Getting the word out: a request to fund one or two small films describing the decline of Seward Park's old-growth forest

Overview: what we value

Two quite different communities sit side-by-side in southeast Seattle. The first is our human community; the second is our forest. HistoryLink describes the vitality and heterogeneity of the human community: "… a neighborhood of nations where Somali children study the Koran a few blocks from the largest Orthodox synagogue in Seattle; where fourth-generation Italians and newly arrived South Asians shop at stores owned by second-generation Vietnamese; and where Ethiopian wat and Filipino halo-halo are as easy to find as pizza and sushi." Lake shore residents are mostly White and often wealthy. Climbing to the west, and descending into the Rainier Valley, one enters that part of zip code 98118 described, with some hyperbole and much truth, as the the most ethnically diverse in America.

We, the Friends of Seward Park, value and, whenever possible, promote this rich cultural diversity. We work to make Seward Park available and welcoming to all.

And in the same spirit we work to protect and promote the other community in our midst: the rare and biologically diverse 100-acre old-growth Magnificent Forest. Here Douglas Fir, Red Cedar, Western Hemlock, Big Leaf Maple, Bald Eagles, Barred Owls and Pileated Woodpecker live in complex ecological association, a rare survival of what was once a million acres of such lowland forest - a full 10% of the surviving 1000 acres.

The challenge we face

Alas, crucial, dominant, perhaps even indispensable keystone species in this forest - hemlock and sword fern - are now in rapid decline. Acres of sword fern, a species famously long-lived and resilient to every insult, are now gone, leaving barren ground behind. More than half of the Western Hemlocks are dead, with the remainder expected soon to follow. With this loss, the entire fabric and future of this rare forest is at risk: more die-offs of more species are nearly certain. UW's Dr. Robert Edmonds predicts that on the current trajectory, all conifers will soon be gone.

Are fern and hemlock die-off a simple result of climate change? We hear this suggestion often. However, seven years of citizen science, along with research published from the Pittermann lab at UC Santa Cruz on sword ferns shows otherwise. Instead, an as yet unidentified possibly water-borne pathogen seems to be the root cause Western Hemlock decline and death appears to be the result of a combination of newly virulent, previously known fungal pathogens. Climate change may be a factor in both die-offs, but does not explain them. We do not understand the mechanisms by which these dominant species are dying. Perhaps a loss or depletion of mycorrhizal networks has occurred, interrupting long-established mechanisms of hydraulic transport. Our ignorance, and our lack of funding, keeps us from finding these explanation, along with any possible remedy or response.

The Friends of Seward Park has worked on these die-offs for seven years. With the help of a few donations, and pro bono efforts from UW and WSU researchers, we have mapped and counted, experimented and observed. Informal and greenhouse experiments suggest that a water-borne pathogen is involved in sword fern death. We conducted the first intensive survey of Western Hemlock populations at Seward with young interns from CHOOSE 180 this summer, documenting a dramatic decline, and identifying a possible novel implicated pathogen. Our

WSU researchers expressed interest in both of these findings, but made it clear that their time must go to grant-funded research: they are unable to pursue these leads.

Thus citizen science has its limits. Occasional consultation with professional scientists goes only so far. Our untrained and unpaid labor can set the stage for proper research - and indeed we have done so - but we are unable to carry it out. Without sustained funding, without laboratory resources, without skilled researchers, the nature of forest death and decline, and any possible responses to it, will not be found.

The solution we propose.

With the contributions of citizen science now exhausted, the time for sustainably funded professional science has arrived. But funding at that level - $100k per year for a few years to support a graduate student and supervising faculty - is hard to come by. Research dollars typically go to economically significant topics, or to charismatic species. Millions are spent to address agricultural problems, and to increase lumber production Ecological research is chronically underfunded, but that money which is spent tends to go to charismatic species - in our region, to Orca and salmon decline and recovery.

Seward Park's declining old-growth forest is, in aggregate, and as visitors always discover, a charismatic *composite* of species, a complex web of co-evolved, often beautiful plants and animals. Not as amenable to poster-child status as are Orcas and salmon, but perhaps no less worthy.

Seward's forest has regional importance. It is a coal mine canary, an early warning system of forest decline in the Pacific Northwest, west of the Cascades. Two factors confer that status: unlike second-growth urban forest, Seward's early old growth community is susceptible to environmental insults and stress which, in time, will appear in more remote forests. The sword fern die-off was first noticed here in 2013. Had we marshaled the resources to do exhaustive research at that time, responses - perhaps even remedies - would have emerged, and the current spread of die-off in the Puget Lowlands might have been prevented. Western Hemlock decline is reported throughout the region, and into the foothills of the Cascades, but nowhere as dramatically, nor as easily studied, as at Seward Park. This forest is unusually rich, and it is usually threatened.

Call to Action

We request a budget of up to $10,000 from the Friends of Seward Park in order to make this case: to attract sustained funding so that professional, peer-reviewed research maximizes the chance of understanding the mechanisms of the forest decline, and of finding responses to it which ensure its survival. The $10,000 budget will be used to produce short, impactful videos to make the case for this essential research.