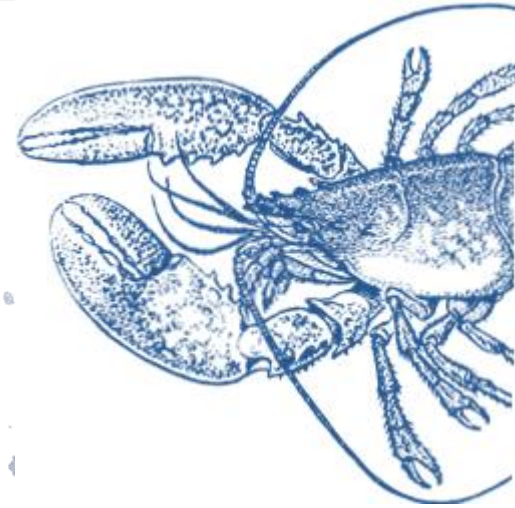


FISHERMEN & SCIENTISTS RESEARCH SOCIETY

28th Annual Conference and Annual General Meeting

Welcome from the President

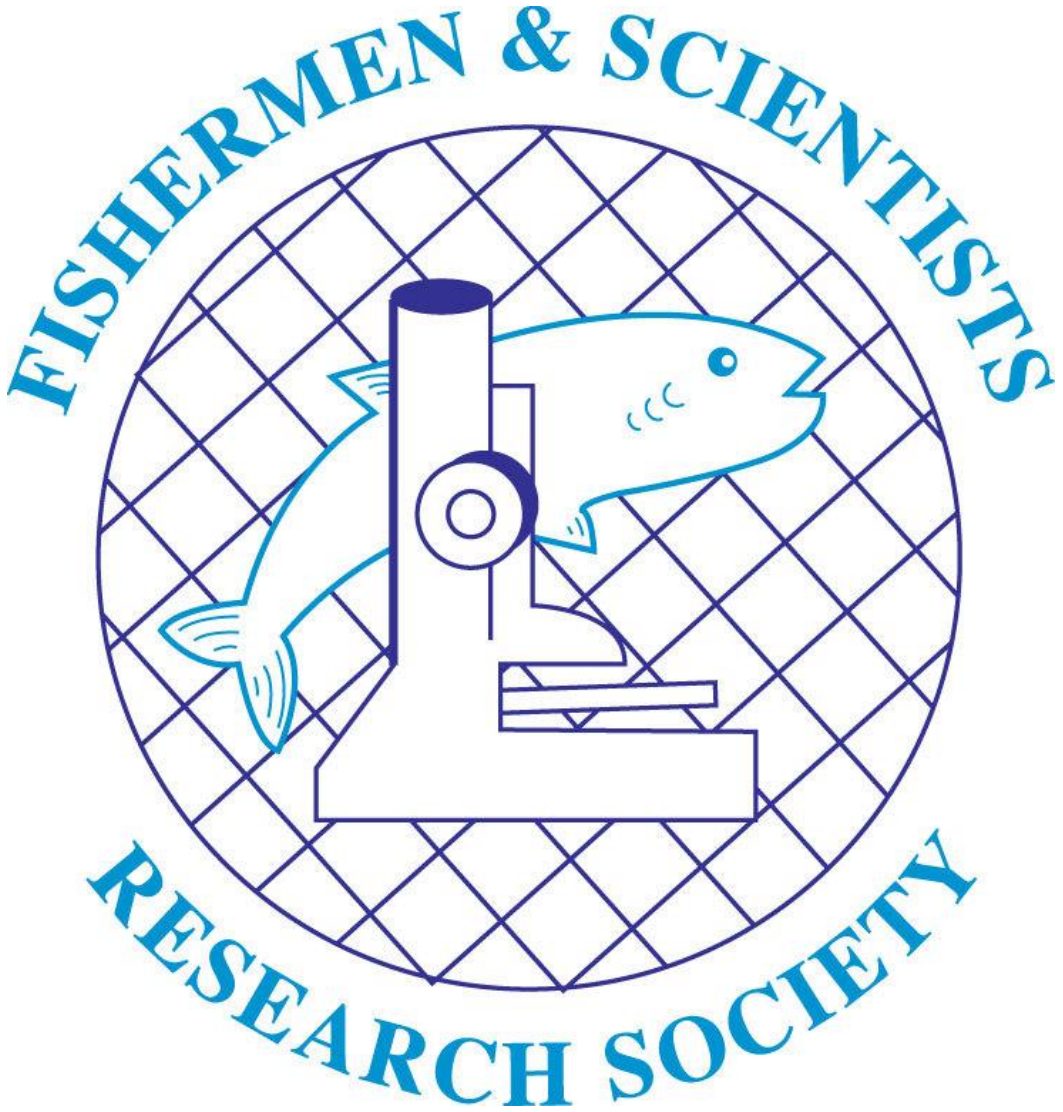
Hello,

I would like to thank everyone for their continued support through difficult times. We have another year under our belts. And a great team in the office who continue to bring excellence to the table. We have faced many challenges through the years but with the cooperation of the membership and core staff, we have emerged stronger than before.

In closing, I would like to personally congratulate each and every member, our staff, and our collaborators for making the FSRS the inspiration and symbol that it is to be today. Stay safe and all the best, to all.

Respectfully submitted,

Ken Snow



FSRS Board Members

Ken Snow

Hugh Boutlier

Peter Hurley

Chelsey Karbowski

Courtenay Parlee

Carl Myers

Josh Fricker

Angelica Silva

Bill Bond

Emily Blacklock

Jr Risser

Evelien Vanderkloet

Randy Boutilier

Megan Baily

FSRS Staff

Shannon Scott Tibbetts – Director of Operations

Jessica MacDonald – Senior Research Assistant

Jade Petritchenko – Research Assistant

Kiana Endresz – Office and Conference Assistant

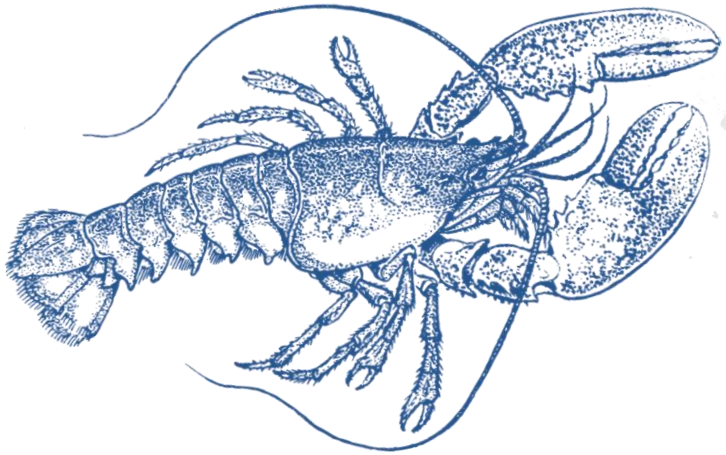
Candace Nickerson – Office and Conference Assistant

Conference Agenda

March 25, 2021	**Time**
Welcome/ Introductions	9:00-9:15
Russell Wyeth: A system to study lobster foraging behaviours in response to different prey and bait types	9:15-9:30
Katie Schleit: Oceans North Marine Species at Risk	9:30-9:45
Student Posters Presentations	9:45-10:30
Stretch break/ door prize draws	10:30-10:35
Delphine Morin: NARW Occupancy in Atlantic Canadian Waters	10:35-10:50
Gabrielle Deveau and Shannon Landoskis: Apoqnmatulti'k: Integrative knowledge, collaborative stewardship	10:50-11:05
An Ecosystem Approach to Fisheries Management at DFO	11:05-11:20
Stretch Break/ door prize draws	11:20-11:30
Annual General Meeting	11:30-12:30
FSRS Science Updates	12:30-1:00
Closing Remarks/ Online auction promotion	01:00-01:15

Fishermen and Scientists Research Society 28th Annual Conference and Annual General Meeting

Master of Ceremonies:
Magali Grégoire
Founder of the Back to the Sea Society



Dr Russell C. Wyeth, Associate Professor in the Department of Biology at St. Francis Xavier University. RCW is an invertebrate zoologist, animal behaviourist, and neurobiologist, so he's really interested in how the brains of marine invertebrates make them creep, crawl and scuttle in response to food or mates or predators. He earned his degrees at the University of Victoria (BSc, 1996) and University of Washington (PhD, 2004). Moving from that coast to this coast, he was a post-doctoral researcher at Dalhousie University before starting at StFX in 2007. He just likes hanging out in or near seawater, so that's where he does most of his science. He and his students have done a lot of research with slugs and snails and lobster, mostly using video. He particularly ponders how animals can interact with odours and odour sources in aquatic environments, which has led him to this particular project studying lobster responses to both natural prey and baits used in the fishery.

Field Behaviour of Lobsters in Response to Natural Prey and Baits

The American lobster (*Homarus americanus*) is an abundant benthic marine predator along much of the continental shelf of the Northwest Atlantic. Lobsters are opportunistic omnivores that feed on a variety of vertebrate, invertebrate, and macroalgal species. Lobsters are also the target of an extensive and economically important trap fishery that adds substantial quantities of bait into the nearshore benthic ecosystem. How lobsters interact with food items, conspecifics and other species around food items are key components in understanding the ecological role of lobsters, the influence of the bait subsidy on the ecosystem, the sustainability of the fishery, and the costs associated with bait. However, previous research on lobster foraging behaviour has primarily occurred in laboratory settings, where behaviours may or may not be like what occurs in nature.

Our goal is to investigate how lobsters move and behave around food sources in the field and compare responses to different prey and bait items. We have developed a system to use downwards-facing cameras attached to tripods with prey or bait secured below to record foraging lobster behaviour. A range of different natural prey and baits were tested. Ongoing analyses include enumerating lobster appearances in the video and contact with the bait. We also will be measuring movement directions and speeds relative to water flow directions and using an ethogram to quantify durations and frequencies of all behaviours recorded in the videos. Collectively, these measures will be used to describe lobster foraging behaviours, social and heterospecific interactions, and to assess the relative attractiveness of different prey and bait items.

Our results to date have established a baseline that shows good correspondence with information from harvesters. Future efforts will now focus on improving understanding of lobster foraging, food preferences, and food-related interactions. Understanding lobster foraging preferences will also be useful for improving the efficiency and sustainability of the lobster fishery. Finally, the system will likely also be useful in future assessments of alternative baits considered for use in the fishery.

Katie Schleit, senior fisheries adviser at Oceans North. With expertise in fisheries management and policy, Katie Schleit focuses on rebuilding fish populations while considering the needs of people and the ecosystem. Katie has worked in the NGO and public sector for over a decade, collaborating with government, fishermen, scientists and the public on ocean conservation and sustainable management. Before joining Oceans North, she led marine campaigns at the Ecology Action Centre and previously worked at the Pew Charitable Trusts and U.S. Peace Corps. She holds a master's degree in marine affairs from the University of Washington where her research included working with a community in the Philippines to develop a marine protected area network management plan. She is based in the Halifax office.

Marine Species at Risk

As of 2019, 19 species across 45 populations of commercially fished species- or those caught as bycatch- have been designated as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). While there are policy and regulatory tools available, there are often obstacles to implementing measures to rebuild populations. Oceans North is working with fishermen to identify stewardship actions and best practices to reduce the impact of fishing on at risk marine fish species. In this presentation, we will discuss findings from these conversations so far and seek additional thoughts and ideas from conference participants.

Shannon Landovskis is a Masters student at Dalhousie University. She completed her undergrad at the University of Waterloo in Ontario before moving out to Nova Scotia. She gained field experience working at a marine research station in the Bahamas that focussed on sharks and rays. She is currently studying lobster movement and habitat use in the Bras d'Or Lake, Cape Breton.

Gabriel Desvaux

Apoqnmatulti'k: Integrative knowledge, collaborative stewardship

Canada's Ocean Tracking Network (OTN) has embarked on a 3-year collaborative research project that aims to enable better stewardship of marine resources through equal participation and engagement among Mi'kmaq rights holders, local knowledge holders, and academia to increase understanding of the movements and seasonal habitat use of valued species in the Bay of Fundy and Bras d'Or Lake, Nova Scotia, Canada. The project, Apoqnmatulti'k ("we help each other"), is guided by local and Indigenous (Mi'kmaw) knowledge from the study sites with the goal of better understanding and protecting ecologically and culturally valued species for the surrounding communities. Knowledge co-production, exchange, and capacity-building are central to this project. Project partners contribute to all aspects of the project, from developing the initial proposal, designing the study objectives and methods, training students and technical personnel, and disseminating project information. Relationship-building between the research partners and the larger communities is central to the success of the project.

The largest grant of its kind in Canada's Maritime region, Apoqnmatulti'k places Indigenous partners at the core of the research program and aims to enhance aquatic stewardship by combining the strengths of different knowledge systems to produce community-based results. Data and results from the research will flow through Mi'kmaq communities and technical bodies, as well as government and academic institutions, with the goal of informing co-management approaches for marine resources and support community-based decision-making

Using passive acoustic moorings to define North Atlantic right whale (*Eubalaena glacialis)* distribution in Atlantic Canada

Many North Atlantic right whale (NARW) have been injured or killed by ship strikes and entanglements in fishing gear in the Gulf of St. Lawrence (GSL) since 2015. In response, Fisheries and Oceans Canada and Transport Canada have implemented, and continue to revise, mitigation measures to reduce human caused risks in Atlantic Canadian waters. Despite an increase in monitoring efforts, NARW distribution in most of these waters remains poorly defined. Addressing this knowledge gap is crucial for effective mitigation and the long-term survival of this species. NARWs produce a characteristic sound, the “upcall”, which when detected using passive acoustic monitoring (PAM) devices can indicate NARW presence. The objectives of this study were to 1) describe seasonal distribution patterns of NARW in Canadian waters and 2) identify areas of NARW presence outside of routinely monitored habitats. To achieve this, we analyzed PAM data collected by 73 moored and 14 mobile platforms (~20,800 recording days) deployed during 2015 through 2017 across the Atlantic Canadian waters between 42°N and 58°N. The results highlight NARW presence on the Scotian Shelf nearly year-round, while presence in the GSL and Cabot Strait extended from May through December, emphasizing the importance of such areas for risk mitigation. This characterization of range-scale variability in NARW acoustic presence demonstrates the potential of PAM to facilitate efficient, persistent monitoring and sustainable dynamic management of the species.

Delphine Durrette–Morin is a MSc student in the Oceanography Department at Dalhousie University. Her current research focuses on characterizing North Atlantic right whale distribution in Canadian waters and investigating the role of bioacoustics in advising industrial regulations. Her main research interests include biological oceanography, bio-acoustic ecology, marine conservation, science communication and outreach. Originally from Montreal, Delphine moved to Halifax 8 years ago to study the ocean and its inhabitants. In June 2016, she received a Bachelor of Science with First Class Combined Honours in Marine Biology and Oceanography with a cooperative component from Dalhousie University. Following her graduation, Delphine started her work for the Canadian Whale Institute, an organisation striving for the sustainable co-existence of whales and the humans through research and communication.

An Ecosystem Approach to Fisheries Management at DFO

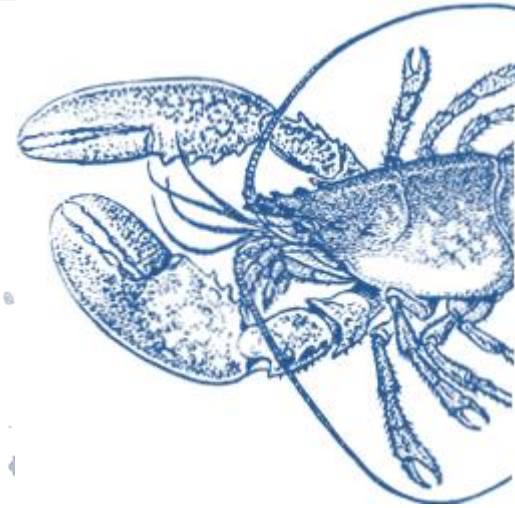
The purpose of DFO's National Initiative is to implement an Ecosystem Approach to Fisheries Management which will improve management of aquatic resources in Canada. An EAFM incorporates environmental variables, such as climate, oceanographic and ecological factors, into science advice to improve the management of aquatic resources in Canada through better understanding and consideration of ecosystem function and interactions. To achieve this goal, the Department formed the National EAFM Working Group, which is comprised of scientists, fisheries managers and policy makers. The Working Group has a three-year timeline to develop a national framework for integrating an ecosystem approach to single-species stock assessments and the provision of science advice for fisheries management decision making. To this end, the working group is working on taking an EAFM in a suite of case studies across Canada that will contribute to the development of this framework. The work will help meet the requirements of the new Fish Stocks Provisions of the revised Fisheries Act.

Alida Bundy, senior research scientist with Fisheries and Oceans Canada at the Bedford Institute of Oceanography, Canada. In support of the sustainable use of our oceans her research focuses on providing science advice for ecosystem-based fisheries and oceans management. Alida uses interdisciplinary approaches such as empirical ecosystem indicators, ecosystem modelling and local ecological knowledge to further understanding of how marine socio-ecological systems respond to change. She currently leads the DFO Maritimes Region Ecosystem-based Fisheries Management WG, co-chairs the DFO Maritimes Region Ecosystem-based Management WG and is a member of DFO's National Ecosystem Approach to Fisheries Management Working Group.

Kristian Curran, a manager in fishery resource management with Fisheries and Oceans Canada (DFO) at the Bedford Institute of Oceanography, Canada. Cross fishery issues, such as an Ecosystem Approach to Fisheries Management (EAFM), ghost gear, marine mammals, North Atlantic right whale, at-risk species recovery, and marine conservation targets fall within his section, among other programs. Kristian has a range of experience at DFO, being employed over the past two decades in ocean and ecosystem science, oceans management, fish habitat management, at-risk species recovery, policy and economics, science advice, ocean engineering and field support and, most recently, cross fisheries management. Kristian aims to bring all DFO interests to the table in his work regardless of where he resides in the Department. Of importance to Kristian is decision-making founded in science and other forms of knowledge, transparency, stakeholder engagement and consultation, and upholding Indigenous rights and reconciliation. Kristian currently represents the regional fisheries management sector on the DFO Maritimes Region Ecosystem-based Management WG and is a member of DFO's National Ecosystem Approach to Fisheries Management Working Group.

Student Posters

Kayla Hamelin	Novel approaches to improving assessments for information-poor fisheries in Atlantic Canada
Emily K Blacklock	The Risk of Haemic Neoplasia in North Atlantic Crustacea
Lisa Chen	Marine Way App
Samantha Stevens	Timing of Behavioural Modification in Green Crabs Infected with Acanthocephalan Profilicollis botulus



Call for Contracts!

We are actively seeking new contracts and collaborations. Please contact info@fsrs.ns.ca for more information.

Thank you to our Sponsors!

Adult Lobster Sponsors

Rachel Reeve
TriNav Fisheries Consultants
CME
deep cove seafoods
Vernon D'Eon
Ocean Tracking Network
Campobello Whale Rescue
Farm Credit Canada
Argent Fisheries
MetOcean
OFI
Dalhousie Science
Sustainable Marine Energy
FGCAC
Victoria Cooperative Fisheries
Fishermen's Market
Oceans North
Nova Scotia Seafood Alliance
NSDFA
Ashored

Juvenile Lobster Sponsors

Atlantic Electronic Limited
Bakers Point Fisheries
Caldwell Roach
Sambro Fisheries
Kathy Brown
FORCE
EAC
CIOOS
CPAWS
West Fish Canada

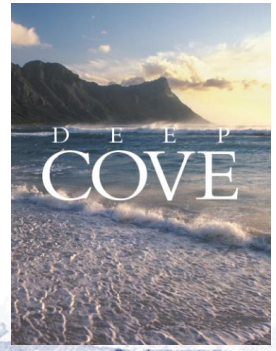
Lobster Settler Sponsors

Oceana
Art Maree Haute
High Liner
White Point Beach Resort
WWF
wades wire traps
Atlantic Catch Data
Big Spruce Brewing
Spartan
Amos Pewter
Lobster Council of Canada
Marine Affairs Program
Don Metke Photography

Lobster Egg Sponsors

Ken Snow
O'Reagans
Me and Mommy Purses
Lobster Mafia
Abeego
Rousseau Chocolatier

RACHEL REEVE



NOVA SCOTIA SEAFOOD ALLIANCE

CAMPOBELLO WHALE RESCUE

VICTORIA BRAND EST. 1955 Victoria Co-operative Fisheries Ltd.

Ashored

FISHERMAN'S MARKET EST. 1948 Quality Seafood & Lobster

Adult Lobster Sponsors

FISHING GEAR COALITION OF ATLANTIC CANADA

OCEAN TRACKING NETWORK

VERNON d'EON FISHING SUPPLIES LTD. www.VernonDeon.com Quality Fishing Supplies • Best Selection • Reasonable Prices

NOVA SCOTIA Department of Fisheries and Aquaculture

OCEANS NORTH

OCEAN FRONTIER INSTITUTE

TFC Inc.

Argent Fisheries

Canadian Maritime CME Engineering

fcc

SUSTAINABLE MARINE ENERGY

DALHOUSIE UNIVERSITY

metOcean telematics

SAMBRO FISHERIES LIMITED

BAKERS
BAKERS POINT FISHERIES LTD.

caldwell roach
INSURANCE

AEL
Atlantic Electronics Limited

ACD

OCEANA

Marine Affairs Program

WWF

Juvenile Lobster Sponsors

force

Kathy Brown
CSPWC
WATERCOLOUR PAINTINGS

CIOOS
CANADIAN INTEGRATED OCEAN OBSERVING SYSTEM

West Fish Canada

CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY

Ecology Action Centre

Lobster Settler Sponsors

WHITE POINT
1928 90 2018
BEACH RESORT

HI-LINER
FISHING GEAR
WWW.HILINER.COM

SPARTAN
INDUSTRIAL MARINE

AMOS PEWTER
EST. 1974

Wades Wire Traps
Don Metke Photography

CANADIAN LOBSTER
THE LOBSTER COUNCIL OF CANADA

BIG SPRUCE
BREWING

CAMPOBELLO WHALE RESCUE

Fishermen Helping Fishermen

If you see a whale in distress **call 1-866-567-6277** or **VHF 16**

Download the Whale Alert App

Help Us Find Whales

Scan the code or visit www.whalealert.org

For more info, please visit: www.canadianwhaleinstitute.ca

Email: info@canadianwhaleinstitute.ca

OCEAN FRONTIER INSTITUTE

An international collaboration hub for ocean research.

We work with industry, government and community partners to champion ground-breaking investigation and graduate training across the social sciences, natural sciences and applied sciences.

SAFE AND SUSTAINABLE DEVELOPMENT OF THE OCEAN FRONTIER

- One ocean
- Understanding change
- Collaborating on solutions

Learn more at **OceanFrontierInstitute.com**

DALHOUSIE UNIVERSITY

MEMORIAL UNIVERSITY

UNIVERSITY of Prince Edward ISLAND

CANADA FIRST RESEARCH EXCELLENCE FUND

HELP US FIND SOLUTIONS FOR END-OF-LIFE FISHING GEAR

FISHING GEAR COALITION OF ATLANTIC CANADA

Visit our website to learn more:

www.fgcac.org

APOQNMATULTI'K

INTEGRATIVE KNOWLEDGE. COLLABORATIVE STEWARDSHIP

Apoqnmatulti'k (Mi'kmaw: 'we help each other') is an NSERC-funded project that aims to increase the collective understanding of the movements and seasonal habitats of eel, lobster, and tomcod in Atlantic Canada's Bay of Fundy and Bras d'Or Lake ecosystems.

Equal participation and engagement among Mi'kmaw, local, and western knowledge holders is facilitating the transfer of knowledge and enabling better aquatic stewardship.

UINR · MINAS · OCEAN TRACKING NETWORK · ACADIA UNIVERSITY · Fisheries and Oceans Canada / Pêches et Océans Canada · DALHOUSIE UNIVERSITY · NSERC CRSNG

Lloyd Bond

Sean Landsman

OCEAN TRACKING NETWORK

The Ocean Tracking Network (OTN) is a global aquatic research, data management and partnership platform headquartered at Dalhousie University in Halifax, Nova Scotia, Canada.

Together, the Network and its collaborators are tracking animals, connecting people and transforming global oceans management.

OCEANS NORTH

Oceans North supports marine conservation in partnership with Indigenous and coastal communities.

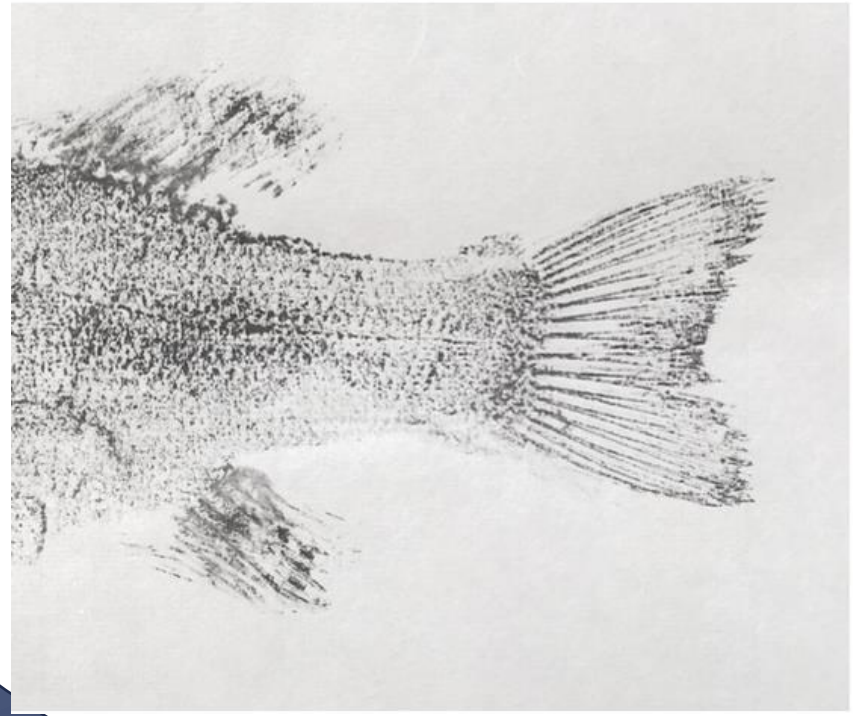
Have your say!

We want to learn from fishermen about potential actions on the water that could effectively recover depleted fish populations.

We are interested in solutions that come from the people who spend the most time on the water and how these solutions might be put in place.

If you have any ideas or want to participate in these conversations, contact Katie Schleit (kschleit@oceansnorth.ca).

oceansnorth.org



RACHEL
REEVE
Art
Design

rachelreeveart@gmail.com
www.rachelreeveart.com

@rachelreeveart

FISHERMAN'S MARKET

Est. 1948

Buyer of Lobster & Seafood
Halibut Quota Available

Call

Bill
(902) 448-6579

Alex
(902) 293-2220

Quality Atlantic Seafood
Since 1994

DEEP COVE AQUA FARMS

E: aschnare@deepcoveseafood.ca
P: (902) 228 - 2002
5182 HWY - 329, Blandford, Nova Scotia B0J 1T0

CATCH GREAT TALENT

HIRE A CO-OP STUDENT. Year-round availability.

DALHOUSIE UNIVERSITY

SCIENCE, INFORMATION TECHNOLOGY, ENGINEERING
COOPERATIVE EDUCATION
DAL.CA/SITECOOP | COOPINFO@DAL.CA