



VOL. 16 NO. 1

JAN - FEB 1993

CALENDAR OF EVENTS

- Jan Cache Chapter Meeting. Fliers will be mailed announcing this meeting.
- Jan 27 Salt Lake Chapter Meeting. Bob Stack, educator and
Wed naturalist will be the speaker. He is planning an
7:30 pm activity also. Utah Department of Natural
Resources, 1636 West North Temple, Salt Lake City
Easy access from I-215 or North Temple. Board
Meeting at 6:30.
- Feb Cache Chapter Meeting. Fliers will be mailed
announcing this meeting.
- Feb 24 Salt Lake Chapter Meeting. Watch for blue cards to
Wed announce this meeting. Utah Department of Natural
7:30 Resources, 1636 West North Temple. Board Meeting
at 6:30.

Chairman of Board	Pam Poulson	(O) 581-3744
		(H) 359-3939
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SPIRANTHES DILUVIALIS

Excerpts from the Federal Register, Department of the Interior, Fish and Wildlife Service

In 1984 Sheviak described a new species of *Spiranthes*. The type location is along Clear Creek in Golden, Colorado. Populations of *S. diluvialis* occur in relatively low elevation riparian meadows in three general areas of the interior Western United States. The eastern population is in Colorado.

The central populations of *S. diluvialis* are in wet or mesic riparian meadows or in understory meadows of riparian woodlands in the Colorado River drainage of eastern Utah. Six separate populations are known. All these populations were discovered since 1977. The western populations of *S. diluvialis* occur in riparian, lake and spring-side wet or mesic meadows in the eastern Great Basin of western Utah and adjacent Nevada. Two existing populations are known, both in wetlands adjacent to Utah Lake in Utah County, Utah. Five additional populations were known:

- (1) "Ogden" in Weber County, Utah--specimens from this population were collected in 1887 but no plants have been observed since then;
- (2) wetlands in the Jordan River drainage in Salt Lake County, Utah--specimens from this population were last collected in 1953;
- (3) Red Butte Canyon near Salt Lake City--plants in this population were last observed in 1966;
- (4) Willow Springs near the town of Caliao in Tooele County, Utah--specimens from this population were last collected in 1956; and
- (5) wet meadows in the drainage of Meadow Valley Wash near the town of Panaca in Lincoln County, Nevada--specimens from this population were last collected in 1936. Recent searches for *S. diluvialis* in the Great Basin failed to rediscover any of the species' historic populations, except for those near Utah Lake, and recent rare plant inventories

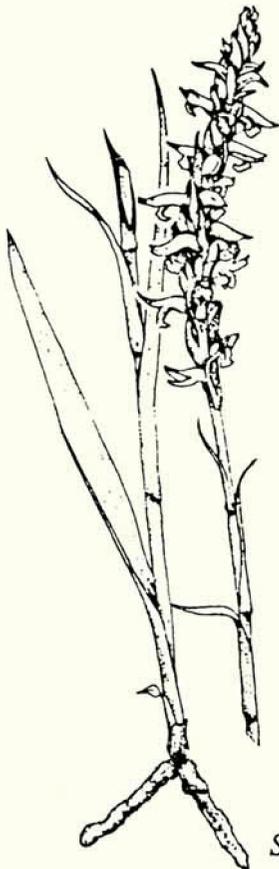
have not discovered any new Great Basin populations.

S. diluvialis populations in eastern Utah may not be subjected to habitat loss from urbanization as occurred to populations along the Wasatch Front. However, they may be vulnerable to changes in their riparian habitat as a result of stream channelization or impoundment projects. Existing and proposed water projects in Utah have the potential to adversely affect the riparian habitat in which *S. diluvialis* is found. The eastern Utah populations are typically small in size, and all are potentially vulnerable to any impact to their riparian ecosystems. The highly disjunct nature of the known populations in eastern Utah gives rise to questions of what is the factor causing this disjunction. It is possible that local extinctions have taken place in currently unoccupied potential habitat similar to extinctions which occurred along the Wasatch Front, the Great Basin, and certain historic populations in Colorado.

The effects of grazing are largely not known with respect to this species. The largest populations of the species, along the Uinta River and Deer Creek in Utah and along the Boulder Creek in Colorado, are grazed during the winter, when *S. diluvialis* is dormant, with no noticeable effect on the species. It is plausible that moderate winter grazing may be beneficial to or have no impact on the species. Yet, the most striking feature of the Uinta River ecosystem, which contains one of the largest *S. diluvialis* populations, is the vigor of the riparian vegetative community and its lack of degradation from heavy summer grazing. For populations on National Park Service lands, *S. diluvialis* habitat was or is in the process of being withdrawn from active grazing allotments, at least temporarily. The impact of grazing on the species and its ecosystem will be investigated as part of the research and recovery effort for this species.

Federal action on this species began on September 27, 1985, when the Service published a notice of review of candidate plants for listing as endangered or threatened species, which included *S. diluvialis* as a category 2 species. Category 2 comprises taxa for which the Service has information indicating the appropriateness of a proposal to list the taxa as endangered or threatened but for which more substantial data are needed on biological vulnerability and threats.

After a review of status information acquired since 1985, the Service upgraded *S. diluvialis* to category 1 in the plant notice of review published in the Federal Register on February 21, 1990. Category 1 comprises those taxa for which the Service has on file substantial information on the biological vulnerability and threats to support the appropriateness of proposing to list them as endangered or threatened species.



Spiranthes diluvialis

In the 1990 notice, *S. diluvialis* was given the common name "plateau lady's tresses" to provide the public a convenient reference. However, the Service will henceforth use "Ute ladies' tresses" as the species' common name in recognition of the fact that the species' historic range coincides with the ancestral home of the Ute Indian Tribe.

On November 13, 1990, the Service published in the Federal Register a proposed rule to list *S. diluvialis* as a threatened species. That proposal constituted the final finding for this species.

New populations were found in August of 1992 in the Uinta Basin by Joel Peterson, Doug Stone, Ben Franklin, and Jim Coyner. The search continues for new populations on the Wasatch Front.

DOC COTTAM FIELDTRIP SERIES

When Dr. Walter P. Cottam died four years ago at the age of 94 we lost an eminent ecologist and conservationist. We might also have lost a vast knowledge of unusual plants and their whereabouts but for the "Thursday Sabbath Club". Doc Cottam was already 75 years old when Vard Jones and Maxine Martz began taking Thursdays off to join him on outings to favorite places. For twelve years the thursday excursions continued.

This year Vard and Maxine will organize and lead fieldtrips in the footsteps of Doc Cottam for the Utah Native Plant Society. One of the earliest fieldtrips will be to see *Sisyrinchium inflatum* (Blue-eyed Grass) near Stockton. Another spring wildflower we will visit is *Viola beckwithii* near Brigham City. Hopefully this will be the year we see the elusive Steershead also.

The fieldtrips will be on Saturdays and will often involve some traveling, but should be very rewarding.

Vard and Maxine will present a slide show and discussion at our March meeting. Don't miss it.

**PURPLE LOOSESTRIFE
INVASIVE EXOTIC ?**

A recent article in Rocky Mountain Landscape Plus called for a ban on the selling and planting of *Lythrum sp.* (Purple Loosestrife). Already banned in several states of the eastern and northwestern sections of the U.S., this plant has invaded wetlands of five counties in Utah. The Utah Association of Nurserymen and Landscape Contractors is urging all nurseries to stop selling it and offer alternative plants instead. According to Steve Burningham, weed specialist, Plant Industry Division, Utah Department of Agriculture more studies will be done before the plant could be listed as a noxious weed.

The following information comes from an article recently printed by the Virginia Native Plant Society:

Description:

Purple Loosestrife (*Lythrum salicaria*) is an herbaceous perennial characterized by long showy spikes of magenta flowers. Usually under 4 feet in height, the plant may reach up to 10 feet tall in nutrient-rich habitats. Purple loosestrife has flowers with 5 to 7 petals which occur in dense clusters on terminal spikes and which bloom from June to September. The leaves are usually opposite or in whorls of 3, lance-shaped, and without teeth. The plant is a member of the loosestrife family (*Lythraceae*) and may be confused with other members of that family. Purple loosestrife is virtually indistinguishable from another Eurasian species, *Lythrum virgatum* and its cultivars.

Habitat:

Purple loosestrife occurs in a variety of wetland habitats, including marshes, river banks, and the edges of ponds and reservoirs.

Distribution:

A native of Eurasia, purple loosestrife was introduced into the

northeastern U.S. and Canada in the early 1800's. The plant has subsequently spread westward and southward through most of the temperate North America.



Threats:

According to most reports, purple loosestrife crowds out native wetland vegetation, such as cattails, grasses, sedges, and rushes. The plant thrives in disturbed wetlands and may, in fact, be diagnostic of disturbed or artificial wetland habitats. It often forms extensive monospecific stands in place of a diverse mixture of native species which provide the food and shelter required by many species of native wildlife. Purple loosestrife appears to provide little of value to wildlife.

Purple loosestrife may have achieved its widespread distribution due to its lack of natural predators in North America and its reproductive capabilities. A single stalk may produce as many as 300,000 seeds, and densities of up to 80,000 stalks per acre have been reported. The species also

readily reproduces vegetatively from stem or root segments.

Cultivars of *Lythrum salicaria* and a closely related Eurasian species, *Lythrum virgatum*, are widely sold by commercial nurseries. Many of these cultivars are advertised as being infertile. Recent experiments have shown, however, that while these cultivars may be self-incompatible, they are extremely fertile when crossed with wild purple loosestrife populations. Thus, these cultivars may be contributing to the spread of purple loosestrife in the wild, although this has not been conclusively demonstrated.

Control:

Accurate identification through field guides or a knowledgeable person should be made before control measures are undertaken. Early detection of the plant is important as small populations are more successfully controlled than large, entrenched populations.

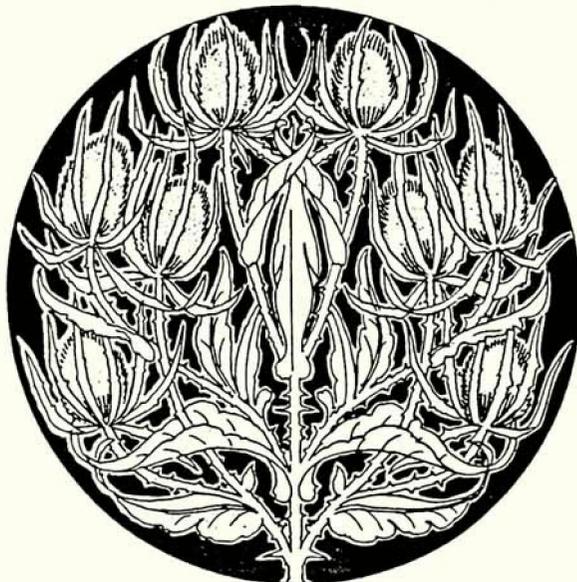
Small populations of purple loosestrife may be removed by hand pulling. This method should be avoided after flowering so as not to scatter seed. Pulled plants should be bagged at the site so that fragments are not dropped along the exit route. Burning is the preferred method of disposal. Follow-up treatments may be needed in subsequent years to remove new plants which have sprouted from seed persisting in the ground. Digging plants out is not recommended as this creates disturbance, which may favor the spread of the species.

Where mechanical removal is not feasible, purple loosestrife may be removed by spot application of a glyphosate herbicide to individual plants. As glyphosate is a non-selective herbicide, it should be used sparingly so as not to contact the desirable species which may grow beneath the loosestrife. These species will be important for recolonizing the area after loosestrife has been removed. As with mechanical control methods, follow-up treatments may be needed

in subsequent years to remove new plants which have sprouted from the seed bank.

Suggested Alternatives:

Suggested alternatives to purple loosestrife for use in the home garden include *Physostegia virginiana* (Summer Snow), and *Chelone glabra*.



PRESIDENT'S MESSAGE

(January-February 1993)

I extend my wishes for an adventurous and prosperous new year to all of our UNPS members and friends.

I thank you for your confidence and support in placing me in the position of UNPS State President for 1993. Also, many thanks to the 1992 officers, committees and members for their efforts, numerous activities, and significant accomplishments. Sometimes we fail to understand and appreciate the level of effort and commitment that goes into planning and execution for events such as the UNPS mushroom field trip to Boulder Mountain (with over 100 participants) and the numerous other UNPS sponsored activities. We had many such successful activities during 1992. Also, a special thanks to those who put the Sege Lily publication together six

times a year to inform the members of upcoming events, report events of the past months, and provide informative articles regarding native plants and related topics. These are not small accomplishments and, as members, we need to tell these individuals, regularly, that their service is appreciated and that they are making a difference.

I've spent some time reviewing the UNPS Articles of Incorporation and Bylaws, in order that I might better understand what is expected of me (and of you) to accomplish the purposes and objectives of the society. The Articles of Incorporation state that the UNPS "...shall be operated exclusively for educational and charitable purposes..." One of the stated objectives is "To promote in every possible way programs and systems which will assist in the appreciation, preservation, and conservation of the native plants and plant communities of the State of Utah and the Intermountain area." These are the primary objectives of the UNPS: to educate each other and the public and to promote programs for the appreciation, preservation, and conservation of native plants and plant communities. The opportunities for learning and service within this framework are great.

The UNPS is not a political or radical organization. The Articles of Incorporation state that "...no substantial part of the activities...shall be in carrying on propaganda or otherwise attempting to influence legislation, nor shall the corporation participate in or intervene in any political campaign on behalf of any candidate for public office." However, we definitely can make a difference. Through educational activities we can promote study, appreciation, and wise use of native plants and plant communities and promote preservation and conservation of the same.

The UNPS has opportunities for each member to give of themselves in serving fellow members and the

public and to enjoy the rewards of the same. At the end of 1993, I want to be able to say, "I have been a contributor and I have made a difference in UNPS." I'm sure you want to do the same so make your desires to make a difference known to me and the other officers. One of my personal objectives is to provide meaningful opportunities for every member to be better informed and to participate and contribute to the success of the UNPS.

Sincerely,

Brent L. Shipley
State President
Utah Native Plant Society

THANK YOU

We wish to thank Dorothy Egan for the time she spends collating our newsletter. She is one of the silent volunteers who contributes so much to Utah Native Plant Society.



WILDFLOWER POSTERS

The Utah Wildflower Poster is still available for only \$11.50 which includes postage. Send your check to: Utah Native Plant Society, P.O. Box 520041, Salt Lake City, Ut. 84152-0041.

VERONICA BECCABUNGA - A LINGUISTIC HISTORY

by Robin Lodewick

If you have gone flower searching in late summer or early fall, you may remember seeing a tiny blue flower growing near water. In Alton Baker Park in Eugene, it blooms beside a duck pond, where Dr. David Wagner likes to point it out to people on his wildflower walks. Veronica americana is found in wet places, usually at low elevation, all the way across North America. The plant is a low-growing perennial with opposite, oval leaves on short petioles; it bears its racemes of flowers in the leaf axils. Each flower has three wide petals above, one narrow petal below and two stamens - the typical "speedwell" shape.

This particular speedwell happens to be so closely related to one European species that it may soon be reclassified as Veronica beccabunga spp. americana. This brings up a question: What did Linnaeus mean when he used that odd word "beccabunga"? Was it a joke? Was it the name of some obscure eighteenth century botanist?

The answer turns out to be simple, if one can find the right dictionaries. I started out searching the Italian encyclopedias in the University of Oregon library. They list the word as the common name of two streamside plants, Veronica beccabunga and V. anagallis. One book traces the name to a Middle High German word, "bekebunge".

Unfortunately, the only Middle High German dictionary available contained no such word, but of course Middle High German was spoken from AD 1050 to 1500, which gives room for change.

So OK, back to the Italian, using multi-volume dictionaries this time. One source refers the word to Low German, a modern dialect; each authority says "bunge" comes from a Middle High German word meaning 'tuber'. Both dictionaries describe the two

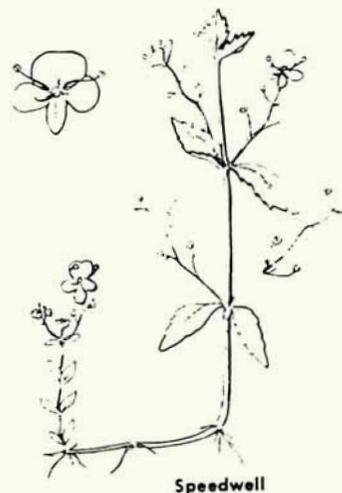
veronicas as streamside or swampland plants with hollow tuberous roots. Both also refer to the modern German "Bachbunge".

Unfortunately that word does not appear in newer German dictionaries. So, back to the nineteenth century. The Middle High German dictionary defines "Bachbunge" as "berula", a word no one else seems to have heard of. According to the brothers Grimm, "bunge" means drum, and is related to "bangen" and "bingelin" (or as we say in English, bing, bang, bong).

A couple of German/English dictionaries make things clearer. "Bach" means a little brook and a dozen words begin that with that syllable, notably "bachbunge", which means the brookline, and "bachamsel", which turns out to be the water ouzel.

Apparently the name spread from Germany, becoming "beccabunga" in Italy, "becabunga" in Spain, and "baechabanga" in Sweden. So now one can guess why Linnaeus picked the Italian form of the name: it sounded like the word he grew up with, but looked more like Latin. And, if we like, we can visualize the little brooks edged with blue-flowered, hollow-rooted plants, and possibly, water ouzels dipping among them.

reprinted from the Bulletin of the Native Plant Society of Oregon, Aug '92



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NEW BOOKS

From black-eyed Susans to violets, young readers enter the beautiful world of wildflowers in *A Child's Book of Wildflowers*, written by M.A. Kelley and illustrated by noted naturalist Joyce Powzyk. This informative introduction to twenty-four wildflowers commonly found in North America describes the simple steps of plant identification and explores the myths and traditions associated with these plants. The book also features such easy activities as flower pressing, dying, and drying. This book can be ordered by your local bookdealer from Macmillan Publishing Company.

Wildflower Magazine said, "*Requiem for a Lawnmower* gives the back-to-nature gardening movement a much-needed boost of literary experience and love of place that has been painfully absent." The book deals with a subject near and dear to all of us -- native plants, and how to use them in an ecologically sound way. Your local bookstore can order this book from Taylor Publishing.

Membership Application

New Member Renewal Gift

Name _____

Street _____

City/State _____

Zip _____ Phone _____

If Gift, from: _____

Check membership category desired:

- Student/Senior\$ 5.00
- Individual\$ 10.00
- Family\$ 15.00
- Supporting\$ 30.00
- Corporate\$ 30.00 and up
- Life\$250.00

Please send a complimentary copy of the Sego Lily to the above individual.

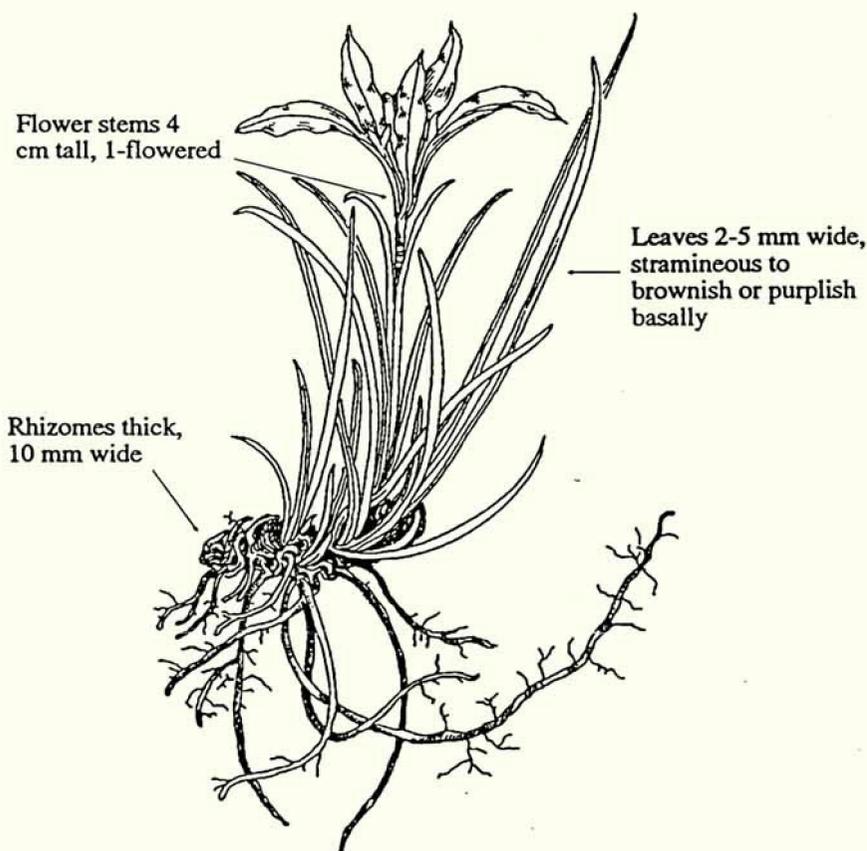
Please enclose a check, payable to Utah Native Plant Society, and send it to:

Pam Poulsen, treasurer,
Utah Native Plant Society
P.O. Box 520041
Salt Lake City, Utah 84152-0041

(If you prefer not to cut this out of your Sego Lily, feel free to copy the membership form or simply write the information down and mail it with payment for the category of membership.)

W A N T E D

Paria River Iris *Iris pariensis*



\$100 REWARD

(OFFERED BY THE UTAH NATIVE PLANT SOCIETY)

Height: 5 to 6 in. Flower: Pale to blue

This is a rare wild iris collected only once, May 1976, in the sandy soils of East Clark Bench, Kane County, Utah, but recently reported from nearby West Clark Bench. If you see this plant in this area please do not pick the flower or collect the plant. Carefully note the location and contact either of the following agencies as soon as possible:

Larry England, Botanist
U.S. Fish and Wildlife Service
(801) 975-3620 FAX (801) 975-3626

Ben Franklin, Botanist
Utah Natural Heritage Program
(801) 538-7223 FAX (801) 538-7315



VOL. 16 NO. 2

MAR / APR 1993

CALENDAR OF EVENTS

- Mar 8
Mon
7:00 pm
Cache Chapter Meeting
Seed Planting BYOS (Bring Your Own Seed). Some seed, soil and containers will be available for those of you who would like to get a head start on your summer wildflower gardens. The meeting is at the Logan Public Library. Call Robert Fitts for more information (753-5613).
- Mar 24
Wed
7:30
Salt Lake Chapter Meeting
Vard Jones and Maxine Martz will present a slide program and discussion: **The Thursday Sabbath Club---Fieldtrips With Doc Cottam**. Maxine and Vard will be leading fieldtrips this year to view some of Dr. Walter Cottam's favorite sites. Use the west door of the Utah Department of Natural Resources Bldg., 1636 West North Temple, Salt Lake City. Board meeting at 6:30 pm.
- Apr 10
Sat
10:00 am-
5:00 pm
Gardening With Native Plants will be sponsored by the Utah Museum of Natural History and presented by Dick Hildreth of Red Butte Garden and Arboretum. For more information call the museum (581-4887)
- Apr 12
Mon
7:00 pm
Cache Chapter Meeting
Watch for fliers to announce this meeting.
- Apr 28
Wed
7:30 pm
Salt Lake Chapter Meeting
Bob Stack, educator and naturalist will lead a discussion on creative writing and also an activity to make bookmarks with leaves and flowers collected along the Wasatch Front. Use the west door of the Utah Dept of Natural Resources Bldg., 1636 West North Temple, Salt Lake City. Board Meeting at 6:30 pm.
- Aug 20-21
Mushroom Hunt
This year we will be at the Great Basin Environmental Education Center in Ephraim Canyon. Mark your calendars now and you can call Dave Okelberry for more information (968-6190).

PRESIDENT'S MESSAGE

(March-April 1993)

"So little time and so much to do!" Does this little saying ring a bell with you? It sure does for me. With regard to UNPS, "so much to do" is certainly true. I am flabbergasted that January is now history, February will soon be gone, and many of the things I wanted to have done are not done. Obviously, your assistance as members and officers of UNPS is greatly needed. As you will recall (hopefully), I extended an invitation in the previous issue of the Sego Lily for you to let someone on the UNPS executive committee know of your interests and areas that you would like to contribute. We can and will make a difference!

UNPS supports some fund raising activities, in addition to our membership dues. As you will recall (again), the objectives of UNPS are to support "...educational and charitable purposes..." pertaining to "...the appreciation, preservation, and conservation of the native plants and plant communities of the State of Utah and the intermountain area." Surprisingly, enough we seem to have to go looking for projects to contribute to. Yet, we know that there are lots of worthwhile projects being carried out that would qualify for our assistance. Please let one of the officers know if you are aware of studies or projects that fit our criteria (objectives) and could benefit from UNPS participation. This is one of the ways that we are making a difference.

Our chapter officers are constantly on the lookout for resources to be used in monthly chapter meetings. If you don't think that putting those meetings together is a challenge, just you sit down and outline 12 topics and presentations that will keep the members coming back for more. I think our chapter presidents do a great job, but I am certain that they will not have their feelings hurt if you should volunteer some information, an idea, or offer to assist in setting up one of the programs. After all, you want to make a difference too.

Making a difference is what life is about. If you didn't resolve at the beginning of the new year that you are going to make a difference with UNPS, it is not too late to do so. I look forward to meeting and getting to know more of the members. Together, we will not only make a difference--we will have a lot of fun.

Sincerely,

Brent L. Shipley
State President
Utah Native Plant Society



YELLOWSTONE INSTITUTE FIELD COURSES

- Edible Plants and Medicinal Herbs
(June 18-20)
- Alpine Wildflowers (Jul 17-18)
- Alpine Ecology (Jul 26-29)
- Wildflowers Llama Trek (Jul 26-29)
- Wildflowers of Yellowstone
(Jul 31-Aug 1)
- The Art of Keeping a Field Journal
(Aug 21-24)

For more information and a complete list of classes contact:
The Yellowstone Association, P.O. Box 117,
Yellowstone National Park, Wy., 82190. Phone
307-344-2294.

GROWING FOR DIVERSITY

Glenn Beagle, Coordinator
Lone Peak Conservation Center

The Lone Peak State Forest Nursery, operated by the Division of State Lands and Forestry, produces over a million container and bareroot tree and shrub seedlings. The state nursery provides tree and shrub seedlings to non-industrial private landowners for windbreaks and shelterbelts, reforestation, soil erosion and other conservation uses.

In past years, many state owned nurseries or Soil Conservation District nurseries in Great Plains and western states concentrated on a similar mission offering a selection of native and introduced plant species suitable to local soils and climate conditions. Plants like black locust, hybrid poplar, nanking cherry, and eastern red cedar were being offered in nurseries from Oklahoma to Idaho for conservation planting efforts. With assistance from the Soil Conservation Service (SCS), these plant species and others took the shape of windbreaks, a reminder of the great dust bowl era. Today these same species share an important role in the establishment of shelterbelts.

Breaking from tradition the Lone Peak State Nursery has developed a new plant list during the last three years. Some new plant species will be offered for the first time in Spring 1993. Producing new plant species is not a simple task. After selecting a new species foresters spend two years locating seed sources and growing seedling-size plants. In addition, weather, lack of literature and tested planting techniques or poor seed can cause extensive delays. This is particularly true with

some native plant species we are currently growing. Despite the challenges our current species list offers a wide variety of native plants with the promise of new plant species offered in the near future.

The plant selection process is driven by several factors. First and foremost we will continue to grow many plant species recommended by the Soil Conservation Service, along with those species recommended in the new Tree and Shrub Selection Guide for Conservation Plantings in Utah and Nevada published by Utah Division of State Lands and Forestry.

We want to encourage planting shelterbelts and promote the benefits vegetation can provide for soil conservation districts and the agricultural industry. As we increase the number of species offered, we hope many of the native plants will be used for shelterbelts.

The 1992 Farm Bill, which includes a land stewardship incentive program, is developing into an organized effort by soil conservation districts, the Division of State Lands and Forestry, wildlife managers, and plant producers to plant more windbreaks, improve habitat and protect riparian areas. The stewardship program is placing increased demand on select seedlings

Selection of species is also driven by demand for wildlife habitat. The need for both upland and big game habitat has created a demand for large quantities of shrubs particularly focused on winter range or migratory range species. Fishery management and the restoration of riparian areas also

impact species selection. Riparian areas support native trout populations and serve as a haven for non-game species, as well as food for Utah's big game population. The protection of riparian areas is of paramount concern to the Lone Peak Nursery, and restoration efforts in these areas are best served by planting vegetation. Water quality is also served by the riparian complex. Water quality and wildlife issues that increase the demand for riparian plants are clearly exemplified in the Reclamation Projects Authorization and Adjustment Act of the Central Utah Project.

Not surprisingly, statements like "No Net Loss" of wetlands and Section 404 of the Clean Water Act have created a demand for wetland grass-like plants. The use of native plants for creating and restoring wetlands has merit. The effects and benefits from the wetland ecosystem has made a profound impact in the most unusual places. City managers are using created wetlands as a phase of treatment for sewage affluent. City planners in Murray, Utah have used wetland plants to treat non-point source water runoff from highways prior to using the water for irrigating a golf course. Industries have discovered that wetlands will remove heavy metals and other dissolved pollutants from ground and surface water. The agricultural and dairy industries can use wetlands to treat contaminated water from feed lots or provide a method of filtering sediment and nitrates from irrigated fields.

The Soil Conservation Service is studying these benefits and has made significant contributions to Lone Peak's new wetland program. Financial support for our program has also come from the Utah Department of Agriculture, USDA Forest Service and Utah Power. Lone Peak is currently producing *Carex nebrascensis*, *Juncus balticus*, *Scirpus acutis*, and *Eleocharis* for wetland restoration.

Utah's land managers provide direct

input into our selection process by requesting native species for specific projects. For example, we produce smooth sumac (*Rhus glabra*), blue elderberry (*Sambucus caerulea*) and golden current (*Ribes aureum*) requested by the U.S. Forest Service. A customer may also require a specific plant grown from an identified seed source by providing the seed and allowing us a 24-month production schedule. We can produce requested plants for orders exceeding 2500 plants. In this way, the customer receives plants designed for a specific project in quantities necessary to complete the project. We encourage this method of cooperative growing because it reduces waste from speculative sales.

A government agency indirectly effects our production decisions when researching new methods for disturbed site reclamation or fire resistant shrub species. Many of our native plant materials have been beneficial to sites disturbed by mining operations or pipeline corridors. These applications help round out the reclamation and conservation uses of Lone Peaks plant materials.

Lone Peak has addressed other issues of production in addition to species selection. Quality control is a major force at the nursery. Aggressive weed management increases the health and vigor of our stock by reducing competition. Handling bareroot seedlings at Lone Peak has improved. Seedlings are graded and evaluated on root development, shoot height, bud development, stem caliper, and disease control. Storage and packaging has changed to provide a quality plant for outplanting. Educational brochures and a planting video have also been developed to aid outplanting survival.

It is important for the public to know about the service Lone Peak Nursery provides; however, it must be noted the Lone Peak State Nursery offers plants for conservation, reclamation and educational uses only. Lone Peak's nursery stock may not

be used for landscaping purposes. Any requests for landscape plants are directed to the appropriate retail nursery or local producer.

Lone Peak Nursery is a state organization and as such provides a variety of educational information and technical assistance. Our nursery is open to tours by appointment and welcomes groups interested in learning more about Lone Peak's programs and growing seedling stock.

Inmates from the Utah State Prison assist with production and quality control at Lone Peak Nursery. In cooperation with Utah's Department of Corrections, we employ up to 50 inmates for greenhouse management, field irrigation, grading and shipping, and all field collections of seed and vegetative material. Many inmates have worked at Lone Peak for up to two years and receive training that is transferable to employment upon their release.

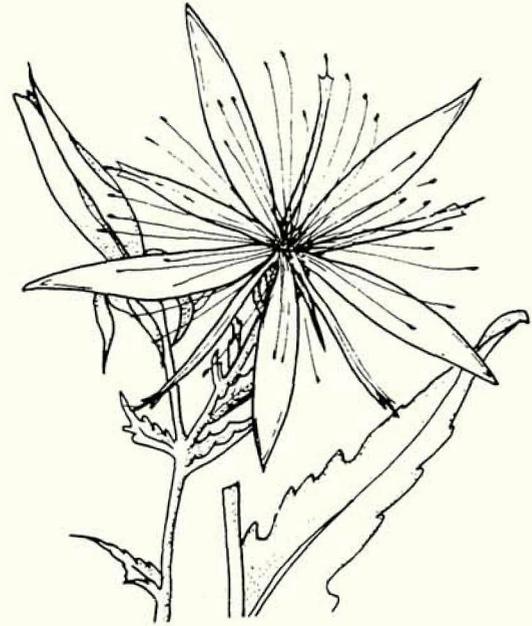
For additional information, full listing of plant species offered and order forms, contact Glenn Beagle at (801) 571-0900 or write Lone Peak State Nursery, 14650 South Prison Road, Draper, Utah 84020.

BOOK REVIEW

Sagebrush Country: A wildflower sanctuary
by Ronald J. Taylor, published by Mountain Press Publishing Company (\$12.00).

Those looking for an introduction to the plants of the sagebrush-covered areas of Utah need look no more. *Sagebrush Country* includes beautiful color photographs of roughly 200 species, with several more being described in the text. But *Sagebrush Country* is much more than a collection of photographs for Taylor discusses a wide-range of topics concerning the plants he illustrates, from habitat preferences and distribution patterns, to adaptations to a particular habitat or pollinators and the origins of a plant's

scientific name. Reading *Sagebrush Country* one becomes aware of plants as entities that interact with their environment and their pollinators, not just attractive additions to the landscape. This emphasis is enhanced by the introductory paragraphs in which Taylor discusses the major vegetation zones that occur within the sagebrush country and some of the animals that frequent it.



SMOOTH STEMMED BLAZING-STAR

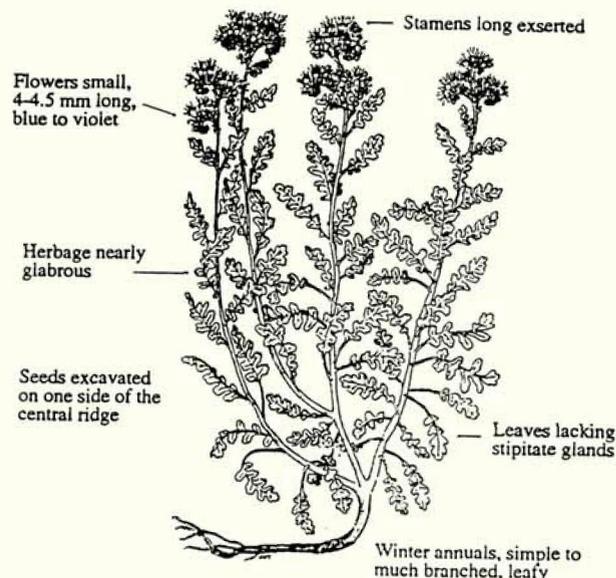
Some amateur botanists will be dismayed to find that the photographs are arranged according to family, not flower color. They should not panic, nor give up in dismay. Taylor provides a straightforward, almost non-technical, identification key to the approximately 50 families represented in his book. This, together with the glossary and illustrations of the basic terminology used to describe flowers, will enable most wild-plant enthusiasts to identify the plants they find. Investing this effort will bring additional rich rewards, for it will open the door to the identification of an even wider range of plants. Those that still find a key intimidating will discover that perusing the pictures will quickly enable them to get on "first-name" terms with the many colorful plants that grow in the sagebrush ocean of western North America. In so doing, they will appreciate why Taylor describes the sagebrush covered regions of the west as a "wildflower sanctuary".

CLAY PHACELIA

(Abstracts of two papers by Lori Armstrong)

Site Characteristics and Habitat Requirements of the Endangered Clay Phacelia

Phacelia argillacea Atwood is a narrow endemic known only from two populations on Green River Shale in Spanish Fork Canyon, Utah. Abiotic and biotic characteristics, including vegetation, physical properties and soil chemistry, of the habitat at two sites per population of *P. argillacea* were studied to define habitat requirements of the species. The sites were highly similar with respect to species composition and abiotic components. Potential habitat should be characterized by a high percentage of bare soil, slopes averaging about 70% with southeast to west facing aspects and vegetative components that include the native species *Eriogonum umbellatum*, *Mentzelia laevicaulis*, and *Stipa hymenoides*. Characteristics of occupied sites were compared with characteristics of six potential sites for both biotic and abiotic components. Statistical analyses comparing occupied and potential sites suggest that populations of *P. argillacea* may be able to exist on several of the potential sites if introduced. Relocation sites should be minimally impacted by grazing and trampling.



Phacelia argillacea

Aspects of the Biology of *Phacelia argillacea*

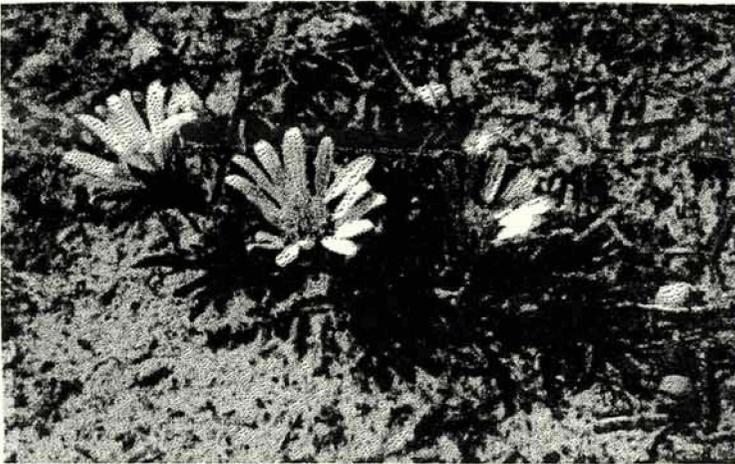
Life history and reproductive biology were studied using 323 *Phacelia argillacea* plants from a population near Tucker, Utah, over a two year period. Preflowering mortality of marked individuals of this annual plant averaged 44% over the two year period. Mortality generally occurred after plants had overwintered as rosettes. Herbivory, frost action and sloughing of the slope all contribute to the mortality rate. Protection of plants from herbivory and slope slough was observed to significantly reduce mortality. Surviving plants flower abundantly with an average of 637 flowers/plant and a potential of up to 3500 flowers/plant. Most flowers (approximately 86%) set four-seeded capsules. Insect pollen vectors, mostly bees, are required for fertilization. Seeds are dispersed short distances by upslope wind with most carried above the mother plant. No single set of experimental conditions induced more than about 20% of the seeds from the soil seedbank to germinate, thus the seedbank reserve is not likely to be depleted in any given year.

Valori Armstrong recently received her Master of Science degree from Brigham Young University for her work with *Phacelia argillacea*. These two abstracts are from papers written for her thesis. Utah Native Plant Society is proud to have provided some funding for this project .

EASTER DAISY

Jo Stolhand, editor

For those of us with "compositaphobia" (a fear of composite flowers) the genus *Townsendia*, in the family Asteraceae, could be a starting point for overcoming the terror of encountering a flower head of ray and or disk flowers. Generally speaking, the genus *Townsendia* is represented by small compact plants (pincushion size) with disproportionately large flowers. Easy to spot when blooming they are often overlooked when the flowers are gone. With *T. exscapa* the foliage can almost disappear beneath a couple of flowers with a circumference of 1 1/2 inches.



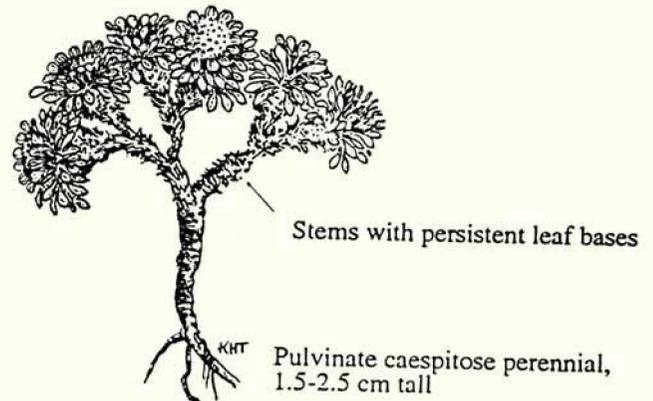
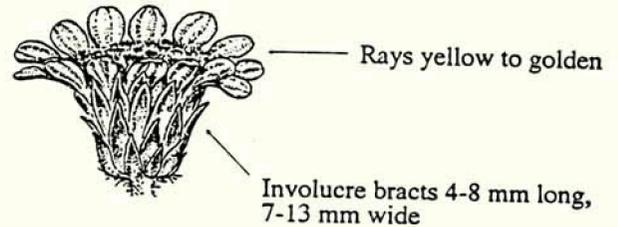
Townsendia incana

Many *Townsendia sp.* are early bloomers (March-April) hence the common name Easter Daisy. They usually grow at higher elevations and bloom soon after the snow melts. Some species, such as *T. incana*, may continue blooming into the late summer and fall.

Historically this plant was first collected in 1823 by a Dr. Richardson in Saskatchewan. The plant was named by Sir William Hooker in 1834 to honor an amateur botanist from Pennsylvania. David Townsend corresponded with many of the prominent botanists of that era and prepared specimens to ship to them.

Thomas Nuttall, while travelling with the Wyeth Expedition of 1834, collected four more species in the Rocky Mountain area.

Geographically, *Townsendia* ranges from the Columbia River Plateau to Nebraska, Southern Canada to Northern Mexico. While a few species are found scattered over much of this area, typically, *Townsendia's* are narrowly endemic. Our endangered *T. aprica* grows only in a small area of Utah. This can be an aid in identification at the species level.



Townsendia aprica

Utah has thirteen species of *Townsendia*. The disk flowers are yellow, and the ray flowers are white, pink, or yellow. Often the underside of the ray flowers have more color: yellow, red or purple. Leaves are alternate and entire. To identify to species level one needs a hand lens to compare the length of pappus of the disk or ray flowers to the actual disk or ray flower. One may also need to see the achene (seed), but this is often not a problem with flowering plants because they set seed rapidly and seed and flower are often found together on the same plant.

You will only need to see these plants a few times and they will become old friends. Easy to recognize, fun to find; you will have the gratification of identifying one of the members of the family Asteraceae.

ARTHUR H. HOLMGREN (1912-1992)

Professor Emeritus Arthur H. Holmgren, 80, died Dec 24, 1992, at his home in Logan, Utah. Holmgren was a recognized mentor, educator, researcher, authority on Western U.S. flora, plant explorer, environmentalist, conservationist, gardener, and music aficionado.

He was born Nov. 18, 1912, in Midvale, Utah, to Axel Herman and Anna Carlson Holmgren. He married Doris Edstrom on May 10, 1934. Prof. Holmgren graduated from Murray High School where he served as student body president in his senior year. He received his B.A. degree from the University of Utah in 1936 and M.S. degree from Utah State Agricultural College in 1942. Additional graduate work was done at the University of California at Berkley.

Prior to joining the staff at Utah State University, Prof Holmgren worked for the Desert Range Experiment Station near Milford, Utah, 1936-37; served as chief-of-party of the range and economic survey in Elko County, Nevada, 1937-41; and worked at the Squaw Butte Experiment Station, Harvey County, Oregon (Oregon State University and Bureau of Land Management), 1942-43. He served as professor of botany and curator of the Intermountain Herbarium, USU, from 1943 until his retirement in 1978. In the 1980s he taught at the Teton Science School, Jackson Hole, Wyoming.

He was the recipient of many honors, including Outstanding Educator in America, 1972; Robin's Award for professor of the year, 1975; 55th Faculty Honors Lecture, 1977; a special award of merit by the State Arboretum of Utah for outstanding achievements as an honored teacher, a research botanist, writer and chronicler of the unique plants of Utah in the Intermountain flora, 1983; and Jim Bridger Award, 1988.

Music and gardening were a major part of his life. He played violin in the Univ. of Utah and USU symphonies and served for many years as a leader in the Cache Valley Civic Music Association and USU's Lyceum Committee. He was an avid gardener. His gardens were unique for his selection of native species and unusual horticultural varieties, and they were a favorite showcase for local gardeners and garden clubs.

He was active in many societies, including American Institute of Biological Sciences,

American Rock Garden Society, American Society of Plant Taxonomists, Botanical Society of America, California Native Plant Society, Northern Nevada Native Plant Society, Sierra Club, Sigma Xi, Southern Utah Wilderness Alliance, Utah Native Plant Society, and Utah Academy of Sciences, Arts and Letters.

He is survived by his wife Doris, two sons, two daughters, a brother and two sisters, and eight grandchildren.

A VARIETY OF WILDFLOWERS

Press Release

American Seed Trade Association, Inc

I looked out over a field of corn and wondered at the soothing monotony of wave after wave of plants. They were nearly identical in appearance, each reaching skyward with broad green leaves and just a hint of the ears peeking out.

For agricultural purposes, it is much easier to grow a monoculture - an entire field or even acres of the same kind of plant. When farming this way the whole can be treated exactly like the parts. The same seeding techniques can be used throughout, as well as the same fertilizers, watering schedule, and harvesting methods. It is a case where the sum of the parts exactly equals the whole.

Some people treat their garden as they would a farm, with huge swaths of the same kind of plants. This is undoubtedly an efficient way to grow flowers but from an aesthetic point of view, such a monoculture is also repetitious.

With the tremendous number and variety of plants available to us today through the nursery trade, it seems a shame to limit ourselves to the same plants that we rely on year after year. Consider instead the possibility of creating a planting of wildflowers where each day and each season brings a rich variety of colors, textures, and scents, and where you can depend on the unexpected.

In planting wildflowers, we are creating a plant community rather than making a garden patch of flowers to be plugged in and pulled up year after year. Within this community, different plants will appear and disappear with the cycle of

years and seasons. Much of this fluctuation can be expected, some of it comes as a refreshing surprise.

Although it is possible to plant wildflowers for a single growing season, usually establishing a wildflower planting is a long term project and one in which the gardener can expect continual change depending on varying temperatures, soil composition and available water or rainfall. Not only will there be changes from one season to another, but also from one year to the next. Wildflowers, like people, show tremendous variation in what they like. Some like it hot, others prefer it cool. Some like it wet, others must have dry conditions. The fluctuations in weather patterns will cause your wildflower planting to have an everchanging diversity, unpredictable, but welcomed in every season.



A good mixture of wildflower seeds will include perennials, biennials and annuals, and flowers that bloom in spring, summer and early fall. During the first growing season after wildflower seeds have been planted, the majority of blossoms will come from annuals. Perennials almost always need at least two years of growth before they will bloom.

Depending on what part of the country you live in, you can expect bloom from plants such as *Gysophila elegans* (Annual Baby's Breath), *Coreopsis tinctoria* (Plains Coreopsis), *Phlox dummondii* (Annual Phlox), *Eschscholzia californica* (California Poppy), *Centaurea cyanus* (Bachelor's Button), *Papaver rhoeas* (Corn Poppy), and *Silene armeria* (Catchfly).

In some climates certain annuals such as Coreopsis, Cosmos, Corn Poppy, Cornflower and Catchfly will reseed themselves. This is particularly true in the Pacific Coast states and in those states bordering the Gulf of Mexico.

During the second year, biennials such as Wallflower and Dame's Rocket, and most perennials will begin to flower. Among the perennials that bloom during the second year are *Gaillardia aristata* (Indian Blanket), *Coreopsis lanceolata* (Lance-leaved Coreopsis), *Rudbeckia hirta* (Black-Eyed Susan), *Linum lewisii* (Wild Blue Flax), *Lupinus perennis* (Wild Blue Lupine), and *Echinacea pupurea* (Purple Coneflower).

Often one or two perennial species tend to dominate the wildflower planting. To minimize this tendency cut the flower heads of particularly aggressive species before the seeds mature. To maintain good color from the annual plants each year, you may want to reseed with either an all annual mixture or the same mixture used initially. The best way to accomplish this is to reseed in open areas in the fall or very early spring. You can increase the perennials you desire by over-seeding more of those species in the fall.

Because diversity is one of the great benefits derived from planting wildflowers, maintaining this variety of color, textures and fragrances is a primary goal. Choosing a good mixture for the initial planting can greatly enhance the diversity of an area. The least expensive mixtures usually have the least variety in the seeds offered. A good mixture should include many different kinds of plants that will bloom in different seasons. Greater diversity can also be maintained by weeding out unwanted or overly aggressive plants.

When you plant a row of marigolds you know exactly what you will get - a row of marigolds. But when you plant a mixture of wildflower seeds, the possibilities are endless. With the cycles of the seasons new flowers will pop up and bloom to please and delight as old ones drop and sleep for another year.

UNPS SEGO LILY
c/o Jo Stolhand
Utah Native Plant Society
P.O. Box 520041
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TEACHING THE ENVIRONMENT

by Andrew Boyack

We learned a bit about the environment by playing a game at our January 27 Salt Lake Chapter meeting, a game which Vern Fridley taught us. Vern is the executive vice-president of the Utah Society for Environmental Education. The game he taught us was one of the many techniques this society uses to teach people about the environment.

The game was simple. We divided into groups and each group was given samples of evergreen twigs. Through a process of comparing sample differences, we worked out a simple method of identifying each one, under Vern's direction. The method is actually the basis for botanical key identification.

The Society for Environmental Education is a storehouse of information and techniques for teaching about the environment combined with a service organization to disseminate its information to the public through programs for both children and adults. It describes its goal as "to produce a citizenry that is environmentally knowledgeable, with the ability to apply that knowledge appropriately, and dedicated to achieving an equilibrium between Quality of Life and Quality of Environment..." It is a non-profit organization staffed by volunteers.

Membership Application

New Member Renewal Gift

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Check membership category desired:

- Student/Senior\$ 5.00
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Please send a complimentary copy of the Sego Lily to the above individual.

Please enclose a check, payable to Utah Native Plant Society, and send it to:

Pam Poulsen, treasurer,
Utah Native Plant Society
P.O. Box 520041
Salt Lake City, Utah 84152-0041

(If you prefer not to cut this out of your Sego Lily, feel free to copy the membership form or simply write the information down and mail it with payment for the category of membership.)



VOL. 16 NO. 3

MAY / JUNE 1993

CALENDAR OF EVENTS

- May 08
Sat
9:00 a.m. **Primula maguirei fieldtrip.**
Meet at Brigham City at the parking lot on the southwest corner of the intersection to Brigham City and Logan. We will be stopping first to see the **Viola beckwithii** in Brigham City. Contact Brent Shipley for more information (268-2601).
- May 10
Mon
6:00 p.m. **Cache Chapter Fieldtrip**
Dr. Richard Shaw will lead a fieldtrip in the foothills of Logan. Meet at the electric substation in the mouth of Green Canyon.
- May 20-21
Th & F **Paria iris survey.**
See details under article, Wanted Posters.
- May 26
Wed
7:30 p.m. **Salt Lake Chapter Meeting.**
Doug Stone from the Natural Heritage Program will speak about **Spiranthes diluvialis**. Use the west door of the Department of Natural Resources Bldg., 1636 West North Temple, SLC. Board Meeting at 6:30 p.m.
- Jun 14
Mon
7:00 p.m. **Cache Chapter Meeting**
Edible Native Plants is the topic of the June meeting which will take place in the Logan City Mtg Room across the hall from the library.
- Jun 25-25
 T & E Conference
This is a tentative date and more information will come to you on a blue card.
- Aug 20-21 **Mushroom Hunt**
This year we will be at the Great Basin Environmental Education Center in Ephraim Canyon. Mark your calendars now and you can call Dave Okelberry for more information (968-6190)

Wildflower Hotline

Keep abreast of what is blooming in Utah. Call 581-4747.

THE NEW RANGE WAR Native vs. Introduced Species

by **Kay Asay**

Jerry Chatterton

Howard Horton

Kevin Jensen

Tom Jones

Melvin Rumbaugh

This range war probably won't be a big draw at the box office. No bellicose barroom brawls, bullets or confrontations under open skies. The combatants in this conflict dodge paper fusillades, nurse ulcers and batter each other with competing paradigms. A lot of the battles are fought in carpeted rooms where the tones are polite, the arguments become soporific and the air is conditioned and filtered.

But don't kid yourself. There's a lot at stake here, much more than when sheepherders and cattlemen noisily squared off last century. Public rangelands, which were always an ecological experiment on a grand scale, are now becoming an ecological experiment on a deliberate scale.

The debate is percolating through academic institutions and government agencies, accompanied by a blizzard of papers, memos, articles and faxes. Livestock producers have a definite stake in the outcome, although they have much less say in the matter than they did a century or so earlier. This is definitely a twentieth century range war, a feisty hybrid of economics, politics and science.

The main issue is biological diversity on public rangelands; nearly everyone agrees that more is desirable. Beyond that, however, matters become muddled and consensus thins dramatically.

In the 1930s, millions of acres of public rangelands in the West were planted to introduced species, most of them grasses that thrived on abandoned farmlands and lands scarred by drought, erosion and overgrazing. At the time, the fact that these plants weren't

indigenous to the area, or that they were planted in tracts large enough to be visible from outer space wasn't nearly as important as the fact that they healed the battered landscape. Forage for livestock was an added bonus.

Things have changed. As more of the country is slathered in concrete and asphalt, public lands are viewed as ecological treasures. The introduced grasses, once viewed as replenishing the landscape, are now criticized as interlopers. Critics claim that lush growth masks an impoverished ecosystem and that while native vegetation may not support as many cows, sheep and big game, it nourishes a richer and more diverse ecosystem, which they want back.

They might not be able to have it, but not because people aren't trying.

Perhaps the most famous (or notorious, depending on your perspective) of the nonnatives is crested wheatgrass, which had been seeded on more than 12 million acres in the West by 1981 and which probably occupies an even greater acreage today. It offers excellent grazing but many criticize these large monocultures as an assault on biological diversity, an opinion that was easy to form considering some of the gargantuan reseeding efforts in the 1950s in which crested wheatgrass carpeted the horizon in every direction, a particularly disconcerting sight in late summer when the growth of crested wheatgrass falters and turns brown. Most range managers now disavow such large-scale, single-species seedings.

"I chose to work with crested wheatgrass because of its excellent grazing qualities," says Kay Asay a geneticist with the USDA Forage and Range Research Laboratory, who has studied the grass for 18 years. But that's not all. Crested wheatgrass is easy to establish, has good-quality seed and has the ability to shrug off drought, diseases and insects, as well as

tolerating grazing. It also stabilizes sites by reducing erosion. "Although it was once seeded in monocultures, there's no reason that it can't be grown with other species, including natives," Asay says.



Crested Wheatgrass

That's not enough to assuage some critics. Crested wheatgrass is foreign. (It originated in Asia.) And one of the basic ecological principles is that native plants should fare well on sites where they originated---with the caveat that these sites haven't been altered.

Most have and that's the crux of the problem. Soils have eroded. The microclimate has changed. As a result, natives often do poorly on sites where they originally flourished and the choice is often not between introduced grasses and native plants, but between introduced species and bare erodible soil. Or between improved introduced species and cheatgrass, a particularly nefarious annual weed that has elbowed out other vegetation on millions of acres in the Intermountain West and which makes it even more difficult to establish perennial seedings.

One suggested tactic---let introduced species upgrade ranges and improve the microclimate so natives can gain a foothold.

The issue of native versus introduced species has been around for a while. Some of the first attempts at revegetation of western rangelands used native grasses. Only after these attempts failed did scientists turn to introduced species that were adapted to the altered rangelands.

Jerry Chatterton, research leader of the USDA's Forage and Range Research Laboratory who oversees a team of plant breeders, plant physiologists, range scientists and plant geneticists, views the bias against "foreign" plants as debilitating and as short-sighted as similar discrimination against humans, the product of a misplaced belief that any native plant is, ipso facto, automatically and intrinsically better than a nonnative plant.

Many people assume that a native plant has an ecological edge over a nonnative plant, the result of their adaptation to sites over eons. That's only true, if plants and sites evolved together and if the sites haven't been altered.

A concomitant belief is that a nonnative plant has aggressive and invasive tendencies that threaten to overwhelm the entire ecosystem.

Chatterton admits there is evidence for both beliefs. Weeds and pests carelessly or accidentally introduced in the past have cut a wide and devastating swath through large sections of the country. However, the USDA has stringent guidelines and procedures now guard against the introduction of any organism of this type.

In effect, plant breeders say they are able to tailor plants to survive specific sites, mimicking natural adaptation that would otherwise take thousands of years, or circumventing site restoration that would be prohibitively expensive. It may not be ideologically pure, but it works. And it works well.

There is concern that introduced plants will become naturalized and perpetuate themselves at the expense of other native species, but crested wheatgrass is an example of an introduced plant that has proved to be remarkably well mannered. It is less aggressive than critics think, in spite of its visibility. In the western Great Basin, it has seldom wandered from the rows where it was planted 40-60 years ago. It hasn't died out in spite of severe grazing and an inhospitable climate, nor has it

regenerated itself and threatened to crowd out other plants. If not already present, similar traits can be bred in other introduced plants.

Native plants that can assert themselves would definitely make for a more varied landscape, Tom Hones is studying several promising native species, including bluebunch wheatgrass, Snake River wheatgrass, Indian ricegrass and Basin wildrye. There's commercial interest in all of these species, although efforts to improve them via hybridization and artificial selection lag far behind progress with introduced species.

Jones says the evaluation of promising accessions collected by the Soil Conservation Service and other agencies is a "logical first step, but if possible we would like to move beyond evaluation and into plant breeding." This requires a resolution to the thorny question of how much human intervention is compatible with "native plants."

Natives may have more exacting planting requirements and may entail more risk than introduced species, but that doesn't mean natives should summarily be rejected, says Mel Rumbaugh, plant geneticist with the USDA. Many of the problems with natives can be solved by learning their germination requirements and by employing better seeding techniques. He also notes that any limits on introduced plants that curtail forage production on public lands could provide additional incentives to increase forage production on private lands, which are usually more fertile.

"The next 10 years are going to be very interesting," Rumbaugh says. "It's a very emotional issue. I anticipate that there will be restrictions on where introduced species are allowed because of the strong public support for reintroducing native plants, even among many scientists who view species as intact, distinct entities."

Many Americans like the idea of restoring rangelands to their "original" condition. Nurturing native vegetation could salve our conscience about a host of unnatural acts, ranging from the widening ozone hole to trammeling of native culture. Most probably envision lush, productive, low-maintenance rangelands when they think of native vegetation, or a least a chance to snatch our

pristine, wild past from the clutches of cows or the peregrinations of scientists who simply won't stop tinkering with the natural order of things.

If only that were so.

The argument that an introduced plant may be better suited to a site than a native plant often falls on deaf ears. As we become more insulated from natural rhythms, natural (read native) sells in a society with a penchant for anything "natural," whether it's crackers, shampoo or socks.

"Millions of dollars are wasted every year in attempts to re-establish native plants on sites they are no longer adapted to," Chatterton says. "This is irresponsible."

"For years I have asked to see a successful planting of native plants on more than an acre or two of rangeland. There aren't any."

Excerpted from UTAH SCIENCE, fall 1992.

THE PROBLEM WITH LISTS (especially when identifying drought-tolerant plants)

by **Larry Rupp, Extension Ornamental Horticulturist, Utah State University.** Reprinted from **Landscape Plus**, Aug 1992.

One of the unique things about people is that they like to put things in lists. We have the Top 10 This and the Top 10 That, shopping lists, lists of things to do---and lists of plants.

Making lists can be very helpful in sorting out complex groups and classifications and in communicating these ideas. If there is a list of trees classified as large, deciduous, maroon-leaved and broad-spreading, for instance, we get a pretty good image in our mind of what the tree looks like.

The problem with classifying plants into lists is that we tend to draw hard lines between categories, when in reality no such lines exist. In nature there is usually a gradual change in characteristics, and deciding where one group ends and another begins can be very tough. Even something as simple as listing crabapples according to blossom color becomes a challenge

when separating all the shades of pink, red, rose, crimson, purple, maroon and carmine. Combine these base colors with bicolored blooms and blooms that change color over time, and a simple job becomes quite complex.

It would be great to have a list categorizing all plants according to their absolute irrigation requirements. But because of the complexity of water use by plants, the best we can do is to make broad generalizations. There are many factors influencing our attempts to classify plants according to their water needs. A list of some of these would include:

The environment. Irrigation needs are affected by soil, solar radiation, precipitation, water tables, wind speed and competition with other plants. For example, a plant under the north eave of a large building would have entirely different irrigation needs from one in the open, due to differences in solar radiation and the fact that a half inch of rain may translate into 10 to 15 inches under the eave.

The lack of a "yield" concept. It is easy to measure the water efficiency of wheat, because the yield in pounds can be expressed in terms of gallons of water used to grow it. But there is no concept of yield with landscape plants. A comparison of similarly aged Ponderosa pines, for example may find one in good soil and moisture that is 30 feet tall while another is in the cleft of a rock and only three feet tall---and yet from a landscape point of view, both can be healthy and beautiful.

The lack of research. There are literally thousands of species and varieties of landscape plants (more than 600 named varieties of crabapples alone), and we simply do not have all of the information yet.

The difficulty in definitions. Is a tamarisk drought-tolerant because it sends down a taproot 50 feet to the water table to avoid water stress? Because of this characteristic, it may never experience water stress, even though it grows in a very dry environment.

The misconceptions about natives. Just because a plant is native does not mean it is water-conserving. Utah and surrounding states have dramatic environment extremes, and a plant native to one area of the state may not be adapted to another.

Should we eliminate plant lists? Of course

not! But we do need to recognize their limitations. Lists, such as those of low-water-use plants, are usually compiled from all the available scientific, empirical, experimental and natural history information that can be obtained. They are simply guidelines and will change with additional research and as new plants are introduced.

While lists may provide an excellent starting point in choosing plants for water-wise landscaping, they are not a substitute for a sound understanding of plant materials, soils, local climate, landscape management and the creative expression of these factors in the landscape.

KACHINA DAISY

Two abstracts from papers by Loreen Allphin

Habitat Requirements for *Erigeron kachinensis*, A Rare Endemic of the Colorado Plateau

Erigeron kachinensis is a rare endemic of the Colorado Plateau, Southeastern Utah. This perennial composite grows in small, isolated populations at seeps and alcoves arising along the canyon walls in Cedar Mesa Sandstone substrates. The characteristics of six *Erigeron kachinensis* sites in Natural Bridges National Monument, San Juan County, Utah, were studied to describe habitats associated with this rare species in the deep canyons of Southeastern Utah. Sites were analyzed with respect to geology, soil chemistry, physical properties, and vegetational characteristics. The alcoves studied were very saline, often with soil surfaces covered with a white crust of salt. Total living cover was significantly correlated with percent soil moisture, soil salinity, and "available" phosphorus. Kachina daisies appear to be more tolerant than associated species to differences in these abiotic factors. Most soil characteristics do not vary between the sites. The prevalent plant species on *E. kachinensis* sites were *Aquilegia micrantha*, *Calamagrostis scopulorum*, *Zigadenus vaginatus*, and *Erigeron kachinensis*. These species accounted for more than 75 percent of the total living cover in the alcoves studied. Attempts have been made to

establish *Erigeron kachinensis* on sites which appear to have the necessary habitat conditions.



Erigeron kachinensis

Demography and Factors Influencing Seed Set in *Erigeron kachinensis*, A Colorado Plateau Endemic

The demography of six population of *Erigeron kachinensis* in Natural Bridges National Monument, Utah is described. Mortality was greatest for the youngest size-classes recognized. Once established, individuals appear to have great longevity. Apparent pollination percentage is low (only about 48%) and fruit abortion rates are high (55%). Abiotic resource availability appears to have no impact on abortion rates. As determined by pollinator exclosures, *Erigeron kachinensis* require animal vectors for successful pollination. The species is apparently self incompatible: plants in pollinator exclosures set almost no seed (<1%). Few seeds (fruits) were observed to be destroyed by seed predators. It was observed through light microscopy that aborted (shriveled) achenes included remnants of nonliving embryos. It seems likely that fruit abortions are tied to recessive alleles exposed in sexual recombination. Seed set is limited primarily by genetic load and incomplete pollination.

Loreen Allphin recently received a Master of Science degree from Brigham Young

University. The preceding two abstracts were part of her master's thesis. The Utah Native Plant Society was proud to be a small part of this project by contributing to the study.

WANTED POSTERS

When the Utah Native Plant Society made the decision to produce wanted posters for plants that had not been sighted in Utah for many years, it was the consensus of the group that we would probably never have to pay reward money. However, in March, after seeing a wanted poster, Linda Bohs called to report having seen *Cipripedium calceolus* (Yellow Lady's Slipper) the previous year in the Wasatch Mountains. Ben Franklin, co-chairperson of the Endangered Plant Committee for UNPS and botanist for the Natural Heritage Program, will confirm the identification when the plants bloom in early June. The Society is elated and confident that they will be presenting a check to Linda in June.

Because of interest in finding the Paria iris, the BLM Cedar City District Office and Kanab Resource Area Office are hosting a two day search May 20-21. Members of the Utah Native Plant Society have been invited to join the survey trip. Meet at the Kanab Resource Area Office, 318 North First East, Kanab, at 8:00 am to travel to West Clark Bench. Please contact Lori Armstrong, BLM Botanist, at (801) 896-8221 if you are interested in joining the search party.



Iris pariensis

ARTHUR H. HOLMGREN

by Leila Shultz

Arthur H. Holmgren, noted botanist and long-time friend of the Utah Native Plant Society, died peacefully at his home on December 24, 1992. Doris Edstrom Holmgren, his wife and life-long companion, was at his side.

Professor Holmgren leaves a legacy of exuberance and botanical knowledge with his many professional colleagues, students, and friends. He came to Utah State University as a graduate student in 1941, completed his master's degree and began his appointment as Curator of the Intermountain Herbarium in 1943, a position he continued until his retirement in 1978.

Born to Swedish immigrants, Axel Herman Holmgren and Anna Carlson Holmgren, in Midvale, Utah, in 1912, Arthur Holmgren built his career and fame in the landscape of the Intermountain west. His father built violins, raised asparagus and celery, and developed a thriving landscape business while his mother kept the family entertained with her Swedish humor. From an early age, Art developed a finely-tuned aesthetic sense, a love of music, and a first-hand appreciation for the intricacies of plant development. His robust sense of humor helped carry his wealth of knowledge to appreciative students.

Few professors can claim as wide a sphere of influence as Arthur Holmgren. His students can be found throughout government agencies and academic circles. In Utah, it would be difficult to find a Forest Service or National Park Service office that did not house someone who has studied with Art or with one of his students. And if you mention his name, you are sure to spark some interest and perhaps a flood of stories.

Arthur Holmgren's academic career began at the University of Utah where he vacillated between majors in music and botany and an extramural interest in wrestling. He attributed his final move to a botanical career to Professor Walter H. Cottam, a noted ecologist and specialist in the genus *Quercus* (oaks). Romance was a part of those years as well. While an

undergraduate, Arthur fell head-over-heels in love with Doris Edstrom--the woman who would become the mother of their four children.

Love of the land and a need to work took Art and Doris to Elko, Nevada, where a series of events would lead them back to northern Utah. In 1939 (?), Art began working for the U.S. Grazing Service, the agency that would eventually become the Bureau of Land Management. Art's knowledge of plants and enthusiasm for learning soon caught the attention of Bassett Maguire, a young professor of botany at Utah State University. After meeting in the field near the Ruby Mountains of Nevada, Art and Bassett began a lifelong collaboration. In 1941, Art went to Utah State University, working with Bassett and completing his master's degree in botany. When Bassett was offered a position at the New York Botanical Garden, he accepted on the condition that Arthur Holmgren be hired as his replacement as curator of the herbarium.

Arthur Holmgren was appointed curator in 1943 and spent the next forty-five years developing the collection of plants of the Intermountain Herbarium and teaching plant taxonomy. He completed a *Flora of Northeastern Nevada* in 1943 and his *Vascular Plants of the Northern Wasatch* was published in 1946. His major life's work, however, was his contribution to the *Intermountain Flora*. Initiated with Bassett Maguire in the 1950s, Arthur continued collections through the 1960s, when formal collaboration began with the New York Botanical Garden. When Art's son Noel graduated from Columbia University with a Ph.D. in botany, the real work of pulling together complete descriptions of the 5000 or so species in the *Intermountain Flora* was begun. Joining forces with Arthur Cronquist, a former classmate, and student James Reveal, the long-term collaboration was begun. The project grew as the family expanded. When Noel Holmgren married Patricia Kern, he had no idea they would soon be collaborators---she as his boss at the New York Botanical Garden and another author for the *Flora*.

Few classes on campus were as sought-after as Holmgren's lectures and labs on the taxonomy of native plants. He was honored as

PRESIDENT'S MESSAGE

by Brent Shipley

Outstanding Educator in America in 1972, with the Robin's Award for professor of the year in 1975, gave the 55th Faculty Honors Lecture in 1977, and was presented with a special award of merit by the State Arboretum of Utah, University of Utah, for ".outstanding achievements as an honored teacher, a research botanist, writer, and chronicler of the unique plants of Utah in the *Intermountain Flora*," in 1983. By the time Arthur Holmgren retired in 1978, enrollment in his Taxonomy of Wildland Plants was limited by space. Even with the largest lecture hall on campus (then the Business building auditorium), students were turned away.

Art was active in many societies, including the American Institute of Biological Sciences, American Rock Garden Society, American Society of Plant Taxonomists, Botanical Society of America, California Native Plant Society, Northern Nevada Native Plant Society, Sierra Club, Sigma Xi, Southern Utah Wilderness Alliance, The Utah Academy of Sciences, Arts, and Letters---and, of course, The Utah Native Plant Society. He was also a member of the Utah State University Arboretum Committee and served for many years as leader in the Cache Valley Civic Music Association and USU's Lyceum Committee.

Colleagues remember Arthur Holmgren for his exuberance, knowledge of individual plants, love of music, and masterful gardening skills. Friends remember gracious times around a table with music in the background, sampling Swedish breads and coffee, and listening to tales of the latest plant discoveries in the intermountain west. The home gardens he developed were spectacular in form and floral diversity. Many unusual natives and carefully selected biotypes were sheltered in the confines of his garden. In the fall of 1991, Art and Doris hosted a meeting of the UNPS at their home of Country Club Drive, regaling us with stories of individual species. We shall miss those times together, and shall carry the good works and contributions made by Arthur Holmgren to generations to come.

A memorial service for Arthur Holmgren was held on April 30, 1993 in the USU Taggart Student Center---a gathering of botanists and friends.

Wow! Are you as amazed as I am that another two months have passed? Summer is nearly here and UNPS has a number of fun, exciting, and educational activities planned for the months ahead. Some of these activities are still in need of members to volunteer and assist in the planning and execution.

One activity that is totally under control (being organized by Dave Okelberry and those who are assisting him) is the annual UNPS mushroom hunt and campout. Dave has put an extraordinary amount of work into organizing this activity and it promises to be at least as good as the one held last year. I probably should say "better than last year's" but that is a pretty big order to fill. Dave has been contacting last years participants and nearly everyone is saying that they will be there again this year and that they are bringing at least one friend (we had over 100 participants last year). I would like to say a special thanks to Dave, not only for his efforts in organizing the mushroom hunt, but because his unselfish efforts bring him into contact with a lot of people who had not previously heard of UNPS. You can bet they know about UNPS now and that they have a very positive impression of it.

A special thanks also to our chapter presidents and others who lead the local programs and plan the monthly activities. A lot of effort is put forth in providing interesting activities for the local members. These leaders are still open to suggestions and offers to assist in keeping the local chapters functioning.

We have a number of activities that would normally be held during the summer months that are not yet fully organized. For some of these it is a matter of not having someone to organize and carry them forward. If you would like to assist in this area please let one of the officers know.

We have contributed to the Red Butte Gardens wildflower hot line again this year. We have other projects that we have and will make financial contributions to in order to support our purpose of helping others to appreciate the natural setting and plants of the

area. Our contributions help some very worthwhile projects that might not, otherwise, be possible.

I'm looking forward to a very active and exciting summer with you.



King Woody Aster

DRUG PLANT POACHING

by Robert Fitts

Modern medicine men in the field have found new drugs that are hailed as a salvation from many of the diseases of the day. One research group has found three different compounds that are active against the AIDS virus. The plants are from different rain forests in Asia. The rosey periwinkle of Madagascar is the source of the drug vincristine. In its promotional literature, the Nature Conservancy touts the value of vincristine, used to treat childhood leukemia, as a great example of how important maintaining biodiversity is.

In a cooperative agreement between business and conservation, the Merck company has set up a contract with a government sponsored organization in Costa Rica (INBio) to look for valuable compounds in rain forest plants there. The contract calls for 10% of the million dollar grant to be used for conservation of the forest, along with 50% of the royalties on the profits of any drugs discovered. This is probably a step in

the right direction, and other countries are looking at similar agreements as a way not only to preserve natural areas, but use them to build their economies. Some conservationists look back on the discovery of vincristine with anger. Millions of dollars made from the drug, but not a penny has gone to Madagascar or conservation.

While some look at new plant derived products as the salvation of the forest, there are historical and modern dangers of extinction to plants that are rare if they are known to be medicinal. In ancient times, a type of fennel called silphion, was used as an effective oral contraceptive. It grew in the hills near the city of Cyrene in North Africa. So valuable was this plant to the ancients that it was stamped onto the face of coins and became the symbol of Cyrene. As an item of trade, it became more valuable by weight than gold, and was exported around the Mediterranean. Attempts to cultivate silphion failed (as happens with many wild plants). The ancient world lost an important form of birth control when the plant was collected to extinction.

Taxol is a drug recently approved by the FDA for the treatment of ovarian cancer. The Pacific yew in the old growth forests of the northwestern states is the source of this product. The drug is extracted from the bark, so the trees are sacrificed in the process of bark collection. It takes 3-12 trees to make enough taxol for one patient. Bristol-Meyers will make enough of the product for 12,000 patients this year. With 90% of the old growth forests already cut, the habitats for yew trees is limited. A native yew conservation council has been set up to fight for the trees. The forest service controls harvest of the bark, but bark poachers have already been caught. Fortunately, pacific yew can be cultivated and Weyerhaeuser and others have set up nurseries to provide for future supplies of Bark.

While the yew in the Pacific Northwest may not be in danger of extinction, the existence of plant poachers threatens species in other areas. In fact, the native yews of the state of Himchal in India have declined since the discovery of taxol. Other plants in Himchal are even worse off. Rauwolfia serpentina, used to control blood pressure, has become extinct there, and Costus speciosus, which is used to make steroidal drugs,

TWIGS IN WINTER
Feb Meeting of SL Chapter

by **Andy Boyack**

In the winter landscape, shrubs, bushes and trees show grey, brown and mauve colors above the snow. The green leaf coverings of other seasons are gone. The plants all look alike. An examination of the twigs on these plants, however, reveals characteristic differences by which the species can be identified as demonstrated by Alyce Hreha and Bill Wagner at the UNPS monthly meeting on February 25.

Alyce pointed out that twigs in winter have various buds, the appearance, shape and arrangement of which is quite distinct for each species. The bark of the twig is marked with distinctive scars which were left when the leaves fell off the previous fall. A regular botanical identification key could be prepared using these distinctions. None has been prepared for Utah to our knowledge, but I am sure Alyce could write one if she had the time. Keys have been published for Montana and parts of Oregon and Washington.

Bill Wagner had collected branches and twigs from two dozen different species of shrubs and had them laid out and numbered on tables for us to examine. We were given handouts with all the names of the shrubs that were on the table, and were then asked to individually match the name with the numbered samples on the table. Afterward Bill identified each of them and described their characteristic features. The writer matched up somewhat less than half of them correctly.

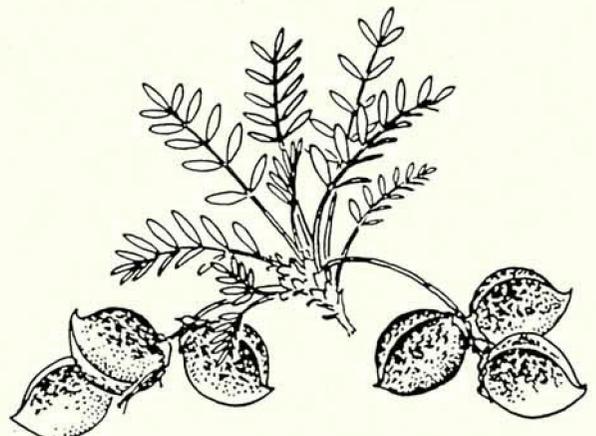
The plants collected represented a variety of plant species. There were gymnosperms (conifers) such as bristlecone pine, lodgepole pine and juniper. Among the angiosperms (true flowering plants) were some with alternate leaves and some with opposite leaves. The position of leaves is often a primary key to plant identification. Alternate leaves were represented by such plants as Oregon grape, oak, sumac, birch and cottonwood. Opposite leaves were represented by maple, box elder, elderberry, dogwood and mountain lover.

MARCH MEETING
SALT LAKE CHAPTER

by **Andy Boyack**

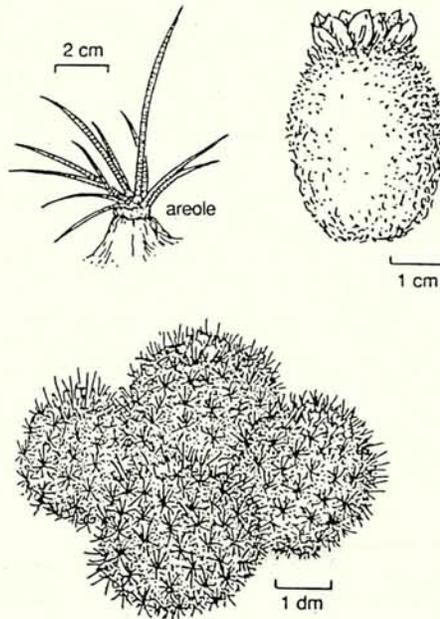
The Utah Native Plant Society extends its sympathy to Vard Jones who is recovering from bypass surgery. Vard Jones and Maxine Martz were to have told us about Dr. Cottam and the **THURSDAY SABBATH CLUB**. This was a club that devoted every Thursday to an unplanned all day outing to explore anything that occurred to them; rock hounding, botany, biology, geology, history, or whatever, according to Dick Hildreth.

Pam Poulson joined Dick Hildreth to describe plans for enlarging Red Butte Gardens, plans which are even now under construction. Their scope is amazing. We have become accustomed to the present Red Butte Gardens along Red Butte Creek and have enjoyed the new development there; amphitheatre, the ponds and waterfalls, flower displays, and stage for concerts. The new plans go way beyond this. An area twice as large as the present gardens is even now being developed south of the creek where the nature trails are now. There will be a visitors center, conservatories and several specialized gardens. A new parking lot is under construction at the visitors center and a new entrance to the Gardens is being constructed from Wakara Way which will replace the present Fort Douglas entrance.



W A N T E D

Clustered Barrel Cactus or Cotton Top *Echinocactus polycephalus*



\$100 REWARD

(ONE TIME REWARD OFFERED BY THE UTAH NATIVE PLANT SOCIETY)

Height: to 2-3 dm Width: 1-2 dm Flower: Yellow

This is a state-rare (not endangered) barrel cactus reported, but not definitely known, from the west slope of the Beaver Dam Mountains in Washington County and from "near Kanab" in Kane County. Another large barrel cactus known from the west slope of the Beaver Dam Mountains and which could be mistaken for Cotton Top is *Ferocactus acanthodes*; it can be distinguished by its' larger size, tendency not to cluster, and the following characters:

Echinocactus polycephalus - stems subglobose, 1-30; fruit and stem tip densely wooly

Ferocactus acanthodes - stems cylindrical, generally 1; fruit and stem tip not wooly.

If you see this cactus carefully note the location and contact either of the following agencies as soon as possible:

Larry England, Botanist
U.S. Fish and Wildlife Service
(801) 975-3620 FAX (801) 975-3626

Ben Franklin, Botanist
Utah Natural Heritage Program
(801) 538-7223 FAX (801) 538-7315

UNPS SEGO LILY
c/o Jo Stolhand
Utah Native Plant Society
P.O. Box 520041
Salt Lake City, UT 84152-0041

Non-Profit Org.
U.S. Postage
PAID
Salt Lake City, Utah
PERMIT No. 327

Address Correction Requested

is nearly extinct. Ephedra and Dioscorea were once common, but with medicinal plant poachers in the hills, they can now be found only after intense searching. The Indian government has banned export of six endangered plants, and has a committee on medicinal plants. Even with these recent changes, there is no commercial cultivation of these medicinal plants, which can be the only final answer for preservation.

In South Africa, sangomas (witch doctors) have been arrested collecting medicinal herbs to sell. The problem has forced the trade underground. In Cape Town, the government has begun nurseries to supply herbs for the sangomas. This is not only important to protect wild plants, but as a source of medicinal plants for researchers in the future.

Plants used for commercial drugs in the United States now come from 34 families, and are the basis for 25% of the drugs presently on the market. The number of plants used for traditional medicine is not known, but a large number. It has been said that of every 125 plants species, one will have some type of active drug. Many of these can be true friends to mankind.

Medicinal properties of plants can lead to their extinction or preservation. Its up to human friends to save them.

Membership Application

New Member Renewal Gift

Name _____

Street _____

City/State _____

Zip _____ Phone _____

If Gift, from: _____

Check membership category desired:

- Student/Senior\$ 5.00
- Individual\$ 10.00
- Family\$ 15.00
- Supporting\$ 30.00
- Corporate\$ 30.00 and up
- Life\$250.00

Please send a complimentary copy of the Sego Lily to the above individual.

Please enclose a check, payable to Utah Native Plant Society, and send it to:

Pam Poulsen, treasurer,
Utah Native Plant Society
P.O. Box 520041
Salt Lake City, Utah 84152-0041

(If you prefer not to cut this out of your Sego Lily, feel free to copy the membership form or simply write the information down and mail it with payment for the category of membership.)



VOL. 16 NO. 4

JULY / AUG 1993

CALENDAR OF EVENTS

July 30-31
Fri. & Sat

Sensitive Plants of the Tusher Mountains.

Join botanists and plant enthusiasts for some cool hiking in the Tusher Mountains east of Beaver, Ut. We will have a dutch oven dinner on Friday night so we need you to RSVP. Call Jo Stolhand to make those reservations (521-0069). This year we plan to do more hiking than driving and at an elevation above 9,500 feet so start getting acclimated now. Most of us will camp at the Big John Flat primitive campground but one could also get accommodations in Beaver. See map to campground in this issue. Cache chapter members wishing to carpool should contact Robert Fitts (753-5613).

Aug 19-21
Thur-Sat

Mushroom Hunt

This year we will explore the Wasatch Plateau above Ephraim. We begin Thursday evening with a slide show and lecture by Dr. Frank Anderson. See this issue for more details and RSVP to Dave Okelberry (968-6190).

Wildflower Hotline

Keep abreast of what is blooming in Utah. Call 581-4747.

Members are invited to submit original articles and or black and white botanical illustrations for publication in the **SEGO LILY**. Send typewritten manuscript or disk to Se-go Lily, UNPS, POB 520041, Salt Lake City, Utah, 84152-0041.

PRESIDENTS MESSAGE

by **Brent Shipley**

Did you notice that we are now half way through 1993. I hope you have enjoyed it, so far, as much as I have. However, if your feeling short-changed, the best part is still ahead, and there is time for you to become involved in UNPS. The Threatened and Endangered (T&E) Conference is being held on 20-21 July, and the 1993 Annual UNPS Mushroom Hunt is being held on 19-21 August. Both activities promise to be super events, with opportunities to become more familiar with the flora of Utah and to forge new friendships.

It seems that the plight of sensitive plants (T&E species and other species of concern) is not being given the priority that it deserves in the State of Utah. Government funding that was initially intended for study of sensitive plant species is being diverted to other uses. UNPS contributes to some plant studies and we are convinced that it is money well spent. However, there are many worthwhile projects that are not being funded, and the diversion of government funding is a matter of major concern for amateur and professional botanists alike. Members of UNPS should be actively looking for opportunities to point out that preserving the natural diversity of Utah's flora is important. Utah's floral diversity is part of our natural heritage and should be preserved for future generations.

Remember: You deserve to have fun this summer. If you don't it's not UNPS' fault. See you at the summer events.

1993 Annual UNPS Mushroom Hunt August 19, 20 and 21

The 1993 Annual UNPS Mushroom Hunt will be held at the Great Basin Environment Education Center (GBEEC), 10 miles up Ephraim Canyon from Ephraim, Utah. The GBEEC is a facility of Snow College and is a teaching facility used for ecological studies. This is a super facility and we are very pleased that the college has been so generous in letting us use it for our annual mushroom hunt. Some

accommodations are available near the facility, but UNPS members and guests are also encouraged to use the available campsites in the canyon. We have been assured there are plenty.

The "experts" will be joining us again this year. Dr. Kent and Mrs. Vera McKnight (author and illustrator of the Peterson Guide to Mushrooms), Dr. Frank Anderson, Dr. Ardean Watts, Dr. Brent Palmer, and Dr. Al Tate will all be there. And, as if our own experts are not enough, Dr. Orson K. Miller (author of Mushrooms of North America) will also be joining us. The McKnights and Dr. Miller are world renown experts on mushrooms.

The attendees at this years UNPS mushroom hunt will include both connoisseurs and reluctant tasters. Most of those who attended last years event (100 plus) are planning to attend again this year and bring friends.

A slide presentation on mushrooms will be presented on Thursday evening. Tex Parker, Ardean Watts and some other first-class (and some not so first-class) entertainers will be participating in a campfire program and impromptu performances. If YOU have a talent (and everyone does) you too are invited to share it.

Our class room for the weekend will cover most of the Manti-LaSal National Forest.

All Friday and Saturday meals will be provided. Al Tate and Brent Palmer are returning by popular demand to tantalize and nourish us with their famous and delicious dutch oven cooking.

The cost for members will be \$10.00 per adult and \$5.00 per child (under 10). Non-member guests will pay \$15.00 per adult and \$10.00 per child. The meals alone are worth that. UNPS memberships are available for \$10.00 per year.

If there is enough interest, UNPS will have event T-shirts made up and available for purchase. If T-shirts are made up, only those who placed orders in advance (state your size and color preference) will be assured of getting one. Extras will be on a first-come, first-served basis.

To register for the 1993 Annual UNPS Mushroom Hunt and order your T-shirt, call Dave Okelberry at 968-6190.

Green Canyon Field Trip

The Cache Chapter of UNPS sponsored a field trip to Green Canyon on 10 May 1993. Dr. Richard Shaw led the expedition up the mountain and enriched our understanding by sharing his knowledge of the spring flora. One of the participants was a former student who hadn't seen Dr. Shaw in nearly 25 years. For the members and guests of the Cache Chapter, as well as those individuals who traveled from SLC, it was a very enjoyable outing. The following is a partial list of the plants that were identified.

bigtooth maple
yarrow
wild onion
service berry
sagebrush
loco weed
utah milkvetch
balsamroot
balsamroot
mountain mahogany
alderleaf mahogany
thistle
blue-eyed Mary
bastard toadflax
long-stalk spring parsley
wall flower
leopard lily
stickseed
little sunflower
water leaf
Dyer' woad
Utah juniper
woodland star
gromwell
desert parsley
desert parsley
bluebells
phlox
chokecherry
false Solomon's seal
white snowberry
speedwell
pine violet
mule ears
foothill death camas

Acer grandidentatum
Achillea millifolium
Allium sp.
Amelanchier alnifolia
Artemisia tridentata
Astragalus ciberius
Astragalus utahensis
Balsamorhiza macrophylla
Balsamorhiza sagittata
Cercocarpus ledifolius
Cercocarpus montanus
Cirsium sp.
Collinsia parviflora
Comandra umbellata
Cymopterus longipes
Erysimum Wheeleri
Fritillaria atropurpurea
Hackelia patens
Helianthella uniflora
Hydrophyllum capitatum
Isatis tinctoria
Juniperus osteosperma
Lithophragma parviflora
Lithospermum ruderales
Lomatium Greyi
Lomatium triternatum
Mertensia oblongifolia
Phlox longifolia
Prunus virginiana
Smilacina racemosa
Symphoricarpos albus
Veronica sp.
Viola purpurea
Wyethia amplexicaulis
Zigadenus paniculatus



Illustration of *Artemisia tridentata* by Leigh Brown

UNPS MUSHROOM HUNT ON BOULDER MOUNTAIN

by Gina Levesque

My family and I were not prepared for the wonderful experiences awaiting us when we accepted David Okelberry's invitation to join the Utah Native Plant Society's mushroom field trip to Boulder Mountain. We knew nothing of field mushrooms and went only for the camping and fishing. We were late in arriving and caused some concern since we were carrying the sourdough for the early morning breakfast. After breakfast, which was wonderful, we had a beautiful day to enjoy the area. My husband Ray, and 13 year-old daughter, Myra, decided to go fishing. Dr. Al Tate and his son Eric, who spent all of their time cooking and preparing to cook, offered to lend them the use of their canoe. They caught and kept 6 beautiful trout, releasing several others, while I met some wonderful people hiking the surrounding area in search of the elusive mushrooms.

On the second day of scoping for mushrooms I arrived back at camp to place my finds on the table. Dr. McKnight was cataloging and grouping the specimens. I showed him some mushrooms that I had discovered earlier which no one in my group could define. He seemed very interested. I asked Dr. McKnight if the mushrooms were edible and was informed that they were not. In my disappointment I could not understand his enthusiasm. He searched through files and his wife, Vera, pulled out some of her beautiful drawings for comparison. Dr. McKnight said it was a wonderful specimen and asked if he might keep it. Later I understood the excitement when it was determined that this was a mushroom that had never before been found in Utah and only the year before on this continent. It had been originally found in Austria by a Dr. Moser and turned out to *Cortinarius canabarpa*. The "luck of the Irish" and placing a foot beside, instead of on top of the specimen, was responsible for the find.

We had a wonderful experience as did everyone involved. Below are some excerpts from others who were present:

Mountain appetites are always sharp - even more so when dutch ovens produce a tasty menu, complimented by sourdough bread. Canned pork and beans were never mentioned, let alone opened thanks to the cooking skills of Al and Eric Tate.

Honey Bee, a 5 1/2 pound Belgian watchdog, owned by the Okelberrys protected her domain by keeping an 80 pound Siberian Husky at bay. Early Saturday morning (5:30), Honey Bee was busy opening all of the plastic garbage bags. Her jet black hair gave her away - until she turned around and one could see white stripes running down her back! Honey Bee's masquerader then proceeded to devour a full bar of Ardeen Watts soap. Ardeen is pleased to report a Ponds-scented skunk is roaming around Barker Reservoir.

Dr. Frank Anderson spotted a "new specimen" near camp. On first examination it appeared to be a type of puffball. Dr. Anderson carefully dug the fungus from the ground as Dave Okelberry looked on. When Frank discovered that the mushroom had a "strange" texture, and indeed some of it stuck to his fingers, he realized he had found the rare *Sourdough buckwheatensis*. It made a nice splash on the back of David's shirt as he tried to elude Frank's overhand pitch.

Ruth & Bert Atwater

My favorite experience during the "shroom hunt" was Tex Parker's singing. As I sang along and tried to remember the lyrics to those wonderful songs, it brought back sad and wonderful memories from the early 50's. Since most people sit and watch TV in the evenings these days, it was a real reminder of just how much we can lose if we're not careful.

Bob Frix

At Dave Okelberry's near insistence, my husband, Tom, and I decided to join in on this year's mushroom hunt. With a little trepidation, we turned off the asphalt near Escalante and

started towards Barker Reservoir. The Quaking Aspen forest near the reservoir made the drive exceptionally beautiful, and that was after driving through Red Canyon and Bryce Canyon! My senses were on overload already. We found the group, just where they said they'd be, and received a warm welcome, delicious barbecued chicken, and Pierre's bread. To top it all off, there was live entertainment and a light show in the sky.

Saturday morning, after a breakfast of sourdough pancakes, Tom and I took off to find some mushrooms and see more of Boulder Mountain, which is about the size of Rhode Island, I think. We tried to travel quickly to cover some new areas. It always lifts my soul to be out in the mountains, and this time was no exception. We marveled at some deer, broad-winged hawks, a falcon, and a pesky raven tormenting one of the hawks. The biggest treat in the wildlife department was seeing a family of wild turkeys cross the trail and strut up the hillside. Two adults led five chicks, the youngsters being about the size of skinny chickens, and the adults much larger, though thinner than the grocery store variety. We didn't care if we found any mushrooms or not - the hike already had its rewards. We did find a few puny specimens, which we dutifully brought back for identification. It was fun to watch Dr. McKnight in action, and see how the pros figure out what they are looking at. The array of beautiful fungi laid out on the table was truly amazing to me. Where did you guys find all of those, anyway??? Maybe someone could give away a few secrets on where and how to look.

The day was capped by a delicious steak dinner, sans mushrooms in my case, but delicious, anyway. Thank you Dave Okelberry, Brent Palmer, Dr. Kent McKnight, Al Tate, Frank Anderson, Ardean Watts, Tex, and everyone else who made our first official mushroom foray successful.

Kathy McFarland

We had a great time on the August Mushroom Hunt at Barker Lake. We can't think of a better place to spend a few days during the heat of August than at 10,000 feet on the Aquarius Plateau, where it is 75 during the day and 55 at night. We found out after we

got home that it was near 100 degrees in Salt Lake City every day while we were gone.

The mushroom hunts led by Ardean Watts and Frank Anderson were a great learning experience, and having Kent and Vera McKnight there for two days really topped it off, though as beginning mushroomers we didn't understand a lot of the fine points they were discussing with the more knowledgeable mushroomers.

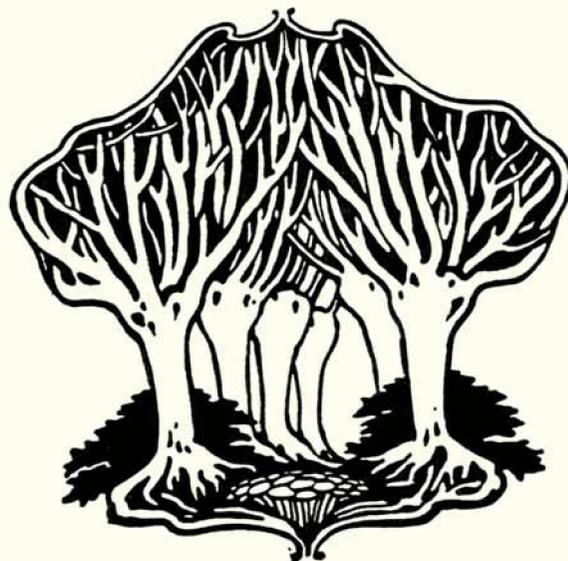
Besides the mushroom hunting, we really enjoyed the people. Even though there were over 100 of us, it seemed more like a group of 25, considering how friendly everyone was and how smoothly everything went. Thanks to Dave Okelberry for his hard work and for keeping everything and everybody organized. A really big thanks to all the cooking crew who absolutely knocked themselves out putting on one great feast after another. There is nothing like a great dutch oven dinner followed by lounging around the campfire and singing along with Tex. How does he remember all those songs?

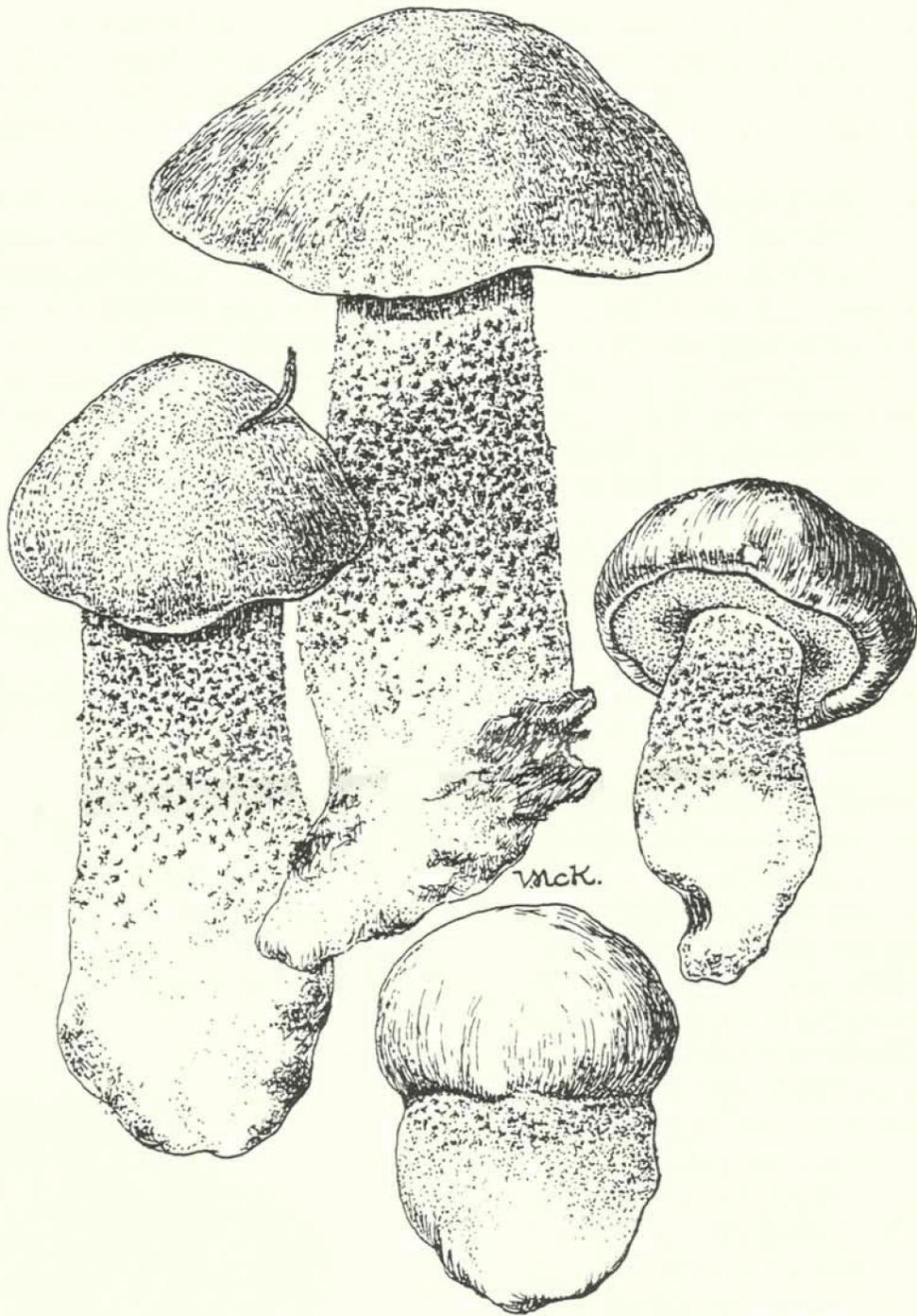
Bill and Cindy Thomas

A special thanks to the volunteers! Thanks too, to everyone who participated. Without you it would have been a failure.

Mark your calendars for August 21-22, 1993. Bring your friends and see you in Sanpete County.

Dave Okelberry





Leccinum insigne

8 August 1992
Boulder Mtn., Utah

Boulder Mountain Mushroom Hunt 1992

I. Mushrooms and Other Fleshy Fungi

<i>Agaricus</i> sp.	Field mushroom
<i>Agaricus sylvicola</i>	Forest mushroom
<i>Amanita pachycolea</i>	
<i>Amanita vaginata</i>	Grisette
<i>Armillaria albolonaripes</i>	Scaly bracelet
<i>Armillaria mellea</i>	Honey mushroom
<i>Armillaria straminea</i>	Yellow bracelet
<i>Auricularia auricula</i>	Brown ear fungus
<i>Cantharellus cibarius</i>	Chanterelle
<i>Catathelasma ventricosum</i>	Swollen-stalk
<i>Clavicornia pyxidata</i>	Crown coral
<i>Collybia acervata</i>	Cluster coin-cap
<i>Collybia dryophila</i>	Forest friend
<i>Coprinus atramentarius</i>	Inky cap
<i>Coriolus subchartaceus</i>	Violaceous polypore
<i>Cortinarius adalberti</i>	
<i>Cortinarius anomalus</i>	
<i>Cortinarius canabarpa</i> var. <i>coeruleus</i>	Moser
<i>Cortinarius collinitus</i>	Greased webcap
<i>Cortinarius gentilis</i>	Goldband webcap
<i>Cortinarius</i> (subgenus <i>Dermocybe</i>) <i>croceus</i>	
<i>Cortinarius</i> (subgenus <i>Leproclybe</i>) sp.	
<i>Cortinarius</i> (subgenus <i>Telamonia</i>) sp.	
<i>Cortinarius</i> sp.	Webcap
<i>Tremella mesenterica</i>	Witch's butter
<i>Flammulina velutipes</i>	Velvet shank; Winter mushroom
<i>Fomes igniarius</i>	Bracket fungus
<i>Fomitopsis pinicola</i>	Bracket fungus; Redbelt
<i>Ganoderma applanatum</i>	Artist's fungus
<i>Gomphidius subroseus</i>	Slimecap
<i>Guepinopsis alpinus</i>	Jelly cup
<i>Gymnopilus</i> sp.	Flamecap
<i>Gyromitra</i> (<i>Helvella</i>) <i>infula</i>	Hooded false morel
<i>Hebeloma</i> sp.	Poison pie
<i>Hygrocybe conica</i>	Conic waxycap
<i>Hygrophorus chrysodon</i>	Golden-tooth waxycap
<i>Hygrophorus erubescens</i>	Pink waxycap
<i>Hygrophorus pudorinus</i>	Blushing waxycap
<i>Hygrophorus pudorinus</i> var. <i>pallida</i>	Pale blushing waxycap
<i>Inocybe boltonii</i>	
<i>Inocybe geophylla</i> var. <i>lilacina</i>	Lilac earthblade fiberhead
<i>Inocybe</i> sp.	Fiberhead
<i>Laccaria laccata</i>	Deceiver
<i>Lactarius deliciosus</i>	Saffron milkcap
<i>Lactarius uvidus</i>	Damp milkcap
<i>Leccinum aurantiacum</i>	Aspen scaberstalk
<i>Leccinum insigne</i>	Aspen scaberstalk
<i>Leccinum scabrum</i>	Birch scaberstalk

Lycoperdon perlatum
Lyophyllum connatum
Lyophyllum montanum
Lyophyllum sp.
Marasmius pallidocephalus
Marasmius sp.
Melanoleuca evenosa
Omphalina postii
Otidea sp.
Oudemansiella longipes
Panaeolus sp.
Pholiota squarrosa
Pholiota squarrosoides
Pluteus petasatus
Pluteus cervinus
Polyporous elegans
Ramaria botrytis
Ramaria lagentii
Ramaria sp.
Rhizopogon rubescens
Russula near virescens
Russula queletii
Russula spp.

Sarcodon imbricatus
Sarcosphaera crassa
Scutellinia scutellata
Stereum rufum (also S. rufa)
Stropharia ambigua
Suillus variegatus
Tricholoma flavovirens
Tricholoma intermedia
Tricholoma saponaceum
Tricholomopsis platyphylla
Tricholomopsis rutilans
Tyromyces leucospongia

II. Lichens

Cladonia gracilis
Cladonia pyxidata
Parmelia chlorochroa
Parmelia conspersa
Peltigera canina
Xanthoria elegans (also Caloplaca elegans)
Rhizocarpon geographicum

III. Slime Molds

Fuligo septica
Lycogala epidendron
Leocarpus fragilis

Gem puffball
Snow funnel
[Pinwheel mushroom similar to Horsehair]
Pinwheel
Cavalier [similar to Yellowish Cavalier]
Tiny navelcap
Yellow ear

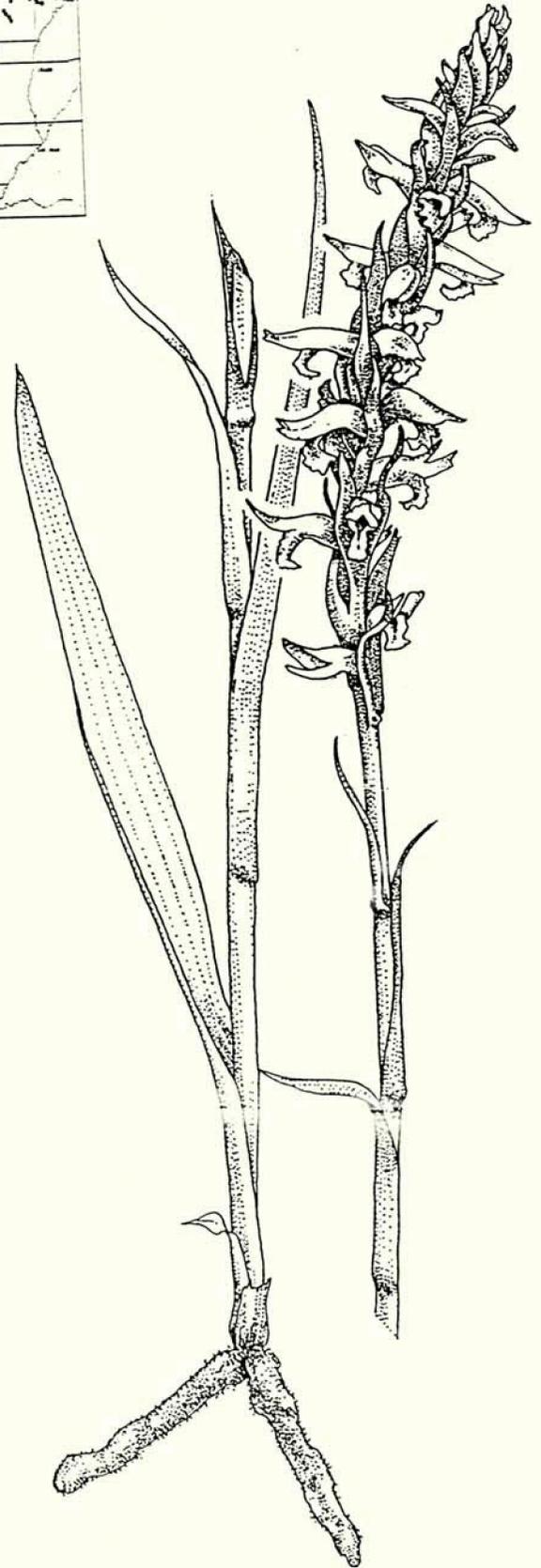
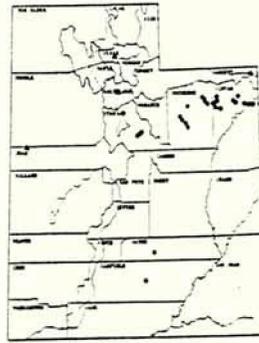
Mottlegills
Shaggy scalecap
Sharpscales
Sawdust mushroom
Deer mushroom
Black-footed polypore
Cauliflower coral
Golden coral
Coral mushroom
False truffle
Green brittlecap
Brittlecap
[Several--about a dozen--Brittlecap species were collected but not fully identified]
Scaly hydnum
Violet star cup
Eyelash cup
Red tree brain
Fringed ringstalk
Slippery cap
Cavalier
Whitegill cavalier
Soapy cavalier
Broadgill
Red rider
White-sponge polypore

Ladder lichen
Pixy cup lichen
Loose ground lichen
Boulder lichen
Dog lichen
Orange shield Lichen
Map lichen

Scrambled egg slime mold
Wolf's milk slime mold
Insect eggmass slime mold

SPIRANTHES DILUVIALIS
 Discussed at May SLC Meeting

Following the presentation by Doug Stone, director of the Utah State Natural Heritage Program, comments made were "informative", "well-organized" and "superb handouts". For those of us illiterate in botanical jargon and unfamiliar with *Spiranthes diluvialis* (Ute Ladies' Tresses), the illustrations, maps and slides were very informative. So for those who missed the meeting here are a few of the salient characteristics for distinguishing *Spiranthes diluvialis* from *Spiranthes romanzoffiana*, a general map of known locations, and Doug's suggestions for involvement by UNPS and its individual members.

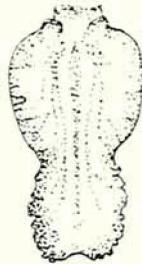
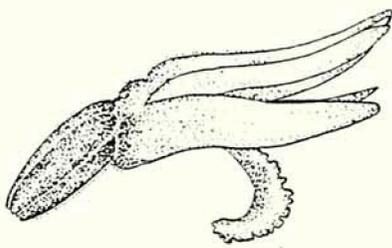


Geographic Range:

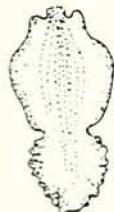
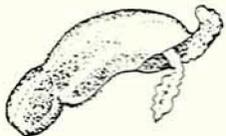
Spiranthes diluvialis: Low elevations (mostly below 6,500 feet) in the Colorado River drainage and eastern Great Basin of Utah and (historically) eastern Nevada; disjunct locally along the eastern front of the Rocky Mtns. in Colorado.

Spiranthes romanzoffiana: Boreal region of North America; high elevations (rarely below 8,500 feet) in Utah and Colorado.

Flower



Spiranthes diluvialis (x4)



Spiranthes romanzoffiana (x4)

Possible Avenues for Involvement

1. Continued inventory work to locate additional populations on the Wasatch Front.
2. Monitoring of known populations from year to year.
3. Review and comment on environmental impact studies currently being conducted by the Central Utah Water Conservancy District for the CUP Irrigation & Drainage System.
4. Funding for an in-depth monitoring study on Diamond Fork to include tracking the growth, reproduction and fate of individual plants over time, and investigating the relationship between stream flows and groundwater levels on the floodplain.

Member wishing to be involved in any of these projects should contact Doug Stone, Natural Heritage Program (538-7217).

EFFECTS OF UNGULATE GRAZING ON CASTILLEJA AQUARIENSIS

by David Whittekiend

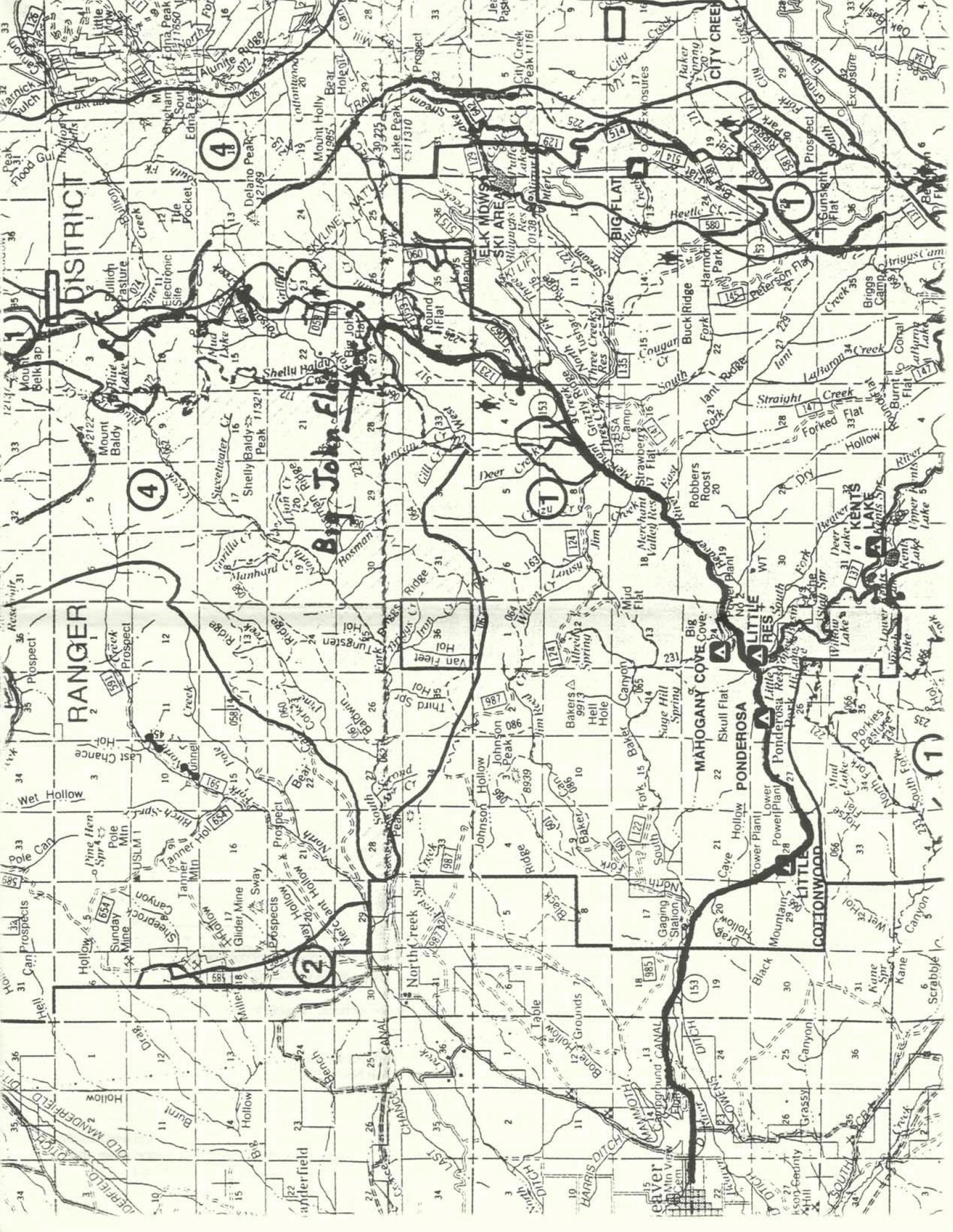
Aquarius paintbrush is an endemic restricted to the Aquarius Plateau and Boulder Mountain of south-central Utah. Effects of grazing were determined by monitoring individual plants in 4 populations, 2 protected from grazers and 2 open to grazing by domestic livestock and big game animals. Eighteen small grazing exclosures were used to evaluate effects of grazing at different times during the growing season. Antelope do not appear to use this plant to any significant degree. Mule deer do graze the plant when it is close to forest escape cover. The bulk of the grazing use observed on Aquarius paintbrush appears to be made by sheep and cattle. Ungrazed plants were significantly larger than grazed plants, whether one considered height, width or number of stems per plant. Fruiting success of individual plants was significantly greater when plants were grazed after flowers had appeared rather than before flowering. Ungrazed plants usually set more fruits than plants grazed after the onset of flowering. Soils do not differ

significantly between sites where paintbrush is now present and nearby sites of comparable elevation, aspect and vegetation cover where the species is now absent. A deferred-rotation or rest-rotation grazing system should afford the Aquarius paintbrush sufficient relief from grazing to ensure healthy plants and regular seed production.

The above article is an abstract from a thesis written by Dave Whittekiend for partial fulfillment of a master degree at Brigham Young University (Dec 1992).



CASTILLEJA AQUARIENSIS



DISTRICT

RANGER

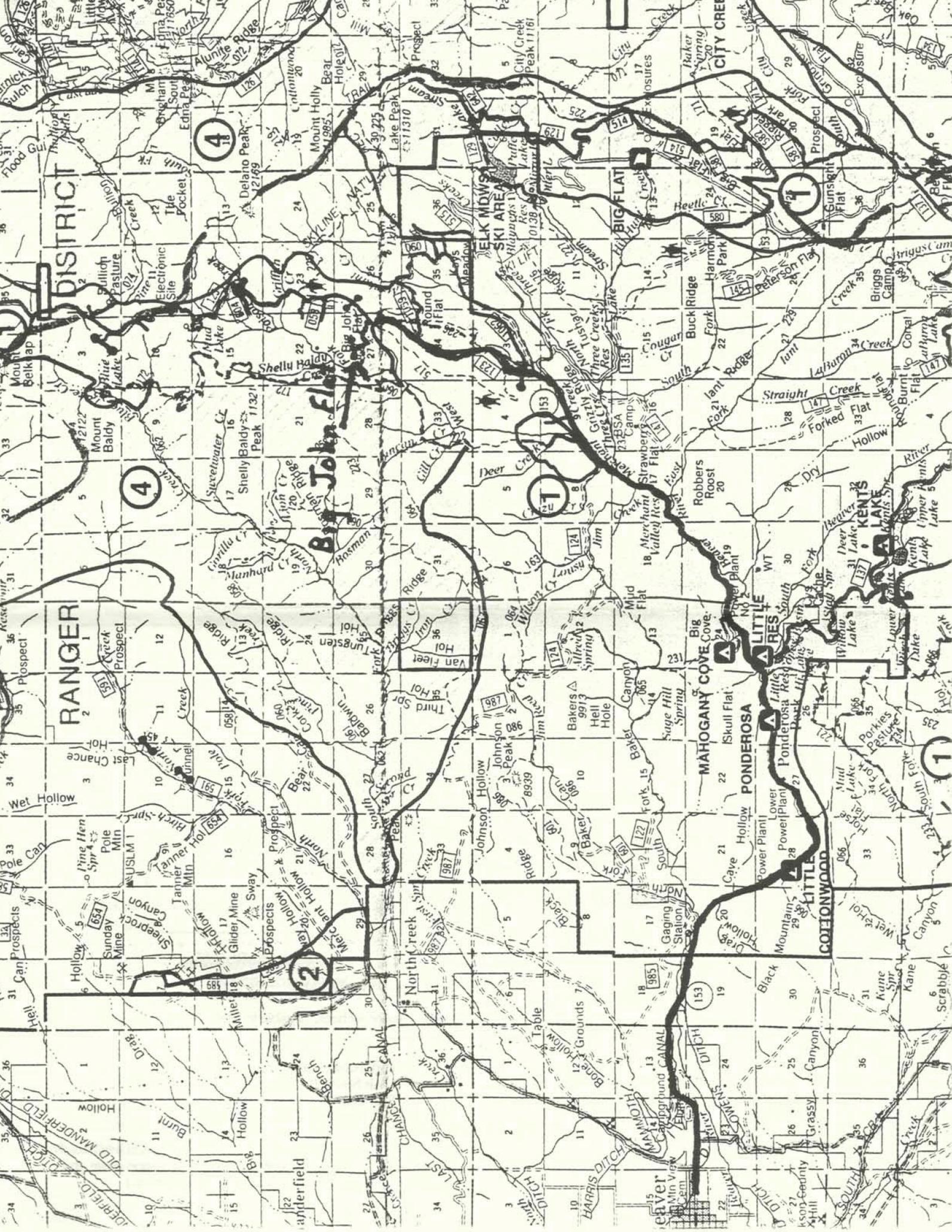
John Day

ELK MOUNTAINS
SKI AREA

MAHOGANY COVE
PONDEROSA

COLETONWOOD

KENTS LAKES



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mail it with payment for the category of membership.)



VOL. 16 NO. 5

SEPT / OCT 1993

CALENDAR OF EVENTS

Sept

Cache Chapter Meeting.

Watch for flyer. There is the possibility of a new meeting place and schedule. Contact Robert Fitts for more information (753-5613).

Sept 22
Wed.
7:30 pm

Salt Lake Chapter Meeting.

Joan Livingston is putting together a great program for us. Details will be on the blue cards. Use the west door of the Department of Natural Resources Building, 1636 West North Temple, Salt Lake City. Board Meeting at 6:30 pm.

Oct

Cache Chapter Meeting.

To be announced by flyer.

Oct 22
Wed.
7:30 pm

Salt Lake Chapter Meeting.

Details will be announced by blue card.

Nov 17
Wed.
7:30 pm

UNPS State Meeting.

This is our annual meeting to elect new officers and chairpersons. This is also a social event to get acquainted with other members. Please plan to attend and if anyone is interested in serving as an officer or as a committee chairperson please contact Brent Shipley (268-2601).

Members are invited to submit original articles and or black and white botanical illustrations for publication in the **SEGO LILY**. Send typewritten manuscript or disk to Sego Lily, UNPS, POB 520041, Salt Lake City, Utah, 84152-0041.

HOW PLANTS GET THEIR NAMES AND WHY NAMES CHANGE

by James R. Shevock

The classification of life forms is as old as the human need to communicate. For survival, our early ancestors had to discover which plants were useful for food, medicine, and other purposes, and then to transfer that knowledge from one generation to the next. They had to create their own "taxonomy" in order to name or at least to identify useful plants. Unfortunately, in many cases the knowledge gained by early cultures has been lost to us since it was handed down orally.

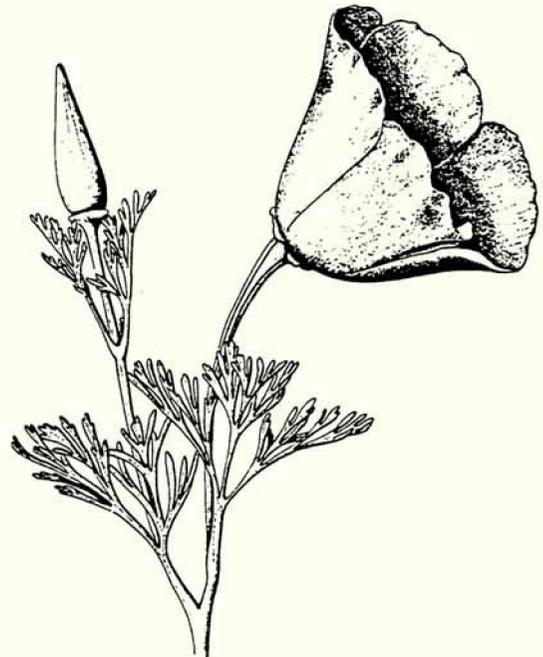
Centuries ago, in such separate places as China and Greece, herbalists documented the uses of plants and their understanding of the organization of nature. Since they relied on narrative statements to describe each organism, early classification systems were quite cumbersome. These systems did not accommodate relationships or groupings of organisms with similar traits. As botanical exploration became more common, thousands of plants from other continents were discovered by the 1700s, and old systems of classification became unworkable. Imagine how difficult it would be to differentiate species of pine, oak, or maple with long narrative statements. A new solution was required.

Botanical Nomenclature

The system used today to name and differentiate organisms was standardized and applied by Swedish biologist Carolus Linnaeus (Carl von Linné) in the mid-eighteenth century. Under the Linnaean system of classification, each organism is given a binomial name that is similar in format and function to "last name, first name." The "last name" is called the genus and the "first name" is called the species. A "middle name" also may be used to denote a variety or subspecies. The generic and specific name together form the scientific name. Botanical nomenclature is independent of zoological nomenclature.

The scientific name for California poppy, for example is *Eschscholzia californica* Cham.

Eschscholzia is the generic name and *californica* is the specific epithet. "Cham." is the abbreviation for botanist A.L. Chamisso, who described and named the plant. No scientific name is complete without the author citation, since this provides the reference point to the name published in the scientific literature. The system ensures that each generic name is unique to a single genus, and within a genus only a single species can have a given specific name.



Eschscholzia californica Cham. was described and named by the Russian botanist, A.L. Chamisso for J.E. Eschscholtz, his colleague and companion on the Russian ship, Rurik. Drawing by Helen M. Gilkey.

Taxonomy is strictly for our convenience, and disciplined order is essential if we are to clearly communicate our observations of the biological world. The language used as a basis for naming the botanical world is Latin. At the time of Linnaeus, Latin was the classical written language for law, medicine, and diplomacy through out Europe and was widely understood and used by learned individuals. Latin also was a neutral language, since it was not the spoken language of any European country, and it was common to both scientific and religious

institutions. To this day, the language used for validating scientific names, regardless of the national origin of the taxonomist, is Latin. There are, however, specific rules that must be followed to ensure that taxonomists worldwide describe new entities (taxa) in a consistent fashion. The rules are set forth in *The International Code of Botanical Nomenclature* (ICBN). More on rules later.

History of International Botanical Congresses

Beginning in 1864, a series of botanical congresses was held in an attempt to formulate a generally accepted process by which plants would be named. In 1905 the First International Botanical Congress met in Vienna. The results of that congress were published, and the ICBN was adopted by congress members. Early this century, however, there was ongoing disagreement between American plant taxonomists and their European counterparts regarding applications of the code. The major differences hinged on the use of Latin and acceptance of the type specimen.

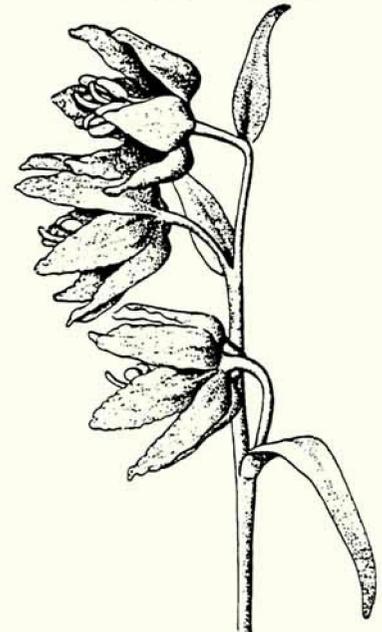
After a sixteen-year hiatus, the Fourth Botanical Congress was held in 1926 in Ithaca, New York, the first such meeting held in the United States. By the Fifth Congress, in Cambridge, England, in 1930, a compromise between American and European botanists finally had been reached. The key compromise introduced the "type method" into legal botanical nomenclature. This was a significant concept, since it assigned by reference a single herbarium specimen to the original description and published name. This nomenclatural voucher is called the "type specimen" or "holotype." Establishment of a holotype was designed to remove ambiguity around what the author had described when providing a new botanical name to science. It also provided a permanent reference for future botanists to study the specimen on which the name was based.

The Eighth Botanical Congress was held in Paris in 1954. The ICBN was published in English, French, and German in a single volume. Prior to this time the ICBN was published only in English. The Thirteenth Congress Was held in Sydney, Australia, in

1981, the first to be held in the southern hemisphere. At the conclusion of the Fourteenth Congress of 1987 in Berlin, the ICBN once again was published only in English, although publication in other languages was encouraged. The Fifteenth Congress is scheduled for Tokyo in 1993, and will represent the first time the meeting has been held in Asia.

Prior to and during each congress, members propose modifications (referred to as recommendations) to the ICBN. These recommendations are debated, amended, and voted on by congress members for incorporation into the code. Compromise is the general approach, and major changes to the ICBN are infrequent. Occasionally a rule is dropped, clarified, or revised slightly.

Fritillaria lanceolata is in a genus, *Fritillaria*, in which there have been few name changes. Drawing by Helen M. Gilkey.



Why Plant Names Change

Nature is made up of biological units called species. While sometimes difficult to define, evolutionary biologists generally consider a species to be a group of organisms that share a common ancestor and are reproductively isolated from other related groups. Plant taxonomists, on the other hand, consider the species to a hierarchical category between the genus and subspecies as defined in the ICBN.

Much emphasis is placed on knowing exactly what to call a particular plant, yet it may be difficult to establish a "positive identification."

Complicating the task is the fact that scientific names may change. Most of us know our common California wildflowers by certain names, and we are shocked when we learn that a name is no longer valid. It often seems that just when we finally learn a plant's name, some botanist has changed it. While name changes may seem arbitrary and capricious, however, there are specific rules and a well defined process for changing plant names to better reflect an improved understanding of taxonomic relationships.

Lumpers and Splitters

Differences among closely related plants can be morphological, genetic, chemical, or ecological. The critical issue concerns the significance of observed differences within the taxonomic group under study. Some botanist ("lumpers") adopt the conservative view that differences must be major before a new species is recognized, while others ("splitter") favor a more liberal view. In a sense, the existence of a species distinct from others in a group is at least partly in the eye of the beholder. Evolution within a group of plants occurs at different rates and by different routes. So the question becomes: When has a particular entity progressed far enough along an evolutionary path that botanist decide it is a new species worthy of its own specific name? This is where disagreements often occur.

The two approaches to classification also differ in the ways in which they deal with circumscription. For example, the number of species may remain constant, but they may be moved or combined in different ways. Both of these situations can result in name changes.

Some plant groups have received more intense study than others. Most taxa were first described from a handful of herbarium specimens by a taxonomist who may not have seen the plant in the field. Continued field collecting and research may suggest that some named species are better represented as varieties or subspecies, while some varieties and subspecies may be reinterpreted as valid species in their own right.

A third scenario can occur when a botanist determines that species, subspecies, or variety is

not a distinct entity (taxon), and therefore not worthy of recognition. This situation happens often with named species about which we know little. Some species have proved to be unworthy of recognition once field work has demonstrated that they were based on a specimen of an abnormally large or depauperate population. Whether a researcher's approach leans towards lumping or splitting, it is generally based on that person's knowledge of that group of plants and his or her application of the taxonomic hierarchy.

Other Reasons for Name Changes

Name changes also may occur when plants are moved into small or larger taxonomic units. In his treatment of the evening-primrose family (Onograceae), Jepson originally treated the farewell-to-spring species in the genus *Godetia* and the lobed-petaled species in the genus *Clarkia*. Lewis and Lewis, in their 1955 monograph, favored a broader circumscription; therefore, when combined, *Clarkia* becomes the legitimate name over *Godetia* due to priority of publication as described in the ICBN. For those species of *Godetia* never named before as a *Clarkia*, Lewis and Lewis had to make new name combinations to accommodate them. So *Godetia deflexa* (Jeps.) Lewis and Lewis. Note that it is the same species in nature, but the species has a different name due to its new taxonomic placement.

Camissonia refracta (formerly *Oenothera refracta*) and *Oenothera deltooides* subsp. *cognata* are now in different genera based primarily on differences in stigma morphology. Illustrations courtesy of the *Jepson Manual*.



In another example from the Onagraceae, Munz treated all of the evening-primroses in *A California Flora* in the genus *Oenothera*. When Peter Raven completed his monograph of this group in 1969, he concluded that the evening-primroses were best treated as two genera, and he resurrected the previously legitimate genus name *Camissonia* to accommodate the capitate stigma species, while *Oenothera* retained those species with four linear lobed stigmas. Here again, some new name combinations were required when several *Oenothera* species were transferred to *Camissonia*.



Potentilla campestris. This genus has received several different treatments in the past which have resulted in its being "lumped" with or "split" from other genera by different authors. Illustrator unknown.

Conserved names, approved by the Botanical Congress, are incorporated into the ICBN as an appendix. A good example of conserved family names are those not ending in "aceae." These names include the Compositae (Asteraceae), Cruciferae (Brassicaceae), Gramineae (Poaceae), Leguminosae (Fabaceae), and Umbelliferae (Apiaceae). While these names are available, most floras now utilize the family name based on the type genus instead of the older descriptive name. Besides the family names that are conserved, the ICBN also lists hundreds of conserved generic names.

Sometimes a recent name change fails to receive wide acceptance by botanists. The question generally asked is "what is the evidence for the change?" The most recently used name is not necessarily the best or most valid. Again, one must look at the taxonomic history of the plant group, along with the current understanding of its evolution and its relationships to other taxonomic ranks. A good rule of thumb to follow, when reasons to split or lump are of equal value, is to retain existing nomenclature.

We should all keep an open mind when one of our favorite plants has been lumped into a broader taxonomic unit, split into a narrower taxonomic unit, or simply called by a different name. Botanical names will continue to change as long as plant taxonomists continue to obtain more detailed information on our native flora. Let us not allow the name changes to cloud our vision, but see them as reflecting a growing understanding of our botanical world and the intricacies of plant evolution and species diversity.

Conserving Names

The ICBN also has a provision for conserving names. Conserved names generally are restricted to species of major economic importance. The ICBN states the "in order to avoid disadvantageous changes in nomenclature of families, genera, and species entailed by strict application of the rules, and especially of the principle of priority, several names have been 'conserved' and must be retained as useful exceptions. Conservation aims at retention of the names which best serve stability of nomenclature."

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UINTA MOUNTAINS FIELD TRIP

JUNE 26, 1993

FLOWER LIST

These flowers were identified between Soapstone and Shady Dell campgrounds on the Mirror Lake highway.

Scientific Name	Family	Common Name
<i>Agoseris glauca</i>	Asteraceae	Mountain Dandelion
<i>Antennaria anaphaloides</i>	Asteraceae	Pearly Pussytoes
<i>Antennaria</i> sp.	Asteraceae	Pussytoes
<i>Arnica cordifolia</i>	Asteraceae	Heartleaf Arnica
<i>Crepis</i> sp.	Asteraceae	Hawksbeard
<i>Erigeron flagellaris</i>	Asteraceae	Trailing Daisy
<i>Senecio integerrimus</i>	Asteraceae	Lambstongue
<i>Senecio multilobatus</i>	Asteraceae	Uintah Groundsel
<i>Mahonia repens</i>	Berberidaceae	Oregon Grape
<i>Hackelia floribunda</i>	Boraginaceae	Showy Stickseed
<i>Cynoglossum officinale</i>	Boraginaceae	Houndstongue
<i>Mertensia</i> sp.	Boraginaceae	Bluebell
<i>Cardamine</i> sp.	Brassicaceae	Bittercress
<i>Lonicera utahensis</i>	Caprifoliaceae	Utah Honeysuckle
<i>Stellaria jamesiana</i>	Caryophyllaceae	Starwort
<i>Pachystima myrsinites</i>	Celastraceae	Mountain Lover
<i>Sedum debile</i>	Crassulaceae	Opposite-leaved Stonecrop
<i>Sedum lanceolatum</i>	Crassulaceae	Common Stonecrop
<i>Equisetum arvense</i>	Equisetaceae	Horsetail
<i>Arctostaphylos patula</i>	Ericaceae	Green-leaf Manzanita
<i>Geranium richardsonii</i>	Geraniaceae	Richardson Geranium
<i>Phacelia heterophylla</i>	Hydrophyllaceae	Varileaf Phacelia
<i>Allium</i> sp	Liliaceae	Wild Onion
<i>Erythronium grandiflorum</i> (in seed)	Liliaceae	Glacier Lily
<i>Fritillaria atropurpurea</i> (in seed)	Liliaceae	Leopard Lily

<i>Smilacina stellata</i>	Liliaceae	False Solomon Seal
<i>Streptopus amplexifolus</i>	Liliaceae	Clasping Twistedstalk
<i>Veratum californicum</i>	Liliaceae	Skunk Cabbage
<i>Zigadenus</i> sp.	Liliaceae	Death Camas
<i>Epilobium</i> sp.	Onagraceae	Willowherb
<i>Calypso bulbosa</i>	Orchidaceae	Fairy Slipper
<i>Corallorhiza maculata</i>	Orchidaceae	Spotted Coralroot
<i>Habenaria dilatata</i>	Orchidaceae	White Bog Orchid
<i>Habenaria hyperborea</i>	Orchidaceae	Northern Bog Orchid
<i>Pinus ponderosa</i>	Pinaceae	Ponderosa Pine
<i>Gilia aggregata</i>	Polemoniaceae	Scarlet Gilia
<i>Eriogonum heracleoides</i>	Polygonaceae	Whorled Buckwheat
<i>Lewisia triphylla</i>	Portulacaceae	
<i>Lewisia pygmaea</i>	Portulacaceae	Least Lewisia
<i>Dodecatheon alpinum</i>	Primulaceae	Alpine Shootingstar
<i>Chimaphilia umbellata</i>	Pyrolaceae	Pipsissewa
<i>Pyrola</i> sp.	Pyrolaceae	Wintergreen
<i>Aquilegia flavescens</i>	Ranunculaceae	Yellow Collumbine
<i>Delphinium nuttallianum</i>	Ranunculaceae	Nelson Larkspur
<i>Thalictrum fendleri</i>	Ranunculaceae	Fendler Meadowrue
<i>Ceanothus velutinus</i>	Rhamnaceae	Deer Brush
<i>Amelanchier alnifolia</i>	Rosaceae	Serviceberry
<i>Fragaria</i> sp.	Rosaceae	Strawberry
<i>Prunus virginiana</i>	Rosaceae	Chokecherry
<i>Lithophragma parviflora</i>	Saxifragaceae	Woodlandstar
<i>Mitella pentandra</i>	Saxifragaceae	Fivestar Miterwort
<i>Collinsia parviflora</i>	Scrophulariaceae	Blue-eyed Mary
<i>Penstemon</i> sp.	Scrophulariaceae	Penstemon
<i>Veronica americana</i>	Scrophulariaceae	American Speedwell

A special thanks to Dr. Ty Harrison who led this fieldtrip for identifying the plants and for lessons in biogeography. The following notes were submitted by Andy Boyack:

A large Ponderosa Pine growing on the north slope was called to our attention by Ty. In past geological times when Utah climate was different, there were no Ponderosa Pines in Northern Utah, but they were plentiful in Southern Utah (and still are). Over time the Ponderosa Pine spread northward and has now reached the Provo river valley in the

Uintas, but has not yet been found on the Weber River drainage to the north. The Manzanita (*Arctostaphylos patula*) which is common in southern Utah has also spread northward and is now found in the Uintas. Ty found them growing on the same north slope as the Pine.



sweeping over a terrain bereft of windbreaks.



Castilleja parvula var. *parvula*
Drawing by Kaye Thorne

TUSHER MOUNTAIN FIELDTRIP

by **Andy Boyak** and **Jo Stolhand**

They were just white spots across a very deep canyon. Moving spots. We had been watching for them as we traversed the alpine tundra on Mt. Delano in the Tushar Mountains. There had been signs: the tracks, and the long white hair caught in the dwarfed vegetation. Now, lying at the edge of the canyon we could watch the mountain goats graze their way up the far side.

We had come to the Tushars for the Threatened and Endangered Plant Fieldtrip. Only an hour earlier and a 1000 ft. below we had photographed and admired the endemic Tushar Paintbrush, *Castilleja parvula*. Below, there had been patches of snow where winter winds had built drifts, but here near the top the snow had been gone for awhile. Flowers had blossomed and were ripening seeds in the short summer season of the alpine tundra. The ground still showed signs of the tilling done by pocket gophers; a maze of tunnels dug beneath winter snow often ending abruptly at a boulder. Mats of plants clung tenaciously to the hillside and kept low to avoid the winds

Moving back down Mt. Delano, Kevin Sanchez, biologist for the USFS, spotted tracks and the scat of a mountain lion. Other eyes were perhaps tracking the mountain goats.

Portions of the Tushar Mountains east of Beaver, Ut. show exposed volcanic rock such as tufts probably formed during a period of volcanism in western Utah 30 million years ago. The mountains are high with peaks rising over 12,000 ft. The UNPS fieldtrip in search of sensitive species was conducted in these mountains July 30 and 31.

Our exploration in the vicinity of Mt. Delano led by Tony Valdes, Land Manager for the Beaver District of the Fish Lake National Forest, found two plants listed as class II on the Federal Register of Threatened and Endangered Plants. These were the Tushar Paintbrush (*Castilleja parvula*), and Creeping Draba (*Draba sobolifera*). Many other high elevation plants were found such as the mat-forming Moss Campion (*Silene acaulis*), and (*Phlox pulvinata*). Also we saw Gooseberry, (*Ribes montigenum*), Yellow Evening Primrose (*Oenothera flava*), Least Lewisia (*Lewisia pygmaea*), Rock Columbine (*Aquilegia scopulorum*), Kittentails (*Synthesis pinnatifida*), and Purple Avens (*Geum triflorum*).

Big John Flat, where we camped, is a high elevation meadow bordered by Spruce forests and is typical of many areas in the Tushar Mountains. According to Tony Valdes these areas have been grazed by cattle and sheep for the past 100 years. Overgrazing has occurred causing deterioration in the plant growth and plant survival in these areas. The Forest Service and other agencies have attempted to alleviate the damage. In the 60's many of the steeper slopes were terraced to prevent further erosion. Also at this time many areas were reseeded and log fences were built to control grazing. At the present time programs are being developed to limit the seasonal grazing loads and to provide fallow years for plant life to recover. It was interesting to note that grazing is at present only 17% of what it was in the 50's.

We were fortunate to have several expert botanists on this trip including Tony Valdes of the Beaver Ranger District, Ben Franklin of the Natural Heritage Program, Ty Harrison from Westminster College, and Lori Armstrong from the BLM.

Friday the field trip covered the alpine area west of Mt. Delano and on Saturday we explored the south slopes of Mt. Holly.

Friday evening Brent Shipley cooked a great dutch oven dinner, complete with chicken, potatoes, and vegetables. Apricot and rhubarb cobblers were prepared by Jo Stolhand.

LATE SEASON BLOOMS

by Jo Stolhand

Heading for the high country often offers a second chance to see spring flowers that you missed at a lower elevation. A July 4 hike to Red Pine Lake in Little Cottonwood Canyon meant hiking a mile in snow this year. But it was worth the effort, because, pausing to rest on a slope from which wind and sun had worn the snow, we found the illusive Steershead (*Dicentra uniflora*). Previous experience had taught me to look on slopes with sagebrush, but here it was at an elevation much too high for sagebrush and long after I expected to find it blooming.

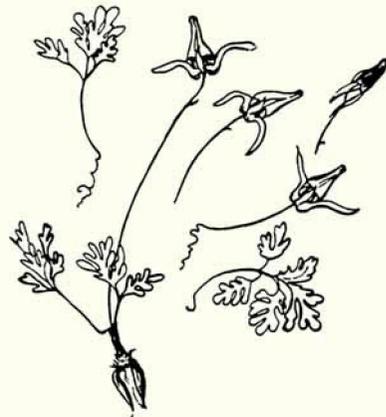


Cypripedium fasciculatum
Drawing by Kaye Thorne

August 15 found Joan Livingston and myself hiking to Lake Blanche at about 10,000 feet in Big Cottonwood Canyon. We were going to see the Brownie Ladyslipper (*Cypripedium fasciculatum*) though we knew it was late for it to be blooming. Walking around Lake Blanche we found Sego Lilies (*Calochortus nuttallii*) in bloom. The Sego Lily blooms in late May to early June on the foothills of the Wasatch. So here was another second chance.

We found the *Cypripedium* and as we suspected the blooms were spent, but we hadn't missed them by more than a week or two. Keith and Kathy Wallentine had been up in this area earlier and located and mapped close to a thousand plants.

In rock crevices on the north side of the lake there are Hummingbird Flowers (*Zauschneria*) blooming. Also watch for *Smelowskia* and other high elevation plants.



Dicentra uniflora

UNPS SEGO LILY
 c/o Jo Stolhand
 Utah Native Plant Society
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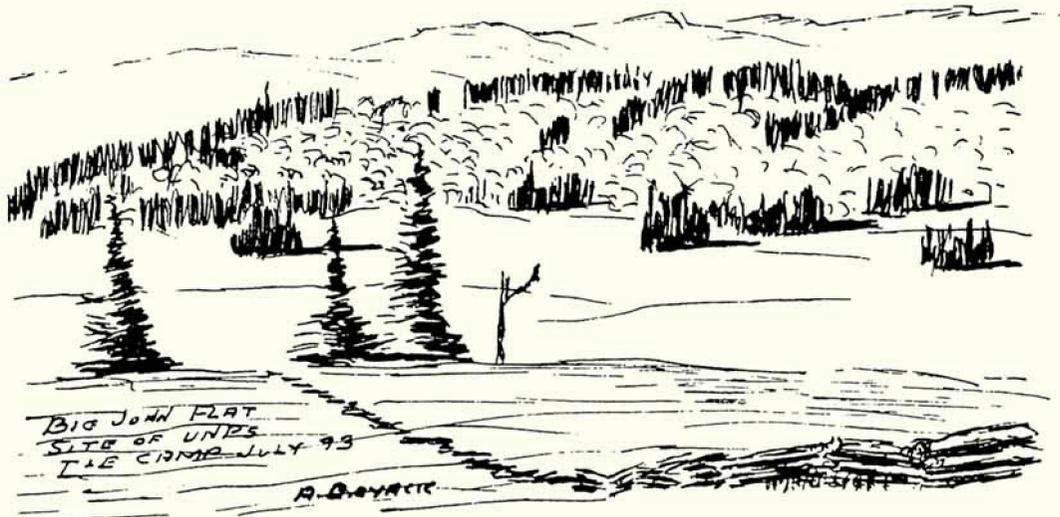
Newsletter of the Utah Native Plant Society

VOL. 16 NO. 6

NOV / DEC 1993

CALENDAR OF EVENTS

- Nov. 10** **Utah Native Plant Society Annual Membership Meeting.** Be there, or be square! This year we need to discuss where we've been and where we're going. This could lead to some major revisions of the bylaws. **Utah Department of Natural Resources**, 1636 West North Temple, Salt Lake City, Utah. Easy access from I-215 or North Temple. Exact time and details to be announced via our **Blue Cards**.
- December** **Salt Lake Chapter.** No meeting this month. Have a happy holiday.
- December** **"Evergreen Christmas"** Purchase a living Christmas tree and then donate it to **TreeUtah** and they'll plant it in a city park or cemetery. The cost of your tree is tax deductible and they'll come to your home and pick it up. Call **TreeUtah** at 363-5900.



UNPS MUSHROOM HUNT 1993

Dr. Kent McKnight
Mycologist

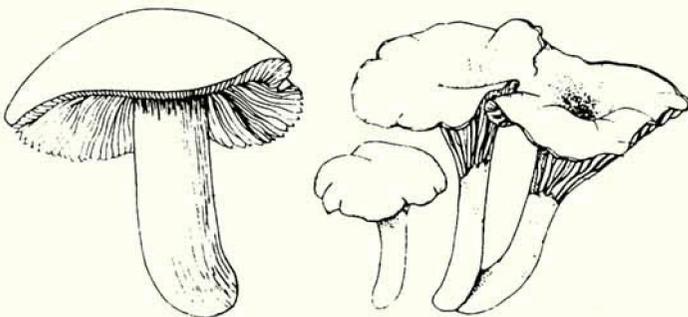
The 156 different species of mushrooms and other fungi which were collected and (mostly) identified at the UNPS Aug. 20-23 Ephraim Canyon Foray was both surprising and gratifying in view of the extremely dry late spring and early summer weather.

Twenty seven families were represented. With 36 species, the Tricholomataceae was the largest family. Among its rare and otherwise interesting species are Pleurotus populina and Tricholoma olida (= Armillaria olida.) Pleurotus pulmonarius, on the other hand, is the correct name for an old favorite often mistakenly called Pleurotus ostreatus which has not been recorded from the Rocky Mountains, according to Dr. Miller who specializes in this group of mushrooms.

Cyptotrama asprata is a small but well-known species with many synonymous names, often seen but never in great numbers.

Lepista saeva and Lepista nuda are sometimes regarded as color forms of a well known favorite, Tricholoma personata. In other families Lepiota castanea (Lepiotaceae) and Flammulaster erinaceela (Strophariaceae) are particularly interesting finds.

Many recent name changes are recorded here, (see species list) particularly in the Polyporaceae. A good example of this in another family is Cortinarius aureopulverulentus, a large, brassy brown and purplish species which Smith called C. pseudoarquatus according to M.M. Moser. Other newly described but common Rocky Mountain species in this genus are Cortinarius albobrunnoides, C. fulvoochrascens, and variety Americanus of Cortinarius elegantior.



THANKS, THANKS, THANKS

Jo Stolhand
UNPS Newsletter Editor

A swarm of mushroom hunters gathered at the Great Basin Environmental Education Center in Ephraim Canyon on Aug. 20 and 21 for the annual UNPS Mushroom Hunt. It was our largest and most successful foray to date. We attribute that success in a large part to the participants--not only by collecting mushrooms, but picking up potato peelers and brooms to lend a hand.

It was early afternoon on Friday and already specimens were stacking up. Dr. Kent McKnight, mycologist, was manning the lab alone since everyone else was still in the field. Feeling a little frustrated because identified specimens were not moving on to the exhibit hall (which had not yet been set up), he collared the next stranger through the door.

"Have you ever had a biology class? Do you understand anything about taxonomy?" Dr. McKnight said he was a little embarrassed but pleased when the stranger identified himself as Dr. Michael Windham, Director of the Garrett Herbarium at the University of Utah. Oh, by the way, Mike answered yes to both questions.

Thanks to a year's worth of phone calls and arm twisting on the part of Dave Okelberry, we had some really excellent help in the way of amateur and professional mycologists. Specimens were initially screened in one building and then sent to another building where they were checked by Dr. Kent McKnight or Dr. Orson Miller. Aiding Kent and Orson were Vera McKnight, Dr. Michael Treshow, and Dr. Sherman Brough. Initial screening was done by Dr. Frank Anderson, Dr. Ardean Watts, Paul Harding, and Athalie (Lee) Barzee. The final stop for the mushrooms was the exhibit hall which was organized by Dr. Darrell Weber, Dr. Michael Windham, and Jo Stolhand. Running mushrooms between buildings were a number of people who contributed to the smoothness of the entire operation.

Two hundred people don't work and intermingle well unless they are fed well. Again this year we extend appreciation to Dr. Al Tait for the transport of equipment and food, and the timely preparation of delicious meals. Al brought more help than just his

NATIONAL FOREST BOTANICAL AREAS UPDATE

Nicholas (Nick) Van Pelt
Utah Public Lands Coordinator
Great Basin Field Office
The Nature Conservancy

Since 1991, The Nature Conservancy, the Utah Native Plant Society, and Forest Service botanists have collaborated to locate Special Interest Botanical Areas on the national forests of Utah. Species lists and illustrated writeups have been assembled for three areas. They occur on the Dixie National Forest (NF) near Bryce Canyon National Park, on the Manti-LaSal NF southwest of Price, and on the Ashley NF northwest of Duchesne. Two generous grants from UNPS have been vital and deeply appreciated contributions to this work.

A draft report and plant list for the proposed **Claron Botanical Area** in Red Canyon has appeared in an earlier issue of The Segoe Lily. Two years after a UNPS field trip scouted the area, it remains in excellent shape--albeit with few of the Wasatch geologic Formation endemics in flower. A Forest Service recreational trail will not encroach on the botanical site, which is a short walk from a good-condition dirt road. Staff members of the Powell Ranger District have been very supportive of the area, and willing to ensure its protection pending a final, formal zoning decision. A couple of the area's 14 notables are *Calylophus lavandulaefolia* and *Lomatium minimum*.

A botanical area "candidate" in the Manti-LaSal forest plan, **Scad Valley**, continues to be protected and studied. A report the Conservancy prepared will be revised. Forest Botanical Specialist and UNPS member Bob Thompson has seen or collected over 100 vascular species within the 40-acre subalpine meadow site. These include *Gentiana prostrata* and *Thalictrum alpinum*.

This past August, a Conservancy representative and Ashley NF foresters got together to alter the boundaries of two "cutting units" in a large timber sale. The proposed **Rock Creek Botanical Area** was enlarged, and a sample of old-growth Engelmann spruce forest was added. The spruce bog and talus-slope area supports very rare mosses, 12 sedges, and the uncommon *Penstemon montanus*.

On the policy front, the Great Basin Field Office

is helping draft guidance to national forest planners on creation of Special Interest Areas like the foregoing three. Within the next three years or so, the six national forests in the state will revise the comprehensive plans adopted in the mid-1980's.

THIS WREATH IS FOR THE BIRDS

Jo Stolhand
UNPS Newsletter Editor

There are all the signs of a cold, hard winter this year: an abundance of acorns and a plethora of pinenuts. Snowblowers are selling well and woodpiles are larger than usual. With a long winter in mind, you may be interested in preparing a holiday wreath which can be fed to our "feathered friends" the first of January.

A friend and I teamed up to create such a masterpiece. What a partnership! I originated the idea and she did most of the collecting and artistic preparation. If you don't know what to collect, talk to birders or call the Utah Audubon Society. Birding field guides and a free booklet, Creating Landscapes for Wildlife, available from the Utah State Division of Natural Resources would also be helpful.

Now as my colleague pointed out, the real fun was in gathering. Afternoon walks became a quest for material that would appeal to the palate of birds and also add texture and color to the wreath. Careful observation of what birds are eating will help you make choices and lead you to plant material you might never have thought to gather. One evening we went out after dark to prune pyracantha protruding onto a public pathway. Grasses, sunflowers, rosehips, all were carefully picked so as not to disturb seeds.

Tips for constructing the wreath

The fruits and seeds of our collecting were attached to a grapevine wreath base, but any foundation could be adapted for use.

Wiring twigs onto the base will keep them secure while birds are feasting.

Using some bright-colored berries will attract the attention of the birds.

The wreath will keep best in a cool room or even better if hung outside.

Here are some thoughts to keep in mind for hanging the wreath when the time comes to surrender it to the birds. If you have an area in your yard where birds already gather, place the

son, Eric, this year. They were aided by Dr. Richard Dotson and Dr. Blain Maxfield, all of the University of Southern Utah. The quiet man who slipped from one cooksite to another, always seen with a kitchen utensil in hand, was Sy Kraft, a volunteer at the homeless kitchen in Salt Lake City.

Dave Okelberry cultured another fungus (yeast) for his wonderful sourdough pancakes.

Connie and Pierre Chesnel, who own and operate Pierre Country Bakery at 3239 E. 3300 So. in Salt Lake City provided all the wonderful french bread.

Many and varied activities proved popular with the not-so-die-hard mushroom collectors. Mike Windham taught a plant identification class. Florence Olson led two trips into the woods to discuss the edible native plants. Mike Windham, Larry England, and Brent Palmer teamed up to lead an alpine fieldtrip along the Skyline Drive. The highlight of the alpine trip was seeing *Silene petersonii*, a category C2 plant (being reviewed for federal listing).

Cooking classes taught by Hope Miller were very well-attended. The delicious samples which she served were a big hit and the recipes are printed in this issue of The Segoe Lily.

Evening activities included a choice of four slide shows presented by Kent McKnight, Paul Harding, Frank Anderson and Orson Miller. And for those who were 'shroomed-out, Tex Parker led a Sing-along.

There seemed to be something for everyone. Thank you, Dave Okelberry. Another great job.

RECIPE'S FROM THE 1993 MUSHROOM HUNT

HOPE'S DILLY LEMON SHIITAKE SOUP

Saute sliced shiitake mushrooms in small amount of butter or margarine. Add minced shallots, salt and pepper. Add chicken broth and lemon juice to taste and garnish with fresh dill weed which has been minced. Simmer 10 minutes. This may be made for 1 to 25 persons depending on the quantity of mushrooms available.

HOT MUSHROOM DIP ESPECIAL

1 lb. fresh morels (or any other species)
6 Tb. butter or margarine
1 Tb. lemon juice
2 Tb. minced onion
1 lb. carton sour cream (may use low fat)
2 tsp. chicken or vegetable bouillon granules
(or two cubes dissolved)
Salt and peper to taste
2 Tb. soft butter or margarine
1 Tb. flour

Chop mushrooms quite fine and saute in pan with butter and lemon juice. Let simmer 5 to 10 minutes. Add onions, sour cream, bouillon granules, salt, and pepper. Simmer 5 to 10 minutes more. Make a paste of remaining butter and flour. Add to hot mixture and stir until thickened. Serve hot, in fondue pot or chafing dish, with chips, crackers, or fresh vegetables. Note: May be used as a filling for Mushroom Squares if thickened with seasoned break crumbs. Use crescent roll dough. Pat the dough into a small 9 inch pan, spread filling and cover with more dough. Bake according to instructions on rolls. Cut into squares and serve hot.

CHEESY MUSHROOM STICKS

(makes 8 doz.)

Saute together:

1/2 cup butter or margarine
1 lb. mushrooms, sliced, such as Morels, Shiitake
or Agaricus
1 medium onion, chooped
2 garlic cloves, clopped
1 green pepper, chopped

Mix together:

10 eggs, beaten
2 cups cottage cheese
1 lb. Monterey Jack cheese, shredded
1/2 cup all-purpose flour
1 tsp. baking powder
3/4 tsp. each nutmeg, basil, salt

Combine with mushroom-onion mixture, and put into a cookie sheet with sides (size 17 1/4 x 11 1/2). Bake at 350 for 35 minutes or until set. Cool 15-20 minutes before cutting into small sticks, approximately 3/4 inches. Will keep in refrigerator for 2 days. May be reheated.

Note: Could be cut into squares and used for a luncheon with a salad and bread.

from A Lifetime with Mushrooms: Hope Miller's Cookbook.

MUSHROOMS & OTHER MACROFUNGI FOUND ON EPHRAIM CANYON FORAY
AUGUST 20-23, 1993

FAMILY	GENUS & SPECIES	COMMON NAME
ASCOMYCETES (SAC FUNGI)		
Helvellaceae	<i>Helvella acetabulum</i>	Vinegar Cup
Helvellaceae	<i>Helvella griseoalba</i>	Gray Saddle
Helvellaceae	<i>Helvella lacunosa</i>	Elfin Saddle
Helvellaceae	<i>Helvella leucomeleana</i>	
Pleosporaceae	<i>Herpotrichia niger</i>	
Pyronemataceae	<i>Scutellinia chateri</i>	False Eyelash Cup
Pyronemataceae	<i>Scutellinia scutellata</i>	Eyelash Cup
Pyronemataceae	<i>Scutellinia sp. near scutellata</i>	
Xylariaceae	<i>Daldinia concentrica</i>	Carbon Ball
BASIDIOMYCETES (CLUB FUNGI)		
Agaricaceae	<i>Agaricus abruptibulbus</i>	Flat-bulb
Agaricaceae	<i>Agaricus augustus</i>	Prince
Agaricaceae	<i>Agaricus campester</i>	Meadow Mushroom
Agaricaceae	<i>Agaricus crocodilinus</i>	Crocodile Mushroom
Agaricaceae	<i>Agaricus perrarus</i>	Yellow Prince
Agaricaceae	<i>Agaricus sylvicola</i>	Sylvan Mushroom
Agaricaceae	<i>Agaricus sp. near sylvaticus</i>	Forest Mushroom
Amanitaceae	<i>Amanita muscaria</i>	Fly agaric
Amanitaceae	<i>Amanita muscaria var. alba</i>	White Fly Agaric
Amanitaceae	<i>Amanita muscaria var. formosa</i>	
Amanitaceae	<i>Amanita pantherina</i>	Panthercap
Amanitaceae	<i>Limacella illinita</i>	White Slime Mushroom
Boletaceae	<i>Boletus chrysenteron</i>	Red-cracked Bolete
Boletaceae	<i>Boletus edulis</i>	King Bolete (Cepe)
Boletaceae	<i>Leccinum insigne</i>	Aspen Scaberstalk
Boletaceae	<i>Leccinum aurantiacum</i>	Aspen Scaberstalk
Boletaceae	<i>Suillus brevipes</i>	Stubby-stalk
Boletaceae	<i>Suillus granulatus</i>	Granulated Slipperycap
Boletaceae	<i>Suillus lakei</i>	Lake's Slipperycap
Coprinaceae	<i>Coprinus atramentarius</i>	Inky Cap
Coprinaceae	<i>Coprinus comatus</i>	Shaggy Mane
Coprinaceae	<i>Coprinus micaceus</i>	Glistening Inky Cap
Coprinaceae	<i>Coprinus sterquilinus</i>	Coolie Hat Inky Cap
Coprinaceae	<i>Psathyrella candolleana</i>	Fringed Crumblecap

Coprinaceae	<i>Psathyrella gracilis</i>	Thimblecap
Coprinaceae	<i>Psathyrella velutina</i>	Weeping Widow
Cortinariaceae	<i>Cortinarius albobrunnoides</i>	Yellow Bulb Webcap
Cortinariaceae	<i>Cortinarius aureopulverulentus</i>	Brassy Webcap
Cortinariaceae	<i>Cortinarius elegantior</i> var. <i>americanus</i>	Elegant Webcap
Cortinariaceae	<i>Cortinarius fulvoochrascens</i> (= <i>Cortinarius pseudoarquatus</i> Smith)	Tawny Webcap
Cortinariaceae	<i>Cortinarius glaucopus</i>	Bluefoot Webcap
Cortinariaceae	<i>Cortinarius orichalceus</i>	Copper-red Webcap
Cortinariaceae	<i>Cortinarius rufoolivaceum</i>	
Cortinariaceae	<i>Cortinarius triformis</i>	Onion Bulb Webcap
Cortinariaceae	<i>Gymnopilus sapineus</i>	Fir Flamecap
Cortinariaceae	<i>Hebeloma crustuliniforme</i>	Poison Pie
Cortinariaceae	<i>Inocybe fastigiata</i>	Conic Fiberhead
Cortinariaceae	<i>Inocybe geophylla</i>	Earthblade Fiberhead
Gomphidiaceae	<i>Chroogomphus rutilus</i>	Brown Slimecap
Gomphidiaceae	<i>Gomphidius glutinosus</i>	Slimecapa
Gomphidiaceae	<i>Gomphidius cf smithii</i> (=subroseus)	Pink Waxycap
Hygrophoraceae	<i>Hygrophorus camarophyllus</i>	Goat Waxycap
Hygrophoraceae	<i>Hygrophorus erubescens</i>	Pink Waxycap
Hygrophoraceae	<i>Hygrophorus flavodiscus</i>	Yellow-center Waxycap
Hygrophoraceae	<i>Hygrophorus odoratus</i>	
Hygrophoraceae	<i>Hygrophorus pudorinus v. pudorinus</i>	Blushing Waxycap
Hygrophoraceae	<i>Hygrophorus pudorinus var. fragrans</i> forma <i>pallidus</i>	Pale Blushing Waxycap
Hygrophoraceae	<i>Hygrophorus purpurescens</i>	Wine Pink Waxycap
Hygrophoraceae	<i>Hygrophorus sp.</i>	
Lepiotaceae	<i>Lepiota castanea</i>	
Lepiotaceae	<i>Lepiota clypeolaroides</i>	False Shield Parasol
Pluteaceae	<i>Pluteus cervinus</i>	Deer Mushroom
Pluteaceae	<i>Pluteus nanus var. lutescens</i>	
Pluteaceae	<i>Pluteus pellitus</i>	
Pluteaceae	<i>Pluteus petasatus</i>	Sawdust Mushroom
Russulaceae	<i>Lactarius deliciosus v. deliciosus</i>	Saffron Milkcap
Russulaceae	<i>Lactarius deliciosus v. areolatus</i>	Pale Saffron Milkcap
Russulaceae	<i>Lactarius deterrimus</i>	
Russulaceae	<i>Russula brevipes</i>	Stubby Brittlelegill
Russulaceae	<i>Russula emetica</i>	Sickener
Russulaceae	<i>Russula sp. near emetica</i>	
Russulaceae	<i>Russula squalida</i>	
Strophariaceae	<i>Flammulaster erinaceela</i>	
Strophariaceae	<i>Pholiota astragalina</i>	Bitter Scalecap
Strophariaceae	<i>Pholiota carbonaria</i>	Charcoal Scalecap
Strophariaceae	<i>Pholiota decorata</i>	Beauty Scalecap
Strophariaceae	<i>Pholiota fulvozonata</i>	Rusty-zone Scalecap

Strophariaceae	<i>Pholiota squarrosa</i>	Shaggy Scalecap
Strophariaceae	<i>Pholiota vernalis</i>	Spring Scalecap
Strophariaceae	<i>Stropharia ambigua</i>	Fringed Ringstalk
Strophariaceae	<i>Stropharia coronilla</i>	Crown Toadstool
Strophariaceae	<i>Stropharia kauffmanii</i>	Scaly Ringstalk
Strophariaceae	<i>Stropharia semiglobata</i>	Manure Roundhead
Tricholomataceae	<i>Armillaria pitkinensis</i>	Pitkin Bracelet
Tricholomataceae	<i>Armillaria straminea v. americana</i>	Yellow Bracelet
Tricholomataceae	<i>Baeospora myosura</i>	Conifer Coincap
Tricholomataceae	<i>Catathelasma ventricosa</i>	Swollen Stalk
Tricholomataceae	<i>Clitocybula familia</i>	Family Coincap
Tricholomataceae	<i>Collybia acervata</i>	Cluster Coincap
Tricholomataceae	<i>Collybia asema</i>	
Tricholomataceae	<i>Collybia butyracea</i>	Butter Coincap
Tricholomataceae	<i>Collybia dryophila</i>	
Tricholomataceae	<i>Cyptotrama asprata</i>	Golden Coincap
Tricholomataceae	<i>Flammulina velutipes</i>	Velvet Shank
Tricholomataceae	<i>Lentinellus omphalodes</i>	Navel Sawgill
Tricholomataceae	<i>Lepista nuda</i>	Blewit
Tricholomataceae	<i>Lepista saeva</i>	False Blewit
Tricholomataceae	<i>Lyophyllum decastes</i>	Fried Chicken Mushroom
Tricholomataceae	<i>Melanoleuca cognata</i>	
Tricholomataceae	<i>Melanoleuca melaleuca</i>	Common Cavalier
Tricholomataceae	<i>Mycena lilacifolia</i>	Lilac-gill Fairy Helmet
Tricholomataceae	<i>Mycena pura</i>	Lilac Fairy Helmet
Tricholomataceae	<i>Omphalina epichysium</i>	Shallow Navel Cup
Tricholomataceae	<i>Oudemansiella longipes</i>	Velvet Deep Root
Tricholomataceae	<i>Pleurotus populinus</i>	Poplar Oyster
Tricholomataceae	<i>Pleurotus pulmonarius</i>	Oyster Mushroom
Tricholomataceae	<i>Strobilurus sp.</i>	
Tricholomataceae	<i>Tricholoma aurantium</i>	Golden Cavalier
Tricholomataceae	<i>Tricholoma focale (=T. zelleri)</i>	Zeller's Bracelet
Tricholomataceae	<i>Tricholoma olida (=Armillaria olida)</i>	
Tricholomataceae	<i>Tricholoma pardinum</i>	Tigertop
Tricholomataceae	<i>Tricholoma populinum</i>	Poplar Cavalier
Tricholomataceae	<i>Tricholoma saponaceum</i>	Soapy Cavalier
Tricholomataceae	<i>Tricholoma sp.</i>	
Tricholomataceae	<i>Tricholoma stramineum</i>	Straw-colored Cavalier
Tricholomataceae	<i>Tricholoma virgatum</i>	Silver Streaks
Tricholomataceae	<i>Tricholomopsis decora</i>	Yellow Rider
Tricholomataceae	<i>Xeromphalina campanella</i>	Golden Trumpets
Tricholomataceae	<i>Xeromphalina caudicinalis</i>	
Hydnaceae	<i>Hydnum repandum</i>	Spreading Hedgehog
Hydnaceae	<i>Sarcodon glaucopus</i>	
Polyporaceae	<i>Cryptoporus volvatus</i>	Doorknob Fungus
Polyporaceae	<i>Fomes igniarius</i>	
Polyporaceae	<i>Fomes pini</i>	
Polyporaceae	<i>Fomitopsis pinicola</i>	Redbelt
Polyporaceae	<i>Gloeoporus dichrous</i> (= <i>Bjerkandera adusta</i>)	
Polyporaceae	<i>Ganoderma applanatum</i>	Artist's Fungus

Polyporaceae	<i>Gloeophyllum saeparium</i>	
Polyporaceae	<i>Oligoporus leucospongia</i> (= <i>Tyromyces leucospongia</i>)	White Sponge Polypore
Polyporaceae	<i>Oligoporus obductus</i> (= <i>Polyporus osseus</i>)	Bone Polypore
Polyporaceae	<i>Polyporus brumalis</i>	Winter Polypore
Polyporaceae	<i>Polyporus elegans</i>	Black-footed Polypore
Polyporaceae	<i>Polyporus squamosus</i>	Dryad's Saddle
Polyporaceae	<i>Polyporus varius</i>	
Polyporaceae	<i>Postia caesia</i>	
Polyporaceae	<i>Pycnoporellus alboluteus</i> (= <i>Spongiopellis alboluteus</i>)	
Polyporaceae	<i>Trametes hirsuta</i>	
Polyporaceae	<i>Trichaptum bififormis</i> (= <i>Polyporus pargamenus</i>)	Violet-teeth Polypore
Cantharellaceae	<i>Cantharellus cibarius</i>	Chanterelle
Cantharellaceae	<i>Cantharellus subalbidus</i>	
Cantharellaceae	<i>Hygrophopsis aurantiacus</i>	False Chanterelle
Clavariaceae	<i>Clavaria purpurea</i>	Purple Coral
Clavariaceae	<i>Clavaria vermicularis</i>	White Worm Coral
Clavariaceae	<i>Clavariadelphus pistillaris</i>	Club Coral
Clavariaceae	<i>Clavariadelphus truncatus</i>	Flat-top Coral
Clavariaceae	<i>Clavicornia pyxidata</i>	Crown Coral
Clavariaceae	<i>Ramaria magnipes</i>	Coral Fungus
Auriculariaceae	<i>Auricularia auricularis</i>	Brown Ear Fungus
Dacrymycetaceae	<i>Guepiniopsis alpina</i>	Jelly Cup

GASTEROMYCETES

Puffballs, Stinkhorns, etc.

Secotiaceae	<i>Gautieria morchelliformis</i>	
Rhizopogonaceae	<i>Rhizopogon</i> sp. near <i>R. roseolus</i>	
Lycoperdaceae	<i>Calbovista subsculpta</i>	Giant Puffball
Lycoperdaceae	<i>Geastrum fimbriatum</i>	Fringed Earthstar
Lycoperdaceae	<i>Lycoperdon</i> sp. near <i>L. marginatum</i>	Puffball

MYXOMYCETES

Slime Molds

Cribrariaceae	<i>Lycogala epidendrum</i>	
Didymiaceae	<i>Fuligo</i> sp.	
Didymiaceae	<i>Physarum cinereum</i>	

wreath nearby. You can place it on the ground if your yard excludes cats and dogs. Hang it near a window if you want to watch the birds that come to visit. Wherever you place the wreath, it should be within five feet of bushes that offer protection to the birds if threatened by predators.

Bird watching is a favorite pastime for many people, so a wreath might be a great gift idea for someone you know. It will be enjoyed twice, first during the holidays, and then by the birds and those who watch them.

Berries, seeds, fruits, and samaras from:

- pyracantha
- elderberry
- roses
- sunflower heads
- fringepod
- Russian olive
- thistle heads
- grasses
- ailanthus
- boxelder
- hawthorn
- mountain ash
- serviceberry
- grapes
- sumac
- juniper
- maple
- coneflower heads
- acorns

THE USE OF WILDFLOWER SEED IN AMERICA

Wildflower Group American Trade Association, Inc.

It was not very long ago that wildflowers were simple plants growing in the woods, prairies, and along roadsides. Then, in the mid-70's, gardeners discovered that these charming flowers were a delightful alternative to traditional ornamental plants. Word spread like wildfire. Soon gardeners all across the country began to plant wildflowers, and a new industry was born.

Publicity about wildflowers was tremendous. They were soon heralded as magical plants, until, finally, folks were convinced that wildflowers could grow just about anywhere without any work or trouble. After all, folks argued, Mother Nature has fields and fields of flowers, and she doesn't plow or

till or haul extra buckets of water from the creek.

Well, Mother Nature has the distinct advantage of time. If you want to wait a couple of centuries for wildflowers to grow and bloom in your backyard, go right ahead. But if you want results more quickly, say within 2 or 3 months, then you'd better pay attention to the basics of gardening: seed-to-soil contact, ample water, lots of sunshine and weed control.

As the wildflower movement grew and expanded, the demand for wildflower seeds grew commensurately. Seed became readily available, and wildflowers were planted in more and more places including parks, golf courses, roadsides, commercial developments, and home gardens.

Not surprisingly, different people have different expectations from their wildflower projects. A Department of Transportation roadside crew may want something very different than a home gardener transforming a bit of lawn into a controlled meadow environment.

The word "wildflower" is a general term, encompassing a multitude of different kinds of plants, which create a myriad of different kinds of landscapes--each of which has its own merits. To the purist, a wildflower means a plant indigenous to a particular area, and many landscaping projects are composed of just these plants. Such projects are often characterized by a high diversity of plants, all of which are indigenous to the immediate locale.

The joy and beauty of such a project is that it is very specific to the area and distinctly different from landscapes in other parts of the country. Maintaining a balanced ecosystem with purely indigenous wildflowers is not the aim of every gardener or landscape project. In addition to indigenous plants, there are many wonderful non-native and naturalized species that withstand grassland conditions and add vibrant colors to a landscape. Used on golf courses, roadsides, commercial developments, and in home gardens, these wildflowers can present a spectacular display.

It is the role of the seed supplier to meet the needs of all customers from the purist with very special requirements to the average gardener or landscaper whose primary interest is low maintenance and beautiful color.

Just as in any industry, different suppliers specialize in different aspects of the trade. The bigger companies are able to provide large quantities of seed while smaller seed houses and collectors cater to the specialty user. The major seed companies continually explore the possibilities

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of offering more native species. This is a long and challenging procedure that begins with a complex selection process, followed by the determination of customers' needs, the development of methods for growing, harvesting and cleaning, and a final evaluation of costs and availability versus the projected demand for the seed.

Before ordering seed, consumers should have a clear picture of their expectations and then discuss these objectives with the supplier. A wildflower mix is much more than a bunch of seeds thrown into a bag. Developing a good mixture is both an art and a science. Your supplier can recommend the best mixture for your area and meet other special needs or desires.

Seed suppliers also should be able to share information about the basics of planting wildflowers--how to prepare the soil, when to plant and how to maintain the area. Good communication between the consumer and the seed trade is essential to the continued success and expansion of wildflower usage. Approaches and objectives may vary, but the goal is the same--the wildflowering of America.

Membership Application

New Member Renewal Gift

Name _____

Street _____

City/State _____

Zip _____ Phone _____

If Gift, from: _____

Check membership category desired:

- Student/Senior\$ 5.00
- Individual\$ 10.00
- Family\$ 15.00
- Supporting\$ 30.00
- Corporate\$ 30.00 and up
- Life\$250.00'

Please send a complimentary copy of the Sego Lily to the above individual.

Please enclose a check, payable to Utah Native Plant Society, and send it to:

Pam Poulsen, treasurer,
Utah Native Plant Society
P.O. Box 520041
Salt Lake City, Utah 84152-0041

(If you prefer not to cut this out of your **Sego Lily**, feel free to copy the membership form or simply write the information down and mail it with payment for the category of membership.)