NIRB Application for Screening #125973

ISOLATED: Impact of Stability On pLasticity and AdapTation potEntial of Diatoms

Application Type:	New
Project Type:	Scientific Research
Application Date:	6/6/2024 2:38:20 AM
Period of operation:	from 2024-08-23 to 2024-09-13
Project Proponent:	Giannina SI Hattich Vesilinnantie 5 Turku, South-West-Finland 20500 Finland Phone Number:: +358406762240, Fax Number::

DETAILS

Non-technical project proposal description

English: The project, titled ISOLATED: Impact of Stability On pLasticity and AdapTation potEntial of Diatoms, is led by Dr. Giannina Hattich, a Postdoctoral Researcher at the University of Turku. This research explores how Arctic phytoplankton species, particularly diatoms, respond to changing environmental conditions. By examining the plasticity and adaptation potential of diatoms, the study aims to answer critical questions regarding their ability to thrive in the face of climate change. The study is crucial because diatoms are fundamental components of Arctic food webs, sustaining diverse marine life and influencing nutrient cycling. Furthermore, the Arctic is experiencing climate change at an alarming rate, with profound effects on its delicate ecosystems, necessitating a deeper understanding of how organisms like diatoms adapt to these rapid environmental shifts. Fieldwork will be conducted along the coasts of Greenland and Canada during the summer months of 2024, involving the collection of water samples and isolating diatom species. The research will have significant implications for understanding Arctic ecosystem dynamics and the broader impacts of climate change on marine life. Data generated from the research will be carefully stored, managed, and made publicly available to ensure its accessibility for future studies. It's crucial to mention that the sampling duration is short, with the bulk of the work happening upon returning to my home university. However, should this research offer an opportunity for collaboration and mutual learning, I would be immensely grateful. I am eager to share the results with the community and engage in knowledge exchange.

French: Des travaux de terrain seront menés le long des côtes du Groenland et du Canada pendant les mois d'été de 2024, impliquant la collecte d'échantillons d'eau et l'isolement des espèces de diatomées. La recherche aura des répercussions importantes sur la compréhension de la dynamique des écosystèmes arctiques et des répercussions plus larges des changements climatiques sur la vie marine. Les données générées par la recherche seront soigneusement stockées, gérées et mises à la disposition du public pour assurer leur accessibilité pour les études futures. Il est crucial de mentionner que la durée de l'échantillonnage est courte, la majeure partie du travail ayant lieu à mon retour à mon université d'origine. Cependant, si cette recherche offre une opportunité de collaboration et d'apprentissage mutuel, j'en serais immensément reconnaissant. Je suis impatient de partager les résultats avec la communauté et de m'engager dans l'échange de connaissances. Des travaux de terrain seront menés le long des côtes du Groenland et du Canada pendant les mois d'été de 2024, impliquant la collecte d'échantillons d'eau et l'isolement des espèces de diatomées. La recherche aura des répercussions importantes sur la compréhension de la dynamique des écosystèmes arctiques et des répercussions plus larges des changements climatiques sur la vie marine. Les données générées par la recherche seront soigneusement stockées, gérées et mises à la disposition du public pour assurer leur accessibilité pour les études futures. Il est crucial de mentionner que la durée de l'échantillonnage est courte, la majeure partie du travail ayant lieu à mon retour à mon université d'origine. Cependant, si cette recherche offre une opportunité de collaboration et d'apprentissage mutuel, j'en serais immensément reconnaissant. Je suis impatient de partager les résultats avec la communauté et de m'engager dans l'échange de connaissances.

Inuktitut: ᐱᓕᕆᐊᖅ, ᐃᓱᒫᓘᑎᖃᖅᑐᖅ ᐃᒪᕐᒥᐅᑕᓕᕆᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᓂᒃ ᓱᖏᐅᑎᕙᓪᓕᐊᑐᐃᓐᓇᕆᐊᖃᕐᓂᕐᒥᒃ, ᐊᐅᓚᑕᐅᔪᖅ ᓘᒃᑖᖅ ᔨᐊᓂᓇ Hᐋᑎᔅ−ᒧᑦ, ᖃᐅᔨᓴᖅᑎᕐᔪᐊᖅ ᓯᓚᑦᑐᖅᓴᕐᕕᐅᔪᐊᕐᒥ ᑐᕼᐸ ᓯᓚᑦᑐᖅᓴᕐᕕᐅᔪᐊᖓᓂ. ᑖᓐᓇ ᖃᐅᔨᓴᕐᓂᖅ ᖃᐅᔨᓇᓱᐊᖅᑐᖅ ᖃᓄᖅ ᐅᑭᐅᖅᑕᖅᑐᒥᑦ ᐱᕈᖅᑐᐃᑦ ᐊᔾᔨᒌᖕᖏᐊᕐᔪᓐᓂᖕᒋᑦ, ᐱᓗᐊᖅᑐᒥᑦ ᖃᐅᓯᖅᑐᑦ, ᑭᐅᔪᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᔪᒧᑦ ᐊᕙᑎᐅᑉ ᖃᓄᐃᓐᓂᖓᓄᑦ. ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᐊᐅᒃᑕᔫᓂᒃ ᐊᒻᒪ ᓱᖏᐅᓴᓂᕐᒧᑦ ᐱᑕᖃᑐᐃᓐᓇᕆᐊᓕᖕᓂᒃ, ᖃᐅᔨᓴᕐᓂᖅ ᑐᕌᖃᖅᐳᖅ ᑭᐅᔾᔪᑕᐅᔪᒪᓪᓗᓂ ᐱᕐᔪᐊᓂᒃ ᐊᐱᖅᑯᑎᓂᒃ ᐱᔾᔪᑎᓕᖕᓂᒃ ᐱᔪᓐᓇᕐᓂᕆᔭᖕᒋᓐᓂᒃ ᓯᓚ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᔪᒧᑦ. ᑕᒪᓐᓇ ᖃᐅᔨᓴᕐᓂᖅ ᐱᒻᒪᕆᐊᓘᕗᖅ ᐃᒪᐃᓐᓂᖓᓄᑦ, ᑕᒪᒃᑯᐊ ᓂᕿᑦ ᐱᓪᓗᐊᑕᐅᓂᖕᒋᓐᓄᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᓂᕿᓄᑦ ᐃᑭᐊᖅᑭᕖᖕᓄᑦ, ᑲᔪᓯᑦᑎᓂᐊᕐᓗᓂ ᐊᔾᔨᒌᙱᑦᑐᓂᒃ ᐃᒪᕐᒥᐅᑕᓂᒃ ᐃᓅᓯᖃᖅᐸᖕᓂᕐᒥᒃ ᐊᑐᖅᑎᑦᑎᕙᖕᓂᕐᒥᓪᓗ ᓂᕿᑦᑎᐊᕙᖕᓂᒃ ᐊᑐᖅᐸᖕᓂᕐᒥᒃ. ᐊᒻᒪ ᓱᓕ, ᐅᑭᐅᖅᑕᖅᑐᒥᐅᑦ ᓯᓚᐅᑉ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓂᖓᓂᒃ ᐊᑐᖃᑦᑕᖅᐳᑦ, ᐊᒃᑐᐃᕐᔪᐊᖅᓱᑎᒃ ᐆᒪᔪᑦ ᓇᔪᖓᕆᓐᓂᒃ, ᑐᑭᓯᐅᒪᓂᖅᓴᐅᔭᕆᐊᖃᓕᖅᓱᑎᒃ ᖃᓄᖅ ᐆᒪᔪᑦ ᐆᒪᔪᑦ ᓲᕐᓗ ᐆᒪᔪᑦ ᐆᒪᔪᑦ ᓱᖏᐅᑎᓲᖑᒪᖕᒑᑕ ᐊᕙᑎᐹᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᑎᓪᓗᒍ. ᓯᓚᒥ ᐱᓕᕆᓂᕆᔭᐅᔪᖅ ᐱᓕᕆᐊᖑᓂᐊᖅᐳᖅ ᓯᒡᔭᕆᓇ ᑲᓛᓪᓖᑦ ᓄᓈᓐᓂ ᑲᓇᑕᒥᓗ ᐊᐅᔭᐅᓕᖅᐸᑦ 2024−ᒥ, ᐃᓚᖃᕐᓗᓂ ᑲᑎᖅᓱᐃᓂᕐᒥᒃ ᐃᒪᕐᒥᒃ ᖃᐅᔨᓴᒐᒃᓴᓂᒃ ᐅᐸᒃᑕᐅᑦᑕᐃᓕᒪᑎᑦᑎᓂᕐᒥᓪᓗ ᓂᕐᔪᑎᓂᙳᖅᑐᓂᒃ. ᖃᐅᔨᓴᕐᓂᖅ ᐊᑦᑐᐃᓂᖃᓪᓚᕆᓐᓂᐊᖅᑐᖅ ᑐᑭᓯᐅᒪᓂᕐᒥᑦ ᐅᑭᐅᖅᑕᖅᑐᒥᑦ ᐆᒪᔪᓐᓇᖅᑐᓕᒫᑦ ᓇᔪᖓᕆᓐᓂᑦ ᐊᒻᒪ ᐊᑦᑐᐃᓂᕆᕙᑦᑕᕆᓐᓂᑦ ᓯᓚᐅᑉ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓂᖓᓂᑦ ᐃᒪᕐᒥᐅᑕᐃᑦ ᐃᓅᓯᕆᓐᓂᑦ. ᑎᑎᕋᖅᓯᒪᔪᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᑯᐃᑦ ᖃᐅᔨᓴᕐᓂᐅᔪᒥᑦ ᑐᖅᑯᖅᑕᐅᑦᑎᐊᕐᓂᐊᖅᑐᑦ, ᐊᐅᓚᑕᐅᑦᑎᐊᕐᓗᑎᑦ, ᐊᒻᒪ ᐃᓄᓐᓄᑦ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᓗᑎ ᐊᑐᐃᓐᓇᐅᓗᑎ ᓯᕗᓂᕐᒥᑦ ᖃᐅᔨᓴᕐᓂᐅᔪᓂᑦ. ᐱᒻᒪᕆᐅᕗᖅ ᐅᖃᐅᓯᕆᓗᒍ ᖃᐅᔨᓴᒐᒃᓴᐃᑦ ᐊᑯᓂᐅᓂᖕᒋᑦ ᓇᐃᑦᑑᒪᑕ, ᐱᓕᕆᐊᖑᓪᓗᐊᑕᖅᑐᑦ ᐅᑎᖅᑎᓪᓗᕆᑦ ᐅᕙᖓ ᓄᓇᖓᓄᑦ ᓯᓚᑦᑐᓴᕐᕕᐊᕐᔪᐊᕐᒧᑦ.

ᑭᓯᐊᓂ, ᑖᓐᓇ ᖃᐅᔨᓴᕐᓂᖅ ᐱᕕᖃᖅᑎᑦᑎᒃᐸᑦ ᐱᓕᕆᖃᑎᒌᖕᓂᕐᒥᒃ ᑕᒪᐃᓐᓄᑦᑐ ᐃᓕᑦᑎᓂᕐᒥᒃ, ᖁᔭᓕᕐᔪᐊᕿᔭᖅᑐᖓ. ᑐᓴᖅᑎᑦᑎᔪᒪᑦᑎᐊᖅᐳᖓ ᖃᓄᐃᓕᖓᓕᕐᓂᕆᔭᐅᔪᓂᒃ ᓄᓇᓕᖕᓄᑦ ᐃᓚᐅᕙᒃᓗᖓᓄ ᖃᐅᔨᒪᔭᐅᔪᓂᒃ ᑕᐅᖅᓯᖃᑎᖃᕐᓂᕐᒥᒃ.

Inuinnaqtun: Tamna havaaqhaq, atia ISOLATED: Ayungnautiqaqtunik Stability On plasticitynik atugiaqaqtuniklu Diatomsnik, hivuliqtigivakhimayuq tapfuminga Dr. Giannina Hattich, Postdoctoral Researcher talvani University of Turkumi. Una ihivriudjutikhaq qiniqhianiaqtuq qanuq Ukiuktaqtuniitun iqaiyaliqidjutikhangit huradjat, tapkuningaluaq diatomsnik, kiuyaangat allanguqtiqhimaaqtunik avatiliqinikkut atuqtakharnik. Ihivriuqhugit palastiit uvalu hungiutidjutait piyauniagungnaqhiyut, naunaiyautit tugaaqhimayut kiulugit akhuuqnaqtut apiqhuutit mikhaagun inmi piyaaqnigit inuuyaangani hilap aalanguqtirniranun. Tahvuna ihiviukhinikmun naunaiyainikmun naunaitkutakhanik ipiknakpiaqtuq kauhimayauvaktunik pilingnik diatoms nik havakhikhimayunik kanukgitakhainiklu ilanganik Tunungani nirgitinik nirgitinik, piyukhanik alauyunik taryumiutanik immanikmun nipalukpaliavaktuniklu. Taimaalu, Ukiuqtaqtumi atuliqtut hilap aalanguqtirniranun ququungnikkut amigaitilaangit, anginirhakkut hulaqutit ahiguqtirnirmun avatiinun, ihariagiyauyut akhut kangiqhimanirmun qanuq uvaluuniin timiit imaa diatoms hungiutiyut hapkununga qilamik avatiinun aalanguqtirnirmun. Maniqami havaktut aulapkaqtauniaqtut hinaani Kalaalliit Uvalu Kanatap auyami tatqiqhiutini 2024mi, ilauyut katitiqhimayut imakkut uuktuutit uvalu avaliingaaqtitaunikkut huradjat. Ihivriurutit angiyumik pidjutiqangniaqtut kangiqhiyaangini Ukiuqtaqtumi avatingit anginiit uvalu anginirhakkut hulaqutit hilap aalanguqtirniranun tariumi inuuhiinun. Naunaipkutit pihimayut ilituqhainit qayagitiaqniaqut tutquqhimalutik, munariyaulutik, inukniklu qahakhiyaagani atulaaliriagani hivunikhami ilituqhautinik. Akhurnaqtuq uqagianganik taima ihivriudjutikharnik aulaligumi, taima amigaitunik havaanganik aulaliqtun utiligumik aihimavimnun iliharvimnun. Kihimi, una naunaiyainiq tuniyukhaq pivikhaqautikhamik havaqatigiikniqmut atauttikkutlu ayuirhaqniq, quviagikpiaqtunga. Uqautigiyumayatka qanuginiit nunallaanun uvalu ilaulutik ilihimanikkut himautinik.

Personnel

Personnel on site: 2

Days on site: 21

Total Person days: 42

Operations Phase: from 2024-08-23 to 2024-09-13

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
area for sampling site 1 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity if possible
area for sampling site 2 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible
area for sampling site 3 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible
area for sampling site 4 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible
area for sampling site 5 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible
area for sampling site 6 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible
area for sampling site 7 (actual sampling area very small)	Sampling sites	Marine	NA	NA	We will not sample in protected areas and avoid waters in its vicinity and close to communities if possible

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted

Naujaat	Natan Obed	ITK President	2024-05-24

Authorizations

Indicate the areas in which the project is located:

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Fisheries and Oceans Canada	We have applied for a permit to conduct scientific research in marine habitats from DFO	Applied, Decision Pending		
Nunavut Research Institute	We have applied for a permit to conduct scientific research in Nunavut from NRI	Applied, Decision Pending		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Water	: It's crucial to emphasize that this research is conducted under the operational permits of LEX-NG, with access , safety and fuel use falling under their purview. For further inquiries regarding permits and safety measures, please direct your questions to Ashley Knight and the ESC (Expedition Science Committee) at Lindblad Expeditions, located at 2505 2nd Ave, Suite 300, Seattle, WA 9810, or email science@expeditions.com. This arrangement also means that we have limited information on the precise travel route and no control over it. Therefore, we have requested access to wide-ranging areas (see attachment below) to ensure the flexibility needed for sampling wherever the expedition stops, thereby promising the best possible outcome from our extensive efforts. The actual sampling area is constrained to a maximum of 20m², and the sampling of phytoplankton is a non-destructive sampling practice.	

Project accomodation types

Other,

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Plankton net	1	30x30x100cm	The net is used to concentrate the abundance of phytoplankton from sea water.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Information is not available						

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Plankton net and bottles	Seawater in Dundas harbour, Devon island, Beechy island, Radstock bay, Philpots, Grise fjord, Makinson inlet, Bellot Strait, Pond inlet, Buchan Gulf, Eastern Baffin Island, Ellesmere Island

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Information is not available				

Environmental Impacts:

We expect the environmental impact from the collectin of 12 L of sea water to be minimal. Transportation to the sampling area (by zodiac) might be the biggest dirturbance of sampling and we plan to drive slow and carful to not dirturbe wildlife. Originally, we planned a horizontal tow with a phytoplankton net, but to reduce time spent on the zodiac, we have changed the protocol to a vertical tow. We will conduct the water sampling outside national wildlife areas. If we have to sample close to these areas, we will keep impact and disturbance as small as possible.

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

We are conducting this research as Visiting Researchers on the Lindblad Expeditions-National Geographic voyage "High Arctic Archipelago: Canada and Greenland" aboard the National Geographic Endurance. We are part of a commercial expedition and thus have no influence over firearm permits and emergency beacons, VHF radios and satellites phones. Personnel of the expedition equipped with firearms (holding permits) and emergency gear needed will join our sampling efforts at all times. Overall, it is important to point out that this research will be conducted under the operational permits of LEX-NG and access, as well as safety (especially in terms of polar bears , firearms, fuel use and communication) falls under their responsibility (for further questions please contact Ashley Knight and the ESC, Lindblad Expeditions, Fleet Science/Expedition Science Committee, 2505 2nd Ave, Suite 300 Seattle, WA. 9810, science@expeditions.com).

SECTION H2: Disposal At Sea

We will not dispose anything at sea. We are taking all sampling equipment back home at the end of the sampling

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

Arctic is experiencing climate change at an alarming rate

Description of Existing Environment: Biological Environment

Marine diatoms are fundamental components of marine food webs, sustaining diverse marine life and influencing nutrient cycling.

Description of Existing Environment: Socio-economic Environment

Indirectly - it is important to understand the potential of the basis of the marine food web to adapt to global warming.

Miscellaneous Project Information

We are part of a commercial expedition and thus have no influence over firearm permits and emergency beacons, VHF radios and satellites phones. Personnel of the expedition equipped with firearms (holding permits) and emergency gear needed will join our sampling efforts at all times. Overall, it is important to point out that this research will be conducted under the operational permits of LEX-NG and access, as well as safety (especially in terms of polar bears , firearms, fuel use and communication) falls under their responsibility (for further questions please contact Ashley Knight and the ESC, Lindblad Expeditions, Fleet Science/Expedition Science Committee, 2505 2nd Ave, Suite 300 Seattle, WA. 9810, science@expeditions.com).

Identification of Impacts and Proposed Mitigation Measures

We expect the environmental impact from the collectin of 12 L of sea water to be minimal. Transportation to the sampling area (by zodiac) might be the biggest dirturbance of sampling and we plan to drive slow and carful to not dirturbe wildlife.

Cumulative Effects

We expect the environmental impact from the collectin of 12 L of sea water to be minimal and not to result in cumulative effects, as it is a one time sampling.

Impacts

Identification of Environmental Impacts

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
Construction																									
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Operation																									
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Decommissioning																									
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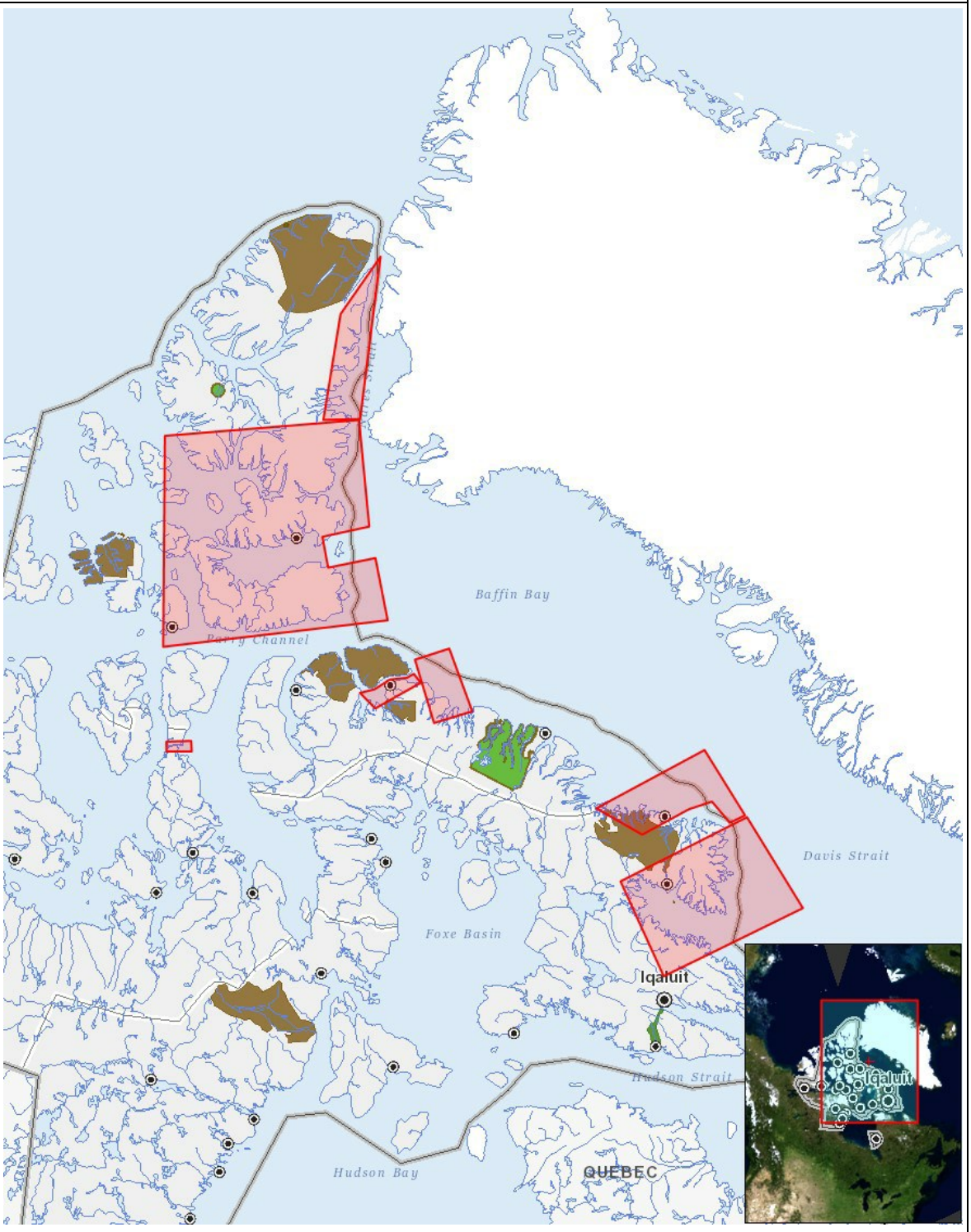
(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	polygon	area for sampling site 1 (actual sampling area very small)
2	polygon	area for sampling site 2 (actual sampling area very small)
3	polygon	area for sampling site 3 (actual sampling area very small)
4	polygon	area for sampling site 4 (actual sampling area very small)
5	polygon	area for sampling site 5 (actual sampling area very small)
6	polygon	area for sampling site 6 (actual sampling area very small)
7	polygon	area for sampling site 7 (actual sampling area very small)