



AMERICAN FISHERIES SOCIETY
ONTARIO CHAPTER
ANNUAL GENERAL MEETING

March 19 – 20, 2021
Virtual Meeting

*“Resilience: The importance of past,
continuing and future explorations in
Fisheries Science”*

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“Resilience: The importance of past, continuing and future explorations in Fisheries Science”

Friday March 19th

1:00 GREETING AND CONFERENCE OUTLINE
Craig Paterson, AFS-OC President

1:10 *Keynote 1: The Fish Ecology of Place on The St. Lawrence River: What Does Long-Term Research Say About Responses to a Changing Environment?*
Dr. John M. Farrell

Lightning Session 1

1:50 *Talk 1: A 25 Year History of How Pre-Season Angling has Impacted the Black Bass Population in Lake Opinicon, Ontario*
David. P. Philipp

2:00 *Talk 2: Invasive Species and Angling Combine to Alter Smallmouth Bass Nesting Behavior in the St Lawrence River*
Madison A.C. Philipp (Student Presentation)

2:10 *Talk 3: Outcomes of a Survey of Lake Users about Black Bass Competitive Angling on Big Rideau Lake, Ontario*
Alice E.I. Abrams (Student Presentation)

2:20 *Talk 4: Assisted recovery reduces post-release behavioural impairments in angled Rainbow Trout (*Oncorhynchus mykiss*)*
Auston D. Chhor (Student Presentation)

2:30 *Talk 5: The influence of artificial lure hook type on hooking characteristics and injury of angled freshwater gamefish*
Alexandria Trahan (Student Presentation)

- 2:40** *Lightning Session 1 – Q&A and Discussion*
Questions to presenters of the lightning round as well as poster presenters
- 3:00** **BREAK**
- 3:10** *Applied Talk 1: Barefoot Box Culvert™ - Providing Sensitive Habitat Solutions*
Christopher Pfohl
- 3:50** **ANNUAL BUSINESS MEETING**
- 4:50** **BREAK**
- 5:00** **CAREER PANEL DISCUSSION - MENTORSHIP EVENT**

Saturday March 20th

- 01:00** **OPENING REMARKS**
Craig Paterson, AFS-OC President
- 1:10** *Keynote 2: Introducing FishCAST: New NSERC CREATE-funded career-training program for students and postdoctoral fellows in fisheries management and conservation.*
Christina Semeniuk and Catherine Febria
- 2:00** **BREAK**

Lightning Session 2

- 2:10** *Talk 6: A practitioner's guide for bending the curve for freshwater biodiversity*
Steven J. Cooke
- 2:20** *Talk 7: Seasonal variation of brain size and structure in a freshwater top predator*
Evan Versteeg (Student Presentation)
- 2:30** *Talk 8: Exploring the effects of elevated water temperature on the imperilled Pugnose Shiner*
Lindsay Potts (Student Presentation)
- 2:40** *Talk 9: Changes in freshwater fish co-occurrence patterns across Ontario*
Timothy Law (Student Presentation)
- 2:50** *Talk 10: A 10 minute summary of 20 years of fish community data collected through the Regional Watershed Monitoring Program*
Jan Moryk
- 3:00** *Lightning Session 2 – Q&A and Discussion*
Questions to presenters of the lightning round as well as poster presenters

3:20 *BREAK*

3:30 *Applied Talk 2: Normandale Fish Hatchery Tour*
Justin Chan

4:30 PRESENTATION OF STUDENT AWARDS & CONFERENCE WRAP

Oral Presentation Abstracts

Friday March 19, 1:10

Keynote 1: *The Fish Ecology of Place on The St. Lawrence River: What Does Long-Term Research Say About Responses to a Changing Environment?*

Dr. John M. Farrell, Thousand Island Biological Station, SUNY College of Environmental Science and Forestry

Many fish ecologists get to travel the world and study charismatic fish fauna in exciting and foreign locales. I've taken a different approach whereby I *do* study amazing fish in an extraordinary location, but accomplish that from the same place, the upper St. Lawrence, year after year. I'm not unique in this pursuit of this 'ecology of place' and suspect many of you are learning from the same streams, lakes and rivers over time. To some it may seem boring, doing the same thing over and over – it is after all Einstein's definition of scientific 'insanity'. But we oftentimes observe a different and new result and the accumulation of data yields patterns and generates hypotheses we can only speculate about if lacking this vital repeated sampling. This is the science of monitoring and when coupled with targeted research can yield fascinating insights into dynamics of fish in aquatic ecosystems. In this presentation I will share the development of the TIBS field station with its mission of better aquatic resource conservation by applying ecosystem-based science toward applied management action and decision making. Along the way we hope to provide exceptional educational opportunities. Through creation of sampling indices focused on the nearshore with many linked research studies and collaborations we've made some progress in understanding a section of large river I never thought we'd have a clue about. I'll share some examples and stories from this journey and what it's teaching us about a sampling of significant fishery resource management challenges.

Friday March 19, 1:50

Lightning Talk 1: *A 25 Year History of How Pre-Season Angling has Impacted the Black Bass Population in Lake Opinicon, Ontario*

David P. Philipp¹, Julie E. Claussen¹, Steven Cooke², Aaron Shultz³, Brandon Barthel⁴, James Ludden⁵, Jana Svec⁶, Madison A.C. Philipp⁷, Matthew M.C. Philipp⁸, Cory Suski⁹, Jeff Stein⁹, Frank J. S. Phelan¹⁰

¹Fisheries Conservation Foundation, ²Carleton University, ³Great Lakes Indian Fish and Wildlife Commission, ⁴Florida Fish and Wildlife Commission, ⁵College of DuPage, ⁶Moraine Valley Community College, ⁷Memorial University NF, ⁸University of Vermont, ⁹University of Illinois, ¹⁰Queen's University Biological Station

Long-term snorkeling studies conducted across a number of lakes and rivers in southern Ontario has shown that year class strength (i.e., cohort abundance) in both largemouth bass *Micropterus salmoides* (LMB) and smallmouth bass *M. dolomieu* (SMB) is positively related to reproductive success and negatively related to the prevalence of illegal angling for nest guarding males. Annual snorkel surveys of bass reproductive

metrics have been conducted since 1990 in Opinicon Lake, Ontario, and they show some alarming trends. Since 2000, the number of spawning males has decreased about 20%, the number of eggs laid almost 25%, the number of successful nests over 50%, and the number of surviving independent fry over 60%. As a result, annual recruitment of black bass in Opinicon Lake has decreased 70% since 2000. What caused those declines? The over three-fold increase in observed hookwounding rates among nesting male bass during that same period indicates that the cause was the substantial increase in illegal preseason angling of nesting males. In fact, we calculate that in 2019 each nesting male bass was on average hooked a minimum of three times. During the COVID-19 Pandemic of 2020, however, access to fishing in Ontario was severely limited during the bass reproductive season. Not surprisingly, our 2020 survey results showed that last year had by far the lowest hook-wounding rates together with the highest nest success and fry production rates for nesting LMB and SMB ever recorded. We suggest that the current closed season regulation is failing monumentally in its goal of protecting bass reproduction and that it should be replaced by a regulation that will work, such as the use of bass spawning sanctuaries.

Friday March 19, 2:00

Lightning Talk 2: Invasive Species and Angling Combine to Alter Smallmouth Bass Nesting Behavior in the St Lawrence River

Madison A. C. Philipp¹, Julie E. Claussen², James Ludden³, Jana Svec⁴, Jeff Stein⁵, Frank J. S. Phelan⁶, David P. Philipp², Geof Eckerlin⁷, John Farrell⁷

¹Memorial University NF, ²Fisheries Conservation Foundation, ³College of DuPage, ⁴Moraine Valley Community College, ⁵University of Illinois, ⁶Queens University Biological Station, ⁷Thousand Islands Biological Station

We used snorkel surveys to assess smallmouth bass *Micropterus dolomieu* (SMB) nesting activity around a four-island complex adjacent to Grenadier Island in the St. Lawrence River in 1991-92, before the invasion of both zebra mussels and round gobies. We then compared those results to the nesting activity observed in 2013-14, after the invasions. For all years, snorkelers swam the entire littoral zone surrounding those four islands, locating, tagging and mapping all bass nests. We re-snorkeled the study area every 3-5 days from when the first nests were detected until the end of parental care activities, a period lasting from the first week in June until the first week in August; no SMB had raised a successful brood by July 1, much less Opening Day. Our results showed that there were substantial changes comparing 2013-14 with 1991-92. Although the number of nests decreased by only 18%, success rates decreased by more than 50% and the number of successful fry produced by more than 70%. Perhaps even more interesting was the fact that the SMB altered their nesting locations substantially. In 1990-91, all male SMB nested in the shallow protected areas between the islands, in depths averaging 1.3m, but in 2013-14 they nested all along the outside edges of the island complex in depths averaging 2.9m. Although zebra mussels may have influenced nesting decisions by increasing water clarity and algal growth, we postulate that the real cause was predation of eggs and larvae by the now numerous invasive round gobies, but more so by the facilitation of that predation by the at least 5-fold (and more likely 10-fold) increase in angling of nesting bass that at best temporarily removed them from

their parental care duties. It appears that the SMB are losing their arms race against the unwitting coalition of anglers and round gobies.

Friday March 19, 2:10

Lightning Talk 3: Outcomes of a Survey of Lake Users about Black Bass Competitive Angling on Big Rideau Lake, Ontario

Alice E.I. Abrams¹, Amanda L. Jeanson¹, Nathan Young², Steven J. Cooke¹

¹Carleton University, ²University of Ottawa

User-group conflict surrounding competitive angling events is well known. However, very little work has focused on better understanding the human dimension of this aspect of recreational fishing. Big Rideau Lake is among the most heavily fished water bodies in eastern Ontario and bass fishing tournaments occur regularly throughout the open fishing season. To study the recognized conflict, we use an online self-report survey to better understand the major concerns of lake users in relation to black bass tournaments in Big Rideau Lake. Qualitative and quantitative data were obtained from 230 survey respondents through 36 Likert-style and open-ended questions. To our knowledge this is the first socio-ecological study of competitive angling events for black bass. We aim to translate this knowledge to community awareness by contributing insights to support socially robust solutions to ongoing conflict among lake users.

Friday March 19, 2:20

Talk 4: Assisted recovery reduces post-release behavioural impairments in angled Rainbow Trout (Oncorhynchus mykiss)

Auston D. Chhor¹, Jessica L. Reid¹, Peter E. Holder¹, Liane Nowell², Andy J. Danylchuk³, and Steven J. Cooke¹

¹Carleton University, ²The Kenauk Institute Kenauk Nature, ³University of Massachusetts Amherst

Stress incurred during catch-and-release can alter post-release swimming behaviour in fish. Occasionally, it may be beneficial for anglers assist recovery until fish are able to swim independently. We assessed two assisted-recovery methods on angled Rainbow Trout: 1) retention in a flow box or 2) retention in a water-filled cooler. Trout were air exposed and held in a recovery tank for 3 minutes or immediately released. Recovery tanks were filled with surface water (26°C) or sub-surface water (17°C). Tri-axial acceleration biologgers were fixed around the trunk of the fish to observe post-release swimming behaviour. Trout that were held in recovery tanks regained equilibrium significantly quicker than those that were immediately released, especially when they were filled with sub-surface water. Trout air-exposed for 30 s exhibited greater swimming activity when held in a recovery tank compared to immediate release. Our study demonstrates the value of assisted-recovery of Rainbow Trout during catch-and-release.

Friday March 19, 2:30

Lightning Talk 5: The influence of artificial lure hook type on hooking characteristics and injury of angled freshwater gamefish

Alexandria Trahan¹, Auston D. Chhor¹, Luc LaRochelle¹, Andy J. Danylchuk², Steven J. Cooke¹

¹Carleton University, ²University of Massachusetts Amherst

Catch-and-release is practiced in recreational fisheries under the premise that released fish will survive with negligible injury and stress, however, hooking injuries may prevent that from being realized. One potential way to minimize injuries in fish is to replace treble hooks with single hooks on plastic lures. Yet, there is little known about the effectiveness of that tactic. Our study investigated if replacing treble hooks with single hooks on lures reduced injuries and fish handling times with Northern Pike (*Esox Lucius*), Smallmouth Bass (*Micropterus dolomieu*) and Largemouth Bass (*Micropterus salmoides*). Furthermore, we compared fish handling time and injuries between fish that were captured with barbed hooks and those captured with barbless hooks. Fish were angled using three types of conventional hard lures (i.e., crank baits, jerk baits, lipless crank baits). Upon landing, total length and hooking characteristics (number of hook points in the fish, hook depths, unhooking time, hook locations, lure characteristics, hook type and welfare outcomes) were recorded. Predictors included species, hook types and lure types, responses included number of hook points, unhooking time, use of hook removal tools, hook location, hooking depth and reflexes/acute survival. Linear models indicated that using J barbless hooks on all lures had the shortest unhooking time on hard baits for all species. Smallmouth Bass caught on both crank and jerk baits, J hooks tended to be shallower than treble hooks. Treble barbless hooks were more likely to be embedded in a sensitive location (foul, gullet, gills, eyes) compared to J barbless hooks in Smallmouth Bass. No other significant differences in hook types and anatomical locations were found for other species. Hook type and lure type did not influence reflex impairment or survival for any of the species. Using J hooks on lures that traditionally have treble hooks should be considered when encouraging best angling practices for the freshwater gamefish studied here.

Friday March 19, 3:10

Applied Talk 1: Barefoot Box Culvert™ - Providing Sensitive Habitat Solutions

Christopher Pfohl, R.J. Burnside & Associates Limited

Over the past 5 years R.J. Burnside & Associates Limited has designed, constructed and monitored an innovative pre-cast box culvert that can improve existing conditions for aquatic life. Based on the need to replace degraded, cast in place structures, and the concerns related to maintaining channel form and function, this unique culvert design has proven to function as intended. Over the last three years various methods of monitoring and testing have been used to confirm the potential to support thermal stability and create critical habitat for sensitive coldwater species such as Brook trout (*Salvelinus fontinalis*). Methods to determine function include water temperature, groundwater pressure, eDNA and videography. Observations and results may prove that the Barefoot Box Culvert™ could be the first of its kind in the World used to

support aquatic life and provide critical habitat for cold water species. The benefit to use the Barefoot Box Culvert™ relates to ease of construction, time and cost savings to clients and most importantly, providing a solution to stressed aquatic environments. Regulatory acceptance and industry knowledge are key aspects that need to be advanced and the results of this pilot study will support this process. A video will be provided at the end of the presentation that will prove the success of this innovative box culvert design.

Saturday March 20, 1:10

Keynote 2: *Introducing FishCAST: New NSERC CREATE-funded career-training program for students and postdoctoral fellows in fisheries management and conservation.*

Christina Semeniuk¹, Steven Cooke², Brian Dixon, Margaret Docker⁴, Catherine Febria¹, Daniel Heath¹, Nicholas Mandrak⁵, Bryan Neff, Trevor E. Pitcher and Barbara Zielinski¹

¹University of Windsor, ²Carleton University, ³University of Manitoba, ⁴University of Toronto Scarborough

Saturday March 20, 2:10

Lightning Talk 6: *A practitioner's guide for bending the curve for freshwater biodiversity*

Steven J. Cooke, Carleton University

The WWF Living Planet Index reveals that freshwater biodiversity has declined over 80% since the 1970s. This downward trajectory continues and we must focus efforts on actions that have the potential to “bend the curve” and restore freshwater biodiversity. An emergency action plan has been created to do just that. Yet, how this emergency action plan interfaces with frontline staff such as fisheries practitioners is less clear. With support from SSHRC, our team has been developing a toolbox for freshwater biodiversity practitioners in Canada to help them engage in curve-bending activities. Here we introduce that toolbox in the hopes that it will be embraced.

Saturday March 20, 2:20

Lightning Talk 7: *Seasonal variation of brain size and structure in a freshwater top predator*

Evan J. Versteeg¹, Timothy Fernandes¹, Matthew M. Guzzo², Frédéric Laberge², Trevor Middel³, Mark Ridgway³, Bailey C. McMeans¹

¹University of Toronto Mississauga, ²University of Guelph, ³Harkness Laboratory of Fisheries Research

Teleost fishes occupy a range of ecosystem and habitat types subject to large seasonal fluctuations. Strategies for surviving these seasonal environments can vary widely and are commonly accompanied by variation in brain structure. However, our understanding of how predictable changes in behavior across seasons shape, or are shaped by, the nervous system is limited. Here we investigate how patterns in the brain size and brain region sizes of lake trout (*Salvelinus namaycush*) coincide with seasonal

changes in their habitat and behavior. We found significant seasonal variation in whole brain size, as well as the size of some regions, which correlated with movement of lake trout between nearshore and offshore habitats as found through the use of bioacoustic telemetry. Successful completion of annual life history events could therefore be supported by seasonally responsive brain size flexibility that allows for a cognitive capacity more tailored to different parts of the year.

Saturday March 20, 2:30

Lightning Talk 8: *Exploring the effects of elevated water temperature on the imperilled Pugnose Shiner*

Lindsay Potts¹, Nicholas Mandrak², Lauren Chapman¹

¹McGill University, ²University of Toronto Scarborough

Climate change has emerged as an increasingly important threat to freshwater systems. To cope with rapidly changing thermal regimes, freshwater fishes must either relocate or adjust through genetic adaptation and/or phenotypic plasticity. This study investigated effects of rearing temperature on critical thermal maximum (CT_{max}), agitation temperature (Tag, temperature at which fish show behavioural signs of thermal stress), and gill size in Pugnose Shiner, *Notropis anogenus*, an endangered species in Canada. Juvenile Pugnose Shiner were reared for 4 months across five different ecologically relevant temperatures. CT_{max} and Tag were measured under normoxia and acute exposure to hypoxia to test for oxygen sensitivity of upper thermal limits in this species. CT_{max} increased with elevated water temperature. Tag also increased with rearing temperature and occurred, on average, 4.3°C above acclimation temperatures. CT_{max} and Tag were lower when fish were acutely exposed to hypoxia. Interestingly, gill size (e.g. total gill filament length) increased with rearing temperature, which may increase oxygen uptake capacity and support increased metabolic demands of warmer waters. Overall, Pugnose Shiner show plasticity in several traits in response to long-term exposure to elevated water temperature that may facilitate persistence in warmer waters. However, acute hypoxia exposure reduced thermal tolerance, stressing the importance of evaluating interactive effects of multiple stressors. Identifying source populations of Pugnose Shiner with greater thermal tolerance or implementing captive breeding under higher temperature regimes may improve success of re-introduction efforts in the face of climate change, but fitness consequences of increased thermal tolerance should be examined.

Saturday March 20, 2:40

Lightning Talk 9: *Changes in freshwater fish co-occurrence patterns across Ontario*

Timothy Law¹, Pedro Peres-Neto¹, Dylan Fraser¹

¹Concordia University

Accurate predictions for how freshwater fish communities will change in the future requires a good understanding of how different mechanisms (e.g., environmental filtering, biotic interactions) shape freshwater fish communities. Current analytical models have taken the step of incorporating more mechanisms like biotic interactions

into predictions, however many of these models assume that these mechanisms are not context dependent. Context dependency describes the function by which the importance and magnitude of a mechanism depends on abiotic and biotic factors. For example, the outcomes of pike (Esocidae) predator-prey interactions can depend on characteristics of its habitat. To understand how context dependency effects our ability to predict community structure, we examined how species co-occurrence patterns changed with abiotic factors using a dataset from the OMNRF, containing hundreds of lakes over a large latitudinal gradient. We estimated species co-occurrence patterns for the entire dataset using Markov random fields and incorporated environmental covariates to estimate how species co-occurrence varied with the environment. Using these estimated co-occurrence patterns, we then described the community structure of each lake by calculating connectivity, modularity and metrics which summarize the strength and directions of species co-occurrence patterns for each community. Our preliminary results show that positive and negative co-occurrence patterns do not have the same predictability using abiotic variables, suggesting that the mechanisms behind these patterns show different levels of context-dependency. With further analysis, the outputs of our model can be used to 1) improve predictions of future freshwater fish communities and; 2) inform fish management outcomes through predictions of species associations for target species under specific environmental conditions.

Saturday March 20, 2:50

Talk 10: A 10 minute summary of 20 years of fish community data collected through the Regional Watershed Monitoring Program

Jan Moryk, Toronto and Region Conservation Authority

The Toronto and Region Conservation Authority (TRCA) has one of the few long term monitoring programs. The Regional Watershed Monitoring Program (RWMP) began in 2001 and sampling through the program continues to occur today. The TRCA has a 20 year rich dataset dedicated to both the aquatic and terrestrial habitats which span our nine watersheds. This presentation focuses on the fish community portion of the dataset and speaks towards some emerging trends and results.

Poster Presentation Abstracts

Investigating the effects of Rainbow Smelt invasion on Lake Trout restoration in the Sudbury Basin

Christian Therrien^{1*}, Heidi Swanson¹, Bryan Neff²

¹University of Waterloo, ²Western University

**Presenting author (Student Presentation)*

The re-establishment of Lake Trout in ecosystems from which they have been extirpated is a priority for management agencies in Ontario. Despite ongoing effort, Lake Trout stocking and reintroduction programs have resulted in established, self-sustaining populations in only ~30 % of target lakes. One factor hypothesized to affect re-establishment of Lake Trout is the invasion of exotic prey species, particularly Rainbow Smelt. Rainbow Smelt contain higher levels of the enzyme thiaminase than native forage fishes, and consumption of Rainbow Smelt has been associated with thiamine deficiency in many salmonids. It is thus possible that thiamine deficiency is hindering reintroduction efforts for Lake Trout in lakes where smelt are now present. The ongoing restoration and recovery of lakes in acid-affected systems in the Sudbury Basin provide an opportunity to study how the presence of exotic prey species may influence the outcome of a reintroduction program for Lake Trout. We will compare the prevalence of thiamine deficiency in Lake Trout between lakes that do and do not contain smelt, and determine if fitness-related traits (condition, growth rate, gonadal-somatic index) differ in Lake Trout between these two lake types. Adult Lake Trout will be collected from lakes throughout the Sudbury Basin during routine gill net index sampling and angling in summer 2021. Fitness-related traits, including condition and tissue thiamine levels, will be quantified, and compared. Results from this study will help identify whether Rainbow Smelt and thiamine deficiency are influencing Lake Trout reintroduction success in the Sudbury Basin.

The human dimensions of the shore-based shark fishery in Florida, USA

Jessika Guay^{1*}, Jill L. Brooks¹, J.M. Chapman¹, Hannah Medd², Steven J. Cooke¹, Vivian M. Nguyen¹

¹Carleton University, ²American Shark Conservancy

**Presenting author (Student Presentation)*

Recreational shark fishing has seen increases in popularity and, although assumed to be less threatening to shark populations than commercial fishing, may nonetheless have some adverse effects on vulnerable species. The shore-based shark fishing community in Florida is rarely monitored as it largely occurs at night on remote beaches and has received a somewhat controversial reputation after recent exposure of illegal activity. While these events have led to calls for better management and enforcement, the characteristics of the fishery itself remain largely unknown. Our study, therefore, provides the first comprehensive profile of the Florida shore-based shark fishery to inform fisheries management and conservation. We distributed an online survey to all Florida Fish and Wildlife shore-based shark fishing permit holders gathering data on

angler socio-demographics, fishing preferences, habits, motivations, and their perceptions of shark conservation. We identified three angler typologies segmented primarily by shark fishing experience and frequency: I) Experienced infrequent anglers; II) Skilled frequent anglers; and III) Novice infrequent anglers. The Florida fishery itself has increased in participation fivefold since 2010 and generates approximately 7.8M USD annually in equipment expenditures and 34.3M USD annually in shore-based shark fishing trips. Motivations of anglers in this fishery segmented into social reasons, seeking thrill and excitement, and for consumption. Perceptions of shark conservation and management were generally positive, and most anglers expressed a desire to learn more about handling practices that benefited sharks. These results may help target angler communications and education by providing managers with data on angler characteristics and preferences. Understanding who is fishing for sharks from Florida's shorelines may inform and support decisions on optimal management strategies and their implementation.

Diversity of chars in the central Canadian Arctic

Spencer Y. Weinstein (She/Her)^{1*}, Matthew C. Hale², Tracey N. Loewen³, Heidi K. Swanson¹

¹University of Waterloo, ²Texas Christian University, ³Fisheries and Oceans Canada

*Presenting author (Student Presentation)

The Canadian Arctic is warming at approximately three times the global rate, which has significant impacts on biota, such as anadromous char (*Salvelinus* spp.), and on the local Indigenous communities who depend on them as a critical subsistence food source. Anadromous fishes, which are important for food security in the remote North due to their abundance and availability for year-round harvest, are especially vulnerable to climate-induced change due to their life stage-specific dependency on multiple habitats. Despite this vulnerability, the genetics, ecology, and demography of anadromous chars – namely, the closely-related Arctic char (*Salvelinus alpinus*) and Dolly Varden char (*S. malma*) – remain understudied, making it difficult to anticipate the effects of climate change on species persistence. The community of Kugluktuk, Nunavut, located along the Coppermine River, has historically supported a subsistence Arctic char fishery. Since 2015, however, fishers have reported fewer char in the river, as well as physical variation in fish appearance. These observations, along with anecdotal scientific data, have led to the belief that Dolly Varden may be present in the Coppermine River, several hundred kilometers outside of their purported range. Using next-generation sequencing technologies, meristic and morphometric analyses, and traditional knowledge, I am assessing the diversity of chars in the Coppermine River and, more broadly, in several locations across the Canadian Arctic. I am also investigating the extent of past and contemporary species hybridization. Preliminary meristic and genomic data suggest that the Coppermine River contains Arctic char, Dolly Varden, and hybrid fish, and that the species exhibit differences in length-at-age. In collaboration with community members in Kugluktuk, these data will help inform habitat restoration and management, thereby working to ensure the viability of a critical subsistence fishery.

Notes: