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Field Notes I

Monday, May 26 – A Return to the Woods

Evening is falling as I sit at the edge of a clearing high above the headquarters of the H. J. Andrews Experimental Forest, a Forest Service research area east of Eugene, Oregon in the lovely McKenzie River country. I'm back in the woods of my youth, looking out over a densely forested valley much like those I used to wander through elsewhere in the surrounding Willamette National Forest.

Today I drove across half of the state after camping in the Blue Mountains east of John Day. I gassed up in Sisters, crawled out of town behind a pack of bicyclists, stopped for an hour at Santiam Pass to walk among the burned snags of a forest I once skied and hiked in, then descended into the lush greenery of the upper McKenzie. I'm spending a week as a visiting writer at the Andrews Forest, as it's known to the scientists who conduct ecological and watershed research in the drainage of Lookout Creek. This is a homecoming of sorts; forty years ago this summer I left Eugene to begin graduate studies in Montana. I returned often for family visits, but I lost touch with the forests that helped shape my youth.

I'd visited the Andrews Forest only once before, on a field trip with one of its principal researchers, with whom I coincidentally share a name. In the fall of 1973 Dr. Frederick J. Swanson, then a postdoc in the geology department at the University of Oregon, taught a course on geomorphology which I took as an undergraduate. The purpose was examine landscape processes at work, including the troublesome tendency of some logging roads to slip off their steep sidehills and end up in the creek. "Mass wasting," it was called, and it was a major research focus at the time, for the agency faced mounting criticism for its road-building and logging practices.

Fred went on to became a leading researcher in forest ecology, specializing in landscape disturbance processes and their effect on forest succession. His and his colleagues' work contributed to the improved management practices in use today on the national forests of the Pacific Northwest. Until his recent retirement, he was a member of the Forest Service's research branch in Corvallis, and he maintains close ties with the Andrews Forest. Last year he gave a talk on its ongoing research program in Salt Lake City, where I now live, and I was pleased to renew our acquaintance.

In his talk Fred mentioned a related program, co-sponsored by the Forest Service and Oregon State University, which brings writers and others involved in the humanities to this little outpost in the woods. The chance to revisit the west-side

Douglas fir forest intrigued me, and I applied for and received a one-week writing residency. So here I am with a unique opportunity to re-examine this interesting and evocative forest region. Tomorrow Fred will give me a brief introduction to a place that helped change the socio-political landscape of the Pacific Northwest. My hope is to see firsthand a small part of the land and biota which I've read about in reports and articles over the past few decades. I want to get a sense of how the forest in the upper McKenzie has changed, both in its physical appearance and its place in the social and economic order. I also want to see if I've changed. I'm no longer the hopeful, energetic youth that once sought adventure in these mountains, but maybe the images I've kept in my mind all those years still have some truth to them.

After unpacking my belongings at the apartment where I will stay, I walk up the logging road in back of the station, which climbs steadily up a steep, east-facing hillside. I try to push back the memories that flood in. I've walked up many a logging road before on the Willamette, sometimes appalled at what has been done here in the name of forestry, but this time I hope to see these woods with as few preconceptions as possible. That's one of the luxuries afforded a visitor who is tasked with nothing more than keeping his eyes open, assimilating a little of the research that has been done here, and making whatever written contribution he can. From my notes taken that evening:

> Initially the road traverses a thick stand of fairly young Douglas fir, mostly about 12 to 14 inches in diameter, but there are big old stumps scattered about, five feet or so above the ground, reminiscent of the old practice of falling trees with a springboard. How long ago would this logging have been done? The reproduction here looks perhaps fifty years old.
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> Song of winter wren – there's nothing like a remembered sound to carry one back to time spent in forests like this.
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> After about 50 minutes of walking, I top out on a ridge between Lookout Creek and Blue River. Steep slope down to the latter, with trees marked for cutting. Is this something experimental, or are they still cutting on such slopes? The Blue River drainage appears well forested, but in my day it was undergoing heavy logging. Regrowth happens fast here, unlike in Utah.
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> I stop to rest at a clearing beneath a rock face, which recently disgorged a 5-foot tall boulder onto the road. View east-southeast into Lookout Creek – mostly old trees with many snags interspersed among them, but also some small clearcuts. There must be logging roads hidden among those trees. Healthy looking reproduction in the patch cuts ("healthy" is a loaded word when it comes to forests these days).
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> Close at hand, the setting sun illuminates the youngish firs by the roadside. Their yellow-green needles are lit up as they photosynthesize madly. Soft, almost silky in appearance, they contrast to the ragged,

massive stems visible across the valley. Walking among the remnant old trees and snags on the way up here, I'm still amazed at their sheer towering height.

Tuesday, May 27 – Touring the Andrews Forest

Fred Swanson pulls up at 8 AM to the "Green House" (a spanking new, three-unit apartment which is painted a tasteful light green) for an introductory tour of the HJA. We sit in the foyer and begin a wide-ranging discussion which continues as we visit the four "reflection plots" which will be the centerpieces of my week's stay. I'm interested in the history of the research area and the environmental controversies which have blanketed the entire Northwest. As a historian, it's hard for me to look at the forest without referring to the larger context.

I ask Fred about the age of the cutting units in the forest; he says that no logging was done here before the 1950s. Even the unit west of the entrance road, where I saw the tall stump suggestive of the springboard era, is from the 1960s. Hardly antique logging! The rapid rate of decomposition gives the stumps an air of history. Here, of course, one finds much older trees, part of what Fred calls a regionally extensive component of 400-500-year-old Douglas firs, which may reflect a period of fewer large fires associated with the Little Ice Age. The oldest specimens found in this area reach 850 years in age, he says. These exist in a half dozen known locations, typically in high mountain cirques with cold-air drainage. Not sure why this would favor longevity, but perhaps decay processes are retarded? Around here it certainly appears that anything made of cellulose is going to return to the earth before long.

There are also numerous stands in the 100-150-year age class, reflecting widespread fires during the late nineteenth century, many of which may have been human caused. Surveyors and travelers using the Santiam Wagon Road probably set many fires, accidentally or otherwise.[1] There has been a complex regime of mixed-severity fires in the Douglas fir region, Fred tells me, unlike the commonly held view that nature took a linear path from large, stand-replacing fires to new, even-age stands. I recall how often the latter claim was made by those advocating large-scale clearcutting as a substitute for "nature's way" of replacing stands through fire.

We discuss the historical uses of the Andrews landscape. Evidently there was an old ridgeline trail used by native peoples which ran along the Santiam-McKenzie drainage divide to the north of here. Lithic sites (obsidian) have been found all along the perimeter of the Andrews, pointing to long-established trade routes. The ridges offered easier travel than the steeply dissected and heavily vegetated drainages. The trails also skirted the fault line which demarcates the Old Cascades from the newer volcanics to the east, along which the upper McKenzie River runs. I find it

fascinating how wildfires and geology tie in with human history and land use. We are channeled unawares along paths governed by hidden forces.

In pre-settlement days native peoples may have done some burning to create forage and clear travel routes along these ridges, but the amount is not known -- Fred says it was nothing like the extensive burning done in the Willamette Valley to keep trees from growing into the natural oak savanna there. This casts some doubt on the idea that vast areas of the West were extensively and repeatedly modified by human action during prehistoric times. “We have to be careful to nuance the role of native burning,” he adds.

Whether burning the forest, logging it, or (more recently) just letting it grow old, there are widely varying “root assumptions” (Fred’s term) underlying society’s uses of forest land. These, in turn, influence the research environment. Fred takes me to the main office and shows me a wall chart depicting the evolution of research at the HJA from the 1940s on. Researcher interests respond in part to society’s needs; in the 1970s they dealt with the immediate impacts of logging (notably road failures and mass wasting on steep slopes), then moved to address biodiversity and endangered species. Now the emphasis is on climate change. Scientists here have the freedom to undertake “big picture” studies that require long-term funding and support from administrators who do not bend to the pressures of the moment. The LTER (Long Term Ecological Research) program certainly qualifies in this respect, and I hope it continues.

We get in Fred’s car to visit the four reflection plots where I am asked to spend time observing the forest. While we are driving he reviews the long history of conflict over logging in Pacific Northwest. Andrews Forest researchers played a major role in the discussions that preceded and followed Judge Dwyer’s 1991 decisions that required the Forest Service to delineate and protect habitat for the northern spotted owl. Much of this research, if I understand correctly, was channeled into the FEMAT (Forest Ecosystem Management Assessment Team) report issued in 1993. Fred said that this process gave scientists “extraordinary cachet” because they answered to one judge – Dwyer – who wanted to ensure that federal agencies complied with the Clean Water Act, the Endangered Species Act and the less well-known National Forest Management Act, which established a requirement to maintain “viable populations” of wildlife species. These laws and regulations gave rise to the unfortunately characterized “jobs versus owls” issue. My feeling, watching this from afar, was that environmentalists needed to do a lot more groundwork preparing the public for the spotted owl listing. The economic upheaval that followed indicates that society was ill prepared to handle the consequences.

Despite the drastic curtailment of logging on federal lands in the Northwest, Fred says he still hears the wistful refrain of “oh, we’ll get back into the woods one of these days.” Clearly, the root assumption among many in Oregon and Washington is that forests are there to be used. One sympathizes – yet in the coming week I will see much evidence that old forests have their own utility. Not an immediate economic product, perhaps, but real enough if one takes a broader view of what humans need.

Fred says there was a "great convergence" of science, policy, politics and social needs that led to adoption of the Northwest Forest Plan in 1993, and he wonders what will be the next such convergence. I suggest, perhaps too hopefully, that it could be a return to long-horizon, low-intensity, community-scale forestry. In places this is already happening. In the 1930s and 1940s Forest Service leaders and researchers worried about what would happen when the big trees were gone from private lands. Today we're dealing with the aftermath of a similar logging spree on public lands, and private holdings have returned to supplying the bulk of the timber. When I look across the McKenzie River valley to the denuded mountainsides to the south, though, I realize that any lasting solution to the forest management dilemma will have to take both private and public ownerships into account. This was a goal of New Deal foresters, but we seem even less willing to grapple with this question today.

Fred speaks of the "reciprocity" we need to have with the landscape – what we leave is as important as what we take. To that end, he sees the goals of the Long-Term Ecological Reflections program at the Andrews Forest, also abbreviated LTER, (which I hastily jot down) as:

Give place a voice
Be place-based
Take the long view – Be present but look backward and forward
Collect the work
Actively disseminate & archive
Do synthesis[2]

It's a tall order. The researchers here have studied the forest for decades, while I'm here for a week. I feel a little like the politician who shows up for a quickie tour, offers a few comments, and disappears again. I do have some background in these issues, but it will be a challenge to assimilate all this knowledge and history and try to make some sense of it. A worthy goal for the coming week and afterward.

We get into an interesting discussion of the effect of forest roads. Here, again, research has led to some surprising findings – namely, that roads act as a sort of drainage network in themselves, channeling runoff in novel ways by intercepting the slow seepage through the soil and dumping it into culverts, where it gets into the streams faster. As a result, runoff peaks are higher and occur earlier. This seems like a reprise of the old "forest influences" argument that helped give birth to the Forest Service in the early 1900s. Things do come around! Perhaps we will learn to once again value forests primarily for their water-holding abilities.

We stop at a pullout along Lookout Creek, where the creek draining Watershed 3 tumbles down to the road. A gauging station measures its flow, which is normally a pleasant gush of clear water, but (as Fred explains) can grow fierce on occasion. One major "runoff event" occurred in 1996 when warm rain and wind liquefied much of the early-winter snowpack and sent huge volumes of water crashing down Lookout Creek. Fred shows me photos of the torn-out roadway, which is clogged with trees and debris. Below the road I see some big logs projecting

out into the stream, which may have been left there by this flood. “The landscape was performing,” Fred says, and as a geomorphologist he must have been in some way delighted. The damage to the road was substantial, but from a purely scientific standpoint the result was fascinating: the flood and resulting sediment deposition either exposed or added to the layers from previous floods, the last big one coming in 1964. He has apparently dated these back quite a ways, and there ensues a long and complex account of the interacting forces which shaped the present-day hillside and creekbed. I can follow none of it, so instead I try to pay attention to how he delivers this little landscape sermon. “I’m a geologist,” he says. “So I have a historical perspective.”

That is clear enough, but Fred goes on to tie in the whole spotted-owl issue as well, calling it an “aha moment” when he realized that the maps of owl habitat which others created for the FEMAT studies were *polygons*, whereas the maps of the streams in the Andrews were *networks*, and that these each told different stories about the land. Both are valid expressions of underlying aspects of the landscape, he tells me, but what really interests him is the interaction of polygons with networks. “Our thinking was not [yet] developed,” he offers. The networks interdigitate, overlap each other in a complex dance of relationships. Again I lose his train of thought -- scientists see this landscape so differently than artists, writers, or even a historian like me. I would love to sit down with him in front of a fireplace and have a beer and try to take it all in. But there’s more to see, so we move on up the road to look at the “log decomposition” site. My notes get sketchy here, but I will return to it another day.

Another winter wren calls, and I mention my interest in the sounds of the forest. Here, too, science offers some illumination. Fred recalls a theory that the variable, high-pitch call of this wren may be an adaptation to constant white noise coming from streams. In all the times I’ve heard this lovely song I never thought of that.

He talks of the “other instruments” heard in the forest, such as the thwap of raindrops hitting maple leaves. Recently he helped host a multimedia and hip-hop artist named DJ Spooky, who recorded and composed music based in part n the forest soundscape. I am getting quite an impression of Fred’s diverse interests, which are unusual but not unknown among scientists. He draws connections from many fields of inquiry as a means of understanding the workings of the forest and its significance to society. Science is often criticized for reducing the natural world to numbers -- for depriving it of magic -- yet the kind of integrative work Fred is describing makes the forest come alive.

It’s an enviable position to be in, but Fred is able to ground his ideas in more than four decades of research, including pioneering work at Mt. St. Helens. He calls himself a “disturbance ecologist,” which means he is used to looking at the forest environment as a series of upheavals at intervals ranging from a decade or two (like floods) to a truly geologic timescale. “To me the world is a disturbance cascade,” he says. This would predispose him to see the forest not as an eternal, changeless backdrop to human activity – the classic “forest primeval” -- but as a constantly

evolving system which sometimes undergoes drastic change.

I wonder how this perception of the forest as a dynamic system plays into current management issues – would it tend to contradict the idea of sustained yield, or of community stability? For years we have tried to manage and control forests to get them to produce what we want, when we want it. Unwilling to let the forest follow its own timeline, we impose our own, with little awareness of the underlying forces Fred is talking about. An idea germinates which I want to flesh out further – the divergent time scales of the managed and unmanaged forests. Time is on my mind a lot these days.

We head on up to the ridge dividing Lookout Creek from Blue River, several miles farther north of the point I reached the evening before. Here there are several cutting units in which "New Forestry" principles were employed. Again my notes grow sketchy, but I return the following day to examine these units more closely (see my post for May 28, "Then and Now").

Fred encourages me to compare the Montana situation that I wrote about in my last book with what I see in the Andrews Forest and in the surrounding Willamette National Forest.[3] I maintained that the controversy that embroiled the Bitterroot National Forest in the late 1960s was fundamentally a matter of the Forest Service moving toward an export-driven, industrial forestry approach in place of the community-scale forestry which held sway under former supervisor G. M. Brandborg. A "social forester" in the New Deal mold, Brandborg wanted to sustain the small, locally owned mills in the Bitterroot Valley through a policy of selective harvests and steady yields – what later became known as "nondeclining even-flow." The modernists in the agency, as well as sawmill interests outside the valley, wanted to cut the commercial forest more rapidly in order to get the land into faster growing, single-age plantations. I suspect that much the same conflict happened here in the Northwest, although on a much broader scale.

In the early 1970s some Forest Service researchers were issuing reports warning of a day of reckoning when the big old trees ran out. This was the so-called allowable cut "falloff," which received remarkably little attention in the news media or even from environmentalists. Instead, attention shifted to the spotted owl and the resulting court battles over biodiversity and its implications. Cutting levels were drastically curtailed, though not for the reasons the earlier researchers predicted. The spotted owl issue overrode the question of how the forest industry would transition to a smaller-tree economy. Environmentalists were blamed for dislocations which to some extent may have been inevitable (although probably not to the degree that actually took place).

That's a gross simplification, of course, but the story line appears very similar to what happened in Montana, where concerns about the aesthetic impact of clearcutting and its long-term effects on soils, watersheds, and wildlife led to restrictions on the practice. Cutting levels declined there, too, which tended to obscure the older issue of maintaining community stability through locally-oriented, small-scale forestry. The Forest Service brought in landscape architects to try to

soften the harsh appearance of the clearcuts, believing this to be the major cause of public uproar, but the more significant issue was the rate of cutting on both public and private lands. The bills came due in the 1990s when the national forests and the large private owners simply ran out of accessible large timber.

It seems to be extraordinarily hard for society to deal with issues that involve long time horizons. Our attention is on the immediate concern. When mills started closing, people acted as if this were coming out of the blue, when a few planners and economists (mostly in the Forest Service!) had been warning of it for decades.

All this seems far removed from current concerns about biodiversity, but I think there's a connection. It may have something to do with our perception of time, oddly enough. We fail to see the forest as an entity that works on very long time horizons. Sure, any silviculturalist or timber planner will tell you about rotation age and allowable cut effect. But their work is usually predicated on the need to speed up nature's rate of producing wood fiber. Here at the Andrews Forest, it seems that research is getting into longer time frames and broader questions of maintaining biodiversity. This is all to the good. What I hope to do (perhaps in a spinoff article) is discuss this deep-time versus rapid-results issue as it relates to how we perceive the forest itself. We'll see how it goes.

Related to this, Fred and I discuss one of the key issues that came out of the clearcutting debates of the early 1970s – the question of long-term soil productivity, which Robert Curry, a geomorphologist at the University of Montana, famously called into question at the 1971 Senate hearings on forest management practices. Fred says that follow-up studies have shown no conclusive evidence of declining productivity in clearcuts, either from direct soil loss or from the leaching of nitrogen, as Curry alleged based on preliminary studies at the Hubbard Brook watershed in the Northeast. The focus soon shifted to other concerns such as biodiversity – as Fred puts it, "the issue environment didn't go that way." Moreover, the somewhat arcane topic of soil productivity lacked a "poster child" such as the spotted owl.

After touring the four reflection plots, I get in my car and follow Fred down past the Blue River saddle dam to a pair of cutting units along the 1501 road, outside the Andrews Forest and not far from the McKenzie River highway. We talk for a bit and he leaves me there to ponder the full plate of research questions, management issues, and social concerns he has set before me. I rarely meet someone who is both a highly accomplished scientist and a "big picture" thinker, and it is even rarer for such a person to invite others to enter his thought-world and add their ideas to the mix. I begin to see why the Andrews Forest has emerged as a center not only for forest ecology research, but for useful and interesting humanistic inquiry. It will be quite a challenge to add something original to the flow of ideas here — especially after only a week's stay -- but Fred seems confident that I will. I appreciate his interest in my work, and his insistence that it has some bearing on the hugely complex socio-politico-ecological maelstrom that has been going on in the Northwest ever since I left.

I get my lunch from the car and wander up into the partial-cut unit on the

1501 road. From my field notes:

> Fred strikes me as the tribal elder -- the griot -- the storyteller who wants to pass on the immense store of knowledge which he and his colleagues have amassed. He uses the word "persistence" often – both to describe forest processes over time and the researcher's ongoing efforts. It's an apt term for a landscape of ancient veteran trees and smaller lifeforms that can recolonize a clearcut after having (like the ceanothus in the Blue River Face unit) lain dormant for 100 years or more.
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> I'm sitting now next to a bed of twinflowers, a plant with deep evocations for me. The biologist Olaus Murie once described sitting among "a company of twinflowers" outside of Yellowstone National Park in the 1940s, when he needed to relax after spending a few hours in animated discussion with a forest ranger over wilderness policy.[4] In my case, I thoroughly enjoyed listening to Fred recount the high points of his 40-year career as a forest researcher. He and Murie would have liked each other – two scientists who wanted the outside world to understand more of their fields and take ecological knowledge into account before conducting "business as usual" in the forest.
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> Weedy plants have infiltrated among the Oregon grape and maples where I sit. Yet somehow the twinflowers make things seem right, and give this harvest unit the appearance of a native forest re-establishing. But this may only be the associations I have for this lovely plant.
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> All around me is the detritus of a fairly recent thinning operation. Leftover slash, stumps of trees 50 or so years old, a good number left standing. Vine maple, some bigleaf maple, even (as Fred pointed out) some true fir and incense cedar, in contrast to earlier practice which favored a single commercial species. The logging here appears to be part of the "New Forestry" approach that came out of the Andrews in the past couple of decades. It contrasts substantially with the older but more conventional clearcut adjacent on the east, which is on private land. That cut now sports a thick regrowth of young Douglas fir, without snags or leave trees in evidence.
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> The unit I'm sitting in displays evidence of a still older cut. Massive, decaying stumps, four or five feet in diameter, about the same in height. Their bark has mostly fallen off to expose soft, reddish-brown humus-in-the-making. Tiny hemlocks sprout from the tops of several of these stumps. The moist Oregon winters give these relics the look of ancient pediments or platforms, though they are perhaps only 70 years old.
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> Rising above me is a 100' tall hemlock, about 16" in diameter at its base, which perches on what looks like an old stump. By now the stump is nothing more than a conical pile of Bark-O-Mulch. The hemlock's roots reach around it into real soil. This is what the little volunteers on

the more recent stumps will grow into.

After an hour I drive back to the station, take a nap, and toward evening head down to Lookout Creek to sit and enjoy the forest ambience. No great thoughts come to me, mostly reminiscences about the years I spent in Oregon, fishing such streams or hiking along them. Nostalgia is a powerful emotion, but is it a useful one? If it leads only to a desire to retain the past, to avoid or reject change, it is counterproductive. Our perceptions remain fixed while the forest changes all around us. I remember the 1964 flood here in western Oregon and how it blew out all of my favorite fishing holes. I remember the canopy of maples that touched each other above the old McKenzie highway. Those are gone, but elsewhere the forest has re-created such scenes. Change is also renewal. Many of the clearcut scars have grown back to something less objectionable. Ideas and policies, too, have changed, mostly for the better. Nostalgia ain't what it used to be, as the saying goes. In my week here in the Andrews I need to temper my wistfulness for the lost forests of my youth with an awareness that nature herself moves on. If allowed to, she will lay new beds of flowers in the midst of our ugliness.

I'll end with this extract from my notes taken that evening, at the edge of Lookout Creek:

> Maybe we should just listen to the scientists. Put aside our ideas of utility & beauty for a while, set up a bunch of research plots and otherwise leave the forest alone.
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> Or, like the forester Bud Moore did on his plot of land in Montana's Swan Valley, just wander into the woods, sit on an old stump, and listen – period. Listen for what the forest is saying. Then, as he put it, maybe in two or three years he would know what to do with it. Waiting that long wouldn't hurt anything, he said.
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> Well, old Bud is gone, and with him the patience of a veteran woodsman. Fred J. Swanson seems to exemplify some of that patience, the very-long-term perspective which led him to set up the LTER reflection plots.
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> Here I am, then, a habitually impatient person, sitting on a fat log jutting out into Lookout Creek, wondering if I will have anything to offer in the way of insight or understanding. I'll indulge in some nostalgic musings about life's changes in the forty years since I lived in western Oregon, and I'll observe (in a loose qualitative way) how the forest has regrown along the roads and in the clearcuts. I'll proclaim that all this is beautiful and should be protected from the moneychangers. And I'll sleep well in my modern quarters, built from 2x6s and plywood from (I would guess) the "working forest" to the west of here, where large-scale clearcutting continues. Sweet ironies!
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> Well, it *is* beautiful here. The water has that unmistakably Northwest

look about it – spruce green, a hint of blue at depth, clear, clear, clear. The tangled bank opposite: vine maple, mosses, ferns tucked into rooty grottoes. A bigleaf maple rises 50-60 feet, dwarfed in turn by the Douglas firs which anchor the bank. Even the floods of '64 and '96 didn't tear them away (though a dozen or so of their cousins from places upstream lie at their feet). Riprap for the now-placid stream. Sunshine, blue sky, drifting cloud – as much enchantment as one could ask for.

Until, perhaps, one begins to look deeper, as these scientists all seem to. Why are there no big fish in the stream? Is it not the season for salmon, or has the reservoir blocked their passage? Why are there no elk coming down to the waters' edge? Why, for that matter, do I walk these trails with such a distracted mind, wobbling clumsily as I try to walk out on a projecting log? Clearly I do not live here, do not really know these woods, do not belong to them as humans once did.

I show up here with my need for solitude & my ideas of beauty & think I can make some sense of it. Probably I should come and stay for weeks, months, leave my notepads behind, carry no binoculars, perhaps forage a little or try to catch a fish. Be the opposite of a scientist, in other words. Then, maybe, I could put down a few words that might mean something.

Whatever I come up with this week, I suspect it will have something to do with the sounds the stream makes, the trill of the winter wren, the pattern of maple leaves superposed on the rotting snag on the far bank.

Listen. Be still.

# # #

Notes

1. For a discussion of fire history in the Andrews forest, see Tepley, Alan J., Swanson, Frederick J. and Spies, Thomas A., 2013, "Fire-mediated pathways of stand development in Douglas-fir/western hemlock forests of the Pacific Northwest, USA." http://www.esajournals.org/doi/abs/10.1890/12-1506.1

2. For more on Fred's role in the LTER program, see his interview in http://terrain.org/2013/interviews/fred-swanson/

3. Frederick H. Swanson, *The Bitterroot and Mr. Brandborg: Clearcutting and the Struggle for Sustainable Forestry in the Northern Rockies* (University of Utah Press, 2011).

4. This is a reference to my article "Olaus Murie and the Defense of the Wild," *International Journal of Wilderness*, December 2013.