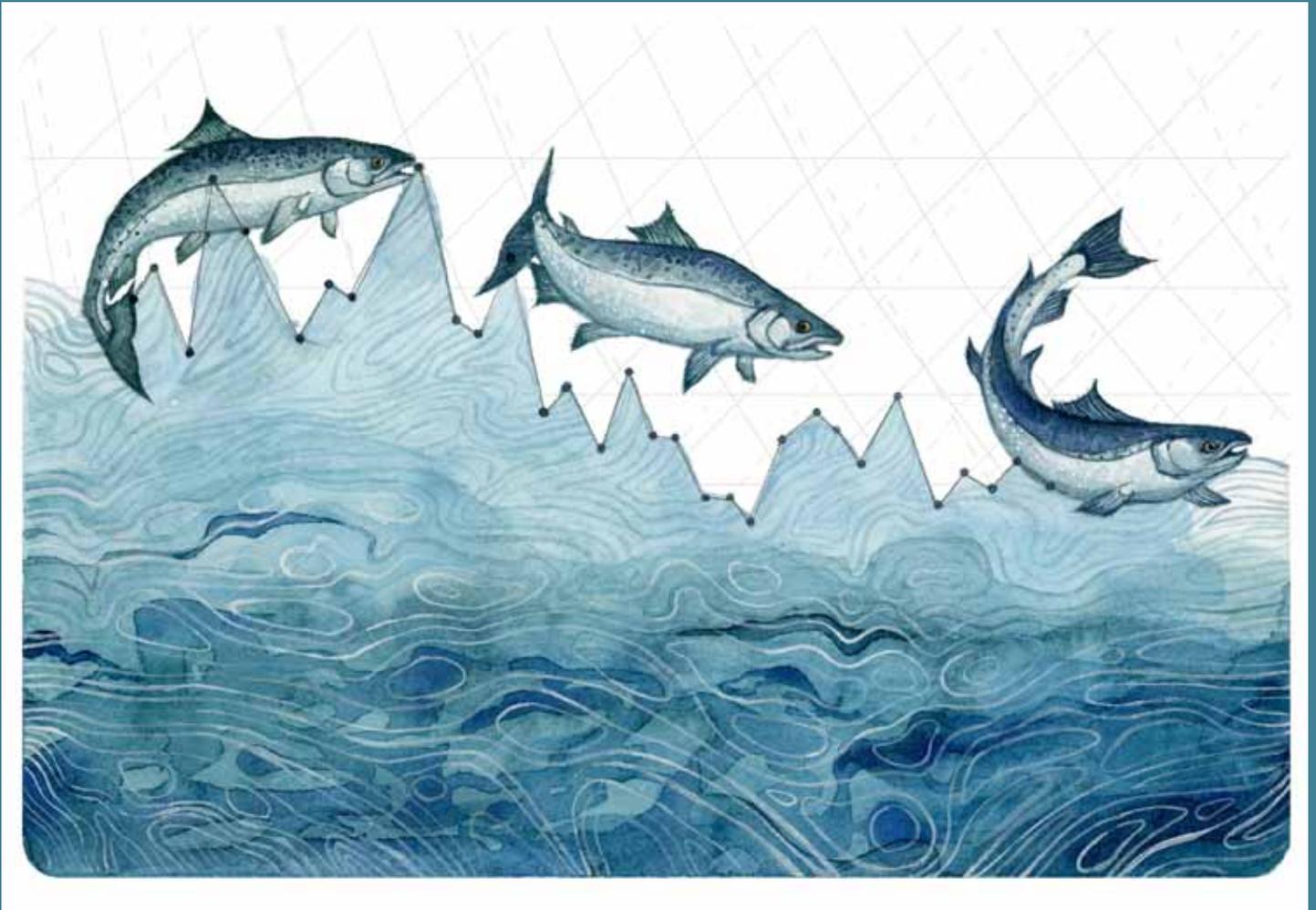


THE WILD CASCADES

THE JOURNAL OF THE NORTH CASCADES CONSERVATION COUNCIL

SPRING/SUMMER 2016



THE WILD CASCADES ■ Spring/Summer 2016

- 3 **President's report** — Tom Hammond
- 4 **NCCC Actions** November 2015 - April 2016
- 5 **Betty Manning memorial**
- 6 **Alpine Lakes dam projects begin scoping** — Karl Forsgaard
Lawsuit closes ATV routes on national forest roads — Karl Forsgaard
Time to renew?
- 7 **Military to reconsider helicopter training sites in Cascades** — Rick McGuire
- 8 **New board member Scott Crain**
Lands Commissioner Goldmark to step down — Rick McGuire
- 9 **North Fork Skykomish road to reopen?** — Rick McGuire
- 10 **Celebrating 100 years of national parks the best way I know how** — Tom Hammond
- 13 **Alpine Lakes Wilderness celebrates 40 years** — Rick McGuire
- 14 **Wild Nearby exhibit opens at Burke Museum**
Join the NCCC work party October 1
- 15 **The restoration of grizzly bears to the North Cascades** — the North Cascades Ecosystem Grizzly Bear Recovery EIS Team
- 17 **NCCC responds**
Kennecott mine opposition poster — 50 years ago
- 18 **Hunting habitat affects viewing of national park wolves**
- 19 **North Cascades Institute's 30th anniversary picnic**
- 21 **Under the weight of ice** — Thom Schroeder
- 22 **About artist Jill Pelto**
- 23 **Membership application**

FRONT: Salmon Population Decline by artist Jill Pelto. Read about Jill and her art on page 22.

The Wild Cascades

Journal of the North Cascades Conservation Council

EDITOR: Anne Basye

EDITORIAL BOARD: Philip Fenner, Anders Forsgaard,
Tom Hammond, and Rick McGuire

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THE NORTH CASCADES

CONSERVATION COUNCIL was formed in 1957 "To protect and preserve the North Cascades' scenic, scientific, recreational, educational, and wilderness values." Continuing this mission, NCCC keeps government officials, environmental organizations, and the general public informed about issues affecting the Greater North Cascades Ecosystem. Action is pursued through administrative, legal, and public participation channels to protect the lands, waters, plants and wildlife.

Over the past half century NCCC has led or participated in campaigns to create the North Cascades National Park Complex, Glacier Peak Wilderness, and other units of the National Wilderness System from the W.O. Douglas Wilderness north to the Alpine Lakes Wilderness, the Henry M. Jackson Wilderness, the Chelan-Sawtooth Wilderness, the Wild Sky Wilderness and others. Among its most dramatic victories has been working with British Columbia allies to block the raising of Ross Dam, which would have drowned Big Beaver Valley.

NCCC is supported by member dues and private donations. These contributions support the full range of the Council's activities, including publication of *The Wild Cascades*. As a 501(c)(3) organization, all contributions are fully tax deductible to the extent allowed by law. Membership dues for one year are: Living Lightly/Student \$10; Individual \$30; Family \$50; Sustaining \$100.

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Founded in 1957
SEATTLE, WASHINGTON

THE PRESIDENT'S REPORT SPRING/SUMMER 2016

Laura Zalesky passed on May 18th at the age of 92. This issue of *The Wild Cascades* was essentially in print at the time, so stay tuned to the next issue for tributes. Laura stands as one of the great conservationists of our time, and it has been an honor to work with her and call her friend.

Thanks to Scott Crain for answering our call and joining the board—see page 8 for a bit of his story.

Please join the NCCC in celebrating 100 years of National Parks. As you'll see in this edition of *The Wild Cascades*, and in the next as well, we'll be paying attention to the centennial anniversary of what has been called "The (United States') Greatest Idea" in Ken Burns' excellent documentary on our National Parks.

Greatest idea indeed: preserving the natural character and ability of the landscape for all living things because such preservation is important. Perhaps the greatest importance of the National Park concept is that it is now world-wide: nations across the planet have recognized the wisdom of preserving the natural world, and have taken steps to do so.

On a more local scale, the NCCC has met with the National Park service staff twice in the past couple of months to discuss grizzly bear recovery, helicopter use in Wilderness and our upcoming work party. You're invited to join us on October 1—we will be removing invasive plants and planting natives at Diablo overlook, or (if bad weather) working in the Miller Greenhouse at the ranger station in Marblemount. See details on page 11 and RSVP. We thank the staff of North Cascades National Park for taking the time to meet with us.

On a personal scale, I have been fortunate enough to visit North Cascades National Park twice and Olympic National Park once in the past several weeks, where my brother and I saw dozens of California gray whales cavorting within a hundred meters of the beach over the course of four days—morning noon and night! We are fortunate to live in a place surrounded by natural wonders and beauty, and in a nation that recognizes the importance of Wilderness preservation: not for the sake of human gain, but to support all life forms.

The North Cascades Conservation Council was formed in 1957 with the specific mission of getting a National Park created in our North Cascades.

Subsequent to realizing this goal with the signing of the law in 1968, the board of the NCCC considered disbanding the organization a number of times from the late 1960s through the present. At each consideration, we've asked ourselves if we provide value to the preservation of Wilderness and wilderness character in the North Cascades, and each time the answer has been and continues to be a resounding "Yes!" There is a need for all-volunteer advocates, and the board and I thank each and every member for your continued support.



NCCC Actions

NOVEMBER 2015
to APRIL 2016

*Advocacy carried out by
dedicated NCCC volunteers
in the last six months to
protect and preserve the
North Cascades lands,
waters, plants, and wildlife.*



EXPANDING, ESTABLISHING, AND PROTECTING WILDERNESS AREAS

Why it matters: federal land designation as Wilderness and Park is the gold standard of ecosystem protection, precluding most damaging industrial and commercial exploitation.

- Attended public meeting of the Icicle Work Group, a Chelan County Department of Natural Resources and Ecology effort to increase irrigation water storage in eight lakes in the Alpine Lakes Wilderness.
- Met with staff of the North Cascades National Park to discuss issues of joint concern and organizational relationships.
- Joined Wilderness Watch in signing joint letter to all members of Congress opposing amendment to the Wilderness Act to allow bicycles in congressionally designated Wilderness.



PROMOTING ENVIRONMENTALLY SOUND RECREATION IN WILD AREAS

Why it matters: balancing access with economics and Wilderness preservation, we evaluate motorized use and places where it needs to be limited to reduce land impacts and recurring road repair costs.

- Participated in a discussion panel at the University of Washington Film Club/Scarecrow Video presentation of *Chasing Ice*, a film about climate change and the retreat of glaciers.
- Presented a lecture at the University of Washington at Bothell on the retreat and measurement of North Cascade Glaciers.
- Submitted comments to the Darrington Collaborative supporting some elements of their proposals and opposing others.
- Published an article on the retreat and measurement of North Cascade Glaciers in *The Mountaineer* magazine.



PROTECTING ANCIENT FORESTS AND PROMOTING RESPONSIBLE FOREST MANAGEMENT

Why it matters: like real estate, they're just not making ancient forest anymore. We seek to restore watersheds and fisheries damaged from decades of heavy logging and road building and protect significant forests from degradation.

- Signed joint letter commenting on the scope of the environmental impact to be evaluated, project area of 65,000 acres, 6,700 acres to be thinned, of the proposed South Fork Stillaguamish Vegetation Management Project.
- Submitted scoping comments on the proposed Greenwater River Access Travel Management (ATM) to the Snoqualmie Ranger District of the Mount Baker Snoqualmie National Forest.
- Commented on the Draft ATM for the Upper North Fork of the Nooksack River on the Mount Baker District of the Mount Baker Snoqualmie National Forest—the first

ATM issued under the Sustainable Roads Strategy. NCCC advocated keeping open and maintaining only the mileage of roads with the available budget.

- Signed joint letter to the U.S. Senate opposing inclusion of Senate Bill S-1694 (promoting the Yakima Integrated Plan) to the Energy Omnibus Bill.
- Submitted comments on the Chewuch Transportation Plan draft Environmental Assessment to the Methow Valley Ranger District.
- Submitted comments on salvage logging in the Methow Valley and Tonasket Districts.



PROTECTING WILDLIFE AND HABITAT

Why it matters: from microscopic fungi to top predators, the wilderness ecosystem's living members are interdependent, so keeping viable populations of each species is essential to preserve the ecosystem for future generations.

- Signed joint letter to the WA State Department of Ecology opposing revision of the instream flow rule for Snohomish Public Utility's proposed Sunset Falls hydroelectric plant on the Skykomish River.
- Signed joint letter to the WA State congressional delegation supporting funding for the Legacy Roads and Trails (LRT) program.
- Attended meeting of the Washington Watersheds Group to discuss LRT distribution of the \$40 million 2015 appropriation and future request.
- Joined the Washington Forest Law Center and other conservation organizations in signing joint letter to the U.S. Fish and Wildlife Service urging strong protections for remaining marbled murrelet habitat.

Betty Manning memorial



Sunday, August 28, 2016

1:00 to 3:30 pm

The Mountaineers
7700 Sand Point Way NE
Seattle, WA 98115

Please RSVP to
claudiamanning05@gmail.com
by July 24

Alpine Lakes dam projects begin scoping

By Karl Forsgaard

Alpine Lakes Wilderness is at risk of future water development. As previously reported (*TWC* Winter 2015), two government agencies (State Department of Ecology and Chelan County) are now evaluating whether to build dams, manipulate water levels, and issue water rights from seven lakes in the Wilderness: Colchuck, Eightmile, Upper and Lower Snow, Nada, Lower Klonaqua and Square Lakes. At least for the time being, they have dropped their proposal to drain an eighth lake, Upper Klonaqua, by installing a siphon or pump or blasting a tunnel between Upper and Lower Klonaqua Lake. One of their goals is to extract more water for “new home construction” in the Wenatchee Valley. They also claim to solve instream flow problems in Icicle Creek near the Leavenworth National Fish Hatchery to protect tribal fishing rights and improve irrigation reliability.

In May 2016, the agencies concluded a public comment period for scoping under the State Environmental Policy Act. NCCC was one of 40 parties that submitted a

joint comment letter. We appreciate the irrigators’ need for water to irrigate their orchards and keep them productive. We do not object to the exercise of valid, existing water rights of the Icicle-Peshastin Irrigation District, but we question an assertion of water rights that have been relinquished or are otherwise invalid. While we appreciate the goal to improve instream flows in Icicle Creek, it is contradictory to exploit one natural area under the guise of enhancing another, particularly when other options are available. We urged that the EIS include a full range of alternatives, including a Wilderness Protection alternative (not seeking any increase in the amount of water removed from the Wilderness); a Water Right Relinquishment alternative; a Water Conservation alternative; and a Water Right Change alternative (moving irrigators’ point of diversion downstream to the Wenatchee River).

The Wilderness is managed by the U.S. Forest Service, which must also prepare an environmental analysis to ensure protection of wilderness values. Although this

federal process has not started, we anticipate that the Forest Service will monitor public input, and will initiate project-level analysis when triggered.

The existing diversions of water are familiar to visitors, as described in *100 Hikes in Washington’s Alpine Lakes*, by Ira Spring, Vicky Spring and Harvey Manning (Mountaineers Books, 3rd Ed. 2000):

“Like a bathtub, water is drained through a hole in the bottom of the upper lake (which thus has a fluctuating shoreline) and is used to guarantee a pure intake for the Leavenworth Fish Hatchery; probably few people imagined, when the fishy business was perpetrated back in the 1930s, that Snow Lakes and unmolested pristinity of wilderness would become so treasured by so many as they are.”

More information, including environmental documents, can be found on the agency websites:

<http://www.co.chelan.wa.us/natural-resources/pages/icicle-work-group>

Lawsuit closes ATV routes on national forest roads

By Karl Forsgaard

Alpine Lakes Protection Society, Kittitas Audubon and Sierra Club achieved a favorable settlement of their lawsuit to halt the Forest Service opening of 350 miles of roads across the Okanogan-Wenatchee National Forest to wheeled all-terrain vehicles (WATVs). In June 2015, the WATV routes were opened, and the lawsuit was filed in federal court in Seattle. As previously reported (*TWC* Fall 2015), the WATV routes were closed in September 2015.

The settlement agreement was part of a stipulated order of dismissal entered by the court in March 2016. The settlement accomplishes the goals of the litigation while securing the recourse of judicial review should the Forest Service fail to comply with the settlement terms. The Forest Service agreed it will not open any

roads to WATV use without first complying with the National Environmental Policy Act (NEPA) and specified sections of the Travel Management Rule (36 CFR 212.51-212.57). The Forest Service will pay plaintiffs’ attorney fees and costs. The court will retain jurisdiction until 90 days after Okanogan-Wenatchee National Forest issues its Travel Management decision for the whole Forest.

Okanogan-Wenatchee National Forest has not yet completed its decade-long Travel Management process, begun in November 2005. NCCC has actively participated throughout the Travel Management process, and we are pleased that the Forest won’t exempt these WATV routes from the public process.

Time to renew??

On the mailing panel on the back cover of *TWC* is the line, “Your subscription expires....” If the date has passed, please consider bringing your membership up to date. And if by chance our membership records are wrong, please let us know at

ncccinfo@northcascades.org

Military to reconsider helicopter training sites in Cascades

By Rick McGuire

After a huge outcry from conservationists and recreationists, commanders at Joint Base Lewis McChord (JBLM) will reconsider their choices for helicopter training “mountain warfare” landing sites in the Cascades.

Some months ago, the military suddenly announced they would be moving part or all of their high-altitude helicopter training from Colorado to the Cascades. Many of the places chosen for landing sites were in popular, much-used recreational areas. More than one was actually located directly on top of Forest Service trails. Some were located near the Lake Chelan-Sawtooth Wilderness. One particularly objectionable site was atop Icicle Ridge near Leavenworth, just within the Alpine Lakes Wilderness.

No one in the conservation or recreation communities had been consulted by the military about these sites. The number of flights would be substantial, and they would occur night and day throughout the year. It is not clear just why the decision to relocate the training area from Colorado to the Cascades was made.

Almost all mountains in Colorado are many thousands of feet higher than those in the Cascades. It would seem that the much higher mountains of Colorado would be better suited for assessing and learning how to deal with the effects of high altitudes on both people and machinery. Many summits in the Cascades are not even as high as valley bottoms in Colorado. The Cascades can be steep and rugged, but they are among the lowest “real” mountain ranges in the world. Many helicopters suffer degraded performance at altitudes over 10,000 feet. It would seem that effective high-altitude training would be better done in an environment where that problem had to be dealt with, since it will likely be part of any real mountain warfare.

Whatever the reasons, the choice of sites and the projected intensity of use quickly generated widespread opposition. Washington Wild, a leading statewide conservation group with whom NCCC has worked on the Wild Sky Wilderness, the recent Alpine Lakes Wilderness additions, and many other efforts, took the lead and wrote a letter asking the military to

reconsider its choice of sites. The letter was quickly and eagerly signed on to by almost every conservation and mountain recreation organization in the state, including NCCC. Senator Patty Murray also stepped in to call for an extended comment period. Many other comments poured in, almost all opposed to the plan as presented.

Military commanders at JBLM appear to have gotten the message. The initial plan has been withdrawn, and conservationists are waiting, fingers crossed, to see what will replace it. Reports indicate that they will still be moving part or all of the training from Colorado, and are looking

at the entire state of Washington for suitable landing sites. The Cascades are the only place in the state where much high altitude terrain can be found, but they are a big mountain chain, and hopefully military planners will be able to find the kind of terrain they want in less frequented parts of the range. Conservationists, and pretty much anyone who cares about the Cascades, are hoping the next proposal, whatever it might be, will avoid high-use areas and areas close to Seattle. The hope is that the military will take better account of the many conservation, wildlife and recreation values of the Cascades.



Bell UH-1 “Huey” helicopter, well known for its roles in Vietnam as “guns,” (gunships,) and “slicks,” (troopsips.) After 60 years of service it is still considered one of the best helicopter designs ever. With its powerful, and very innovative for the time, jet turbine engine spinning the rotor tips at supersonic speeds, its “wup-wup-wup”, audible from miles away, became the signature sound of the war in Vietnam. Heavily armed with gatling guns, machine guns and rockets, Hueys terrified the natives until they learned that

they were vulnerable to concentrated and well aimed small arms fire, and thousands were brought down by Vietnamese defenders. Probably most famous for its role in the terrifying village raid set to “Flight of the Valkyries” in the movie “Apocalypse Now,” in reality such raids would have been very unusual. Hueys were just too vulnerable to ground-based defensive fire.

Sikorsky UH-60 “Blackhawk,” more modern and powerful replacement for the “Huey.” As noisy or noisier than Hueys, Blackhawks are now the most widely used helicopter by the U.S. military, and will likely become part of the soundscape in areas of the Cascades once the military decides where large-scale training operations are to be carried out in Washington State.



Introducing new board member Scott Crain



NCCC asked Scott Crain to write a few words introducing himself to members and readers. Welcome to the board, Scott!

I'm excited to join NCCC's long legacy of protecting and advocating for the North Cascades. I first heard about NCCC during the Suiattle River Road process. I supported NCCC's efforts to take a closer look at our road system in the national forests and try to do it better moving forward.

After reading Harvey Manning's *Wilderness Alps*, I was hooked. Joining NCCC as a board member is a culmination for me in a long process of watching and supporting the efforts that others have made to protect the North Cascades.

Ed Abbey is credited with saying, or stealing, the phrase, "Wilderness needs no defense, only defenders." NCCC epitomizes this belief, and I share it. Wilderness is under a huge threat, from demands

to return public lands to the states, to motorized intrusions, and from thoughtless overuse. Land managers can't stop all these threats, and NCCC is a critical part of the fight to keep wilderness a place where we experience nature on nature's own terms.

My first outdoor adventures were Boy Scout camping trips in the eastern Washington desert, where I grew up. I've traversed nearly every wilderness in our state. I biked the Suiattle road and hiked the upper Suiattle to Chocolate Creek—before the repairs—and enjoyed watching nature rebuild itself. Being out in the wilderness, and working to protect it, go hand in hand for me. When the Army announced its decision to launch helicopter training trips in the Alpine Lakes, I took an off-trail multi-day trip to the precise point they intended to land helicopters so I could photograph it, experience it, and maybe be a plaintiff with standing to intervene and stop it!

In the summer when I'm not in the North Cascades, I'm in the Boundary Waters Canoe Area Wilderness guiding youth wilderness trips for the Boy Scouts and others. I'm particularly interested in teaching youth about wilderness and why it's important to keep it wild. The wilderness itself really does the job itself, however, and I just stay out of the way. Six days into a wilderness canoe trip, kids who catch a lake trout, build a fire in the rain, or outlast a lightning storm understand what wilderness has to offer.

My wife Ann is a long-time guide and director of a Girl Scout canoe base that introduces teenage girls to multi-day wilderness canoe trips in the Boundary Waters Canoe Area Wilderness. My family—us and our two boys—spends its summers half a mile from the wilderness boundary, where we work tirelessly to see that youth have a safe trip, and come back with a new awareness of their own strengths and a better appreciation for their natural environment. The single greatest challenge facing environmental advocacy organizations far and wide is getting younger people to care about the wild places we want to protect.

In my professional life, I'm a legal aid lawyer advocating for civil rights for the poor. I believe in litigating for high-impact systemic change, and hope to bring my understanding of navigating the court system to my advocacy with NCCC. I hope to bring my experience working with youth in the wilderness, and my belief in uncompromising defense of the Wilderness Act to NCCC as a board member. I'm happy to be here.

Lands Commissioner Goldmark to step down

By Rick McGuire

It has been announced that Washington State Lands Commissioner Peter Goldmark will be stepping down at the end of his second term. No specific reasons have been given, but presumably Goldmark wishes to pursue other interests after eight years in Olympia overseeing the Department of Natural Resources and state lands.

Goldmark designated the Middle Fork Snoqualmie Natural Resource Conservation Area (NRCA) and considerably expanded the adjacent Mt. Si NRCA and the Morning Star NRCA on Mt. Stickney north of Gold Bar. NRCAs are the state's near-equivalent of Wilderness on its lands. He also took on the wildly out-of-control abuse by ORVs of the Reiter Forest area

between Gold Bar and Index, stopping all motorized recreation there for several years before reopening the area to motorized use on a much smaller scale, in designated areas only.

NCCC wishes Goldmark all the best in his future endeavors and hopes that whoever succeeds him will be a strong conservationist.

ALSO: *The Wild Cascades* wishes to correct a mistake in the article "R.I.P., Queen of the Middle Fork," in the previous issue. We stated that Commissioner Goldmark had designated the expanded Mt. Si and new Middle Fork Snoqualmie NRCAs in 2006. It was actually done in 2011.

North Fork Skykomish road to reopen?

By Rick McGuire



After what has seemed like years of silence, Snohomish County has sent out another update on the projected rebuild of the North Fork Skykomish road, also called the “Index Galena” road by the county.

Almost a mile of the road was taken out by the changing river course in 2006, about six miles or so above Index. Plans were quickly announced to rebuild the road, but not as what most people would consider a “forest road.” Instead, a road with a 40 mph design speed was proposed, essentially a highway, with large clear zones on either side, and plenty of cutting and filling.

This “all or nothing” approach to road building and rebuilding seems to be the default condition for road designers. There is no need to rip a wide gash up the North Fork valley and make a high-speed road. It

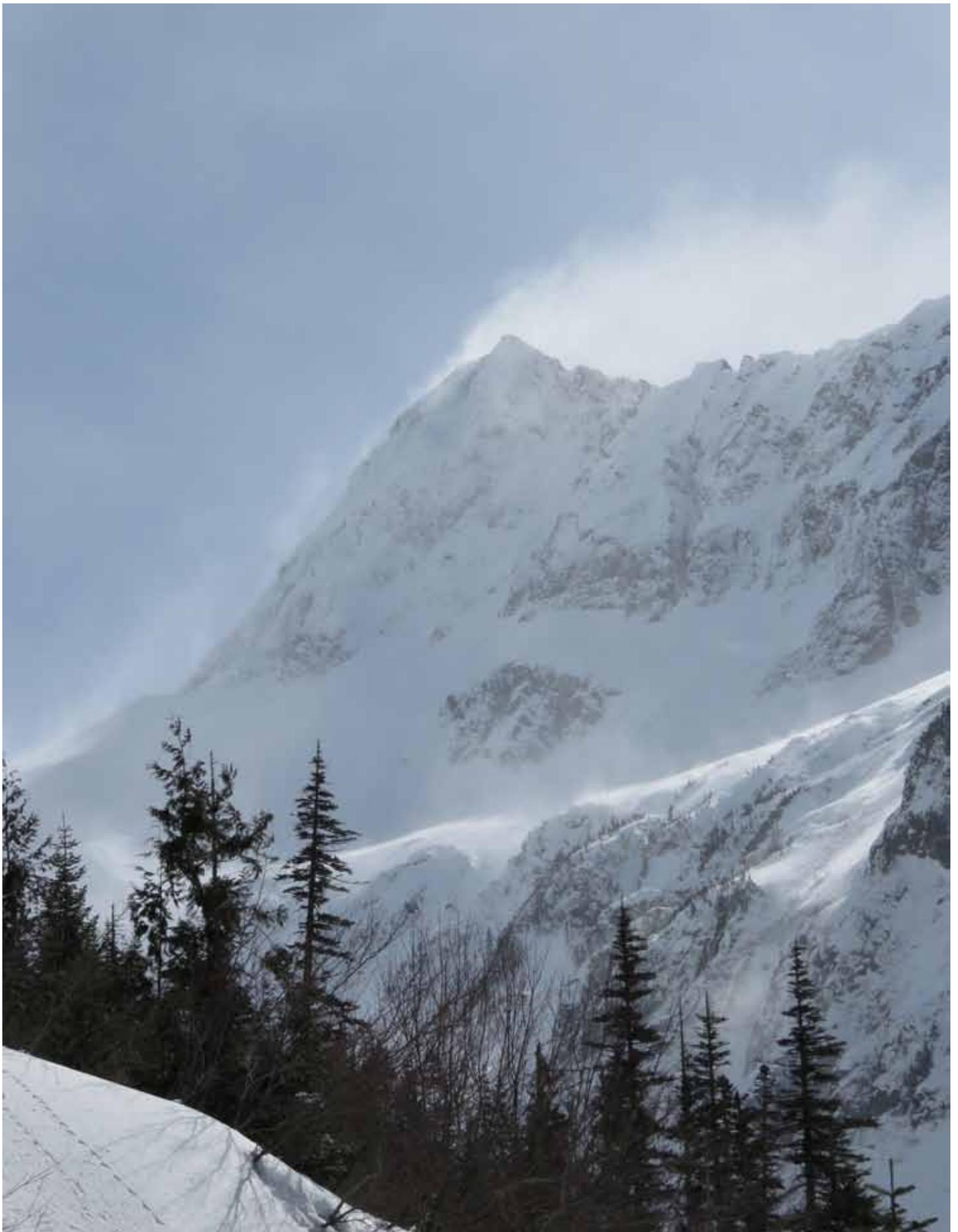
does nothing to make a road more storm-survivable. A slower-speed road is far less expensive to build and can be made just as survivable, for much less money.

The all-or-nothing approach eats up huge amounts of money. One figure bandied about a while ago was \$27 million dollars for this rebuild of about a mile. You can’t help but wonder, is the real purpose here (and too many other places) really about “access,” or is it about employing the maximum number of designers, planners, engineers and various other bureaucrats?

It’s anyone’s guess at this point if the road will actually be rebuilt, and if so, just how overbuilt it will be. If the object really is to provide access to trails and backcountry, the current approach does not seem to be working. The all-or-nothing engineering mentality seems to be hanging on in spite of overwhelming evidence that it is failing.

North Fork Skykomish valley looking south from Scott Peak, mounts Index and Persis in the distance.

—JOHN ROPER PHOTO



Celebrating 100 years of national parks the best way I know how

By Tom Hammond

This article spans two overnight ski trips to the same camp on the North Fork of the Cascade River in North Cascades National Park—one on the Vernal Equinox March 19 and the next on April 1. Just two weeks apart—but two vastly different experiences.

Vernal Equinox 2016

The forecast called for sunny skies, though perhaps a bit breezy and cold. Such has been the nature of this winter, with record precipitation and seemingly continuous wind storms. But I had to get out, even if the conditions weren't perfect. I have in mind to visit National Parks as much as I can this year to celebrate 100 years of "America's Greatest Idea", so I packed up the skis and headed to my favorite ski destination, where the peaks soar a vertical mile above the valley, and present a grand scene of snow, glaciers and deep forest. My decision was confirmed by the fact the Cascade River road will be closed for six weeks across April-May, the high season for avalanches...a real bummer because this year will see some exceptional avalanches, even though the snowpack is non-existent below 3,000 feet, and "average" or "normal" at mid-

elevations (4k-6k feet). Snowpack up high is also about "normal" but tremendously wind loaded on ALL aspects.

I headed up to see avalanches and get some skiing in. What I found was yet another wind storm. Still, I know the best (place to) camp, in a bit of a dell, protected from avalanches and fortunately also from the wind and falling trees.

There was more wind-transported snow than I've ever seen in 35 years of mountain travel. Snow was blowing off the summits and mid-levels of the surrounding mile-high ramparts such that all peaks appeared at ghosts shrouded in billowing clouds of snow. As I approached the range, I said "oh oh" to myself, so obvious was the force of the wind. There were gusts of 60mph throughout my stay, perhaps easing a bit overnight.

Two miles of hiking and a mile of skiing later, I was rummaging around in my tent, reconfiguring for a bite of lunch and a day of sunny skiing.

Not long after, a solo guy (snowshoes) was headed down and out. In another comical mountain meeting, this guy looked like he was straight out of McMurdo—bronzed goggles, overboots, over-

mitts, full-on fur lined heavy parka—the works. I was lounging on my sleep pad in only light-weight poly-pro. He looked in on me with a mix of incredulity and wonder: "You're going to spend the night!?! It's REALLY STORMY." He didn't even realize there was no need to shout to be heard over the wind. I replied that there would be a gibbous moon waxing near full and the night skiing would be the bomb. I wouldn't see another human for about 24 hours.

Shortly after, as I skied up to the near-side avalanche chute that I was unwilling to ski past/through while keeping a wary eye on the huge old growth WALLING in the wind, a big gust came up and literally blew me off my feet! Next thing I know, I'm tumbling back downhill, my poles raking my face. Good thing it was blowing so COLD, my face was numb and I didn't feel but a brief moment of pain—made sure there was no blood, and continued to make runs for the next eight hours—probably about 20 kilometers worth.

Saw many many powder avalanches—nothing of substance compared to most years. Many of the avalanches would hit the big air of the Johannesburg cliffs and GO UP about 100 vertical feet. The transport of snow from high to low and from up valley to down valley was remarkable. At times there'd be little flurries at camp, from an otherwise brilliant sunny sky—sudden halo of rainbows all around me. A major avalanche had come off the Triplets-Cascade cirque (within four weeks?) and flowed all the way down to the Johannesburg cliffs. The far west and central west chutes of Johannesburg have seen large ones too, but the central east and far east (Sill Glacier) chutes still have much to give. Boston-Midas drainages were devoid of avalanches—instructive that even though we have had record precipitation, it has not translated in to a big snowpack. Hmmmm....

During the night, when I was snuggled in my bag for 11 hours, I watched Mars, Saturn and Jupiter sprinkled in the Pleiades, Hyades and Orion, as they sailed over the Cascade Pass peaks. Good deal having a National Park to myself for a night. I saw a fox, heard a small number of Varied Thrush and some robins, but notably very little wildlife. I guess they don't care for the wind either...

April 1

I had to reprise my equinox visit to North Cascades National Park because the forecast called for temperatures in the 70s. Warm weather and a snowpack running



100-125 percent of “normal” would provide for fantastic skiing and likely some big avalanches. It bears repeating that even though we’ve experienced the wettest six months in recorded history in Seattle (average precipitation is 37.5 inches for the hydrologic year, and we’ve had 43.3 inches in the first six months!) it has not resulted in a big snowpack—something that is very telling for the health of our glaciers and the summer stream flow which they support. What snow there is however, is wind loaded like I’ve rarely seen—tremendous fluting on the high peaks, giant cornices, and most importantly, thick wind-sculpted slab structures visible on all the mid-level alp slopes.

It is remarkable how sharp the snow line is—below 3,000 feet there is absolutely no snow; above 3,200 feet there is a meter of snow “instantly”. The intervening two weeks has seen the snowpack decrease about a half meter, but there was plenty to set my usual camp. On the approach, just as I was putting on my skis, three young men were headed out. Once again I would have another night with North Cascades National Park to myself. The skiing was fantastic—at times sugary, at times a bit more substantial—Cascade concrete at its best! I was a bit concerned with the slabs in evidence along Sahale Arm as I skied below them across Soldier Boy Creek/drainage. I have seen this entire area buried by

avalanches in years past, so there was no loitering! The parking lot at the end of the road has nearly been whacked by a couple of avalanches off the Triplets, with much much more yet to come down. I’m glad I wasn’t camping in this area, and I was and am lamenting not being able to get back here until mid-May, when most everything will have come down. There was no lamenting the conditions though. It was so warm I couldn’t stay in the (80 degrees F) tent and thus spent the day skiing many kilometers in shorts and a tee-shirt. Indeed, it was 5 pm before I put on additional layers—simply a bluebird Spring day!

It was warm enough that I didn’t need to fire up the stove to melt snow for drinking water. I loaded up the pan and all of my water bottles with snow and set them in the sun. Bake two hours and water is at the ready! I don’t take for granted how fortunate I am to drink water directly from North Cascades snowpack—I marvel at the number of days->weeks->months of my life that I’ve “made water”. Not some silly television commercial extolling clean mountain streams, but actually living it! While I didn’t see any wildlife per se, there were many more birds this time—especially the lovely lilting trill of the thrush and the hrump of the grouse. There were avalanches coming down all the major chutes, but nothing too big, and not too frequent. One of the largest of the weekend was

Photo captions: page 10, Mix-Up Peak sports a plume of wind-blown snow while experiencing gusts exceeding 50 mph; above, Mount Torment rises a mile above the ski camp in North Cascades National Park. —TOM HAMMOND PHOTOS

interrupted by an EA-18G roaring through Cascade Pass—an alarming annoyance, needless to say! In a fitting send-off, just as I was packing up to leave, a large plaque of ice and wind-loaded snow popped off the cliffs of Johannesburg directly across the valley. I watched intently as blocks of ice/snow the size of SUVs and delivery trucks seemingly fluttered through more than 100 meters of free-fall to SMASH on to the feet of the great mountain. That is a sight and sound that will forever take my breath away, and fuel my soul with an appreciation for the power of physics.

I am so thankful for the ability and desire to keep exploring. Don’t live in the virtual world, live in the REAL WORLD. Planetary science is one of the great gifts, so experience just a little bit.



Alpine Lakes Wilderness celebrates 40 years

By Rick McGuire

This summer marks 40 years since the designation of the Alpine Lakes Wilderness on July 12, 1976. Visible from Seattle, it was the original “backyard Wilderness”

It’s hard to remember how different the politics of Washington state were 40 years ago. It was the heyday of taxpayer-subsidized logging of the National Forests, with powerful Senators such as Henry Jackson from Washington state and Mark Hatfield of Oregon bringing home the bacon in the form of hundreds of millions of dollars per year to construct logging roads. Timber was still king, although its throne was starting to get a bit shaky.

The assumption had always been that the trees in the National Forests would be cut. Not just some of them—pretty much all of them. The “biological deserts” of “overmature, decadent” natural forests would be replaced by thrifty, fast-growing young stands watched over by expert foresters.

In 1976, many people really believed that foresters knew how to grow forests better than nature. (Some still do, but

Malachite Peak from Copper Lake, Alpine Lakes Wilderness.

—JIM SCARBOROUGH PHOTO

luckily they seem to be the minority.) Forests were for logging. Trees were there to be cut down.

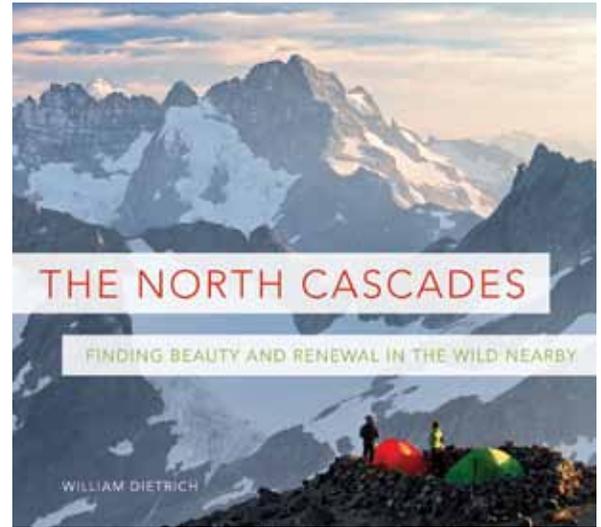
Conservationists knew that unless action was taken, the National Forests of

CONTINUED ON PAGE 19

Wild Nearby exhibit opens at Burke Museum

Discover the sights, sounds and stories of the people, plants and animals that make up the North Cascades in the Burke Museum of Natural History and Culture's exhibit, Wild Nearby.

Inspired by Mountaineers Books' *The North Cascades: Finding Beauty and Renewal in the Wild Nearby* (whose cover photo was taken by NCCC board member Thom Schroeder), the exhibit features beautiful large-scale photos from the book while putting you in the shoes of Burke scientists to examine the North Cascades using specimens and artifacts from the Burke Museum.



The exhibit will be on display June 18, 2016 to February 15, 2017. NCCC will host a table from 10 a.m. to 3 p.m. during the June 18 opening celebration.

As an organization committed to environmental issues and education, we've been given coupons to promote attendance at the show! One more reason to enjoy the Wild Nearby.

Join the NCCC work party October 1



Join the board in volunteering at North Cascades National Park on Saturday, October 1. We will meet at Diablo Overlook along Highway 20 at 11 am **if the weather is nice** to remove invasive plants, and plant natives. If the weather is wet, we'll meet at Marblemount Ranger Station-Miller Greenhouse. Please RSVP to ncccinfo@north-cascades.org by August 31 if you plan to attend.

The restoration of grizzly bears to the North Cascades

By the North Cascades Ecosystem Grizzly Bear Recovery EIS Team



Thanks to Jack Oelfke, Chief of Natural and Cultural Resources, North Cascades National Park Complex, for arranging this article and for making a presentation to the NCCC board. Those of us worried about threatened BC bear populations in areas nearest the Cascades would feel much less anxiety about removing bears from “source populations” with plenty of bears, such as the NCDE, perhaps supplemented with a relatively few bears from different areas in BC to add genetic diversity.

In the Fall 2015 *Wild Cascades*, Rick McGuire offered his thoughts on the question “*Is transplanting grizzly bears to the Cascades really a good idea?*” From the perspective of US Fish and Wildlife Service and the National Park Service, it’s more than a good idea, it’s the law. When Congress passed the Endangered Species Act (ESA) in 1973, it recognized that our rich natural heritage is of “esthetic, educational, ecological, recreational, and scientific value to our Nation and its people.” The purpose of the ESA is to protect and recover imperiled species and the ecosystems on which they depend. The US Fish and Wildlife Service has primary responsibility for administering the ESA for terrestrial and freshwater organisms. The National Park Service works to sustain and recover species listed under the ESA in the parks.

The Interagency Grizzly Bear Committee (IGBC) was formed in 1983 to “achieve the recovery of the grizzly bear...” and to “attain the objectives established by the Grizzly Bear Recovery Plan...” Its members include USDA Forest Service, National Park Service, US Fish and Wildlife Service, Bureau of Land Management, US Geological Survey and representatives for the states of Idaho, Montana, Washington and Wyoming. In the interest of international coordination and cooperation, the Canadian Wildlife Service is also represented. At the ecosystem level, Native American tribes possessing grizzly bear habitat within the recovery areas have also been involved.

The IGBC designated the North Cascades Ecosystem (NCE) as a grizzly bear recovery zone in 1991, after a five-year assessment that considered habitat suitability and availability, human activity, and the presence of grizzly bears. A recovery plan chapter for the NCE was subsequently appended to the overall Grizzly Bear Recovery Plan in 1997. The recovery plan chapter laid out recommendations for what would be needed to restore a viable, self-sustaining population, and stated upfront that “a range of alternatives should be considered for recovery of this population. These alternatives should range from no action to augmentation of

the population in the North Cascades with bears from another area. The National Environmental Policy Act (NEPA) process is the appropriate way to consider these alternatives.” In other words, an Environmental Impact Statement (EIS) would be undertaken to examine means by which the NCE population could be restored.

The National Park Service and US Fish and Wildlife Service, along with the USDA Forest Service, Washington Department of Fish and Wildlife, and the BC Ministry of the Environment, commenced work on a Grizzly Bear Restoration EIS in late 2014. This EIS will evaluate a range of alternatives for how to restore grizzly bears in the North Cascades ecosystem, a process that involves the public in meaningful ways. Public scoping, which asked the public to provide input on issues important to them for this evaluation, was completed in March 2015. A public review of the range of potential alternatives will occur in the summer of 2016. In the meantime, alternatives will be identified, developed, and analyzed by the agencies in response to biological, public, and agency input. The analyses begin with several proposed actions and then questions will be asked of each one. Those questions include: what may be the biological and/or behavioral effects on other species in the ecosystem; what may be the effects on human factors, including access, safety and economy; if bears are moved from other areas, what would be the effects – biologically and socially – in the area(s) of source population(s)? Those analyses affect the outcome of what alternatives are put out for public review as viable options, and substantive comments from the public can influence the outcome of what alternatives are ultimately selected for final review and recommendation. It has been established that there are very few grizzly bears left in the NCE, both south and north of the international boundary, and restoring bears to the Cascades should thus consider bringing some animals in from another place. The details pertaining to what this means are part of what will be studied over the next several months.

CONTINUED ON PAGE 16

Translocations are not a simple task, but can be very effective for wildlife conservation at broad scales. Adult bears are most likely to go “home” as they have established home ranges over the course of their lives, know the resources there, and know the other bears using those ranges – all advantages for survival and successful reproduction. Adult males, who have the largest home ranges and are not encumbered by offspring, are the most likely of all to return to their home range. Bears who have learned to forage from human sources, as Winston did, are most likely to either return “home”, or to transfer this learning to similar food sources in the new location. Winston’s return home took several months and occurred over 20 years ago. Public land managers have learned from these types of experiences and, as a result, adult male bears, and especially conflict bears, would not likely meet the needs of a successful restoration effort. Best available science and modern day wildlife management practice would suggest that translocated animals would be young bears, selected from areas with similar food economies and donor populations that would not be negatively impacted by the loss of a small number of individual animals.

Large-scale restoration of grizzly bears has not been attempted to date, but that does not negate it as a possible tool for species recovery. Grizzly bears have successfully been translocated, contributing to species restoration in the Cabinet Mountains. By the late 1980s it was estimated that only 5-10 primarily elderly bears remained in the Cabinets; a dying population. After 25 years and the augmentation of 18 grizzly bears, the current population estimate is 25 bears, including several second-generation offspring of translocated bears. The rate of population growth has been roughly 3 percent, very good for one of the slowest-reproducing land mammals in North America. Collectively, these data show us that carefully selected candidate bears added into an ecosystem can begin to establish restoration...and it takes a very long time. Even at a larger spatial scale such as the Cascades, the biological time scale and feasibility of translocations (availability of good candidate animals, availability of technical

From the perspective of US Fish and Wildlife Service and the National Park Service, it's more than a good idea, it's the law.

and personnel expertise and resources, and availability of funding) suggest that restoration would take many decades to achieve.

Lastly, have we preserved a place for them? To provide some history, in 1994 the IGBC developed an analysis process for determining the existing level of human access and defining the area within which road and trail density should be measured. This provided a consistent way to evaluate access management concerns across recovery areas and was agreed to by all of the signatory agencies. The metric used for determining spatial security for bears was based on a large body of grizzly bear research, and dubbed “core”. Core

referred to areas over 500 meters from a road or high use trail, with the latter being defined as greater than 20 parties per week. In 1997, the NCE Subcommittee of the IGBC agreed to an interim standard of no net loss of core on federal lands within bear management units throughout the ecosystem, until the agreement was superseded by a Forest Plan revision or amendment, or an NPS

general management plan. The National Park Service formalized access policy for the whole of the North Cascades National Park Service Complex in the 2012 Ross Lake National Recreation Area General Management Plan. Trails proposed in this plan would reduce core area by less than one percent, none of it in high-quality habitat. Further trail construction is not anticipated.

Specific mention was made of the Pacific Northwest National Scenic Trail (PNNST). No new trail has been built on federally managed lands in this grizzly bear recovery area as a result of the PNNST’s designation by Congress as a National Scenic Trail in 2009. The trail work underway along the South Fork of the Nooksack River, on the Mt. Baker-Snoqualmie National Forest, is the relocation of some sections of existing trail away from the river and to bring other sections of trail/ old skid road up to standard. The PNNST designation has not changed any areas from low use to high use in the Cabinet-Yaak, Selkirk, or Northern Continental Divide recovery areas. High-use trails within the national park were high-use before the designation. Core habitat is being protected throughout the recovery area, and has been for nearly 20 years.

So, will grizzly bear populations grow in the Cascades? The EIS will spell out the options and details with best available information and you will have the opportunity to share your thoughts. At the agency level, this is beyond a good idea, it is an obligation. Grizzlies persisted in this wild place long before people. With only two confirmed grizzly bears observed within the entire 13,000 square-mile ecosystem (Thompson River to I-5) in the past 10 years, the question truly is how they can be restored to the magnificent wilderness of the Cascades. For additional information on the Grizzly Bear Restoration EIS, go to www.nps.gov/noca/grizzly.btm.

EIS Schedule/ Key Deadlines

- ✓ Notice of Intent and Public Scoping – spring 2015
- ✓ Development of alternatives – fall 2015/ spring 2016
- Notice of Availability of Draft EIS – summer 2016
- Public comment period – fall 2016
- Notice of Availability of Final EIS – summer 2017
- Record of Decision – fall 2017



NCCC responds

NCCC wishes to thank Jack Oelfke for his thoughtful response regarding grizzly bear reintroduction to the Cascades. He was also kind enough to meet personally with NCCC to present information and answer questions.

NCCC's main concern about transplanting bears has always been "where do they come from?" The areas in British Columbia closest to and most like the Cascades are not good places from which to remove bears. Although Jack was careful not to commit himself or the agencies on where the bears would come from, he did explain that possible source areas also include what in the US is usually called the "Northern Continental Divide" ecosystem, or NCDE.

The NCDE comprises Glacier National Park and adjoining and nearby Wilder-

ness areas. Some estimates of the grizzly population there are as high as 1000 animals. It is, like the Cascades, a wet west/dry east side kind of place, with its western side having many of the same tree and plant species as the Cascades. Bears there are not accustomed to getting a lot of meat, like in Yellowstone, nor do they have access to salmon. Westside NCDE bears would likely find the Cascades pretty similar to where they came from.

It's hard to see how removing bears from such a robust population could do it any harm. Perhaps a few bears might be taken from other places, including British Columbia, for the sake of adding genetic diversity, but the bulk of the population would not need to come from those areas.

When the bear recovery EIS is released, NCCC may recommend that NCDE be

looked to for most of the bears to move. So far, the talk has been of moving about five bears per year into the Cascades. Capturing, moving and releasing bears is a rather specialized skill, and logistics obviously limit how many bears could successfully be moved during a season. NCCC may also recommend trying to move more than five bears per year if possible, so as to avoid the problem of too few bears to find each other. (See the response article by Kevin Geraghty in TWC Spring 2016.)

Again, NCCC wishes to thank Jack Oelfke for taking the time to explain what moving bears to the Cascades might involve. NCCC is looking forward to release of the Park Service/Fish & Wildlife Service EIS on grizzly bear recovery in the North Cascades.

50 years ago in The Wild Cascades

Copper ore under Miners Ridge near Glacier Peak attracted Kennecott Copper Corp. in the 1950s, and although the 1964 Wilderness Act offered protection against logging, it gave holders of mining claims a 20 year window to start digging. Kennecott announced in 1966 that it planned to dig a huge open pit mine on the ridge that holds iconic Image Lake, in the heart of the Glacier Peak Wilderness (pictured here), and build a haul road out the Suiattle River, forever scarring the land. NCCC's membership resisted, writing Congress and spreading the word. As one NCCC member famously said at the time, an open pit mine there "would be as appropriate as one in the Sistine Chapel." The mine project was kept at bay long enough and the publicity was so bad for Kennecott that it finally abandoned its claim. As anyone who has been there can attest, the Image Lake area ranks among the nation's finest scenic wonders, and remains so thanks to NCCC members.

MINING INDUSTRY PLANS TO RAPE THE NORTH CASCADES

KENNECOTT COPPER CORPORATION IS THREATENING TO START A \$15,000,000 OPEN-PIT COPPER MINE IN THE VERY HEART OF THE PRESENT GLACIER PEAK WILDERNESS AREA AND PROPOSED NATIONAL PARK.



THE REGION'S PRICELESS SCENIC CLIMAX OF IMAGE LAKE AND GLACIER PEAK WOULD BE DESECRATED.

Hunting habitat affects viewing of national park wolves



Visitors to national parks are half as likely to see wolves in their natural habitat when wolf hunting is permitted just outside park boundaries.

That's the main finding of a paper, "Implications of Harvest on the Boundaries of Protected Areas for Large Carnivore Viewing Opportunities", co-authored by University of Washington researchers. Its authors examined wolf harvest and sightings data from Denali and Yellowstone National Parks, and found visitors were twice as likely to see a wolf when hunting wasn't permitted adjacent to the parks.

"This is the first study that demonstrates a potential link between the harvest of wildlife on the borders of a park and the experience that visitors have within the park," said lead author Bridget Borg, a Denali wildlife biologist.

The researchers looked at the dynamics between hunting and viewing wolves at these two national parks because they are the only ones where visitors have a good chance of seeing a wolf. Both parks have long-term monitoring programs that have collected years of data on resident wolf populations, including years when wolf harvest was permitted and years when it was prohibited near the borders of both Denali and Yellowstone.

Adjacent to Denali, wolves are primarily trapped during legal harvests, while states adjacent to Yellowstone permit shooting wolves during hunting season. Wolves have always existed in Alaska and are generally regarded as an important part of the state's ecosystem — by trappers and wildlife enthusiasts alike.

The sentiment is quite different around Yellowstone, where wolves were reintroduced by wildlife biologists in 1995. Cattle ranchers, in particular, must contend with predators that hadn't previously roamed those areas.

Wildlife viewing is an important economic driver for the states surrounding the two national parks. Wolf-watching activities in Yellowstone after the 1995 reintroduction have brought in an estimated \$35 million each year to Idaho, Montana and Wyoming. In Alaska, wildlife viewing activities supported more than \$2.7 billion in economic activity in 2011.

At the same time, these states are required to provide for consumptive uses of wildlife. In 2011, hunting in Alaska supported more than \$1.3 billion in economic activity, and revenue in Montana from buying wolf tags alone brought in over \$400,000.

"We have shown there is a tradeoff between harvesting and viewing wolves, but these findings could extend to other large carnivores that also move in and out of parks," said senior author Laura Prugh, a University of Washington assistant professor of quantitative wildlife sciences in the School of Environmental and Forest Sciences.

"In an ideal world, there wouldn't be a tradeoff. You could have wolf harvests outside of the parks, which also bring in a lot of economic activity, and it wouldn't have an effect on the populations or probability that tourists are going to see wildlife in the parks."

The researchers analyzed data on wolf sightings, pack sizes, den locations and harvests adjacent to the parks in Denali from 1997 to 2013 and in Yellowstone from 2008 to 2013. In both parks, they found that in years when the wolf populations were up and their dens were close to park roads, visitors were more likely to see wolves.

But their models also suggest more subtle effects of harvests on the ability of visitors to see wolves. Sightings are perhaps driven by key individuals in a pack, such as wolves that den by the road. If those wolves are killed, that loss may not result in an overall decrease in the total wolf population, but it could significantly reduce the sightings for that year.

Hunting and trapping may also have behavioral effects on wolves, making them more wary of humans and less likely to traverse roads where park visitors travel.

This research has prompted the National Park Service to begin a thorough socioeconomic study of the impact of wolf sightings on visitors' experiences in Denali. The researchers are also looking more closely at how other factors such as vegetation cover and topography affect wolf sightings in the park.

Other co-authors are Stephen Arthur and Nicholas Broman of the National Park Service (Denali); and Kira Cassidy, Rick McIntyre and Douglas Smith of the National Park Service (Yellowstone).

This research was funded by the National Park Service.

—Adapted from *UW Today*,
April 28, 2016

Alpine Lakes

CONTINUED FROM PAGE 13

Washington state would end up looking like those of Oregon, with roads everywhere. Oregon's original endowment of National Forest timber was considerably greater than Washington's and its gentler terrain made road construction dollars go further. But the Forest Service was well funded and determined to do all it could to transform wild forests, even in the rugged terrain of Washington's Cascades, into "tree farms."

We owe much to those conservationists, who faced challenges perhaps more formidable than today. After the 1938 designation of Olympic National Park, conservation took a back seat, first to war, then to the boom mentality of the 1950s and 1960s. Oil was cheap, money was abundant, and it didn't seem to matter if the National Forest timber program was a big money loser. Natural values were ignored and never appeared in any cost/benefit analysis. Cutting trees on public lands provided jobs. The fact that only small number of people were employed didn't matter. It was "progress."

So it was all the more remarkable that after 30 years of very little conservation, NCCC was able to take the lead and bring about the designation of the North Cascades National Park, taking land away from the Forest Service. But roads were still being punched up valleys up and

down the rest of the Cascades anywhere there were trees to be cut. After the North Cascades Park, attention turned to the areas closer to Seattle in the central Cascades.

Opposition to the creation of the Alpine Lakes Wilderness may have been even stronger than the opposition to the Park. Much of the Alpine Lakes area spilled into politically conservative Eastern Washington, where trees were fewer but were cut with even greater determination. Caravans of logging trucks protested the "lockup" of public lands that the timber industry viewed as theirs.

Against all odds, a decent-sized Wilderness bill passed Congress in the summer of 1976 and landed on the desk of President Gerald Ford. Both the Secretary of Agriculture, master of the Forest Service, and the Office of Management and Budget recommended a veto. Then-governor Dan Evans famously interrupted a European vacation to meet with Ford, a copy of Brock Evans' Alpine Lakes book in hand. When he saw Evans' exhibit-format book with its stunning photos, Ford exclaimed, "It is such beautiful country, it must be saved!" And he signed the bill. It is hard to believe now that Republicans were often better conservationists than Democrats in that decade.

Passage of the Alpine Lakes bill was followed by the Washington Wilderness Act protecting over a million acres in 1984. It would be 24 more years until the Wild Sky

bill passed in 2008, followed by the addition of the low-elevation Pratt River valley to the Alpine Lakes Wilderness in 2014, both projects championed by Senator Patty Murray, who has earned a reputation as the state's most environmentally effective politician.

The Alpine Lakes still faces threats. Development interests in the Leavenworth and Wenatchee valley area want to pull more water out of Wilderness lakes in the Icicle Creek watershed. The Middle Fork Snoqualmie valley is in danger of being loved to death, with thousands of vehicles pouring into the valley on peak-use days, threatening to turn the entire Middle Fork road into one big traffic jam.

The numbers of private vehicles need to be limited in the Middle Fork, and Wilderness lakes need to be protected from being reservoir-ized. Snowmobile and ORV trespass is reaching alarming levels, with almost no policing any more in the form of Wilderness rangers. A giant underground laboratory proposed for below the Enchantment Lakes area a decade ago was barely defeated.

These and other threats need to be opposed and defeated. Wilderness was a big step forward for the Alpine Lakes area, but NCCC and other conservation groups need to be constantly vigilant and ready to act to keep the gains of past decades from slipping away. Wilderness advocates need to win again and again. The forces of destruction only need to win once.



Prusik Peak

— THOM
SCHROEDER
PHOTO

UNDER the WEIGHT of ICE

A Tribute to the Alpine Lakes Wilderness by Thom Schroeder

OCTOBER 9.

First light. The tiny window of my tent is etched with the frost and ice of the night before, the dawn sky now clear and pale blue. I burrow deeper into my bag and wait for the sun and shadows and warmth to make their way to Leprechaun, a fresh layer of thin ice hugging the shore. I head back out into the lower basin to photograph the angles I could not the day before, overwhelmed again by all of the water. On the precipice, as the world of granite falls away beneath me, below to the Magic Meadow, I stand. The water crashing, Prusik Peak rising, bathed in light. It feels as if I am floating, over granite and peaks, ice and waters, all from a million years before, unchanged. I am forever at a loss.

OCTOBER 8.

Up at four o'clock in the morning with the alarm. Still nighttime, should be asleep. The neighborhood is dark and quiet as I creep out, past slumbering houses and the twenty-four hour coffee shop. Traffic. The furnace back home is about to kick back on after a good night's rest. An hour to the pass. Half an hour more to Cle Elum, and coffee. Another hour, maybe fifty minutes, to Leavenworth. It is pouring rain at the summit, dark. But by the top of Blewitt Pass, I can tell it is going to be a glorious day. Fruit farms, nestled in the still-shadow of the valley. Quiet. At a quarter before eight, the gruff but endearing ranger of the Enchantments swings open the Forest Service door with a brisk, 'You here for a permit?' I am the only one on the ranger station's creaky porch. 'Yeah.' The mountains past town shadowing the Wenatchee River sparkle with fresh snow and sunlight, and soon I am hiking, in the cold depths of Snow

Creek canyon, upwards to Lake Viviane, a vertical mile higher, still ten miles south. Onward, a steady march. Up over bedrock slick with ice, trickles of water from above, cascading, falling. Lake Vivian, awash with mid-day sun, gleaming. I continue, over polished granite, towards Leprechaun Lake. Half-past noon, I collapse in my tent, already a long day. But so much to explore, in this Lost World Plateau, through the history and folklore up until now about which I have only read. It is credited to having been discovered by a topographer named A. H. Sylvester who, in 1904, was exploring the place for the Forest Service and wrote flowingly, *I found five or six most beautiful small lakes grouped in a wonderful glacial valley all ringed with alpine larch. From the highest lake over an entrancing fall tumbled the water it received from a small glacier. It was an entrancing scene. I named the group the Enchantment Lakes.*

The glacier he mentioned was the Snow Creek Glacier, and at the time covered much of the basin. In the 1940s, rock climbers discovered the area, and following that, a couple from Leavenworth, Bill and Peg Stark. Drawing from various mythologies, the couple took it upon themselves to naming most of the lakes and features. A splendor too good to be true, impossible to describe. But the names in the lower basin, Gnome Tarn, Troll Sink, Naiad Lake, Pixie Pond, Magic Meadow, hinted at the magic they held, their spell only to be discovered, never broken. And in the upper basin, Brynhild Lake, Lake Freya, Valhalla Cirque, Asgard Pass. There, it felt as if the Ice Age had just ended, or not quite. Another description of it I recalled from years ago, perfect, simple... 'still forming.'

The trail winds around meadows and bedrock, lakes and streams. Stout, golden

larch stand impressive, bold, forgiving. The sound of rushing water, everywhere. Under ice. Over ice. Over granite, and in between. In all its forms. It seems here the granite does not break the ice, the ice breaks the granite, splintering it into millions of shards, tumbled and tossed in every corner of every meadow. Impossible to ignore, or understand, the power of water. Crashing down from the glacier, through the basins, the lakes, to the river, miles below, the ocean, infinite. Wandering further up the trail, past small tarns, then Rune and Talisman Lakes (those were the Stark's names, the Forest Service has unromantically renamed them Perfection and Inspiration, respectively), towards the middle basin. The gentle statue of Little Annapurna rises to the south. Then, at last, the uppermost basin, still forming under the weight of ice. The alpine larch have all but disappeared, crippled, this place now void of color, all for but the cobalt sky above, the grey granite beneath. Only ice and granite survive, here, in an epic battle.

Back in camp, I am tucked safely back into my sleeping bag, listening to music, quiet. The night shifts, settles. Tired. Falling asleep, I hear the sound of water surrounding me. The granite is cut only by the forces of water, and time. Stillness. After having spent the summer and fall wandering amongst the wild ranges of the Sierra Nevada and Wind River, I tell myself now, whispering, softly, this is the most incredible place of all.

About artist Jill Pelto



Artist/Scientist Jill Pelto digging a three-meter snow pit on Kokanee Glacier, Selkirk Range, BC., April 2016 © TOM HAMMOND

I am an artist and a scientist who graduated from the University of Maine in December 2015 with a double major in Studio Art and Earth Science. I have always loved nature and want to use my creative skills to communicate information about extreme environmental issues with a broad audience. I have assisted with research on the mountain glaciers of Washington and British Columbia, in the Dry Valleys of Antarctica, and over the rolling hills and carved cirques of the Falkland Islands. I create artwork about both the research I have been involved with as well as a myriad of other important topics.

I believe that art is a uniquely articulate lens: through it I can address environmental concerns to raise awareness and inspire people to take action. Art is powerful because many people respond more to the visual than to the writing in a scientific paper. My art can show the essential information of an environmental issue while expressing its beauty and its story. My hope is that this combination of intellectual and emotional content will be meaningful to a lot of people.

Salmon Population Decline, featured on the cover of this issue, is part of a series about the major impacts of global warming that I witnessed in Washington State in August 2015, using scientific data to show how the drought devastated the state. Seeing the rivers and reservoirs looking so barren was frightening; the snowpack in the mountains and on the glaciers supplies a lot of the water for this region, and the additional lack of precipitation greatly depleted the state's hydrosphere. Consequently, the water level in the rivers the salmon spawn in was very low in 2015 and not cold enough for them. This piece uses population data about the Coho Salmon species; the salmon are depicted swimming along the length of the graph, following its current. While salmon can swim upstream, lower stream flow and higher temperatures are making this more of an uphill battle. This image depicts the struggle their population is facing as their spawning habitat declines.

The clownfish piece on page 23 is part of *Habitat Degradation*, a series commenting on humans' negative impacts on ecosystems worldwide. I chose representative species responding to the effects of the changes. *Ocean Acidification* contains oceanic pH data from 1998 to 2012. The decreasing pH is due to atmospheric carbon dissolving into the ocean, and



Bridge Creek approaching its confluence with the Stebekin River, North Cascades National Park.

—JIM SCARBOROUGH PHOTO

creating carbonic acid, which means a more acidic ocean. This has harmful effects on all marine life. Studies on clownfish show that more acidic water alters how their brains' process information. This affects their ability to avoid predators by detecting noises and to find their way home. Ocean water has a lower pH than a fish's cells, so they take in carbonic acid in order to be in harmony with their environment. Even a small drop in pH requires fish to expend much more energy in order to equilibrate, and this energy is taken from other necessary functions. The clownfish in my watercolor are grouped in confusion, separated from the anemone in which they live. The oceans may be vast, but if pH drops globally, there is literally nowhere marine life can go, because they are confined to the water.

Ocean Acidification —JILL PELTO ART



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Ski camp, North Cascades National Park.—TOM HAMMOND PHOTO