

Bulletin of the
**NATIVE PLANT SOCIETY
OF OREGON**

Dedicated to the enjoyment, conservation, and study
of Oregon's native vegetation

VOLUME 24 NUMBER 5

JUNE 1991

ISSN 0884-599

HAVE YOU EXPIRED?

---or have we buried you prematurely? During the recent change of guard in the mailing committee, several membership renewals were not recorded in our computer. Please check your mailing label: if there is a yellow "90" next to your name, you are listed as not renewed for 1991, and you will not receive any future *Bulletins*. If you have really renewed, please notify the Membership Committee. If there is no number next to your name, you are enrolled for 1991. If you did not receive *Kalmiopsis*, and wish to have a copy, please notify the Membership Committee---

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Portland Or 97210-2412
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IMPORTANT NOTE TO FIELD TRIP PARTICIPANTS

Field trips take place rain or shine, so proper dress and footwear are essential. Trips may be strenuous and/or hazardous. Please contact the trip leader for information about difficulty, mileage, and terrain. Participation is at your own risk. Bring water and lunch. All NPSO activities are open to the public at no charge (other than carpool mileage), and friends, newcomers and visitors are always welcome.



Recycled Paper

Notice to field trip chairs and leaders: The Forest Service and other Federal agencies have set policies limiting group size in wilderness areas to 12. The reason for this is to limit the human impact on these fragile areas. As we are often in the position of asking them to follow their rules and regulations for conservation of our natural resources, it's time for us to do the same. Each group using wilderness must be no larger than 12.

CHAPTER NEWS

Blue Mountain

1 June, Sat.

FIELD TRIP. Bruce Barnes will lead a trip up Buck Creek on the upper Umatilla River. Leave from the BMCC Greenhouse at 8am.

9 June, Sun.

FIELD TRIP. Jerry Baker will lead a trip up Ruckle Ridge. Leave from the BMCC Greenhouse at 8am.

Corvallis

1 June, Sat.

FIELD TRIP to Fern Ridge Reservoir with Kathy Connelly to look at wet prairie plants. Leave at 10am from the parking lot across from the Monroe Beanery. Bring a sack lunch, rain gear and appropriate walking gear. Contact Esther McEvoy for more information (754-0893).

- 8 June, Sat. **FIELD TRIP** to Mary's Peak to look at the spring wildflowers. Leave 9am from the parking lot across from the Monroe Beanery. Contact Esther McEvoy for more information (754-0893).
- 10 June, Mon. **MEETING.** 7:30 pm at the Herbarium Library (Room 4083, Cordley Hall, OSU). Our speaker will be Dr. Ken Chambers; his topic is "Does Every Species Really Count?"
- 30 June, Sun. **FIELD TRIP** to Iron/Cone Mountain, a joint trip with the Salem Chapter. Leader is Dan Luoma. Leave 8am from the parking lot across from the Monroe Beanery.

Emerald

- 8 June, Sat. **FIELD TRIP** to the north shore of Lookout Point Reservoir. We will be bicycling to complete an inventory of plants along the north shore road in a variety of habitats including open rock outcrops, forested zones and riparian areas. Good opportunity to sharpen your plant keying skills and gain familiarity with both common and some uncommon plants of the Western Cascades. Depart from South Eugene High School parking lot corner of 19th and Patterson at 9:30am. Bring bicycle, handlens, lunch and drink. Trip leader: Jenny Dimling (343-3242).
- 22 June, Sat. **FIELD TRIP.** Willamette Forest botanist Jenny Dimling will lead a field trip to Wolf and Wildcat Mountain and nearby Wolf Lake in the Blue River ranger District to explore this unique botanical area and survey the flora. Depart from South Eugene High School parking lot corner of 19th and Patterson at 9am. For further information call Jenny Dimling (343-3242).

High Desert

- 9 June, Sun. **FIELD TRIP** to Hatfield's High Desert Ranch. Depart from the Juniper Park parking lot (7th and NE Franklin in Bend) at 8:30 sharp. Doc and Connie Hatfield have invited us to tour their ranch 15 miles north of Brothers. They have practiced innovative ways of running cattle which are kinder and gentler on the land. Prescribed fire, juniper control, and riparian protection are only some of them. Easy hiking. Trip leader is Stu Garrett (389-6981 eves).

Mid-Columbia

- 5 June, Wed. **MEETING.** 7:30pm at the Mosier School. George Lewis of the Portland Chapter will present slide of native plants from his extensive travels through Oregon.
- 10 July, Wed. **MEETING.** 7:30pm at the Mosier School. Please note change this month only to the 2nd Wednesday of the month due to the 4th of July holiday. Program to be announced.

North Coast

- 22 June, Sat. **MEETING/FIELD TRIP.** Our group will assist Bill Miles in planting of 1000 wildflowers at Bear Creek Artichokes in Beaver. For more information call Sallie Jacobsen (842-4350).

Portland

- 1 June, Sat. **FIELD TRIP:** Lois Kemp will show slides of unusual plants of the Gorge between 10 and 12am at Leach Botanical Garden. She will also show how to identify plants using Hitchcock to key a weed species. Bring lunch to eat besides Johnson Creek. After lunch see fern propagation and more of the garden. Meet 10am at the garden's Manor House, 6704 SE 122nd Avenue, south of Foster. Park south of the bridge. For information, call Charlene Holzwarth (384-3444).
- 9 June, Sun **FIELD TRIP:** Join Del Blackburn of Clark College when he leads his botany students to Gumboot Bog in the Gifford Pinchot National Forest. Leave at 9:30am from the 134th St. Park and Ride off of I-5 north of Vancouver, Wa., or at 11am at Sunset Campground on the Lewis River. For information call Nancy Fahey (206-694-2902).
- 11 June, Tue. **MEETING.** 7pm at First United Methodist Church, 1838 SW Jefferson St., Portland. Lois Kemp will be showing slides of native plants of Oregon, rescheduled from last month.

- 15 June, Sat. **FIELD TRIP:** Carroll DuBuar will lead a joint NPSO-Friends of the Columbia River Gorge moderate 6.5 mile hike along the Pacific Crest Trail. The route will pass Gillette Lake and go to Greenleaf Basin Overlook. Leave at 8:30am from the DOT parking lot at 60th and Glisan, Or at 9:30am at the trailhead, across Washington State Highway 14 from Bonneville Dam (2 miles west of the north end of the Bridge of the Gods). Leader is Carroll DuBuar (234-4135).
- 28-30 June **CONFERENCE WITH FIELD TRIPS:** Jointly sponsored by the Portland Chapter NPSO, Leach Botanical Garden, Berry Botanic Garden and Hoyt Arboretum. The theme is "Nature in the Garden" and "The Garden in Nature". Registration fee is \$75.
- 6 July, Sat. **FIELD TRIP:** 'Right Angle Viewpoint' on the Clackamas & Molalla watershed divide, an area new to the NPSO. Spectacular views, unusual geologic features, old growth, and an excellent wildflower display. Gain about 300' to 4900' on an approx. 3 mile round trip. Leave at 8:30am from the K-Mart at 82nd & Milwaukee Expressway. Leader: Bryan Boyce (655-4457).
- 13 July, Sat. **FIELD TRIP:** Destination is 5334' Mount Lowe in the Upper Clackamas drainage. Typical West Cascades flora with some old growth. Call leader Bob Powne (292-5364) for more information.

Siskiyou

- 13 June, Thurs. **MEETING.** 7:30pm in Room 171 of the Science Building at Southern Oregon State College. John Irwin will show slides on a potpourri of wildflowers.
- 9 June, Sun. **FIELD TRIP:** Babyfoot Lake and proposed Howell Memorial Drive. Anita Seda, botanist for the Illinois Valley Ranger District will lead us to Babyfoot Lake, Fiddler Mountain, and the proposed Howell Memorial Drive. Plants we'll see are *Draba howellii*, *Fritillaria glauca*, Brewer's spruce, and *Lewisia cotyledon* var. *purdyi*. Leave at 8am from the Food 4 Less lot in Medford, at 8:45am from the Grants Pass BiMart or Selma Market at 9:30am. Contact Anita Seda (592-2166) for more information.
- 22 June, Sat. **Field Trip for *Calochortus coxii*.** Frank Callahan and Ray Godfrey will lead a joint trip with the Umpqua Valley Chapter to several populations. A moderate hike of about one hour with some botanizing along the way. Meet Frank Callahan at 8am in the parking lot of the Siskiyou National Forest Supervisor's office. (At the north Grants Pass exit on I-5, turn right at the stop sign, then another quick right onto Greenfield Road, driveway on left.) Interested people from the Roseburg area meet Ray Godfrey at McDonalds (take Garden Valley Exit 125, then east to McDonalds). At 9:15am everyone converge at the Boomer Hill exit on I-5 (just north of Myrtle Creek). For more info call Frank (855-1164) or Ray (673-5094).

Umpqua Valley

- 8 June, Sat. **Field Trip.** This is a good time to look for *Calochortus umpquaenses* in its habitat from river to 2000' elevation. Meet 7:45 am BLM parking lot, 777 Garden Valley Road for carpooling, leave 8 am. Coordinator, 673-3709.
- 13 June, Thur. **MEETING.** NE US alpine flora by Peter Zika. 7pm Room 310 Douglas County Courthouse, Roseburg. For more information call Russ Holmes (672-4635).
- 22 June, Sat. **Field Trip.** Look for *Calochortus coxii* with the Siskiyou Chapter. Frank Callahan and Ray Godfrey will lead a trip to several populations. A moderate hike of about one hour with some botanizing along the way. See Siskiyou Chapter schedule. Meet Ray Godfrey at McDonalds (take Garden Valley Exit 125, then east to McDonalds). At 9:15am everyone converge at the Boomer Hill exit on I-5 (just north of Myrtle Creek). For more info call Frank (855-1164) or Ray (673-5094).

Willamette Valley

- 22 June, Sat. **Field Trip.** Mill Creek near Buell. Car pool from west Salem Safeway parking lot at 9am or from the Buell Fire Department building at about 9:30am.

- 30 June, Sun. **Field Trip.** Iron/Cone Peak in Willamette National Forest. Leader is Dan Luoma. Car pool from west Salem Safeway parking lot at 8am or from the Tombstone Pass parking area on Highway 20 at 9:30am. A joint trip with the Corvallis Chapter.
- 13 July, Sat. **FIELD TRIP.** Andrews Experimental Forest, Blue River Ranger District, Willamette NF. Leader is Art McKee. Leave from South Salem K-Mart at 8am or meet at the experimental forest headquarters at 11:30am.
- William Cusick**
- 8 June, Sat. **Field Trip** to Morgan Lake near LaGrande. Come learn about aquatic and moist site plants with Eastern Oregon College professor Karen Antell. Contact her at 962-3610 for meeting time and place.
- 22 June, Sat. **Field Trip** to Government Draw Research Natural Area in the LaGrande Ranger District, Wallowa-Whitman National Forest. Come see old growth ponderosa pine forest in an area that has not been grazed for 25 years. Contact Paula Brooks (523-7564) for more information.
- 29 June, Sat. **Field Trip** to Mt. Howard in the Eagle Cap Ranger District, Wallowa-Whitman National Forest. Come ride the Tramway (fare is \$9 roundtrip) to the top of 8,000' Mt. Howard to see sub-alpine plants and the rare Greenman's lomatium. Contact Marty Stein (426-4978 days; 426-3443 eves) for more information.
- 13 July, Sat. **Field Trip** to visit the John Day area with Malheur National Forest botanist Greg Lind. Hike will be in the Cedar Grove Botanical Area and the Baldy Mountain Research Natural Area. Contact Greg (820-3311 days; 820-4759 eves) for more information.

WELCOMING OUR NEW MEMBERS....

We have 18 new members as of May 12th!

Corvallis Chapter	Butch Field
High Desert Chapter	Joan Ellis
	L.D. & Natalie MacKellar
	Ruth Burleigh
Yvonne Winsor	
Mid-Columbia Chapter	Julie Sanderson
	Sue Allen
North Coast Chapter	Sandy Polishuk
Portland Chapter	Angelica Adams
	Cathy Olson
	Terry Medaris
	Walt & Karen Trandum
Siskiyou Chapter	Tom & Barbara Mathieson
Willamette Valley Chapter	Jim Crane
	Jo Yeager
William Cusick Chapter	Lavada Nudo
At Large	David Lloyd
	Karen Wiese

THRIFT IS BOTH NATIVE AND INTRODUCED IN OREGON

"Thrift" can mean different things to different people, but as the common name of a plant it refers to *Armeria maritima*, an attractive pink-petalled wildflower found on sandy bluffs all along the Oregon Coast. The genus *Armeria* is reported to contain around 80 species, of which 43 occur in Europe. In several species, cultivated varieties have been developed which are grown as garden border-plants, often under the name Statice. *Armeria maritima* is the only species native in North America. It has a wide natural distribution in Europe and throughout the Arctic regions, extending down the Pacific Coast from Alaska to California, then jumping to the southern tip of South America. The plants of Oregon and California have been grouped taxonomically as var. *californica*, separate from var. *purpurea* and var. *sibirica* of the Arctic (see figures 1 and 2).

Beginning in the 1950's, studies of *Armeria* by Prof. Herbert Baker, of the University of California, Berkeley, revealed a fascinating but subtle story of variable reproductive systems in *A. maritima*. This species was found to have two diametrically opposed methods of pollination; in Europe, successful reproduction can only occur by cross-pollination between different individual plants (technically known as outcrossing or xenogamy); in the Arctic and throughout the New

World, the species reproduces very successfully by selfpollination within individuals (known as inbreeding or autogamy). This reproductive difference is genetically controlled in a complex way, involving genes that affect the ability of particular pollen grains to germinate and grow on particular kinds of stigmas. Luckily for botanists who wish to study this phenomenon, a microscopic examination of pollen and stigmas from a single flower can instantly tell us whether the plant is an "out-crosser" or an "inbreeder."

What one would see under the microscope is shown in figures 3, 4, and 5. All populations of *Armeria maritima* in Europe, south of the Arctic region, contain equal proportions of two kinds of individuals--one-half the plants have the pollen and stigma types shown in Fig. 3, the other half have the pollen and stigmas shown in Fig. 4. The pollen of Fig. 3 will only germinate if transferred to the stigma of Fig. 4, and vice versa (pollen of Fig. 4 transferred to a stigma of Fig. 3). No plant in Europe can self-pollinate, because the pollen of a given flower is never "compatible" with the stigmas of the same flower! Flowers of this species occur in showy heads which are attractive to bees and other insects; pollen is picked up and carried from plant to plant, thus ensuring successful cross-pollination.

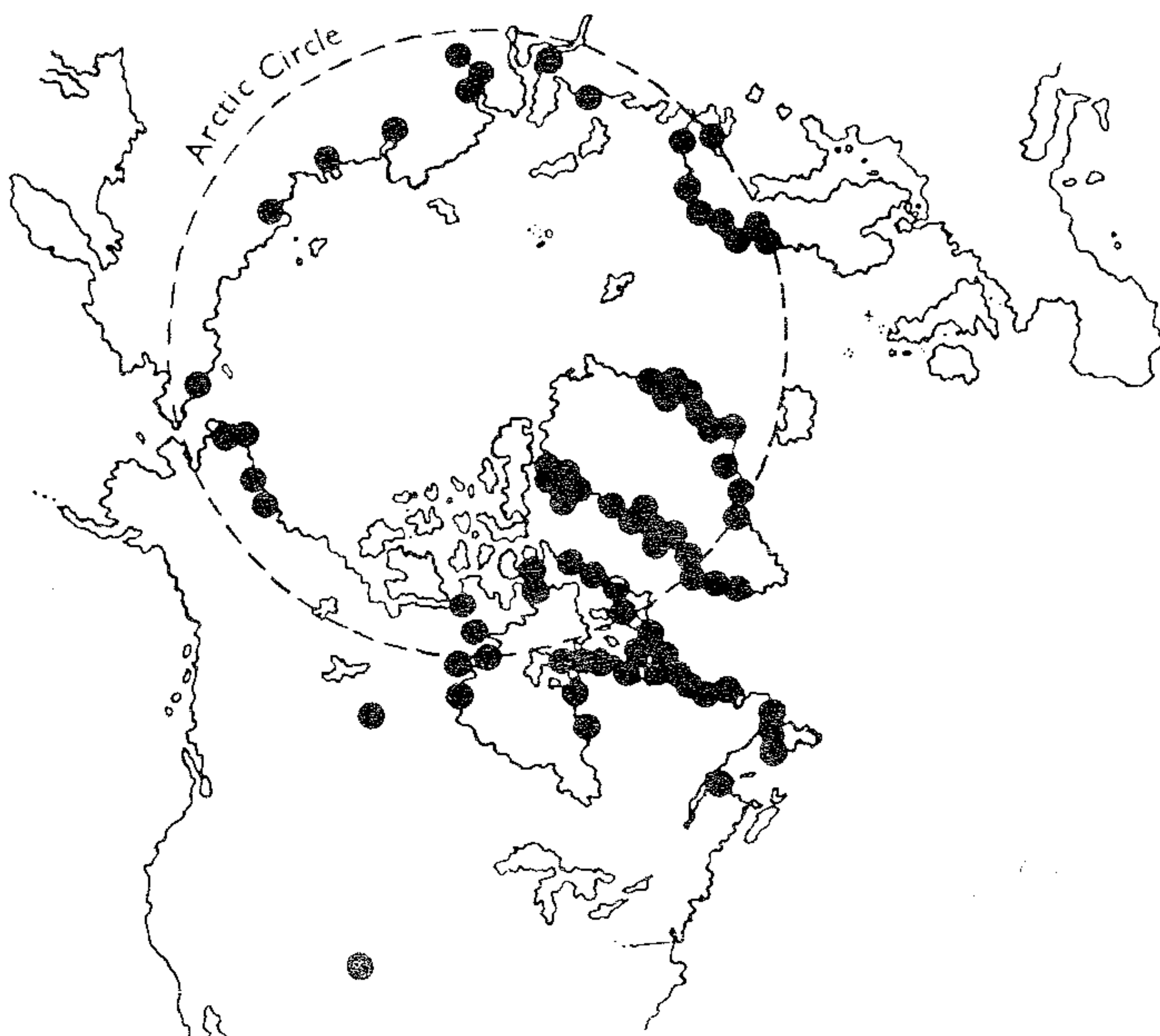


Fig. 1 Circumpolar distribution of *Armeria maritima* subsp. *sibirica* (includes var. *labradorica*).

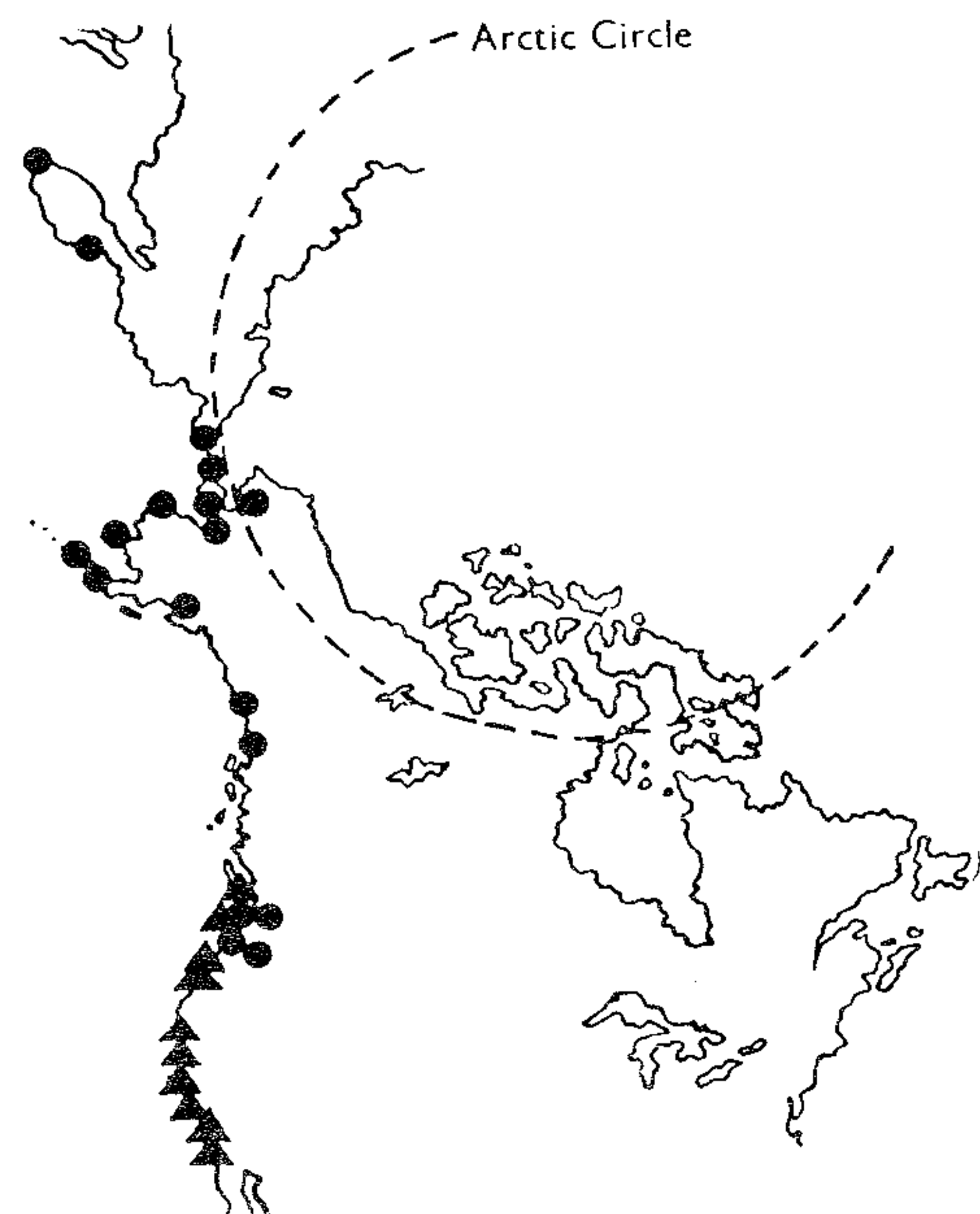


Fig. 2 Distribution of *Armeria maritima* subsp. *purpurea* (circles) and *A. m.* subsp. *californica* (triangles).
Not in detail for Puget Sound area

Plants of the Arctic and the western coasts of North and South America are changed genetically from the European type--they are all alike in having the pollen and stigma forms shown in figure 5. Note that this flower combines the pollen type of Fig. 3 with the stigma type of Fig. 4! Such plants are self-compatible, and insect visitors can readily spread pollen from the anthers to the stigmas of the same flower, as well as between flowers and between plants. This self-compatible pollen performs the necessary fertilization and seed production, even on a plant that is physically isolated from all other members of the species. Thus, a single seed of Arctic or New World *Armeria* can disperse to a distant site, germinate, and start a new colony via self-fertilization. But plants from Europe, unable to self-fertilize, can only start new colonies by the lucky joint migration of a minimum of two plants, one of the Fig. 3-type and one of Fig. 4-type. The success of *Armeria maritima* in spreading throughout the Far North, thence south to California, and jumping the tropics to South America, evidently depended on gene mutations that shifted the flowers from the outcrossing to the self-fertilizing form. Many other plant genera also illustrate this change in mode of reproduction, but very few display the telltale characteristics of pollen and stigmas seen in *Armeria*.

In 1977, two students at Oregon State University--Richard Halse and Hesh Kaplan--made herbarium collections of *Armeria maritima* from near Newport, Lincoln County, which we now know are quite peculiar. Not until 1990 was it pointed out to me by Xavier Vekemans, of the University of Brussels, Belgium, that these two collections represent the European form of the species. They have the pollen and stigma combination shown in figure 4; furthermore, they have hairy stems, like most European plants, not smooth (glabrous) stems like all native Oregon specimens. To assist Vekemans' research, I have revisited the two sites that were sampled by Halse and Kaplan in 1977. Halse's plants came from "1.3 miles north of Lost Creek State Park," by Hwy. 101 south of Newport. In 1990 I found that *Armeria* is no longer present at this site. Kaplan's collection was from near the lighthouse on Yaquina Head, north of Agate Beach. On my visit there last year, I found a small colony of *Armeria* on the steep south-facing cliff below the lighthouse. Some of the plants were hairy-stemmed and some were smooth-stemmed. I took a flower-head from each of 15 plants and sent them to Vekemans for his study.

The results of Vekemans' research were very unexpected. He found that all of my sampled plants had "Oregon-type" flowers (as in Fig. 5), but all except one were sterile; that is, 99-100% of their pollen grains were aborted and nonfunctional! The one plant with fertile pollen had a glabrous stem and formed normal seeds, so it was a typical Oregon native. The hairy-stemmed plants are probably sterile hybrids, formed by crosses of the fertile "European-type" plant collected by Kaplan in 1977 with native-occurring "Oregon-type" plants. The pollen-type shown in Figs. 3 and 5 is known to be genetically "dominant" over the type in Kaplan's plant (Fig. 4), while the hairy-stem trait is dominant over smooth stems. Hence the expected hybrid combination would be hairy stems plus "Oregon-type" flowers (Fig. 5). The sterility of the plants' pollen and seeds probably results from numerous hidden genetic and chromosomal differences, which accumulated over evolutionary time as the species slowly migrated step by step from Europe to Oregon.

Do any European-type plants still exist here, either at Yaquina Head or elsewhere on the coast? Furthermore, how did such plants arrive in Oregon in the first place? The first question can pose a challenge to members of the Native Plant Society of Oregon! You can help us by looking for hairy-stemmed plants wherever you see *Armeria* growing on the Oregon Coast. The second question may never be answered satisfactorily; however, a strong possibility is that the European form of the species was in cultivation in someones garden and "escaped" into nature, where it could reproduce only by cross-pollinating with its Oregon cousins.

---Ken Chambers,
Corvallis Chapter

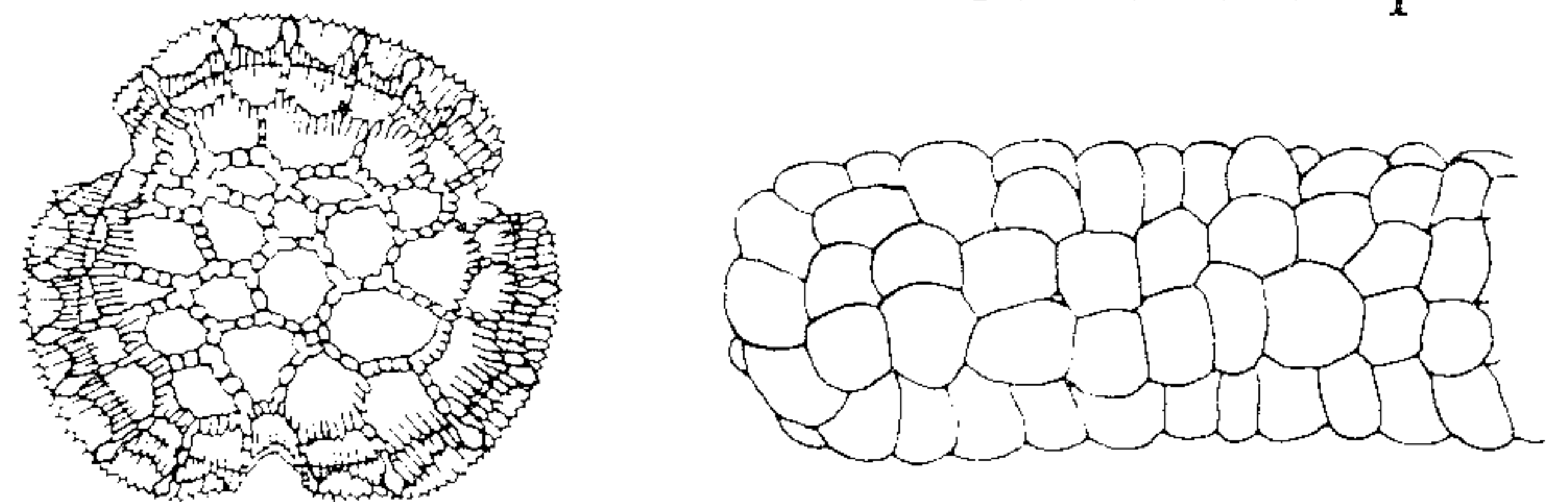


Fig. 3. Highly magnified view of a pollen-grain (left) and a stigma (right) of the "Type-A, cob" flowers of European *Armeria*.

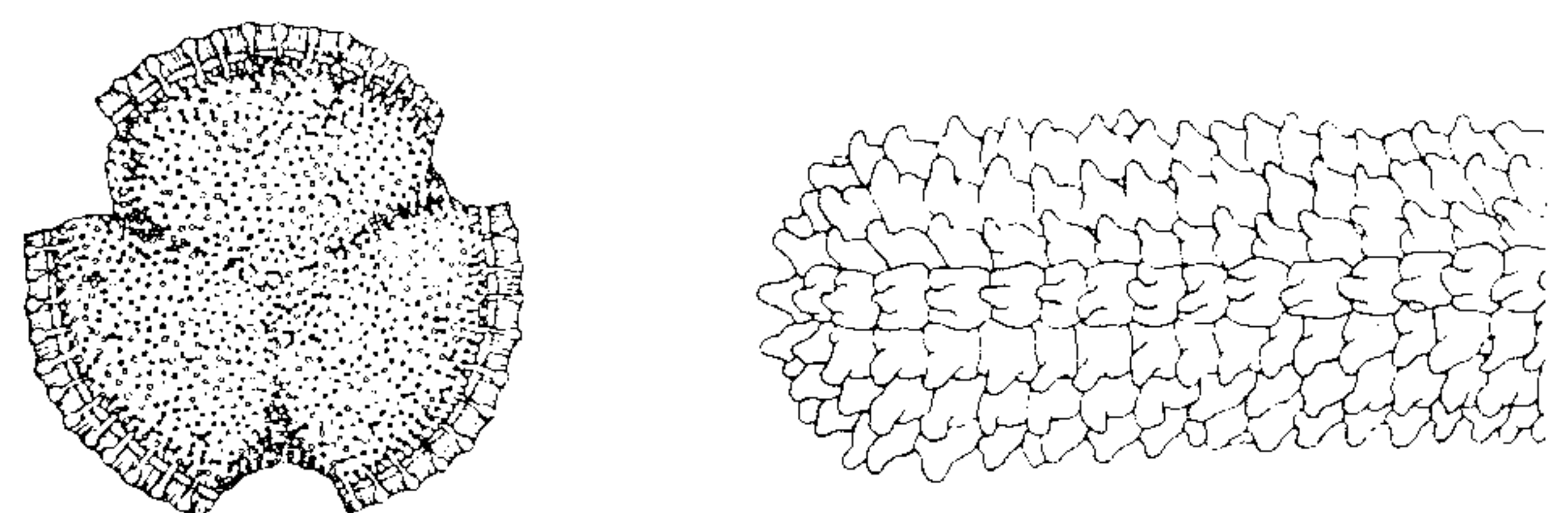


Fig. 4. Similar magnified view of a pollen-grain and stigma of the "Type-B, pap" flowers of European *Armeria*.

**ANNUAL MEETING SPEAKER:
"NPSO IN PERFECT POSITION
TO INFLUENCE LOCAL AND
NATIONAL ACTIVITIES"**

Dr. Linda R. McMahan, Executive Director of the Berry Botanic Garden in Portland will be the featured banquet speaker at the NPSO Annual Meeting in Eugene June 15. Dr. McMahan attended Oregon State University in Corvallis for a time and received her BA and PhD in Botany from the University of Texas at Austin. Dr. McMahan later earned a Juris Doctor degree in law from the American University Law School in Washington DC. Before taking up the Directorship of the Berry Garden, Dr. McMahan was the Director of Botanic Garden Programs, Center for Plant Conservation, Jamaica Plain, Massachusetts and before that she was Senior Botanist, Plant Conservation Program, World Wildlife Fund, Washington DC.

At the NPSO Annual Meeting this month in Eugene, Dr. McMahan will speak on "Conserving Plant Diversity: Challenge for the 1990's." Over 25,000 species of plants world wide are threatened with extinction. As many as 250 of these are native to our own area, the Pacific Northwest. Conservationists tell us that there is little time left to conserve the diversity in nature. Although many groups are working on the problem, much remains to be done. In her after-dinner address, Dr. McMahan will outline the unique opportunities available to members of the Native Plant Society of Oregon as participants in conserving nature. Dr. McMahan has written: "NPSO is in a perfect position to influence local activities, even at a national level. It is a role we cannot count on others to fill."

--Rhoda Love
Emerald Chapter

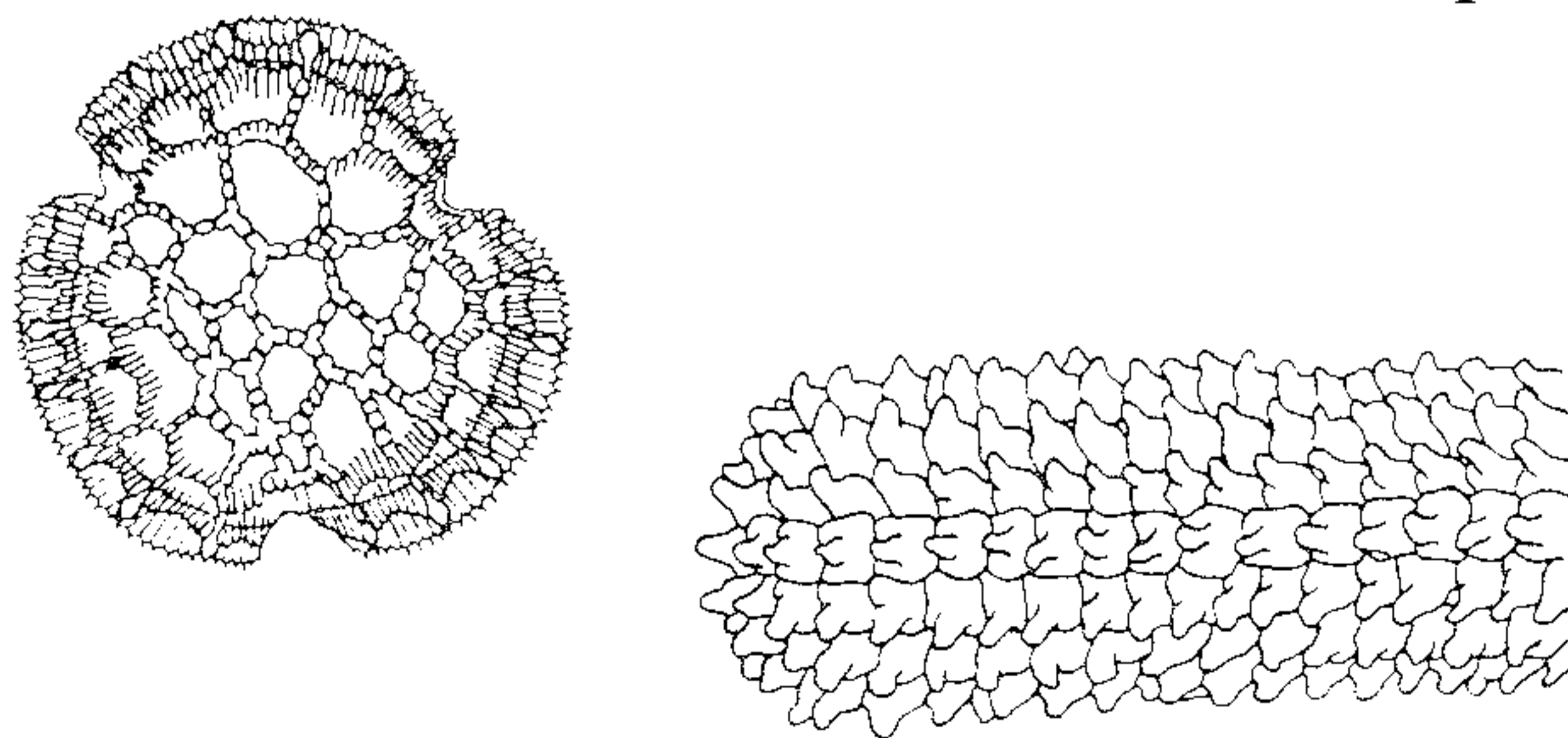


Fig. 5. Magnified view of a pollen-grain and stigma of the "Type-A, pap" self-compatible flowers of Arctic & Pacific Coast *Armeria*

LEGISLATIVE NOTES

It is difficult to write about a number of the issues since by the time you receive this *Bulletin* the session will almost be over. I plan to give a detailed report about how a number of key issues worked out after the end of the session. Here is a brief update on the cyanide leach mining issue.

SB 1182 which is the "environmental" comprehensive approach to cyanide heap leach mining, has as of this writing had only one hearing and is supported by the Native Plant Society of Oregon and other conservation groups. It looks like it will rather be HB 2244---the agency's approach to cyanide heap leach mining---that may have a chance to make it through the session if it ever gets out of committee. We want legislation this session for regulation of cyanide heap leach mining because of the pending application for permitting by Atlas at Grassy Mountain. Hopefully the Atlas project will not be allowed exceptions, grandfathered or other special exemptions in HB 2244.

I have been participating with the Mining Work Group which is trying to resolve the issues relating to cyanide heap leach mining. The Mining Work Group is being orchestrated by Martha Pagel, Senior Policy Advisor for Natural Resources to the Governor. a number of the issues that have reached consensus by the group have been amended into HB 2244. At this time HB 2244 has a good administrative process and a lot of public involvement throughout the permitting process. Yet a number of key issues have not yet been resolved at this time. Some of the key issues that do not have consensus at this time are backfilling, reclamation, and a moratorium on permitting until proposed rules and changes in laws are in place.

Remember that we need legislation this session as current law does not require public input or real reclamation. I hope you have written or called your representative, senator, or the governor about this important issue. You should follow the progress of this mining issue and the development of HB 2244. Let us make sure that we get legislation THIS SESSION.

1-800-322-2313 Bill information
1-800-327-7389 Legislators and Committee Staff.

--Esther McEvoy
Legislative Committee Chair

