Danielle Nowosad



| Intro | I am a Red River Métis-settler interdisciplinary researcher that is interested in community-driven freshwater ecology projects. I prioritize working with Indigenous collaborators in participatory research and combining multiple ways of knowing and honours data sovereignty. I am currently investigating the baseline of biodiversity and response to impacts of climate change in freshwater invertebrate/biting insect communities in the Kitikmeot region of Nunavut, using DNA methodologies and IQ (Inuit Qaujimajatuqangit). I have worked with government agencies, academics, non-profits, and the public. | |
|----------------------------------|--|---|
| Education | 2019 – 2025 | University of Guelph PhD Integrative Biology |
| | | Thesis: Using DNA barcoding as a tool to assess biodiversity of freshwater invertebrates and risks associated with black flies in the Canadian Arctic |
| | | Advisors: Dr Sarah Adamowicz, Dr Karl Cottenie, and Dr Ian Hogg |
| | 2013 - 2019 | University of Winnipeg BSc with Honours in Physical Geography |
| | | Thesis: Effects of seasonality and sediment properties on nutrient cycling in Sub-Arctic tundra ponds |
| | | Advisors: Dr Nora Casson and Dr LeeAnn Fishback |
| Major Awards \$411,000 | 2025-2027 \$130,000 | NSERC Postdoctoral Fellowship Government of Canada |
| | 2024-2026 \$130,000 | Weston Family Foundation Post-Doctoral Fellowship (declined) |
| | 2024 \$10,000 | Natural Sciences and Engineering Research Council of Canada (NSERC), Department of Fisheries and Oceans Supplemental Award <i>Government of Canada</i> |

| | 2023 \$10,000 | Natural Sciences and Engineering Research Council of Canada (NSERC), Department of Fisheries and Oceans Supplemental Award <i>Government of Canada</i> |
|---------------------------------------|-------------------------|---|
| | 2021-2024 \$63,000 | NSERC Post-Graduate Scholarship – Doctoral Government of Canada |
| | 2021 - 2024 \$45,000 | Indigenous Graduate Scholarship – Merit University of Guelph |
| | 2021 \$8,000 | Graduate Tuition Scholarship (forfeited) University of Guelph |
| | 2020 - 2021 \$15,000 | Weston Family Award for Northern Research Weston Family Foundation |
| Other Awards Total \$37,667 | \$2,240 | Braithwaite Conference Travel Grant University of Guelph |
| | \$120 | Herbert Armstrong Memorial Book Prize University of Guelph |
| | 2024 \$3,600 | Northern Scientific Training Program Polar Knowledge Canada |
| | 2023 \$3,000 | Indigenous Graduate Scholarship – Fulfilling Community Commitments University of Guelph |
| | 2023 \$3,157 | Northern Scientific Training Program Polar Knowledge Canada |
| | 2023 \$2,950 | NSERC Indigenous Student Ambassador Government of Canada |
| | 2022 \$4,000 | NSERC Indigenous Student Ambassador Government of Canada |
| | 2022 \$3,000 | James Bourque Northern Scholarship Royal Canadian Geographical Society |
| | 2021 \$7,500 | Building Brighter Futures Indspire |
| | 2021 \$1,000 | Jim Bourque Scholarship for Northern Research Arctic Institute for North America |
| | 2020 | Kishaadigeh "She Who Guards The Lodge" Indigenous Leadership Award University of Guelph |

| | 2020 \$600 2019-2020 2018 \$4,500 2017 \$2,000 | First Place – ArcticNet Annual Scientific Meeting Graduate Poster Competition Campus Sustainability Recognition Award University of Winnipeg NSERC Undergraduate Student Research Award Government of Canada Northern Scientific Training Program Polar Knowledge Canada | | |
|------------------------|---|---|--|--|
| Research Experience | 2028 Univers Advisor • (• (• (• (• (• (• (• (• (• (| Taloyoak, Kugaaruk in Nunavut) working closely to support Hunter-Trapper Organizations and territorial Wildlife Offices Logistics coordination for academic teams at two universities in addition to Inuit youth hires | | |
| | 2025 Univers | ation, Integrative Biology aty of Guelph, Guelph, Ontario s: Dr Sarah Adamowicz, Dr Karl Cottenie, Dr Ian Hogg Contributing specimens and DNA barcodes to the major Arctic BIOSCAN project as the freshwater invertebrate specialist Working in tandem with Polar Knowledge Canada (federal government) and the Centre for Biodiversity Genomics University of Guelph) Collecting 267 unique samples from 140+ sites, identifying and plating ~11,000 invertebrate specimens for DNA barcoding, learning the Barcode of Life Data System (online genomic repository), and biodiversity assessment analyses using DNA barcodes as a proxy for species | | |

2024 Dr LeeAnn Fishback – EarthWatch Field support

- Supporting an international team of citizen scientists in Churchill, MB
- Project entitled "Climate Change at the Arctic's Edge"
- Teaching field safety, field methods, lab methods
- Teaching about local natural and cultural history, relevant science
- Lecture on wetlands in Sub-and-High Arctic regions

2024 Contract Researcher First Nations Information Governance Centre

- Project entitled "Respecting and Asserting First Nations Data Sovereignty in Research Data Management"
- Co-writing final report and manuscript

2024 - Contract researcher Canadian Wildlife Services

2025 Environment and Climate Change Canada

- Conducting study on Indigenous perspectives with regards to migratory birds and their monitoring methods
- Preparing a project management plan, research methods, ethics, materials, finding participants, interviewing participants nationally
- Analyzing interviews and writing a final report
- Results will help inform migratory bird policy at the federal level

2023 - Graduate Research Assistantship Research Services Office 2024 University of Guelph, Guelph, Ontario

- Role is part of a multi-institutional project entitled "Respecting and Asserting First Nations Data Sovereignty in Research Data Management"
- Bumped up from assistant role to join project lead/facilitation team from the First Nation Information Governance Centre, who are spear-heading the project
- Co-leading project, co-facilitating multi-institution and multi-First Nations/Inuit dialogue meetings
- Co-authoring final technical report

2022 Research Writer CLEAR Lab – Dr Max Liboiron Memorial University, St John's, Newfoundland

- Reviewing various projects for completeness and identifying gaps
- Editing manuscripts, preparing/editing figures, simple statistical analyses, preparing manuscripts for publication

2020 - Grant writer

- 2021 Waterways Canada Winnipeg, Manitoba
 - Two contracts to write grants for an Indigenous-led non-profit organization
 - Successful applications to >\$50,000 in funding for various community, land, and culture-based programs for Indigenous youth in Manitoba

2019 - Research Assistant

2022 Science and Technology, Polar Knowledge Canada

- Cambridge Bay, Nunavut; Guelph, Ontario; Winnipeg, Manitoba
 - Seven contracts, full-time and part-time, based remotely or at the Canadian High Arctic Research Station
 - Assisting with field collections of plant phenology, insect ecology, botany, and remote sensing projects
 - Collecting freshwater invertebrate samples for my MSc and PhD; planning logistics for field collections
 - Training assistants in field and lab methods for freshwater invertebrate collections, sorting, preservation
 - Creating and leading youth workshops in partnership with the Kitikmeot Friendship Society
 - Databasing, identifying, processing, and plating specimens for DNA sequencing at the Centre for Biodiversity Genomics in Guelph

2017 - Seasonal Research Technician

2018 Churchill Northern Studies Centre Churchill, Manitoba

- Providing logistical support for field and lab work in Manitoba's Sub-Arctic
- Collected contract data for 15+ projects from a variety of disciplines
- Polar bear guard for school groups, researchers, citizen scientists
- Led international citizen science teams, conducted a pilot study on nutrient dynamics in Sub-Arctic tundra pond systems, and completed an Honours thesis on the same topic

2013 - Honours Thesis, Physical Geography

- 2019 University of Winnipeg, Winnipeg, Manitoba Advisors: Dr Nora Casson and Dr LeeAnn Fishback
 - Completed a pilot project in 2017 to establish experimental protocols to investigate nutrient uptake in tundra ponds in Churchill, Manitoba
 - Completed a 4-month field season with in-situ experiments in 2018 to determine influences of sediment composition and temperature in nutrient uptake in tundra pond systems in Churchill, Manitoba
 - Wrote field/experiment and lab protocols for the project so I could teach other students, assistants, and international groups of citizen scientists
 - Analyzed sediment samples for organic composition and water samples for nutrient (ammonium, phosphorus, nitrogen) concentration

TeachingJuneUniversity of Guelph, Kitikmeot Heritage Society, KitikmeotExperience2024Inuit Association – Students on #STEAM
Co-Instructor, Cambridge Bay (Iqaluktuuttiaq), Nunavut

Emily Angulalik and Elders in Residence Kitikmeot Heritage Society/Inuit Knowledge Keepers

Dr Shoshanah Jacobs, Dr Dan Gillis, Dr Jonathan Goldner Integrative Biology/Computer Science

- Co-instructed a 10-day holistic, on the land course targeting Inuit high school youth between grades 10-12; co-taught with Inuit Elders and Knowledge Keepers
- Activities were loosely structured, guided by youth interests, weather, and which Elder/Knowledge Keeper was participating that day
- Established a base camp for 5 days on the tundra and did activities such as soil sampling, insect sampling, botany sampling and identification, archery, hunting, fishing, canoeing, egg harvesting, bird plucking and butchering

August University of Guelph, Grundy Lake Provincial Park, Ontario 2023 Dr Jesse Popp and Dr Susan Chiblow

School of Environmental Science

- I was invited to assist on an honorarium basis with the field component of a second-year Bachelor of Indigenous Environmental Science and Practice course
- I taught a Metis-style beadwork workshop to ~15 participants, spoke about my experience as an Indigenous graduate student in a Western scientific discipline, and participated in teachings from Elders

June University of Guelph, Kitikmeot Heritage Society, Kitikmeot

2023 **Inuit Association** – Students on #STEAM Co-Instructor, Cambridge Bay (Iqaluktuuttiaq), Nunavut

Emily Angulalik and Elders in Residence, Margot, Burt Kitikmeot Heritage Society/Inuit Knowledge Keepers

Dr Shoshanah Jacobs, Dr Tad McIlwraith, Dr Jess Clausen

Integrative Biology/Anthropology/Lakehead University

- Co-instructed a 2-week holistic, on the land course targeting Inuit high school youth between grades 10-12; co-taught with Inuit Elders and Knowledge Keepers
- Activities were loosely structured, guided by youth interests, weather, and which Elder/Knowledge Keeper was participating that day
- Activities ranged from learning in various environmental areas (wetlands, tundra, lakes, ocean), traditional sewing and beadwork, and combining Inuit Knowledge and way of life (Inuit Qaujimajatuqangit) and Western scientific ways of knowing

January University of Guelph, Guelph, Ontario – April Graduate Teaching Assistant, Integrative Biology

- Taught 2-3 lab sections associated with BIOL-1080, "Discovering Biodiversity", a first-year biology course
 20-25 students per section, in-person and virtually
 - Each section met once per week
 - Grading assignments (in-person and virtual), and proctoring exams (in-person)

Technical reports

2020 Nowosad, D., Hogg, I. and Adamowicz, S. (2020). Using DNA barcoding to inventory and track changes in the distribution and diversity of freshwater invertebrates in the Canadian Arctic. Aqhaliat 2020, Polar Knowledge Canada, p. 21-23 (in press).

Journal publications

- 2025 **Nowosad, D.,** Segal, B., Wilson, K., and Beattie, M. (2025, accepted). Inuit Qaujimajatuqangit and Western science: examples of research that demonstrate sovereignty and self-determination in the face of complex impacts from climate change. Arctic Science.
- 2024 Nowosad, D., Hogg, I., Cottenie, K., Lear, C., Adamowicz, S. (2024). High diversity of freshwater invertebrates on Inuinnait Nuna, the Canadian Arctic, revealed using mitochondrial DNA barcodes. Polar Biology. https://doi.org/10.1007/s00300-024-03311-3

Nowosad, D. (2018) Rethinking the Foundations of Canada:

2018 From Historical Records to Life Experiences. The Case of Peter Fidler. Crossings, vol. 2, pp. 143-153.

Works in progress

2025 Nowosad, D., Currie, D., Hogg, I., Cottenie, K., Steinke, D., Maksagak, B., Dumond, A., deWaard, J., Colman, O., and Adamowicz, S. (expected submission April 2025 to Journal of Animal Ecology). Biting truths: Black fly diversity and vector potential in Arctic Canada. **Nowosad, D.,** Currie, D., Hogg, I., Cottenie, K., Steinke, D., and Adamowicz, S. (expected submission May 2025 to Arctic Science). Climate change reshaping black fly ranges and wildlife disease risks in Northern Canada.

Non-peer reviewed

2021 **Nowosad, D.** (2021). Arctic BIOSCAN: Tracking biodiversity in Canada's Middle Arctic using DNA. iBOL (International Barcode of Life) Bulletin Board. Online. <u>https://ibol.org/barcodebulletin/illuminations/2021-25-05-dnabarcode-research-in-the-canadian-middle-arctic-that-worksto-include-indigenous-locals//</u>

Nowosad, D. (2021). Birding in Cambridge Bay. Canadian Section of The Wildlife Society Newsletter. 14(4).

- 2023 Nowosad, D. and Beattie, M. (2023). SciQ: A new approach to ethical research in the North. Canadian Geographic. Online. https://canadiangeographic.ca/articles/sciq-a-new-approach-to-ethical-research-in-the-north/
- 2024 Nowosad, D. (2024). Backcountry Arctic Science: Canoe Edition. Arctic Focus. Online. <u>https://www.arcticfocus.org/stories/backcountry-arctic-science-canoe-edition/</u>

Nowosad, D. (2024). Upholding Inuit data sovereignty in Nunavut. Arctic Focus. Online. https://www.arcticfocus.org/stories/upholding-inuit-datasovereignty-nunavut/

Nowosad, D. (2024). Inuit-led wellness and support programs in the Kitikmeot. Arctic Focus. Online. https://www.arcticfocus.org/stories/inuit-led-wellness-and-support-programs-kitikmeot/

Community reports

| July 2022 | • | Delivered in-person and by email to the Hunter-Trapper Organizations in Cambridge Bay and Kugluktuk, Nunavut |
|--------------|---|---|
| April | • | Reported sampling sites and protocols, preliminary results, knowledge mobilization strategies |
| 2023 Nov | • | Answered project-specific questions from community members |
| 2024 | • | Plain-language summaries of published academic papers |

- 2024 Biting truths: Black fly diversity and vector potential in Arctic Canada. ArcticNet Annual Scientific Meeting, Ottawa, Ontario. Dec 12 (talk)
- 2023 Using DNA barcoding to assess biodiversity of freshwater invertebrates on Inuinnait Nuna, or the Canadian Middle Arctic. Canadian Society for Ecology and Evolution Annual Scientific Meeting, Winnipeg, Manitoba. June 13 (talk)
- 2022 Using DNA barcoding to assess biodiversity of freshwater invertebrates on Inuinnait Nuna, or the Canadian Middle Arctic. ArcticNet Annual Scientific Meeting, Toronto, Ontario. Dec 7 (talk)
- 2021 Métis Experiences in Science. Mawachihitotaak: Let's Get Together Métis Symposium, online. Sept (talk)

Building the reference library for freshwater invertebrates in the Canadian Middle Arctic. ArcticNet Annual Scientific Meeting, online. Dec 6 (poster)

How can DNA barcoding be used to understand biodiversity and 2020 phylogeography of freshwater invertebrates in the Canadian Arctic? Canadian Association of Limnologists Annual Scientific Meeting, online. Feb (talk)

> Using DNA barcoding to assess biodiversity and phylogeography of freshwater invertebrates in the Canadian Arctic. ArcticNet Annual Scientific Meeting, online. Dec 6 (poster)

> DNA barcoding: what is it, and how it can be used in the Canadian Arctic?. American Indian Science and Engineering Society (AISES) international annual conference, online. Nov 14 (poster)

2019 Using DNA barcoding as a tool to understand biodiversity and phylogeography of freshwater invertebrates in the Canadian Arctic. Cold Regions Research Days, online. Oct (talk)

> Freshwater invertebrates in the Canadian Arctic: Using DNA barcoding to assess biodiversity, phylogeography, and ecological factors. ArcticNet Annual Scientific Meeting, Halifax, Nova Scotia. Dec 8 (poster)

> Freshwater invertebrates in the Canadian Arctic: Using DNA barcoding to assess biodiversity, phylogeography, and ecological factors. Annual Cold Regions Conference, Waterloo, Ontario. (poster)

| | Effect of Seasonality and Sediment Properties on Rate of Nutrient Uptake in Tundra Pond Sediments. Canadian Association of Geographers Annual Conference, Winnipeg, Manitoba (talk) |
|------|---|
| 2018 | Effect of Seasonality and Sediment Properties on Rate of Nutrient Uptake in Tundra Pond Sediments, Prairie Biology University Symposium, Winnipeg, Manitoba (poster) |
| | Effect of Seasonality and Sediment Properties on Rate of Nutrient Uptake in Tundra Pond Sediments. High North Programme Symposium, Gjovik, Norway (talk) |
| | Effect of Seasonality and Sediment Properties on Rate of Nutrient Uptake in Tundra Pond Sediments. Randy Kobes Poster Competition, Winnipeg, Manitoba (poster) |
| | Nutrient Uptake in Tundra Pond Sediments. Geography Honours Symposium, Winnipeg, Manitoba (talk) |

| Memberships | 2022 – present | Explorers Club International organization dedicated to the advancement of field exploration and scientific inquiry |
|------------------------------------|----------------|---|
| | 2022 – present | Canadian Society for Ecology and Evolution |
| | 2018 – present | American Indian Science and Engineering Society |
| | | |
| Presentations and invited lectures | March 2024 | Respecting Indigenous Sovereignty Through Research Knowledge Management Strategies Indigenous Initiatives, University of Guelph |
| | October 2023 | Ethical Research on Indigenous Land – How Do We Engage Communities When We Study "Uncharismatic" Animals? |
| | | North American Symposium on Bat Research Annual Scientific Meeting, Winnipeg, Manitoba |
| | September 2023 | Implementing Inuit guidelines for ethical research BIOL 6110 - Emerging Problems and Opportunities in Wildlife Biology, University of Guelph |
| | August 2023 | Implementing Inuit guidelines for ethical research GEOG 3330 - Research Methods, University of Winnipeg |

| | December 2022 | Building a genetic DNA library of freshwater invertebrates around Cambridge Bay, NU Grade 10 Biology students in Peel, Ontario |
|--------------------------|----------------|--|
| | October 2022 | Indigenous inclusion in universities Centre for Innovation in Campus Mental Health |
| | October 2022 | Knowledge Mobilization: Implementing Inuit guidelines for ethical research Environment and Climate Change Canada seminar series |
| | September 2022 | Knowledge Mobilization: Implementing Inuit guidelines for ethical research Integrative Biology Departmental Seminar Series University of Guelph |
| | June 2022 | Building a genetic DNA library of freshwater invertebrates around Cambridge Bay Canadian High Arctic Research Station Public Speaker Series, Cambridge Bay, Nunavut |
| | May 2022 | Careers outside: Scientific research Sturgeon Heights Collegiate Outdoor Education class. Winnipeg, MB |
| | May 2022 | Using DNA barcoding to understand biodiversity in Canada's North Canadian Parks and Wilderness Society, Manitoba chapter |
| | February 2022 | Exploring freshwater biodiversity in the Arctic Live lesson via Explore By The Seat Of Your Pants |
| | October 2021 | Arctic BIOSCAN freshwater invertebrates in Cambridge Bay Kiliniik High School Freshwater Biology class (in Cambridge Bay, NU) |
| Professional training | 2022 | Workshop Skills for research impact series: planning for research impact University of Guelph, Guelph, Ontario |

| | 2022 | Workshop Reproducible practices for Arctic research using R Arctic Data Centre, California |
|----------------------|----------------|---|
| | 2021 | Workshop Introduction to geographic analyses of biodiversity Transmitting Science, Spain |
| | 2021 | Course Project Management graduate course Partnership between the University of Guelph and the Community Engaged Scholarship Institute University of Guelph, Guelph, Ontario |
| Professional service | 2023 – present | Peer-Reviewed Articles for: Conservation Biology Freshwater Biology |
| | 2022 - 2024 | Graduate Programs and Faculty Committee University of Guelph |
| | 2022 - 2025 | Centre for Indigenous Fisheries Advisory Council University of British Columbia |
| | 2022 | Session Co-Organizer ArcticNet Annual Scientific Meeting |
| | 2021 - 2022 | IAAC Indigenous-Science Knowledge Systems Engagement Departmental working group, Integrative Biology University of Guelph |
| | 2019 - 2022 | English Communications Officer ArcticNet Student Association Executive Committee |

Community 2024- Métis Harvesting Collective

service 2025 • Advisory committee for \$20,000 grant on food sovereignty

2023 - Métis Harvesting Collective

2024 Co-lead, Winnipeg, Manitoba

- Co-leading the Collective with two other Metis youth \$20,000 in funding from Indigenous Youth Roots to plan and facilitate on-the-land traditional knowledge mobilization
- We organize workshops with Métis Knowledge Keepers and Elders in Manitoba, and use the grant to offer workshops to Metis youth free of cost
- 2 beading workshops, 5 trapping workshops, 2 fishing workshops, 1 guided hike

2023 Kitikmeot Friendship Society

Freshwater Biodiversity Workshops

- Workshop in Cambridge Bay, Nunavut at the Canadian High Arctic Research Station
- Funded by the NSERC Indigenous Student Ambassador award and Polar Knowledge Canada, in partnership with the Kitikmeot Friendship Society, a local youth-oriented organization which delivers many social programs and day camps
- Outdoor pond invertebrate collections and indoor microscope and identification component
- Youth took custom-made colouring pages, transfer pipettes, plastic forceps, jars, and invertebrate stickers home
- Donated all workshop materials (nets, hand microscopes, petri dishes, identification sheets and book) to the Kitikmeot Friendship Society for use in future youth programs

2022 Manitoba Métis Federation

Métis Environmental Leaders of Tomorrow (MELT)

Freshwater Biodiversity Workshops

- Funded by NSERC Indigenous Student Ambassador award
- Workshops for ~60 youth delivered in Winnipeg, Brandon, and Grand Marais, Manitoba
- Created freshwater and bird workshops to integrate into *Métis* Environmental Leaders of Tomorrow (MELT) day camps, which are canoe, land, and culture-based
- Created a budget and purchased freshwater invertebrate sampling equipment, which was donated to the MELT program

2022 Polar Knowledge Canada and Kitikmeot Friendship Society

Freshwater Biodiversity Workshops

- 2 workshops run in Cambridge Bay, Nunavut at the Canadian High Arctic Research Station
- Funded by POLAR, in partnership with the Kitikmeot Friendship Society, a local youth-oriented organization which delivers many social programs and day camps
- Outdoor pond invertebrate collections and indoor microscope and identification component
- Youth took custom-made colouring pages, transfer pipettes, plastic forceps, jars, and invertebrate stickers home

| Languages | English | Native language |
|------------|-----------|---|
| Mentorship | 2024-2025 | Undergraduate Honours Thesis Olivia Colman, honours student BSc BioMed: New DNA primer protocol for detection of O. cervipedis in Simuliidae adults Trained logistics coordination, field methods, lab processing methods |
| | 2023 | Undergraduate Student Research Assistants Adamowicz Lab, University of Guelph Created and curated onboarding materials and project management plans tailored to two |

undergraduate students working full-time summer contracts

- Developed research projects aligned with interests and goals of each student, and aligns with research interests outlined by the Hunter-Trapper Organizations in Kitikmeot
- Twice-weekly meetings to support students in skill development including citation management software, statistical software, data management, and more

2020 - 2022 College of Biological Sciences Undergraduate Mentorship Program (CoBUMP)

University of Guelph

- Mentor to one upper-year undergraduate student per winter semester
- Weekly meetings to discuss research interests, job opportunities, graduate school expectations
- Provided a living document of opportunities based on student's interests