

Title: Arctic Wildland Fire Ecology Mapping and Monitoring Project (Arctic FIRE)

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Submitted by: Gwich'in Council International

1. Rationale: Wildland Fires are increasing in frequency, intensity, duration and expanding into new areas. The 2016 Fort McMurray Fire in Canada left two dead and caused the evacuation of 88,000 people and incurred \$9.9 billion dollars Canadian in damages. Fires in California in 2018 killed 97 and released 68 million tons of carbon dioxide, equivalent to all electrical production in the state of California for a year. Wildland Fire has become not only more destructive, but it has become a significant driver of carbon release and thus climate change in its own right. Wildland Fire can also release significant amounts of Black Carbon and have profound effects to air quality generally.

Wildland Fire has had significant impacts on other northern States as well. The 2018 summer season saw unprecedented wildland fire activity in Sweden, the disaster led to calls for aid from European partners, additionally there were fires in Greenland and Chukotka. Russia and the United States have both seen increased fire activity in the north with significant taiga and tundra burns becoming increasingly more common over the last two decades. Additionally, we need to have a greater understanding about the long term impacts of Wildland Fire on northern ecologies particularly with its effect on climate change drivers such as carbon and methane release in the post-fire environment, and its impacts on permafrost and soil stabilization, in order to improve modeling in the future.

Additionally Wildland Fire can have profound effects on indigenous communities, harvest of traditional foods, transportation, and sustainability. Gwich'in communities have been profoundly impacted by Wildland Fire, having more acreage burn in their traditional homelands than in any other region of North America in the last 20 years.

Migrating caribou, and other migratory species are affected by Wildland Fire, and there are biodiversity concerns where fire meets critical terrestrial habitats, and that interface needs to be better understood.

It is important to understand the changing nature of Fire ecology and its effects on the Arctic by gathering data on areas affected via pertinent studies that can benefit by circumpolar partnerships, by mapping fire effected areas annually across the circumpolar north, by sharing the latest information via an online annual Arctic Fire Monitoring journal, by researching with Indigenous peoples traditional and indigenous knowledge related to forest management and fire ecology in the north, to better understand the impacts to health in the north that are driven by wildland fire, and lastly to have a more firm understanding of the changing nature of fire ecology and how it may effect climate in diverse ecological regimes and eco-sheds.

2. Objective: This project aims to improve the understanding of fire ecology, the impacts in Arctic States and to communities represented by the Permanent Participants, and to reduce the threat of catastrophic wildland fire. The project will seek to promote the conservation and sustainable use of Arctic flora and fauna by mapping annual acreage burned, and providing an annual digital Arctic Fire Monitoring Journal that includes relevant Arctic fire ecology and fire-related Indigenous Knowledge research, and to evaluate the impacts of wildland fires on Arctic ecosystems, air quality, and climate change.

3. Study Area: Participating States, additionally States and Permanent Participants will define the mapping areas, observer countries as appropriate.

4. Project Design: Generating map and data products to inform decision making, develop best practices for Arctic fire ecology and forest management for carbon sequestration, analysis and coordination of wildland fire activities, and an annual Circumpolar Arctic Fire Map and Monitoring Journal which will include relevant Arctic fire ecology and fire-related Traditional and Local Knowledge research to evaluate the impacts of wildland fires on Arctic ecosystems, air quality, and climate change. Coordination and documentation of indigenous practices regarding fire management and ecology as a possible best practice and possible carbon sequestration measure.

5. Relevance to Indigenous Peoples: mapping of impacts to traditional lands, flora and fauna, better understanding by nation states of Indigenous practices related to fire ecology and management. Co-production of knowledge.

6. Traditional and Local Knowledge (TLK): Co-production of knowledge, documentation, better understanding of the effects of Fire Ecology on northern communities, fire management practices of Indigenous peoples.

7. Other Related Projects: EPPR WG project on coordination of Wildland Firefighting Resources and best practices on the circumpolar level.

8. Schedule

- Feb 6: CAFF Biennial - release project proposal draft 1
- April 9: Project proposal draft 2 circulated for Board approval
- April 23: Project proposal approved
- May-August: Project Steering Committee formed and work initiated
- September CAFF meeting: Status and update on project

9. Anticipated Outputs: Annual map of the circumpolar north and areas burned in State geographic units in an Annual Circumpolar Arctic Fire Map and Monitoring Journal inclusive of relevant fire ecology research from member States.

10. Application of Results: Greater understanding of mitigation efforts, of fire ecology and best practices, as well as a defined mapping and monitoring area for Wildland Fire for comparative research.

12. Literature Cited: N/A

13. Personnel: The CAFF WG Steering Committee would be ultimately responsible for coordinating this effort along with the CAFF Secretariat.