## Assessing Berries to Monitor Ecological Change: a collaboration with Nunavut Arctic College's Environmental Technology Program

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## رحی المالی ا المالی Nunavut Arctic College





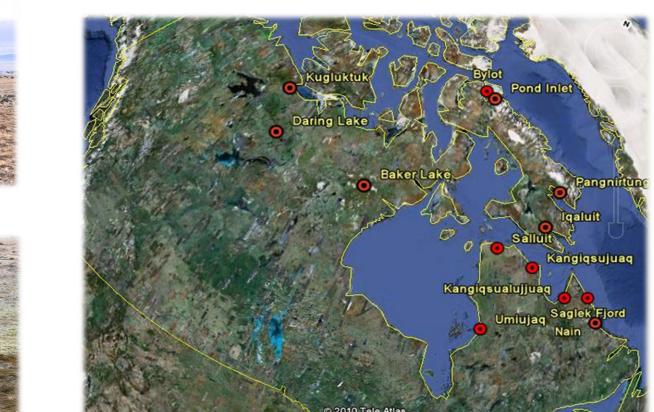


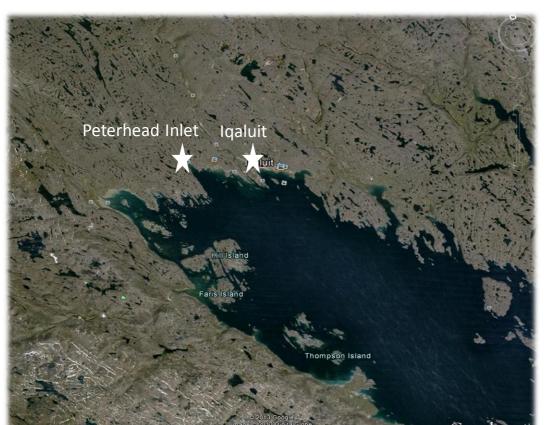
2011

2012

## Project and site description

Students of ETP have been contributing to a multidisciplinary study looking at vegetation response in a warming Arctic context, with a focus on berry ecology and productivity of 3 favourite species: Blueberry (Kigutangirnaq/Vaccinium uliginosum), Crowberry (Paurngaq/Empetrum nigrum) and Cranberry (Kimminaq/Vaccinium vitis-idaea). From 2009 to 2013 we have been collecting berries following a scientific protocol in a permanent monitoring plot near our fall field camp location at Peterhead Inlet, near Iqaluit (N63°46'42.4" W68°42'50.8"; alt. 1m). We also took measurements (vegetation cover and height, soil humidity) in 4 open top chambers (OTCs) and 4 paired control plots we installed in 2011 and retrieved soil surface temperature data from HOBOs dataloggers. As part of our Inuktitut class, we also interviewed local Elders/berry pickers about berries and environmental changes they observed in the region.





770

175

646

74

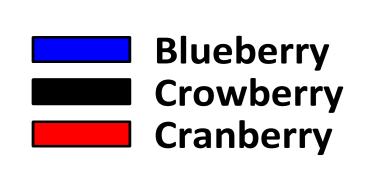








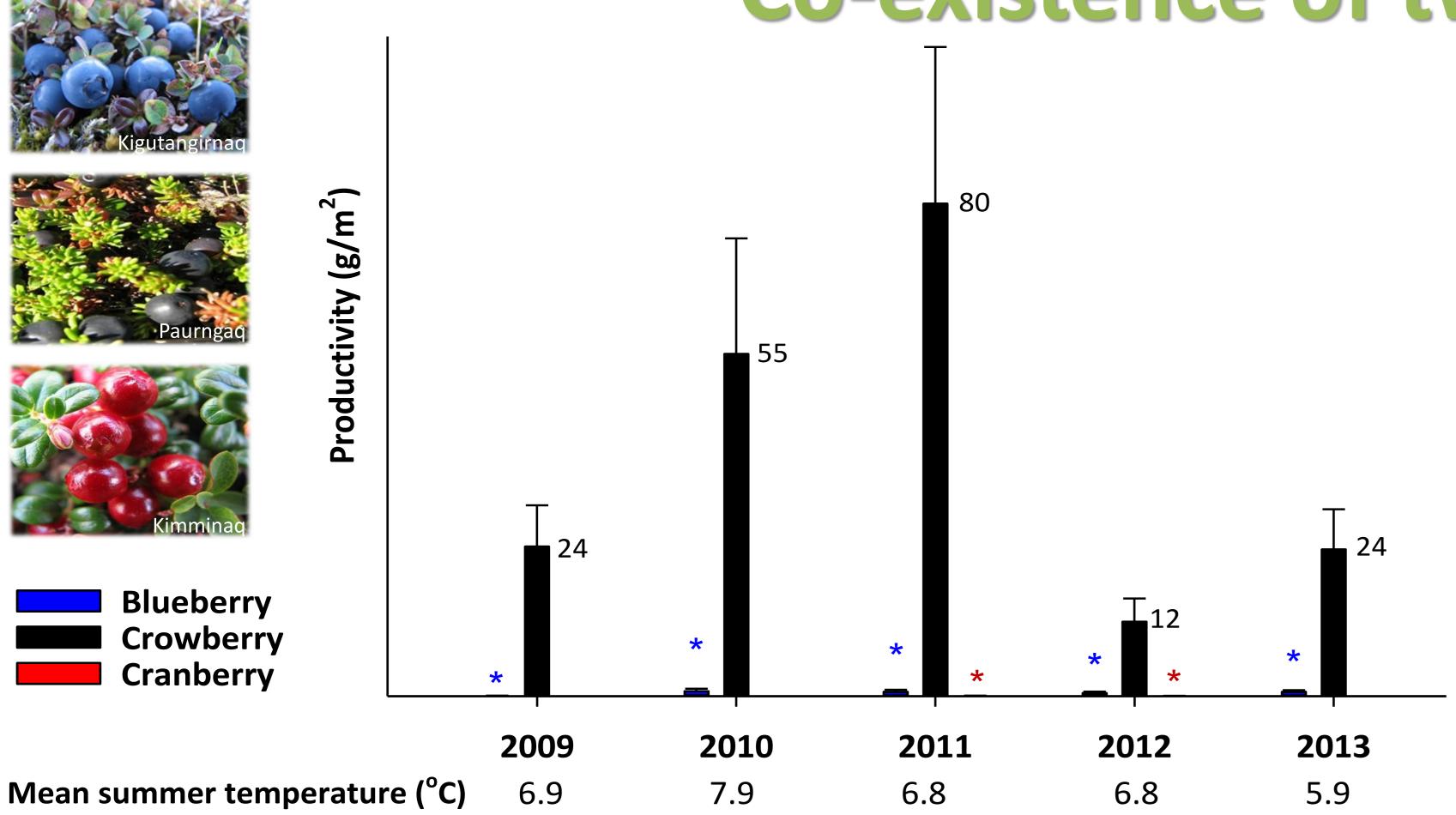




Thawing degree-days (TDD)

Summer precipitation (mm)

Co-existence of two knowledge systems



720

178

Figure 1. Berry productivity (g/ $m^2$ ) in one permanent monitoring plot (20 m X 20 m) from 2009 to 2013 at Peterhead Inlet near Iqaluit, Nunavut (n = 51 to 64) random quadrats 25 cm X 25 cm). Mean summer temperature and summer precipitation include June, July and August. TDD is calculated from May 1st to October 31<sup>st</sup>. \* Means productivity  $< 0.5 \text{ g/m}^2$ .

976

n/a

n/a

Table 1. Vegetation characterization and soil moisture in quadrats (70 cm x 70 cm) sampled in four open top chambers (OTC) and their associated control plots (CTR).

Quadrat	Dominant species/group	Plant cover (%)	Maximum height (cm)	Soil Moisture (%/vol)
SE-OTC	Willows	35	4	16.6
SE-CTR	Soil/Sand	70	n/a	9.8
NE-OTC	Berries/Heath	33	6	25.8
NE-CTR	Small Labrador tea	49	n/a	39.1
NW-OTC	Berries/Heath	92	8	22.9
NW-CTR	Berries/Heath	65	3.5	26.6
SW-OTC	Soil/Sand	70	n/a	13.2
SW-CTR	Soil/Sand	75	n/a	13.3

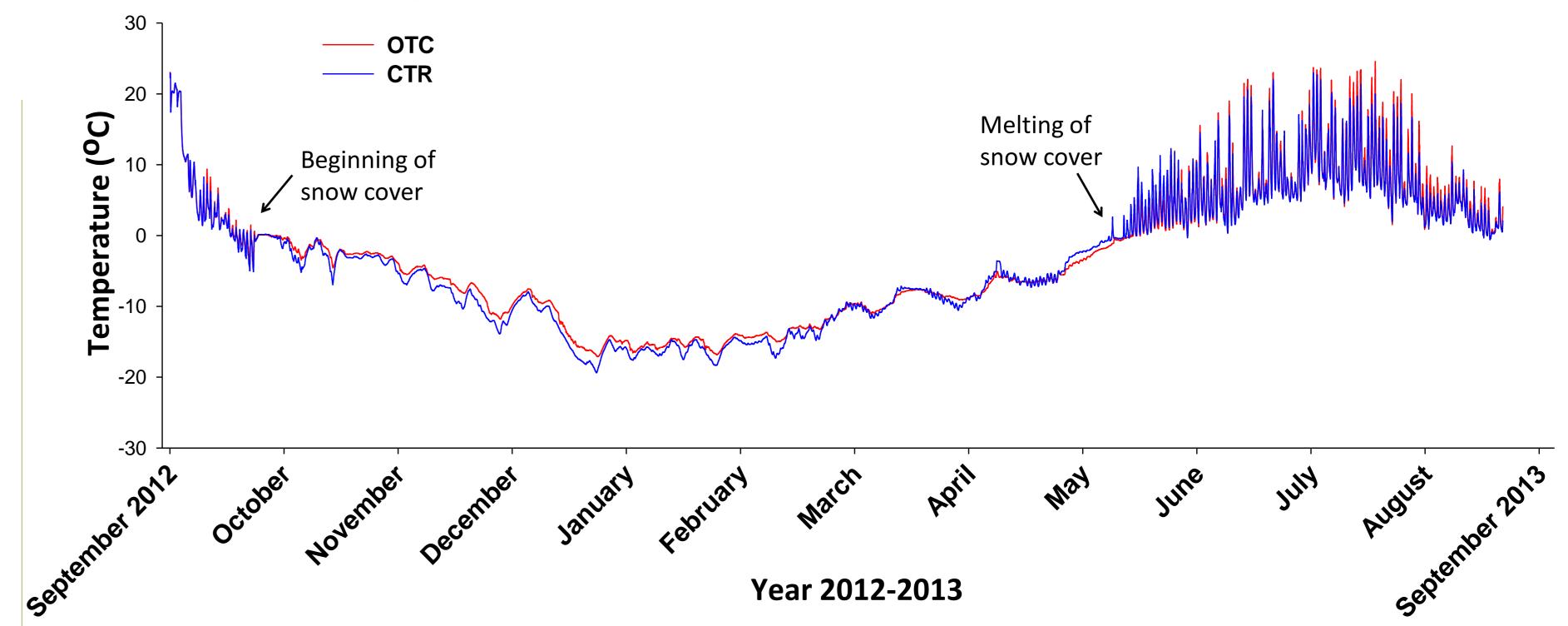


Figure 2. Mean surface soil temperature at 5 cm depth recorded hourly during one year in OTCs (n=4) and their paired control plots (n=4), installed near the permanent monitoring plot at Peterhead Inlet, near Iqaluit, Nunavut.



"The vegetation has changed; as an example around our house we now see flowers that have never grown in our area before. I also noticed that permafrost is thawing in some areas and that some huge icebergs are now melting."

"We used to pick just with our hands but now we use the new invention of the comb picker we buy at the store."

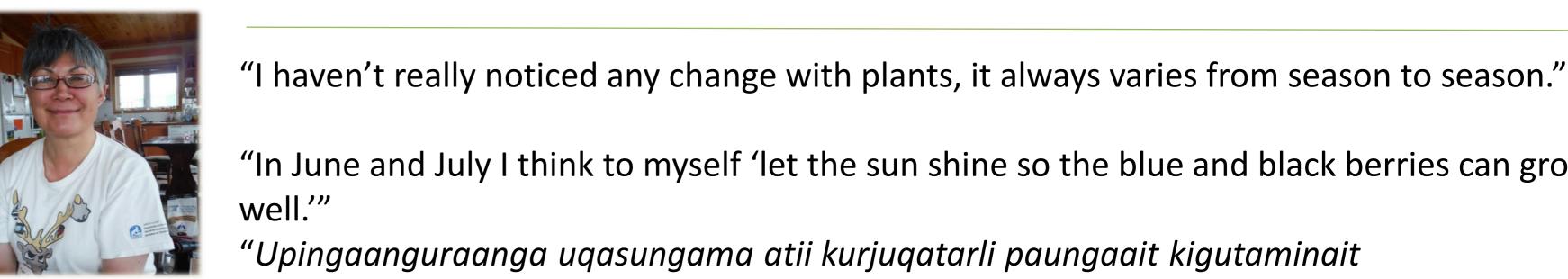


"Out of all the berries, black berries are my favourite. There are a few different ways to prepare black berries but eating them fresh is always the best and it brings family, friends together. They can be mixed with caribou fat or marinated on top of seal fat."

"When I think of early fall, picking berries automatically comes to mind, because we go berry picking every fall season."

Taina Nowdlak

"I am always happy to go whenever I get invited for Berry Picking



because I have loved doing it since I was a child."

"In June and July I think to myself 'let the sun shine so the blue and black berries can grow well."





a place of mind

"Upingaanguraanga uqasungama atii kurjuqatarli paungaait kigutaminait pirutiannianmata isumainasungujunga."