# VOICE of the WILD OLYMPICS

**Olympic Park Associates**
**Founded in 1948**

**Volume 10, No 2**
**Spring 2002**


## Contents



# The Natural History of a Coastal Prairie In Olympic National Park

*by Ed Tisch*

Although typically they are forested, the Olympic lowlands support a sizeable number of coastal prairies. Harlan Bretz, an early Washington geologist, reported in 1913 that many of these occupy glacial outwash plains and moraines (e.g., near Shelton and Sequim) where excessively-drained, gravelly soils produce summer-arid conditions. Fire has also contributed to the sparsely-forested character of these "prairies," which sometimes resemble oak savannas. G.N. Jones, a 1937 University of Washington graduate student, felt that these "constituted the nearest approach to a grassland formation" in the Puget Trough region.

In stark contrast, however, the coastal prairies of the rainy western Olympics are bog-like and tend to occur on clayey glacial tills where wet, nutrient-deficient soils limit tree growth. Here, also, natural and man-made fires have played a role in restricting invasion by redcedar, hemlock and Sitka spruce. In the absence of periodic fires, both the dry and the wet prairies are usually replaced by forest.

Ahlstrom's Prairie, located in ONP's coastal strip, halfway between Cape Alava and the north end of Lake Ozette, belongs in the wet prairie category. It, too, has had a long fire history. In a recent interview with Myra Vanderhoof, one of the last children born to homesteaders at the now-extinct Lake Ozette settlement, she informed me that in the early 1900s the white settlers found an abundance of fire-scarred trees in the forests adjoining Ahlstrom's Prairie to the west. At that time most of the trees between Ozette and Cape Alava also seemed smaller than they are today. The homesteaders assumed that the local Ozette Indians had burned their prairies to eliminate trees and to keep down the salal understories. When Myra first visited Ahlstrom's Prairie, around 1927, she found it very sparsely forested.

In the early 1900s the prairies near Ozette were occupied by two, possibly three, Scandinavian pioneers. Lars Ahlstrom's homestead straddled the trail that now connects Lake

*Continued on P. 6, Coastal Plain*


*Picket fence at Roose's Prairie. Photo by Ed Tisch.*

## Next OPA Board Meeting

**Dates:** September 25.
**Time:** 6:00 p.m.
**Place:** Kingston Community Center
A short walk up the hill from the ferry, white building on the right.
**Please join us.** OPA members are always welcome at Board meetings.
**OPA Board meetings** *generally* are in the Kingston Community Center on the 4th Wednesday of odd-numbered months, except no meeting in July.

## How to Reach Your Members of Congress

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From this number you can reach any member of the U S Senate or House of Representatives.

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# Roadless Bill?

*Excerpted with permission from* **Inner Voice**, *the newsletter of Forest Service Employees for Environmental Ethics.*

While the ninth U.S. Circuit Court of appeals mulls the future of the U.S. Forest Service's roadless rule, members of Congress are rallying to introduce legislative protection for those 58.5 million roadless acres. A roadless bill would fix protection for these wild areas, making their preservation a federal law rather than an administrative rule. Ultimately, protection would be under the authority of elected members of Congress rather than administration-appointed bureaucrats, who in the current climate have refused to enforce the provisions of the Roadless Area Conservation Rule or defend it in court….

Congressional protection of roadless areas is backed by bipartisan support — Washington Democrat Jay Inslee and Representative Sherwood Boehlert, a New York Republican, are prominent in the coalition spearheading the bill.

Inslee spokeswoman Sara O'Connell expects a difficult fight with the current makeup of the House of Representatives…. Without a core group of conservation conservatives in support, the roadless bill won't go far in the Republican-majority House.

Rather than locking up lands, as some critics of roadless are protection have argued, the bill would determine forest practices in the remaining unprotected roadless acres on national forests…. Nevertheless, industry and off-highway vehicle groups see the roadless rule as an attempt to deny them their rights to public land, as if the Forest Service, if it enforces the rule, will ring roadless areas with No Trespassing signs. Roadless protection won't tell the public what it can and can't do on roadless land. Rather it's a call for the Forest Service not to add more roads to a system that the agency is incapable of maintaining. The Forest Service is responsible for the largest network of roads in the world — 386,000 miles — an underfunded deteriorating system that would be stressed further by the addition of new roads….

The Forest Service estimates that 220 species listed as threatened or endangered or proposed for listing under the Endangered Species Act would benefit from preservation of roadless areas.

About 31 percent of national forest land would be protected under the rule…. [This figure includes 85,000 acres in Olympic National Forest. Ed.]

Roadless areas are roadless for a reason. The Forest Service predicts that roadless protection would reduce timber harvest on its land by 2 percent — or about 0.5 percent of the national harvest. Most roadless areas are in rugged terrain that has offered little opportunity for cost-effective resource extraction, but that doesn't mean there's a lack of will to try. On the other side of the issue, environmentalists mounted the biggest ever public comment campaign about a resource issue. Most of the nearly 2 million comments submitted to the Forest Service supported protection, but the will of millions means little to the current management of the Forest Service: the agency, after all, isn't beholden to the people in the way Congress is, and in the end, it may take legislative protection for roadless areas to keep them undeveloped.

**What you can do:**
Write or e-mail your representative in Congress, urging support for legislative protection for National Forest roadless areas.

## A GREAT Third Olympic Coast Clean Up !

Sunshine greeted more than 225 volunteers in the third Olympic National Park ocean beach clean up April 20 weekend. Most of the volunteers went to remote beaches such as Shi Shi, Yellow Banks, Norwegian Memorial and Toleak Point. For some remote beaches this was the first clean up.

The enterprising and adventurous volunteers included: more than 25 Americorps volunteers from Port Angeles who swept the area from Beach 4 to Ruby Beach; members of Olympic Peninsula Institute who joined the Makah to clean up Hobuck Beach. The Makah Tribe also was to have a major tribal sponsored clean up during the April 27 weekend. The Quileute sponsored a clean up of First Beach on April 19.

Total tonnage numbers are not in yet, as remote beaches have not been surveyed. Efforts in past three years have removed the larger bulk items from the beaches; however, with winter storms, the beaches always receive a new "shipment" and the beach clean up must go on. The Makahs are interested in continuing clean up efforts for 2003, and a volunteer has stepped forward who would like to coordinate a clean up of the Copalis beaches in 2003!

# Elwha Update

*by Shawn Cantrell*

The long-running Elwha River campaign continues to make steady progress towards the goal of removing the two aging dams that have blocked the river for nearly a century, leading to restoration of the Elwha's once bountiful salmon populations.

Since the Department of Interior acquired the two dams from the private owners in February 2000, the federal government has been methodically moving forward with implementing the Elwha River Ecosystem and Fisheries Restoration Act (P.L. 102-495). Representative Norm Dicks has provided key leadership in securing needed federal appropriations to fund the project, with timely support from Senators Patty Murray and Maria Cantwell.

In addition, in marked contrast to his actions on numerous other environmental issues, President Bush has not sought to block or undermine work on this landmark environmental restoration effort. While the Bush Administration has not made any specific public comments or policy statements regarding Elwha River dam removal, the President has included the necessary Elwha project funding in his budget proposals to Congress in both fiscal years 2002 and 2003.

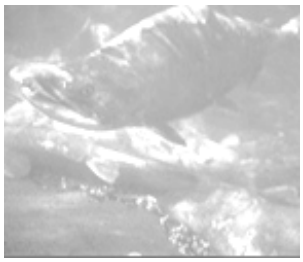
Beyond the funding issues, the Park Service has reached an Agreement in Principle with the various Elwha River water users on the final package of water quality protection measures. This includes protecting municipal drinking water supply for the City of Port Angeles, the industrial water supply for the Daishowa America paper mill, the fisheries facilities along the river operated by the Elwha Tribe and the state of Washington, as well as several small water districts and individual well owners.

Federal agencies are also implementing several on-the-ground activities associated with the project, including work on plant and seed collection and cultivation for re-vegetating the reservoir sites after dam removal and some initial construction activities on water supply mitigation measures.

Despite the important progress that has been accomplished in recent months, however, significant difficulties remain that could easily delay or even kill full implementation of the Elwha Act. Time is running out for the river's severely depleted fish runs. Sockeye salmon in the Elwha are now extinct. Elwha River chinook salmon and bull trout have each been listed recently under the Endangered Species Act.

Bureaucratic inertia and a lack of urgency within government agencies threatens to postpone the actual beginning of dam removal. The tentative date for beginning dam deconstruction has already slipped to 2005, with the possibility that it could be pushed back even more. Local, state and federal officials need to quickly finalize the specific details of the removal plan in order to avoid having deconstruction work postponed.

And while river restoration advocates have defeated past efforts to undermine or derail Elwha dam removal (such as proposals to delay removal of the Glines Canyon Dam for as long as 12 years), we must continue to press for swift removal of both Elwha River dams. Numerous scientific analyses over the past decade have all concluded that concurrent removal of both dams is the most biologically-sound, cost-effective means to fully restore the Elwha River's native fish runs.



*Sockeye. Photo by Jeremy Sarrow, California Academy of Sciences*

# Highlights from North American Wilderness Conference, May 3-5, 2002

The perspective of the 2002 North American Wilderness Conference was wilderness across boundaries: ecological, national, regional, cultural, political, and jurisdictional.

**Inclusiveness.**

Friday's keynote speaker, Sharon Parker of Executive Diversity Consultants, and later speakers challenged participants to reach beyond their own cultural concept of wilderness, and stressed the importance of inclusiveness in building both viable wildlands and a viable, committed conservation constituency.

**Connectivity.**

Friday afternoon and Saturday morning sessions explored connectivity: trans-boundary conservation landscapes that supercede national borders in favor of inter-connected, functional ecological systems. This concept is illustrated by The Wildlands Project, which envisions "rewilding" of "islands" of habitat, restoring key native predators, and connecting these islands with corridors. Mike Harcourt, former Premier of British Columbia, Saturday morning's keynote speaker, described this vision of the North American continent as "arteries of conservation, networks of life".

Reaching these goals will require connectivity among grassroots and national conservation groups, native people, and public agencies, and partnerships with public, private, and tribal lands and preserves.

**Learning by example.**

Some 30+ wildland projects are underway, including: the Spine of the Continent (Canadian Rockies southward into Mexico); the Boreal Forest; Alaska to Arizona (A2A); Banff to Bob Marshall (B2B; Yellowstone to Yukon (Y2Y), Rainforest to Rockies (R2R). Two groups that made presentations on wildlands projects were from the Boundary Waters area and their neighboring counterparts in

*Continued on P. 5, Wilderness Conference.*

# Dosewallips River Claims Dosewallips Road

*by Tim McNulty*

Olympic's wild rivers experienced a feisty winter during 2001-02. Several Forest Service roads were blocked by slides or washed out by river action, and the Graves Creek road in Olympic National Park experienced further damage.

The most spectacular washout on the Peninsula occurred in January on the Dosewallips River Road in Olympic National Forest. Ten miles in from Highway 101 the river cut a new meander channel and wiped out more than 100 yards of the road and adjoining hill slope. The former roadway is now occupied by the river.

The road now ends below Elkhorn Campground leaving a 4-mile hike to the Dosewallips Campground and trail head in Olympic National Park.

In March Olympic National Forest sought public comments on the situation. Preliminary options include rebuilding the road in place, a process that would require hundreds of feet of rip-rapping along the river channel, reconstructing the road through the adjoining forest, or closing the road at the washout and developing a new trail head.

Rip-rapping poses known threats to salmon habitat. At least two threatened and endangered salmon stocks, Puget Sound chinook and Hood Canal chum, spawn in the Dosewallips River. Rip-rap also accelerates peak flows, compounding downstream erosion.

Constructing thousands of feet of new road through adjoining old-growth and late-succession forest raises serious concerns regarding habitat protection for threatened spotted owls and marbled murrelets.

OPA and other environmental organizations have requested that the Forest Service evaluate these issues through a full environmental impact statement (EIS) before any action is taken. We contend that this is not a minor road repair, but a major environmental action. Full consideration should be given to all alternatives, including closing the road at the existing washout.

# Graves Creek Road

*by Tim McNulty*

In January OPA wrote Olympic National Park regarding washouts on Graves Creek Road in the Quinault Valley. High floods washed out an additional 200 feet in November. OPA, other environmental organizations, and the Quinault tribe expressed opposition to installing further rip-rap along the East Fork Quinault River to repair these washouts.

Like the Dosewallips, the Quinault River supports spawning populations of several salmon stocks, including threatened and endangered species. Currently, the Hoh River is armored with more than 5,000 feet of rip-rap. This protects sections of the Hoh Road, but hinders natural river processes that are essential to wild salmon. With state and federal agencies making major investments in restoring salmon habitats, we feel it is counterproductive for the Park Service to persist in rip-rapping river banks.

OPA requested that the Park Service employ engineered logjams and other salmon-friendly management tools to protect access roads. And like the Dosewallips, managers should give consideration to closing the last few miles of the Graves Creek Road (accessing the Graves Creek Campground and trail head) if reconstruction proves incompatible with the park's irreplaceable salmon resources.

A decision on the Graves Creek Road is due this summer. In the meantime, backpackers heading to the upper Dosewallips or Enchanted Valley should plan on longer approaches.

## Wilderness Conference (cont.)

Ontario and Manitoba (see web page <www.friends-bwca.org>) and several speakers from the US-Mexican borderlands (see web page <www.lobo.net/~skisland>).

For more information on the Wildlands Project: <www.twp.org>.

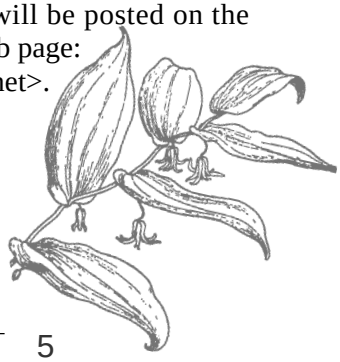
### Sustainability.

Saturday evening Doug Scott (Pew Wilderness Center) reminded us that "the easy stuff is done", and the remaining challenges are long-term. He reinforced the conference's theme of diversity and urged participants to create early alliances with all stakeholders, especially in rural US, and to nurture our volunteers.

### Energy.

Sunday focused on politics and energy. The closing keynote speaker, Representative Jay Inslee, savored a moment of victory over oil-drilling in the Arctic National Wildlife Refuge, and promised to push the roadless area bill, which he is sponsoring. Regarding the energy bill that is currently headed for a conference committee, Inslee agreed with conservationists: the bill has been so weakened that it deserves to die in conference.

Proceedings of the Wilderness Conference will be posted on the following web page: <wilderness.net>.



## Coastal Plain (continued)

*1. Roose's cabin, showing clearing efforts by Park Service, and the rapid invasion of forest trees due to favorable soil conditions. Photo by Ed Tisch.*

Ozette with Cape Alava. According to Myra, Ahlstrom lived in a poorly constructed building that today is essentially gone. He reportedly had a fine vegetable garden but did not raise sheep.

Peter Roose occupied a smaller prairie about one-half mile north of Ahlstrom's house. Roose's Prairie was enclosed, at least partially, by attractive picket fences. Peter gardened and also raised sheep. His house (Photo 1) remains in surprisingly good condition and is currently being restored by ONP's Cultural Resources Division. Park employees have removed many invading trees from the site, and Roose's Prairie is again quadrangular and well defined. The soils at Roose's farm are better drained than those at Ahlstrom's, and dense stands of timber surround his clearing on nearly all sides.

*2. Uprooted hemlock, and Joanne Tisch, along the trail leading to Ahlstrom's Prairie from Lake Ozette. Photo by Ed Tisch.*

At Ahlstrom's Prairie the soils are more poorly drained, and it seems likely that Lars's gardening efforts were not well rewarded. The surrounding forests have similar soils, and many trees there are so shallowly anchored that they often topple during windstorms, revealing nearly complete up-ended root systems. Over time this phenomenon, so common in coastal swamps (Photo 2), produces an interesting mound-swale microrelief in which the collapsed remains of old root systems alternate with the concave mud holes that once housed them.

In the early 1970s my field botany class discovered a number of uncommon plants growing in the vicinity of Ahlstrom's cabin: crowberry, groundcone and Alaska clubmoss. While the first two are likely candidates for this locality, the clubmoss (normally found in subalpine heath communities) was elevationally disjunct and may have belonged to the lowest population in ONP. The crowberries are still present, but earlier this year I could not relocate the "rare" clubmoss.

Ahlstrom's prairie also supports one of the few populations of swamp gentian found in ONP, and the surrounding forests contain small groups of the elusive Ozette coral-root orchid. All of the above probably survived past fires, though the clubmoss, which appears fire sensitive, may have invaded this site since the last major burn. Adolf Ceska, a Canadian botanist, told me that this general area also supports the only known Washington population of three-leaved goldthread.

Ahlstrom's prairie lies in a shallow north-south-trending valley between low coastal ridges. Many of the plants growing there are light-loving species that require, or at least tolerate, very wet soils. At least 12 of these species also are indicative of acidic, nutrient-deficient soil conditions. Since the land undulates slightly and has localized variations in soil moisture and aeration, the "prairie" plants exhibit gradual shifts in dominance from one micro-site to another. The resultant community types are quite intergradient.

The highest, best-drained sites favor tree establishment. Most of these elevated areas currently support a hemlock/salal-evergreen huckleberry community type in which bracken, deer ferns, bunchberries, twinflowers, and beaked mosses are common, and the dominant shrubs grow to heights of three to ten feet. These expanding "forests" are slowly repossessing Ahlstrom's prairie. Their removal would be labor intensive and may warrant a return to the burning methods of old. The tree densities here are so great that controlled burns could result in deadly crown fires.

Salal is widespread throughout Ahlstrom's prairie, but on the lower wetter sites it rarely

*Continued on P. 7.*

*3. Ahlstrom's Prairie showing several intergradient plant communities. Photo by Ed Tisch.*

## Coastal Plain (continued)

grows taller than two feet, as Myra observed back in the 1920s. Nearly everywhere it occurs in association with bracken and deer ferns. Small trees are presently invading a Labrador tea/slough sedge vegetation type, seen as dark-colored patches (Photo 3). The community associates here include salal, bracken, Pacific needlegrass, bog laurel and deer fern. In this community the invading trees are stunted and often yellowish (chlorotic), probably due to nutrient deficiencies and poor soil aeration.

Immediately adjacent, on still wetter sites, a qualitatively similar slough sedge/sphagnum moss community type appears totally devoid of conifer trees. Here the salal is very short, deer ferns and bracken are much less abundant, and one frequently encounters small islets of bog cranberry/sphagnum moss community in which bog St. John's-wort, northern starflowers, sundews, and swamp gentians are small but conspicuous elements.

The very lowest (wettest?) sites are dominated by grass-like plants that are difficult to identify in early spring. One of these habitats apparently supports a Chamisso's cotton-grass/pale sedge community type that is better defined in mid-summer. Another, contiguous, community is dominated by rushes. These latter (bog) communities are virtually treeless, and controlled burns in these areas, if properly timed, would simply remove the dead tops of plants, leaving their root systems intact.

One wonders why the Ozette Indians burned their prairies. Wild blackberries, which flourish after fire, are rare or absent there, and salmonberries do poorly on these sites. Was it for salal berries? Evergreen huckleberries? Tribal elders told Teresa Parker, an Ozette descendant now living at Neah Bay, that the prairies were burned to replenish the soil, reduce plant diseases, and promote the growth of cranberries. (Teresa is involved in education outreach at the Makah Cultural and Research Center.) Myra Vanderhoof suggests that forest clearings attract deer and elk, which the Ozettes undoubtedly hunted. Unfortunately, by 1940 the Ozette people had relocated to Neah Bay, taking their prairie secrets with them. The European homesteaders had also vacated after their "promised" access road to Clallam Bay failed to materialize. Ahlstrom's prairie has not burned in recent years, but the possibility of fire – both physical and political – has come 'round again.

Ed Tisch, Port Angeles, WA, April 24, 2002.

*4. Charred snag at the north end of Ahlstrom's Prairie. Chlorotic (yellowish) hemlock sapling indicates poor soil conditions.*
*Photo by Ed Tisch.*

## *The Olympics: A Wilderness Trilogy*

BOOK REVIEW

By Ross Hamilton and Janet Scharf. Self-published. Available in many Kitsap bookstores, Elliott Bay Books, Third Place Books, Walden in Southcenter, and by order from your local bookseller. Distributed by Partners West. ISBN: 0-9708154-0-9. $29.95.

*Reviewed by Peter L. Hemp in the Kingston Community News, March 2002. Excerpts by permission.*

***The Olympics, A Wilderness Trilogy****....* showcases the work of Ross Hamilton, 59, Sequim photographer, lecturer, and outdoor enthusiast. Commentary accompanying the photos is provided by Janet Scharf, Olympic National Park naturalist.

Hamilton's photography is known locally.... This is the first compilation of his work in book form. It draws from 30 years capturing the Olympics on film….

Not content to capture the panorama of the Strait of Juan de Fuca, he moves his image a few feet above the water, detailing multicolored stones just below the glassy surface. Page after colorful page takes us into the silence of the Olympics, well past the usual scenes we have seen so often.

Scharf's commentary is appealingly understated, saying hardly more than is needed to identify the photos, to set a mood fitting that which is seen…. She does this with lovely, soft prose, an occasional verse of her own, and quotes from the likes of John Muir, Robert Frost, William O. Douglas....

Like any photographer of nature, Hamilton shows extreme patience, waiting for exactly the right cloud position, the just-perfect reflection of sun or moonlight -- while we silently look over his shoulder at the Olympics as we've never quite seen them before.

*Photo 2001 Ross Hamilton Photography, Inc.*

# Amphibians of Olympic National Park

*by Patrick Loafman. Reprinted from Vigilance, April 2002, by permission.*

Merely eight years ago, almost nothing was known about the amphibians that lived in the mossy forests of Olympic National Park (ONP). That all started to change in the summer of 1994 with park biologist Bruce Moorehead obtaining funding to inventory amphibians within the Lake Mills area of the Elwha drainage.

Moorehead employed the knowledge of Bruce Bury to direct the research. Bury is a herpetologist: a biologist who specializes in the study of reptiles and amphibians. Herpetologists have traditionally had the reputation of being especially passionate about the animals they study, as well as a bit eccentric. I should know. I am also a herpetologist.

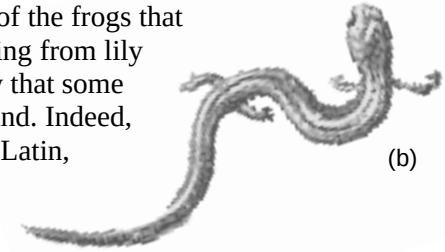
My training started in Auburn University in Alabama where I graduated with a BS in wildlife Biology in 1998. My herpetology professor was a chain-smoking, whisky-swilling, skinny old man, whose accent was as thick as a cottonball. The first field trip we went on, I remember a snake slithering through a patch of grass, and the old professor shouted, "Seize that serpent!" But seeing that none of his new students were pursuing the snake, he sprinted and hurled his body horizontally through the air grasping the serpent by the tail. The snake proceeded to bite his arm, but he was laughing heartily. And by the end of that three-month long herpetology class, most of the students were hurling their bodies through the air to catch snakes, also. The professor had unique ways of instilling passion for reptiles and amphibians into his students.

The first time I met Bruce Bury was in 1994. He was a burly, bearded man who instantly wanted to go and find some amphibians. This is what herpetologist do: we catch "herps." We went out to the Elwha drainage, and because Bruce is "the tailed frog guru," he quickly spotted a suitable stream to find tailed frogs. We spent the whole afternoon hunched in that small, cold stream, catching tadpoles.

And in a way, eight years have passed as I have stood in rubber boots with a dipnet in hand, hunched to small, unnamed streams draining the Olympic Mountains, turning stones, catching amphibians. To be honest, I have fallen in love with the amphibians that live in these small streams.

## WHAT ARE AMPHIBIANS?

Amphibians are a Class of vertebrates and the two main Orders are Anura (frogs and toads) and Caudata (salamanders and newts). When most people think of amphibians they think of the frogs that breed in ponds, bellowing from lily pads. Few people know that some amphibians breed on land. Indeed, the name amphibian is Latin, meaning "both lives," referring to the fact that most amphibians have an aquatic larval stage (like tadpoles) and an adult terrestrial stage. There are three terrestrial salamanders in the Olympics: the red-backed salamander, the ensatina and the Van Dyke's salamander. These salamanders lay their eggs inside moist, rotting logs and the females coil around them, defending them against predators. The amphibian's gilled larval stage is passed inside the egg.



(b)

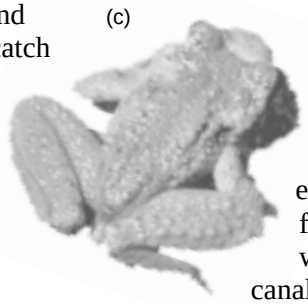
(a)

The most unique amphibians of the Pacific Northwest, though, are the stream-breeding species: the tailed frog, the Cope's giant salamander and the Olympic torrent salamander.

Streams put on a modest face, as if they are simply trickling water, but look closer. There is a whole ecosystem: diatoms, stoneflies, mayflies, caddisflies, worms, algae, beetles, bugs, amphibians, and fish. The closer you look the more you will notice, and each stream is completely different, unique, an individual. These three species of stream-breeding amphibians live without most people ever noticing them. Let me peel back the superficial skin of water and give you a glimpse of their lives.

## THE FROG WITH A TAIL

The tailed frog (*Ascphus truei*) is a small (only an inch-and-a-half), voiceless and deaf frog. It is considered the most primitive of all living frogs. This frog may live as long as twenty years. It breeds in swift-flowing, rocky streams, usually absent of salmon. The tadpole's mouth has evolved into a highly efficient sucker it uses to adhere to stones, preventing it from being swept downstream. The "tail" of the male tailed frog is not a tail at all, but an extension of the cloaca. Used for internal fertilization, the cloaca is the chamber into which urinary, intestinal, and reproductive canals discharge. It currently is the only species in the Family of frogs called Ascaphidae, but some scientists believe the frog is so distinct that it belongs in its own Order separate from all other frog species.



(c)

The tailed frog lays her white eggs in long rosary-like strings that congeal into an amorphous blob, stuck on under a rock in the stream. The tadpoles spend two years before metamorphosing into frogs in ONP, while in the colder climes of Northern Cascades they spend four years as tadpoles.

Tailed frogs are common and abundant within the protected boundaries of ONP. They are sensitive to the increased temperatures and higher silt loads found in streams

*Continued on P. 9.*

## Amphibians (continued)

after clearcutting, though. Current research has begun by the U.S. Forest Service, studying the potential benefits of tree-buffers on amphibians in managed landscapes.

### THE GIANT

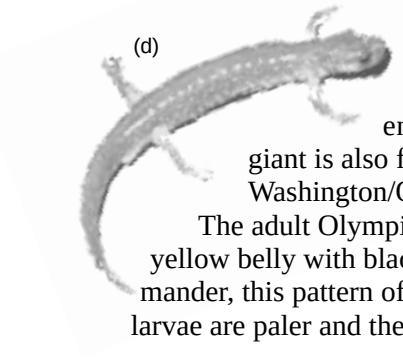
There is a giant of a salamander that is on the top of the aquatic food chains in small fish-less streams called the Cope's giant salamander. This species was not discovered until 1970, making it the most recently described vertebrate in the Northwest. Commonly a half-a-foot long, they are stout brown salamanders with shovel-like heads used to push themselves underneath stones in the creek. One of the most surprising results of the amphibian inventories in ONP is that the giant salamanders are found only on the west side of the park from the Sol Duc to the Skokomish.

Cope's giant salamanders have a beautiful pattern of gold mottling. I have discovered that this mottling is highly variable and photographs can be used to identify individual salamanders in the same way the coloration of Orcas can be used to identify individuals. I have kept track of individual salamanders using photographs for several years, and have found them to be a highly sedentary species, only moving a few meters. The adults grow very slowly, only a few millimeters a year, implying that the large individuals are at least fourteen years old.

The Cope's giant salamander is generally a paedomorphic species. This means that instead of developing into a terrestrial adult, they keep their gills and become adults while they still look like larvae (the juvenile morph). Originally, the species was believed to never metamorphose into a terrestrial adult, but over the years more terrestrial "metamorphs" have been discovered. Five metamorphs have been found in ONP as a part of this research. They are mottled brilliantly in silver and brown, and I have felt privileged to see four of those. A trail-maintenance worker who has been working here for over a decade found the fifth. He described it as, "The most beautiful animal I have ever seen."

### THE OLYMPIC SALAMANDER

The Olympic torrent salamander is found on the Olympic Peninsula and nowhere else in the world. This is the only endemic amphibian.



(d)

Though you may find popular articles claiming that the Cope's giant salamander is endemic, it is not. The Cope's giant is also found in the Cascades near the Washington/Oregon border.

The adult Olympic torrent salamander has a bright yellow belly with black dots, and like the giant salamander, this pattern of dots is individually unique. The larvae are paler and their eyes are blue.

Very little is known about the natural history of this species. No eggs have been found in the wild. They can be extremely numerous in small seeps: wet areas that may not look wet at first, but when you scratch the surface of pebbles the earth will bleed some water and the small shapes will scurry into view. They first appear as shadows, or glimmers of light, but become salamanders to the trained eye. This is what I've done for years – pulled away the surface layer of stones to discover what hides underneath.

### CONSERVATION

Much has been written recently on the global decline of amphibians. Indeed, many species have declined dramatically, while some have gone extinct. The causes are varied: habitat destruction, epidemic diseases, pesticide/herbicide use, UV radiation, and acid rain. This issue of amphibian declines started receiving much media attention in 1990 after a scientific workshop, but scientists in the 1960's had already documented declines of leopard frogs in the Midwest. My old herpetology professor who retired in 1987 had personally observed many declines of common amphibians and reptiles in Alabama, during his career. In the Northwest, Bruce Bury was publishing scientific papers in the 1980's on the effects of clear-cutting on stream-breeding amphibians.

The main question I am always asked when I am hiking in ONP each summer with a dip net in hand is, "How are the frog populations doing here?" I cannot honestly answer the question, yet. Science is a slow process and the research on amphibian population changes takes years of close observation. No amphibians have been found in ONP with mutations that have become more commonly reported elsewhere. In general, the amphibian populations are quite abundant in ONP compared to surveys in other localities, implying that if populations have declined here in the past they have not been large declines.

But before conservation can begin, people need to care about the species. I hope that I have introduced you to three species that live hidden from most people's views, given you a glimpse of what lives hidden in small, unnamed streams. Once you learn what lives underneath that skin of water, you can never look at a stream in the same way.

**Key to Amphibians**

(a) Cope's giant salamander
Photo by Robert C. Stebbins, Museum of Vertebrate Zoology

(b) Red-backed salamander
Photo by Henk Wallays

(c) Tailed frog
Photo by Jens Vindum, California Academy of Sciences

(d) Olympic torrent salamander
Photo by William Leonard

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*Do we have so much earth*
*that we can afford to destroy forever*
*any one part of it?*

Michael Frome, in ***Battle for the Wilderness.***