



MRNPA News

Volume 6 Number 4

From the Summit

The coming years will be a great challenge to us in our efforts to maintain and protect the resources of Mount Rainier National Park. We will see continued pressure placed on the Park by the sheer number of visitors coming to enjoy its beauty. Looking at the borders of the Park, we are met with decreased habitat for Park wildlife because of continued logging.

At the same time the Park Service is taking little interest in expanding the boundaries. A third major threat comes from the lack of federal economic resources being devoted to the Park, including funds assuring that the basic infrastructure is maintained in good operating condition. At the same time we are becoming more and more aware of our impact on the fragile balance of nature.

It is imperative that we act both individually and as a group to assure that the Park is protected. This organization will continue to keep you informed of specific issues as we learn of them. Individually, you can also help by expressing your opinions to your legislators. Let them know the Park must be protected. Finally, each of us must be sure we are doing our best to "leave only footsteps" when we visit the Park.

It is now time for me to say good-bye. It was a pleasure working with all of you, but after three terms as president it is time to let others lead. Thanks for all of your help. See you in the mountains!

Pat Smith

1992 Trail Work Parties

During each of the past five summers, friends of Mount Rainier have volunteered a weekend of constructive work on the Park's trail system. We will be there again this summer for three enjoyable weekends of service to the Park. The first Trail Work Party was on Saturday, May 16th in the Carbon River Area, clearing trails for summer use.

The major project will be in the Paradise area on the south side of the Park. Fourth Crossing is the name given to the car bridge over the Paradise River on the one-way road leaving Paradise. When this road is used for overflow parking, visitors create their own "social trails" to get to the Skyline Trail system, especially if they are coming from or going to the Ice Caves. Revegetation projects will be supervised by Park naturalists.

Beginning in 1991 the Park Service plans to construct a single maintainable trail and close the others with revegetation. Trail damage in the Park during the November 1991 storm prevented an earlier start on this project.

Here are dates of the Paradise work parties:

Saturday, August 17th at Paradise

Saturday, September 14th.

As usual, there will be a group camp and potluck dinner on Saturday night, and on Sunday workers may choose to hike or relax.

Please contact Bob Aegerter, 9230 41st Ave. N.E., Seattle, WA 98115-3802, or call (206) 527-4492 if you would like to participate.

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A Descent Along the Inner Slope of the Crater

by Jim Whittaker

(Excerpted from *The Challenge of Rainier*
by Dee Molenaar - Mountaineer Books, 1979)

"In August of 1954, around 10 a.m., we made our most extensive explorations. Up until that time on two previous occasions we had descended as far as we could without flashlights. Lou and I left our clients resting on the crater rim by Register Rock and descended into the first large steam cave just east of this. We were not roped nor did we have crampons—just ice axes.

"The floor falls away at about 25 to 30 degrees, and consists mostly of pumice and loose rock with a few solid ridges; the roof, being ice, is convoluted from wind and melting and forms all sorts of interesting tunnels and passages. We followed the largest tunnel downward and to the right. The flashlights were our only source of light, and that was limited because of the amount of water vapor in the air. As we kept going the largest tunnel seemed to be dropping to the right but we had no compass so couldn't tell for sure. Twice we came to what seemed to be dead ends but upon further search found additional tunnels that led down. Once we had to take a tunnel through the ice—that is, the floor as well as the walls and ceiling were ice, which ended on top of an eight-foot drop back down to the pumice.

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The MRNPA News is published periodically by the Mount Rainier National Park Associates of Seattle, WA. for the purpose of providing general information about issues affecting Mount Rainier National Park in furtherance of the goals of the Mount Rainier National Park Associates - To Maintain, Restore, Nurture, Protect and Appreciate the natural values of Mt. Rainier National Park.

The opinions expressed in the MRNPA News are those of those of the authors and do not necessarily represent the official position of the MNRPA.

Letters and articles from readers and members are welcomed. We reserve the right to edit for length, grammar or libel.

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"After jumping down to the crater floor again Louis complained of a headache and I noticed I had one too. You know this is not uncommon at the summit but this being our 12th trip that summer and not having had a headache that year, we began to doubt the air we were breathing and thought it best to get out of there.

"We were about 300 to 400 feet down the inner slope of the crater rim. The tunnel seemed to be opening up into a much larger room than we had ever encountered and as we rolled rocks down the slope we heard them continue for quite a while, ending in what seemed to be water.

"The desire was strong to continue and there seemed to be a breeze coming up from the center of the crater, but we were not sure what oxygen problems we might encounter (or sulphurous gases) and also decided our clientele might be getting impatient and worried over our return. Louis made a dash down about 15 feet while I watched, then while he watched I dashed 15 feet down. It didn't show us any more than we already knew, so we began the ascent. Instead of taking the route back we tried another tunnel to the east of it and followed it to the surface, out of the warm moist air into the below-freezing atmosphere of 14,000 feet where, after catching our breath, we gathered our customers and resumed earning our bread and butter."

On June 16th, 1964, guides Lou Whittaker and Lee Nelson, after leading members of an expedition seminar to the summit and pitching camp inside the crater, proceeded to explore the depths of the great bowl. They entered at about the same steam cave on the south rim that Lou and his brother had explored in 1954. Equipped with oxygen tanks and masks and with extra flashlights and batteries, Whittaker and Nelson extended the previous discovery and followed steam-melted alcoves and tunnels across the crater. After 55 minutes below the ice, they emerged into the bright outer world at the north rim, about 250 feet east of the summit register box below Columbia Crest.

Beneath the ice Whittaker and Nelson found several chambers which were interconnected and led down the 30-35 degree slope to a major tunnel about 250-300 feet below the crater rim. They first took the east branch of the tunnel which was followed on a general contour across steep slopes of hard mud and loose gravel and boulders. The final 300 feet involved a steep climb upslope to where light once again could be seen. Enroute they found both hot steam vents and drafts of cold air. After making their exit at the north rim of the crater, they returned through the tunnel and continued through the westward extension to its point of exit in a cave on the west rim south of Columbia Crest.

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Summit Caves continued ...

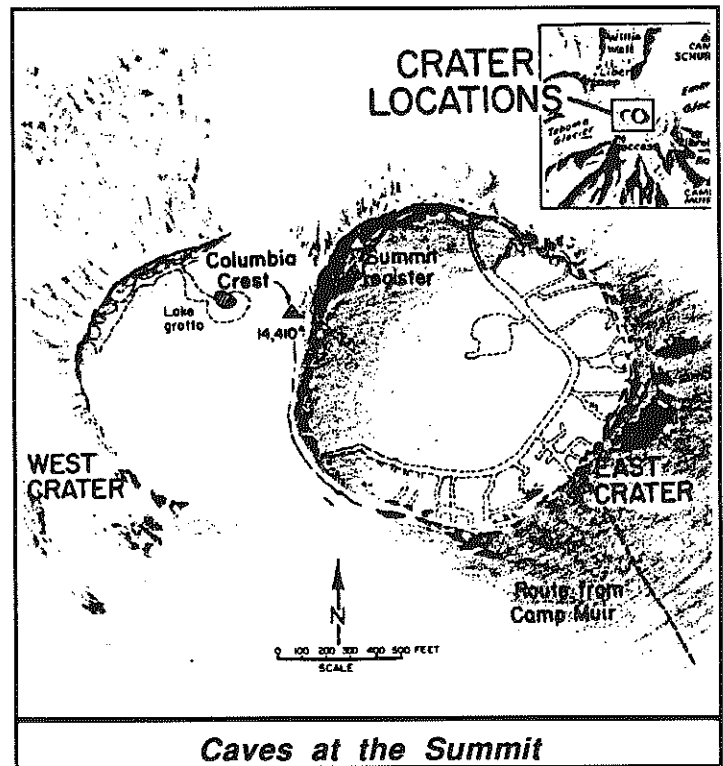
According to Nelson, good flashlights and extra batteries and bulbs are imperative to one's return from the stygian blackness of the depths. In places in the west branch of the tunnel the two men were forced to crawl in mud beneath low ice ceilings, and to make their exit, they had to chop a hole in the ice. They found a small stream of water and a larger chamber with several pools of cold water, also a moraine-like embankment of rocks and gravel which probably is a remnant product of downward melting of a retaining wall of ice.

Whittaker and Nelson reported no problems with noxious gases and they had no breathing problems below the surface. As they entered the cave system they left a pot of snow over one of the vents; it was near boiling upon their return. The atmosphere inside the tunnels was generally foggy, which created some problems of throwing the flashlight beam for great distances. In places overhead melt-water dripped heavily and waterproof outer garments were found useful. The greatest hazard appears to be from loose boulders perched on the steep slopes.

Mt. Rainier National Park's Fish

NPS Ashford, WA. Park fisheries are currently stable, according to Park Resource Management Specialist Stan Schlegel. Native fish never were found in Rainier high lakes but did occur in Park streams and rivers. Park lakes were stocked until 1972. Cutthroat, Rainbow, and Eastern Brook trout have been established in Park waters for so long that it would be difficult to evaluate the effects of introduced species on the population of native species today.

There are 292 permanent lakes and 84 seasonal ones in Mt. Rainier National Park. Of the total 376, only 30 were ever stocked with trout. Critical to the continued viability of the fish population is water purity. Lake and stream water is naturally somewhat acid, but its pH is not at dangerous levels for fish. Because buffering agents in the strata are low, lake water could acidify easily and quickly. Park Naturalist Barbara Somora is the person to contact regarding changes in Mt. Rainier water purity and potential pollution.



Caves at the Summit

The Naming of the Mountain

This year as we celebrate the finding of the North American continent by Europeans five hundred years ago, Mount Rainier National Park remembers the two-hundredth anniversary of the naming of the Mountain. On May 7, 1792 Captain George Vancouver of the British Royal Navy mentioned a "remarkably high, round mountain covered with snow". The next day he named the mountain for his friend, Rear Admiral Peter Rainier. The words of the ship's botanist and surgeon, Archibald Menzies, in his journal are more detailed;

We cannot quit Admiralty Inlet without observing that its beautiful canals and wandering navigable branches traverse through a low flat country.... thus diffusing utility and ornament to a rich country by affording a commodious and ready communication through every part of it, to the termination of the most distant branches.

The general appearance of the country from this station was as follows. To the Southwest of us a high ridge of Mountains ran from the outer point of de Fuca's entrance in a South East direction, - gradually increasing in height to form the rugged elevated peaks of Mount Olympus. To the South East of us down Admiralty Inlet was seen through a beautiful avenue formed by the banks of the inlet, Mount Rainier.... which did not dimin-

continued on next page

Naming the Mountain continued ...

ish but rather apparently augmented its great elevation and huge bulky appearance; from it a complete ridge of mountains with rugged and picked (sic) summits covered here and there with patches of snow and forming a solid and impassable barrier on the east side of New Georgia, running in a due north direction to join Mount Baker."

Journal of naturalist and surgeon to Captain Vancouver aboard H.M.S. Discovery June 6, 1792.

Study Stirs Warnings over Rainier Mudflows

by Gary Larson,
The News Tribune

A major new study of prehistoric mudflows from Mount Rainier is likely to add fresh fuel to the debate over development controls in the growing Puget Sound lowlands threatened by the volcanic giant.

A team of U.S. Geological Survey scientists armed with knowledge gained from the Mount St. Helens eruption has found that huge out-washes of Mount Rainier mud, rock and water were more frequent and extensive than previously believed.

The scientists shy away from politically tough recommendations about how local governments should respond to the new study, which is not expected to be made public until later this year.

But the concern is that a modern-day Mount Rainier mudflow similar to those that have occurred regularly over thousands of years could endanger lives, homes and property along miles of river systems that originate on the flanks of the ice-covered volcano.

"The events are common enough and large enough that they deserve consideration in land-use planning," said Kevin Scott, the lead geologist involved in the research.

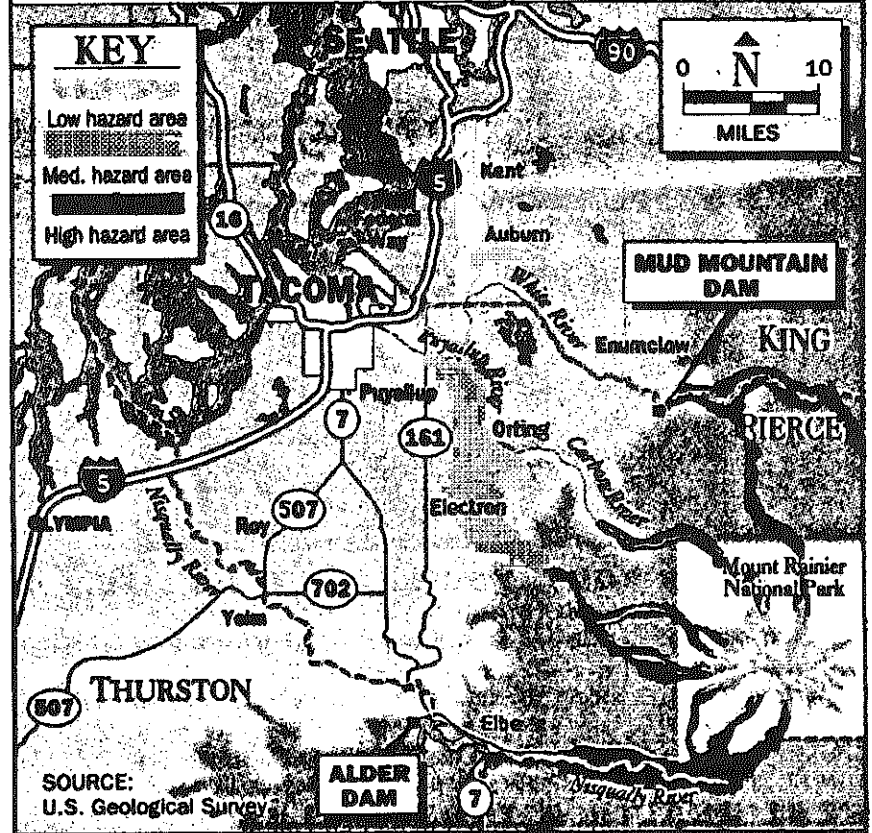
"We're not telling them (local officials) what to do. What they do is entirely what their constituents want them to do."

It's highly likely that local officials would encounter stiff opposition from property owners if they enacted tough development restrictions based on a geologic disaster that might not occur once in several lifetimes.

Mt Rainier Mud flow projections

IN HARM'S WAY

In the 1970s, scientists defined three volcanic-hazard risk zones in King and Pierce counties. Map shows areas that are at risk of mudflows from Mount Rainier.



Greg Harris/The News Tribune

Already the Orting School District has gone to court to challenge a newly adopted Pierce County geologic-hazards ordinance. That law, passed in October 1991, limits construction of so-called critical facilities—including schools, hospitals and public assembly buildings—in areas where Rainier mudflows are considered a threat.

That law is patterned after portions of a sensitive-areas ordinance King County adopted in 1990. But King County officials are awaiting the results of the new Geological Survey study before implementing the volcanic-hazards provisions in that ordinance, said John Bethel, a geologist in the county's Building and Land Development Division.

Bethel and others believe the flood-control reservoir behind Mud Mountain Dam east of Buckley would contain most of a large mudflow traveling down the White River and prevent it from spreading into heavily developed areas of South King County.

The county's biggest mudflow threat probably is along relatively undeveloped stretches of the

continued on next page

Mud Flows continued ...

White River upstream from Mud Mountain Dam, Bethel said.

But geologists also know that Enumclaw sits atop a massive mudflow from Rainier that occurred about 2,600 years ago. Evidence of other mudflows has been found as far north as Kent.

But the greater danger is in Pierce County, where the Puyallup, Carbon, White and Nisqually rivers provide avenues for mudflows to reach populated areas.

Scott said the latest research builds on pioneering studies by geologist Dwight Crandell in the early 1970s. Crandell established the existence of major mudflows from Mount Rainier and outlined potential hazard areas based on those events.

"Our basic contribution is to bring new science to the problem," Scott said. "Mount St. Helens stimulated research and also provided a laboratory that has yielded new findings and approaches to studying volcanoes and volcanic risks."

Where Crandell defined hazard zones surrounding Mount Rainier, the new study identifies different kinds of mudflows and the rate at which they are likely to occur.

That doesn't mean the geologists have tried to predict when the next catastrophic mudflow might happen.

"We could have two of them tomorrow morning, or it could be 2,000 years before we see the first one," Scott said.

But the most dangerous variety of mudflow occurs on average about once every 500 to 1,000 years, Scott said. The most recent example—the Electron mudflow down the Puyallup River Valley—occurred about 550 years ago.

Pat Pringle, a state geologist who worked on the new study and examined the Electron mudflow's geologic record, said its impact on the Puyallup Valley was more extensive than previously known.

It was 100 feet deep when it entered the Puyallup Valley at Electron," Pringle said. "It seems to fill the valley from wall to wall, and that's five to 10 feet thick. So if that happened today, it would be devastating." Such clay-rich mudflows begin as massive landslides triggered by earthquakes, steam explosions or classic volcanic activity, Scott said. Mount Rainier is especially susceptible because of its size and old age, which has given chemical processes time to turn volcanic rock into unstable clay.

One way public officials can deal with the threat is to make preparations for minimizing loss of life in the event a mudflow occurs.

Bill Lokey, Pierce County emergency management director, said volcanic mudflows fall under the county's general emergency plan.

"But given the rate at which different events occur, earthquakes and chemical spills are higher on the list of potential disaster concerns than volcanic mudflows," Lokey said.

Lokey also said Mount Rainier is one of the most heavily monitored volcanoes in the world, and he predicted early warnings of dangerous activity on the mountain would give officials time to evacuate threatened areas.

But Scott said an event triggering a giant mudflow could occur with little warning.

Estimates based on Mount St. Helens studies indicate a large mudflow from Rainier would travel at about 11 mph, Scott said. At that rate, a wave of mud and debris traveling down the Puyallup River could reach Orting roughly four hours after the flow began.

But such a flow might travel even faster because thick forests that once slowed the pace of pre-historic flows have been cut.

"It's a logical assumption that flows in the future are going to travel somewhat faster and somewhat farther than the ancient flows," Scott said. "From that standpoint, future flows could be a bit more dangerous than those in the past, but how much more we have great difficulty in saying."

Besides preparing emergency measures to deal with such a disaster, the other way to cope with a potential mudflow is to limit development in its path.

Among other things, Pierce County's geologic-hazards ordinance prohibits construction of schools with more than 250 students in areas identified as high or moderate risks. But unlike the King County ordinance, Pierce County does not prohibit new apartments or subdivisions in the same areas.

It's that same difference that has put the Orting School District at odds with Pierce County.

The moderate volcanic-risk zone around Orting includes 55 acres of school-district land south of the city where the district plans to build a new middle school and bus-maintenance facility.

District Superintendent Lee Thoren said it's financially impossible under current school-funding formulas to build a school for less than 250 students. A typical new school today would house at least twice that many, he said.

Thoren said the middle school is intended to serve students who already live in the district—not projected future growth. But he said the district would have less of a quarrel with the county if the volcanic-hazards ordinance restricted future residential growth.

"Our complaint is that if residential growth is going to occur, we need to be able to serve it," Thoren said.

Continued on next page

Mud Flows continued ...

The district has asked the Pierce County Superior Court to declare the school provisions of the ordinance unenforceable. A trial is scheduled in December.

County Council Chairman Paul Cyr declined comment on the school issue because of the pending lawsuit. But court papers filed by the county dispute the district's claim that the ordinance will prevent school construction, and the county denies the measure is irrational because it prohibits schools but not residential development.

Ecology of Major Climbing Routes

by Dr. Ola Edwards

(excerpted from "The Alpine Vegetation of Mt. Rainier National Park: Structure, Development and Constraints", a 1980 dissertation)

"Oh Mother Earth, ocean-girdled and mountain-breasted, pardon me for trampling on you."

a Sanskrit prayer.

The alpine zone of Mt. Rainier is unique in that it is an isolated vascular plant habitat at much higher elevations (2100-3000 m) than the nearby Cascade Range. The alpine vegetation was analyzed by classification and ordination of 51 stands. Four community types are distinguished:

- Heath meadow (dominated by Phyllodoce empetriformis, P. glanduliflora and Cassiope mertensiana)
- Fellfield (dominated by Carex spectabilis, C. phaeocephala and C. breweri)
- Talus
- Snowbed

Major determinants of their distribution are elevation and duration of winter snowpack. Soils are in general poorly developed with a high pyroclastic content. Despite low moisture retention, soil moisture was available throughout the summer in all plant communities. Elevation differentially affects the growth rate and vigor of the three dominant species of the heath communities.

The absence of seedlings of heather species from mature heath communities is attributed to unfavorable microclimatic conditions at the soil surface and to intense soil hydrophobicity. Trampling has initiated and accelerated erosion of some heath meadow soils which have taken more than 7000 years to accumulate. Given present technology, such communities cannot be repaired.

In fellfield communities, vegetational patterns are associated with the positioning of stones. Surface stones influence vegetation development by protecting underlying soil from wind and meltwater erosion, moderating summer soil temperatures, conserving soil moisture and preventing the lifting of seedlings by needle ice. Campsite construction in fellfields has removed stones and caused desertification of numerous alpine plant habitats around the mountain.

Ecological aspects of the Mt. Rainier alpine plant communities along the major summit climbing approach routes are based on the status of extant plant species populations and implications of community development trends.

Plant communities are associated only with land that is snow free long enough to allow a summer growth season. Consequently, the vegetated areas lie along the moraines and volcanic cleavers which dissect the mountain's flanks, and species distributions are thereby fragmented into subpopulations, each of which is separated by the wide expanses of intervening glaciers or permanent snowfields but each of which, regardless of its numbers, may be essential for the species persistence.

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How to express your opinions to your elected Representatives

State your case simply, clearly and without rancor.

Don't use more than two typewritten pages.

Write often. If your statements make sense to the staffs, your regular correspondence will be read.

Use the correct addresses...

Your U. S. Representative

(Jolene Unsoeld, Rod Chandler, etc.)

U. S. House of Representatives

Washington, DC 20515

Your U. S. Senator

(Brock Adams or Slade Gorton)

United States Senate

Washington, DC 20510

Ecology continued ...

Conclusions have been based on environmental severity, soil and geologic characteristics, synecology, autecology and known criteria for species endangerment. These have been spelled out in the guidelines for National Park Service Policy (1978) for the rational determination of significant resources. But it is impossible, without both a massive program of field work, as well as controlled environment studies, which examine physiological responses and limiting factors, to collect all the necessary data for every species. Consequently, the record is still far from complete.

A single action may have a negligible effect on the environment, whereas a succession of similar actions may lead to cumulative effects. If the lost resources (species, soils) are irretrievable and the processes (erosion) are irreversible under present climatic and usage regimes, then vegetation cover may be reduced by cumulative perturbation.

It is important to distinguish between short-term and long-term changes and to determine whether community development has been temporarily limited or deflected or has been drastically altered or destroyed. The degree of destruction depends not only on the intensity and kind of disturbance, but on the kinds of vegetation, soil, and animal life that were there when man arrived.

All major alpine zone approach routes were visited with National Park Service backcountry management personnel. During the visits entire areas were surveyed, paying special attention to the principal corridors used by visitors, evidence of disturbance, and vegetation distribution. Since selection of pathways along routes is made largely on the basis of local peculiarities of topography and substrate, each one must be assessed individually.

Glacier and snowfield travel is often hazardous and more complicated during the summer climbing season so that traffic becomes concentrated along the ridges and moraines of the alpine cleavers. This coincides with the short period when the alpine plants, confined as they are to the same ridges, are snow free, and actively growing.

Panorama Point-Camp Muir-Cathedral Rock
The Muir route is the one most popular for summit attempts and on this basis was extensively analyzed to provide the baseline data needed for comparative surveys of the other summit approach routes. The area can be subdivided into two parts: above and below 2740 m elevation. The Lower Muir snowfield, 2100-2740 m elevation part is within a 2 to 3 hour hike from Paradise Visitor Center. Evidence abounds of both heavy visitor use (large organized parties, trampling trash, footprints, noise, feces) and park management manipulation (trails, signs, cairns). Compared with areas of similar elevation around the mountain, the Panorama Point-Moon Rocks fellfields contain some

special and comparatively extensive plant communities; i.e., the Carex sedge turf areas.

The upper part between 2740 m and Camp Muir at 3050 m has sparse vegetation which is confined to the rubbly ridge running eastwards towards Anvil Rock. Here are to be found several old rock camping shelters which have long been in use and as described in 1910 were essential to early climbing parties. They may still fulfill that need. There are no particularly rare plant species growing there. The trail leading from Ingraham Glacier onto the ridge up Cathedral Rocks is a habitat for *Draba aureola*. Cathedral Rocks represent the upper limit for flowering plants on this summit route.

Steamboat Prow-Camp Schurman The second most popular route starts at Camp Schurman. There are two alternative approaches: 1) Inter Glacier, on snow and/or ice; and 2) along the vegetated flanks and ridges of Mt. Ruth. The Inter Glacier route travels first through a bouldery meadow area known as the Wedge which supports a richly diverse assemblage of subalpine and alpine species.

Mt. Ruth supports more varied communities and more plant species than any other alpine area on the mountain. Because of its particular rich flora, Mt. Ruth is an area of considerable ecological interest. Eleven species are on the 1980 list of proposed endangered species for Washington State. Much of Mt. Ruth has been overlain by deep pumice deposits which make its surface particularly unstable and easily eroded when dislodged. Fellfield pumice terraces, unique on the mountain, occur around 2100 m near the main ridge. Further up the ridge at ca 2440 m the terrain becomes stonier and affords better protection to the vegetation; 18 species were found at 2950 m and 11 species at 2740 m, more than at comparable sites elsewhere on the mountain. (Muir Ridge communities come next with 15 species and 3 species at comparable elevation communities).

The Mt. Ruth and Inter Glacier routes converge at a locality, generally known as Camp Curtis, at 2740 m on a more gently sloping and wider part of the ridge leading onto Steamboat Prow. Three subareas have been distinguished at Camp Curtis: (1) The Beehive, where bedrock is exposed and fragmented into huge boulders, where at least 8 bivouac sites have been developed. These probably date from earlier times. Vegetation is protected by the stony soil. (2) Upper Camp Curtis. Six camp sites were found here in 1977: 12 in 1979. Five species grow in the vicinity: *Phacelia sericea*, *Arabis lyallii*, *Erigeron compositus*, *Polemonium elegans*, and *Poa lettermanii*. The underlying soil differs from that found at other high camps in that it consists of deep, unstable, erodible stony pumice deposits. (3) Lower Camp Curtis. This locality describes the down-slope continuation of the Upper Camp Curtis area. It has the same erodible sub-

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Ecology continued ...

strate and species with the addition of *Draba aureola*. No excavated camp sites were present in 1977; nine were mapped in 1979.

Campsite construction along the ridge has now resulted in a bank and terrace formation consisting of a series of more than 20 platforms, averaging 2.6 m² and with some surrounded by stone walls. The recent proliferation of these platforms has affected the natural environment by disruption of the substrate, acceleration of erosion and by destruction of both past and future plant habitats. From an ecological point of view this is significant because of the high elevation alpine habitat it once provided.

High alpine climbing has enjoyed a long tradition on Mt. Rainier, predating the creation of the Park in 1899. Specific high elevation camp sites are described in current climbing guides such as Beckey (1973); climbers both expect and need them. Established camp sites occur along all the routes. Nearby vegetation has already been depleted by excavation and stone moving and will take an unknown time (but certainly decades) to re-establish even if use of the present camp sites is discontinued. If these camp sites are left intact, their continued use may prevent further proliferation of new camps. Unless more stones are dislodged, impact is likely to remain localized and minimal.

Where approach routes are along narrow ridges the camp sites are usually established near the ridge crest. Vegetation to either side is largely protected by the steep terrain which discourages travel. These camps are often strategically placed and easily located on the ridge, even under severe weather conditions. On the other hand, where approach routes pass over broader open slopes, the camp sites are more widespread and more difficult to locate. Trampling of the entire area is then more likely because of the greater ease of extensive cross-country travel. Consequently, camp site proliferation may be more likely to continue.

In most cases, it is recommended that the existing high climbing camps which might conflict with the habitat for rare species (i.e., below 3350 m) remain intact where they provide adequate shelter and essential support for climbers. But their numbers and frequency should be systematically planned, not by private interests unfamiliar with the requirements of natural ecosystems but by National Park backcountry management well-qualified through long experience and familiarity with the complex interactions between the physical environment, its dependent ecosystems and the requirements of serious climbers.

The National Park Service Backcountry Managers are to be recommended for the realistic and sensitive manner in which they have handled the conflicting concerns inherent in managing the complex alpine zone. Despite decades of constant use

there is little long-term impact evident in the alpine zone on the mountain with the exception of two areas-the land surrounding Muir snowfield and Camp Curtis on Mt. Ruth. However, considering the recent influx of visitors it is not surprising that some communities have been depleted and are unable to sustain the rapid changes that have ensued.

POLLUTION FINDS ITS WAY INTO WILDERNESS AREAS

from The Bremerton Sun, Dec. 26, 1991

Western Washington residents hoping to escape increasingly smoggy cities with a trip to the mountains may be in for an unpleasant surprise. "We now know that air pollution in some cases is worse in the forests than it is in the urban areas where it is created," said Western Washington University researcher Tony Basabe, who is preparing to publish results from a five-year pollution study.

Basabe found that prevailing winds and the region's geography combine to funnel grimy urban air onto lower and middle-elevation forests on the west slopes of the Cascade Mountains. "Most of the forests below 3,000 to 4,000 feet are being fumigated, so to speak," he said.

The biggest problem Basabe found was high ozone levels. The gas, which screens harmful ultraviolet radiation, is also the eye-stinging ingredient in smog. It's created near the ground by interaction of auto exhaust, industrial smoke and sunlight. Basabe said he has several times measured forest ozone levels well above national clean-air limits.

"All this stuff that's being emitted by the urban areas as the clouds are passing over is being picked up by the clouds very efficiently," he said. "When these clouds impact the forests, they dump this stuff on the trees." High ozone levels have devastated some California forests. Laboratory tests have shown ozone is particularly damaging to young seedlings. During a three-year experiment at the University of Washington's Pack Forest near Eatonville, southeast of Tacoma, forestry professor Tom Hinckley found extremely high ozone levels. The ozone was found to slow tree growth and processes such as photosynthesis.

Basabe pointed out that ozone is not a constant problem in forests. It is produced only in sunny weather and builds up near the ground only during temperature inversions. Conversely, pollution-induced acid clouds cover forests only during overcast conditions.

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Pollution continued ...

But he also said the problem may worsen with expected rapid population growth in the Puget Sound region. "We're on the verge of seeing serious effects, but we still have a chance to correct the situation," he said. "If we would car pool and use more mass transit...make cars more efficient and industry cleaner, our air would be a lot better."

Field Seminars in Mount Rainier National Park-1992

The Pacific NW Field Seminars, sponsored by the Tahoma Woods, a non profit association, offers classes taught by highly qualified paid instructors in subjects to increase understanding or to enhanced enjoyment of natural resources. For catalog and registration, write to:

Pacific NW Field Seminars

83 S King ST

Seattle, WA 98104

Some classes may be taken for credit with Seattle Pacific University, subject to additional fees.

Alpine Ecology of Mount Rainier

\$100 Edwards Aug. 21-23

Focus on the wide variety of biotic communities found between the lowland forest and high alpine zone. We will explore talus, scree, fellfields, heaths, turfs, meadows, snowbeds, and bogs.

Backpacking for Women

\$75 Runge Aug. 1&2

Learn all the basics necessary to plan backpacking. Hike through some of Mount Rainier's most beautiful areas with a knowledgeable leader. (An orientation meeting is scheduled on July 25 at the Federal Way REI store.

Birds of Mount Rainier

\$45 Jensen June 20-21

During our field study in this variety of habitats, we will learn how to detect forest bird species by sound and determine their nesting status, and work out the identification of species found.

Field Sketching

\$100 Hammerly Aug. 21-23

We will concentrate on quick expressions of flora, fauna, and scenery rather than taking the time to polish and fully render our drawings. The course will include several warm-up exercises, techniques for getting shape and proportion to look right, shading to show form, shadow pattern and texture, and the selective use of detail and written notes. No art training needed.

Geology of Mount Rainier

\$90 Frank Aug. 14-16

On day-hikes we will examine a variety of rock formations that tell us about the growth of volcanoes, their destruction and the potential hazards. We will find such igneous delights as lava flows, pyroclastic flows, and tephra; and examine deposits from mudflows, avalanches, and glaciers.

Ice & Fire: Interactions of Glaciers & Volcanic Mt. Rainier

\$100 Driedger Aug. 18-19

Approximately one cubic mile of snow and ice exists on the slopes of the mountain and most of that is perched more than one mile above sea level. We will discuss the nature of glacier-volcano interactions. We will examine the volcano's role as a snow catchment basin, the role of glacial processes in the mountain's destruction, and what results when the two meet.

Introduction to Natural History Photography

\$45 Ashbaugh Sep. 26-27

This may be at the height of fall color. We will cover composition, exposure, films and necessary equipment. Beginners should be familiar with their equipment, but all formats are welcome.

Living Forests of Mount Rainier

\$50 Ellis Jul 11-12

We will explore how ecologists study forests and classify them. Topics include the complex interactions in the living forest, how the forest changes through the centuries, how forests differ around Mt. Rainier, and the limits of our knowledge about forests.

Mountain Weather

\$50 Biddle Jun 6-7

Would you like to learn how to use an altimeter, a compass, and a cloud chart to help you predict the weather in the mountains? You will learn to use your senses as well as instruments.

Continued on next page

MRNPA News for Summer 1992

Mountain Seminars continued ...

Natural History/Barrier Free

\$25 Gross Aug. 29

Enter the splendor of an old growth forest with its intricate ecology linking towering trees to microscopic fungi. The barrier-free seminar will be slow-paced and wheelchair accessible.

Nature Writing

\$100 Saling Aug. 13-16

This seminar will combine classroom discussion, field observation and the writing of several nature-based pieces. Sharpen your powers of observation, review outdoor writers, and enhance your knowledge of natural phenomena.

Night Skies of the Northwest

\$40 Anderson July 18 & 25

You will learn how to navigate through the night sky to locate celestial objects. After dark, if the sky is clear, you will put this knowledge to use, observing the wonders overhead.

Painting Plants and Waterfalls/Barrier Free

\$100 Schieber Aug. 3-6

Limited to 12 advanced students. Trees and undergrowth in the Cascades vary depending on altitude, rainfall, soil conditions, and wind. Whether painting large landscapes or intimate outdoor scenes, the plants need to be accurate to the location.

Painting Mountain Vistas/Barrier Free

\$75 Schieber Aug. 7-9

Learn how to design a painting to capture the scene. Be aware of moving clouds and mists and changing light to use them to create a mood. Use aerial perspective to achieve depth.

Photographing Nature at Mount

Rainier \$130 Stahl Aug. 6-12

Mountain lighting and techniques can be tricky. This four-day seminar is designed for those interested in developing their skills in outdoor color photography from a recognized expert. A tripod and 35 mm SLR camera are required.

Studying the Mountain Meadows of Mount

Rainier \$40 Jensen/Lane Aug 1 & 5

Sub-alpine meadows of Mt. Rainier are world famous for their color and beauty. This 4-mile round trip walk on the mountain's eastern flanks stresses habitat variety as a means to appreciate nature's bounty.

Wilderness Soundscape Studies

\$50 Storm Jun. 27-28

Meet at 8:00 P.M. at the White River Campground Amphitheater. We will listen to the dusk chorus. Sunday at 4:15 A.M. we will listen to the dawn chorus and hike up trail to glacier's terminal moraine. Subjects: silent travel, listening, seasons and sounds, sensitizing your hearing, nature sound recording.

Wildflower Photography at Mount

Rainier \$70 Ellis Jul. 20-21

With this seminar, you will learn the basic techniques of high quality flower photography. We will cover the concepts of exposure, how to determine correct settings, the use of screens and reflectors, the use of flash, and questions of composition.

Wonderland Trail Geology-Summerland

Vicinity \$100 Driedger Aug. 21-23

During this three day backpack trip we will hike approximately 14 miles of the spectacular Wonderland Trail and environs in the vicinity of Summerland on Mount Rainier's eastern flank. Participants will be expected to provide and carry gear to maintain themselves for three days and two nights.

Mount Rainier Travel for 1992

	4/92	4/91	92 to date	91 to date	% Chg
Visitors	71,941	32,223	203,521	115,371	+76%
Car campers	776	506	2296	1216	+89%

With the mild winter and minimum snowpack in the high country, the Park is now facing decisions on how to best handle overnighing in the Wilderness areas as well as simple snowcamping in the vicinity of Paradise. Present snow conditions require that summer camping regulations go into effect in some areas of the Park so as to minimized damage to the natural resources.

As of this date, all camping in forest areas will be restricted to designated (summer) camping sites. In the higher elevations where snow pack still exists, camping will be allowed outside designated sites, but the construction of snow caves is not permitted. It looks like it is going to be a year when the backcountry opens 4-6 weeks earlier than normal. Please be aware that work crews may not have had time to check the trail conditions prior to use.

Taxol Briefing Questions and Answers

from the National Cancer Institute

1. Why is taxol of such great interest?

A. Taxol has demonstrated reproducible activity in the treatment of women with ovarian cancer, with a remission rate of about 30-35% in previously treated patients. Initial studies in women with advanced breast cancer have demonstrated a response rate of about 50%, and there are suggestions of activity in other forms of cancer as well. Although no patient has been "cured" using taxol, it is expected to be of utility in the treatment of several types of cancer. Taxol may be one of the most important anticancer agents discovered in the past decade.

2. How is taxol produced?

A. Currently, taxol is extracted from the bark of the Pacific yew, *Taxus brevifolia*. The extraction and purification process is very difficult, time-consuming, and expensive.

3. How many trees does it take to provide enough drug for one patient?

A. That will vary somewhat according to the size of the tree, but the calculation is roughly as follows. It requires about 30,000 pounds of bark to produce one kilogram of pure drug, considering losses in processing. Since each patient will need about two grams, one kilogram will be sufficient for about 500 patients, resulting in the use of about 60 pounds of dried bark per patient. It is our understanding that a mature tree may yield about 20 pounds of bark, and it thus requires about three trees per patient.

4. Is taxol found anywhere else?

A. Yes, taxol is found in the needles of a number of *Taxus* species throughout the U.S. and in other countries.

5. If that is so, why can't you use those other sources now?

A. The technology to produce pure taxol suitable for human use from these alternate sources is under development but has not yet been worked out. There are a number of reasons why a significant amount of development work is required. (1) The amount of taxol in the needles varies widely from species to species, from variety to variety, even from time to time in a specimen—far more variation than is found in bark. (2) The taxol in needles is far more sensitive to handling, specifically with regard to the process for drying the needles. If not carried out properly, the taxol is destroyed. The optimal process for drying is still under development. (3) Because of different constituents in the needles, a different purification process is required. (4) The pure product obtained from the needles must be checked thoroughly to be sure that the product is equivalent to that obtained from bark. (5) The product must be produced under Good Manufacturing Practices (GMP) in order to be suitable for human use. The standardization of the total process thus requires both time and effort, and it is being actively pursued.

6. How long will the Pacific Yew remain the primary source of taxol?

A. Although an exact time cannot be estimated, we hope that within about two-to-three years, sufficient taxol will be available from other sources to provide some relief from the need to utilize bark. However, it is likely to require four to five years before the need for bark is completely eliminated.

7. In the meantime, how much material are you going to need?

A. We have requested that Bristol-Myers-Squibb arrange for the collection of about 750,000 pounds of dried bark during the 1991 growing season in order to produce about 25 kilograms of pure taxol.

continued on next page

1992 Trail Parties

Saturday, August 15 — Paradise Fourth Crossing Trail construction
Saturday, September 12 — Paradise Fourth Crossing Trail construction and Paradise re-vegetation.

Contact Bob Aegerter at
(206) 527-4492 (residence)
(206) 454-9703 (work)

Taxol Briefing continued ...

8. How did you arrive at that number?

A. That is enough to continue our highest priority clinical studies and to begin providing taxol on a compassionate basis to some patients with ovarian cancer who may benefit from the drug. For the immediate future, taxol will be available only to patients in clinical trials.

9. How much drug is going to be needed in future years?

A. We cannot make a realistic estimate at this time, but if the results in breast cancer are confirmed and if some of the studies in other types of cancer demonstrate activity, the amount needed could increase significantly.

New Source for Taxol Discovered

From "The Seattle Post-Intelligencer", Tuesday, April 21st, 1992. ... A researcher has found a new source for an anti-cancer drug that had been available only by harvesting slow-growing Pacific yew trees, the University of Kansas announced yesterday.

Lester A. Mitscher, professor of medicinal chemistry, found large amounts of the drug taxol in the leaves of a closely related Asian yew tree.

The discovery could mean an increased supply of taxol, which is scarce, and preservation of the Pacific yew, found in dwindling old-growth forests.

A University of Washington chemistry professor, Heinz Floss, noted yesterday that European researchers already are studying the potential for extracting the anti-cancer drug from European yew species. At UW, Floss is attempting to reproduce taxol through a bio-synthetic process.

Taxol can help fight advanced cases of ovarian, breast and other cancers. But short supplies have slowed research on the drug. The Pacific yew is killed when its bark is stripped for extraction of taxol.

Mitscher and a colleague found usable quantities of taxol in the leaves of a plant that grows in the Himalayas. And stripping leaves, rather than bark, does not kill the tree...

From NPS Offices in Mt Rainier NP. ... In Mount Rainier National Park, Pacific yew is common but not abundant, according to Stan Schlegel, Park Resource Management Specialist. Yew branches are highly attractive to wildlife, and are frequently browsed by Park elk and deer.

Poaching of the trees for their bark is not an inconceivable possibility, he says.

Road Closures and Issues

Ted Lewis, District Ranger for the White River District of Mt. Baker-Snoqualmie National Forest, has expressed concern about over-use at Coplay and Summit Lakes. To protect these fragile areas from degradation, several options are being considered:

- 1) Closure of the road between Coplay Lake and the Summit/Twin Lakes Trailheads. A trail would be constructed to replace the road adding perhaps one half to one mile to the hike.
- 2) The possibility of going to a permit system.
- 3) Retaining the status quo.

The Forest Service would appreciate letters from interested persons stating their ideas and preferences. Because one of the popular lakes is in the Clearwater Wilderness (Summit), and because Coplay is near the northern boundary of Mt. Rainier National Park, this decision is of particular interest to MRNPA.

Please direct your letter to:

Ted Lewis, District Ranger
White River District
Mt. Baker Snoqualmie National Forest
Enumclaw, WA 98022

In a mid-May press release, Superintendent William J. Briggie announced that the park will hold public scoping meetings sometime in late June or early July to discuss the future use of the Westside Road. Briggie stated that the road has been closed most of the time, during the last few years due to glacial outburst flooding, and attempts at repairs have met with minimum success. The meetings will provide the public with an opportunity to offer input into alternatives being considered for the road. Contact the Superintendent's office at (206) 569-2211 extension 2303 for the time and place for the meetings.

In another release, Superintendent Briggie announced that the Stevens Canyon Road opened at noon on Friday, May 22. Three other roads within the park still remain partially closed to traffic. They are:

The Westside Road, open to Dry Creek only for this season.

The Sunrise Road, scheduled to be opened on June 27. (The White River Campground road is was opened on May 16.)

The Mowich Lake Road, open to the Paul Peak Trailhead.

Current road conditions can be obtained by calling the park at (206) 569-2211.

Minutes of Board of MRNPA March 19, 1992

Guest during meeting: William Briggie, Superintendent, Mt. Rainier National Park.

SUPT. BRIGGLE'S REPORT

Overall management. Briggie will emphasize better relations with Park neighbors: sister agencies, neighboring communities, corridors leading to the Park, and public interest groups. He sees "partnerships outside the Park" and building communication bridges as a vital management goal, and will be fostering these attitudes among NPS employees.

Briggie believes a park manager must "take more risks": advocacy positions on issues affecting the Park and its boundaries. Park managers must be advocates for the protection of the parks, and this may require some reordering of NPS employees' positions. He hopes to work closely with superintendents of North Cascades National Park and Olympic National Park, to share resources and try to do a better job of solving problems in all three parks.

Tacoma project: An \$11 million project involves an overpass from Union Station over State 705 to the waterway. Mt. Rainier N.P. staff will be developing an interpretive display to portray Mt. Rainier and the other WA national parks as gateways, linking urban and Native American populations physically and historically to the mountains. If the train to the mountain materializes, this overpass will connect with it.

"Agenda 99": Looking forward to Park's centennial (1999), Briggie is asking NPS people to bring together every resource they can to "make Mt. Rainier National Park whole".

Westside Road. NPS cannot continue to "throw good money after bad", repeatedly rebuilding this road despite Tahoma Creek's relentless rechannelization. USGS and highway engineers say Tahoma Creek will continue on its new path for at least the next 10-12 years. The river will come within 50' of the wilderness boundary, so road rebuilding would then require congressional action, which Briggie philosophically opposes. He plans to hold public meetings in late May/early June to weigh alternatives:

- * a public road into the wilderness, or
- * retain road as administrative only, for trail work

and service to radio on Gobbler's Knob, and rebuild in future of the river settles down. The road would be closed at Fish Creek parking area.

Public support will be needed to enable any decision by NPS to close the road.

Tahoma Creek Bridge replacement. Bridge suffers from the stress of being dropped each year. Replacement cost: \$200,000. Crews will have to camp in Indian Henry's for 2 summers, and motorized vehicle requirements will have to be relaxed so helicopters can bring in supplies.

Paradise Ski Dorm. Briggie sees this as a chance to make an "architectural statement", in terms of appropriate design, location, and minimizing disturbances to the Park. The building will house 30 people. The conceptual plan is done. No money is currently available. Work will probably begin next year.

Sunrise. Lodge: NPS wants to remove and rebuild, half on and half off the original footprint, to provide more space for resource offices and public facilities. There will be an opportunity for public comment before plans are final. Construction may begin in 1994. This is another opportunity for an "architectural statement", that will be compatible with the environment. Jones and Jones, of Seattle, are the architects.

Highway 410. Briggie has taken the position that the project, as presented, is unacceptable. The Fed. Hwy. Admin. has sent new plans, which are closer to being acceptable: reduced cuts and fills, less blasting.

However, they still call for a wide clearing zone and considerable tree cutting. Briggie is asking for a full EIS. The EA was lacking, especially in geotech. information, which is now available. The Sunrise intersection, guardrails, and gabions are still at issue.

Deadwood Creek/Laughing Water Bridge work will require dropping the bridge into the creek, and building a small road into the creek to do the job.

Long Range Development Plan (General Management Plan) will get underway next fiscal year. Briggie's main concern is the mountain itself: how its dynamic forces affect the Park and future development. This has not been adequately addressed.

Briggie favors getting development out of the Park, into a "gateway commons", where services would be provided by the private sector. Likewise, remove employee housing from within the park. Briggie is sensitive to the need to limit the number of cars entering the park.

The Hounds from Packwood. Recently three hunters' hounds ran a cougar into the Park and treed it. The hunters made no effort to retrieve their dogs, and the ranger who investigated was unable to call off the hounds, so he legally killed them. Briggie has met with

March 92 Board Minutes continued ...

the hound owners association to clarify rights and responsibilities on both sides. Consensus was that MRNPA should develop a position regarding hunting abuses that affect the Park and its wildlife.

Proposal for a foundation. Briggie would like to see a foundation formed to raise funds for Mt. Rainier N.P. A similar foundation for Yosemite raised \$1 million for projects.

OTHER BUSINESS

Board Composition. The board discussed whether or not to change the by-laws to enlarge the Board, in an effort to expand the number of active members. Conclusion: Leave the Board at its present size, and make an effort to select Board members who will be active participants.

Nominations for Board and prospective new officers. Jon Soest will be asked to serve as president, and Bob Aegerter is willing to serve as vice president. Other officers apparently are willing to continue their roles.

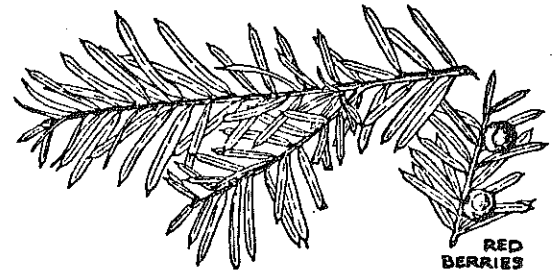
Plum Creek. Pat Smith has written a letter asking for an EIS and expressing concern about water quality and habitat destruction.

Elections and candidates' positions. It was suggested that we should ask candidates to state their positions on environmental issues, and report their positions in the Newsletter. Gorton's position on protecting wetlands is weak. He is expected to support the Hayes bill. Gorton is introducing the bill on Lake Cushman (40 acre exchange of land from within Olympic National Park). National Parks and Conservation Association supports the bill. Polly reports that Olympic Park Associates opposes it.

Membership. John Titland suggested that it is time to mount a modest membership drive, and will pursue this.

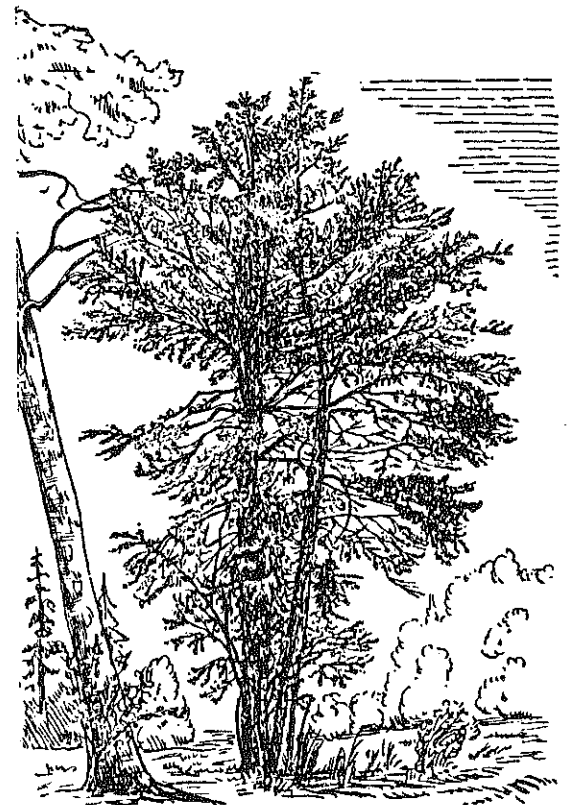
Annual Meeting

The MRNPA Annual meeting was held on Thursday, May 7, at the U.W. Arboretum. The turnout was about 40 members and guests. Social hour spilled outdoors onto the patio under the arbor, where we enjoyed the mild evening and the sunset. A buffet dinner was followed by a short business meeting and election of officers for next year. The guest speaker was Carsten Lien, who gave some entertaining and interesting historic background of Mt. Rainier National Park.



Pacific Yew
(*Taxus brevifolia*)

from *Trees, Shrubs and Flowers
to know in Washington*,
by C.P. Lyons,
J.M. Dent & Sons, Ltd.,
Toronto, 1977.



Mt. Rainier National Park Associates

Designated in 1899 as the country's fourth national park, Mt. Rainier is the very symbol of Washington State - a wilderness gem of 300 square miles centered around an active glaciated volcano with magnificent streams, meadows, and forests flowing down its flanks.

Under federal law, the National Park Service, which manages Mt. Rainier, has a dual - too frequently conflicting - mission: to protect the park's natural wonders, and to provide access for tourism and recreation. Moreover, the Park Service can not control damaging developments (such as clear-cut logging) which take place outside the park's boundaries.

Because all this imperils the natural values of a great national park, concerned citizens in 1985 founded **Mt. Rainier National Park Associates (MRNPA)** seeking wise stewardship of park lands and the surrounding region. Among other accomplishments to date, MRNPA has:

- Prevented the removal of 90 huge old-growth trees during the recent upgrade of the Nisqually-Paradise Road, and
- Fought for permanent wilderness protection of all the park's roadless lands when Congress passed the Washington National Parks Wilderness Act of 1988.

However, we still must find a solution for visitor impacts, particularly the crush of motor vehicles on the park's roads. And the boundaries of Mt. Rainier National Park need expansions to protect adjacent wild lands.

If you share our vision of a Mt. Rainier National Park, forever wild, we invite you to join MRNPA. You will receive a quarterly newsletter, and, more importantly, you will enjoy the satisfaction of joining with others to help preserve a living symbol of what is best in Washington and the nation.

Please sign up today!