

Bulletin of the
NATIVE PLANT SOCIETY of OREGON

To increase the knowledge of members and public in identification
and conservation of the native plants of the Pacific Northwest

Volume 17 No. 10

October 1984

CHAPTER NEWS

Blue Mountain

For information about October activities, call Chapter President Harry Oswald, 276-1241 (days).

Corvallis

8 Oct., Mon.

Meeting, 7:30 p.m., Rm. 2087, Cordley Hall, OSU campus, Corvallis. MUSHROOMS & THEIR HABITATS IN CHINA, by visiting scientist Wang Yun.

27 Oct., Sat.

Field trip--CASCADES MUSHROOM FORAY. Leave from parking lot at NE corner of Cordley Hall at 7:00 a.m. Call Dan Luoma, 758-8063, for details and car pool arrangements.

Emerald

1 Oct., Mon.

Meeting, 7:15, Multipurpose Rm., N Craft Bldg., Amazon Community Center. BIOLOGICAL CONTROL OF TANSY RAGWORT, by Cathy Macdonald.

High Desert

For information about October activities, call Chapter President Marge Ettinger, 382-2255.

Mid Columbia

3 Oct., Wed.

Meeting, 7:30, Mosier School.

Portland

Our field trip meeting place is the K-Mart at NE 122nd & Sandy Blvd. (exit I-84 at 122nd northbound and meet at the south end of the parking lot). If you have any questions about a field trip, please call the leader or Doris Ashby, 245-2977.

6 Oct., Sat.

CASTLE CANYON. THIS TRIP HAS BEEN CANCELLED.

11 Oct., Thurs.

Meeting, 7:30 p.m.,

9 Oct., Tues.

Meeting, 7:00 p.m., First United Methodist Church, SW 18th & Jefferson, Portland. Two subjects: ENDANGERED & CANDIDATE PLANT SPECIES OF THE SOUTHEASTERN U.S., by Andy Robinson, staff biologist and Section 7 coordinator, U.S. Fish & Wildlife Service; POPULATION STUDIES OF THREE SISKIYOU MOUNTAINS IRIS, by Carol Anne Wilson, currently of the USFWS staff.

- 13 Oct., Sat. What is blooming at this time of the year in the DUNES & DESCHUTES RIVER AREA? Meet at K-Mart at 8:00 a.m. or the Portage Inn at The Dalles (last exit) at 10:00 a.m. Leader: George Lewis, 292-0415.
- 20 Oct., Sat. Come & learn all you ever wanted to know about NW conifers, & enjoy good views of Mt. Hood. This moderate hike will be in the ELK MEADOWS-BLUEGRASS RIDGE area. Meet at K-Mart at 8:00 a.m. or at Zigzag Ranger Station at 9:00 a.m. Leader: Jean Siddall, 636-4633.
- 27 Oct., Sat. Take a late fall hike to MIRROR LAKE & TOM DICK MOUNTAIN. This trail gains 1700 ft. in 3½ miles, with great views from the top. Leader: Dave Dobak, 643-2213.

Siskiyou

- 11 Oct., Thu. Meeting, 7:30 p.m., Rm. 171, Science Bldg, SOSC. Wendell Wood, president of the Oregon Natural Resources Council, will give a presentation on wildflowers of southern Oregon, featuring EIGHT DOLLAR MOUNTAIN.

Willamette Valley

- For information about October activities, call Chapter President Larry Scofield, 787-3833.

MT. PISGAH MUSHROOM SHOW OCTOBER 28

The last Sunday in October is again the date of the Mt. Pisgah Arboretum annual MUSHROOM SHOW & PLANT SALE.

As in the past, the day will feature cider pressing, guided trail hikes, refreshments and the sale of dried and living plants.

Highlight of the event will, as usual, be the display of approximately 200 local mushroom species. These are always stunningly arranged on beds of moss, lichen and autumn foliage. Each mushroom species will be labeled with its name and other pertinent information. Freeman Rowe and his students at Lane Community College will prepare the show.

And this year a brand new 76-page wild mushroom cookbook will be for sale at the show.

The Mushroom Show is absolutely free, so come out to the Mt. Pisgah Arboretum near Eugene-Springfield on Sunday October 28, 10:00 to 3:00 for this outstanding event.



INFORMATION NEEDED FOR TILLAMOOK PARKS PLAN

The Oregon State Parks planning staff is preparing master plans for parks and waysides along the coast of Tillamook County, including Oswald West, Nehalem Bay and Cape Meares State Parks, and Neahkahnie-Manzanita, Manhattan Beach, Rockaway Beach, Twin Rocks, Oceanside Beach, and Neskowin Beach State Waysides. If you have information about the use of or resources on these park lands, please contact Nancy H. Gronowski, Project Manager, 373-1654, Parks and Recreation Division, Dept. of Transportation, 525 Trade St. SE, Salem, OR 97310.

When land use plans and preliminary development plans have been completed, public hearings will be held to solicit public response. These hearings are expected in late October or early November.

MARK YOUR CALENDARS!

Plans are beginning to take shape for the 1985 Convention for Western Native Plant Societies. By the first of the year Registration Information should be in the mail. This will cover such items as programs, available housing, food, field trips, etc. As of now three field trips, choice of any one, are planned for the first day, to be followed by dinner and an evening program.

Remember to reserve the dates, August 2, 3, & 4 for an enjoyable weekend at La Grande, Oregon!

*Ruth M. Hansen
Chairman*

BOARD MEETING OCT. 6

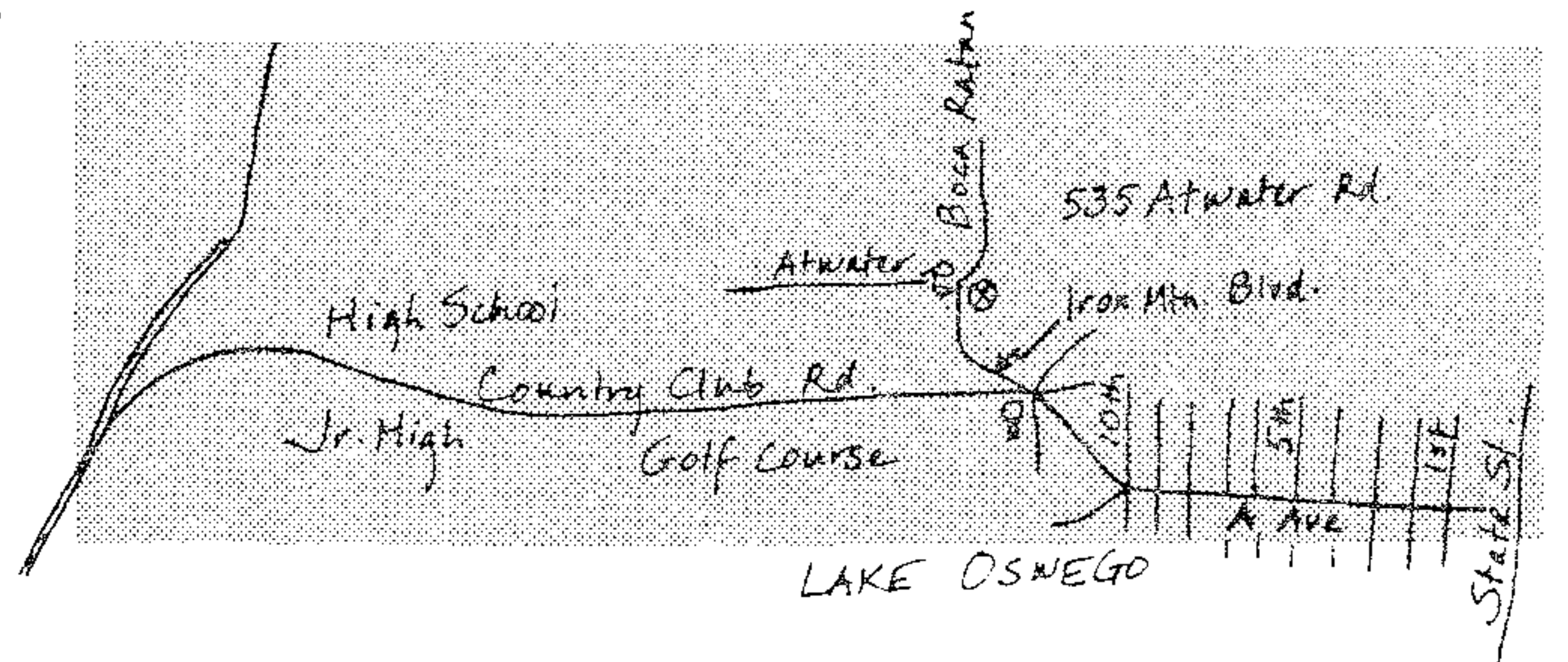
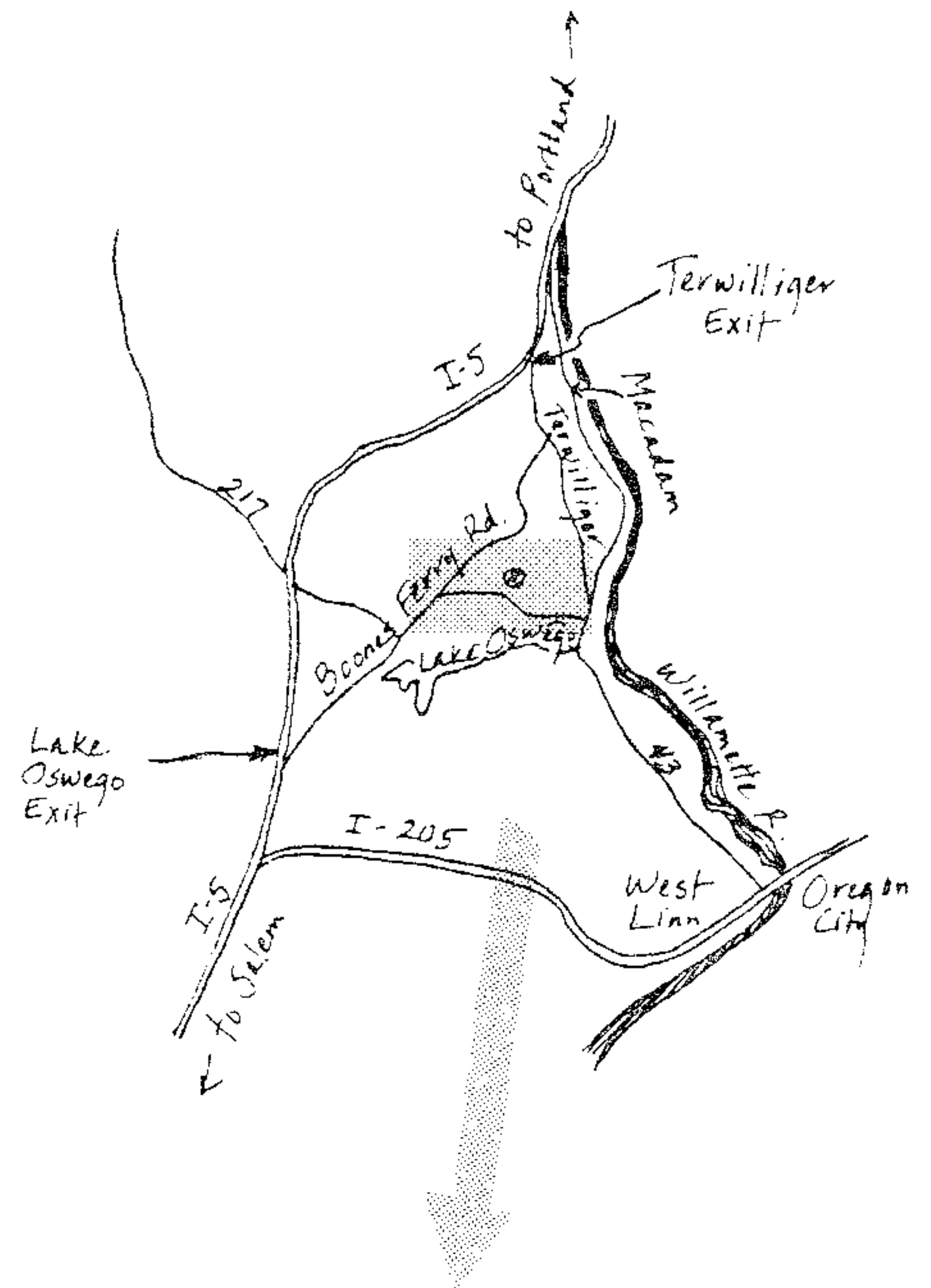
NPSO's state board will meet October 6, 1:30 p.m., at Jean Siddall's house (which also houses the Oregon Rare & Endangered Plant Project), 535 Atwater Drive, Lake Oswego (see map). Some of the more important items on the agenda are appointment of a new legislative committee chairman, discussion of the 1985 joint meeting of western native plant societies, and flower show ethics guidelines. All members are welcome. Be there!

Coming S on I-5 from Portland:

Turn off at Terwilliger exit
 Stay on Terwilliger until it dead ends at Macadam/State Street
 Turn right on State St.
 At 2nd light, turn right on A Ave.
 At stop sign on 10th St., take right hand fork "to Country Club Rd."
 At next intersection 6 streets come together--turn onto Iron Mtn. Blvd., the street immediately right of Country Club; follow signs "to Red Fox Hills"
 Stay left at top of rise where a street goes off to right
 535 is third house on right as you drop down hill--gray house w/ shingle roof (if you have to turn right or left, you've gone too far)

Coming N on I-5 from Salem:

Turn off at Lake Oswego exit
 Go through Lake Grove; turn right onto Country Club Rd.
 Go to stop sign at end of golf course where 6 streets come together
 Turn left onto Iron Mtn. Blvd. (the most lefthand turn you can make); follow signs "to Red Fox Hills"
 Stay left at top of rise where a street goes off to right
 535 is third house on right as you drop down hill--gray house w/ shingle roof (if you have to turn right or left, you've gone too far)



NATURE CONSERVANCY/DATA BASE/HERBARIUM
 TO SPONSOR RARE PLANT CONFERENCE

The Oregon Natural Heritage Data Base, The Nature Conservancy, and the University of Oregon Herbarium will be sponsoring a statewide rare plant conference at the U of O in Eugene on the weekend of November 3-4. One purpose of the conference is to receive comments and field data preparatory to updating the plant portion of the publication "Rare, Threatened and Endangered Plants and Animals of Oregon" which will be reprinted around January, 1985. Other workshop topics will include rare plant/endangered species legislation for the state of Oregon, a discussion and computer demonstration of the Data Base and its activities, and an overview of the Berry Botanic Garden's cryogenic seed bank.

We hope all botanists with knowledge and interest in Oregon's rare taxa will be able to attend. If you do plan to come please contact Curt, Jimmy, or Sue for further details at:

Oregon Natural Heritage Data Base
 1234 N.W. 25th Ave.
 Portland, Oregon 97210
 (503) 228-9550

BLM PUBLIC COMMENT OPPORTUNITIES

Several BLM documents are now available for public review and comment. Copies of the published documents are available from the BLM state office in Portland, or from the appropriate BLM District office.

- MEDFORD-- Medford (district-wide) land use plan amendment decision record for proposed Areas of Critical Environmental Concern (ACECs) will be ready for a 30-day public review period starting in late September.
- MEDFORD-- Medford (district-wide) draft supplemental timber management environmental statement (EIS) will be ready for a 60-day public comment period starting in late September.
- PRINEVILLE-- Two Rivers resource management plan (RMP) summary of proposed alternatives was made available for a 30-day public comment period starting in September. Closing date for comments is Oct. 9.
- SPOKANE-- Spokane draft resource management plan/environmental impact statement will be ready for a 90-day public comment period starting in early October.

FLOWERS FOREVER

by Rhoda Love

FOR THE SAKE OF OUR PLANTS,
WE MUST HAVE A CHANGE

As your Conservation Chairman I feel it is important for me to write to you about our choices at the polls on November 6.

If you are like me, you may have mixed feelings about our choices for a national leader for the next 4 years. Many issues, such as economic and foreign policies, military build-up and social services seem to be increasingly complex and difficult to fathom. However, in one important area, the record of the present administration has been so abysmal that the choice seems crystal clear. That area is the environment.

NPSO members, I'm certain you realize that it is no coincidence that the greater part of the work and correspondence that monopolized my time as your president from 1982 to 1984 was concerned with lack of protection for plants on federal land.

Even though James Watt is gone, the policies of the present administration continue. The Bureau of Land Management, custodian of most of our federal lands east of the Cascades and a large percentage of our forest, has, in the last 4 years, increasingly ignored its responsibility to protect rare plants.

The listing of endangered species at the federal level has slowed in the last 4 years to the point where, if the present pace is allowed to continue, it will take 94 years to review the information on plants and animals which need protection now! Meanwhile it is estimated that 7 or more species become extinct in the US each year!

For the first time in its politically active but bipartisan history, the Sierra Club has endorsed a national political party. The Club's letter to the Democrats reads in part: "Our commitment to (the environment) mandates that we take a stand when confronted by a President whose first-term actions contain so blatant and tragically consistent record of opposition to the environmental interests of the United States."

Walter Mondale's platform includes the following statement regarding the use of public lands: "This nation of ours should not be up for sale...When it comes to our

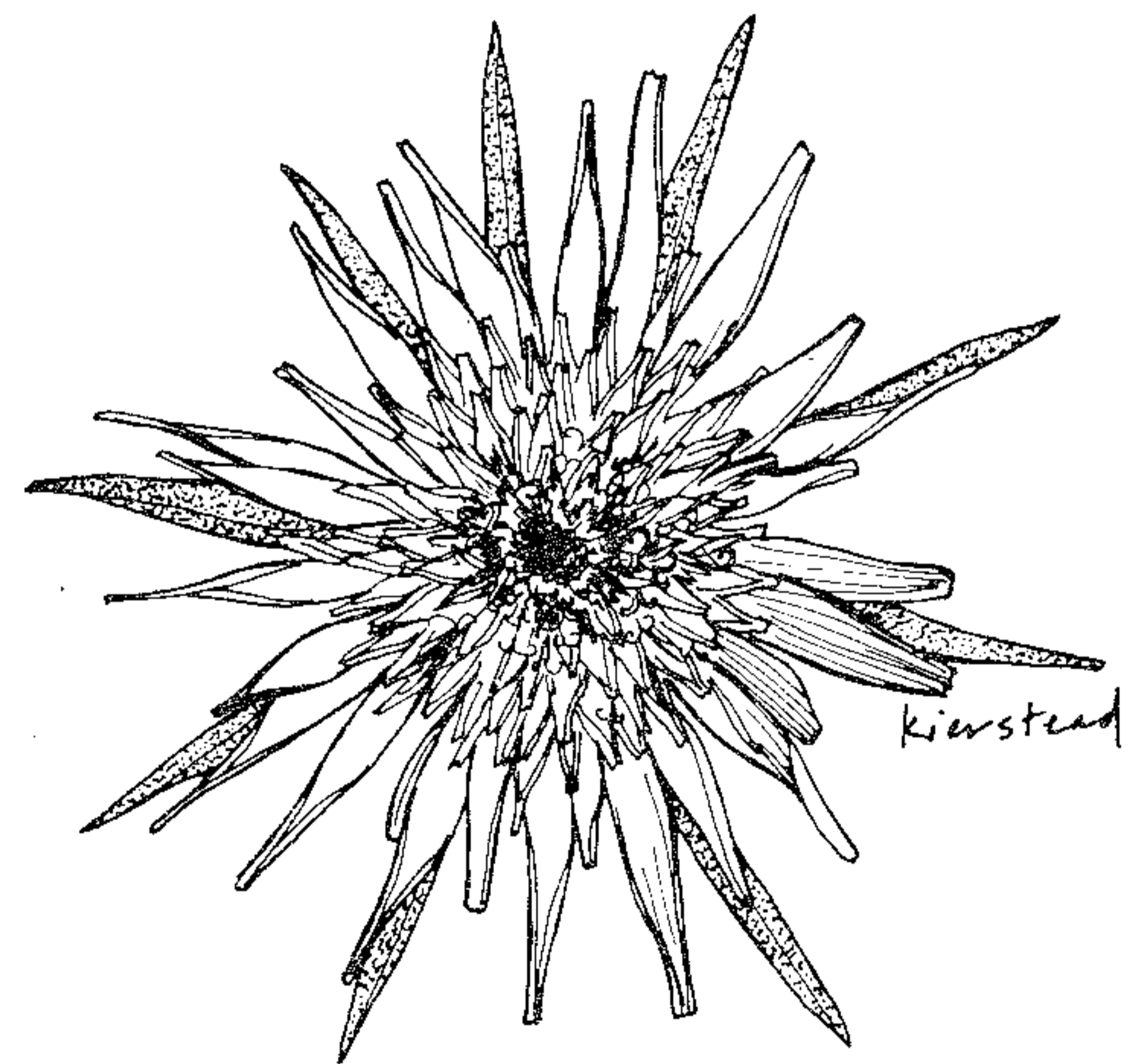
resources, the standard by which this generation must be judged is not how well we use our inheritance for ourselves, but how we honor our debt to our children."

Here in Oregon we are faced with a Bureau of Land Management which has no full-time botanist working in the enormous Vale, Burns or Lakeview districts. Where protection for our federally listed *Stephanomeria malheurenses* seems desultory at best. Where selling of land parcels and timber cutting are proceeding without the mandatory plant inventories. Where use of seasonal botanists has dropped to a tiny percentage of what it was 4 years ago. And where in 10 years only 3 species out of hundreds have been placed on the list of federally protected plants. All of the above are the direct result of policies of the present administration.

NPSOers, it is time for a change. And it's up to us to make our voice heard. If we do not reverse this trend now, the damage which can be done in another 4 years is frightening to contemplate. Please consider our country's endangered plants and habitats when you make your choice at the polls on November 6.

Flowers Forever,

Rhoda Love,
Conservation Chairman



Tragopogon porriifolius L.
Salsify: European origin, established
in disturbed places in the Northwest

There are several exciting new "first records in Oregon" found this summer to report this month, along with a name change for one of the R/E plants.

Veva Stansell & Julie Kierstead found *Carex gigas* in April, at Winton Prairie on Sourdough Trail, Curry Co. According to Munz, Philip A., *A California Flora*, this species was previously known only from Plumas, Trinity, & Siskiyou Counties, California. It is listed as "rare, but not endangered" in the 1980 California R/E list.

Steve Shelly, botanist for Lakeview BLM this summer, found *Mimulus latidens* near Wool Lake, NE of Adel in Lake County. The known range for this little annual, according to Muna, is Butte & Lake Counties, California, to San Diego.

In July, Dennis Vroman discovered yet another California species, *Eriogonum lobbi*, in Josephine Co. His account is as follows:



Mimulus latidens (Gray) Greene

"The Todd Creek drainage of the Galice Ranger District on Siskiyou National Forest has always been interesting to me. There is a lot of diversity in the plants in this area, which include species such as Brewer's spruce, *Picea breweriana*. In late July, 1984, I had stopped to look at clumps of *Dicentra formosa* var. *oregana*, when a woolly-leaved, ground-hugging plant next to it caught my eye. After thirteen years of rambling throughout the Galice area, this plant was new to me. Time did not permit a complete search of the area, but one quick glance revealed no similar plants. Because of this, I took only one basal leaf and one yet unflowering stem for further study at home.



Eriogonum lobbi T. & G.
Illustrations on this page from *Illustrated Flora of the Pacific States*, by Leroy Abrams

"After spending some time trying to identify this plant, I sent it to Dr. Kenton Chambers at Oregon State University Herbarium. Dr. Chambers tentatively identified it as *Eriogonum lobbi*, an alpine plant known from the Sierra Nevada of northern California, but never collected in Oregon before. He asked that a complete plant be sent if the population could tolerate it. Well, the possibility of collecting a "first in Oregon" seemed quite an occurrence.

"I returned on August 6, and before I arrived at the original location, I found more plants well above the road cutbank, in bloom no less. The original population was also in full bloom and exceedingly pretty. There were numerous plants in the rocky shallow soil of this barren gabbro ridge. In digging a plant for Dr. Chambers, I was surprised to see its thick, woody taproot.

"The soil on the ridge was pumice-like, supporting remarkably few other plants. *Eriogonum lobbi* had very little competition. The only other species noticed around them was *Phacelia corymbosa*."

NAME CHANGE: The scientific name for *Asarum caudatum* var. *viridiflorum* Peck has been changed to *Asarum wagneri* Lu and Messler, honoring Professor Warren H. Wagner, Jr. of the University of Michigan. The name change was published in *Brittonia*, 35(4), 1983, pp. 331-334. Please change the name on your R/E list.

There have undoubtedly been other "first records in Oregon" found this summer. Let us hear from you.

Jean L. Siddall
State R/E Chair

Conservation Alert

SIDALCEA NELSONIANA TO BE DROWNED BY WALKER CREEK DAM

Sidalcea nelsoniana, endangered throughout its range and a candidate for listing under the Endangered Species Act, was recently discovered in the wetlands at Walker Creek Flats, in the Coast Range near McMinnville. The site is owned by the Bureau of Land Management, which plans to allow dam construction by the City of McMinnville Dept. of Water and Light. The dam would create a reservoir covering the wetland, and the Sidalcea. The Walker Flat wetland is heavily used by elk and other wildlife.

The Salem District of the BLM prepared an Environmental Assessment rather than an Environmental Impact Statement. Botanical inventory of Walker Flat was not done by BLM staff members, but rather was performed under contract by CH₂M Hill of Corvallis. The inventory did not note any plants of concern. A later visit to the site by John Hauser, an employee of the Salem BLM District, turned up a population of Sidalcea. Specimens sent to OSU have been positively identified by Kenton Chambers as S. nelsoniana.

There is an alternative site available for this project. Hydrologists' recommendations, which were available during the early planning stages of the project, suggested that the dam be built on Haskins Creek, which drains east, on City of McMinnville property. The resultant reservoir would be on city land, not on BLM and private land, would not affect the Walker Creek area, and would leave the fisheries of the Upper Nestucca unspoiled.

WHAT YOU CAN DO: Write or phone to express your concern to William Leavell, state director of the BLM, and to Bill Blum, City Engineer and Director of Public Works, McMinnville. Ask why the dam and reservoir are not sited on city property. Copies of your letters should go to Senators Hatfield & Packwood, and to Rep. Les AuCoin, if you are his constituent.

William Leavell
Bureau of Land Management
P.O. Box 2965
Portland, OR 97208
(503) 231-6251

Bill Blum
City Engineer & Director
of Public Works
230 E 2nd
McMinnville, OR 97128
(503) 472-9371

AWARDS RECEIVED FOR WILDERNESS WORK

For their interest in and work toward establishment of the Table Rock Wilderness Area, several Portland Chapter members were given awards by the Bureau of Land Management and the Oregon Natural Resource Council. Jeanne Huffstutter, George Jeffcott, and Ruth Hansen were each given ONRC's Volunteer Service Award and a BLM Certificate of Appreciation, at the August 25 dedication ceremony for the Table Rock Wilderness Area.

RARE BIRD & PLANT HABITAT THREATENED BY OFF-ROAD VEHICLES

The Nature Conservancy describes the Lily Lake (Berry Creek to Sutton Creek) estuarine area, seven miles north of Florence on the central Oregon coast, as an "outstanding ecological and scenic resource" with "more diversity of natural systems available at this site" than at many other coastal sites.

Yet despite the objections of botanists from around the state, the Mapleton District of the Siuslaw National Forest has continued to allow off-road vehicles to run over sensitive plant and animal habitat without restriction.

The Nature Conservancy states that "approximately 20% of the state's threatened coastal population of non-migratory Western Snowy Plovers utilize the beach adjoining the lake." Additionally, several rare plants, which the Forest Service is obligated to protect, grow on a dune meadow deflation plain and on the surrounding dunes. These include bog club moss, Lycopodium inundatum, and the even more sensitive pink sandverbena, Abronia umbellata var. acutalata, previously reported from only three localities on the Oregon coast. Freshwater deflation plain-associated species that are being affected by off-road vehicles include the leathery grape fern, Botrychium multifidum; chatterbox orchid, Epipactis gigantea, hooded Ladies' tresses, Spiranthes romanzoffiana; and the insectivorous sundew, Drosera rotundifolia. Also adversely affected is a small salt marsh along Berry Creek with associated species including a diminutive species of arrow grass, Triglochin striata.

According to recent sensitive plant surveys conducted by a Forest Service Biological Technician, Dennis Woolington, "Most of the clubmoss colonies have had ORV traffic across them and there has been some mortality of individual plants. Some of the saturated flats have been disturbed enough that any Lycopodium colonies have been eliminated or precluded from establishment." With regard to the very rare Abronia the Forest Service reported, "No impacts were observed because Abronia umbellata was not observed."

Despite having recently issued a special use permit to a commercial stables (adding an additional impact to the area), the Forest Service has so far refused to close the Lily Lake dune area (Berry Creek to Sutton Creek) to offroad vehicles.

WHAT YOU CAN DO: Please write Forest Supervisor Larry Fellows, Siuslaw National Forest, P.O. Box 1148, Corvallis, OR 97330, and request that the Lily Lake to Sutton Creek area be permanently closed to off-road vehicles. Most importantly, send copies of your letters to Senators Bob Packwood and Mark O. Hatfield (Senate Office Building, Washington, D.C. 20510).

Wendell Wood
Oregon Natural Resources Council

GRASSY KNOB WILDERNESS AREA DEDICATION

* * * * * IMPORTANT ADDRESSES * * * * *

An old lookout site a few miles east of Port Orford was the scene August 18 of a ceremony dedicating Grassy Knob Wilderness Area. About thirty people gathered on the rocky summit, an area of about twenty by thirty feet, bounded by vertical drops and impenetrable brush.

Grassy Knob Wilderness Area, on Siskiyou National Forest, ranges in elevation from a hundred to 2600 feet. It covers 17,000 acres of steep, rugged hills, mostly forested. It will be under the management of Siskiyou National Forest.

Jim Rogers, President of the Kalmiopsis Audubon Society, discussed historical background of the area. Early uses by the Indians included hunting, acorn gathering, and trail route. The lookout was built in 1942. In September of that year a Japanese plane circled the lookout, was fired upon by lookout personnel, and dropped incendiary bombs, none of which ignited. The lookout was abandoned after the war.

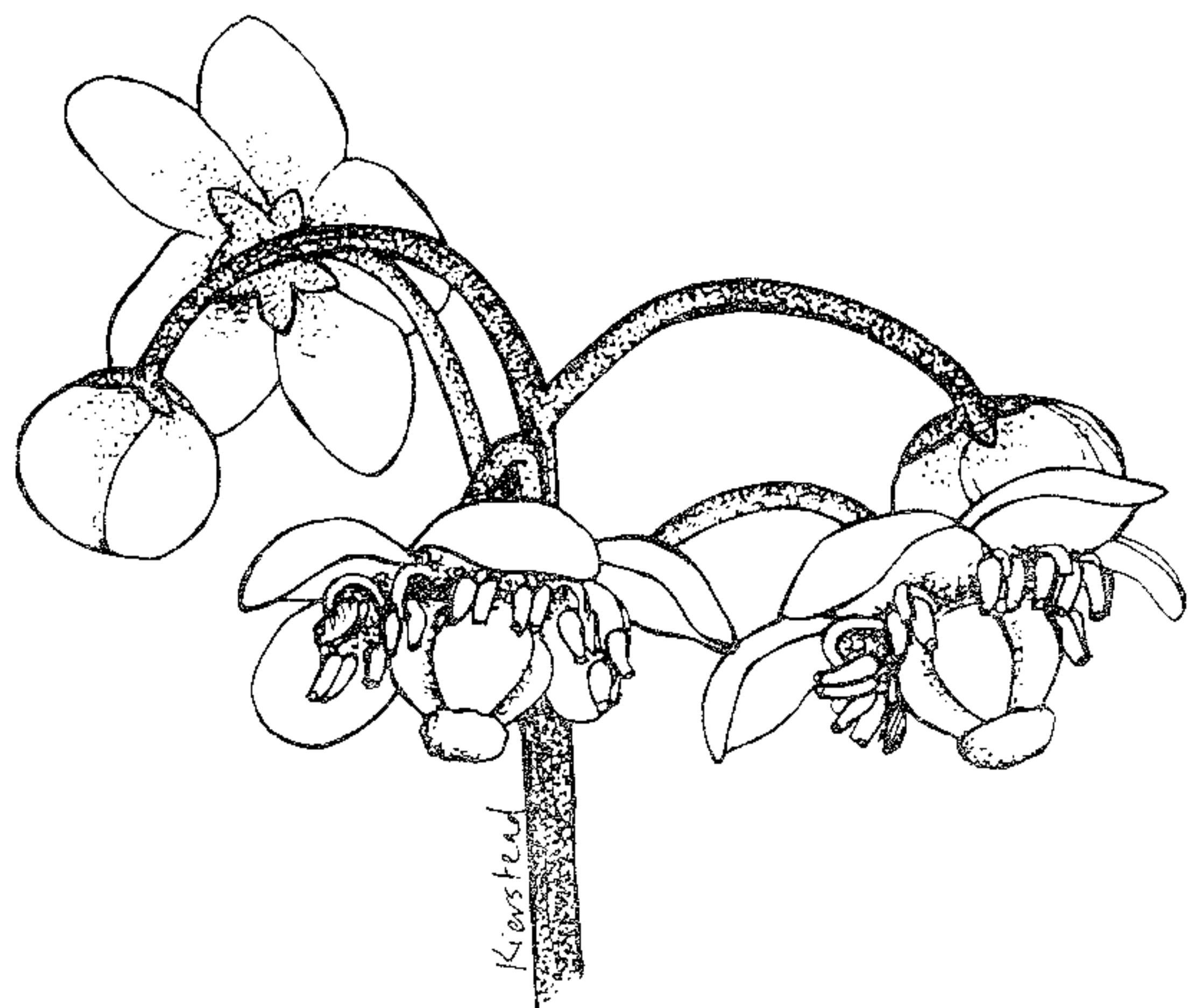
Ron McCormack, Supervisor of Siskiyou National Forest, pointed out that this is not a typical wilderness area in that its importance lies in protection of fisheries, watershed, and water quality rather than scenic or recreational values.

James Monteith, Executive Director of the Oregon Natural Resources Council, described the designation as a good beginning, and a challenge to those who would like to see an additional 12,000 acres in the area protected in the same way or managed for the same values.

Larry Stone, Director of Pacific Fisheries Enhancement Corporation (a public non-profit corporation), expressed his group's support for the designation, and that of the Coos County League of Women Voters.

It was an altogether enjoyable afternoon, for reasons including the meaning of the ceremony, the excellent weather, and the chance to visit with friends of like interests. The occasion was definitely a milestone in a long journey.

Veva Stansell
Siskiyou Chapter



Chimaphila umbellata (L.) Bart.
var. *occidentalis* (Rydb.) Blake

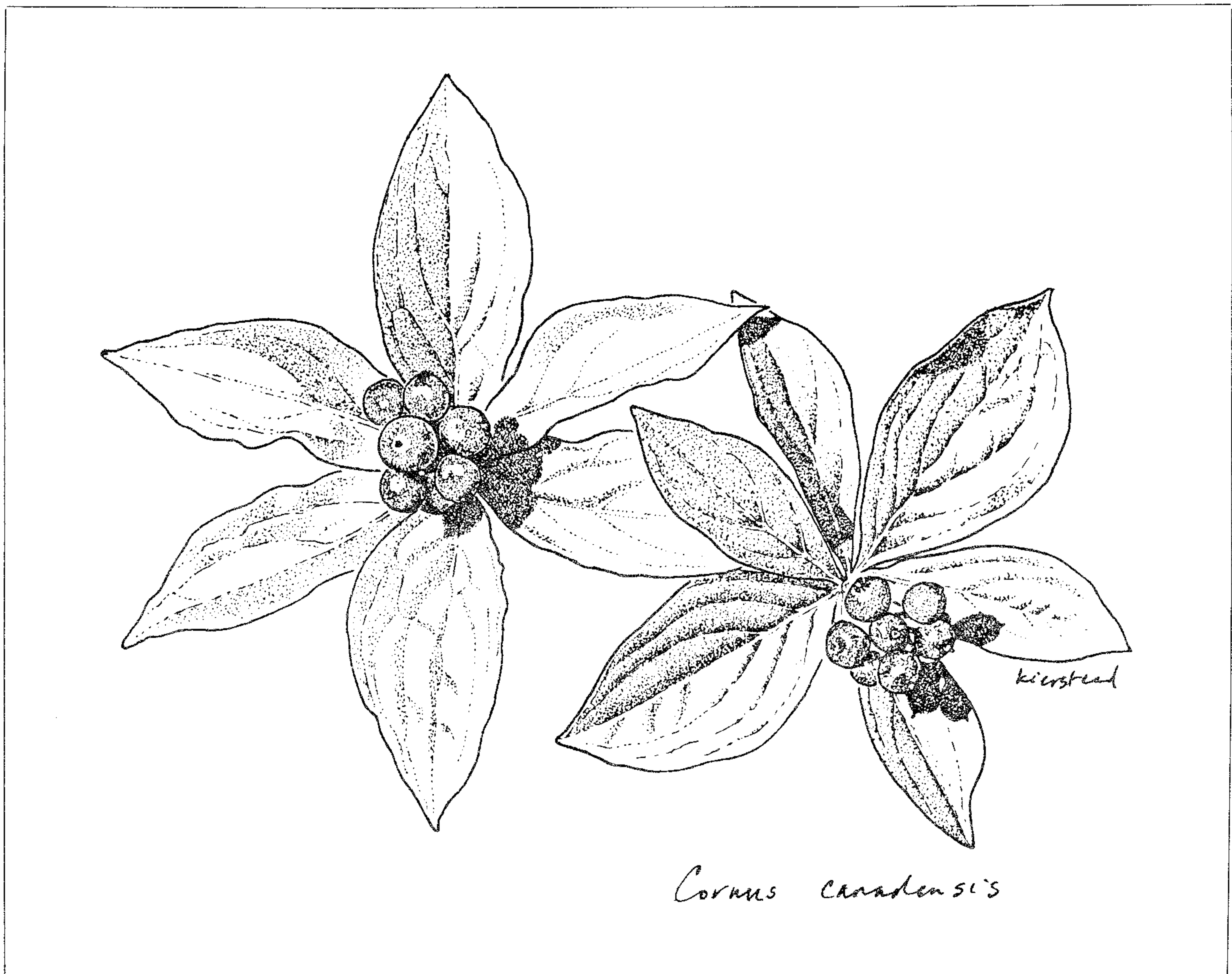
- Senator Mark Hatfield, Senate Office Building, Washington, D.C. 20510; (202) 224-3753 or (503) 221-3386.
- Senator Bob Packwood, Senate Office Building, Washington, D.C. 20510; (202) 224-5244 or (503) 221-3370.
- Congressman Les AuCoin, House Office Building, Washington, D.C. 20515; (202) 225-0855 or (503) 221-2901 or (800) 452-1920.
- Congressman Bob Smith, House Office Building, Washington, D.C. 20515; (202) 225-6730 or (503) 776-4646 or (800) 533-3303.
- Congressman Ron Wyden, House Office Building, Washington, D.C. 20515; (202) 225-4811 or (503) 231-2300.
- Congressman Jim Weaver, House Office Building, Washington, D.C. 20515; (202) 225-6416 or (503) 687-6732.
- Congressman Denny Smith, House Office Building, Washington, D.C. 20515; (202) 225-5711 or (503) 399-5756 or (800) 452-7889.
- Governor Victor Atiyeh, State Capitol, Salem, OR 97310; (503) 378-3111 or (800) 452-7813.
- Jeff Sirmon, Regional Forester, U.S. Forest Service, P.O. Box 3623, Portland, OR 97208; (503) 221-2877.
- William G. Leavell, State Director, Bureau of Land Management, P.O. Box 2965, Portland, OR 97208; (503) 231-6273.
- Richard J. Myshak, Regional Director, Fish and Wildlife Service, 500 NE Multnomah, Suite 1692, Portland, OR 97232; (503) 231-6171.
- Daniel J. Tobin, Jr., Regional Director, National Park Service, Westin Building, Room 1920, 2001 6th Avenue, Seattle, Washington 98121; (206) 442-0170.

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Jean Davis Award

We regret to report that the 1984 winner of the Jean Davis Memorial Scholarship has reported that due to ill health he will be unable to enrol in school this fall. This means forfeiture of the scholarship. Since there were no other candidates for this scholarship this year, we will award two scholarships in the 1985 year. Scholarships are to be awarded to worthy students who have completed at least two years of satisfactory college work and are to be students in an Oregon college during the year they apply for the scholarship. Previous winners are eligible to apply and compete with other candidates. Please pass this information on to all possible applicants. Applications must be in to the scholarship committee not later than April 1 of the year for which application is made.

Mary Falconer
Chairman, Scholarship
Committee



Oregon Native Plant Portraits

Cornus canadensis L.

CORNACEAE: Dogwood Family. Some taxonomists consider our western bunchberry to belong to a separate species, *Cornus unalascensis* Ledeb., which is intermediate in appearance between the circumboreal *Cornus suecica* L. and true *Cornus canadensis*, which ranges across Canada and the eastern U.S.

OENOTHERA WOLFII IN OREGON

The occurrence of Wolf's Evening-primrose, Oenothera wolfii, in Curry County, Oregon, was recently verified from a collection made by Veva Stansell near the mouth of the Pistol River. This news, while not exactly earthshaking, adds a species to our state's flora and increases the known populations of a plant which is listed as "rare" by our neighboring state of California. Readers of this Bulletin may be interested in a brief resume of the history of Oenothera wolfii, which involves some famous botanists and some peculiar biological complexities. The story of this species, a kind of botanical "this is your life, Oenothera!", starts in a Dutch genetist's garden in the late 19th century, leads to Philip Munz (author of "A California Flora"), and ends with Peter Raven, the present Director of the Missouri Botanical Garden. The biological peculiarities include hybridization, self-fertilization, lethal genes, and ring-forming chromosomes.

The evening-primrose genus Oenothera is native to the New World, but during colonial times it was introduced into Europe as a popular garden flower. Extensive research on the genetics and mutability of garden oenotheras was done by Hugo de Vries in Holland, and in 1901 he published a monumental book titled "The Mutations Theory" which prominently featured the formation of numerous "new species" of evening-primroses out of the cultivated species Oenothera lamarckiana. De Vries's startling observations initiated over half a century of studies by plant geneticists, both in Europe and the United States, to discover how Oenothera could mutate to new, true-breeding strains that simulated the evolution of distinct species. A center for Oenothera research existed for many years at Indiana University under the direction of Ralph Cleland, and this became a major institution for the training of American plant geneticists. This humble garden flower therefore achieved high status as an experimental organism, comparable perhaps to the famous peas of Gregor Mendel and the fruit-fly Drosophila, which has dominated zoological research on genetics and evolution for seven decades or more.

The plant family Onagraceae, to which Oenothera belongs, is rich in numbers of genera and species in California, so it was natural for the taxonomist Philip Munz, a professor at Pomona College, to become interested in its classification. Working independently of the Oenothera geneticists such as Cleland, but with an awareness of their results, Munz eventually (in 1965) developed a classification of this genus in which 119



Oenothera wolfii (Munz) Raven, Dietrich, & Stubbe
Illustration from *Threatened & Endangered Vascular
Plants of Oregon: An Illustrated Guide*, by Robert
J. Meinke

species were recognized as occurring in North America including Mexico. He divided the more variable species, in turn, into subspecies. Very closely related to de Vries's original species Q. lamarckiana, according to Munz, is Q. hookeri, and it was as a subspecies of Q. hookeri that Munz (in 1949) first described our plant of interest, Wolf's Evening-primrose. Its name, by the way, honors Carl Wolf, a southern California botanist and authority on the cypress genus Cupressus.

To understand why we now call Oenothera wolfii a species rather than a subspecies, one must be introduced (as gently as possible) to the genetic and evolutionary research that has been done with this genus. One basic finding has been that there are really two "kinds" of species in North American oenotheras--outbreeding ones and inbreeding ones. These terms describe the movement of pollen during the reproductive cycle of the flowers; outbreeders must trade pollen (via insects) between flowers of different plants, while inbreeders almost invariably place the pollen from the anthers onto the stigma of the same flower. There is a convenient correlation between petal size and pollinating method, with the outbreeders having petals up to 5 cm long and inbreeders having petals no larger than 2.5 cm. In the United States, inbreeding species of Oenothera related to Q. hookeri are often very widespread and weedy, and it has been discovered that they have some peculiar genetic features which may contribute to their success as weeds. In botany manuals for various parts of the country, you will find these inbreeders referred to under the names Q. biennis, Q. strigosa (more correctly, Q. villosa), and Q. parviflora. Oenothera strigosa occurs in Oregon, as does Q. hookeri and the escaped cultivated species Q. glazioviana. Oenothera wolfii is an inbreeding species which, however, is rare and presumably endangered through competition and invasion of its habitat by the garden escape, Q. glazioviana. Oenothera hookeri, on the other hand, is a large-flowered outbreeder.

All the oenotheras mentioned above have just 14 chromosomes in each cell nucleus, but these chromosomes sometimes turn out to be peculiarly "scrambled" by the process known as translocation. This scrambling occurs naturally, through spontaneous chromosome breakage. The odd thing is that ordinarily this process should be extremely deleterious to the plants, but rarely it works out that the translocated chromosomes can undergo normal cell division by linking arms, as it were, to form a ring with 14 segments. It appears to be a normal evolutionary process in Oenothera for numerous kinds of

translocated chromosomes to arise (by mutation), for hybridization to assemble these scrambled chromosomes into new combinations, and for the fittest of these to survive and prosper under the test of natural selection. To be successful in nature, a new combination of chromosomes must be viable and fertile, must form a ring of 14 during gametic cell divisions, and must breed true by the process of self-fertilization. Studies of the inbreeding oenotheras, including Q. wolfii, exactly confirm this prediction, since all of them form a ring of chromosomes, and all produce offspring exactly like themselves. Readers of this article may want to make an analogy to "cloning" and "genetic engineering," but remember that these innocent plants are only doing what comes naturally to them--peculiar as it may seem to us.

The many "new species" derived from Oenothera lamarckiana, which so excited Hugo de Vries, we can view in retrospect as arising by this same process, except that it happened in a garden and the crosses were between cultivated rather than wild plants.

The fascinating evening-primrose family continues to be under active investigation today, particularly by a team of researchers at the Missouri Botanical Garden led by Peter H. Raven. One outcome of this research has been to reclassify all Oenothera species using the genetic criteria described above, and in particular to trace the origins of the chromosomes found in each species. According to Raven, Q. wolfii is genetically much like the ring-forming Q. strigosa (Q. villosa), but the two species have had separate, parallel evolutionary origins out of the ancestral, non-ring-forming species, Q. hookeri. Oenothera wolfii can be told apart from Q. strigosa in having slightly larger flowers, a longer floral tube, and a combination of villous and glandular hairs on its inflorescence. Whereas Q. strigosa ranges from the Pacific Coast eastward to the Mississippi River, Q. wolfii is localized in Humboldt and Del Norte Counties, California, and adjacent Oregon. It seems to be rare and is found only as small, scattered populations on dune areas by the ocean. Disturbance of its habitat by human activities, or even the competition of its more aggressive relative Q. glazioviana, may possibly endanger its long-term survival as a species.

What has been said above applies only to this one limited group of species within Oenothera, so not all plants--nor even all evening-primroses--can be accused of excessive mutability or bizarre reproductive habits. Research shows,

however, that among even the humblest of species there is much to be learned about the natural processes governing the diversity and adaptability of plants.

Kenton L. Chambers
Oregon State University



Rubus discolor Weihe & Nees
Himalayan blackberry: introduced from Eurasia

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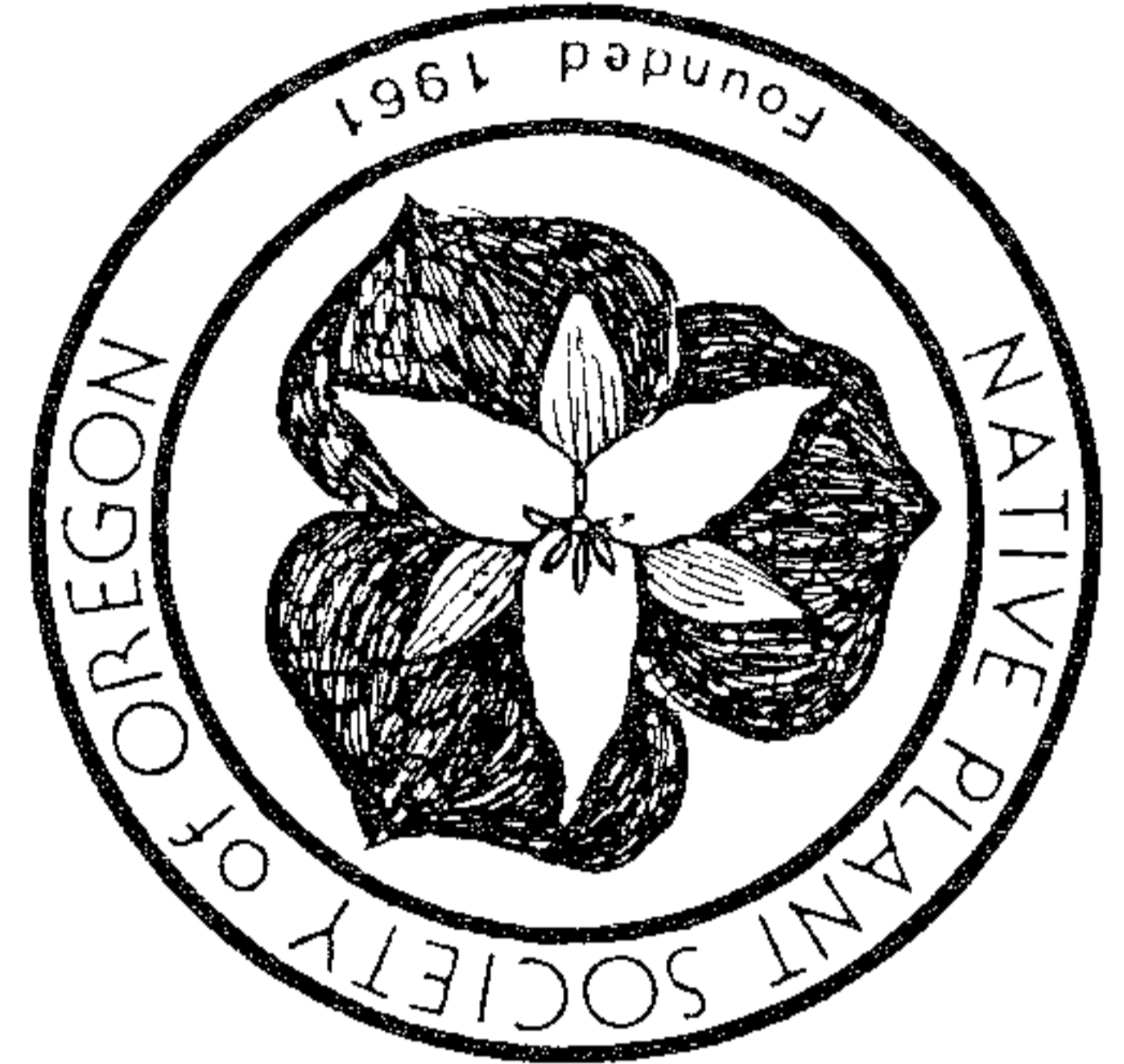
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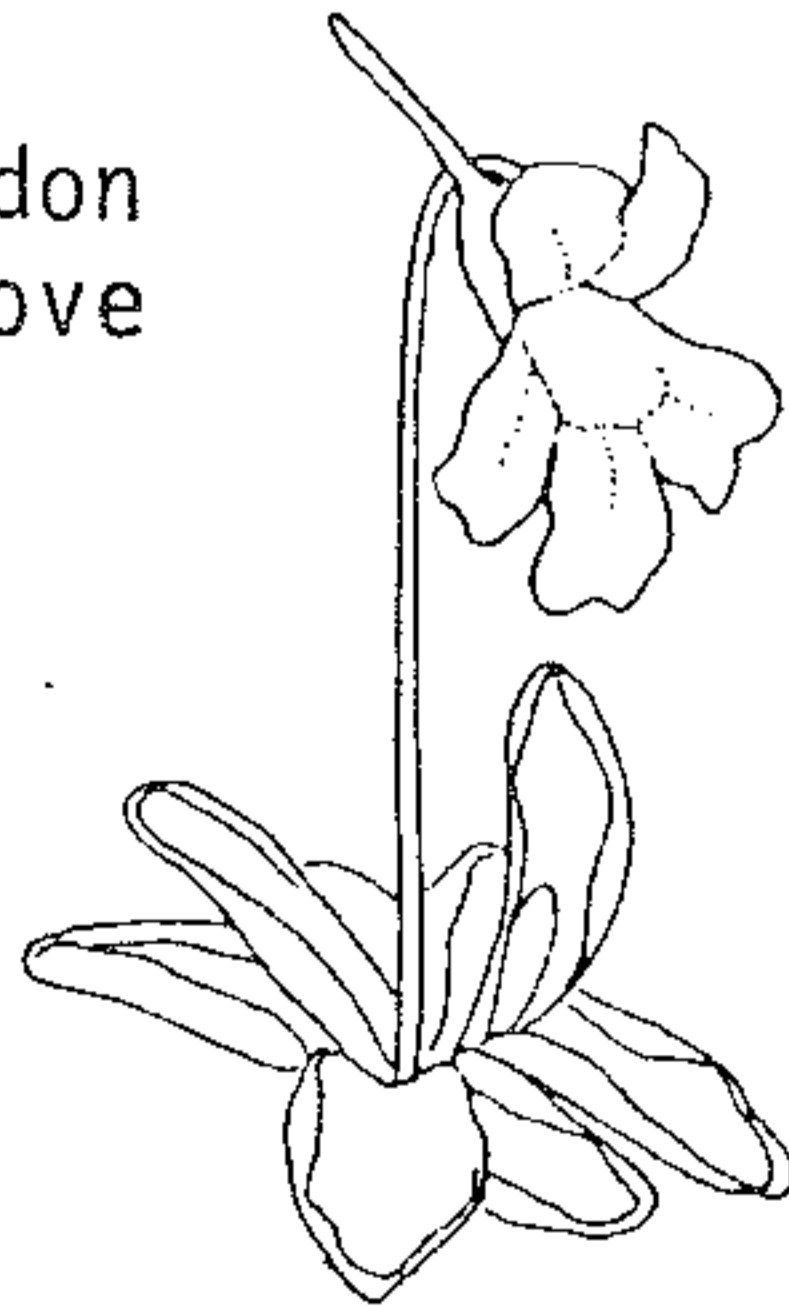
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