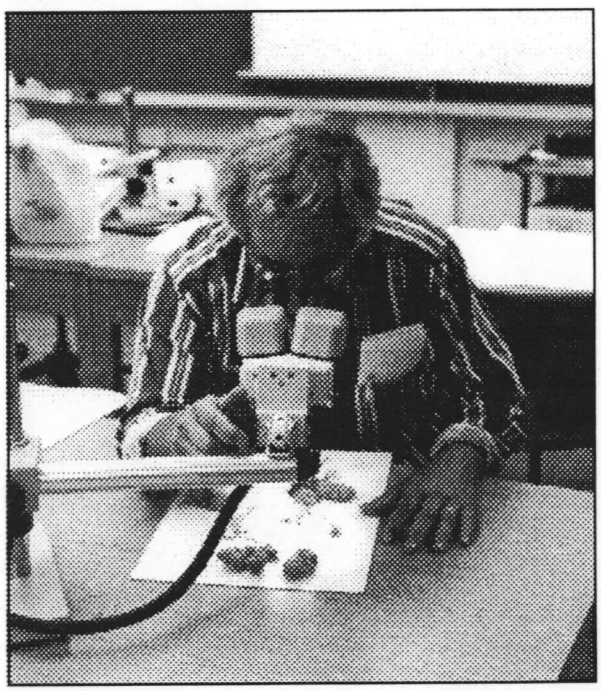
The data-basing effort also includes updating nomenclature, editing existing records, and providing impetus for repairing specimens and adding new acid-free folders. To date we have 44,250 records in the database, which represents nearly 45 percent of our collection.

We are also involved in creating the web site for the NPSNM (**http://npsnm.unm.edu**), and hope that members with knowledge in web page construction will volunteer to create and maintain their particular chapter's web sites which will be linked to the state's site. Creating web pages is a fun way to get involved and learn some new skills.

Future Activities

In an effort to influence science education in New Mexico, the herbarium, along with other divisions of the MSB and the Centennial Science and Engineering Library, has recently submitted a proposal to the Institute of Museum and Library Services to establish a virtual museum of New Mexico natural history. We are proposing to use a team of scientists, librarians, and teachers to construct a web site that will enhance the teaching of science and foster a deeper appreciation of the state's natural history.

If funded, this web site will include photographs and profiles of selected plants and animals native to New Mexico, photos of selected habitat types, guides to obtaining additional electronic and printed information on the state's natural history, field notes of prominent early biologists that describe plants and animals, information on how to identify organisms, suggestions for natural history activities for grades 6-12, and lesson plans for teachers, as well as other related material. We hope this approach will be adaptable to other regions of the country in promoting an interest in natural history.



Dr. Timothy Lowrey, Curator of the UNM Herbarium

(Mexican Buckeye cont'd from page 9)

through small children and fortunate adults without adverse effect.

Although trainable by selective pruning into a small tree, and adaptable to full or part shade with a range of irrigated tolerance, Mexican Buckeye is in its glory as a large shrub when it is allowed to follow its natural multitrunked habit in placements that mimic wild habitat. It is most often found in moisture-collecting pockets of coarse, weathered soils trapped by rocky outcrops and sheltering boulder fields on otherwise seemingly dry slopes of hills and canyons whose east or north-facing shoulders are often shaded from the hottest afternoon sun.

Its normal size is eight to ten feet tall and six to ten feet wide, although *Ungnadia speciosa* (it *is* fun to say, isn't it!) can make a very large shrub over time, reaching twenty feet tall by ten feet wide or more in favorable irrigated settings. At least an 8 foot spacing is recommended for group plantings, but I prefer using single plants as a foundation or background accent.

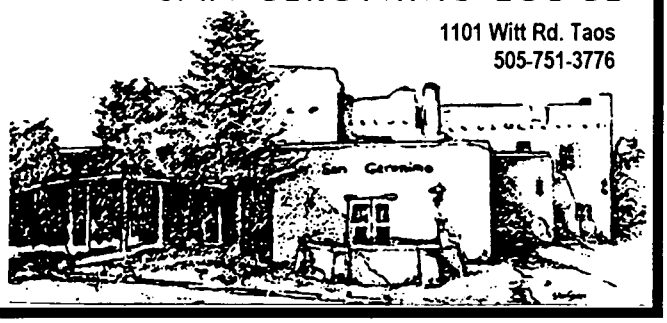
An Easy Going Shrub

Few problems are encountered with this plant. Regular supplemental watering is advised for young seedlings or new transplants, especially to hasten growth. And partial or light shade also seems appreciated until the maturing plant achieves its own natural equilibrium with sunlight and drought tolerance. In fact, the only problem I've noted with landscape plantings of Mexican Buckeye is the mid-summer burning of leaf margins by excessive reflected heat, overhead watering that results in leaf "burn," unnecessary fertilization, or subjecting the plant to all three conditions, which is not at all uncommon.

Wynn Anderson is Botanical Curator for the Centennial Museum at the University of Texas at El Paso where he designed and supervises The Chihuahuan Desert Gardens, a mini-botanical display showing the native flora of the Chihuahuan Desert in landscape settings. He may be reached at **Anderson@utep.edu** or by regular mail in care of the University, El Paso, Texas 79968. This article originally appeared in the October 1999 issue of *Southwest Trees and Turf*, and is reproduced here with the permission of both the author and publisher.

"Man merely thinks plants are motioness and feelingless because he will not take the time to watch them."

Raoul Francé
Viennese Botanist



Should New Mexico's Ponderosa Forests be Burned? Or Thinned?

By Sally Wasowski

Walton Hawk, a wonderfully opinionated friend of mine who lives in San Cristobal, is an active rancher and a retired veterinarian. Hawk opposes prescribed burns. "I believe that the good produced by any burn is being exaggerated and the damage caused by burning is being largely overlooked. With the right conditions of dryness and winds, fire does not need brush, small trees or heavy grass to spread. During the Hondo Fire, up on La Lama, isolated trees up to many yards separated from others were killed."[1] Having seen only unburned or catastrophically burned ponderosa forests, Hawk is skeptical about how often these forests were historically burnt. "If burns occurred as close together as is stated by the proponents of prescribed burning, ponderosa pine habitat would have huge open spaces or little prairies." [2]

What Hawk is describing is ponderosa savanna, not ponderosa forest. And savanna is exactly what ponderosa forest used to be. 1876 was the last year before European settlement put an end to the natural fire regimes that maintained low levels of tree regeneration in Arizona. A never-logged ponderosa forest that has not burned since 1876 gave scientists at Northern Arizona University a chance to determine what a ponderosa forest used to look like. Tree-ring samples from living and dead trees showed that 20 percent of the trees in 1876 were from 200 to 540 years old and, overall, densities were about 24 trees per acre. Fire exclusion and favorable climatic conditions have now allowed the number of trees to increase to more than 1,200 per acre.[3]

The definition of savanna is controversial, but "more than one tree per acre" and "canopies of 10 to 80 percent," are accepted by almost everyone.[4] For ponderosa canopies of 15 to 30 feet square, 24 trees per acre would be 12 to 50 percent canopy.

The prescribed fire in Los Alamos that got out of control last May was set in ponderosa woodland. More than 200 homes were burned and nearly 50,000 acres were charred. This disaster has refueled the discussions about whether or not to replace "controlled burns" with "thinning" and "partial harvests." Here are some of the issues:

1. Less than one percent of prescribed burns get out of control.
2. Regular, moderate fires require a grassy fuel load, not almost bare soil.
3. The small diameter trees that choke public forests after years of fire suppression carry crown fires.
4. It's hard to figure out how to thin out the small trees, because they have little commercial value other than firewood. To make a profit, loggers would want permission to take the large trees, too, as they did when "salvage logging" was permitted in the mid-1990s.
5. Fires tend to burn more intensely in areas that have been logged, as the forests are drier and the "slash piles left behind by logging crews make perfect tinder."[5]

Solutions for New Mexico ponderosa forests are varied. New Mexico Representative Tom Udall (D) has suggested "pre-commercial thinning" of trees too small for commercial use. Sam Hitt of Forest Guardians has called for labor-intensive thinning of the canyons around Santa Fe, with no sales permitted of the logs. Bruce Babbitt, Secretary of the Interior, is supporting "somewhat revised" federal fire-management policy. In Taos County, contracts have been made with locals who cut firewood to see if that will help thin out the forests of oak and small conifers.

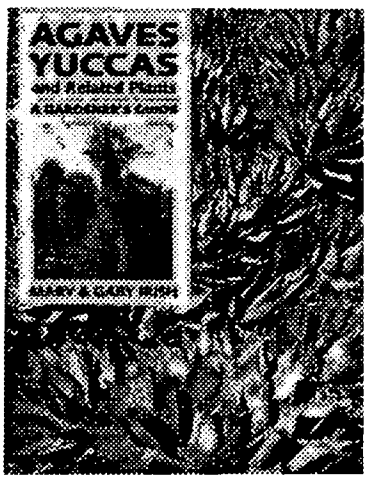
(1) Hawk, Walton, "Burning Bad for Trees," *The Taos News*, 1998.
(2) Hawk, Walton, "Burning Bad for Trees," *The Taos News*, 1998
(3) #138 from *Ecological Restoration* 18:2 Summer 2000 (formerly *Restoration and Management Notes* by the Society of Ecological Restoration, published for the University of Wisconsin – Madison Arboretum: *Restoration of Presettlement Age Structure of an Arizona Ponderosa Pine Forest.* 1999. Mast, J.N., Dept. of Geography and Public Planning Northern Arizona University, Flagstaff, AZ 86011; P.A. Fule, M.M.. Moore, W.W. Covington, and A.E.M. Waltz. *Ecological Applications* 9(1):228-239
(4) Nuzzo, Victoria A. "Extent and Status of Midwest Oak Savanna: Presettlement and 1985." *The Natural Areas Journal* 6:6-36.
(5) *Twice Burned? The Los Alamos fire rekindles debate over logging.* Sept-Oct, 2000. McManus, Reed., *Sierra.*

Sally Wasowski is a landscape designer, author, and a member of the Taos Chapter. Her new book, *Gardening with Prairie* (University of Minnesota Press) will be out January 2002.

Book Reviews

Agaves, Yuccas and Related Plants: A Gardener's Guide

by Mary and Gary Irish
Timber Press, Portland Oregon
380 pp, 100 color photos, 18 line drawings



Agaves and yuccas are usually mentioned in Southwestern gardening books, but nobody talks as ardently about them as do these authors. Intended to help gardeners, nursery professionals and horticulturists, the book is immensely useful for plant identification; complete keys are provided.

The authors discuss plants of the Agave and Nolina families, but limit the discussion to genera occurring in North, Central and South America only. Within the Agavaceae the following genera are described: *Agave, Yucca, Hesperaloe, Furcraea, Manfreda, Beschorneria,* and *Polianthes.* The Nolinaceae include *Nolina, Dasylirion, Beaucarnea,* and *Calibanus.*

Agaves, yuccas, and their relatives are native to arid and semi-arid regions, making them excellent choices for water-wise gardens. Also, they are evergreen and provide a regional look (sense of place) when used in Southwestern gardens.

As it turns out, there is an agave, yucca, or related plant for every taste and need. Although they all have a similar look, there is much variation among the various species. Some have marginal filaments, while others have prominent, sharp marginal teeth. Some species stay very small and are even suited for pot-culture, and other plants grow quite big — some yuccas can eventually require the space of a small tree.

The book is illustrated with color photos of mature specimens, which is very helpful in making correct identifications. For example, young *Agave neomexicana, A. parryi, A. havardiana,* and *A. palmeri* can look very similar. Regrettably, not every species is illustrated in color. Photos also show native trees, shrubs, cacti, and wildflowers growing together with agaves and yuccas in beautiful settings full of varied textures, forms, and colors. These pictures offer great design ideas and should discourage "rock-and-gravel" landscapes where only a few yuccas and agaves are thrown in.

Especially lovely is the photo of the authors' garden in Scottsdale, Arizona. I wanted to see more! And Karen Bell's drawings are done with great sensitivity.

A chapter on the history of Agavaceae and Nolinaceae was a pleasure to read, though perhaps only botanists will retain the information on discovering, naming, and renaming these plants. Other chapters cover a detailed description of the genera; ornamental history; economic and ornamental distribution; ethnobotany; horticultural requirements; propagation; and pest, disease, and cultural problems. The heart of the book is the specific plant profiles. An alphabetical guide helps select plants for specific areas or climates, while a very useful chart lists approximate cold tolerances of selected species.

This wonderful book will deepen the knowledge of agave and yucca enthusiasts, and give people who have never tried to cultivate them more understanding, appreciation, and confidence.

Lisa Mandelkern

The Rose's Kiss: A Natural History of Flowers

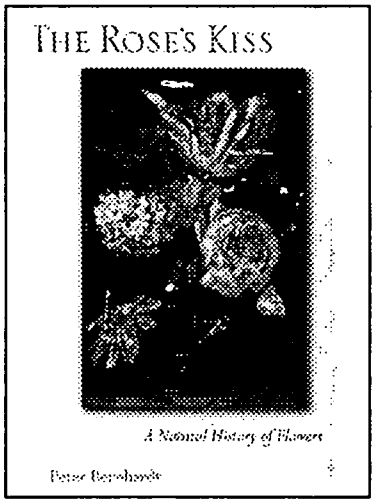
by Peter Bernhardt
Island Press, Washington D.C.
267 pp. Hardback $24.95

I readily admit to being a plant nerd, so I didn't know that I was even interested in plant reproduction until I read *The Rose's Kiss.* This book is a good example of my favorite type of science writing: the author gets straight to the good stuff with-

out making you wade through the boring stuff.

Although plants cannot get together to mate as animals do, they share the same imperative to pass on their genes to as many offspring as possible. This book reveals the ingenious reproductive strategies employed by plants. We're familiar with flowers enticing pollinators with nectar and pollen, but did you know that some flowers offer further rewards? For instance, Devil's Apples' (*Clusia*) flowers contain stamens that turn into a resinous material when the petals open. Bees use this resin as a nest cement. Some flowers offer warmth within their petals to entice pollinators on cold days.

But dependence on fickle pollinators is risky. Wind pollinated plants solve the reproduction problem without a "middleman." The energy that would have been used in producing attractants such as nectar and colorful flower parts is instead turned toward production of many hundreds of tiny flowers. But wind pollination presents its own unique obstacles. If a pollen grain is carried too far from its source, it may not reach the receptive tip of the female flower. The anthers of catkins and grass flowers release their pollen early in the morning or late in the afternoon to avoid the strongest winds. Some grasses bloom twice a year to take advantage of moderate temperatures and winds.



And although self-pollination is generally to be avoided, it is sometimes employed as a last resort. Many species of violet (*Viola*), dayflower (*Commelina*) and other woodland wildflowers produce two types of flowers. The early spring flowers attract sun-loving pollinators. But once the canopy leaves mature, the shady forest floor no longer appeals to them. The wildflowers still bloom, but their petals are smaller and duller. Inside these cleistogamous (closed marriage) flowers, the stamens grow just long enough to reach the receptive female stigma. Incestuous perhaps, but inbreeding in the flower world is better than no breeding.

In some harsh environments, certain plant species self-pollinate, ensuring that their genetically identical offspring will be able to endure the difficult conditions. Some species take this self-sufficiency to extremes and, like New Mexico's whiptail lizards, produce only females, bypassing the need for males. How is this possible? Read *The Rose's Kiss.*

Donna Stevens

Alien Species in North America and Hawaii: Impacts on Natural Ecosystems

by George W. Cox
Island Press, Covelo CA, 1999
387 pages. $30.00

I preface this review with a plea for forgiveness. Good editorial practice would not permit the president of an organization to write a book review for that organization's publication. However, as I will be leaving office in the near future, and since I consider this book extremely important to our members, I am allowing my beliefs and biases to get the best of me.

Jack Carter

For the first 40 years of my career, I must admit that in my teaching and research I gave short shrift to introduced species. But over the past 15 years, I have had a road to Damascus experience. While, for many years, I had only recognized roadside weeds for what they were, I began to realize that those natural ecosystems that I treasured were rapidly being invaded and in some cases destroyed by non-native species. Since moving to southern New Mexico it has become obvious to me that I am rapidly being surrounded by alien plant and animal species and that I must get to know the enemy.

Alien Species in North America and Hawaii is the single best and most straightforward statement concerning the impact of invasive species on the native flora and fauna that I have ever read. Categories of invaders, including introduced species, cultivated species, adventive species, and weeds are described in simple terms that we can all understand. Each of the five major parts of the publication contributes to providing a comprehensive overview of the problems resulting from invasion of native ecosystems by exotic species.

(Continued on back page)

Book Reviews Cont'd

Part I makes it very clear that the problem centers on the actions of humankind, i.e., the limited knowledge of our forefathers and our inability to apply our scientific knowledge of biologic invasions as they occur today. **Part II** (Chapters 4-13) presents the problems resulting from the intrusion of exotics into nine ecological regions of North America and Hawaii. Lists of key exotic species by both common and scientific names are presented for each region. Having lived and studied floristics in three of these regions, I found the description of how we have allowed cheatgrass *Bromus tectorum*, spotted knapweed *Centaurea maculosa*, smooth brome *Bromus inermis*, and Kentucky bluegrass *Poa pratensis* to crowd out native species of plants, birds and other animals extremely accurate. Yet even more depressing are the numbers of exotic species we observe along every path and old forest road we travel in the Gila National Forest.

Part III, titled Biotic Perspectives, tells the story of the power of hunting and fishing interests in controlling the actions of state and federal agencies. An important outcome of these activities has been the introduction of brown trout, carp, Japanese quail, ring-necked pheasant, reindeer, the South American oryx (into White Sands Missile Range), and many other species. Chapters 15 and 16 describe "homegrown exotics" and our "domesticated associates," including our cats, dogs, rats, horses, and cows.

Part IV, Theoretical Perspectives, and **Part V**, Policy Perspectives, get down to the most difficult problems humankind must confront. We are now surrounded by these thousands of exotic species and we are realizing the threats many of them bring to life as we have known it in North America and Hawaii and to our biologic and economic systems — but how shall we address these issues? Removal and control are possible, but not easy or cheap to bring about.

George Cox, emeritus professor of ecology at San Diego State University and now a member of the Santa Fe chapter, has produced a book that is must reading for professional botanists, teachers, conservationists, policymakers, and those educated laypersons that make up the membership of organizations such as the NPSNM.

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