

UNIKKAAQATIGIIT:

PUTTING THE HUMAN

FACE ON CLIMATE CHANGE



PERSPECTIVES FROM COMMUNITIES OF

THE LABRADOR NORTH COAST

REPORT OF THE WORKSHOP

HELD IN NAIN, LABRADOR

APRIL 30 – MAY 1, 2002



UNIKKAAQATIGIIT:
PUTTING THE HUMAN
FACE ON CLIMATE CHANGE



PERSPECTIVES FROM COMMUNITIES OF
THE LABRADOR NORTH COAST*
REPORT OF THE WORKSHOP
HELD IN NAIN, LABRADOR
APRIL 30 – MAY 1, 2002

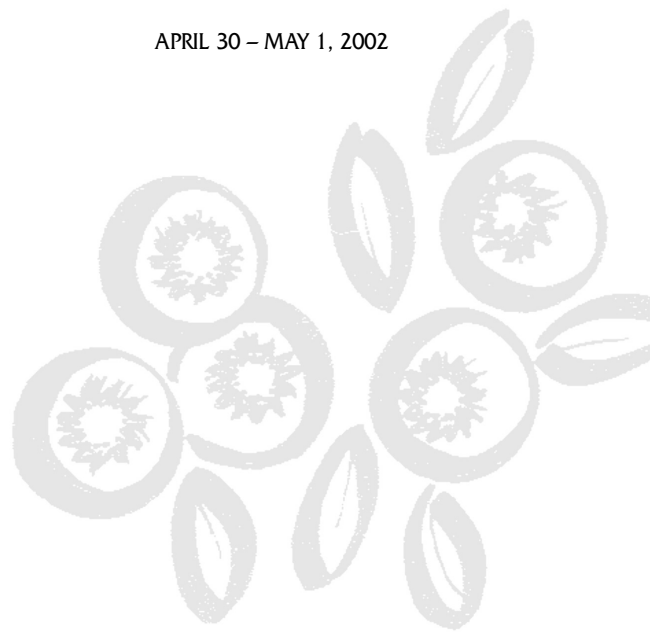
Workshop Team:

Public Health Research Unit, CHUQ-Pavillon CHUL/Université Laval
Labrador Inuit Association
Inuit Tapiriit Kanatami

Funded By:

Inuit Tapiriit Kanatami
Health Canada – Climate Change and Health Office
Northern Ecosystem Initiative, Environment Canada

* This workshop is part of a larger project entitled *Identifying, Selecting and Monitoring Indicators for Climate Change in Nunavik and Labrador*, funded by NEI, Environment Canada.





ACKNOWLEDGEMENTS

First and most importantly, the workshop team would like to thank all the workshop participants for their participation and sharing of knowledge on climate changes. Great thanks go to all those individuals that opened their homes as well to make sure our participants were fed, happy and had somewhere warm to sleep while in Nain. Also, for providing baked goods for our break times at the meeting, we thank Jessie Ford and Henry Broomfield.

We would like to thank the following organizations for their interest and support in the workshop:

- Labrador Inuit Association (LIA)
- Labrador Inuit Health Commission (LIHC)
- The Town Councils of all coastal communities
- OKalaKatiget TV and Radio

LIA is gratefully acknowledged for their provision of the meeting facilities in Nain. Special thanks go to Mary Denniston of LIA Research for all her work in the organization and planning of the workshop, her involvement was truly invaluable. The LIA field workers in each community are also thanked for their assistance in identifying and recruiting participants to come from each community. Our interpreter/facilitators (K Naeme Tuglavina and Sarah Obed) and local facilitator (Frances Murphy) ensured that we all understood each other and facilitated the exchange of information among participants and the workshop team and for this we thank them.

We acknowledge those that provided the financial support for this workshop. They include Inuit Tapiriit Kanatami, Health Canada, and Environment Canada through the Northern Ecosystem Initiative Program as well as CIHR through a fellowship provided to Chris Furgal. Their financial support and interest in this work is greatly appreciated.

This report should be cited as:

Communities of Labrador, Furgal, C., Denniston, M., Murphy, F., Martin, D., Owens, S., Nickels, S., Moss-Davies, P. 2005. *Unikkaaqatigiit* – Putting the Human Face on Climate Change: Perspectives from Labrador. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.



TABLE OF CONTENTS

Naillitissimajuk	1
Executive Summary	7
Introduction	13
Methods	14
Group Organization	14
1.0 Opening Questions	15
2.0 Collection of Observations on Climate Change and Development of Timeline of Changes	20
3.0 Effects	31
4.0 Reactions/Adaptations	45
5.0 Who Should Know About This?	50
6.0 Regional, National and International Processes	52
7.0 From Observations to Indicators	53
8.0 Conclusions	54



NAILLITISIMAJUK

Labradorimi Silak tautsivallianinga ammalu Kanuitailligasuannimut katimaniujuk katititsilauk-Kuk 19-nanik nunaliuKatigengitunik kiggatut-tinik ammalu Pingasunik UKattinik/absangutitsi-jinik ilonnâni Labradorip satjugianganit nuna-linnit (ilautinnagu Hopedale-imiut silalukam-mut apviataulaummata katimaKataugiattugiamut). Ilagiallugu, tamana katiKatigenniujuK ilautitsilaukKuk atautsimik takunnagiattusima-jumik DFO-kunit, ammalu sâkset Kaujisattet atuinnagutjismajut katimaniujutsamik LIA-kunit, Laval University ammalu ITK-kunit. Tamana katimaKatigennik sakKititaumavuk uKâlautau-gunnatillugit ammalu allataugunnatillugit inuit isumâlutigijangit, Kaujimausingit ammalu isumâlutigijangit pillugit silak tautsivallianinga

ammalu asingit avatiujummi asianguvalliajut nunani avittusimajuni, Kanuk sukkuiniKaman-gâta tâkkua asianguvalliajut kinakutuinnanik ammalu nunagijaujunnik Kanullu inuit pilim-mangâta upvalu Kanuk pigunnamangâta sunait tautsivallianinginnut

katimaKataugiattusimajuit malugusuKattavut unuttunik asianguvalliajunik avatiujummi piluat-tumik silak asianguvallianingani Labradorip sat-jugiangani. Ununingit asianguvalliajut attuini-KammagikKut inunnik ammalu nunagijaujunnik. Tamakkaa asianguvalliajut, ununninginni, adju-lungilat upvalu ilingaKatigellutik atautsimut nunagijaujummot ammalu taimaimat kamagi-jausagaigiaKavut. Ilangat uttutigillu asianguval-liajut uKausiuKatasimallutik nunaliujunnut ammalu Kanuk attuiniKamangât ilautitsivut:



Naillitisimajut uKausiuKattalutik avatimmi asianguvalliajut ammalu attuinigijangit Labradorip satjugiangata nunagijanginni.

Avatet Pillugit	Asiangujut/ takunnataujut	Takujausimajut/ Attuinigigajattangillu
Niguminninga	<ul style="list-style-type: none"> Niguminisak ukitsâmit Niguminnisak ukiumi Niguminninga aujami unaluak. 	<ul style="list-style-type: none"> Asiangutitsijuk aullaviusonik pinasuagiamut KamatsiatuKagiaKavuk aujami nillasilluni (ilangit inuit)
Silaup plusingit	<ul style="list-style-type: none"> Silak Kanuilinganiamangât nalunalualittuk 	<ul style="list-style-type: none"> Unuluat inuit nugunnangiumasot Ajunnalualittuk Kanga aullatuKagunnamangât
Sikuit	<ul style="list-style-type: none"> Sikusanninga upalumalualittuk SikuisagailauKattajuk Imappimi sikuk sâlualittuk SikutsiasimaKattagunnaituk 	<ul style="list-style-type: none"> AsiangutitsiKattajuk aisongugiamik atuttausainnatunut nunanut Inggagiamik ullugianannisak ilangani, pilukattuKalualuni
Aputik	<ul style="list-style-type: none"> AputiKanginitsaulittuk ullumi AKilualittuk aputik Kannik upalungaluaKattalittuk 	<ul style="list-style-type: none"> AjunaluaKattalittuk Kangauligaimmat aisongugiamut nunanut Pisugalagiamut piunitsausok ilanginnut inunnut Illuvigaliupviusongungituk tamanna aputik
Imatuinnak	<ul style="list-style-type: none"> Ilangit taset panilittuk Imait itjugunnaitut ununinginni imaKasongujuni 	<ul style="list-style-type: none"> ImaKatsiagunnaituk aullasimatuni nunanut Imipvigigiana imituinnamik ajunnalualittuk
Pigusot ammalu Paungait	<ul style="list-style-type: none"> Ikinnisait ammalu mikinitsait Paungait Asiangusimajut paungait pigupvigisongit 	<ul style="list-style-type: none"> Ikinnisiat paungait ammalu pigusot nigijau-songulutik taimangasuait Kaninginitsamut aigiaKasot napvagasuagiamik



Naillitisimajut uKausiuKattalutik avatimmi asianguvalliajut ammalu attuinigijangit Labradorip satjugiangata nunagijanginni.

Avatet Pillugit	Asiangujut/ takunnataujut	Takujausimajut/ Attuinigijatangillu
Nunamiutait Omajuit	<ul style="list-style-type: none"> • Asianguvalliajut pijausongujuit(sullo tuttuut) • Salunnisiat tuttuut ullumi • Ununnisiat sukkusimajut omajuit • Ilangit nutât (sullo:mooset taggami, utivallianingit amaguit) • Ikinnisiat ilangit omajuit(sullo ukalet) 	<ul style="list-style-type: none"> • Kaninginitsamut aigiaKannik napvagasuallugit, ajunnaluaat pigasuagiangit Kangauligaimmat • Ilangit nigigiangit piungit • Nutât omajuit piujugajattut, sulli pinniagun-nangittavut
Imamiutait Omajuit	<ul style="list-style-type: none"> • Puijet salunnisaulittut • Unulualittut udjuut ammalu Kaigulet • Unulualittut pângulliat 	<ul style="list-style-type: none"> • Unuluat puijet niginasuttut ogagalanik • Puijet ilutsingit isumajannalittut imak piujugaluamangâta
Timmiat	<ul style="list-style-type: none"> • Ikinnisiat ununningit ammalu nungu-simajut ilangit (sullo:KulliKuliat, Kotsiutet, Sitjagiat) • Nillet tikisagailualittut • Ilangit nutât (sullo, swan, hummingbird takujauKattanangit) 	<ul style="list-style-type: none"> • PaingunaKattajut ilangit timmiat tusagiangit takugiangillu • Ikinnisaulittut taimanganit pijausot timmiat • Nillet tikisagainningit uKumaittimititsot pinasuapviKaKâtinagu
Ogagalait	<ul style="list-style-type: none"> • KuliligaKagunnaikKuk ammalu ogatuinnanik kavisilet mikinitsaulittut 	<ul style="list-style-type: none"> • Ikinnisaulittut ogagalait nigigiangit, pigasuagiangit ajunnalualilutik
Asingit	<ul style="list-style-type: none"> • SukkuinattuKalualittuk ullumi • SiKinik unalualittuk 	<ul style="list-style-type: none"> • Sukkuivalliajuk avatimmik. Sukkuigunnatuk omajunik. • Sikinik utâtsigesongullituk

katimaKaujut nalunaitsilaukKuk unuttunik inuit piusigillittanginnik upvalu piusigijatsanginnik sunait asianguvallianinginni. Tâkkua ilautitsilutik:

- Napvâgasualutik akKutitsaugajattunik tamaungatsainak
- Kaninginitsamut aigiaKallutik tâkkuningat-sainak pinasuallutik (tâvatuak akitunitsak)
- KaujisattaugiaKaningit imittausot iluani Kanitânillu nunaliujuit
- AsiumajuKammat KinijattiKavuk Nainimi, ilonnatik pittaKaglialet nunalet
- Inosuttuit ilinniatitaugialet Kanuilingasongumangât silak ammalu Kaujimasongullutik tamânituinngutik

- Asianguutillugit ilangit aullaviuKattajut ammalu piusiuKattajut (Kijuttagiallutik upingsâmni ukiatsângutillugu sikuttailisimannimut-mâna December-imi ammalu ajunnatulluni Kijut-tagiasuagiak ukiuk pigiasitainnatillugu)
- NiKitsanik piuliukKailutik Kuatsivimmud ilanganni pinasugatsait ajunnasongumata pigasuagiangit jâriup ilanginni.
- KaujisapviKallutik Kanuilingatsiamangât sikuk asinginni nunagijajunni.

Pinippautillugu, katimaKataujuit pigumalualauk-Kut Kaujittitsiutiujunni ilonnaini satjugiammi nunagijajunni ammalu inosuttuit ilisattauKullugit tamakkuningagalak InutuKaunitsannit



ammalu asinginnit nunagijamini sunait asiangu-simammangâta, Kanuk asiangusimannet kama-gijaugunnamangâta ammalu ikKananninga ilin-niagamut Kanuk pijuKasongumangât nunatsu-amittuKalluni InutuKaunitsanit, angajukKâgijau-junnit asinginillu ilisimajunit katimaKataugiat-tusimajut pikKujilaugivut tâna Kaujitsiutik tunijaugiaKaninganik nunaliujunnut, avittusima-junut, prâvinsimmi, nunatsualimâmmi ammalu kavamannut KaujimakKulugit sunait asianguval-liamangâta Kanullu attuiniKamangâta Labradorip satjugianganik.

Tâna suliatSaujuk pigiasilâkKuk malillugu kati-manisimajuk sivullitlugit LIA, Laval University ammalu ITK.

Tâna katimaniujop Kaujitsiutinga pigiasitsi-vuk pigianingani uKâlautaujutsanik, allataujut-sanik ammalu kamanitsamik isumâlutaujunik ilingajunik silak asianguvallianinganut ammalu avatik asianguvallianinganut ammalu attuiniugajattumik Labradorimi satjugiangata nunagijanginnik.

ILONNÂGUT NAILLITISIMAJUK – LABRADORIMI AVATET ASIANGUVALLIANINGINNUT KATIMANNET

Isumagijaummagittut nunatsualimâmmi silak asianguunianninganik tâkkua Ukiuttatumiut Nunagijangit attutaullagigajaningit silait asiangu-vallianinginnut. Taimaimat ikKanammagikKuk katitsuigiamut Kaujitsiutinnik pillugit sunait sakKijâlimangâta tâkkunani nunaujuni. Tamana ikKanaluaKuk Ukiuttatumi. Ukiuttatumi avatet sujusagaippot ammalu Inuit atummagiKattavut nunamik ammalu sikumik. Inuit piusituKangit ammalu ullu tâmat inogusigijangit attutauniKa-magikKut sunait asianguvallianinginnut avati-gijanginni taggamiut nunagijanginni. Avatik ikKanammagimmat inogusiujujunnut, Inuit Kau-jimaKattagivut asiangutuKaniallimmat. Taimaimat ikKanammagikKuk tusâgiamik ammalu ilautit-sialugit Inuit Kaujisannimut ilisimausiKatsiamat ikajugajattumik tukisnitsaugiamut ammalu kamagillugit avatet asianguvallianingit.

Asianguniujajut Ukiuttatumi kamagijauligekKut ammalu Kaujitsiutiukattalutik atâgut taijaujop

Mackenzie Basin Impact Study tâkkua sukkujuj-Kagajappat Kaujisautet, Nunatsualimâmmi Kaujisapvik Asitattausonik Pivallianikkut (IISD) pigiasititsilaukKut *Inuit kamaKatausongu-ninginnik Silak Asianguvallianinganut Sachs Harbour*-imi, NWT, ammalu mânaKammik katimalaulutik Inuvialuit Satusattausimajop Nunagijanginni (ISR) sivullitlugit Inuit Tapiriit Kanatami (ITK) kaujimajuummijogaluat Western Arctic-imi kittânit, taimaigaluattilugu asiagujut uKausiuKattasimavut kittimiunni ammalu sulia-KattuKammagigiaKatluni tukisnitsaugiamut ammalu niugulluni asianguvallianiatunuk ammalu attuiniKagajattunik Taggamiunit.

Ilangautillugu suliaKausiup taijauluni *Killigiudj-inik, Tigullainik ammalu kamannik Silak Asiangu-vallianinganut* kamagijauvut Nunavik ammalu Labrador pigiasisimallutik 2001-2003, nunalet katimattitauningit avatet asianguvallianinginnut tamâgik Kaujisattausimavok. Kaujitsiutet sakKi-titauKattasimavut katimajukKâtillugu 19-nait kiggatutte ilautillugit Labradorimit, katimannet ilonnaini pingasuni Nunavik nunagijanginni ammalu atautsik Kaujitsiutik nalunaisivuk Kaujisattaumajunik ilonnaini pinsauni Nunavik nunaKutinginni. Katillutik, tâkkua Kaujitsiutet naillitisimavut nunalet Kaujimausingit ilautilugit ammalu uKâlautigillugit isumâlutauluattut inun-nut. Nalunaisilauvut sunanaik akuniungitumut akunimut maligaKagiaKamangât ammalu suanit kaujusitjaugiaKamangâta pigumajauluattut ammalu killigiudjilutik sunait ikKanaluaKamangâta kamagiamik asianguvallianingit.

Labradorimi Avatet Asianguvallianingit ammalu Kanuittailinnimut katimannet katititsilaukKut 19-nanik nunaliujunik kiggatutinik ammalu pingasuit Ukatte/ablasâgutitsijet ilonnânit Lab-radorip satjugianganit (ilautinnagit Hopedale-imiut silalukammut apviataulaugamik katima-nitsaup ullungani). Ilagiallugu, katimannik ilautitsigunnalauvut atautsimik takunnagiat-tusimajumik Oganniatuligijikkunit Imappiligi-jinillu Canada-mit, ammalu sâkset Kaujisattat atuinnagutjisimajut katimanitsamik Labrador Inuit katutjiKatigenninganit, Laval University ammalu Inuit Tapiriit Kanatami. Katimannet uKâlatsigunnalaukKuk ammalu allataugunna-tillugit inuit takusigisimajangit, Kaujimausingit



ammalu isumâlutigijangit pillugit silak asianguvullianinga ammalu asingit avatimmi asianguvulliajut nunagijaujuni, Kanuk sukkuiniKasongumangâta inunnik ammalu nunagijaujunik ammalu Kanuk inuit pigunnamangâta upvalu pigunnamangâta sunait asianguvulliatillugit.

Katimausiusimajunni PiusiukKujait

Piusiugjalet katimajuKanningani sakKititaulauk-Tuk malillugit pidjutaujuit atânnettut.

- Kamagijaunningit asianguvulliajut avatimmi
- Kaujitiutsiutet attuinigijangit asianguvulliajut nunagijaujunni ammalu kinakkutuinnanut
- Mânnamunet songuitisannet upvalu kiuguset asianguvullianiujujnut, illugijaujunni upvalu nunagijaujunni sakKipalliajut
- Pigumajaujut sivunitsatinni songiutisagiamut ikullaumitigasuallugit attuiniugajattut asianguvulliajunni
- Kinamut Kaujitiutsiutet âjaugjaKamangâta Kaujimatsiagiamut nunalet isumâlutigijanginik Labradorip satjugiangani ilingajuit avatimmut ammalu silak asianguvullianinganut.

Isumâlutauluattut, Attuinigigajattangit ammalu Songiutsapviugajattut

Malittuit katitsutaumajut takujauKattasimajut ammalu isumâlutaujut atausiagatik uKausiuKattasimajut Labradorimi katimajuKaniammatt. Attuinigigajattangit ammalu piusigigajattangit sakKijâligettut upvalu piusiukKujausimajut katimaKataujunnt ikullaumitigasuallugit attuiniugajattut asianguvulliajuKanningani. Piunippâmik kamagigasuallugit ikKagijauuattut nunalinnut, kisimik isumâlutauluattut ammalu takujauKattasimajut uKâlautainnalutik katimajiKatigennut allatausimavut. Allatausimajuit takujauKattasimajut, attuinigigajattangit ammalu songiutsat- taugjalet iluanevut katimautausimajuit Kaujitiutsiutingani.

Silait KaujjauKattasimaninnigit

Labradorimi nunagijaujuit kamatsainakKut ammalu uKausiKatsainallutik tamana **silak niguminnisauKattalininganik** ukiumi, unaluaKattaliluni aujautillugu ammalu niguminnisauKattaliluni ukiatsâmunut. Tâna **siKinik** unan-

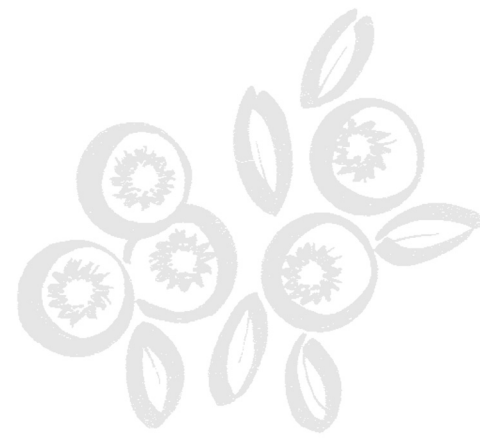
nisaulilluni ammalu inuit uviningit utâsagailuaKattalillutik. Inuit nalunaitsiKattasimalikKut Kanimagalanimik unagaluamut ammalu KaujiKattasimallutik unutsivullianingit inuit niakKiginnimut unagaluamut.

Ilonnâgut, KaujjauKattasimavuk ilonnaini nunagijaujunni silak ajunnalualittuk Kaujigasua- gianga Kanuk piniagalualimmangât. Silak asianguvaliasimavuk angijummagimmik 60ni jârini Kângi- simajuni. Silak Kanuilinganiamangât nalunatuKattalikKuk. Tâkku **silait Kanuilinganial- imangâta nalunannet** inunnik nogunnangi- malitlutik nunamit.

Adjigegunnainingit Kannel ammalu aputiup ilutsingit KaujjauKattasimavut Labradorimi. Ilonnâgut, inuit KaujiKattasimalikKut **aputiKats- iagunnaininganik ullumi** ammalu Kannik upa- lumaluaKattaliluni jârimi. Ilagiallugu, **aputik aKinnisauKattalittuk ammalu mikilualitluni upvalu”pittusaulitluni”**. Asianguvullianinga aputet takugatsauKattasimalikKuk ammalu pisupvigigianga piunitsauKattalilluni nunagi- jaujuni. TakunnaKattagivuk, ilangit nunait silatânnettut uppatauKattangunnaitut Kangau- ligaimmat jârimi aputiKatsiangimmut ski-doo- vigigianga. AputiKanginitsak asianguvullianingani aputik piunigilittisongugivuk illuvigaliugiamik.

Takunnataukattajut :

Ilonnatik Labradorimi nunaKutingit takuKatta- likKut **akuniunitsak sikugasuanninganik** imak ammalu **tapvainaunitsak sikuiKattalilluni**. Imappiup sikunga sânnisauKattalikKuk ammalu **nangiannatualilluni** ilonnâni. Tamana taut- sisimalikKuk nunanni upattauKattajuni ammalu nangiananitsaulilluni. PilukattuKalualikKuk sikuk pititsitillugu. **Sikuit** asianguvulligivut, ilangit nunaKajuit uKausiKaKattajut takuKat- tanimminik “Killijâttumik” nunamit. Tamana Killijânnik apumautauKattavuk ilanginnut oma- jugalannut, niginasugatsaminik napvâgunnangi- umaKattagamik. **Tuttuit ammalu ukalet** piluat- tumik uKausiuKattasimavut niKitsasiugasua- gi- amik ajunasiuKattaninginnik Killijâgaluamut. Omajuit pilukaluaKattagivut sikummi nunamit pidlutik. Tamana taigatausimaKattavuk Nain- imi, omajuit katagaKattasimatillugit KaKanit ammalu pingiuliumitillugit upvalu tuKusimallutik



siagijännagaluammut nunammi **Imatsuit** tasi-galanni itjogunnaiKut jârini Kângisimajuni. Allat, ilangit **tasset kogalaillu** tiniKattasimalikKut. **Kommaget** itijolugunnaiKut ammalu ujugait sakKijâlualilutik. Tamana imak ikkatuguvallianinga attuiniKammagikKuk **iKalunnik** taku-Kattasimagamik kogalait pânginni utakKitunik silalumik majuliaKikKâgatik kokkut.

Nunalet uKaKattasimagivut nunguppalianinga tagiungugituk imak **imijausonnik imannik** piujugunnaininganik nunametlutik. IsumâlutaummagikKuk imijausok Labradorimiunut. Pukkiluatlalinninga imak isumâlutaummagikKuk, tâvatuak **sujuttausimaningit** mangitunnisimajunut utsualuKautinnut.utsualuKautet imittaviu-songujunni uKausiusimagivut. Imak mangitunnianiKattaningâttauvuk, tauttuKatsiagani ammalu siggulet mangitunniKattalilutik iluagut ammalu mannet tauttuigutisongugivut tittititaugamik. **Inoguset attutausimaningit** uKausiuKattagivut nunagijaujunni, unutsivalliatillugit nângunnet ammalu itittanet. Unuttuit katimaKataujut isumâlutiKammagilaukKut InutuKaunitsanik, songiusimalunginamik tamatsuminga, ilagiattauKattajumik imammut ammalu tittiseKattagatik imilikKânagu. Mânnaulittuk, isumâlutaummagimata imittauKattajut, inuit pisiKattalikKut imannik niuvipvinit nunamut aigiasigaigamik.

Nigijaugunnatut:

Tamakkua nunalet KaujiKattasimagivut **ikinnisait paungait ammalu appet** takujauKattalinninginik, piluattumik nunagijaujunut Kaninnisait. Inuit KaujiKattasimalikKut Kaninginitsamut aigiaKallinniminik paungasiugiallutik ammalu pigusonnik niKitsaminik. **Appet** aKilisagailuaKattalikKut ammalu sujusagailualitlutik siKinik unagaluamut. Paungait mikinitsaulillutik. **Sennâluit** mikinitsaulillutik ammalu mamatsautiliuttaugunnaKattajut uKausingititut katimaKatausimajut.

Pigugunnatuit:

KaujijauKattasimavuk unuttuni nunagijaujuni Labradorimi ilangit nunamiutait omajuit nuKattasimalinninginnik niginasupvigisominin. **Nanuit**, ottutigillugit, nunamut ailuaKattalikKut siagunitammalu itsinaluattujâlualutik. Taimaigaluattilugu ilangit katimaKataujut KaujittisilaukKut

tâkua tamâgitta **nanuit ammalu adlait** “nujâttaunginitsaulinninginnik” ammalu isumâlutiKalutik tamaiginnik ammalu inunnik asianguvalianinginni piusigisongit. **Tuttuit** salunnisaulikKut ullumi asianguvallianinginnut niKitsagiKattajangit niKât. **UKalet** attutauKattagivut niKitsaKatsiangimmut. Patingit tuttuut, uttotigillugu, utsuKanginitsaulikKut, paninnisaulilutik ammalu auKalualidlutik. Tuttuut pijauKattasimajut adjigengitunik KumaKaKattagivut. PijauKattajuit Kumalet nigijauKattangilat.

Nutât omajugalait takujausonguligivut nunalet Kanitânni. **Mooset** takujausongulikKut taggami ammalu **Kapvet** utisimalillutik ilanginnut nunalet Labradorimi. Ikinnisait omajuit (sullo: **ukalet**) takujauKattasimagivut. Pinasuadet Kaninginitsamut aigiaKaKattavut niKitsasiullutik omajunik. Ilangani napvaKattangittut napvavigiKattasimajammini. Tipangit omajuit tautsisimagivut uKausingititut katimaKataujuit. Tamakkua asianguvalliajut ilanginnut katimaKataujunnt uKausiuKattasimavut uKatlutik ikinnisaulittut omajuit niKitsagijausot nunagijaujunni.

Asiangusimajut takujauKattavut **puijet** ununingit KaujijauummagiKattasimavut uKâlautautillugit imamiutait omajuit Labradorimut katimaKattaniamata. Ikilivalliatillugit **Kulliligait**, niginasusongit puijet, puijet salunnisaulikKut ammalu niKinga utsuKangilualilluni. Ilagiallugu, nunalet uKaKattavut **unuluat udjuut, unuluallu Kaigulet ammalu unuluat “Pânguliat”** (puijet mamiutjausimajut sikummi). Ilusigilittangit puijet isumâlutaummagikKut Labradorimi nunaliujunnt isumagillugullu Kanuigalualimangât imak.

Ikilismaligivut timmiagalait Labradorimi (sullo: **Kullikuliât, kutsutait ammalu kupanuatuinnait**) ammalu ilangit timmiat asusimalitlutik (sullo: **kotsiutet, Labardorimi mittuinnait, sitjagiat, ammalu tollet**). Nunalet paingumiKattavut takugumallilutillu tâkuninga timianik. Ikilivallianingit timmiagalait niKitsaKatisitsiaKattanginivut inunnik. TakujuKaKattasimagivuk nutânnik timmiagalannik. **Swans ammalu Hummingbirds** TakujauKattasimalikKut Labradorimi.



Nillet tikiKattasimalikKut tapvainaunitsak Labradorimut, akKigiattaugiaKasonguttilugit pinasuapvisait.

Ogagalait Labradorimi ikinnisaulikKut ammalu ajunnatolillutik pigasuagiangit. **Kulligait ammalu ogatuinnait** sakKijalugunnaiKut itijongituni imanni Labradorimi ammalu kingumagijauKattaluytik, niKitsasiangulautsimamata. **Kavisilet ammalu anâdlet** pijauKattalittut ullumi miki-nitsaulittut ammalu ununningit ikillipallianigât-taulutik. **IKaluit** KaKunnisaulikKut, tâvatuak aupalutsivallianigâttajut. SiKingani satjugiap, iKaluit napvâviuKattasimavut Kummanik. Nunalet ippiniagutaKavut ogagalait nigijau-songunninginnik panitsisimatuappata tâvatuak mikigattutaugunnagatik. Ilangit nunalet nigigunnaKattangilat takkuninga ogagalannik KumaKannigâttajunik.

kittugiagalait

Nutât kittugiagalait takujauKattasimavut Labradorimi. 2001-imi, sivullipâmik mikijummaget **Kinitait kittugiat kisisot** takujausimavut. Tâkkua kittugiat Änninattumik, annugâgalannut pulasongullutik pavinattolullu. Asingit nutât kittugiagalait takujauKattasimagivut takijunik niulet âsivait ammalu asingit “nutât ammalu takuminangitut” tajjauullutik katimaKataujunnt.

Asingit Isumâlutajut:

Nunalet Labradorimi isumâlutiKammagilaukKut pillugit **avatik sujuttauvallianingannik** takugatsaulluni ammalu tusagatsaulluni nunatsualimâm-mi. Unutsivallianingit takugatsavut ammalu attuiniKagajallutik ilonnânik avatiujummik. Piluattumik, Labradorimiut isumâlutiKammagilauKut Kanuk avatiujuk sukkuiniKagajamangât omajunnik ammalu inunnik tamânejunnik.

Labradorimiut sulijutsasiavut Kaujimausinginnik InutuKaunitsait. KatimaKataugiattusimajut uKâlautiKalaukKut Kaujimauset tigumiattaugiaKanninginnik InutuKaunitsannut tunillugillu asinginnut, piluattumik inosuttunut, nunagijaujunni. Asianguvallianingani silak piusigisongillu, isumâlutiKattuKavuk tâkkua InutuKaunitsait nalu-

naitsigunnagunnaininginnik silak Kanuilinganiamangât piusigiKatalauttamit. Unuttuit katimaKataujut isumâlutiKalaugivut **Kanuittailinitsanginnik InutuKaunitsait**. IsumâlutiKalaummijut **Imak sujuppalianingannik**, ammalu Kanuk inutuKaunitsait KanimmaKattalininginnik ilagiasimajumik imigaigamik tittisimangitumik. Isumâlutaulaummijut InutuKaunitsait inogusingit ullumi siagunit. Unuttuit apitsotet sakKilaukKut ilautillugu: “KannimasialuKalualikKâ nunagijattini ullumi?” Sunait pititsiluakKât KannimasiauKattajunik?” Nunalet uKausiKatsialaukKut sunanaik tusagumanniminik sivunitsatinillu KaujisakKujilutik tâkkua nunalet Kaujimattitautsianiattilugit sunanut KannimatitauKattamangâmmik.

KatimaKataugiattusimajut KaujittisilaukKut unuttunik piusiluttunik inunnut upvalu piusiuju-saujunik avatimiutait asianguvvalianinginni. Tâkkua ilautitsilutik:

- Nâpvagasuallutik asinginnik inggaviugun-nagajattunik tapvungatsainak
- Kaningiluamut aiKattalilutik niKitsasiullutik (tamana akitujummagiuvuk);
- Pigumajauunningit uttugattaunitsnagit imijauKattajut ilauni silatânillu nunaliujuit;
- AsiumajuKalimmat KinijattiKavuk Nain-imi ammalu pigumajuKalluni ilonnaini nunaliujunni
- Iliniatitajutsavut inosuttuit silak Kanuilinganiamangât ammalu Kaujimattitauullutik suanit asianguvalliamangâta inuit nugun-nagiumaniattinagit nunamit
- Asianguvallianingit aullauviuKattajut piusiu-Kattajullu, (Kijuttugiat upingasâmami sikut-tailiKattamat ukiatsâmi manna Kijuttugiattu-KaKattalikKuk December-imi ajunnalualit-tilugu Kijuttugiamik pigiasinningani ukiuk.);
- PiulukKailuallutik niKituKannik Kutasivinni ilangani ajunnaKattamata pigasuagiangit ilangini jârinni.
- Kaujisagaigasualutik Kanuilingatsiamangât sikuk asinginni nunagijaujunni Kaningitum-mut aullalikKâgatik.



LABRADOR ENVIRONMENTAL CHANGE WORKSHOP — EXECUTIVE SUMMARY

Theories about world climate repeatedly say that the Polar Regions will probably be affected most by climate change. It is therefore important to gather information about what is happening in these areas. This is especially important in the Arctic. Arctic environments are sensitive and Inuit depend on the land and sea. Inuit culture and daily life are therefore greatly affected by any changes. Because environment is such an important part of daily life, Inuit also notice when changes take place. It is therefore important to listen to and involve Inuit in research as they have valuable knowledge which can help to improve the understanding of environmental change issues in the North and to more effectively address these issues.

Changes projected for the Arctic are already being observed and reported under such projects as the *Mackenzie Basin Impact Study*, the International Institute for Sustainable Development (IISD) led *Inuit Observations on Climate Change* project run in Sachs Harbour, NWT, and recent workshops held in the Inuvialuit Settlement Region (ISR) led by Inuit Tapiriit Kanatami (ITK). Much more is known for regions in the Western Arctic than in the east, however changes have been reported in these eastern regions as well and work must continue here to better understand and appreciate the variability of changes and impacts across the North.

As part of a project entitled *Identifying, Selecting and Monitoring Indicators for Climate Change* being conducted in Nunavik and Labrador from 2001-2003, community workshops on environmental change were conducted in both regions. The project has produced one large report that pulls together results from a workshop with 19 community representatives from Labrador as well as individual reports on each community workshop in Nunavik and one general report that summarizes the results of all three Nunavik community workshops. Together, these reports summarize local knowledge, and discuss the main issues and concerns that people have. They also indicate what kind

of short-term and long-term policies may need to be developed, and identify the areas where it is most important to track changes.

A variety of participant activities were used in the workshops. These activities had been developed and tested during similar environmental change workshops in Inuvialuit. A key goal of these workshops was to build local capacity to implement and carry out future environmental change workshops and research in communities in the region. In fact, in line with this goal, capacity building was successfully accomplished within the Inuvialuit portion of this project, as regional representatives there assumed greater responsibility throughout the successive workshops and in the end, were responsible for leading and facilitating the two latter community workshops themselves.

The Labrador Environmental Change and Health workshop brought together 19 community representatives and 3 interpreter/translator/facilitators from all of the Labrador coastal communities (excluding Hopedale because of weather related travel problems on the day of the workshop). Additionally, the workshop involved one observer from DFO, and 6 research staff who organized the meeting from LIA, Laval University and ITK. The workshop was held to discuss and document peoples' observations, knowledge of and concerns about climate and other environmental changes in the region, the impacts these changes are having on individuals and communities and what people are already doing or can do to adapt to these changes.



Nain, Labrador



Workshop Methods

The process of the workshop was an organized dialogue following the topics outlined below. The participants were asked what they were interested in and what they hoped to get out of the meeting. Then they were asked to record all the changes in environment, weather and climate that they had noticed or heard about. They were also asked to explain when these changes started to become really noticeable and common. The tables in this report show their observations and comments. Observations are organized according to ten-year periods, showing when changes started to happen. A number of signals (indicators) of environmental change have been identified.

After participants recorded and dated their observations, they were asked to discuss what kinds of effects (if any) they are experiencing as a result of these environmental changes. In some cases, participants also mentioned how they are trying to cope with the effects.

Main Concerns, Their Effects and Possible Adaptations

The following is a compilation of observations and concerns brought up repeatedly throughout the Labrador workshop. Their effects and possible coping strategies are discussed. In an effort to summarize the points that are important to most community members, only the concerns and observations that were discussed multiple times and brought up by more than one of the workshop groups are listed in this summary. A comprehensive list of observations, effects and adaptations are listed in sections 2.0, 3.0 and 4.0 of the main body of this document.

Weather Observations:

Labrador communities consistently observed and commented upon the fact that **temperatures are warmer** in the winter, heat is more intense during the summer and temperatures are staying warmer later into the fall. The **sun** was noted as being hotter now and people are burning more easily. People are finding hot temperatures in the summer difficult. They are feeling sick from the heat and have noted an increase in people suffering headaches because of the heat.

Generally, it was observed in all communities that weather has become more unpredictable. Weather has been changing a lot within the last 60 years or so. Predicting future weather patterns and events has become more difficult. These **unpredictable weather fluctuations** have led to more people being stranded on the land.

Variations in snowfall and snow conditions were noted across Labrador. Generally, people are observing that there is **less snow today** and snow comes later in the year. In addition, **snow quality** has become drier and grainier. The change to snow depth is seen as positive in some way as it makes it easier to walk around the communities. It is also seen as negative however, as some locations outside of towns cannot be accessed at certain times of the year now. Less snow coupled with the change to snow quality also makes it more difficult to build snow houses.

Physical Observations:

All Labrador communities are seeing **later freeze-ups** of the sea ice and **earlier break-ups**. Sea ice is noticeably thinner also and there is **less good ice coverage** across the region. This has changed access to a variety of traditional areas and species and makes travel much more dangerous. More accidents are occurring as a result of these ice conditions. **Ice quality** has also changed, with some residents mentioning the occasional appearance of a glitter quality on the surface. This glitter is a problem for some animals, as they can't get through it to access food. **Caribou and ukaliks (Arctic hare)**, in particular were mentioned as having difficulties feeding because of glittered ice. Animals are also having more accidents because of this glittered top layer of ice. This was specifically reported most often near Nain, where animals are sliding down hillsides and becoming injured or dying in some cases because of the glitter. Glittered ice also makes skidooring more difficult.

Water levels in many freshwater areas have lowered in recent years. In fact, some **ponds and brooks** have dried up altogether. **Rivers**



are also lower and more rocks are visible as a result. These low water levels affect **char**, as they have to wait for rain to increase water levels so they can travel up brooks.

Community residents indicated that decreases in freshwater levels are also causing **natural sourced drinking water** to be poorer in quality and have led to less available drinking sources when out on the land. There is quite a bit of concern regarding safe drinking water in Labrador. Low water levels were indicated as one cause for concern, but **contamination** by rotting gas tank/oil drums in water supplies was also mentioned with concern. Water is said to taste rusty, is rusty in colour and causes kettles and eggs to turn a rusty colour when boiled. **Health effects** have been felt within communities, with cases of stomach problems and diarrhea reported. Many workshop participants expressed concern about Elders in particular as they are not used to chlorinated water and do not always boil water before drinking either. Now, as a result of such concerns over drinking water, people are buying water from stores to bring with them when they go out on the land.

Vegetation:

These communities have noticed that **fewer numbers of berries and bake apples** are being found, particularly in areas around the communities. People are finding that they need to travel further distances to find berries and plants for eating. Bake apples ripen earlier and spoil quicker because of the hot sun. Berries that are found are smaller in size now. **Rhubarb** grown is also smaller now and is no longer used as much for jam.

Fauna:

It was noted in many communities of Labrador that some terrestrial animals have changed their pattern distributions. **Polar bears**, as an example, are coming closer to the land than they used to and have been described as more aggressive. Both **polar bears and black bears** are 'tamer' and there is concern for both the bears and people with this type of situation. **Caribou** are skinnier today because of changed

ice conditions affecting their access to food on the ground. **Ukaliks (Arctic hare)** are also affected in this manner. Animals have been found with more abnormalities lately as well. Bone marrow of caribou, as an example, is not as greasy, is drier and has more blood in it now. Caribou have also been found with different worms living within their bodies. Those animals that are found containing worms are not eaten and are a lost food source.

New species of animals are being seen in these communities also. **Moose** are now seen in the north and the **wolverine** has returned to some areas of Labrador. Fewer numbers of some animals (i.e. **rabbits**) have also been observed in some Labrador communities. Hunters have to travel further distances to find certain animals. They cannot find some animals at certain times of the year now and they have to discard all animals with abnormalities because they are unhealthy. These changes have contributed to less food for the communities. The taste of wild meat is not the same as it used to be either.

Changes seen within **seal** populations were the most noted observation from discussions on marine mammals in Labrador. With the decrease in **capelin** numbers, a food source for seals, seals have been found to be skinnier generally and also less greasy. In addition, communities have observed **more square flipper seals, more harp seals and more "crawlers"** within all seal species. The condition of the seals has caused some members of Labrador communities to wonder about the health of the sea.

There have been decreasing numbers of some bird species in Labrador communities (i.e. **plovers, snow larks and snow buntings**) and some bird species have disappeared altogether (i.e. **harlequin ducks, Labrador ducks, snipes, pintails and loons etc.**). Community residents miss seeing and hearing these birds. The decrease in some bird species has also meant a decrease in these particular food sources. There have, however, been new species of birds also sighted. **Swans and humming-birds** have both been sighted in Labrador.



Geese have been coming to Labrador area communities earlier in the season, which has meant an adjustment to the hunting season of these birds.

Fish species in Labrador are fewer and are now harder to get. **Capelin and cod** have both disappeared from shallow waters in Labrador communities and have been missed, as they were a dependable food source. **Salmon and trout** caught are now smaller and are also decreasing in numbers. **Char** flesh has been paler lately, but has also been observed to be returning to the regular red colour more recently. In the south, char have been found with worms in them. Community members felt that these fish can be eaten once dried but not eaten raw because of the abnormality. Some residents have had allergic reactions to these fish.

Insects:

New insects have been seen in Labrador. In 2001, for the first time there were very small **black flies** around. These flies bite very hard, crawl into clothing and are seen as a general nuisance. Other new insects seen have included long-legged spiders and other new and ugly insects.

Other Concerns:

Community residents of Labrador were particularly concerned about the **environmental pollution** they are seeing regionally and worldwide. Increases in pollution are very noticeable and detrimental effects have been seen in all sectors of the environment. In particular, Labrador residents were most concerned with how environmental pollution is impacting the health of the animals and people in their region.

Labrador residents hold high respect for the knowledge that their Elders possess. Those at the workshop spoke often of the need for the maintenance of knowledge to be passed down from Elders to others, particularly youth, in the communities. With the changes to the climate and subsequent changes to weather patterns and resources, there is some concern in this

regard as the Elders no longer feel they are able to accurately predict the weather as they did in the past. Many are also concerned about the **health of Elders**. There was concern over **water contamination**, and how Elders are getting sick from chlorinated water or from drinking water that is not boiled. Concern was also expressed about the general health of Elders being worse now than in the past. There were lots of questions on this issue. “Do we have more cancer today?” “What is causing these health problems?” Communities strongly expressed how they would like to hear back from previous studies that have been done in their region on these issues and they expressed a strong desire that future studies be conducted in a manner where the communities can learn more about the causes behind these illnesses.

Workshop participants reported a number of things people are already doing or could be doing to adapt or cope with these changes. These included such things as:

- Finding different travel routes to get to the same location.
- Going further in some cases to get the same food species (however this costs more).
- The need for testing of natural drinking water sources around and outside the communities.
- There is a search and rescue team in Nain, need one in all communities.
- The need to educate youth on weather forecasting and knowledge to decrease people getting stranded.
- The changes to traditional times of some trips and activities (go wooding more in spring because of late fall freeze-up – now in December and therefore difficulty in getting wood for beginning of winter).
- Stocking more traditional foods in personal freezers because they are hard to get at some times of the year.
- Calling ahead now to find out ice conditions in other communities.



Most of all, workshop participants stressed the need for this information to be distributed throughout the coastal communities and for youth to learn more about these issues from Elders and others in the community with this knowledge on what has changed, how to adapt with these changes and the importance of learning how to survive on the land from Elders, parents and others with this experience. The participants also recommended that this report be sent to various communities, regional, provincial, national and international agencies

and governments to raise awareness of these changes and their impacts along the Labrador coast. This task will be undertaken by the workshop team led by LIA, Laval University and ITK.

This workshop report represents the beginning of a process in discussing, documenting and addressing issues relating to climate and environmental change and the related impacts in Labrador coastal communities.

WORKSHOP PARTICIPANTS, OBSERVERS, FACILITATORS AND INTERPETER/TRANSLATORS

Workshop Participants:

<i>Name</i>	<i>Community</i>
Mary Dicker	Nain
Sarah Ittulak	Nain
Julius Merkuratsuk	Nain
Ronald Webb	Nain
Gus Dicker	Nain
Joe Webb	Nain
Pauline Andersen	North West River (NWR)
Randy Keizer	NWR
Horace Goudie	Goose Bay
Mary Adams	Goose Bay
Boas Jararuse	Makkovik
Clara Ford	Makkovik
Joas Fox	Makkovik
Silpa Edmunds	Postville
Douglas Jacque	Postville
Kitty Jacque	Postville
Winnie Michelin	Rigolet
Jack Shiwak	Rigolet
Allan McNeil	Goose Bay

Interpreter/Translators:

K Naeme Tuglavina, Nain, Labrador
Sarah Obed, Nain, Labrador

Workshop Team Members (Facilitators):

Chris Furgal, CHUQ
Pitsey Moss-Davies, ITK
Daniel Martin, CHUQ
Mary Denniston, LIA
Sandra Owens, CHUQ
Frances Murphy, Nain Labrador
Scot Nickels, ITK

Observers:

Becky Sjare, DFO Scientist, St John's, NF



Summary of Most Frequent Observations and Effects

Environmental Component	Change/Observation	Observed/Potential Effect
Temperature	<ul style="list-style-type: none"> • Warmer longer into fall • Warmer winters • Heat in summer is more intense 	<ul style="list-style-type: none"> • Changes time you can get out • Have to be careful in summer to stay cool (some people)
Weather Patterns	<ul style="list-style-type: none"> • Weather is more unpredictable 	<ul style="list-style-type: none"> • More people getting stranded • Harder to predict when you can go off
Ice	<ul style="list-style-type: none"> • Later freeze-up • Earlier break-up • Sea ice is thinner • Less good ice coverage 	<ul style="list-style-type: none"> • Changes time of access to traditional areas and species • Makes travel more dangerous at times, more accidents
Snow	<ul style="list-style-type: none"> • Less snow today • Drier more grainy snow • Snow comes later in the year 	<ul style="list-style-type: none"> • Harder to get out at certain times and into certain areas • Easier to walk around town and easier on some people • Can't make snow houses with this snow
Freshwater	<ul style="list-style-type: none"> • Some ponds and brooks are drying up • Lower water levels in many freshwater areas 	<ul style="list-style-type: none"> • Less drinking water sources when out on the land • Poorer quality of natural sources of drinking water
Plants and Berries	<ul style="list-style-type: none"> • Fewer and smaller berries • Changes in areas where berries are found 	<ul style="list-style-type: none"> • Fewer berries and plants for eating and for traditional uses • Have to go further to find some
Terrestrial Animals	<ul style="list-style-type: none"> • Changes in distribution (e.g. caribou) • Skinnier caribou today • More abnormalities in many species • Some new species (e.g. moose in the north, return of wolverine) • Fewer of some species (e.g. rabbits) 	<ul style="list-style-type: none"> • Have to travel further to find them, harder to get at certain times of the year, less food • Some are not got to eat • New species might be good, but we can't hunt them yet
Marine Mammals	<ul style="list-style-type: none"> • Seals are skinnier • More square flippers, and harps • More "crawlers" 	<ul style="list-style-type: none"> • More seals eating more fish? • Seal condition make you wonder about health of sea
Birds	<ul style="list-style-type: none"> • Decreases in numbers and disappearance of some species (e.g. plovers, harlequin ducks, snipes, etc.) • Geese are coming earlier • Some new species (e.g. swan, hummingbird sighting) 	<ul style="list-style-type: none"> • We miss seeing and hearing some bird species • Fewer birds for traditional foods • Geese coming earlier puts pressure to adjust hunting season
Fish	<ul style="list-style-type: none"> • No more capelin and cod • Salmon are smaller 	<ul style="list-style-type: none"> • Fewer fish to eat, harder to get
Other	<ul style="list-style-type: none"> • More pollution today • Sun is hotter now 	<ul style="list-style-type: none"> • Polluting the environment, impacts health of animals • Sun burns more easily



INTRODUCTION

It is in the northern regions of the world where climate related changes and impacts to the ecosystem, community and human health are potentially the greatest. Changes across the Canadian North are predicted to be variable with warming trends occurring in the Western Arctic and some cooling in regions of the Eastern Arctic. This variability stresses the need to take a regional approach in gaining a better understanding of the changes and direct as well as indirect impacts generated by these changes in the North. Potential human health, socio-economic and environmental impacts are related to climate variation, unpredictability and change in current climate and precipitation regimes and the resulting changes in the various components of the ecosystem. Changes projected for the Arctic are already being observed and reported under such projects as the Mackenzie Basin Impact Study, the International Institute for Sustainable Development (IISD) led “Inuit Observations on Climate Change” project run in Sachs Harbour, NWT, and recent workshops held in the Inuvialuit Settlement Region (ISR) led by Inuit Tapiriit Kanatami (ITK). Much more is known for regions in the Western Arctic than in the east, however changes have been reported in these eastern regions as well and work must continue here to better understand and appreciate the variability of changes and impacts across the North. A project conducted among residents of Nain, Labrador in 2000-2001, reported changes and concerns related to such things as warming temperatures, increasing unpredictability of weather, changes in amounts and types of precipitation, changes in ice distribution, thickness, timing of freeze-up and break-up etc. and the impacts these types of changes have on wildlife, community life and traditional land-based activities which are important for social, mental, cultural and physical health and well-being among individuals living in Labrador.

As part of a current project entitled *Identifying, Selecting and Monitoring Indicators for Climate Change* being conducted in both Labrador and Nunavik from 2001-2003, this workshop brought together representatives from all the Labrador coastal communities¹ and was designed as a central activity for this project and to continue the collection of this information on climate changes, impacts and adaptations among communities along the Labrador coast. The project was continuing work conducted last year under the project *Climate Change and Health in Nunavik and Labrador: What we know from Science and Inuit Knowledge* which only conducted this form of work (interviews documenting environmental changes) in the communities of Nain in Labrador and Kuujuaq in Nunavik. The current workshop

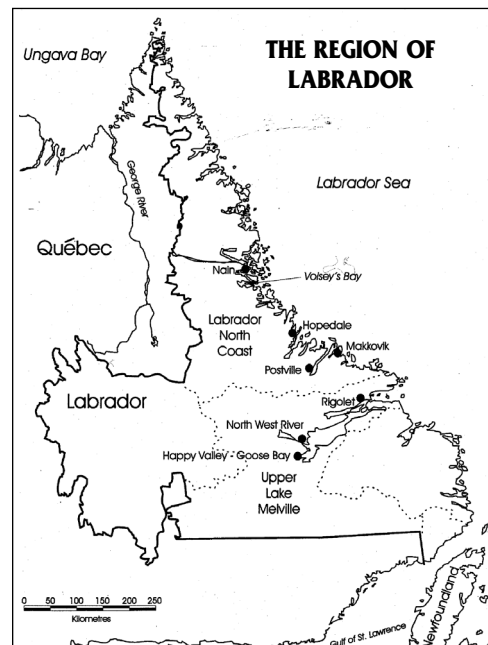


Figure 1. Map of the Labrador North Coast and communities participating in the workshop in Nain, April 30 - May 1, 2002. Participants from Hopedale were not able to attend due to weather conditions.

¹Representatives from all but one coastal community (Happy-Valley Goose Bay, Northwest River, Postville, Rigolet, Makkovik and Nain) attended the meeting. Participants from Hopedale were not able to travel from this community due to weather at the time of the workshop.



intended to collect and make available this information for local, regional, national and international processes on climate change and to bring a “human face” to the issue of climate change in the Arctic. As a result of the community workshop and the knowledge and participation of community residents in this region, a documentation of observations based on the rich and valuable traditional Inuit knowledge in this area is presented in this report. Finally, the workshop still represents stages of the starting point for the development of regional and local processes to address the concerns and questions raised by the participants on behalf of their communities.

METHODS

Pre-Workshop Methods

The workshop planning followed the following steps:

1. plan the workshop;
2. discuss objectives (overt and covert);
3. review the proposed workshop methodology;
4. adapt methods as appropriate.

The workshop followed similar methods as those used in workshops to elicit this type of information on the same subject in the Inuvialuit Settlement Region this past winter and last year. Through discussion with the facilitation team, some small adaptations were made to this process. The processes included all participants in the workshop – community members, regional representatives and facilitators – as co-investigators. The workshop was intended to be a dynamic learning process for all, where everyone had an opportunity to investigate the issue of climate change and its meaning to the community. There was a multi-directional exchange of information and perspectives on climate change.

To facilitate the commitment to co-investigation, the project team utilized the same guidelines as

those prepared and used for the ISR community workshops:

1. **Have fun!** The experience of learning and sharing knowledge with each other will be insightful and enriching.
2. **Appropriate Activities.** Try to choose activities that are most appropriate for the people you are working with. Not all of the activities will necessarily be useful or practical for every group.
3. **Be flexible.** The group or community may already have their own methods and techniques for sharing information. These ideas can be shared at the beginning of the workshop and incorporated as the group sees fit.

Workshop Agenda

- 1.0 Opening Questions
- 2.0 Collection of Observations on Climate Change and Development of Timeline of Changes
- 3.0 Effects
- 4.0 Reactions/Adaptations
- 5.0 Who Should Know About This?
- 6.0 Regional, National and International Processes
- 7.0 From Observations to Indicators

GROUP ORGANIZATION

The group separation was done based on a number of criteria. The workshop team tried to group individuals from the same community together whenever possible to allow for the discussion of locally specific changes. However, because of the limited number of interpreter/translators able to be at the workshop we also grouped together all those wishing to work with an interpreter/ translator to ensure that everyone could share and be engaged in the process. Further, we only had two participants from Rigolet present, and thus these individuals were grouped in with participants from Postville or Makkovik to be able to speak at least to changes along the southern reaches of the North coast. Also, individuals were encouraged



whenever possible to indicate that the changes they were speaking of were specific to their community and to identify which community that was. Also, we were very lucky to have community area and regional maps provided for each group by LIA (Frank Andersen) and participants were welcome to indicate and mark changes associated with a specific location, or site on the map.

After all of these criteria were applied (or attempted to be), and individuals separated, the groups consisted of the following:

GROUP 1

Silpa Edmunds – Postville
Sarah Ittulak – Nain
Mary Dicker – Nain
Julius Merkuratsuk – Nain
K Naeme Tuglavina – Nain
(Translator/Participant)

GROUP 2

Boas Jararuse – Makkovik
Clara Ford – Makkovik
Sarah Obed (Translator/Participant)

GROUP 3

Ron Webb – Nain
Gus Dicker – Nain
Joe Webb – Nain



Figure 2: Labrador workshop participants

GROUP 4

Douglas Jacques – Postville
Jack Shiwak – Rigolet
Kitty Jacque – Postville
Winnie Michelin – Rigolet
Joas Fox – Makkovik
Allan McNeil – Goose Bay

GROUP 5

Mary Adams – Goose Bay
Horace Goudie – Goose Bay
Pauline Andersen – Northwest River
Randy Keizer – Northwest River

1.0 OPENING QUESTIONS

The participants were broken into two small discussion groups after the opening introductory comments by Chris Furgal, CHUQ. The small break-out groups were asked to respond to the following questions to help set the agenda for the meeting and to gather initial perspectives, desires etc. for the workshop.

1. Why did you come here today?
2. What interests you about climate change?
3. What do you hope will be the results of the workshop?
4. Do you have any other interests related to climate change that you would like included in this workshop?

GROUPS 1 AND 2 (combined)

1. Why did you come here today?

- Because I was invited.
- Also invited (from Makkovik).
- To speak.
- Not formally invited but indirectly and was interested anyway.
- Heard through radio.
- Want to hear from Elders about climate and environment.
- First, want more information about this workshop, what are we looking for?



- Want to support this question (asked to participate).
- Want an idea of what a workshop is all about.
- Want to talk about climate changes.

2. What interests you about this topic?

- We cannot control weather, and we have noticed changes over the years; more things are changing than before.
- Dad used to say weather was changing – Elders know – noticed changes – everything – animals disappeared from land and sea – climate changes today and way back – lots of changes in last 60 years – had conference call yesterday: summer in Quebec now.
- In 2000 (April 28): blowing snow, cold – in 2001 (April 28): cold, wet snow – in 2002: wet snow, foggy all day – not very cold – 2002 (March 21): noticed first time full moon was huge.
- Scientists/researchers studied changes – find out what’s happening – neglected people in this land and their knowledge.
- We see changes going on:
 - See new insects.
 - Lived in Goose Bay 55 years – at first could get seals, rock cod, salmon, *iKaluk* (Char) – but not as much anymore.
 - Used to get many berries – not now.
 - Strange birds – other (old) kinds seem to disappear.
 - Rock cods/smelt sickly – skinny – diseased.
 - Rivers drying up.
- When growing up – father used to know weather.
- People used to know to look at sky (cloud formations), wind, etc. – to predict weather – can’t anymore, changes very quickly.
- His son mentioned not seeing any bake apples when they should have been in abundance at that time of year, but there were none.
- Our parents said it would change – we noticed lots of change.

3. What do you hope will be the results of the workshop?

- Some recommendations at the end of this workshop.
- Get info (reports) back to community quickly.

4. Do you have any other interests related to this topic that you would like included in this workshop?

- Dumpsites spread contamination – wind blows into town.
- Causes skin problems.
- Affects asthma – sinus problems.
- Not enough help for Elders (if they have stroke or are really ill).
- Happy Valley: hard to pay \$ 100 to go to hospital.
- \$ 500/month for home, too expensive.

GROUP 3

1. Why did you come here today?

- Invited.
- Interest in climate changes.
- Involved in climate changes – ongoing interest.
- It affects us (more than anywhere else).
- Effects on our food because it is affected by weather changes.
- Affects traveling conditions too.

2. What interests you about this topic?

- Change gradual – hard to notice.
- Ponds drying up.
- Different snow (because weather conditions).
- Ice doesn’t freeze hard (lucky to get ice on 20th May).
- Saglek should be included.
- Anaktalak Bay should be included – development affects our food sources.
- Worms/parasites in wildlife.



3. What do you hope will be the results of the workshop?

- Needs to carry on (importance on food and travel issues for people in Northern Labrador).
- Where will the \$ come from.
- How to stop it.
- Comes from other places.
- Inform people. (How to?)
- Different ideas for getting the message out.
- Learn of the 'reality'.

4. Do you have any other interests related to this topic that you would like included in this workshop?

- We need to work towards a research facility.
- Increase capacity/ability to deal with issues.
- Ice late in fall – everyone hunts in the same area – what is the effect on wildlife
- What is in snow and rain – affects berries – what is the effect ('fall out').
- *OKak*: trees seem to be dying (why?) (Drying up).
- Christmas trees: seem burned.
- Should be aware of anything in our natural water? (Brooks, etc.).
- Indicators in fish and seals to let us know if something is wrong? We should be watching.
- LIHC brook sampling: we should see results.



Figure 3: Scenes from the Labrador workshop.

GROUP 4

1. Why did you come here today?

- Asked to come (LIA).
- Like Nain, interested in learning and helping.
- Share knowledge and understanding about land.
- Elders get asked a lot.
- Interested in Public Education, wildlife, learning from Elders.
- Read invitation letter.

2. What interests you about this topic?

- Interested in wildlife and learning from Elders, Public Education.
- Learn from Elders about old days and land and weather.
- Changes in the weather – things are different now – not just the weatherglass, but TV plus phones.
- Dad told (showed) me he could predict weather. Cannot now, weather changes too fast.
- Talk about changes.
- Interested in past, present and future: land, weather conditions, climate change, land formations (changes), fisheries, wildlife changes, the effects on communities and sustainable development.
- Human health – concern over conditions/ diseases (e.g. asthma), effects of weather and pollution on this.
- How use of modern machinery (generators, planes, skidoos, etc.) affect human health.
- Workshops like this are good idea so we can share and learn about these things.
- Scientific information.

3. What do you hope will be the results of the workshop?

- Teach the young generation more.
- Share Elders' knowledge with young.



- Program where Elders teach young generation about the topics explained in 2.
- Document Elders knowledge on paper (somehow) so their knowledge can be passed on to next generation. Young people will be interested in this.
- Sharing of information. Pass-it-on.
- What are the workshop organizers goals for this workshop? – Workshop organizers are looking for direction from us (participants).
- Young people need to see or hear what workshop was all about.
- Written report should be sent to the actual teachers – not just for the principal of the school so they could use this information in curriculum – Don't have this type of information in schools.
- Videos, Internet, TV, written reports, posters – need to be careful about delivery. To keep it interesting to occupy people (kids) so they will learn.

4. Do you have any other interests related to this topic that you would like included in this workshop?

- Once discussion continues, these will be added.
- Having community people together, having the opportunity to discuss issues that interest them.
- Reporting back after the workshop is important (written report).



Figure 4: Scenes from the Labrador workshop.

- Breaking into small groups is best. Stimulates more discussion. Bring what comes out from small groups to larger groups to hear what each group has to say. This works best.

GROUP 5

1. Why did you come here today?

- Will come to help in any way.
- To find out if people from other areas are talking about climate change.
- What is happening to wildlife? What is happening to the environment? What is happening?
- To get involved.

2. What interests you about this topic?

- Lake Melville and Trans-Labrador Highway (Goose Bay) lined with cabins; garbage everywhere, lures bears to humans, not safe to camp.
- Salmon time: hauling nets – need to take a rifle to protect from black bears.
- Wildlife is overprotected, overrun the place.
- Too much competition for food among animals; good to work on this; get healthy numbers of wildlife; government participation.
- Hard to find a clean place to camp.
- Applies to a big part of Labrador.
- Seagulls' abundance and distribution.
- Bears/animals in groups more aggressive – too plentiful means they are more aggressive.

3. What do you hope will be the results of the workshop?

- Get a group together, to study it, and do something.
- Keep the meeting going as long as doing something; such big changes.
- Find a way to live comfortably with these changes cause we can't change the weather.



- 4. Do you have other interests related to this topic that you would like included in this workshop?**
- Caribou do not taste the same; don't taste right, as it should; when growing up could eat the Mealy Mountain caribou.
 - Past 30 years warmed up in the fall, September/October not cold, falls longer.
 - Weather is different.
 - This winter was bitter cold, first one in a long time.
 - Sun is getting hotter than used to be (January sun melts the ice around the truck window, never see that before).
 - Partridge disappearing, trout, rabbits, berries (smaller and marked) disappearing.
 - Low level flying troubles the caribou, does something to them, don't taste the same.

 **Table 1. Summary of responses by groups to opening questions.**

Question	Groups 1 & 2	Group 3	Group 4	Group 5
1. Why did you come today?	<ul style="list-style-type: none"> • Invited. • Interest in the topic. • Want to hear Elders speak. 	<ul style="list-style-type: none"> • Invited. • Interested. • Affected by the issue. • Involved in changes. 	<ul style="list-style-type: none"> • Invited. • Interested in helping community. • Like to share knowledge. 	<ul style="list-style-type: none"> • Interested in learning. • Want to help. • To get involved.
2. What interests you about the topic?	<ul style="list-style-type: none"> • We see changes, lots going on. • Our parents said it would change. • Scientists often neglect local people in knowledge gathering. 	<ul style="list-style-type: none"> • See lots of changes (ponds drying up, different snow etc.). 	<ul style="list-style-type: none"> • Interested in wildlife and learning from Elders. • Weather is changing. • Interested in the past, present and future (land etc.). • Want scientific info. 	<ul style="list-style-type: none"> • Concerned about changes in the land. • Need better wildlife management.
3. What do you hope will be the results of the meeting?	<ul style="list-style-type: none"> • Recommendations for action. • Information back to the communities. 	<ul style="list-style-type: none"> • Information for people. • Money for work. • How to stop it. 	<ul style="list-style-type: none"> • Teach the younger generation. • Programs with Elders for youth. • Documentation of Elders' knowledge. • This information should go to schools. 	<ul style="list-style-type: none"> • More studies of it. • Find away to live comfortably with the changes.
4. Other interests related to the topic?	<ul style="list-style-type: none"> • Dumps sites and contamination. • Asthma. • Not enough help for Elders in community. • Costs for health care. 	<ul style="list-style-type: none"> • Need a research facility in our region. • Contaminants in water. • We need to be watching things. 	<ul style="list-style-type: none"> • Need to have this report back in communities. 	<ul style="list-style-type: none"> • Caribou are changing. • Changes in weather and wildlife are a concern.



2.0 COLLECTION OF OBSERVATIONS ON CLIMATE CHANGE AND DEVELOPMENT OF TIMELINE OF CHANGES

The small groups were then asked to record on cue cards, the changes they have noticed and heard about in and around their community associated with the environment, weather, climate etc. These observations were recorded, one per card, and following the exercise, were posted together (by group) on the wall in the plenary meeting room for general discussion and viewing by all participants. The groups then came together to share their results of what changes they documented by presented a brief overview of their discussions in plenary and by viewing the separate collections of cards on the wall recorded by each group. They were then asked to return to their small groups and arrange the observations according to when they started seeing each change. Each card was placed in a group according to the decade it was reported to have occurred in. This activity was done in small groups with participants going to the wall and moving cards to the appropriate decade. The summary tables presented below are those observations, organized by the decade in which they were reported to be noticed initially changing, as assembled by each small group of workshop participants.

GROUP 1

1940s

- Smaller rhubarb.
- German missionaries used to grow large rhubarb using capelin fertilizer (capelin fertilizer is no longer used as capelin is no longer available).

1950s

- Drinking water contaminated by rotting gas tanks and oil drums.
- Lower water levels where boats used to have access, for example: the Winnifred Lee used to anchor in Nutāk Harbour but not anymore.

1960s

- Little green worms on Juniper trees are fewer (people are glad of this).
- *KuliKuliak* (plover or ring neck beach bird), *nasauligāk* (Lapland longspur or snow lark) *amauligāk* (snow bunting or snowbird) are fewer.

1970s

- No more *kumaks* (lice).
- Capelin are gone from shallows; in Postville only available in deep water; no one uses for fertilizer anymore.
- *Tulligunaks* (rose root) hardly any around anymore.
- Death of wildlife; mostly seals and fish washing up on shore.
- Pussy willows are almost all gone (can't eat the leaves).
- Storms are getting worse and they break up the sea ice.
- Postville, ice was late freezing – Tikkaratsuk, Hopedale, Postville.
- All ice was broken up by storms, storms are getting worse each year.
- Ponds are drying up everywhere (notably across from Postville after uranium mining at the Kitts Michelin site – wondering if this is why the wildlife appear with sores and if accounts for incidence of cancer among people).
- Natural water sources are contaminated.
- Of note, drinking water is chlorinated and in Postville chlorine was poured directly into the pond resulting in people vomiting and having diarrhea and lots of dead fish found in the drain pipe – Americans left drums in the pond at Hopedale and people became very sick with vomiting and diarrhea – in Nain scientist told people that animal droppings may be contaminating the water.
- Fewer fish off shore and around Ilik islands, had draggers and long liners in those areas 20 years ago.



1980s

- Large saltwater pond cod became scarce.
- Saw large hailstones the size of a fist.
- Lots of flu, children and Elders mainly in all communities.
- Children – lots of ear infections and tonsillitis, school closed down, and with Elders.
- Have lots of strokes and heart attacks and many people with cancer, the question is: What is causing these health problems?
- Tides are changing, higher and lower.
- Bigger and higher waves.
- When people travel from Nain to camps or go out on the land they feel good and then feel sick when they come back.
- Fewer lemmings.

1990s

- Abnormalities in wildlife, i.e. baby beluga got caught and had lots of sores with puss and could not be eaten; sores on liver and skin of caribou and seals and they are fed to the dogs; parasites on caribou meat – they look like little rice grains in sacks.
- Ice comes later now – used to come in November, now it comes in late December.
- Land is dry e.g. hardly any berries, and the ones found are dryer and smaller, can only find plentiful berries on islands.
- Different snow in October now, can't build snow houses, because it's too soft and powdery, tried to teach youth but couldn't.
- After thunder it used to mean good weather was coming but the prediction doesn't ring true anymore.
- Lots of mice equals lots of foxes equals lots of rabies, also lots of wolves.
- Not as many *nakatanak* (purple flowered wild Labrador turnips).
- The water is different (e.g. the nets they pull up are dirty and covered in a thick

slimy substance; fish are disappearing, the cod are no longer near shore, all in deep water) question: is the water temperature getting hotter or cooler?

- Used to be lots of rock cod, maybe there are too many seals eating off the fish, and people have to travel further to get fish.
- New kinds of birds: 2001 small yellow and red birds came in large groups that ate anything including seal skin and seal fat.
- Eggs that ducks laid were rotten/spoiled and could not be eaten and this happened in the Smokey area south coast outside Rigolet.
- Larger insects e.g. mosquitoes and spiders.
- No more severe snowstorms in fall.
- Ice is getting thinner, soon will not be able to go to Hopedale from Postville, can't walk the ice edge for sealing, skidoos went through the ice even though it looked good in Postville, ice is not safe like it used to be e.g. From Hopedale, people went camping and the dog team went through the ice and the people had to be rescued; and sea ice is no longer good for traveling in April – May.

GROUP 2

1950s

- When we lived in Hebron we never saw timber flies, but when we moved to Makkovik – we saw them.
- The char further south have worms in them (1959 – late 50s).

1960s

- Exhaust from planes falls on the moss that caribou eat. It also pollutes the air.
- Char is not as red as they used to be, more pale.

1970s

- The drinking water from the town supply doesn't taste good – tastes rusty.



- Too warm outside in the spring when the season changes, the water changes – wasn't always like this.
- The kettle gets mouldy from tap water, but not brook water.
- The taste of wild meat is not the same e.g. caribou and seal.

1980s

- In 1985 we had a lot of snow in the winter. My daughter went sliding right by the house. It's not like this anymore.
- Bone marrow of caribou is not as greasy. It's drier. Also it is redder and has more blood in it.
- Caribou and seals are skinnier and don't have as much meat and fat.
- Can't use nets in ponds for food, wasn't like that before.
- Can't use nets on ice, people use hook and line and sometimes fish on sly.
- Late 80s (1989) bedlamers, harp seals, don't have as much fat as before.
- Foxes are turning rabid, they didn't before.

1990s

- No more cod, only rock cod. The cod has been over fished (everyone knows this) by trawlers.
- Can't go fishing around Makkovik, only can catch 12 (char/brook trout) per day with a rod.
- Summers are getting hotter.
- Polar bears are coming closer to the land, around camping sites any time of the year.
- Used to be a lot of jumpers (harbour porpoises) outside of Makkovik, but today there are hardly any.
- A lot of icebergs now.
- The landscape is changing.

2000s

- Last winter we were traveling to Nain from Makkovik and around Davis Inlet the ice was open (where it was never open before) and we don't know why.
- Can no longer predict weather – changes too quickly.
- This past Christmas wasn't cold (2001).
- Saw bake apples early – there should have been an abundance, but there wasn't.
- Geese don't go to their nesting places, they don't relax (people would wait for them in evenings).
- Geese come to the community earlier (2002). Hunters want the season to open in mid-August because they start going away in September (season opens in September).
- Before Christmas, ice would freeze but not now.
- Last fall was very cold – it seemed like winter, it wasn't like this before.
- One season we don't know what happened, the trees were knocked down. There were no rivers or brooks close to the trees.
- First time last summer the bake-apples were already too ripe in August, like they were spoiled before they were ripe in September.
- Last summer was the first time we didn't have bake apples.
- Can only use 3.5 inch net, not four inches – it wasn't like this before (2001/2002).
- A couple of years ago, outside of Makkovik, in the winter my *kamutik* was in the air from a tornado – it was like a tornado, all my belongings went up into the air.
- Last year (2002) there were a lot of mice in Makkovik, on islands – it wasn't like this before. They even ate up trees.
- This year (March 21, 2002) the full moon was huge.



- Today there are hardly any snowbirds around – there are usually more around (April 30, 2002).
- Char is starting to get red again.
- People get sick more often now (lots more flu now, it wasn't like this in the 60s and 70s).
- Since 2000, weather has changed a lot.
- Caribou are harder to get nowadays during the winter. They go different places.
- Rest of Labrador had lots of mice last year, first time we have seen some mice on islands. These mice had no eyes. If you kill mice with no eyes it brings bad luck.
- 2001 – noticed last year that there are very small black flies and they bite very hard and crawl into your clothes. They are smaller than sand flies and we do not have these ones usually.
- We find blood in the nostrils of caribou now too.
- In 2000, some people were up around Napáttuk, and it was so hot people had to go onto the speedboat to cool off, also the rocks were so hot they were too hot to walk on and a candle even melted in the sun.

GROUP 3

Observations not associated with a specific time because the changes are so gradual

- Stays warmer longer into the fall.
- Temperature fluctuates often from cold to warm and vice versa.
- Changes in ice freeze-up. Freeze-up of soft ice, then rain or melting, gets freshwater on ice and the mixing of ice (salt and fresh water).

1960s

- By Town Council Office – Carving Shop, ice in the ground (ice lens) no longer there, was there in the 60s.

1970s

- Ice is saltier.

1980s

- Takes longer time to freeze-up less “vapouring”.
- Erosion on land in Webbs Bay is faster now.
- Less pushed ground (permafrost or ice lenses).
- Snow drier, not wet snow anymore.
- Snow melts faster now because there is nothing to it (one hot day and it disappears).
- This winter snow is more sugary.
- Could go around easier on the snow in spring, crust on top powder underneath now.
- Ice “glitter” on snow, animals slip and break legs, injured.
- Ice not as thick as before.
- Can't go inland because of icing on the land, no caribou inland because of ice, this is more frequent now.
- More unpredictable weather.
- Ranger seals disappeared.
- Ice drains now and then is nothing left, before it would be hard after draining.
- More snow and water on the ice, years ago at certain times it would drain and then ice would float and get hard again, now it just soaks through and ice melts.
- Ice used to be 4-7 ft thick in brooks, less thick now.
- Water soaks through the ice now, doesn't drain through cracks and seal holes.
- Warmer winters (fewer very cold days).
- Glitter on the ice affects food for animals, can't get through it, caribou tongues are cut up.



- Snow comes and melts. Doesn't always stay on high ground. It melts and ices. Animals are affected, i.e. *ukaliks* (Arctic hare) come down from hills for food.
- Changes in temperature in April (spring).
- People get stuck because of fast temperature changes.
- Some years, 2-3 years in a row, pups getting born on the ice, no snow, getting eaten by wolves – impacts on population.
- Shoals seem to open quicker now than before (have to be very careful).
- Heat more intense now.
- Summer much drier now – had a forest fire a few years ago.

1990s

- In the spring the rough ice is not as rough as it used to be, doesn't take long to melt now.
- More square flipper seals now, seen all through summer and fall now (distribution).
- Ponds and swamp areas dry up, can walk over them now.
- More rocks and lower water in larger rivers.
- Freshwater ice “candling”.
- Outside areas that get ice is worse ice now (freeze up late December before and now it is late January or early February).
- Square flippers coming further up the bays and more of them.
- Used to get ice underground (pure ice), not anymore – pushed up places.
- Freshwater ice – hard on top and then soft a little ways down (10 cm).
- Smaller brooks in fall, have less water than before, char impacted they must wait to go in or go to another river.
- Char have to wait for rain to go up brooks sometimes because of water levels.
- More crawlers now (species – square flippers, harps, hoods, ringed) – bays open up and seals come in, then freeze up fast and seals get caught.
- More harp seals, coming in earlier.
- Ice goes out earlier (used to be middle of June, and now is end of May or early June).
- Lots more avalanches now.
- Stronger winds all seasons, last longer.

- Geese coming earlier it seems (usually 2nd week of May and now its April).
- Longer to freeze (before by Christmas you could have ice, now it's into January, January 7th this year).

GROUP 4

Observations not associated with any time in particular

- When rivers are low in the fall, freezing causes the river levels to drop.
- Hot summer causes water levels to go low.
- Water levels change but do not seem to change over time.
- Many animals change in numbers but this is a natural cycle e.g. foxes are not plentiful this year, partridge not plentiful, and rabbits are plentiful.

1940-1970

- American airbase.

1950s

- Jack Shiwak born.
- Used to make a dollar a day. Today we do not.
- Dollar used to be worth something.

1960s

- Uranium exploration KipukKak (Inuktitut name for Postville).
- Codfish are gone caught too much by draggers and gill nets.



1970s

- Churchill Falls completed.
- Late 1970s, first high school in Northern Labrador.
- 1972-first colour TV in Nain.
- 1979 – Americans withdraw from airbase.
- LIA formed.
- Get more daylight hours than before (Oct-Nov).
- S1 used to be open water, now frozen and used as a skidoo trail – Rigolet to Goose and out to NWR.
- S1B – is pathways that skidoos used to travel on because was frozen now it's easier to cut across as S1.
- S2 – narrows near Rigolet use to run at 11 knots, now it is down to 6 knots, probably due to Churchill Falls development (whirlpool no longer there).
- For last 20 years, Back Bay used to freeze up, now it does not freeze all the way to the end (Used to travel on it by dog team now must travel on it by boat).
- Development of Churchill Fall. This has changed everything (water levels in Lake Melville, currents, tides, salinity, fish migration, erosion).
- Capelin do not come in anymore (Postville) – mid-1970s.

1980s

- End of 1980s cod fishery fails.
- 1980s closed hospitals in North West River now have to go to Goose Bay.
- Used to see big salmon, great big ones 25-30 lbs in September, don't see them anymore, only small salmon (peels).
- Do we have more cancer today? Or, did we have cancer back then and did not know what it was? Over last 15-20 years, we started to learn what cancer was.

- Long ago had huge snowfalls, particularly in March, now we get little snow and more rain, snow up to the top of doors and windows before, no more dickyhood batches (snow to the top of your coat hood).
- 1994 – dog killed a mallard duck (first time ever seen this before) and people in Goose Bay and Rigolet see them commonly since the 1980s.
- Tree growth has increased, growing faster.
- Used to always have snow before Halloween now not reliable.
- Weather forecasting is difficult now, Elders not predicting weather because they do not feel that the prediction will be reliable.
- Notice where there used to be snow banks, they are not there anymore could be related to the changes in wind direction or temperature changes.
- Some of the rivers smell strong from grass or ground? Tea tastes different because of this, does not taste as good as it used to.

1990s

- Closed Salmon fishery.
- Summer days are not as hot as they used to be – only 1 or 2 days are really hot days, it is like spring comes earlier but then you are wondering when summer will come. Spring is longer now and fall weather is like that too... but summer is shorter
- Water temperature is warmer now, freshwater and saltwater.
- Seasons are very unpredictable used to be predictable and at the same time each year and now it shifts in timing.
- Long ago mosquitoes came first before sand flies (black flies) now black flies show up first (occasionally).
- Geese arrive earlier in the spring and leave earlier in the fall, this affects when hunting happens.



- Ice is forming later in the season, ice leaves earlier in the season and there is less ice.
- Used to be one could travel from Postville to Makkovik at Christmas time over the bay, now must go overland (water frozen before Christmas, now you cannot count on it).
- Geese come earlier now, used to be in May and now it is April.
- Seagulls come earlier now, not until 18th of April we had seagulls all year near open water in Rigolet.
- Ponds drying up slowly, water levels lowering, in Makkovik area.
- Seen new species in last 4-5 years, swans in Rigolet area.
- There are places where berries used to grow but do not anymore in the Postville area, don't know why? (Could be weather or the soil, who knows).
- High wind events are more common now, winds that break the trees, it's common to see great big squalls today.
- First time seeing thunder and lightning in December; not seen in winter before and not seeing so much in summer now.
- Spring comes earlier, and winter comes later.
- Walrus seen at Paul's island (far to the south), never seen them that far south before.
- Moose have moved in Voisey's Bay area and sightings north of Nain (Animal never eaten before, never thought of).
- New small birds, shorebirds and passerines that have not been seen before are now seen.
- Change in prevailing wind. Used to be northerly and nor' westerly.
- Do not have the big thunderstorms that we used to have, used to be regular summer occurrence, but no more (less dramatic, less often).
- Regularly the community has the water tested and sometimes community is warned by authorities to boil water – more concern

and awareness about the issue of clean water – this concern may be causing more worry, because we hear things on news, and from the LIHC.

2000s

- 2001 AIP signed.
- First ratification vote.
- Changes in the movements of caribou, think forest fires have a lot to do with this (around KipukKak (Postville) River caribou went over to the Labrador City area.
- Some people take bottled water on trips, they sell it in the store now.
- Never used to worry about drinking water, worry about beaver fever, bacteria, we hear about water problems down south and worry about what is in our ponds.

GROUP 5

1920s-1930s

- Winters beginning to get shorter.

1940s

- 60 years ago permanent snow starts in October and now in mid-December.
- Sewage going directly to rivers in Goose Bay area.
- Low-level flying troubles the caribou.
- On Lake Melville, garbage everywhere.
- Local people working with asbestos without protective clothing.

1950s

- Animals (especially bears) in groups, more aggressive.
- Ducks and geese in the fall don't taste good (tastes like bog), in the spring they are still good.
- Partridge are disappearing (due to over hunting).



- Capelin used to spawn in Lake Melville, affects seals, salmon and other animals.
- No fish, bad for the other species (otters, martens, wolves).
- Trout are smaller, difficult to find one over 20 lbs.
- Berries are smaller.
- Sprayed insects with DDT (by Americans), affected berries, and sprayed right over houses.
- Trout disappearing, over fishing.

1960s

- Caribou do not taste the same.
- Spawning grounds downstream of dams are gone.
- Seals and salmon disappearing.
- Species no longer here (Labrador Duck, Harlequin, Pintail, Loons, Snipes, Plovers).
- Ducks disappearing.
- Churchill River not clear anymore.

1960s-1970s

- Rivers shallower by 10ft.

1970s

- Sun is getting hotter than used to be (January).
- Less snow now.



Figure 5: Workshop participants discussing observations of environmental change

1970-1980

- Used to have winter conditions in spring – weather is different.

1980s

- Great horned owl, don't see them anymore.
- Increased cancer incidence.

1990s

- Scum on outside windows from rain and snow.
- More thunderstorms – and lightning.
- No more winter storms (whiteouts).
- Fish are soft – gelatinous back.
- After spraying stops (pesticides) – toads and frogs starting to return.
- Birches in the fall are yellow earlier – related to insects.
- End of winter – early May break up on Churchill River (3 weeks before 60 years ago).
- Need to take a rifle to protect from bears.
- CB radio reception not good anymore.
- Freeze-up starts later in the fall.
- Rabbits disappearing.
- Too much competition for food among animals.
- Bears used to humans, feed at dump, relationship to humans has changed.
- Spiders with long legs, new species, never seen before.
- Lot of bears these days.
- More ugly insects.

2000s

- This winter was bitter cold.
- Hummingbirds seen (new species).



 **Table 2. Summary table of observations of changes reported in Labrador workshop, April 30-May 1, 2002.**

Aspect observed	Group 1	Group 2	Group 3	Group 4	Group 5
Temperature		<ul style="list-style-type: none"> • Much warmer in the spring now. • Summers are hotter. 	<ul style="list-style-type: none"> • Stays warmer longer into the fall. • Temperature changes are faster. • Warmer winters (very few cold days). • Heat is more intense 	<ul style="list-style-type: none"> • Spring comes earlier. • Winter comes later. • Summer not as hot. • Fewer extremely hot days. 	<ul style="list-style-type: none"> • Winters getting shorter. • Spring comes earlier.
Storms and extreme events	<ul style="list-style-type: none"> • Storms are getting worse. • No more big snow falls. 		<ul style="list-style-type: none"> • More avalanches. • Stronger winds in all seasons. 	<ul style="list-style-type: none"> • More high winds. • More thunder and lightning in winter than before, and decreasing in summer. 	<ul style="list-style-type: none"> • No more winter storms (whiteouts). • More thunder storms and lightning.
Weather patterns	<ul style="list-style-type: none"> • More unpredictable. 	<ul style="list-style-type: none"> • Can't predict it anymore, patterns change too quickly 	<ul style="list-style-type: none"> • More unpredictable. • Summers much drier. 	<ul style="list-style-type: none"> • More unpredictable. • Change in prevailing winds (N to NW). 	
Ice	<ul style="list-style-type: none"> • Later freeze-up. • Thinner now. 	<ul style="list-style-type: none"> • Later freeze-up. • Lot of icebergs now. • Ice open at strange times of year in some places. 	<ul style="list-style-type: none"> • Later freeze-up and earlier break-up. • No more "ice-lenses" (ice in ground). • Sea ice is saltier. • Takes longer time to freeze-up. • Ice not as thick. • More snow and water on sea ice. • Spring rough ice is not as rough anymore. • Worse quality ice (Outside areas (marine) • Ice around shoals open faster now. 	<ul style="list-style-type: none"> • Later freeze-up and earlier break-up. • Less ice coverage. • Some open areas now frozen up (opposite happens too). • Back Bay used to freeze-up, now doesn't all the way. 	



Table 2. Summary table of observations of changes reported in Labrador workshop, April 30-May 1, 2002. (cont'd)

Aspect observed	Group 1	Group 2	Group 3	Group 4	Group 5
Snow and Rain	<ul style="list-style-type: none"> • Different snow (more grainy-drier). 	<ul style="list-style-type: none"> • Not as much snow. 	<ul style="list-style-type: none"> • Snow is drier now. • Snow melts faster. • More "glitter" on snow in winter. 	<ul style="list-style-type: none"> • Not as much snow. • Snow comes later in year. • More rain than snow. 	<ul style="list-style-type: none"> • Snow comes later. • Less snow now.
Fresh water systems	<ul style="list-style-type: none"> • Drinking water contaminated. • Ponds are drying up. 		<ul style="list-style-type: none"> • Ponds and swamp areas drying up. • More rocks and lowering water in rivers. • Brooks with low water levels. 	<ul style="list-style-type: none"> • Poorer quality in natural drinking water sources. • Water temp is warmer. • Ponds drying up. • Lower water levels. 	<ul style="list-style-type: none"> • Water levels in river is lower.
Marine systems	<ul style="list-style-type: none"> • Lower water levels in some harbours. • Tides are changing (more extreme highs and lows). • Larger waves. 			<ul style="list-style-type: none"> • Some currents decreased (perhaps because of Churchill Falls). • Water temp is warmer. 	
Land	<ul style="list-style-type: none"> • Drier now. 		<ul style="list-style-type: none"> • More erosion on land (Webb's Bay). • Less pushed up ground in summer. 		
Plants and berries	<ul style="list-style-type: none"> • Smaller rhubarb. • Pussy willows almost gone. • Fewer berries now. 	<ul style="list-style-type: none"> • Fewer bake apples. 		<ul style="list-style-type: none"> • Trees growing faster. • Changes in distribution of berry areas. 	<ul style="list-style-type: none"> • Berries are smaller. • Birches turn yellow earlier in fall (related to insects).
Terrestrial Animals	<ul style="list-style-type: none"> • Fewer lemmings. • More abnormalities in all species. 	<ul style="list-style-type: none"> • Taste of wild meat (caribou and seal) not the same. • Caribou bone marrow is not as greasy. • Caribou are skinnier. • Caribou moving to different places in winter. • More rabid foxes. 		<ul style="list-style-type: none"> • Moose moving further north (north of Nain). • Changes in caribou movements. 	<ul style="list-style-type: none"> • Bears more aggressive. • Caribou don't taste the same. • Fewer rabbits.



Table 2. Summary table of observations of changes reported in Labrador workshop, April 30-May 1, 2002. (cont'd)

Aspect observed	Group 1	Group 2	Group 3	Group 4	Group 5
Marine mammals		<ul style="list-style-type: none"> • Seals are skinnier. • Polar bears coming closer to land. • Fewer jumpers outside of Makkovik. 	<ul style="list-style-type: none"> • Ranger seals disappeared. • More square flippers. • More “crawlers” now. • More harp seals. 		<ul style="list-style-type: none"> • Seals are disappearing.
Birds	<ul style="list-style-type: none"> • Fewer plovers, snow larks, and snow buntings. • Some new small yellow and red species coming. 	<ul style="list-style-type: none"> • Geese coming earlier but not going to their nesting places. 	<ul style="list-style-type: none"> • Geese come earlier. 	<ul style="list-style-type: none"> • Geese come earlier in spring and leave earlier in fall. • Seagulls come earlier. • See new species (e.g. swans, passerines, shorebirds). 	<ul style="list-style-type: none"> • Taste of ducks and geese in fall not as good. • Partridge are disappearing. • No more Harlequin ducks, Labrador ducks, Pintails, Loons, Snipes, Plovers, Great Horned Owl, and hummingbird.
Fish	<ul style="list-style-type: none"> • No more capelin in shallow water. • No more cod – only in deep water now. • Fewer offshore fish. 	<ul style="list-style-type: none"> • Fish further south have worms. • Char is more pale (not as red), starting to change back though. • No more cod, only rock cod. 		<ul style="list-style-type: none"> • No more cod fish. • Capelin don't come anymore (Postville). • Salmon smaller. 	<ul style="list-style-type: none"> • Fewer fish and fewer species. • Trout are smaller and fewer in number. • Salmon are disappearing.
Insects	<ul style="list-style-type: none"> • Larger and new insects. 				<ul style="list-style-type: none"> • More, new and ugly insects.
Pollution		<ul style="list-style-type: none"> • More pollution in the environment today. 			
Other				<ul style="list-style-type: none"> • Get more daylight hours. • Seems like there is more cancer. 	<ul style="list-style-type: none"> • Sun is hotter today.



3.0 EFFECTS

Following the placing of the observations in the timeline the small groups were asked to review the observations they recorded and discuss the associated impacts they are experiencing as a result of these changes. These were discussed from the participants' personal perspective.

GROUP 1

1. Lower water levels where boats used to have access/anchor.
 - Changing travel routes.
 - Farther to travel means it is more costly.
2. Fewer green worms on junipers (lots when camping up north though).
 - People wonder what causes this.
3. Fewer birds especially *Nasauligaks* (Lapland longspur or snow lark).
 - Less food – can't find them, so can't fry them up like we used to.
 - Don't get a chance to enjoy these.
 - Due to laws, kids can't trap (*Paluniak*-trying to catch), especially birds, anymore – if caught get charged.
4. No more *kumaks* (lice).
 - Good.
 - People used to think/say *kumaks* (lice) were good for health because they would suck the bad blood.
 - Also tied to a hair, they could be used to rid eyes of puss.
5. Smaller rhubarb.
 - People don't use it at much.
 - Not as good for jam.
 - People think that good rhubarb still grows in Hebron and travel far to gather it, only to find there is none.
6. Drinking water contaminated by rotting gas tank/oil drums.
 - Community members concerned about PCBs.
- Go to Kanaigittuk Bay for drinking water.
- Makes people worry of other water sources – were contaminated drums dumped in other places?
- People are urged to boil water.
- Community concerns with chlorinated water – Elders are not used to this. It has a bad taste – smell and stomach problems and diarrhea – Elders don't boil their water.
- Kettle gets rusty.
- Younger generation buy bottled water.
- Community members are being blamed for dumping tanks even though others used pond, etc. for planes, etc. and left tanks behind.
- Eggs boiled in water become rusty colour.
7. Capelin are fewer – gone from shallows – found only in deep water.
 - Available only in stores – and they are too salty and too smoked.
 - We are no longer harvesting them – our way of life changed – our tradition gone.
 - We crave them.
 - Other small fish being mistaken for capelins – hardly anyone can recognize them now.
8. Fewer *tulligunaks* (Rose root).
 - Used to be use for medicine.
 - Concerned about development in community because they are less in development areas.
 - Have to go further to find them.
9. Seals and fish washing up on shore.
 - Concern – if they are washing up on the shore, does it mean there are less for us? What is the cause? Is it natural?
 - If fish are washing up, what about their predators – what are they eating?



10. Pussy willows are fewer.
 - Leaves are edible – so fewer available for food – when young.
 - Concern that dust/pollution from vehicles in town is affecting this.
 - Sour more quickly now.
11. Storms are getting worse.
 - Break-up the ice.
 - Some people get stranded when traveling and there is an unexpected storm – this is a problem – especially bad if someone happens to be ill and stranded.
 - Need communication improved for better safety – none now (except Rigolet have CBs).
 - Communication equipment too costly.
 - Concern for community members – especially low-income families.
 - Bad news for hunters when ice breaks up.
12. Ponds are drying up.
 - Some ponds had trout – no longer available to us.
 - Concern – what is the cause?
 - Can we do anything about this – studies would be good – take information back to communities.
13. Fewer fish (cod).
 - We are hungry for them.
 - Trout have changed colours – pink to white (when get red fresh salmon, very good.)
 - New limits on how much we can have.
 - More regulations – on location, seasonal quotas – method as well.
 - Locations – have to go elsewhere – costly in gas – need skidoos too – not everyone has these means to travel (low incomes – mostly everyone here in Labrador).
 - Smaller salt water pond cod gone. No more for a long time now.
14. Large hail stones.
 - Infrequent (happened only in Nain) no effect but unusual.
15. Lots of sickness in old communities.
 - Concern – what are the causes? Water pollution? Air pollution? Uranium? PCBs? (Hopedale maybe Voisey's Bay).
 - Need studies on these – information back to people (lot of studies have been done – but nothing is happening).
 - Many sicknesses
16. Tides are changing – more severe high – low tides.
 - When lower tides – we can go farther to get clams, mussels and *ittiks* (sea urchins), *siutiguks* (snails), *kuanniks* (a form of sea weed), other invertebrates.
 - Concern – how high will the tide become? Our communities are in jeopardy.
 - High tides cause lots of kelp to get caught up in the fishermen's nets.
17. Higher/bigger waves.
 - No effect – acceptance – used to it.
18. Feel sick in Nain – not on land.
 - Concern that air in community is polluted – fresh air out on land.
 - Lots of furnaces (fumes).
 - Contamination from dump.
 - People are healthier out on the land.
 - Concern that pollution density in town spreads illness.
19. Fewer lemmings.
 - Little effect.
 - Good pets – easy to train.
 - Heard at meetings in Baffin – migrate as a group – why are they not migrating as much? How does this affect birds? What is causing this? Environment changes?



20. Abnormalities in wildlife (sores and parasites).
 - Concern – what is causing them?
 - When infected we cannot eat – mostly get discarded, left for the gulls /foxes etc.
 - This is disappointing (e.g. beluga with sores caught – we were looking forward to mattak but got none).
21. Ice comes later.
 - Sometimes it's January before freezing over.
 - People can't get to camps at usual times.
 - People waited for stream off newly formed ice – waited for it to freeze properly – not anymore does not freeze well.
22. Dried up land.
 - Fewer berries in land – the berries that are around are small, dried up, can find berries on islands.
 - Used to be that if there is a lot of snow in winter it meant good lots of berries later.
 - What is causing this? Too dry? Too cold?
23. Different snow in October.
 - Can't build snow houses – too powdery – but people don't build these so much – tents, cabins used.
 - Cannot teach youth how to build snow houses – youth have no *saviks* (knives) to make snow houses – not used anymore – when out on land others at home worried that they will be stranded without knowledge and tools to build snow houses.
24. Thunder (weather unpredictable).
 - Cannot predict weather like we used to – impossible now.
 - Thunder used to mean good weather coming – but not anymore.
 - Need to adapt to this.
- Hard to prepare for travel.
- Easy to get stranded – need to be as fully prepared as possible.
- Want Environment Canada people more involved with local people in our language in the a.m. (OK Society gives forecast in the afternoon).
- Lots of people listen for forecast but not dependable especially before travel (6:00 a.m. CBC Goose Bay news).
25. Lots of mice.
 - Lots of foxes and wolves.
 - Lot of rabies, dangerous for people.
 - Skins were used for infections.
26. Fewer *nakatanaujaks* (English translation unknown).
 - Edible (Elders know this, maybe not youth), they are very tasty.
27. Change in the water.
 - Slimy substance on nets – concern – What is causing this? Water temperature? Draggers?
28. Fewer rock cod.
 - Because seals eat them?
 - Can't make *pitsik* (dried fish) anymore.
29. New kinds of birds
 - Concern – What are they? Where are they coming from? What does their presence mean?
30. Rotten duck eggs
 - Concern – must be happening because it's warmer – too much heat from sun – mother ducks leaving eggs in nest too long – why?
31. Larger insects, spiders/mosquitoes.
 - Why are they so large? What are they eating?



32. More serious storms in fall.
 - Can't get flights into KipukKak (Postville) – medivac, charters with supplies for the communities.
 - Especially in November – still lots of open water at that time.
 - Anchored boats sink or are blown ashore and broken up.
 - Travelling hazards – very dangerous.
 - People wishing for breakwater.

GROUP 2

1. When we lived in Hebron, we never saw timber flies, but when we moved to Makkovik, we saw them.
 - People got bit by them and got sick. Just last spring, a man was bit by one and had to be hospitalized.
2. The char further south have worms in them.
 - When my wife ate a fish with worms, she had an allergic reaction. They are all right if they are dried but not if they are eaten raw. We still eat fish there because it is our food. Other people in the community have noticed this and we want DFO to look in to this. *(Recommendation)*
3. Bone marrow is not as greasy, drier.
 - Not as tasty and they have more blood.
4. Seal meat and caribou are skinnier.
 - They are not as meaty.
 - Seal gravy is darker.
 - Bedlamer seal fat is not as greasy – fatty as before.
5. Can't use nets in ponds anymore, wasn't like that before.
 - 4¹/₂ inch nets are not allowed anymore for food only 5 inch nets are used now.
 - Would like to be able to use 4¹/₂ inch again to catch for food, since nets are too big.

6. The drinking water from the town water supply doesn't taste good, tastes rusty.
 - This affects everyone in the community(s). It seems like we're getting sicker all of the time and the taste seems to be getting worse, rustier.
 - Annie Evans, LIHC's community health worker, tests the water every month and after it is cleaned it tastes a lot better.
7. The taste of wild meat is not the same.
 - We noticed this from other communities like Nain, it's not just Makkovik. The land is affecting the taste of the meat (what's happening on the land e.g. pollution) also we think they are eating differently.
8. Back in the 1980s there was a lot of snow but not as much now.
 - The year is colder, so you could not go out as much on skidoo.
9. Foxes are turning rabid. They didn't before.
 - Never used to be like that before, it is more often now.
10. Seems to be less partridges than before because foxes are eating their eggs.
 - This changes every year, sometimes there are a lot, and sometimes there are hardly any.
 - They are not as meaty as before, therefore, we need to cook more to get enough.
11. No more cod, only rock cod. The cod has been over fished by trawlers.
 - Everyone wishes for cod. Get tired of the same old thing, but never tired of cod.
12. In Makkovik people are only allowed to get twelve char, trout a day.
 - We would like to be able to catch more.
13. Summers are getting hotter.
 - Get headaches and have to take Tylenol.



- People get sick more. Feel sick when it's too hot. Make you not want to do anything.
 - We went on speedboat to cool off, it was so hot.
14. Polar bears are coming closer to land, around camping sites anytime of year.
- On the radio, they say that this is also happening further up north.
 - Because the Polar bears follow the ice.
 - The bears destroyed cabins, camps, etc.
 - They are getting scary.
15. There used to be a lot of jumpers outside Makkovik but not as many or hardly any today.
- Travel further to get jumpers, even though they were far before, now they are much further now.
 - Therefore, you spend more money to get Jumpers (dolphins), but they don't mind, as long as they have Jumpers.
 - Gas is very expensive.
16. An opening in the ice around Davis Inlet, which was never there before.
- Why is this, what is causing this?
 - People of Davis Inlet heard a loud noise and thought this may have something to do with the opening.
 - It was not caused by waves.
 - This also happened around Makkovik area, August Point, there was only a small brook, so this was not the cause. Even the big trees were knocked down, this happened a couple of years ago, and the trees are already dried up.
17. Can no longer predict the weather, changes too quickly.
- In the month of May, its mostly only ice, no snow on ice when travelling to cabin, then in June, it is open water.
18. Brooks are starting to dry up and also ponds.
- Because of this, when we are at our cabins we have to find other farther water sources.
19. There are more icebergs now. They travel anywhere.
- Recommendation: need to get more Elders involved, they have a lot more information.
20. Not many bake apples or they ripen a lot earlier.
- There were a lot of bake apples last year but they ripened earlier and spoiled.
 - So the people had to go elsewhere.
 - Every year they seem to be getting less.
 - Because the sun is getting too hot, which dries up the ground, they used to be much bigger.
 - The earth is getting old like the people.
 - Last summer was the first time they noticed there were not any bake apples.
21. Geese are hunted before they can land at their resting grounds.
- As a result, the following year they go somewhere else, further away.
 - When they eat too many berries (including bake apples) they cannot fly.
22. Caribou harder to get during winter now.
- Keep meat during winter for summer months in freezers now.

GROUP 3

1. Stays warmer longer into the fall/Later freeze-up.
 - Have to wait for ice to form.
 - Focuses hunting activity on land because you can't get out on the ice as early.
 - Can't get out far enough to get seals.



- Can't get to traditional hunting spots early.
 - More skidoos falling through the ice.
 - Have to make rescues more often because of the late freeze-up.
 - Older people aren't teaching younger ones the same information they were taught about the land, and people are taking for granted how they think the conditions are.
 - People don't use the traditional method for testing the ice anymore (it used to be three sharp jabs with your dart and then you knew you could travel on it).
 - There is often snow on the ice right after it freezes and this keeps the ice soft and it isn't safe to travel on (and it sinks with snow on it).
 - Animals from islands (foxes and *ukaliks* – Arctic hare) come in from the islands later in the season, changes their distribution and our access to these species.
2. Erosion faster now (e.g. up in Webb's Bay).
- Changes the channel of the brook – we used to get up the brook in the boat and char used to be able to go up the brook, now they have to wait for rain to get up it.
 - Threatens houses and buildings on the site – we will have to do something about it eventually to stop it.
 - We have done some to slow it (put down wood and boards to slow erosion) but it doesn't last for long.
3. Snow lighter/more sugary and dry now.
- Not good for skidooing, get stuck more easily, go down in the powder.
 - Harder access to traditional hunting and wooding areas.
 - Harder walking in snowshoes now too.
 - The snow is no good for making snow houses anymore.
4. 'Glitter' on top of the snow.
- Hard for animals to get at food (caribou and *ukaliks*-Arctic hare).
 - Hard for skidooing.
 - At first when it forms, hard to get out on skidoo, after time gets easier.
 - Easier to find some animals because they go where you know to find them (e.g. come out of the hills to get their food) – the effects of this is that it is easier to access some of the animals.
 - Animal accidents are caused by the glitter, they slide down hillsides and die in some cases (this has happened before in some places-specifically this has been reported near Nain to date).
 - Caribou get bruised a lot because of the glitter, we have caught them after and you can tell.
 - When caribou have to move because of the glitter it changes their diet, this influences their taste; some of them aren't good tasting in these situations (they are out along the coast eating kelp etc.).
 - Caribou are often skinnier in these cases too.
 - Sometimes people take more animals when they are closer to the community (because they have come out of the hills because of the glitter), this has an effect on the population numbers.
5. More unpredictable weather.
- More people get stuck out and caught in weather and stranded.
 - Harder for traveling in speedboats in the fall.
 - Can't predict when to go off as easily as before.
 - Now that there is a ground search and rescue team here in Nain, people take more chances I think (not thinking about the weather) – this puts the rescue team at risk.



6. Capelin gone.
 - Fewer fish for seals, because they are the food for seals, therefore the seals are perhaps skinnier I think, and now seals are changing their diet, eating more char and other things.
 - With more skinny jar seals, they are not as good for eating.
7. There are more 'crawlers' now too of all species.
 - This makes it easier to get seal meat if the seals haven't been up on the ice for too long because then the taste gets bad.
 - Crawlers are good for fox as they are prey.
8. More harp seals.
 - The price for pelts is coming back so maybe this is a good thing?
 - Fewer rock cods (maybe this is because of the increase in harp seals, I am not sure).
 - The harps scare char away, this affects our access to char.
 - Young harps are good for food though.
9. Small ponds and some brooks are drying up.
 - When there is 'hung up' ice along the sides of the brooks (ice where the water level has dropped significantly, and there is nothing under the ice, it is dangerous) it is hard to get in there because it is hollow below and could break (dangerous for accessing these areas).
 - Ponds drying up – has an effect on birds (gulls), they have to move to another place to lay eggs.
 - Affects char when the small rivers dry up because the char can't get up them for their migration and to spawn.
 - So, we can't get char up in the ponds but we can get them at the mouths of the river because they are waiting there while the water is low.
 - Bears can get them there more easily too.
10. More avalanches.
 - We are more aware of them too, because of the avalanche guy in town.
 - People think about them more now though too.
 - People avoid these areas when traveling.
 - They have more knowledge about them but then they think and worry about them more.
 - They are dangerous. We know to avoid them.
 - There is more hoar frost now too, and this has increased the chances of avalanches.
11. Ice opens much faster around the shoal areas.
 - Makes for more dangerous travel in these areas.
 - Have to be more aware when traveling especially in these areas.
 - Can't take some regular paths for traveling now.
 - Ice in these areas goes very fast and therefore it is harder to get out in some regions and in some cases to get to some regular hunting spots.
12. Spring coming earlier, snow gone earlier in the year, and earlier break-up.
 - People stuck in community longer ('spring fever'), people get frustrated and anxious to go off.
 - People are affected by having to stay in the community.
 - Have to wait to go off because the snow is no good to travel on.
13. Land is dryer now – fewer berries.
 - Fewer berries and bake apples some years.
 - Less of them for food for us and animals.
 - But the drier weather is good for red berries so it is not just negative.
 - Birds don't hang around as long if there aren't berries here.



- Some years berries don't grow at all, can't get them as much these years.
 - Blackberries – some places you can find lots, others there aren't many, where before there were.
14. Foxes are fatter and mating earlier.
 - Hard to clean them because it requires more work.
 - This is all part of the cycle though (mice are about to increase now because there are none this year because of rabies in the past few years).
 - Fox skin is thinner when they are fatter and this makes cleaning the pelts harder.
 15. Marten coming back now.
 - We trap them so this is good for economic reasons.
 - Not many people trap anymore though.
 - Hardly any young animals though, they are just moving in from somewhere else, so just the old ones are here right now.
 16. Wolverines are around here now.
 - Bad thing for trappers, they get other animals and can cause trouble at camps.
 17. Moose are far north now.
 - More and more are coming this far north every year.
 - We are not allowed to kill them though so it is not a source of food for us just now.
 - There is no hunting season for them up here.
 18. Beaver are coming back.
 - They are building dams in certain areas.
 - We can trap them.
 - I guess this is a good thing because we can trap them if we want.
 19. Fewer young geese these days.
 - In the spring hunt, mostly you get older ones now.
 - Young ones weren't as good for eating.
 20. The sun is hotter now.
 - Burns your skin more easily than before (get sun burns more now).
 21. Many trees have brown needles. They are much drier now.
 - Some trees are dying in some areas.
 22. Caribou have bugs and worms in them more now than before.
 - We don't eat the livers because of this.
 - There are white round worms in some animals all throughout the meat.
 - The marrow is now dry and stringy, this is bad as it is usually good for eating and now we don't eat those that are stringy and dry.
 - Some caribou are now found with worms (black) in the throat.
 - All these animals we find bugs in etc. we do not eat (so there are fewer for eating then because of this).
 - 16-18 years ago caribou came out to the coast, this was good as it brought wolves and foxes out which were good for trapping.
 23. More contaminants in the environment now.
 - You hear more about the contaminants in eggs (gulls) now.
 - It has to do with the dump I think.
 - People don't eat eggs from close to town.
 - There is concern with the eggs people eat.
 - Concern about eggs at Saglek because of the contamination there.
 24. More golden eagles around now.
 - Positive swing in the population.
 25. Impacts of the changes on polar bears.
 - Ice melting faster changes where polar bears are seen and where they are coming ashore.



- More polar bears around now.
- They stay out long if the ice is rough (i.e. drift ice), when it melts they come in, and this happens more now as the rough ice and ice in general is melting faster now.
- So the changes in the sea ice has impacts on their condition and distribution.
- Maybe they are using land fast ice more than rough ice and there could be more movement back and forth between these habitats by bears now.

26. Impacts of the changes on black bears.

- They are getting more used to all the noise (they are getting 'tamer').
- They are having their young closer to the coast.
- There are many more young ones now and this is because of a higher survival rate; you see more mothers with more cubs now.
- Because of the changes in temperature they are coming out of their dens earlier, with the warmth they come out earlier, with the glitter, the sun goes through the snow, brings bears out earlier.
- They go into dens later with the warmer weather and less snow later in the year than before (got one in November last year).
- More up past tree line (Saglek, Hebron) – this could be because there is no village past Nain and therefore less hunting on them there (barren ground black bears).
- These ones (north of the tree line) go out on the ice for seals, and hunt for caribou.
- There is some concern in the region because some bears are getting killed for no reason (bears coming into camps and being shot).
- Last year there were approximately 7 or so that were killed (barren ground black bears).

GROUP 4

1. Get more daylight hours than before.
 - More daylight hours give you more time to work or stay out on the land.
 - Easier on electricity bill.
 - Changes are slow, difficult to notice, so people adapt to it.
2. S1 used to be open water (*see map*).
 - Changes travel route in winter.
 - Scares the Elders who are not used to travel through there, used to be open water.
 - More direct, much quicker route.
3. S2 – narrows near Rigolet used to run at 11 knots – now 6 knots (*see map*).
 - Not that big effect on locals. Has an effect on fisheries, less salmon and trout – less seals – tide slowed down so salt water has encroached inland. This may have affected the salmon's movements up river to spawn.
 - Affects the way we travel. Used to be whirlpools and bad currents. Used to avoid those areas near the narrows – waited for slack tide – now can go at anytime. Not as dangerous now as it used to be.
4. Development of Churchill Falls.
 - Lower water levels in some rivers that we can no longer travel on. Affects routes used.
 - Made difference to all rivers and how they flow. Even lakes 100 miles away (e.g. Moran Lake).
 - Changed water levels, allows smelts to travel 100 miles up river in places that they never were before. Allows us to dip-net at night (for some) (salt water moving inland and slower currents allows this).



5. Capelin do not come in anymore (Postville) – not on the shoreline (beaches) to spawn.
 - Now go ashore anywhere at all, and spawn other places. Never seen this before. Cannot get them with a dip net because too far under the water.
 - Used to be part of the traditional diet.
 - Used to dry them (and salt them) for the dogs. No more now so we buy them from the store.
 - Some kids probably do not even know what a capelin is.
6. Used to see big salmon 20-35 lbs in September.
 - “September Run” – big ones. Not allowed to put nets out anymore, must take nets out by August but when nets are in, you still do not see as many big ones, mostly peels (still there but not as many big ones).
 - No commercial fisheries anymore – allowed 10 salmon but they are usually very small, like a trout. Affects us in that we get less fish meat. Used to last us the winter, now can’t. Affects our diet.
 - Affects the older generation much more than the present generation because this was something they were used to. Difficult to leave behind. Next generation will not even know about this.
7. Long time ago, had huge snowfalls particularly in March.
 - Only ‘heads and tails’ now (dogs’ bellies under the snow).
 - Effect is that now it is easier to get around.
 - February 2002: big batch of snow – Elders have never seen anything like this before. Also, big sea must have broke up ice in Makkovik harbour – Must have been hurricanes.
 - Deep snow causes slush in spring – makes travel difficult – too watery for seals to get up on ice. Must wait until water on surface drains.
8. 1994 – Dog killed Mallard Duck.
 - Wonder why they are moving into area, other than that another bird to put in a pot. They should be found in places that are warmer.
9. Trees grow faster.
 - Wonder why this is happening? Gives us questions – we notice these changes.
 - Will affect us in the future – some potential in the future (forestry, etc.).
10. Weather forecasting difficult now.
 - Effect is to turn more to electronic forecasting than the Elders – this is not good – no prediction is reliable.
 - Makes planning difficult – really can’t plan a hunting trip based on the forecast – weather changes too quickly.
 - It used to be good to depend on Elders for weather forecasting (Allan’s grandfather used to predict weather well, before he died said ‘hard to say’ too difficult and unreliable.
 - Cats used to go wild before storms – run around houses – no more.
11. There used to be snow banks that are not there anymore.
 - Used these snow ridges and banks for navigation – when this changes, one has to keep this in mind when traveling. Now, with different directions of the wind, the direction (orientation) of snow banks changes and makes it difficult to predict a route.



12. Water smells strong – tastes bad.
 - Scared to drink the water.
 - Water in the houses smells – put too much chemicals in it – smells and tastes bad – worried about health effects from this water.
 - Some rivers and ponds also smell and taste bad. Particularly when it does not rain for quite some time. Do not want to drink this water.
 - Makes us wonder why pond water smells and tastes bad.
13. Summer days are not as hot as used to be (fewer intensely hot days).
 - Some days, the rocks were so hot you could not dry your fish on them – too hot. Don't see this much anymore. Rare to find a day where you cannot dry fish.
 - Hot days (char and trout) you get more fish in the nets because they move more and are higher in the water on hot days.
14. Water temperature is warmer now – fresh and salt water.
 - Wonder how this affects us.
 - Temperature of water affects the fish, which affects our ability to get them.
 - Affects the freeze-up of the ice – we don't get thick ice like we used to. Changes the timing of freeze-up and break-up. This affects our traveling routes and timing.
 - Warmer water – thinner ice – makes dangerous travel – more accidents – trying ice and people are breaking through the 'top crust'.
 - Makes people more nervous to travel.
15. Seasons are very unpredictable.
 - Was something we could depend on. Kids now do not depend on the Elders anymore – do not pay attention to what they say because they could be wrong – Leads to less value being placed upon Elders.
- Why is this happening? Makes us curious.
- Aside: “scrunchin” on the snow (sound of walking on snow – cold snow). Used to hear this in winter all the times, but rarely today. Used to have a dry – cold weather – but not much anymore – could hear your footsteps behind you – snow is different now.
- ‘Smoke-a-drift’ heavy snowdrifts – can't see land.
16. Mosquitoes came first – now sand flies.
 - Lots of torment (bugs you a lot) from the flies.
 - Change activities sometimes because of this. Do not go outside.
 - Torments the animals – dogs too – can't rest, must keep moving.
 - Drives animals out of the woods and to the shorelines – affects where we find animals.
17. Geese arrive earlier in the spring – leave earlier in the fall.
 - Earlier access to geese.
 - People who work at fish plant worried that they may miss the fall goose hunt because geese leave early. There is a spring hunt, birds are fatter.
 - Geese arriving earlier in spring is better because ice may still be good to travel on. Too late, can't travel as well for goose hunt (positive effect).
18. Ice forming later in the fall – leaves earlier in spring.
 - Disrupts our means of travel. Prefer to use skidoos over boats (can go everywhere – safer when breakdown) but this prolongs period of boat travel. Fall not good time to travel by boat (windy – cold).
 - Concentrates hunters in smaller areas for hunting (e.g. partridge). Same for Christmas trees – can't get up the bay anymore – people starting to buy artificial Christmas trees.



- Seals (harp, ring) staying in the bay – used to leave in June – now stay in bay right until they leave in the Fall – must be more seals.
 - Makes it easier to get out to the Islands for eggs. This could affect the birds perhaps?
19. Travel from Postville to Makkovik at Christmas over the bay – now have to go overland.
- Safety: Can be dangerous – can be dangerous to travel over ice.
 - Waiting for Bay to freeze over.
 - Not always enough snow on land to go – stops travel.
20. Seagulls come earlier.
- May lay eggs earlier.
 - This affects egg collection.
21. Ponds drying up slowly – water levels dropping in Makkovik area.
- Changes where you go to get birds and fish.
22. New species seen.
- Mallard: good to eat.
 - Swans: good to look at.
 - Moose: not even good to look at.
23. High winds events more common now.
- Hard on roofs of houses.
 - Dangerous for boaters – ‘waves are too big (bigalops) to get out.’
 - Affects travel – storm bound (The team was unsure of what the participant meant by this), can’t get back: “when you coming back? Depends on the weather.”
 - Must prepare for longer periods of time – in case.
 - Bring more food.
24. First time seeing thunder and lightning in December.
- Makes people say prayers.
 - Makes older people wonder why? Strange.
 - Frightening.
25. Walrus seen at Paul’s Island.
- Good thing, people eat these animals.
26. Poorer water quality.
- Sometimes must boil water – gives stress.
 - Increased expenses to establish water systems.
 - Does not taste as good – will not drink.
 - Will not drink because don’t like the chemicals.
 - Question what chemicals they put in the water and their effects on humans.
 - Can no longer travel across ponds that used to travel on commonly because they are now town water sources – against the law.
27. Change in caribou movements.
- Must travel greater distances – eat more store bought food because of this.
 - More expensive: gas, food (store bought).
 - 1 caribou: worth \$ 600 – \$ 800 of store meat.
28. Some take bottled water on trips.
- More expensive.
 - Different taste – like ice water better.
 - Drink bottled water more because it does not smell like town tap water.
 - Drink more juice and pop (lots of pop) now.
29. Worry about drinking water.
- As above – lack of confidence.



GROUP 5

1. Winters are shorter (started in 1920 to now).
 - Changes too fast to adjust to.
 - Too much to keep up with.
 - Harder for trappers.
 - Overlapping seasons affects seasonal diet – harder to maintain.
2. Hard cold winters, early onset.
 - October trapping travel on ice.
 - Skating on ponds in October.
3. Sewage to river untreated.
 - Could no longer drink the water (Snow water now has a film when melted, used to be beautiful, might be affecting caribou taste).
 - Seals and salmon affected, sores are now seen on them.
 - Increased illness among people and wildlife.
4. Low-level flying affects caribou.
 - Affecting migration routes.
 - Caribou: Mealy Mountain herd doesn't show up anymore.
 - Could affect berries (pollution).
5. Lake Melville: Garbage everywhere.
 - Attracting black bears.
 - More flies around garbage.
 - Need protection (rifles) against the bears.
6. Local people working with asbestos without protection.
 - Health impacts later on: cancers, brain problems, and lung problems.
7. Animals in groups (especially bears) more aggressive.
 - Need to have a gun to stay in a camp.
 - Scared to go camping.
8. Ducks and geese in the fall don't taste good.
 - Local sources of pollution affecting the fish and duck.
 - Diet has changed (life has changed) – inland people don't rely anymore (like coastal communities) on traditional food sources.
9. Partridge disappearing (plus capelin and trout).
 - Missing benefits of traditional food (craving it sometimes).
 - Capelin: food base for other species (seals, salmon).
10. Berries are smaller.
 - Less picking.
 - It is a main source in the diet because it is used for many things (jam, pies, etc.).
 - Prevented scurvy/rickets.
11. Sprayed insects with DDT (done in 1950s and 1960s by Americans).
 - Could no longer eat the berries.
 - It still has not come back normal.
 - Eggshells are soft – now back to normal.
 - Kills the birds.
 - Have to change the sources of drinking water for people travelling.
 - People travelled farther for fishing, hunting and picking berries after DDT applications.
12. Trout disappearing (over fishing).
 - Coming back now.
 - Now there are regulations for fishing.
13. Permanent snow mid-October now mid-December.
 - Delay to go ice fishing (going to store instead).



14. Caribou do not taste the same (George River Herd).
 - Still tasting off today.
 - Don't enjoy caribou meat as much.
 - Changed from daily to once a week meal.
 - Less fat on the rump.
15. Spawning grounds downstream of dams gone.
 - Fish are a lot smaller.
 - Have to go farther for fishing.
16. Seals and salmon disappearing (gone).
 - Have to travel further to find them.
 - More expensive to fish and hunt.
 - More dangerous.
 - Need camping for fishing and hunting.
17. Some duck species are no longer here. Others have changed in numbers.
 - Some duck species are still here but they are reduced in numbers.
 - Some duck species had a good taste: Pintails.
 - Loss of benefits and diet from these changes.
18. Churchill River not clear anymore.
 - No more a source of drinking water (stopped drinking in the 1960s).
19. Rivers shallower by 10 feet.
20. Sun is getting hotter than used to be.
 - Flooding (snow melts too fast).
 - Creatures getting confused by unpredictable seasonal changes.
 - Good for gardens, vegetables, but need watering.
 - Certain plants can survive now, new species like apple trees.
 - Less exercise, used to go snowshoeing.
 - More easy to travel.
 - Savings on snow blowers and gas.
 - Probably better for trees.
21. Used to have winter conditions in spring.
 - Longer growing season.
 - New species of animals, birds.
 - Positive change.
22. Weather is different.
 - See 1920s-1930s effects.



Figure 6: Workshop participants listening to a presentation.



23. Rabbit disappearing; linked to Great Horned Owl (don't see any more).
 - Rabbit is food source for some people.
 - Owl is useful for cleaning pest species.
24. Increased cancer incidence.
 - Because of more people in the area (The team was unsure of what the participant meant by this).
25. More thunderstorms.
 - Starts forest fires (more frequent).
26. No more winter storms.
 - You can travel more easily.
 - Visibility is better.
27. End of winter: early May (three weeks before 60 years ago).
 - Good impact.
 - Longer growing season.
28. Freeze up starts later in the fall.
 - More impact on coastal communities (travelling on ice).
29. CB radio reception not good anymore.
 - Problems if there are emergencies.
30. Too much competition for food among animals – bears used to humans.
 - Risk to communities.
31. New insects, spiders.
 - Not bothering.
 - People wondering why new insects.
32. This winter was bitter cold (one year event).
 - Didn't snow much.

4.0 REACTIONS/ADAPTATIONS

After discussing effects of these changes that have been observed the workshop groups discussed what could be done by individuals and communities to deal/adapt to these changes and if there were things already going on in the community, or their household to adapt to these changes.

GROUP 1

Adaptation – next steps:

- Travel routes have changed.
- High/low tides – studies and research required – give resulting information back to the community members.
- Because we cannot get cod for *pitsik* (dried fish) and *Sivak* (cooked cod liver), we use rock cod instead to replace the cod.
- We need to know more about the reasons our animals are getting sick – what can be done?
- Because our traditional medicines (berries, plants, etc.) are scarce now, we depend on white peoples' medicines, knowledge is not passed to younger people.
- Because we are losing our tradition of making *kamiks* (seal skin boots), we buy store-bought boots, etc.
- We need more people making traditional clothing to teach youth.
- Our youth need to be taught how to live on the land – to be prepared – and just to learn e.g. we will know what to do if equipment/technology breaks down or malfunctions.
- We need science to tell us why these things are happening.
- Bad ice areas are marked – but not until after a fatality – mark bad ice areas before fatalities.



- Need a shorter time span (currently 24 to 48 hours) for missing parties – this should be done (search party dispatch) ASAP.
- Impacts study (low level flying) should be done on Inuit lands too. These have been done on Innu lands with good results for the Innu – what about our land?
- Studies have been done on water quality – people told not to drink water 25 years ago.
- Mining impact studies done but information is not available – when can we know? Why does it remain confidential?

GROUP 2

Caribou

- There is less caribou around Makkovik so we have to go up to Nain to get some, or Davis Inlet way inside the country. We have to spend a lot more money on gas.

Drinking Water

- Sometimes to drink the water, we have to boil it first (there is a boil water order from LIHC). Would be better if we have our own pipes, or plastic pipes were used.

Fishing

- The quota of 12 fish is not enough, especially for large families. So sometimes people fish on the sly to meet their needs. The char is not going to go away. Some people are disabled and can't fish, and people who work can only fish on the weekend. People give some of their quota to the Elders.
- Some white people fishing on the sly, using helicopters. This means less fish for the community.

Ice/Wooding

- Because the ice doesn't freeze until after December, people have to go wooding more in the spring so that they have enough.

Bake Apples

- There aren't many around so we have to look around to other places. If I have to, I will buy some from the store.

Dry Wood

- People have to travel a lot further for dry wood.

GROUP 3

Traditional Foods

- Have freezers so we have traditional food access all year round.
- Used to salt it as well to preserve it (smoked too) not doing this as much as before though now.
- Can get char now year round because travel on skidoos makes it easier and can travel faster and further in winter than before.
- Use different machines to go off, some people walk when waiting for snow to come.
- Access by boat – using them later in the season now.

More Unpredictable and Changing Weather

- Search and Rescue team exists already. We are rescuing these people that are getting stranded.
- Used to be families that did this on their own, now there is a team.
- Need to inform people about the changes that are going on and the impacts they have and could have – education is needed.
- Search and Rescue team has done some specific public awareness, but there is a need for more.
- Parents don't always show kids the traditional ways/knowledge as much as before – this needs to be done especially now with all these changes.

Changes in Ice Conditions

- Ice track tests must be done, we did them for Voisey's Bay tests and informed people of the ice conditions for safety for travel, this is going to be even more important, we need a system like this with all the changes in ice conditions and potential shipping in the future.



GROUP 4

Water

- Go outside community already to get drinking water.
- Should get water being used outside of town tested, so we know if it is good (commonly used sources).
- Already test community water – hear results of tests – they are posted.
- Many people buy Brita water filters.
- Buy bottled water from store.
- Decrease cost of bottled water – make it less than gas.
- There is a by-law that says people are not allowed to travel over water sources with skidoos and dog teams, etc.
- Like to hear medical/health experts' advice on the water issue.

Weather

- Educate people about weather forecasting.
- Call 1-800- ... to get weather reports and this should be free.
- Need more weather stations to give more local weather conditions, so people can make appropriate decisions – forecasting from Goose Bay is not good enough.
- Study local weather patterns.
- Listen to forecast of Goose, Makkovik, and Cartwright – not good enough – weather is very different locally.
- People could keep weather diary.
- More use of traditional weather predicting ways. Use this on TV and radio to add depth plus information.

Animals

- Get what you can when you can because may not be back for sometime (caribou).
- Community freezers.

- Community coordination scheme for distributing meat/food between communities ? yearly changes in who has and doesn't have food exists.
- Monitoring to find out about pollutants in Air/Food/Water.

Ice

- Make trails.
- Monitor ice conditions from year to year.
- People call ahead now to find out ice conditions in other communities.

GROUP 5

Climate Change

- Just go along with it (cope with it).
- Good communication system in Goose-Bay/ Happy Valley.
- Be more flexible/take more time for planning (travelling-fishing-hunting).
- Need 2 weeks for 1-week trip.
- Cost more.
- Still camping, hunting, but get caught in difficult situations now more often.
- Not getting very far with adaptations because of unpredictability.
- 5-6 generations ago they had it all figured out, now it is much harder, it is easy to get tricked out there, just go along with it.

Country Food

- Just go along with it.
- Already more grocery food.

Garbage

- Government should take licenses away from people throwing garbage everywhere.
- The Department of Wildlife – heavier fines for polluters.



- Need a good clean up.
- Bear hotels for black bears (like in Churchill for polar bears) – bear population control.
- Fences to keep the bears away.

Goose-Bay Clean Up

- More involvement from federal government for clean up (like Dew line).
- Independent agency to sample and analyze the soils especially around the base), environmental monitoring.

Sun Getting Hotter

- Sunscreen, hats, sunglasses for good protection against the sun.
- Without sunscreen: small itchy blisters.

Sewage

- Need a treatment plant in Goose-Bay (sewage going directly to water).

Group reported needing more time to provide quality answers for adaptation, as they did not complete this exercise.

Table 3. Summary of commonly reported changes, effects and adaptations at Labrador climate change workshop.

Aspect of Environment or Climate	Change/Observation	Reported/Potential Effect	Adaptation/Coping Strategy
Weather patterns	<ul style="list-style-type: none"> • More unpredictable weather systems and changes. 	<ul style="list-style-type: none"> • More people getting stranded. • Harder to tell when it is safe to go off. 	<ul style="list-style-type: none"> • Search parties need to be dispatched earlier. • Need search and rescue teams in other communities where there isn't one yet. • Need to educate public about weather and survival skills. • Youth need to learn from parents and Elders. • Need more weather stations along coast for local forecasts. • Need to use traditional knowledge on this more. • Learning to adapt already, changing decisions of going off etc. sometimes. • Learning to be more flexible, take more supplies just in case.
Ice	<ul style="list-style-type: none"> • Freeze-up later, break-up earlier, thinner and less stable than usual. 	<ul style="list-style-type: none"> • Can't get to hunting and wooding spots at same times as usual. • More people going through the ice/accidents (some fatalities). 	<ul style="list-style-type: none"> • Need to survey and mark bad ice (not just after a fatality). • Have to go wooding more in spring now because ice isn't there until after Dec. • Need to test ice and monitor it and report to people somehow (esp. Voisey's B). • Should monitor conditions annually. • Make safe tracks and mark safe routes.



Table 3. Summary of commonly reported changes, effects and adaptations at Labrador climate change workshop. (cont'd)

Aspect of Environment or Climate	Change/Observation	Reported/Potential Effect	Adaptation/Coping Strategy
Fish	<ul style="list-style-type: none"> • Fewer species, skinnier fish, some species now gone, some moved to deeper water. 	<ul style="list-style-type: none"> • Can't use same species for food in some cases. 	<ul style="list-style-type: none"> • Have to change species for <i>pitsik</i> (dried fish) now use rock cod. • Some white people using helicopter to fish. • Use personal freezer more to store foods, because sometimes they are hard to get.
Terrestrial Country Food Species (Caribou etc.)	<ul style="list-style-type: none"> • Moving in different areas. • More abnormalities. • Skinnier and in poorer health. 	<ul style="list-style-type: none"> • Harder to get certain species in some areas. • Some not good to eat. • Taste is changing. 	<ul style="list-style-type: none"> • Travel further to get them (costs more though). • Use variety of different means of traveling to get them at different times of year. • Store more in freezers knowing they are hard to get at some times of the year. • Get what you can when you can. • Rely more on community freezer in some years. • Need distribution system between communities. • Research on going about health and abnormalities and pollutants. • Already eating more grocery food, so we are adapting in some ways.
Plants and Berries	<ul style="list-style-type: none"> • Fewer berries. • Changing locations of good spots. • Smaller and poorer quality berries. 	<ul style="list-style-type: none"> • Fewer to eat and use in traditional foods. • Fewer for traditional medicines. 	<ul style="list-style-type: none"> • Using more white people's medicines now. • Knowledge about these plants needs to be passed to youth. • Have to go further to get berries and bake apples. • Sometimes we buy them from the store when they are hard to get.
Freshwater Sources	<ul style="list-style-type: none"> • Drying up, poorer quality. 	<ul style="list-style-type: none"> • Less to drink when out on land. • Less good natural sources around community. 	<ul style="list-style-type: none"> • Take bottled water when going off. • Need more testing of sources outside community. • Decrease price of bottled water in stores. • Need publication education on water quality in the area by expert.
Sun	<ul style="list-style-type: none"> • Getting hotter. 	<ul style="list-style-type: none"> • Getting more sunburns. • Get rashes from sun. 	<ul style="list-style-type: none"> • Wear hats, sunglasses and creams now.



5.0 WHO SHOULD KNOW ABOUT THIS?

After discussing what individuals and the community can do to adapt to these changes, or what they are already doing to adapt, the working groups identified who should be told about this workshop and what was discussed in order to respond to the issues raised here and to be aware of what concerns etc. exist within the community on this issue.

GROUP 1

Who should get this (syllabics and roman orthography should be available)?

- Labrador Inuit Association (LIA)
- Labrador Inuit Health Commission (LIHC)
- Health Labrador
- Environment Canada
- ITK
- Department of Fisheries and Oceans (DFO)
- Wildlife Management Board
- Torngat Fisheries
- CHUL
- Memorial University
- Schools – Labrador Boards of Education
- Labrador coastal communities
- Community councils
- Makkovik Corporation
- Pauktuutit
- OKalaKatiget
- All participants

GROUP 2

Who should get this?

- Labrador Inuit Association
- Town councils
- LIHC
- Schools

- Moravian missionaries
- OKalaKatiget Society – kinatuinamut Ilingajut
- Fisheries and Oceans
- Inuit Tapiriit Kanatami
- Torngasuk
- Community Elders
- Human Resources
- Hospitals
- Federal and Provincial Governments
- Inuit Circumpolar Conference
- Inuvialuit Regions
- Everyone who needs to be informed.
- Universities – St John’s, Ottawa
- Correctional Centers – Labrador
- Labrador Legal Services
- School boards
- Search and Rescue

GROUP 3

Who should get this information?

- Workshop participants
- International governments (George Bush)
- Federal/Provincial research agencies and departments
- Federal government departments (DFO, Environment Canada, Natural Resources Canada (NRCan), Health Can, Department of Indian Affairs and Northern Development (DIAND), Parks Canada)
- Provincial government departments (Aboriginal and Labrador Affairs, Forestry and Agrifoods – Inland Waters), MHA Torngat Mountains region, LIHC, LIA, Labrador Inuit Development Corporation (LIDC), INCO, Voisey’s Bay Nickel Company (VBNC).
- School



- Elders (Church)
- Town Council
- Newfoundland Studies at Memorial University
- Institute for Environmental Monitoring and Research

Group 4

Who should get this information?

- Town councils – North Coast
- Local schools – North Coast
- Health Labrador Corporations
- LIHC
- DIAND
- Environment Canada
- Ernie McLean – Minister of Labour and Indian Affairs – Prov. Gov.
- Walley Andersen – MHA – Torngat Mountains
- Lawrence O'Brien
- LIA
- Radio Stations (local communities): reports, follow-up
- CBC radio (Labrador Morning Show)
- Department of National Defence (DND)
- Institute for Environmental Monitoring Research
- Memorial University – Faculty of Science
- Quebec/Labrador Foundation
- ICC – International – Arctic Council
- ITK (Inuvialuit, Nunavik, Nunavut)
- LIDC
- Community College – Goose Bay – Northern Natural Resource Program
- Inuksuk Development Corporation (Provincial Economic Development Program)

- DFO
- Provincial Wildlife Division
- Communities get copies of reports.
- Give written report to communities.
- Have results on radio as well.
- Bring scientists along on next trip to give some background on the scientific information and so they can listen to what locals have to say.

GROUP 5

Who should get this information?

- Town Council of Goose-Bay – Happy Valley
- Town Council of Northwest River
- Newfoundland Department of Wildlife
- Newfoundland Department of Environment
- Department of National Defence
- Newfoundland Department of Forestry
- Newfoundland Department of Health
- Health Canada
- SERCO (Goose-Bay Public Works)
- LIA
- LIHC
- Mr. George Bush (via Foreign Affairs)
- ITK
- Makivik (Nunavik)
- KRG (Nunavik)
- Innu Nation (Newfoundland)
- Other Inuit Organizations in Canada
- Aboriginal Circumpolar Organizations (Alaska, Russia, etc.)
- Memorial University (NFLD)
- Do follow-up workshop with participants.



6.0 REGIONAL, NATIONAL AND INTERNATIONAL PROCESSES

The final presentation of the workshop was directed at providing information to the participants as to how their information was connected to initiatives at the national and international levels on climate change. Daniel Martin of the CHUQ presented an overview of the CHUQ, LIA, NRBHSS project on monitoring and indicators for climate change in Nunavik and Labrador. Scot Nickels of ITK presented information on what was taking place at the national level on this issue and how this information from Labrador and the other Inuit communities is already helping in moving the issue forward on this level. Chris Furgal of the CHUQ presented how this, and similar information from other Aboriginal communities was being used in the Arctic Climate Impact Assessment program and report that is underway around the circumpolar North under the direction of IASC and Arctic Council. What is presented below is a short outline of these presentations.

REGIONAL LIA, NRBHSS/MAKIVIK, CHUQ PROJECT – Daniel Martin, CHUQ

The current project is designed to collect observations and identify indicators of climate changes and the associated impacts for communities to watch so they know what is changing and what the impacts might be. A test database is being developed with these indicators for the organizations involved in this project (LIA, LIHC, Nunavik Regional Board of Health and Social Services (NRBHSS), CHUQ) and eventually for all communities in the two regions. This project started last year and will be finished next year, the focus is the well being of the communities in Nunavik and Labrador and it depends greatly on the involvement of local experts, as well as people in the communities. This workshop is part of this larger research project.

NATIONAL ACTION – Scot Nickels, ITK

DIAND – Inuit Specific multi-year Strategy
ENVIRONMENT CANADA – Northern Ecosystem Initiative (NEI)

NATURAL RESOURCES CANADA – Public Education/Outreach HPAT/HUBS

IISD/ITK – Pan-Northern Monitoring Strategy

- Maintaining relationship with Regional Inuit Organizations – so they can reach their communities
- Providing information
- Receiving guidance
- Providing/improving capacity

INTERNATIONAL ACTION – Chris Furgal, CHUQ

- ACIA – Arctic Climate Impact Assessment
- Started by Arctic Council
- Producing an international report
 - To be completed in 2003
- 14 Sections included in the report, some are covering:
 - Indigenous perspectives
 - Fishing, hunting, gathering
 - Human health
 - Infrastructure, etc.
- This community information is being collected around the circumpolar North to include in several chapters of the report to document and report to Arctic and other international politicians and negotiators, what local communities are observing in their region and what concerns and questions they have regarding climate change.
- So, information from this workshop in Nain may go directly into an international report on the subject that will eventually be read by governments and scientists around the world when deciding on action to take on this issue.



7.0 FROM OBSERVATIONS TO INDICATORS

Following the workshop, observations are in the process of being translated into measurements that could be used to monitor such changes in and around Labrador communities. These indicators are being developed based on the various observations documented at the workshop and are intended to provide an initial list of community identified indicators for climate change in the Labrador coastal area.

They will provide a starting point for potential future discussions in this region on monitoring for climate change and associated impacts.

Translation of observations to indicators is being conducted by the research team as part of the project “Identifying, selecting and monitoring indicators of climate change in Nunavik and Labrador” and was not explicitly addressed as one of the activities at community workshops. Examples of this translation are provided below.

 **Table 4. Examples of translation of observations mentioned at the workshop and how they could be tracked or measured to monitor changes in their status.**

Observation	Potential Indicator
All pond levels are lower	<ul style="list-style-type: none"> • Max. lake depth/yr (for a specific location in a specific lake of importance to the community or representative lakes in the region)
Freshwater sources not as good anymore – tastes swampy because it is not moving as it should	<ul style="list-style-type: none"> • Water quality indicators (various) from important natural drinking water sources for community (total coliform counts, etc.) • Water related diarrhea outbreaks
Less freshwater sources – some drinking water sources not there now	<ul style="list-style-type: none"> • Monitoring of existence of natural freshwater sources habitually used by community (presence/absence)
Less fish and poorer quality – skinnier fewer but larger because they spend more time in the lakes (whitefish)	<ul style="list-style-type: none"> • Fish stock population survey on important river for community harvesting
Caribou skinnier and poorer health	<ul style="list-style-type: none"> • Survey and monitoring of movement and health of caribou population
Summers are getting hotter	<ul style="list-style-type: none"> • Recording of max and mean weekly and monthly temperatures during summer months in communities
Changes in ice break-up and freeze-up dates	<ul style="list-style-type: none"> • Observation of break-up and freeze-up date recorded each year (data from SAR or community observations after “break-up” location and definition is determined)
Ice conditions	<ul style="list-style-type: none"> • Number of ice-related accidents/deaths
Less snow in winter now	<ul style="list-style-type: none"> • Annual mean precipitation falling as snow in communities



8.0 CONCLUSIONS

The Labrador climate and health workshop brought together people from each of the Labrador coastal communities (with the exception of Hopedale because of weather restrictions for travel) to discuss what changes people are noticing, when they started to notice these changes, and what impacts these changes are having on them, their families and communities. Further, the workshop discussed the things people are already doing (changes in daily behaviours, actions taken etc.) to adapt to these changes. For example, some individuals reported walking to go off hunting at certain times of the years when they would normally take a skidoo or four-wheel vehicle but could not as they were waiting for snow to come; taking bottled water on hunting trips to compensate for the lack of freshwater sources in some areas while on the land. As well, participants recommended changes or things that could be done to help adapt to such changes, for example: the need for testing of natural water sources around communities because of the reliance on natural sources and the fact that they are drying up and are of poor quality today, the need for more weather stations or observation programs to give local forecasts for traveling and going out on the land.

The workshop participants all stressed the need and hope for the workshop material to start discussion and teaching about these issues in their communities, with an emphasis on the need for youth to listen to Elders and for Elders' knowledge of such things to be included and respected. Additionally, the

workshop participants recommended that community, regional, provincial, national and international agencies and governments be made aware of their observations of what is changing and the impacts that these changes have on the Labrador North coast communities and people, and that something needs to be done to address these current and potential impacts. The workshop participants provided a list of individuals and organizations to send this report, which can be found on pages 50-51.

The workshop was successful in discussing and recording Labrador coastal residents' knowledge, observations and concerns regarding environmental and climate related changes in the region and the impacts these changes are having on individuals and communities. The next phase of work under the project (of which this workshop was part of) following the distribution of this report will be to develop a list of indicators or "things to watch" regarding climate changes and impacts in these communities in cooperation with the Labrador Inuit Association and the development of a pilot database of this information incorporating the concerns and knowledge identified at this workshop. At the national level, Inuit Tapiriit Kanatami is pursuing the development of an Inuit-specific strategy in response to climate changes in Inuit regions throughout the North and will use this information to support this initiative. Internationally, the information gathered through this workshop will be used in the development of the Arctic Climate Impact Assessment report on climate related changes and impacts in the circumpolar Arctic regions.