Windfall Films Detailed Project Description

Windfall Films is proposing to spend two weeks, from July 1-15th, 2018, on Ellesmere Island. The primary goal of the project is to film the rocks and fossils of at least two different fossil sites in this location. The team will be comprised of professional researchers and filmmakers, including vertebrate palaeontologist, Jaelyn Eberle (a long-time Canadian Arctic researcher), and paleobotanist Kirk Johnson, as well as six members from Windfall Films. Additionally, an experienced Expedition Leader and Inuit Senior Guide from Arctic Kingdom, based in Iqaluit, NU, will participate on the film expedition. Arctic Kingdom, which has 20 years of experience working in Nunavut and other parts of the Arctic, will handle the transportation to and from the field localities, as well as all other logistics, including safety, risk management, guidance and regional knowledge, camping equipment, water and food resources and wildlife monitoring.

The early Eocene Epoch (ca. 50 – 55 million years ago) was a period of uniquely warm polar environments. Canada's Arctic, including Ellesmere Island, was blanketed by rainforests inhabited by alligators, turtles, and a range of mammals including primates and tapirs. This unique biota reflects a greenhouse world, offering a climatic and ecologic deep time analog of a mild ice-free Arctic that may be our best means to predict what is in store for the future Arctic as climate continues to change. A film team from NOVA (an award-winning documentary series through the Public Broadcasting Service or PBS) and the two paleontologists – Jaelyn Eberle and Kirk Johnson – are proposing to visit and film at some of the Eocene fossil forest sites on Ellesmere Island for a documentary entitled Polar Extremes. To increase public awareness of polar research, the NOVA documentary will provide viewers from around the world with access to the research happening in polar regions that is focused on past and present-day climate change. The NOVA documentary team will visit both the Arctic and Antarctic to produce their documentary. Specific to the Canadian Arctic, the team would like to spend two weeks this July on Ellesmere Island, visiting and filming fossil localities where ancient tree trunks and fossils of mammals, turtles, and alligators have been studied on past research expeditions by Jaelyn Eberle and her colleagues.

Arctic Kingdom will transport the team via fixed wing twin otter from Resolute Bay, over Grise Fiord (for refueling), to the field sites on central Ellesmere Island. Two personnel from Arctic Kingdom plan to arrive at the first field site on July 1st to set up camp. The film team plus the paleontologists (8 people) will arrive at the first field site on July 3rd and finish filming by July 14, 2018. Arctic Kingdom will pack up and take down the temporary camp by July 15th. All dates are estimates and subject to weather and unforeseen circumstances. All personnel, equipment and food will also be transported by twin otter, including the removal of all equipment and waste and the end of the project. No aircraft fuel will be cached on site. Hiking will be the means of transportation from camp to the filming locations. No vehicles will be transported to the site and the only fuels used will be gasoline to run two small, 2KW generators and Naphtha for running two camping stoves. The camp will consist of small, pup tents, basic cooking equipment, portable generators and basic bathroom facilities.

We propose to be placed by fixed wing aircraft at the following two sites:

- Clinker Airport (N78° 46.7'; W82° 20.7') in the Bay Fiord Fossil Site. Fossil leaves and vertebrates have been recovered for over four decades at localities near Bay Fiord. Eberle last visited the locality in July 2010. Crown Land.

- Strathcona Fiord Fossil Forest (N78º 37' 41"; W82º 51' 35") which preserves a petrified fossil forest in a coal seam in the Eocene-aged Margaret Formation. Vertebrate fossils were recovered from the locality in the 1980s by paleontologist Mary Dawson and in 2010 by Eberle and her field team. Crown Land.

Due to the unpredictability of the weather during the time window we plan to be on Ellesmere (July 1–15), we have identified two alternate field sites for filming, should we not be able to access the Bay Fiord Fossil Site or Strathcona Fiord Fossil Forest. The following two sites are not our priority for filming, and so are unlikely for us to visit, save for an emergency where we cannot film at the preceding two localities:

- Stenkul Fiord, southern Ellesmere Island (77º 21' 41"N., 83º 33' 13"W): Fossil tree stumps, leaves, pollen, and fossil vertebrates have been collected from this site over the decades. Eberle last visited the site in 2002. GF-43 Qikiqtani Inuit Owned Land.

- Irene Bay/Thumb Mountain: (N79º 1.58'; W81º 30.80'). The locality is 18 miles north of Bay Fiord. This is not a locality that Eberle has visited on prior research expeditions but has been recommended as a potentially good site to film. This is the lowest priority of the sites. Crown Land.

The following potential impacts and their mitigation have been identified:

Potential Impact: Destruction of fragile arctic vegetation.
Proposed Mitigation: Camp structure will be kept close together to minimize the overall footprint of the camp.

Potential Impact: Introduction of foreign material.
Proposed Mitigation: All waste generated by the camp, except for grey water, will be packed out.

Potential Impact: wildlife disturbance - terrestrial animals.
Proposed Mitigation: There are no known polar bear denning areas nor caribou calving and migratory grounds in the area surrounding the camp. Arctic Kingdom's human-bear conflict management procedures for base-camp will be implemented. A copy can be provided upon request.

Potential Impact: disturbance of archaeological sites
Proposed Mitigation: An experienced paleontologist will be present always during archaeological site visits and will be responsible for any field collection done, as well as monitoring the film crew always to ensure they do not move, remove or disturb any fossils. Fossils collected are from the surface using hand tools and consequently, there should be little to no disturbance to the ground. A bio of the paleontologist in charge can be provided upon request.

There is considerable evidence from both science and traditional knowledge that shows that the Earth's climate is changing, and perhaps the greatest impact of this climate change is being felt in the Arctic, where temperatures are rising at almost twice the rate of the rest of the world, the ice is disappearing, and animals are changing their migration patterns. The production of a NOVA documentary about the ancient fossil forests on Ellesmere Island as well as the animals and plants that inhabited them will introduce viewers from around the world to a unique 'deep-time laboratory' that helps us to understand the impacts of global warming on Arctic environments. Knowledge of ancient Arctic animals, plants and environments is invaluable to understanding and predicting the impacts of future climate change on

today's Arctic plants and animals. Further, the NOVA documentary will introduce knowledge of Nunavut's ancient plants and animals to viewers around the world. The Polar Extremes film project will have considerable international outreach, including a YouTube series and an extensive interactive learning site (for teachers and students around the world).