SALMON HOPE

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The fiol, a thing of wood, sings the plight of Salmon and Sitka, which contain and indicate the future of the ocean-to-forest cycling of atomic, foliar nitrogen and thereby evince their analogy to cells within circulating blood even while they demonstrate their necessity upon which our existence relies, and yet the Salmon nation is attacked blithely and devastatingly by human activity at every stage of life! Water is blood is life.

Water is known as *Mni* in songs and spoken acknowledgements to evoke the simultaneous meaning of blood, water, life, and health all expressed in combination. How does this relate to an understanding of the meaning and importance of Salmon?

Salmon provide critical nutrients to upland forests, and are now known to be a circulatory system that links our boreal watershed forests with the essential nutrients provided by the vast ocean marine ecosystem. If Salmon are indeed cells in a circulatory system, then we must discontinue our habit of removing the oldest and most critical forest habitat, which represents one terminus of the vast nutrient web stretching between ocean and forest and evinced by the synergistic action of Sitka Spruce and Salmon.

For the future existence of Pacific Northwest forests with Salmon, we must place emphasis on forestry and land use practices equally with marine and fisheries research to integrate our fresh understanding of the interrelation of fish population, forestry and fishing practices, water quality, and the cumulative effects of disturbances and pollutants in ocean marine, river, and upland forest environments. We need to exercise our increased understanding of these collaborative factors even now as we continue to seek further knowledge of this forest and marine ecosystem as a working whole.

The span of human lifetime is not sufficient to justify positive conclusions about the veracity of our current forestry management plan, and yet we have evidence to support many negative conclusions.

Throughout the Pacific Northwest, remaining older acreages on public land with healthy forest and watershed characteristics are often as young as 60 years to 120+ years of age and not classified as old growth even when some of it contains old growth individuals or small groves. These areas are at times referred to as "self-regenerated second or third growth," and also "anchor habitat," since they tend to be islands of forest in seas of clearcuts.

Current practices permit "conversion" of these special areas through extensive timber harvesting with minimal periods of rotation; and with harvest operations typically including extensive roading, narrow to non-existent stream buffers, widespread ground disturbance, and the repeated application of herbicides.

These relatively brutal methods typically include the planting of even-aged monocultures of conifer clones chosen for fast growth, planted densely and thinned in successive operations. Such "super-trees" are found over time in some regions to be highly susceptible to diseases and insects which typically only affect certain individuals within naturally regenerated stands of similarly aged conifer species.

The negative input from these factors of forest health has often failed to develop converted younger stands into older structure with the requisite diversity and biological strengths that self-regenerated stands of similar age exhibit. Interestingly, here in Oregon we have dubiously dubbed the older self-regenerated forest the product of our work even as we continue to decimate it, and we call the resultant herbicide-drenched monoculture clearcut plantation a forest as if it already proves the theory of man-made timber renewal.

Why should we trade older naturally regenerated forests that contain pure watersheds for young pulp plantations? We are not growing forest, but wood fiber pulp with such methods!

Forgivingly, forestry is farming when implemented with such ideas after all, but farming suggests that responsible stewardship is also present while in fact it is substantially absent, as evinced by the results of current practices to fish, wildlife and water quality. The vast majority of public forest timberland acreage in Oregon has already been converted to younger stands by timber harvesting, and represents the continued forestry experiment of intensive "active management."

If timber is a renewable resource, then I submit the challenge that we limit our timber extraction to only what has been "converted" into younger stands even as we have trumpeted to ourselves the tragic belief and assurance that such plantations are forest renewal in action. Without stewardship, active management resembles piracy or warfare since there is no evidence that blatantly extractive activity in old stands is necessary or desirable for forest health. We must correct this misunderstanding, especially since we as citizens of Oregon have entrusted such ideas to "manage timber for the greatest permanent good for the citizens of Oregon" into the future.

The forests that fall today are not what is being reared for the future, so the time has come to recognize the many other values that also fall with the old timber (such as water quality and abundance, and wildlife habitat within functioning naturally regenerated watershed forests) which are nearly infinitely valuable to all Oregonians and which should serve first as rules to guide any further sales of public timber for harvest.

Since the doctrines of intensive management have no substantial positive evidence, and can now only predict to show hypothetical future-renewed timber as potential results of the current strategy, I conservatively propose that we set aside and leave alone a maximum acreage of existing older, complex forest structure. It is not the product of human work; it instead represents the miraculous and effective management strategy of the forest itself, only possible through being allowed to grow old.

Older forest structure is now known to be functioning as both inscrutable in its entirety, and yet vastly essential in its known parts to the survival of whole systems of creatures, including ourselves. Old forest already manages itself with the subtle, measurable, and substantial positive responses to catastrophic storms, to wildfires, and to endemic disease pathogens. Even recently, salvage of timber following a "catastrophic wildfire" in Oregon evinced substantial harmful effects in several concise measurements indicative of recovering forest ecosystem health.

Increasing harvest rotation periods and riparian buffer zone widths on a significant portion of public lands should be on the front line among several other (obvious, necessary, inescapable, and long-term) solutions in response to the decline of Salmon runs in the Pacific Northwest.

People may prefer the selective harvest of very old trees for traditional canoes, totems, materials for fine woodworking and musical instruments of high quality, and yet a commitment to habitat conservation also supports these along with other intrinsic essential benefits to water (quality, quantity and nutrient cycling), people, plants and wildlife.

It is only within the relatively undisturbed older forest structure that people can gather presently known as well as yet unknown plants, microbes, and fungi of tremendous food and medicinal necessity. Such amazing things are all best observed and created only with the widespread implementation of very long timber rotation periods on forest lands, of perhaps over a century, along with preserving and nurturing every aspect of the connection between upland riparian forest and ocean marine ecosystems.

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EFFECTS OF SALMON-DERIVED NITROGEN ON RIPARIAN FOREST GROWTH & IMPLICATIONS FOR STREAM PRODUCTIVITY

Without yet direct written permission from nor association with the authors, but in support of their work made public, here is some evidence among many similar sources which inspire me, and with (I hope, proper) credit to the authors:

Abstract. Anadromous Pacific salmon (*Oncorhynchus* spp.) transport marine-derived nitrogen (MDN) to the rivers in which they reproduce. Isotopic analyses indicate that trees and shrubs near spawning streams derive 22-24% of their foliar nitrogen (N) from spawning salmon. As a consequence of this nutrient subsidy, growth rates are significantly increased in Sitka spruce (*Picea sitchensis*) near spawning streams. As riparian forests affect the quality of instream habitat through shading, sediment and nutrient filtration, and production of large woody debris (LWD), this fertilization process serves not only to enhance riparian production, but may also act as a positive feedback mechanism by which salmon-borne nutrients improve spawning and rearing habitat for subsequent salmon generations and maintain the long-term productivity of river corridors along the Pacific coast of North America.

~JAMES M. HELFIELD & ROBERT J. NAIMAN