Understanding and Responding to the Effects of Climate Change and Modernization in Nunatsiavut

Summary

Project Leader(s)

Reimer, Ken
Sheldon, Tom

Nunatsiavut Nuluak is addressing Inuit concerns about the impacts of climate change, modernization and contaminants on the health of marine ecosystems and communities of Northern Labrador. The overarching goal of NN is to involve Inuit and Inuit knowledge in all aspects of the project to ensure the results are meaningful to local communities and industries and to help build scientific capacity in the region. The project co-leads (Nunatsiavut Government, NG, and the Environmental Sciences Group, ESG) have developed core partnerships with organizations such as Parks Canada, the Department of National Defence, Vale Inco (Voisey's Bay Nickel Company), Sikumiut Environmental Management Ltd., the Canadian Wildlife Service, and the Department of Fisheries and Oceans. Together these research partnerships are providing important insights into how the environment of Northern Labrador is changing, what this means for the long term health of marine ecosystems and how Northern communities will access and manage their land and freshwater resources in the future. The involvement of the Inuit, the Nunatsiavut Government and federal agencies in all aspects of the project will ensure that new scientific understandings are used to develop adaptation strategies and polices that have direct relevance for the people, industries and environment of Northern Labrador.

People

Network Investigators

Bell, Trevor - Memorial University of Newfoundland
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Edge, Victoria - University of Guelph
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Pienitz, Reinhard - Université Laval
Reimer, Ken - Royal Military College of Canada
Sheldon, Tom - Nunatsiavut Department of Lands and Natural Resources

Collaborators & Research Associates

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Burgess, Neil - Environment Canada - Canadian Wildlife Service - Atlantic Region
Edinger, Evan - Memorial University of Newfoundland
Ferguson, Steven - University of Manitoba
Fisk, Aaron - University of Windsor
Furgal, Christopher - Trent University
Helbing, Caren - University of Victoria
Iverson, Sara - Dalhousie University
Moenig, Joachim - Fisheries and Oceans Canada - Oceans Sector
Ross, Peter - Fisheries and Oceans Canada - Institute of Ocean Sciences
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Sharp, Martin - University of Alberta
Tremblay, Martin - Kativik Regional Government

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Richerol, Thomas - Université Laval

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Northern Research Staff
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Lyall, Samantha - Kangidluasuk
Merkuratsuk, Jacko - Parks Canada

Rose Campbell, Jennifer - Kangidluasuk
Snowball, Saladi - Kangidluasuk
Unatweenuk, Lizzie - Kangidluasuk
Webb, Ches - Community of Nain
Webb, Joe - Community of Nain
Webb, Patrick - Kangidluasuk

Partners

Centre d'études nordiques
Fisheries and Oceans Canada - Institute of Ocean Sciences
Fisheries and Oceans Canada - Oceans Sector
Fisheries and Oceans Canada - Science Branch Newfoundland
Indian and Northern Affairs Canada - Northern Contaminants Program
Memorial University of Newfoundland
Nasivvik Centre for Inuit Health and Changing Environments
National Defence - Director General Environment
National Defence - North Warning System Office
National Defense
Nunatsiavut Government
Parks Canada - Torngat Mountains National Park Reserve
Torngat Joint Fisheries Board
University of Victoria
Vale Inco Newfoundland and Labrador Limited

Publications

Articles Published in Refereed Publications

Brown, T.M., Sheldon, T.A., Burgess, N.M. and Reimer, K.J., 2009, Reduction of PCB Contamination in an Arctic Coastal Environment: A First Step in Assessing Ecosystem Recovery after the Removal of a Point Source, Environmental Science & Technology, v.43, no.20, 7635-7642, Published

Brown, T.M., Sheldon, T.A., Burgess, N.M., Kuzyk, Z.A., Stow, J.P., Reimer, K.J., 2011, Evaluation of risk in a northen marine ecosystem - a model study for site specific decision making in risk assessment., Marine Pollution Bulletin, , Submitted

Johnson, K.E., Knopper, L.D., Schneider, D.C., Ollson, C.A. and Reimer, K.J. , 2009, Effects of local point source polychlorinated biphenyl (PCB) contamination on bone mineral density in deer mice (Peromyscus maniculatus)., Science of the Total Environment, v. 407, no. 18, 5050-5055, Published

Kahlmeyer, E., and Bentley, S.J., 2010, Patterns of fjord sediment flux and accumulation along a high-relief, recently glaciated coastline, Torngat Mountains, Canada, Canadian Journal of Earth Science, 1, Submitted

Kahlmeyer, E., and Bentley, S.J., 2011, Dispersal of Fluvial Sediment in Two Sub-Arctic Fjords on the Labrador Coast: Nachvak Fjord and Saglek Fjord, Canada, Canadian Journal of Earth Sciences, , Submitted

Other Refereed Contributions

Arnold, M., Sheldon, T., Rowell, J. and Brown, T., 2010, kANGIDLUASUk Student Program: Adventure Education in the Torngat Mountains of Canada, International Polar Year Oslo Science Conference, Proceedings (talk), 1, Published

Bell, T., Barrand, N.E., Leblanc, P., Chadbourn, J. and Sharp, M.J., 2010, Glaciers of the Torngat Mountains, northern Labrador: how many and for how long?, IRIS-4 Integrated Regional Impact Assessment, , Accepted

Brown, T.M., Dangerfield, N., Veldoen, N., Helbing, C.C., Fisk, A.T., Reimer, K.J. and Ross, P.S., 2010, Ringed seals (Phoca hispida) along the Labrador coast: Health in the face of global and local PCBs., SETAC North America 31st Annual Meeting, Portland, OR, Proceedings (Poster), 1, Published

Brown, T.M., Reimer, K.J., Sheldon, T.A., Iverson, S.J., Fisk, A.T., Ross, P.S., 2010, Ringed seals as indicators of ecosystem health in northern Labrador., Northern Contaminants Program 18th Annual Results Workshop, Proceedings (Talk), 1, Published

Brown, T.M., Sheldon, T.A., Luque, S.P., A.T. Fisk, Iverson, S.J. and Reimer, K.J., 2010, Use of chemical tracers and satellite telemetry to assess diet, foraging patterns and contaminant exposure in northern Labrador ringed seals (Phoca hispida)., Contaminants in Freezing Ground 7th International Conference, Proceedings (talk), 1, Published

Shea, D., Bachmayer, R., Carpenter, M. and Brown, T., 2010, Requirements and Initial Testing of an Inspection Class ROV as a Benthic Habitat Inspection Tool., 19th Annual Newfoundland Electrical and Computer Engineering Conference, Proceedings (Paper), 1, Published

Non-Refereed Contributions

Agnatok, D., Fells, A., Merkuratsuk, M., Obed, E., Okkuatsiak, M., Barbour, W., Simpson, A., Rowell, J., Knight, T., and Sheldon T., 2008, Students at home on land and sea: Inuit internships in Torngat Mountains National Park, Proceedings, 2008 Arctic Change (Poster), 1, Published

Agnatok, D., Fells, A., Merkuratsuk, M., Obed, E., Okkuatsiak, M., Barbour, W., Simpson, A., Rowell, J., Knight, T., and Sheldon T., 2008, Building a base camp – building an IPY legacy in Nunatsiavut (northern Labrador): Inuit students and scientists and a new way of knowing, Proceedings, Arctic Change 2008, 1, Accepted

Arnold, M., Angnatok, D., Sheldon, T., Simpson, A., Rowell, J., Baikie, G., Brown, T., Reimer, K., 2009, kANGIDLUASUk Student Program: Blurring Borders – Arctic Science and Inuit Culture, 2009 ArcticNet Annual Conference Proceedings., 1, Accepted

Bell, T., Barrand, N.E. and Sharp, M.J., 2010, A first complete inventory, areal measurement and change detection of northern Labrador glaciers, Annual Science Meeting, ArcticNet NCE, Ottawa, 1, Published

Bell, T., King, J.R., Barrand, N.E., and Sharp, M. , 2009, Current Research on Glaciers and Glaciation of Newfoundland and Labrador., Department of Physics and Physical Oceanography seminar series, Memorial University, St. John's., 1, Published

Bell. T., 2009, Our Ice Age Heritage: glaciers and glacial landscapes of Newfoundland and Labrador, International Year of Planet Earth public lecture series, presented by the Johnson GEO CENTRE and the Geological Survey of Newfoundland and Labrador, 1, Published

Bentley, S.J., and Kahlmeyer, E., 2010, Pattern and process of sediment delivery from land to sea in two subarctic fjords, Torngat Mountains National Park., 2009 ArcticNet Annual Conference Proceedings., 1, Published

Bentley, S.J.,and Kahlmeyer, E. , 2008, Marine Record of Sediment Flux from Glaciated and Unglaciated Catchments, Torngat Mountains, Canada, Arctic Change 2008, 1, Published

Brown T.M., Reimer, K.J., Biasutti-Brown, M., Sheldon, T., Bentley, S.J., Bell, T., Pienitz, R., 2009, An Overview of ArcticNet Nunatsiavut Nuluak: understanding and responding to the effects of climate change and modernization in a northern environment. , Amundsen Cruise 2009, Schools On Board seminar., 1, Accepted

Brown, T., Bell, T., Edinger, E., Devillers, R., Copeland, A. and Carpenter, M., 2010, Benthic marine habitat mapping in northern Labrador fjords and research in Nunatsiavut., Canadian Museum of Nature, Invited talk, Ottawa, ON, 1, Published

Brown, T., Reimer, K., Sheldon, T., Bell, T., Bentley, S., Pienitz, R., Rochon, A. and Gosselin, M., 2010, A first look at Nunatsiavut fjord ecosystems., ArcticNet's 7th Annual Scientific Meeting, Proceedings (Talk), 1, Published

Brown, T.M., Sheldon, T.A., Burgess, N.M. and Reimer, K.J., 2010, Assessing ecosystem recovery from a local historical PCB source in a northern marine environment: a living case study., Amundsen Cruise 2009, Schools On Board seminar., 1, Accepted

Brown, T.M., Sheldon, T.A., Burgess, N.M., Reimer, K.J. , 2008, Assessing ecosystem recovery from a local historical PCB source in northern Labrador: a case study., Society of Environmental Toxicology and Chemistry (North America), 1, Accepted

Brown, T.M., Sheldon, T.A., Gosselin, M., Bourgeois, L., Tremblay, J-E., Gratton, Y., and Reimer, K.J., 2008, Spatial and temporal variability of the phytoplankton composition, biomass and production in the fiords of northern Labrador, Proceedings, 2008 Arctic Change (Poster), 1, Accepted

Brown, T.M., Sheldon, T.A., Luque, S.P., Reimer, K.J., Fisk, A.T., Iverson, S.J. and Ross P.S, 2010, A multidisciplinary approach to assessing contaminant exposure and effects in ringed seal along the Labrador coast: satellite telemetry, trophodynamics and health effects., 2009 ArcticNet Annual Conference Proceedings., 1, Published

Burgess, N., Grasman, K., Sheldon, T. and Reimer, K.J. , 2009, PCBs suppress immune function in black guillemot chicks in the Canadian Arctic., Society of Environmental Toxicology and Chemisty (North America) Conference Proceedings., 1, Published

Burgess, N., Sheldon, T, Basu, N. and Reimer, K.J., 2009, Toxicological impacts of PCBs in black guillemot chicks after remediation of contaminated site in the Canadian Arctic., Society of Environmental Toxicology and Chemisty (North America) Conference Proceedings., 1, Published

Carpenter, M., Brown, T., Bell, T. and Edinger, E., 2009, Benthic Habitat Mapping in shallow environments of Nachvak and Saglek Fjords, Labrador., 2009 ArcticNet Annual Conference Proceedings., 1, Published

Carpenter, M., Brown, T., Bell, T. and Edinger, E., 2010, Fiords and Fiards: Contrasting coastal benthic habitats along the Labrador coast., ArcticNet's 7th Annual Scientific Meeting, Proceedings (Poster), 1, Published

Chadbourn, J., Bell, T., Barrand, N.E. and Sharp, M.J., 2010, Topographic influences on recent changes of small cirque glaciers in the Torngat Mountains of northern Labrador, Annual Science Meeting, ArcticNet NCE, Ottawa, 1, Published

Copeland, A., Bell, T., Brown, T., Sheldon, T., Edinger, E., Devillers, R. , 2008, Benthic habitat maps for Nachvak and Saglek fiords: a contribution to Nunatsiavut Nuluak, northern Labrador, Canada, Proceedings, 2008 Arctic Change , 1, Accepted

Estrada, E., Brown, T., Darnis, G., Fortier, L. and Reimer, K., 2010, Species composition, vertical distribution and biomass of mesozooplankton in four Labrador fjords., ArcticNet's 7th Annual Scientific Meeting, Proceedings (Poster), 1, Published

Hulse, P., and Bentley, S.J., 2008, Factors controlling river runoff into the Hudson Bay at the example of the Great Whale River and Nelson River drainage basins, Arctic Change 2008, 1, Accepted

Kahlmeyer, E., and Bentley, S.J., 2008, Recent Sediment Delivery and Accumulation in Three Subarctic Fjords, Arctic Change 2008, 1, Published

Kahlmeyer, E., and Bentley, S.J., 2009, Recent sediment delivery and accumulation in three subarctic fjords, Spring Meeting Geological Association of Canada Newfoundland and Labrador Section, 1, Accepted

Kahlmeyer, E., Bentley, S.J, 2011, Dispersal of Fluvial Sediment in Two Sub-Arctic Fjords on the Labrador Coast: Nachvak Fjord and Saglek Fjord, Canada, European Geosciences Union, Annual Meeting 2011, , Submitted

King, J.R., Bell, T., Barrand, N.E., and Sharp, M., 2009, Measuring and modeling glacier change in the Torngat Mountains, northern Labrador, 2009 ArcticNet Annual Conference Proceedings., 1, Published

Reimer, K.J., Sheldon, T.A., Brown, T.M., 2008, Ecological Risk Assessment and the decision-making process: using innovative models, Invited Guest Speaker at Department of Fisheries and Oceans Federal Contaminated Sites Action Plan Workshop, 1, Accepted

Reimer, K.J., Sheldon, T.A., Brown, T.M., Luque, S.P., Biasutti-Brown, M., and Burgess, N.M., 2008, Strengthening partnerships in Labrador: the true legacy of a local source of contamination in Nunatsiavut, Proceedings, 2008 Arctic Change, 1, Accepted

Reimer, K.R., Brown, T.M., Sheldon, T.A., Luttmer, C.J., Burgess, N.M., Johnson, K.E., Kuzyk, Z.Z. and Stow, J., 2009, Temporal changes in contaminant effect studies: the use of biomarkers in assessing ecosystem recovery after the removal of a point source, 2009 ArcticNet Annual Conference Proceedings., 1, Published

Richerol, T., Pienitz, R. and Rochon, A., 2008, Paleoceanographic conditions in three Labrador fjord ecosystems (Canada): Preliminary results, Arctic Change 2008, 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2008, Paleoceanographic studies of the impacts of natural and anthropogenic perturbations in three Labrador fjord ecosystems (Nachvak, Saglek and Anaktalak):preliminary results, DINO8 - International Conference on Dinoflagellates 2008, 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2009, Paleoceanographic conditions in three Labrador fjord ecosystems (Canada): Preliminary results, Arctic Frontiers 2009, 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2009, Paleoceanographic conditions in three Labrador fjord ecosystems (Canada): Preliminary results, Arctic Frontier 2009 Congress, Tromsø (Norway), 1, Published

Richerol, T., Pienitz, R. and Rochon, A., 2009, The Labrador Fjords Ecosystems: a first sight at a story told by Dinocysts and Diatoms, Amundsen Cruise 2009, Schools On Board seminar., 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2009, Conditions paléocéanographiques de trois écosystèmes de fjord du Labrador (Canada): résultats préliminaires., Colloque Annuelle du Centre d'Études Nordiques, Québec, QC., 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2009, Paleoceanographic conditions in three Labrador fjord ecosystems (Canada): Preliminary results., Arctic Workshop 2009, Lewiston, Main (USA)., 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2010, Paleoceanographic conditions in Nachvak fjord (Labrador, Canada): Preliminary Results, Paleolimnology Symposium of Ontario-Québec Students (PALS) 2010, Queen's University, Kingston, Ontario., 1, Accepted

Richerol, T., Pienitz, R. and Rochon, A., 2010, Paleoceanographic conditions in Nachvak fjord (Labrador, Canada): Preliminary Results, 10th International Conference on Paleoceanography, Scripps Institut-UC San Diego (CA, USA), , Accepted

Sheldon, T.A. and Reimer, K.J., 2008, Department of National Defence and Inuit – a long term partnership: the legacy of PCB contamination in Saglek, Labrador, Invited Guest Speaker at Department of National Defence, Director General Environment Hazardous Materials Workshop, 1, Accepted

Sheldon, T.A., Brown, T.M., Burgess, N.M., Kuzyk, Z.Z., Stow, J., Reimer, K.J., 2008, Assessing biotic risk from a local PCB source in a northern environment: an effects based study, Society of Environmental Toxicology and Chemistry (North America), 1, Accepted

Way, R., Bell, T. and Sharp, M.J., 2010, Reconstructing late Holocene alpine glacier dynamics in the Torngat Mountains, northern Labrador, Annual Science Meeting, ArcticNet NCE, Ottawa, 1, Published

Specialized Publications

Arnold, M., Sheldon, T., Simpson, A., Rowell, J., and Brown, T., 2010, Students at home on land and sea: Inuit Internships in Torngat Mountains National Park, Canada., Polar Science and Global Climate (IPY Resource Book). , 1, Accepted

Clements, A.J., Bell, T., Brown, T., and Edinger, E.E., 2010, Application of Marine Habitat Mapping to Fisheries Management., Report prepared for the Torngat Joint Fisheries Board, Goose Bay, Labrador, 30, Published

Kahlmeyer, E., 2009, Comparison of the Sedimentary Record in Three Subarctic Fjord Systems in Northern Labrador, BSc Honours Thesis, 1, Published