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Nov 1, 2021

Dear Dawson Regional Planning Commission,

I am submitting comments on the Draft Land Use Plan for the Dawson region on behalf of the BEACONS Project at the University of Alberta / Yukon University. For almost 20 years, we have developed and applied science-based methods and tools to support pro-active conservation and land planning across the boreal region of Canada, including Yukon and Alaska. I have reviewed the entire plan and congratulate the Commission on releasing a draft plan for comment. My comments focus on adaptive management and climate change.

Adaptive Management

Adaptive management is a powerful science-based tool for addressing uncertainty and risk, particularly in regions (like Dawson) where knowledge of how biodiversity responds to human development and climate change is limited. It is encouraging to see this acknowledged in the plan. To be effective, adaptive management requires **reference areas** and a commitment to robust **monitoring**. Without reference areas or ecological benchmarks, it is not possible to distinguish the effects of human development on biodiversity from natural variation in population sizes, for example, and the influence of climate change, adding high levels of risk and uncertainty to management decisions.

There are areas within the Dawson planning region that can serve as ecological benchmarks. We have identified candidate ecological benchmarks for ecoregions intersecting the Dawson planning region that can be explored online: <http://nwb.ualberta.ca/>. Similar analyses could be done specifically for the Dawson planning region, using regional datasets, with input and validation from people who live and spend time on the land.

Recommendations

- “Adaptive management” is often recommended in land use plans but rarely implemented, in part due to associated commitments and cost. The success of the Dawson Plan to maintain healthy lands and waters within Integrated Stewardship Areas (as state on page 176) will likely rely on adaptive management. To be forthright about what this requires, add a description of how adaptive management works, and key elements/commitments required for effective implementation i.e., ecological benchmarks, monitoring, funds and willingness to act.
- Suitable areas for ecological benchmarks may be limited in the Dawson planning region. To avoid lost opportunity, explicitly identify ecological benchmarks in the Plan and ideally classify as SMA I.

Climate Change

The Draft Plan acknowledges the prevailing threat of climate change to infrastructure and biodiversity. For the latter, two papers recently published by Carroll and Noss (2020)¹ and Carroll and Ray (2021)² present strategies and tools for climate resilience, including macro- and micro-refugia and connectivity corridors. Using cutting-edge science and modelling, Carroll and Ray (2021) include a case study of the Yukon that identifies refugia and corridors within the Dawson planning region. In the BEACONS' work highlighted above under "Adaptive Management", we employed a suite of climate change metrics when designing ecological benchmarks including refugia potential.

Recommendations

- To avoid lost opportunity, explicitly identify refugia and corridors in the Plan and ideally classify as SMA I. Given the uncertainty of climate change, monitor the effectiveness of refugia and corridors and be prepared to shift these areas or establish additional areas as required.
- Given the exaggerated effect of climate change in the north, plan for climate change resilience at the full extent of the planning region as well as within individual landscape management units. While developing the plan, take note of the Dawson region's potential contribution to overall climate change resilience in the north.

Thank you for your time. If you have any questions, please do not hesitate to ask. I can be reached at the contact information provided below.

Sincerely,

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¹ <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/cobi.13531>

² <https://onlinelibrary.wiley.com/doi/10.1111/gcb.15645>