



NWT Cumulative Impact Monitoring Program (NWT CIMP)

A source of environmental monitoring and research in the NWT. The program coordinates, conducts, and funds the collection, analysis and reporting of information related to environmental conditions in the NWT.

NWT Environmental Research Bulletin (NERB)

A series of brief plain language summaries of various environmental research findings in the Northwest Territories. If you're conducting environmental research in the NWT, consider sharing your information with northern residents in a bulletin. These research summaries are also of use to northern resource decision-makers.

Author Guidelines

Purpose

The purpose of the NWT Environmental Research Bulletin (NERB) is to help bridge the communication gap between researchers and the public by providing a venue for scientists and social scientists to explain their findings in a brief, plain language context. The NERB can be used by researchers who are conducting environmental research in the NWT, with the target audience being the residents of the NWT. As a summary of research findings or concepts, the NERB will also be useful to northern resource decision-makers.

To make the NERB as useful and consistent as possible, authors are asked to follow the format outlined below. These documents will also be peer-reviewed by internal and external experts, citable, and made publically available through the NWT Discovery Portal.

Overall layout

- 2 pages only in Word format (use the attached "Sample Bulletin Content" as a template)
- Attach at least two relevant photos and/or figures (1MB >2MB). Make you have the photographer's consent to use the photo, as well as the permission of any people in the photo.
- Write the text, including captions, in plain language. Include a reference section if required—for example, a state of knowledge review—but do not include citations in text.
- As submissions will be peer-reviewed, please suggest at least one reviewer of your work.

Sections to be completed

1. Title
 - Provide a short, catchy, descriptive title in plain language
2. Summary
 - Provide a summary of key findings/ main points (3-4 bullets or sentences)
3. Why is this research important?
 - Present the rationale for the work (1-2 bullets or sentences)
4. What did we do?
 - Provide a general, high-level description of methods (1-2 bullets or sentences)
5. What did we find?
 - Briefly describe key findings and results (3-4 bullets or sentences)
6. What does this mean?
 - Describe the applicability of the results to northerners, particularly environmental regulators, Aboriginal organizations, and community members (3-4 bullets or sentences)
7. (Optional) What do we do next?
 - If applicable, describe key next steps, their importance, and relevance to northerners (1-2 bullets or sentences)
8. (Optional) Information box
 - If applicable, provide definitions or explanation of concepts that provide relevant background information (1-2 bullets or sentences)
9. Contacts
 - Identify Project Lead name, organization, and email address; and/or
 - Identify organization and email address
10. References and citations
 - References should be listed in the following sample style:

Pienitz, R., Smol, J. P., and Lean, D. R. 1997. Physical and chemical limnology of 24 lakes located between Yellowknife and Contwoyto Lake, Northwest Territories (Canada). *Canadian Journal of Fisheries and Aquatic Sciences*. 54: 347-358.
 - Citations with the NERB should be (Pienitz et al. 1997).
 - If your bulletin is based on a published study or paper, provide the paper citation, and web link if possible.
 - If your bulletin is based on a review of multiple papers, post a list of the citations on the NWT Discovery Portal and provide the link in this section.

Submission

When submitting, please make sure that you provide:

- Your summary of research in Word format (.doc or .docx)
- Two photos/figures (1MB >2MB).

- Contact information of a peer for review, to nwtcimp@gov.nt.ca

For further information or comments, contact Meredith Seabrook at (867) 767-9233 ext. 53086 or nwtcimp@gov.nt.ca



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NWT Environmental

Research Bulletin (NERB)



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Impacts of Linear Development on Fish

Linear developments such as roads, pipelines and seismic lines usually cross water bodies. This can have an impact on fish and fish habitat. Impacts can include the blocking of migration routes that prevents fish from feeding, spawning and accessing over-wintering areas, or contamination from leaks and spills that poison fish or the food fish eat.



A perched culvert prevents upstream movement of most fish species.
Photo: K. Maier, Gwich'in Renewable Resources Board

Why is this research important?

The NWT has many lakes and rivers. Appropriate monitoring and management is essential for responsible development of our northern resources, to properly protect sensitive northern fishes. Fish are a key component of northern ecosystems, and of significant economic and cultural importance to people in the NWT.

What did we do?

A variety of information relating to impacts of roads, pipelines and other linear developments was reviewed and summarized, with a focus on impacts to fish in northern ecosystems. Industry uses many types of linear development; therefore activities relating to the oil and gas sector were used as examples.

What did we find?

- Sediment from construction activities and erosion is getting into the water. Sediment can cover spawning beds, suffocate eggs, clog gills and make it hard for fish to find food.
- Water withdrawal for ice road construction can remove too much oxygenated water from small lakes and pools of streams, not leaving enough for over-wintering fish. Fish can also get sucked into water intakes.
- Infilling or dredging—for example, for barge landings—can remove or destroy fish habitat.

What does this mean?

The impacts of linear developments on fish can be made worse when coupled with natural disturbances like forest fires, or broad-scale impacts like climate change that can alter ecosystems. Appropriate monitoring and management is essential for responsible development of northern resources, while properly protecting sensitive northern fishes. Fish are a key component of northern ecosystems and are of significant economic and cultural importance to people of the NWT.

What's next?

This information can be used by regulators and resource managers to anticipate and mitigate the impacts of linear developments on fish and their habitats, which would benefit northern aquatic ecosystems in general. Also, this summary of potential impacts and data gaps can be used to justify future research and monitoring of northern aquatic systems in advance of future developments.

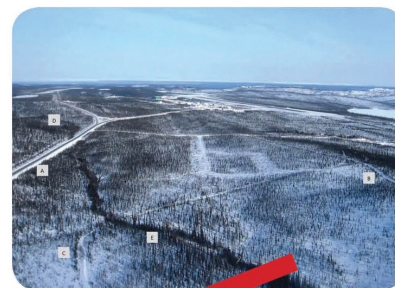


Fig. 1. A variety of linear developments common in northern regions; (A) gravel road, (B) a snow road, (C) a winter road, and (D) seismic line. These types of linear developments often cross watercourses, such as the one shown, and could impact fish and fish habitat if not constructed and maintained properly. The Inuvik Airport is shown in the background, near the Town of Inuvik, NWT, Canada. Photo: J. Kanigan, GNWT-ENR(CIMP).

What are linear developments?

Linear developments are developments made in lines, such as highways, winter roads, pipelines, transmission lines and seismic lines. In the NWT, linear developments usually cross streams, rivers and lakes, and have the potential to impact fish and fish habitat.

Contacts

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References and citations

Cott, P.A., Schein, A., Hanna, B.W., Johnston, T.A., MacDonald, D.D., and M. Gunn, J.M. 2015. Implications of linear developments on northern fishes. *Environmental Reviews*. 23:1-15, DOI 10.1139/er-2014-0075.