Saving Strathcona Provincial Park

- "*Et in Arcadia, ego*"

The unprecedented heat dome of June 2021 and atmospheric rivers of November 2021 herald big changes ahead for British Columbia's ecosystems. This is not a one-off. It is an accelerating trend. It will return and be as normal as a West Coast winter rain by 2030. It is generally agreed that these extreme events inaugurate a new era of climate extremes that has been expected for some time. This raises two questions. What does this mean for Strathcona Provincial Park, and the BC Parks system in general? And why should we care about biodiversity?

Biodiversity is important because it controls processes that regulate climate change. That was the central concern of the joint report of the IPCC (Intergovernmental Platform on Climate Change) and the IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services) released in June 2021, entitled Biodiversity and Climate Change. The IPCC and IPBES concluded with a joint statement that it is impossible to solve the climate change emergency without solving the biodiversity crisis.[1] Climate change and biodiversity are inextricably inter-related. It is not enough just to eliminate fossil fuels.

The events we now witness tell us what 1.1^0C warming means. Somewhere between six to eleven years from now (2021) we can expect to cross the critical 1.5^0C threshold, which most scientists understand should be avoided at all costs. However, it is clear from the latest IPCC report that: "in the near term (2021-2040), 1.5^0C is very likely to be exceeded."[2] A majority of the scientists who wrote the last report do not expect that nations will meet 1.5^0C or 2^0C targets.[3] What we see unfolding now will have enormous consequences for the distribution of most species both terrestrial and aquatic, especially for the future survival of species-at-risk in BC in the coming decades.

Species distributions are synonymous with habitat distributions. There are no species without habitats. If habitats collapse or shift, so must species. To survive, species must have corridors and alternatives to find new habitats. The thresholds they will have to cross in the coming years have serious implications for the very survival of Strathcona Provincial Park as a whole as we know it today.

The park is not just a series of geological formations on which life is just an ornament. Its very rocks are embedded by life forms such as lichens that give them their colours and hues. They photosynthesize, hold water and drive chemical cycles essential to life, and geological processes. As John Muir noted: "everything is hitched to everything else." The park is therefore not just a generalized landscape for our recreation. It is a living biome shaped by its waters and snows that supports specialized vegetation which in turn releases the aerosols that give us "mountain highs" and create its winds and rains and microclimates. What happens when these essential elements reach their tolerance limits and disappear?

It might be easy to disregard these considerations if their reality and importance were not confirmed by recent research by Dobrowski et al. The title almost says it all: "Protected-area targets could be undermined by climate change-driven shifts in ecoregions and biomes."[4] This research shows that climate change turns many of the assumptions that have guided conservation and park planning throughout the twentieth century on their head. We assumed that the world changed slowly. It no longer does. We also assumed that we could save and preserve static areas of land that would not change for generations to come. The basic problem is delineated as follows:

"the impermanence of species assemblages, communities, and ecosystems pose a challenge to conservation frameworks that rely on protected areas with static boundaries. Conservation plans based on current geographic patterns of biodiversity may be insufficient to support future biota and natural processes and may fail to afford species access to suitable climates as the Earth warms. These challenges raise questions about the efficacy of the existing PA (Protected Area) network and how to expand its coverage under a warming climate."

As observed by Dobrowski et al. , all official planning, including the much-touted KBAs (Key Biodiversity Areas) programme, which is central to Canada's biodiversity conservation plan, *Pathway to Canada Target 1,* essentially remain products of a static boundary approach.[5]

The political interest in KBAs, and in *Pathway to Canada*, lies not in conservation per se, but in conservation that still prioritizes and preserves the economic interests of industry. In the KBAs own phrasing, data and boundaries "can help guide conservation investments and inform where development can occur." KBAs are based on the twin assumptions that governments can continue to promote business as usual, while climate change is stabilized at 1.5^0C. For reasons outlined above, we will pass 1.5^0C by 2030 and if we continue business-as-usual in the most optimistic scenario we will exceed 2.4^0C. Neither of these assumptions is commensurate with the reality we face. While KBAs are an improvement, they do not represent the kind of dynamic approach needed to preserve biodiversity in the face of climate change.

Current park planning is now as obsolescent as BC's road and drainage infrastructure planning. Just as the atmospheric rivers tested British Columbia's engineering standards, and will call for an increase in standards as well as re-assessments of the limits of those standards and a revision of the viability of projects, they also threaten the future of Strathcona Provincial Park. If until now climate change has been treated as a remote afterthought in the idyllic mountains of Vancouver Island, this can no longer be so. Climate change is no longer an abstract concept. It threatens all conservation areas in ways for which traditional conservation and park planning are possibly even more woefully unprepared than were BC's Emergency Services and Ministry of Transportation for recent events that were long forecast.

To understand what the heat dome and the atmospheric rivers mean for Strathcona Park, it may be instructive to learn from what is already unfolding in the iconic Yosemite and Sequoia National Parks. Ever since the establishment of Yosemite, first as a "protected area" in 1864 and then as a national park in 1890, parks were set aside as representative conservation areas of regional ecosystems. The assumption was that the environment and ecosystems in which they were set would remain relatively unchanged for centuries. Changes we witness today give the lie to that assumption.

John Muir and countless mountaineers have noted that against the grandeur and awe of mountains human beings seemed dwarfed, by the sheer scale and power of nature. With climate change, all that has changed. As one observer who worked as an intern at Yosemite in 1992, and returned with her son this year, recently noted in an essay aptly entitled "*What I saw at Yosemite was devastating*": *"Now, almost 30 years later, in what might be the most profound shift of all, the power dynamic between humans and Yosemite has changed. To see nature so vulnerable not only feels depressing, but wrong, disorienting and scary."*[6] In what should be familiar for admirers of Strathcona Provincial Park, the shrinking and potential disappearance of glaciers leading to the disappearance of streams and reduction of mighty rivers to mere trickles has reduced ecosystems at Yosemite and Sequoia National Parks to mere shadows of what they were only a few years ago. With temperatures in the High Sierra valleys reaching 104^0F (40^0C), not only is hiking becoming hazardous to human health, it is endangering the survival of both plants and wildlife.

Everywhere on this planet the optimal temperature for photosynthesis is 21^oC. Plants regulate their environment by orienting and releasing aerosols to maintain photosynthesis. Below that temperature plants can slow down and close down to retain hydric cell environments and maintain life, until conditions to re-start return. Above that, plants are stressed to retain the necessary hydric conditions for photosynthesis and cellular integrity. All around the world trees and forest ecosystems are showing signs of heat stress which is interpreted as part of a global forest dieback.[7]

On the West Coast, an annual succession of floods, drought, heatwaves and wildfires are becoming as common and as expected as sunrise and sunset. They take their toll on trees which are the backbone of our forests. In California, redwoods and giant sequoias which were once reputed to be adapted ecologically to and dependent on periodic wildfires, are now overwhelmed by the new extreme wildfires such as we have seen in the last decade on the West Coast. In the last two years alone Sequoia National Park has lost 20 percent of its iconic giant sequoias, and the trend is likely to continue. That is climate change at 1.1^0C. As climate change progresses to 1.5^0C and beyond, similar conditions are likely to be visited upon British Columbia with increasing mortalities of Nootka and red cedars and Douglas fir, which like the atmospheric rivers of November 2021, have long been predicted.[8] There is now an urgency to incorporate this rapidly changing reality in park planning.

Park planning must shift from static paradigms such as the KBA to dynamic planning. Dynamic planning means connecting the landscape so that species are provided with the opportunity to move to analog habitats. To survive, species must be provided with corridors to move as climate changes and threats increase, to habitats that are analogous to the ones they inhabit today. Parks in BC are physically isolated units because clearcutting has all too frequently been carried out right to their borders. Biologically these areas are regionally disconnected by surrounding clearcut operations which have destroyed even the soil fungal networks which would normally provide nutrient avenues for species shifts.[9]

If we are serious about the addressing the dangers that climate change poses, we need to restore soil carbon networks and the biodiversity networks that depend on them. In a climate emergency conservation priorities must guide economic planning, not vice-versa. As Glasgow COP26 showed, climate change is unlikely to be addressed at COP conferences that focus on maintaining the economy and protecting the interests of the fossil fuel industries. It can, however, be addressed at home if we prioritize conservation values in planning, support inventory work and carry out planning dynamically across the landscape, not in isolation.

Saving Strathcona Provincial Park at a time of climate change will require that we move beyond the current thinking. As Dobrowski et al. observe, to address climate change we need to connect existing protected areas and provide corridors for species movement. Much of the potential resilience of Strathcona Provincial Park lies in its size and central position on Vancouver Island. Within the landscape of Vancouver Island it constitutes a vital biodiversity node. However, important parts of it, such as Forbidden Plateau form narrow vulnerable projections in a landscape of clearcuts. Those areas of the park need to be expanded to recover the biological buffers that lost ecosystems surrounding the park formerly represented. In the case of the Forbidden Plateau extension, that would involve an incorporation of the watersheds associated with Comox Lake, and the extensive restoration of these areas from forestry damage.

Given that a large part of the problems posed by the need to develop dynamic boundaries lies in the impact of forestry operations on the resilience of the park's ecosystems to climate change, there is an urgent necessity to change policies that guide forestry. Within the paradigm of static boundaries, forestry has been given a free hand in the destruction of areas outside the preserved areas. The park was planned in isolation from forestry, and forestry was planned in isolation from the park. Their interconnections and interdependencies were rarely, if ever, considered. In dynamic planning, we have to recognize the impact of forestry and its importance for the park's role in maintaining biodiversity. Therefore in dynamic planning forestry plans must incorporate and protect conservation area values. In other words, the park community, and parks staff must first understand the dynamic relationship and only then be involved in forestry planning. The Ministry of Environment and Climate Change and BC Parks must work with forestry and provide plans to protect long-term conservation values across the whole landscape.

The overriding concern with climate change changes the social, political and economic priorities. The lead in planning with "Natural Resources, Lands and Forest Operations" can no longer be forestry and the timber industry, but the Ministry of Environment and Climate Change. It requires that forestry and forestry owners and licensees work in concert with BC Parks in prioritizing climate change and biodiversity, and not the "timber supply," as the *Forest and Ranges Practices Act* suggests.

To address the climate emergency, BC Parks needs to move beyond recreation, important as that is. As per Dobrowski et al., the climate emergency makes the role of conservation and biodiversity in BC Parks increasingly important for the survival of this province's key biodiversity nodes such as Strathcona Provincial Park. To be serious about assuming that role BC Parks needs to be able to map species biodiversity in the parks and ecological reserves.

To a large extent that is the under-funded work that the Strathcona Wilderness Institute has been doing for the last 3 years. SWI has been compiling and mapping species distribution lists, and promoting public education through workshops and webinars, in spite of Covid. To date eight people, on foot, have reliably mapped at least 1682 species which include many species references new to the park and even to the island. (The current list on the SWI Data page on INaturalist is incomplete.) That is the backbone of the information that BC Parks has appropriated and incorporated on its INaturalist page. SWI's work makes Strathcona Provincial Park the best biologically-documented park in the BC Park system. To realistically address the challenges of climate change, this is work that needs to be done in all of BC's provincial and national parks.

In 1989 Strathcona Park was saved by the public from government mismanagement. Once again the public needs to weigh in to demand that the Ministry of Environment and BC Parks develop modern park plans based on dynamic boundaries, not static boundaries. That is essential if we are to meet the challenges of the climate emergency for the benefit of future generations. This will require a large and long public engagement in the park planning process. It is beyond the boundaries of conventional institutional thinking and capabilities that are beholden to government and industry. We need to think differently about geographical boundaries as well as institutional boundaries. The latter requires rethinking the abusive world of institutional privilege.

The public has now gathered enough information necessary to better manage the park's biodiversity, for the benefit of the public. It has done so by providing essential biological data needed to develop the modern dynamic landscape planning it has the right to expect. This is essential information needed to meet the challenge of the day: the climate and biodiversity emergencies. The information is limited, but it is enough to plan for the restoration of soil fungal and biodiversity networks essential for enhanced carbon capture as well as the identification and creation of

analogue habitats. The tools and the knowledge are readily available to address climate change. Is there the will?

Therefore, the only question that needs to guide forestry and BC Parks is: do we take climate change seriously?

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