NATIVE PLANT SOCIETY of OREGON

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

Dues due - Fill out form, make out check, give to chapter Treasurer

Vol. XIII No. 11 NOVEMBER 1980

CHAPTER CALENDARS

WILLAMETTE VALLEY CHAPTER

Meeting: Monday, Nov. 17, 7:30 p.m. in the Carrier Room of the First United Methodist Church, State and Church Street, Salem. Rare and Endangered Species of the Willamette Valley, Morris Johnson, Professor at Oregon College of Education, speaker.

SISKIYOU CHAPTER

Meeting: Thurs. Nov. 6, 7:30 p.m., Rm. 171, Science Building, Southern Oregon State College, Ashland. Problems and Protection of Natives in the Landscape, Peter Giffen, speaker
Field Trip: Sat. Nov. 8: Mushrooms of the Dead Indian Plateau, leader to be announced. This should be a good time to see our local fungi. Trip depends on rain, however, confirmation at Nov. 6 chapter meeting. Meet 8:30 Medford K-Mart, 9:00 Ashland Bi-Mart.

PORTLAND CHAPTER

Meeting: Mon. Nov. 10, 7:00 p.m., Central Library, 810 SW 10th, Portland. A Visual Tour of Nature Conservancy Areas, John Hoffnagle, Oregon Land Steward for the Nature Conservancy, speaker. Special emphasis will be given to management concerns. Slides of plants from Rowena Dell will be included. Come and bring a friend.
Field Trips: Sat. Nov. 8 -- McCord Creek. Dr. George Jeffcott, leader. Meet 9:30 a.m. at Lewis and Clark State Park. This secluded area with towering cliffs and an enchanting waterfall is worth another visit any time.
Sat. Nov. 15 -- Eagle Creek area. Leader, Dr. John Hammond. Meet 9:30 a.m. at Tri-Met's Handyman park and ride lot 15550 S.E. McLoughlin Blvd. and Risley Ave., Oak Grove, to explore for mosses, lichens and whatever may be noteworthy at this late season.
Sat. Nov. 22 -- Local trip. Leader undesignated. Meet 9:30 a.m. in the Rose Garden parking lot below the tennis courts in Washington Park to see what happens.

WELCOME TO NEW MEMBERS

Mr. & Mrs. Harold French, Salem

ATTENTION PORTLAND CHAPTER

Chapter President, Ann Whitmyer, asks your attention to the following announcements:

1. Portland Chapter members are urged to attend the November meeting to vote on a proposal intended to hasten delivery of the monthly Bulletin. The Editors in Ashland have agreed to place the Bulletins for the Portland Chapter on a Greyhound bus. George Lewis has offered to meet the bus in Portland, change the permit information, and mail them. The cost of this arrangement to the chapter would be about $100 per year, to pay for the Postal Permit and the freight charges. Please consider whether you feel earlier delivery of the Bulletin is worth the extra money and effort required to accomplish it. The matter will be discussed and voted on at the November meeting.

2. Arrangements are being made with the Portland Public Library to handle subscriptions to the newsletters of other plant societies. Portland Chapter members will be able to read the publications of the following societies in the Periodicals Reading Room of the main library: Berry Botanic Garden, California Native Plant Society, Colorado Native Plant Society, Northern Nevada Native Plant Society, and Washington Native Plant Society.

FIELD TRIP REPORTS

Siskiyou Field Trip to Crater Lake, August 2, 1980

The remarkable August flora of Castle Crest and other locations around this unique volcanic area was visited by half a dozen native plant enthusiasts. Some of the observed plants were: Pinus albicaulis, Tsuga mertensiana, Smilacina amplexicaula var. glabra, Habenaria leucostachys, Veratrum viride, Polygonum newberryi, Eriogonum umbellatum, Calyptridium umbellatum, Arenaria pumicola, Holodiscus discolor var. glabrescens, Luetkea pectinata (not in flower), Potentilla glandulosa, Spirea densiflora, Sorbus sitchensis, Aquilegia formosa, Actea arguta, Dicentra formosa, Epilobium hornemannii, Heracleum lanatum, Ligusticum grayi, Chimaphila umbellata var. occidentalis, Arctostaphylos patula, A. nevadensis, Dodecatheon alpinum, Gilia aggregata, Polemonium californicum, Phlox diffusa, Penstemon oreocharis, Veronica wormskioldii, Mimulus lewisii, Pedicularis groenlandica, Penstemon rupicola, Castilleja parviflora, Mimulus guttatus, Lonicera conjugialis, Valeriana sitchensis, Antennaria alpina, Arnica cordifolia, A. longifolia, Chrysothamus nauseaosus var. integrifolium, Microseris alpestris, S Senecio triangularis, Aster ledophyllus var. covillei, Erigeron peregrinus var. callianthemus and Lupinus andersonii. Gordon Larum was the trip leader.

BRIEF NOTES ON SEED GERMINATION

Conditions necessary for seed germination vary with species. All seeds depend upon moisture, heat, light and a free exchange of air in varying degrees. Some require special conditions to make the seed coat permeable to moisture and air. Others need a period of after-ripening in which the embryo continues to develop.

Seeds of trees and shrubs are usually best planted in the autumn. They will germinate in the spring wher conditions are favorable. A few tree seeds are so short-lived that they must germinate as soon as they fall from the tree. Willows, white oaks and poplars are eXamples. Others, such as roses and maples, germinate better in the spring, if they are planted as soon as harvested in the fall. Some need the action of freezing and thawing to crack hard shells. Some need to pass through the digestive systems of birds or animals or to be given an acid bath to modify the hard coat.

Many wild flowers germinate better if they are planted in the fall because they need a period of damp cold. Only experience indicates which these are, and as records of experiments are not easily available, it is often desirable to make a practice of planting all wild species within a short time after gathering.

This is most easily done by planting indoors in moist potting soil with good drainage. Foam cups are ideal containers. Species name, date, and notes can be written on them with waterproof felt or ball-point pen. It is not necessary to sterilize soil if the seed is placed in a top 1" layer of a mixture of one part moistened peat moss to one part perlite. Cover small seed very lightly. Bulb seeds are better covered at least 1/2". Enclose each container in a clear pliofilm bag and place in the refrigerator at a temperature just above freezing.

If a suitable place is available outdoors, such as a cold frame or a location protected from wind and heavy rain but with adequate light, the pots can be put there when the weather turns cold and left for the winter. Soil should be kept moist, but it is not usually necessary to water the pots if left in the plioform bags. Some of the plants may begin to germinate in late February or March, depending on the temperature and the requirements of each species. Remove pliofilm when germination occurs and keep soil slightly moist.

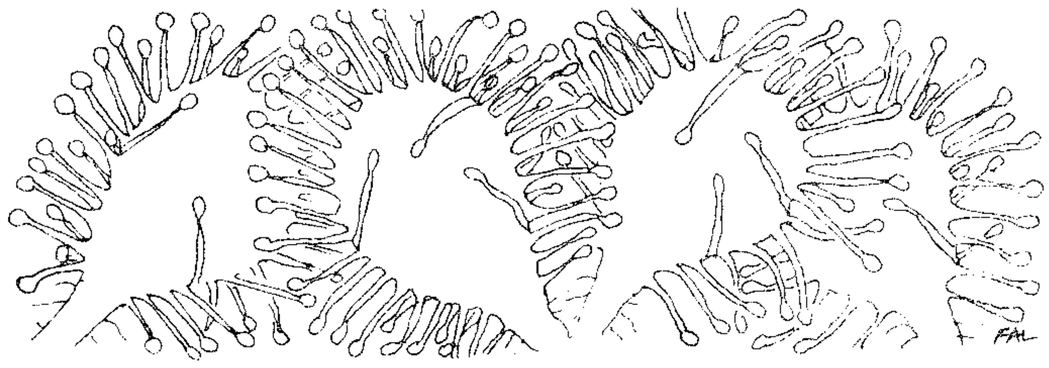
Pots which have been kept in the refrigerator for the winter should be removed in March and set in a location with warmth and good light. The windowsill may be adequate until the seedlings are ready to be transplanted to individual pots. If seedlings become spindly, they need stronger light and lower temperature, and many need to be moved outdoors to a protected location. A cold frame is most desirable.

It is well to remember that one of the mechnaisms of survival of wild plants is uneven germination of seed. Some of a particular species and plant will germinate as soon as conditions are favorable. Others will germinate later in the season and still others may not germinate until a year or two later. Don't be in a hurry to discard seed pans with poor or no germination.

Further information on germination, transplanting and care of seedlings, etc. is abundant and available at the public libraries. Two references which may be helpful are:

Haring, Elda. THE COMPLETE BOOK OF GROWING PLANTS FROM SEED. Diversity Books 1967 U.S. Forest Service. SEEDS OF WOODY PLANTS IN THE UNITED STATES Agric. Handbook 450. U.S. Government Printing Office 1974.

Viola Sobolik
Portland Chapter



BOG LOCALITIES REQUESTED

For the past three years I have been inventorying Oregon's bogs (fens, strictly speaking), with partial financial assistance from the University of Oregon and the Mazamas. I have been able to locate numerous sites through herbarium records, literature reports and tips from many helpful people. Until recently, very little has been known about these fascinating wetlands. A number of range extensions and new state "records" have been found for both vascular plants and bryophytes. Eventually, I hope to assemble an accurate picture of the floristics of our bogs, successional trends occurring in them, and clues as to their origins.

I need your help in identifying additional bogs that may be noteworthy. Of greatest importance are the smaller sites, especially those adjoining lakes where floating mats may form, such as at Hidden Lake (Lane Co.), Parish Lake (Linn Co.) and Duck Lake (Wallowa Co.). Information about bogs of any size, anywhere in Oregon - especially east of the Cascades - will be most welcome. Please send a legal description (township, range, section) whenever possible. Owners will be contacted before any private land is entered.

ALSO: Specimens of Sphagnum moss (enough to fill a 4x5 inch envelope or packet) will be cheerfully identified. Keep a duplicate for yourself, number the collection, and I will return a name.

John A. Christy
960 Adams St.
Eugene, OR 97402

NOTE CARDS AVAILABLE SOON

Note Cards with illustrations of some of Oregon's T/E plants will soom be available from your local chapter. The cost: $2.50 for 10 cards illustrating 5 different plants. Proceeds will be shared between the local chapter and the State organization.

Because of some minor problems we have encountered recently we feel that a reminder on the procedure for submitting membership forms would be helpful.

INSTRUCTIONS FOR SUBMITTING MEMBERSHIP FORMS:

1. Be sure to remove each set of three forms from pad before writing on them (NCR paper).
2. Complete each set of forms fully for each entry.
3. New Members & Renewals:
   - A. Completed form and remittance should be forwarded to the Chapter Secretary/Treasurer, or Membership Committee.
   - B. Chapter responsibility:
     1. Submit pink copy with State portion of dues of the State Treasurer.
     2. Submit yellow copy to State Membership Chairman. (Failure to send this to the proper place will result in New members not receiving a welcome letter and no entry in the membership file.)
4. Changes of Address:
   - A. Completed form should be forwarded to the Chapter Secretary/Treasurer or Membership Committee.
   - B. Chapter responsibility:
     1. Submit yellow copy to State Membership Chairman.

Membership forms may be obtained from the State Membership Committee.

Mary Falconer
1920 Engle Ave NW
Salem, OR 97304

NEW STUDENT MEMBERSHIP RATES

At the September 27 NPSO Board of Directors meeting it was unanimously decided to charge full-time students $5.00 annual membership fee, with $1.50 remaining in the local chapter and the balance of $3.50 going to the state NPSO.

PLANT FAMILY PROFILES
By Herm Fitz

The Onagraceae - EVENING PRIMROSE FAMILY

Centered in southwestern North America, the cosmopolitan Evening Primrose Family contains only about 640 species in 18 genera worldwide. Since Oregon lies to the north of this "family epicenter," where representatives in all genera occur, our state provides home for only about 70 species in 10 genera. The largest genus is the group of willow herbs and Fireweed (*Epilobium*), with some 22 species widespread throughout the state mostly in open habitats. While most of these species have small flowers, those of Fireweed are large and showy. Evening Primroses (*Oenothera*) are next most numerous, with perhaps 21 species scattered around the state on moist or dry, sandy ground mostly in arid areas east of the Cascades. A single species occurs on beaches and sand dunes in coastal areas; two species occur in southern Josephine County. Also found primarily in arid areas east of the Cascades are several species of Gayophytum (*Gayophytum*), small slender-stemmed annual plants. Clarkia (*Clarkia*, including *Godetia*) species, named for Captain William Clark of the Lewis and Clark Expedition, with showy pink to purple flowers, are found on open hillsides on both sides of the Cascades. Two species of Gaura (*Gaura*) may be found in dry sandy ground, often disturbed, especially in sagebrush areas east of the Cascades. Boisduvalia (*Boisduvalia*) occurs on both sides, some in moist ground, some in dry ground. Enchanter's Nightshade (*Circaea alpina*) is widespread and abundant in cool damp woods. Water Purselane (*Ludwigia palustris*) may grow in mud about and in marshes, ponds and bogs; the Broad-Leaved Balsamea (*Zauschneria latifolia*) is found on the dry slopes and ridges in the coast mountains of Curry County and along the lower Rogue River. Finally, an unusual 5-parted native of South America, *Jussiaea uruguayensis*, has been introduced in swamps, rivers and lakes.

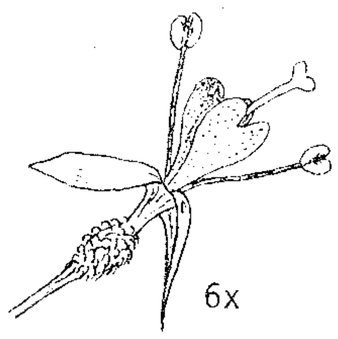
The Onagraceae is a botanically well-defined family. All members are herbs, either annual or perennial, except for the cultivated ornamental genus *Fuchsia* which is shrubby. Most are terrestrial; a few are aquatic (*Ludwigia, Jussiaea*). Leaves are simple, either alternate or opposite. Flowers are either solitary in the leaf axils or in racemes. The floral tube or hypanthium surrounds the style and supports the sepals, petals and stamens. Typically flowers are tetramerous with 4 sepals, 4 petals, 8 stamens (usually in 2 series of 4 each), and a 4-chambered inferior ovary. Exceptions are Enchanter's Nightshade (*Circaea*) which is 2-merous (2-2-2-②) and *Jussiaea* which is 5-merous (5-5-10-⑤). Petals may be small or wanting in Water Purselane (*Ludwigia*), which also bears only 4 stamens (4-0-4-④). The pistil consists of a usually tetralocular ovary (bi-locular in *Circaea*, 5-merous in *Jussiaea*) with axile placentation and a single style with either a 4-lobed or capitate stigma. The fruit is typically a dehiscent capsule, although it may be hard, indehiscent and nutlike (*Gaura, Circaea*).

Pollination in Onagraceae is often accomplished by moths, especially in the genus *Oenothera*. Species are often night-blooming and visited during darkness by night-flying moths which unroll long tongues to probe the elongate floral tube or hypanthium seeking nectar secreted by nectaries at the base. An interesting story relates that Charles Darwin, while visiting the Galapagos archipelago during his 5-year H.M.S. *Beagle* journey, found a species of *Oenothera* there and declared that surely there must be an associated Noctuid moth with a tongue the length of the floral tube. Charles Darwin never found that moth - but later workers did, and the tongue length was just as Darwin had predicted! This relationship also explains why some Evening Primroses open in late afternoon and bloom through the night; it also suggests why *Oenothera* blossoms are either white or yellow (more easily visible) and sometimes very fragrant (olfactory clues to assist moths).

We may now write the generalized floral formula for the Onagraceae:

4 4 8 ④
Ca Co S P with inferior ovary.
Hypanthium

This is a most distinctive formula that makes nearly every member of this family easily recognized. When you see an herbaceous plant with simple leaves, and notice an inferior ovary, a hypanthium, and the typical 4-merous flowers - you may be certain that you have found a member of the Onagraceae - The Evening Primrose Family.



6x

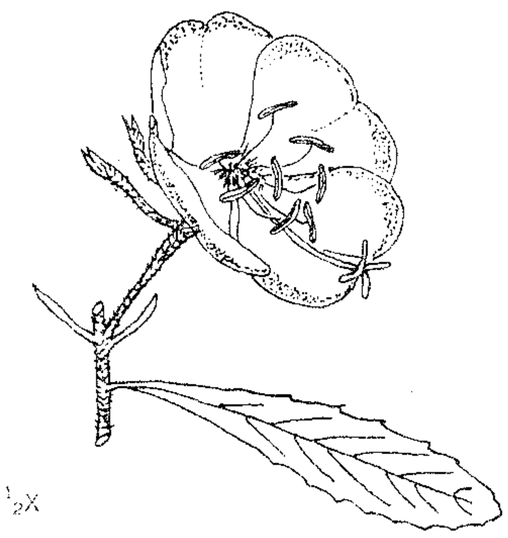
Single flower of Enchanter's Nightshade (*Circaea alpina*) showing the unusual 2-parted condition. Note also the basifixed anthers, bilobed stigma, notched petals, and hooked hairs on the inferior ovary.

½X

Mature capsule of Fireweed (*Epilobium angustifolium*). Note the 4 valves split open releasing the cottony-haired seeds.

½X

Portion of stem and single leaf of Fireweed (*Epilobium angustifolium*). Again, note the 4-parted condition. Anthers are basifixed.



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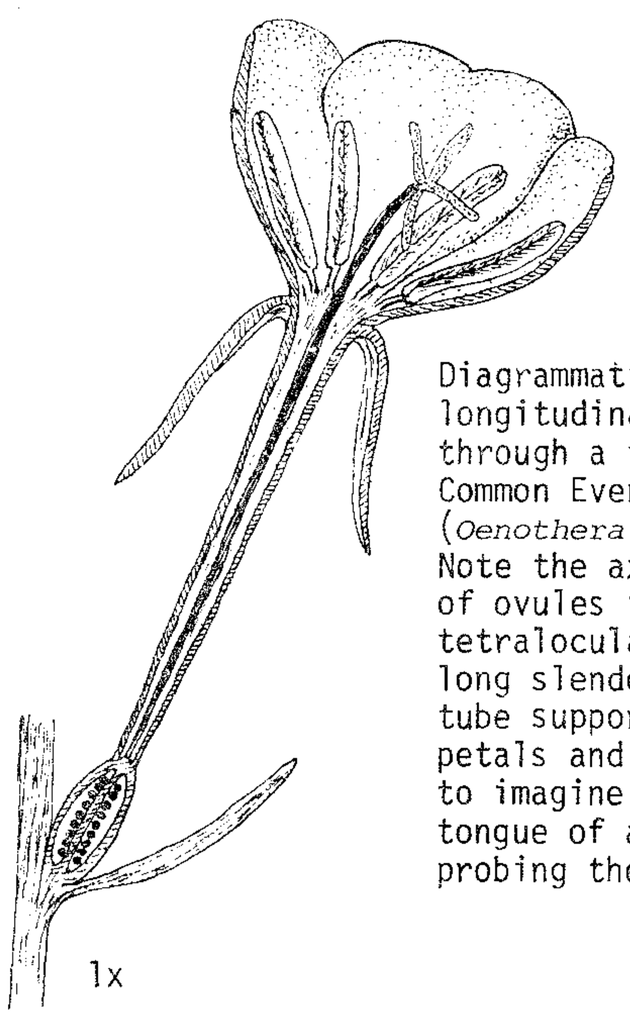
Single flower and leaf of Evening Primrose (*Oenothera hookeri*). Note the typical 4-parted condition with 8 stamens, versatile anthers, the 4-lobed stigma, and simple leaf.



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Diagrammatic cutaway longitudinal section through a flower of Common Evening Primrose (*Oenothera biennis*). Note the axile placentation of ovules in the inferior tetralocular ovary and the long slender hypanthium tube supporting the sepals, petals and stamens. Try to imagine the long uncoiled tongue of a Noctuid moth probing the hypanthium.

THE NATIVE PLANTS COMPANY

(Ed. Note: Usually Bulletin does not make a practice of highlighting commercial concerns. (Though we did publish a list of Oregon retailers of native plants and seeds in 1979.) However, we predict that the wave of the future will include a much greater and more sophisticated use of native plants, both for saving T&E species from extinction and for restoring habitats damaged by mining, roadbuilding, etc. Private concerns may well lead the way in this field. Interest is growing here in Oregon, but a Utah company, Native Plants, Inc., and its subsidiary, Plant Resources Institute, caught our eye. Here we reprint some of their literature. For more information, contact: Native Plants, Inc., University Park, 360 Wakara Way, Salt Lake City, Utah 84108. --Vern Crawford)

The battle between the sexes didn't just debut in the seventies. Mother Nature and Man have been waging war for centuries. And for the most part mankind has held the lead, leaving behind a tarnished battleground.

Reclaiming these ravished lands became the challenge of an innovative team of biologists and businessmen. They did what no one had ever done before - they propagated native or indigenous plants in a few months in greenhouses, a feat which takes nature years to accomplish. And their strategy worked. Transplanted native species were found to permanently establish themselves, tolerate droughts and severe temperatures, require minimal maintenance, and add more naturally to the landscape than non-native vegetation. Indian Ricegrass, Dogwood, Loblolly Pine, and hundreds of other native species became a solution to the critical problem of revegetation.

These allies with Mother Nature, Native Plants, Inc., have bridged the gap between essential industrial development and environmental concerns. They have been in demand by surface mining firms who are working to return their disturbed lands to their original, pristine condition. Native Plants' technology has found application in highway beautification, ski-area maintenance, pipeline right-of-way revegetation, and other projects.

Slope-stablization and land-conservation specialists have employed Native Plants. Wildlife habitat improvement, rangeland upgrading, and restoration of flood- and fire-damaged lands have likewise been tackled. Planners are discovering the merits of native plants for low-maintenance landscaping. And the vast potential of some native plants as new crops is just being tapped. A native desert shrub has been found to yield a valuable oil chemically similar to that of the endangered sperm whale; a plant native to Asia may be a possible new source of protein for developing nations. Native Plants is redefining a valuable resource whose potential has jsut begun to be realized, a means to meet the needs of a growing world.

The Native Plants' process is totally unique. Native Plants' people work to understand the big picture-ecosystem management-and do it one better. When Mother Nature plants a seed she sleeps on it. After extended periods the seed may eventually germinate, only to be smothered out by competitive species. Native Plants knows that the needs of today can't wait that long or take that risk, and so they have gathered seeds themselves-and that's not an easy task. Timing is critical. For some species, such as the Aspen, the seed-ripening season lasts only a few days, thus the seeds can be collected only during this short time period. Seeds of some species have never been commercially gleaned before.

Once collected, the process of germination commences Native Plants has had to second-guess Mother Nature. They've had to reproduce the biological sequence in a fraction of the natural time. To do so they've plunged seeds into boiling water, bathed them in hot concentrated acids, purged them in household bleach, or filed away the seed coats. But their techniques have worked. And now growing in the greenhouses of Native Plants are species which have never before been reproduced by anyone other than Mother herself.

Within Native Plants' greenhouses unheard-of innovatons are taking place. Plants are being propagated in Tubepaks, Native Plants' specially designed containers for growing species for large-scale land rehabilitation projects. The corrugated sides of these sturdy little plastic tubes force plants to grow long, thick vertical root systems which, when transplanted, grab on to deep ground moisture and nutrients.

Native Plants has tricked the seedlings in these Tubepacks into growing both night and day by lighting their greenhouses to eliminate night dormancy. And they have infused the air with carbon dioxide to give their seedlings more than just a fighting chance. These accelerated growing systems, coupled with simple tender loving care, produce a predictable environment which results in hardy, healthy plants. Before boxing and shipping them, however, they are transferred from the gentle environment of the greenhouse to the rigors of outdoors for hardening and transition to the natural environment.

But the real proof of the process is in the planting. While beauty is important, it's establishment that counts. Native Plants boasts of as high as 97 percent successful establishment. This achievement is possible because they've taken into consideration every critical element-soil, climate, exposure, competition from other species, slope, and drainage-and they've grown plants that can take it. And that's what makes the process complete, that's what makes Native Plants unique.

The vast spectrum of environmental needs today demands flexibility and innovation. Native Plants lays claim to both. Their services include any and all aspects of revegetation-from consulting, to testing and technical services, to supplying seeds, bare-root stock and container-grown plants. In addition, Native Plants has prepared a design kit to assist planners in specifying and using native materials.

But perhaps Native Plants' most important contribution is their affiliated organization, Plant Resources Institute. Here the research is conducted which keeps Native Plants on top of the industry. Plant Resources Institute is heavily involved in micropropagation technology-a development in plant physiology whereby parts from a whole plant are removed, sterilized, and grown on a specific nutrient medium. The high degree of selectivity and rapid propagation afforded by this technology has farreaching implications for helping solve some of the world's food, energy, and environmental challenges.

Plant Resources Institute is also into renewable energy resources, studying the utilization of plant materials as new forms of energy. Plant selection research and bio-medical applications await their investigation. And the entire breadth of unexploited plants internationally has just begun to be explored.

Yet Native Plants and Plant Resoruces Institute won't keep these discoveries just under their microscopes. To further the vital work of revegetation they are sharing their findings through symposiums and applied plant technology workshops. And they publish a periodic newsletter, Plant Resources Memorandum, to promote awareness of developments in the industry as a whole. For they firmly believe that the battle between the sexes-Mother Nature and Man-has waged too long. An armistice is near at hand. Native Plants and their affiliate, Plant Resources Institute, are doing everything they can to win a harmonious balance between these two factions, to insure that peace at last will prevail.

Plant Resources Institute, a subsidiary of Native Plants Inc., maintains a large tissue culture facility that is involved in both research and large volume production. Native Plants provides palnt materials and seeds for landscaping, revegetation and reforestation.

Tissue culture is a clean stock - rapid multiplication program whereby a small piece of tissue from a given plant can be multiplied into thousands of new pathogen-free, genetically identical plants. It can also be termed cloning. At our lab we take plant tissues and grow them under sterile conditions in petri dishes containing an artificail nutrient medium.

We have cultured such diverse plants as aspen, wild current, salt bush, Oregon grape, foliage and flowering house plants, ferns, jojobas and cacti. Currently we are working on a contract for the BLM in Arizona to tissue culture five endangered species of Pediocacti. The project has been highly successful, and we have been able to save those plants from near extinction.

NATIVE PLANT SOCIETY of OREGON
Founded 1981

The Editors
Native Plant Society of Oregon
Department of Biology
Southern Oregon State College
Ashland, Oregon 97520

NATIVE PLANT SOCIETY OF OREGON

President:	Dr. Frank Lang, Southern Oregon State College, Ashland, OR 97520 Phone 482-6341
Vice President:	Dr. Herb Armentrout, 20060 SE Hiway 224, Clackamas 97015 Phone 658-2751
Secretary:	Mary Jane Fredricks, 4436 NW Barnes Road, Portland 97210 Phone 228-4891
Treasurer:	Russ Graham, 4030 Eagle Crest Road N.W., Salem, Oregon 97304
Board of Directors:	Dave Garcia, George Lewis, Dave Wagner, Ruth Hasen, Herm Fitz, Karl Urban
NPSO Bulletin Editors:	Vern Crawford and Dr. Frank Lang

CHAPTER PRESIDENTS

Blue Mountain:	Harry Oswald, Box 459, Pendleton, 97801 Phone 276-1241
Emerald:	Dr. Dave Wagner, 3315 Onyx St. Eugene, 97405 Phone 683-2609
High Desert:	Joyce Bork, 60817 Alta, Bend 97701 Phone 389-5657
Mid-Columbia:	Keith Chamberlain, Box 151, Mosier, 97040 Phone 478-3314
Portland:	Ann Whitmyer, 6566 SW Terri Ct. #16, Portland, 97225 Phone 244-9264
Siskiyou:	Joan Seevers, 725 Leonard, Ashland, 97520 Phone 482-5492
Willamette Valley:	Tony Sobolik, 2120 Pioneer Road, Dallas, 97338 Phone 623-2630

For change of address or information on membership, contact your nearest chapter or Mary Falconer, 1920 Engle Ave., NW, Salem 97304
Contributions to the NPSO Bulletin or non-delivery notice should be sent to: The Editors, Native Plant Society of Oregon, Department of Biology, Southern Oregon State College, Ashland, Or 97520

The NPSO Bulletin is published monthly by the Native Plant Society of Oregon incorporated under the laws of the State of Oregon. Your are invited to join. Membership includes Bulletin subscription. Dues are student $5.00, regular member $7.50, Sustaining member $25.00, Patron $100.00, Life member $500.00. Others are welcome to use material from the NPSO Bulletin. Courtesy pleads, however, that credit be given to the author and to the Bulletin.