

Project Title BBC Perfect Planet - Ahiak Migratory Bird Sanctuary (Karrak Lake) - Arctic Foxes There will be 4 members of crew present on location;•Sarah-Jane Walsh – Field Director•Alain Lusignan – Expedition Leader•Ivo Norenberg – Camera Operator•Tom Crowley - Camera OperatorPerfect Planet is a 5-part wildlife television documentary series, which has been filmed over a 4-year period and is due to air on BBC1 in 2020. Episode 1 focuses on how changes in the distribution of sunlight across the globe drive unique animal behaviours and adaptations. Two of our key sequences will showcase how animals cope with periods of no sunlight and perpetual sunlight. We have already filmed the polar night in Ellesmere Island and now wish to film the Midnight sun in the Ahiak (Queen Maud Gulf) Migratory Bird Sanctuary. This location interests us because there is just a short 5-week window when there is no snow on the ground and it is a race against time for animals to rear their young and get ready for the rapidly approaching winter. Our primary objective will be to film arctic foxes at an active den to document the pups in their first few weeks as they begin to explore their new world beyond their den. An additional part of our filming activities will be to document the large numbers of snow geese that nest around Karrak Lake with the aim to film predation by foxes and or other opportunistic predators such as wolves, wolverines and bears. We would also like to film some scenic landscapes with an unmanned aerial vehicle (drone) and wide shots to showcase the nesting goose colonies. There will be two members of the team at Karrak lake within the Ahiak Migratory Bird Sanctuary from the 15th May – 17th July 2019 and the other two members of crew will be present from the 9th June – 9th July 2019. The crew will be based at a permanent research station which has been in use ever summer since 1991 for migratory bird research. No additional camp or infrastructure will be needed. The crew will arrive when the bird research crew arrives and stay with them until they close camp on the 1st day of the research season and leave as the research station is being closed. This is the only location they will visit with the exception of stopping at Perry River to swap from a helicopter to a twin otter on departure. The crew will use commercial airlines to reach their point of entry and departure in Cambridge Bay, then charter aircraft as detailed below to reach the research station. All charter aircraft from Cambridge Bay is managed by the Polar Continental Shelf Program. These flights will be shared by the other scientific research teams who will also be working out of the research station. The flights are just used for moving people and equipment in and out of the location and not used for filming or scouting for fox den locations. Crew 1 Outbound: Twin Otter from Cambridge Bay to Karrak Lake – 3.5-hour return flight. Return: Helicopter from Karrak Lake to Perry River, then Twin Otter from Perry River to Cambridge Bay. We are using Perry River as a midway stop to save money on helicopter costs. a twin otter is unable to fly in to Karrak Lake due to unsuitable landing conditions. Crew 2 Outbound: Helicopter from Cambridge Bay to Karrak Lake, a twin otter is unable to make the journey this late in the season. Return: Helicopter from Karrak Lake to Cambridge Bay On location crew will travel on foot and in small boats (10ft aluminium with 16 hp engines) owned by the Karrak Lake Research Station to reach the mainland from the station, which is situated on an island. The research station have 3 boats in total which are stored permanently on site. The boats can only be used once the lake melts from around the 10th June and are just used for crossing from the accommodation which is situated on an island to the main land. Karrak Lake has been the subject of an extensive Arctic Fox study over the past 20 years. Due to the knowledgeable research scientist, it is one of the best places in the world to film at an active den with fox cubs. Arctic foxes - We will be following the advice of the scientific experts who will help us locate the best dens for filming. Filming will take place in a camouflaged blind/hide located close to the den location. The crew will also place remotely operated camouflaged cameras to film much closer to the fox dens (less than 10m). This is already being undertaken by scientists at the same location and involves putting the camera down as quickly as possible, ideally

[illegible]

[illegible]

[illegible]

qunngialiutit tikimanahuat June 9-mit July 9-mut 2019-mi. Qunngialiutit qauyihaivilluami havagahuat atuqtauhimaghaaqtumi 1991-mit tingmitjanik qauyihaiyunit. Ahiagut tupiqturahuanngettut ikluqpaliulaittutiklu. Qunngialiutit tikinniaqtut qauyihaiyit tikitpata nayuqlugillu tupiqtuqviat umighiilugu hivullianit upluanit qauyihaqviinit aullaqlutiklu qauyihaqviat umiktaukpat. Hamnatuaq nuna pulaaqniaqhimayaat kihimi nutqarlutiklu Kuukyuami halikaaptamit tingmiarmunngaqlutik aullaqvighaanit. Qanuq aullaarahuat Qunngialiutit aullaarahuat angiyukkut tingmiakkut tikivighaanut aullaqvighaanullu lqaluktuuttiaqmi, talvanngat saataqlutik tingmiaqmik ilittuqhithimayutut ataani talvunga qauyihaqvighainut. Tamangnik saataqhimayait tingmiat lqaluktuuttiaqmit munaqtauyut taapkuninnga Ukiuqtaqtumi Nunaqatigiingnit Aulapkaqtaigut. Tingmiqatiqarniaqtut ikayuqtigiiklutit taapkualu qauyihaiyit havaqatigiit havangniaqhimayullu talvani qauyihaqvianit. Tingmivangniat agyaqtarlugit havaktit ingilrutaitalu havakviinut atuqtaulaittutiklu qunngialiutunit tirigannianik hitiurugitigilugilluuniit. Havaktiit 1 Aullaqtiqviat: Malrulik tingmiaq lqaluktuuttiaqmit Hanningayumut – pingahunik avvaaniklu ikaaqnik tingmiyughat. Utiqlutik: Halikaaptakkut Hanningayumit Kuukyuaqmut, talvanngat malrulikkut Kuukyuaqmit lqaluktuuttiaqmunngaqlutik. Kuukyuaq nutqaqviginahuaqtaqqut akunngani maniktuqpallaaqtailipluta halikaaptat akighainik. Malrulik tingmiaq mittaqtulainmat Hanningayumi milvighaillamut. Havaktiit 2 Aullaqtiqviat: Halikaaptakkut lqaluktuuttiaqmit Hanningayumut, malrulik tingmilainmat talvunga kinguvaqtinmat. Utiqlutik: Halikaaptakkut aullaqlutik Hanningayumit lqaluktuuttiaqmut Havakvianit havaktut aullaqpangniat pihughutik mikiyukkullu qayakkut (10 feet-nik takiyaqtunik 16 hp-nik ingniqutiqlutik) nanminiriyaayut Hanningayumi Qauyihaqvianit ikaarutighait ahiarmut qauyiharvingnit, qikiqtamiittumit. Qauyihaiyit havakviat pingahunik qayalgit naallugit tutquumavaktut qauyihaqvianit. Qainnat atuqtauvaktut tahi q hikuiraangat June 10 haniani ikaarutauvaghutik hiniktarviinit qikiqtamit talvunga ahiarmut. Ilittuqhithit havaanginnit naunaitkutallu Hanningayumut tahi q qauyihaivilluanguvaktut Tirigannianik 20 ukiut naallugit. Ilihimattiaqtumik qauyihaiyiqaghutik, qunngiaghaliuqvutqiktut nuna nunaquyumi tamaat hitiqarami tiriganniat piarainik. Tiriganniat – uqauhiita qauyihaiyit ayuittut naalakpangniaqtaqqut paqittinahuaqluta hitinik qunngaliuqtaghat. Qunngialiupangniat ilitturinnaittumik iiraqturviqarlutik haniani hitiita. Qunngialiutit qunngaliupangniat ilitturinnaittunik piksaliutikkut qunngialiuriamik qanilruanit hitiit (10 meters avatqutaililugu). Taimaa qauyihaiyit havakpaliqtut talvani nayugaanit imaalu piksaliutait qilamiurahuaqhugit ipirarahuaqpagaat, tiriganniat piarait nuitinnatik hitimit kuinginnainnahuaqhutik ilaanilu ihuaqhaqtauvaktughat taapkua patuliit himiqhugit tutquumaviillu aallanguqtiqhugit. Himiqhivighait taapkuninnga pittiarahuaqpangniat kuinginnainnahuaqhutik uqauhiigut qauyihaiyit. Ivayut kanguit – Atauhiq havaariyumayaat taimaa qunngialiuplugit angunahuaqtut kangurnik tiriganiat ahiniklu anngutighanik. Qunngialiupangniat unghiaqtumit taapkualu qunngialiutut upagahuaqtailivangniarait upluta kuinginnautilugit kanguqnut. Qunngialiutut tamatkirahuaqniaqtait piksaliutikkut kanguit nayugait tingmitaqtukkut piksaliutikkut (inuittuq tingmitaqtuq ingilrutik). Taimaa piksaliupagahuat ivalirumik maniinik ahiruqtiqtinnagillu manniit tamangnik kanguit uplunit ivalirumik. Taapkua tingmitaqtut piksaliutit atuqtauvangniat pitquyugumik qauyihaiyinit. Aullaqtitauvangniat mittaqtutitaulutik 100 meters haniani uplunit kanguit tingmipkaqtitauvangniallu aktuqtailiplugit niaquinut upluiniklu qimagahuaaraangamik. Tingmitaqtunik tingmipkaivangniat haniaguqhutik qulauhimaittumik kuinginnainnahuaqhutik. Qauyihaivangniat 100 meters-nik qulaagut kanguit imaalu kuinginnaitkumi kangurnut atpaghivangniat. Tingmitaqtuq tingmitillugu munaqtiqaqpangniat qunngiaqtumik kanguqnik qinngutikkut. Tingmitaqtunik UAV-nik ingilrapkaivangniat tautuktittiyaamik amihuayuita kanguit talvuuna qulvahiktumi tingmivangniat. Iqqakuit Havaktiit nayurahuaqtaat Hanningayumi Qauyihaqvik talvani iqqakuiniqmik parnaiyautilgit; paniumayut iqqakuit ikulattiyauvaktut, niqivaluit iqqakuit hauyauvaktut, atuqtautqilaqtut utiqtitauvaktut lqaluktuuttiaqmut, annakuit hauyauvaktut, kuvvikuillu immat kuviyauvaktut imariktut ahianit Avatinut mihingnautaulaqtut ihuaqhautillu havauhiit Qunngialiutit qunngialiuhimavagait tiriganniat hivuani talvuuna

pitquhiit naluhuiqhimaliqtaait taimaalu ilittuqhiyaamik kuinginnautinik ihumaaluutiniklu. Taapkua amirnaqhiyut anngutighat tautungniarahugiyaqqut taapkuanguyut Tuktuut, Aghait Umingmaillu. Qunngialiulaaruptitku, qunngialiurumayaqqut pitquhiita hapkua anngutighat. Amirnaittumik qunngialiulaarupta kuinginnautihimaittumik anngutighanut qunngialiurahuaqpangniat hivuraaniillutik anuqqimit amirnaittumillu piksaluqlutik. Havauhighat amirnainniqmut anngutighanik paqittinnirumik Amirnaqtunik anngutighanik paqittiniarahugiyut; Amaruq (Canis lupus arctos); Aghaq (Ursus arctos); Qalvik (Gulo gulo); Umingmak (Ovibos moschatus). Tamangnik nunainnaqmi havaktut hiqquutilgiarniat/titirautiqpaluktuniklu hiqquutinik qaryughainiklu, tamangniklu havaktit tigumiaqpangniat agharnut ihilatjutinik. Nunainnaqmi havaktit haatkaalgiaqpangniattaauq iharianaqhikpat atuqtaghainik, havaktinut hivuliqti iniqhimaliqtaat taamna Kaniitian Hiqquutiliqiyit Amirnainniqmut Ilihaqtaghaat, tigumiaqtiuliqhuni Tigumialaaliqtuq Piinnarialiutilu laisiutaanik, Nunallaaqnit katimayut ilaupkaiyullu Hapkua havakviit hivayaqpangniaqtavut January-mi hapkua naunaitkutut numiktitaataaqqata; • Iqaluktuuttiami Anguniaqtit Naniriaqtuqtillu Katimayit • Uqhuqtuumi Anguniaqtit Naniriaqtuqtillu Katimayit • Umingmaktuuq HTO Havakvighaqqut hivikiyaaramik ayurnaqtiaqtuq katimaqatigiyaamik nunallaaqmiut hulilukaaqatigiyaamiklu kihimi tamangnik nunallaat aajjikkutaliuqhimayunik iniqhimayunik havaaghavut naunaitkutainik tuniyauniaqtut qunngiaghat takughauliqqata qunngiarutunik nunaqyuami tamaat. Iqaluktuuttiaqmiinniaqtugut atuqlugit hiniktarviit, niriviit taaksiillu qunngialiutqinut tikitpata hunaqtighaillu qauyihavut havakviat munaqtauvangniat Iqaluktuuttiaqmit. Hivunighami parnaiyautit hapummiyaayunut nunanit Hivunighami parnaiyautaittugut talvani Ahiaqmi Tingmitjat Tikitaqtut Nayugainit hapkua iniqtaukpata. Iniqvighaat aullaarvikput hamunga inirutauniaqtuq qunngialiutqinut tamangnut qunngialiutqait takughauliaqtut qunngiarutinit nungutinnagu ukiuq 2020

Personnel

Personnel on site: 4

Days on site: 64

Total Person days: 256

Operations Phase: from 2019-05-15 to 2019-07-17

$$\Lambda \subset \mathbb{N} \triangleleft \mathbb{N} \xrightarrow{\gamma} \Sigma \triangleleft \mathbb{N}^{\mathbb{N}} \supset \mathbb{C}$$
[illegible]

$\Delta_{\text{CD}}^{\text{f}} \Delta_{\text{CD}}^{\text{f}} \sigma_{\text{L}}^{\text{f}} \Delta_{\text{CD}}^{\text{f}} \Delta_{\text{CD}}^{\text{f}} \sigma_{\text{L}}^{\text{f}} \Delta_{\text{CD}}^{\text{f}} \Delta_{\text{CD}}^{\text{f}} \sigma_{\text{L}}^{\text{f}}$

ᓄᓇᓕᓯᓴᖅ	ᐊᑏᓃ	ᓂᐅᓴᐊᖅᑎᑏᓯᓴᖅ	ᖅᓴᓴᐅ ᐅᓴᖅᑎᓕᐅᓇᐅᓴᐊᖅᓯᓴᓂᖅ
ᐃᖅᓴᓴᐅᓴᐊᓴᖅ	cambay@kitikmeothto.ca	Ekaluktutiak Hunters & Trappers Organization	2019-01-15
ᐅᖅᓴᓯᓴᐅᓴᖅ	gjjoa@kitikmeothto.ca	Hunters' and Trappers' Organization	2019-01-15
ᐃᖅᓴᓴᐅᓴᐊᓴᖅ	Perter Kapolak chimo@kitikmeothto.ca	Umingmaktok HTO	2019-01-15

[illegible]

$a^b r^c \Delta$ $\Lambda c_n d_n^e \Delta D \sigma d^{fb} J^c$ $n n f^g \omega^f:$

Kitikmeot

[illegible]

ᐱᕋᓚᑦᑐᒃᔪᑦ ᐅᐸᑲᑯᑦ ᑭᓂᑫᑎᑉ ᑭᓂᑫᑎᑉ ᐵᑏᑶᑦᑭᑆᑭᑎᑉ ᐵᓄᑰᑦ	ᖁᓇᐳᑦᑐᑦᑭᑎᑉ ᑭᓂᑫᑎᑉ ᐵᑏᑶᑦᑭᑆᑭᑎᑉ ᐵᓄᑰᑦ	ᐱᕋᓚᑦᑐᒃᔪᑦ	ᐳᑯᑦ ᑐᓴᑯᑦ/ ᑐᑲᑯᑦᑐᑯᑎᑉᑭᓂᑫᑎᑉ	ᑭᓂᑫᑎᑉ
bacg dldcnpc	APPLICATION FOR A National Wildlife Area permit or A Migratory Bird Sanctuary Permit	Applied, Decision Pending		
bacg Δnfcydcnpd	Special Flight Operations Certificate - to use unmanned air vehicle (UAV) for filming	Not Yet Applied		
dpl	Nunavut Planning Commission	Applied, Decision Pending		

Project transportation types

Transportation Type	How to Access the Site	Length of Use
Air	Twin Otter and 206 LR Helicopter - transport from Cambridge Bay to Karrak lake	
Water	Boat 10ft aluminium with 16 hp engines - permanent camp is on an island these boats are used to gain access to main land on a daily basis	
Land	Foot	

Project accomodation types

Permanent Camp

◁ ୨୦୧୬,

◀▷↳◀⁹⁶▷⁹⁶

Λ⁹δ^c 4⁹π²4⁹ 4⁹π²4⁹σ²δ²4⁹ Δ^cπ²π²π²π² Δ²π²Δ^c, π²π²π²π², π²π²π²π², π²π²π²π²

ᐃᓕᑦᑲᓚᓂ ᐱᓄᓪ ᐋᑐᒐᐅᓂᐋᓖᑐᓖ ᓖᓄᐃᓪᑐᓂᓴ	ᓖᓄᓪᑭᐅᓇᓪ	ᐋᓖᑦᑲᓂᓖᑦ - >ᓖᓂᓖᑦ	ᑭᓴᑭᓪ ᐋᑐᒐᐅᓂᐋᓖᓪ
Aircraft	1	twin otter	The crew will use commercial airlines to reach their point of entry and departure in Cambridge Bay, then charter aircraft as detailed below to reach the research station. All charter aircraft from Cambridge Bay is managed by the Polar Continental Shelf Program. These flights will be shared by the other scientific research teams who will also be working out of the research station. The flights are just used for moving people and equipment in and out of the location and not used for filming .
Boat	1	10ft	On location crew will travel on foot and in small boats (10ft aluminium with 16 hp engines) owned by the Karrak Lake Research Station to reach the mainland from the station, which is situated on an island. The research station have 3 boats in total which are stored permanently on site. The boats can only be used once the lake melts from around the 10th June and are just used for crossing from the accommodation which is situated on an island to the main land.
DJI Inspire Drone	1	60cm	Aerial Filming
Camera equipment	1	various	Filming

በበየቀኑም የፖሊስ ልሳን ማረጋገጫ ለማረጋገጥ

የሰው ሀይል የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ
none	fuel	0	0	0	Liters	We will be guest of the Karrak Lake Research Station we will be using nothing additional to what they already have approved through their own NIRB application
none	hazardous	0	0	0	Liters	We will be guest of the Karrak Lake Research Station we will be using nothing additional to what they already have approved through their own NIRB application

ለፖሊስ ልሳን ማረጋገጫ

የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ	የፖሊስ ልሳን ማረጋገጫ የፖሊስ ልሳን ማረጋገጫ
0	We will be guest of the Karrak Lake Research Station we will be using nothing additional to what they already have approved - Water License 3BC-KAR1316	

$\triangleleft^b C d^c$
$$\Delta^b C d_{\sigma} \Delta^{\epsilon} \sigma^{\epsilon b}$$
[illegible][illegible]

The only species at risk that we expect to encounter are Rangifer tarandus, Ursus arctos & Gulo gulo. We would also like to opportunistically film these species natural behaviours. If any species at risk are sighted the crew will be sure to establish their location in proximity to where they are currently situated and their direction of travel. If it is safe to do so without disturbing the animal the crew will position themselves downwind and at a safe distance with the camera, we would expect this would be somewhere between 30-100m from the animals. However, if they seem calm and not disturbed the crew may approach closer if it is safe to do so. Whilst travelling around generally the crew will avoid disturbing any nesting birds, particularly those listed above, the crew will be made aware of all species at risk present. Disturbance of arctic fox den sites - Team will be following the advice of the scientific experts who will help us locate the best dens for filming. The camera operators have worked with arctic foxes before and are familiar with their behavior and how to identify signs of disturbance and or stress. The crew will be working in a hide and will start at a distance of 100m for the den site and progressively move closer should there be no signs of disturbance, the aim would be to reach a distance of around 30m from the den location Disturbance of nesting Ross's and Lesser snow geese - The crew will follow the instruction of research staff regarding moving through, approaching and filming nesting geese. Filming will be conducted at a distance and the crew will not approach the nest at a distance deemed to cause disturbance to the geese. The crew will attempt to film the goose colony using a UAV. This will be done after egg laying and prior to hatching and fledging when all geese will be on the ground and on the nest. These flights will only be done at the strict discretion of the research scientists.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION 11: Municipal Development

[illegible]

ᐱᓪᑦ ᐃᑦᐅᑦ ᐆᑦᐅᑦᐅᑦᐅᑦᐅᑦ: ᐅᐱᑲᑦᐅᑦᐅᑦ

[illegible]

Miscellaneous Project Information

உதா. $\Delta^{\text{5b}} \text{CD} \sigma^{\text{5f}} \text{C}$ $\text{d}^{\text{b}} \text{J}^{\text{5b}} \text{CD} \text{PL} \text{L}^{\text{c}}$ $\text{5b} \Delta^{\text{c}} \text{J} \sigma^{\text{5f}} \text{C}$ $\text{C} \text{L} \text{D} \text{f}^{\text{b}} \text{J} \text{L}^{\text{5b}} \text{CD} \sigma \text{d}^{\text{f}} \sigma^{\text{5f}} \text{C}$

Cumulative Effects

Impacts

$\omega \rightarrow \omega \Delta^{\epsilon_b} C D \sigma^{-\epsilon_r} C$ $A \rho \cap \Gamma D C \dot{\sigma}^C D^C$ $A^b D^{\epsilon_b} C D \rho L \downarrow^C$

[illegible]
$$(P = \langle b \rangle \Delta_P \cap \langle a \rangle^\perp)^\perp, N = \langle b \rangle \Delta_P' \perp \langle D \rangle \langle a \rangle^\perp \perp \langle \langle D \rangle' \rangle^\perp \langle D \rangle \langle a \rangle^\perp)^\perp, M = \langle b \rangle \Delta_P' \perp \langle D \rangle \langle a \rangle^\perp \perp \langle \langle D \rangle' \rangle^\perp \langle D \rangle \langle a \rangle^\perp)^\perp, U = \langle b \rangle \Delta_P \perp \langle a \rangle^\perp)^\perp)$$

1	polygon	New project geometry
2	point	Karrak Lake Research Station

- | | | |
|---|---------|------------------------------|
| 1 | polygon | New project geometry |
| 2 | point | Karrak Lake Research Station |

