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Climate Change and Impacts to Adventure Tourism on the Tatshenshini-Alsek River

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Climate Change and Impacts to Adventure Tourism on the Tatshenshini-Alsek River (Presentation 20 minutes)

Introduction

Impacts of climate change on terrestrial and marine systems are unprecedented. Bell weathers of climate change include, for example, rising sea levels, higher sustained temperatures, and unpredictable extreme weather events. Tourism scholars have actively explored the various impacts of climate change across a range of dimensions with significant focus on either the role of tourism in contributing to climate change or the impacts to tourism due to climate change (Fang, Yin, Wu, 2018). This paper explores how river-based adventure tourism on the Tatshenshini-Alsek River located in British Columbia, Yukon, and Alaska will be impacted by climate driven events. This research is preliminary and exploratory in nature having been impacted by the Covid pandemic.

Literature/Background

Northern Canada is impacted by climate change even more so than lower latitudes given complicated feedback mechanisms with respect to ocean-atmospheric systems (IPCC, 2007). Evidence of ecological climate driven changes in the Tatshenshini-Alsek river watershed are significant. A lesser known consequence of climate change is 'river-piracy' - the diversion of head waters from one drainage system to another (Shugar, Clague, et al., 2017). The first documented case of 'river-piracy' in Canada due to climate change occurred with the Kaskawulsh Glacier located in Kluane National Park in the Yukon Territory. In this example, as the glacier retreated, glacial melt water was diverted from the northerly flowing Simms River into the westerly flowing Kaskawulsh River, a headwater of the Tatshenshini-Alsek river effectively doubling the volume and tripling the flow of the river. Rapid glacial retreat of the Grand Plateau Glacier near the terminus of the Tatshenshini-Alsek river will alter the location of the river's outlet within two decades by up to 20 kilometres (Loso, Larsen, et al. 2021). Collectively, these climate driven events in addition to the ecological impacts will have wide ranging socio-economic consequences especially on tourism outfitters running wilderness river expeditions to this destination region.

The Tatshenshini-Alsek river is a British Columbia Class A Provincial Park, a World UNESCO Heritage Site, and part of the largest protected area in North America as it borders Kluane National Park (Yukon), Glacier Bay National Park (Alaska), Wrangell St. Elias National Park (Alaska), and Glacier Bay National Park Preserve (Alaska). Serving as an important watershed for this vast protected area, the Tatshenshini-Alsek river is known as the Grand Canyon of the North, the home of the Glacial Blue Bear, the highest known density of Bald Eagles in North America, and the only known winter range of the Dall Sheep. It's a transboundary river starting in B.C, moving into the Yukon, meandering back into B.C. before it finally reaches the Pacific Ocean in Alaska's Glacier Bay National Park Preserve. While a unique and vital ecological system, the Tatshenshini-Alsek river is significant socio-economically and culturally. The Champagne and Aishihik First Nations extensive traditional territory is encompassed by this river system and petroglyphs among the rocky islets in the river highlight traditional activities. The community of Dry Bay (Alaska), a seasonal commercial salmon fishery sits at the mouth of the river. Since the 1980's, numerous adventure tourism companies from Canada and the U.S. have offered two-week wilderness river rafting expeditions beginning in the Yukon and taking out at Dry Bay, Alaska. These wilderness rafting trips have been highlighted in numerous travel stories with full features in *Time* and *Life* magazines. National Geographic rates the Tatshenshini-Alsek river as one of the best adventure travel experiences in North America.

Much like Cruikshank's (2005) seminal work *Do Glacier's Listen?* where she explored the *entanglement of natural and cultural histories* in the Wrangell St. Elias ranges of Alaska, this research explores how climate driven changes to the Tatshenshini-Alsek river watershed will impact communities, cultures, and

local economies. In the context of TTRA 2021, impacts to river-based adventure tourism will be highlighted.

Methods

Research is supported by archival research, a literature review, a situational analysis, interviews (on-line and in-person), and field work scheduled for August 2021. An important aspect of this research is the river journey (August 2021) that will document glacial recession (photographs) taking photos in the same sites as a 1906 Canadian exploratory and survey expedition. While it's understood that glacial recession is a normal process, the rate of recession in northern latitudes is unprecedented and attributed to anthropogenic climate change. A situational analysis includes reviewing the level and magnitude of tourism/recreation in the river corridor, the extent and size of the salmon fishery in Dry Bay and exploring the extent to which traditional activities are undertaken by Champagne and Aishihik First Nations in the watershed area. In situ interviews in August 2021 conducted with northern river operators, guides, representatives from tourism associations, residents of Dry Bay, Alaska, and members of the Champagne and Aishihik First Nations will highlight experience of climate driven change on the Tatshenshini-Alsek river.

Findings/Results

Climate driven changes in the Tatshenshini-Alsek river watershed are highlighted through archival and literature-based research. For example, archived photos from a trans-boundary 1906 expedition in addition to journals by the first European (Edward Glave) to descend the river system in 1890 describe the river. These photos and journal accounts highlight the extent of glaciation in the region and some photos depict glaciers extending across the river system. Glave's journal highlights a story shared by a Tlingit Chief describing the 'tunnel of death' – a hole through one glacier where the river passed. The river was an active trade route for coastal and interior First Nation communities.

In 2016, pilots flying over the Kaskawulsh Glacier informed a geomorphologist that the Kaskawulsh River was flooding tripling the rate of flow and more than doubling the volume of water going into the Tatshenshini-Alsek river watershed (Shugar, Clague, et al., 2017). Impacts on the river were immediate. Sections of the river, once safe to travel, were no longer runnable due to increased size of rapids. In some instances, river rafting operators requested the assistance of helicopters to ferry guests to safer waters. In more recent research, geologists determined that the rate of melt on the Grand Plateau Glacier that separates the Tatshenshini-Alsek river from the Pacific Ocean is so advanced that the river will enter the Pacific Ocean 20 kilometres south from its present day outlet in the community of Dry Bay, Alaska within two decades (Loso, Larsen, et al. 2021).

Research also highlights peoples' *experience* of climate related changes on this river system. River guides and owner/operators are particularly connected to the river some having been the first commercial raft guides from the mid to late 1980's (including the author). Dry Bay, Alaska, a small seasonal community working the salmon fishery but also involved in supporting the rafting industry struggles with the knowledge that the river outlet will change effectively eliminating their livelihood. What is apparent from initial interviews is the overwhelming sense that these climate driven changes are occurring within a lifetime. That climate change is not an abstract concept that will happen one day but is happening now. Collectively, these impacts are significant and will determine whether adventure based tourism on this river system will be viable in the future.

Conclusion

Few studies exist that document the direct impacts of climate change on tourism as startlingly as what is occurring on the Tatshenshini-Alsek river. This case study will support ongoing scholarly work in understanding climate driven changes on tourism.

References

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