Biolink
OFFICIAL NEWSLETTER OF THE
ATLANTIC SOCIETY OF FISH AND WILDLIFE BIOLOGISTS

FALL 2020

Past President's Message

Greetings fellow ASFWB members,

First, I hope this message finds everyone healthy and spending quality time with loved ones during these uncertain times.

To say that 2020 has been a memorable year would be a huge understatement. In a normal fall, we are looking forward to seeing our counterparts and meeting new people at our annual general meeting. Instead, we organized a virtual meeting to engage our membership at a time when we have never been so far apart. Thus far, Atlantic Canadians have been relatively sheltered from the COVID woes experienced in other provinces and regions. However, the pandemic has changed our work and home environment in various ways. Many of us continue to work from home, our research and monitoring plans have been drastically altered, and we have cancelled travel to meetings that we traditionally attend.

Some things have not changed. Our newsletter editors have worked hard to provide a comprehensive and entertaining newsletter to keep our membership informed of wildlife issues and research and monitoring activities taking place throughout Atlantic Canada. Wildlife biologists and technicians have not let COVID keep them from doing this valuable work. Even though we cannot meet in person this fall, we can continue to stay in touch and informed.

We encourage our members to submit articles for future newsletters. These don't have to be long articles, but a short note and accompanying picture or graph is always appreciated. I would especially like to hear from members who found a silver lining in COVID; perhaps it spurred a new research path that they had not planned on pursuing.

Life has always been stressful, but COVID has taken it to a whole new level. It is perfectly normal to feel overwhelmed and frustrated with all of the changes brought on by this pandemic. Be sure to take care of your body and mind and connect with others. Take a deep breath, go for a walk or paddle and do not be too proud to reach out for help. We are all in this together!

I regret that we cannot meet in person in Prince Edward Island as planned this October but mark your calendar, as we fully intend to host the 2021 AGM in PEI. We will have a lot of socializing to get caught up on!

Kind regards,

Rosie MacFarlane, (Past) President

Atlantic Society of Fish and Wildlife Biologists

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BioLink Information and Updates

The ASFWB Newsletter is published twice a year. Articles and opinions do not necessarily reflect the views of the Society or its members.

Thank you to all who contributed to this issue!

Do you have a research project, wildlife topic, upcoming event, photo, story, or anything else that you would like to see included in BioLink? If so, email one of our newsletter editors! We are always looking for content ideas and photos from our membership!

2020-2021 ASFWB Executive

ATLANTIC SOCIETY OF FISH & WILDLIFE BIOLOGISTS

ASFWB Executive Committee

The majority of the executive committee continues to fulfil their roles and maintain their positions. Bruce Moore has returned to the executive committee taking on the Presidents Role. We thank Rosanne MacFarlane for her contributions and leadership to the Society and will look forward to her advice and on-going presence on the executive committee in the Past Presidents role. Much thanks to Stephanie Walsh who has served as the Past President. We hope to see you at future Seminars and AGMs!

Rosemary Curley will continue as the VP Program. Due to current global events, the in-person Annual General Meeting was canceled for 2020 and is anticipated to be held in PEI next year.

Find Us Online

Atlantic Society of Fish and Wildlife Biologists (ASFWB)

Check out our website at www.asfwb.ca:

- register for upcoming events,
- read biographies of your executive committee members,
- download newsletters,
- find blog posts from scholarship winners,
- renew your membership
- and stay up to date on information for the **upcoming 2021 Spring Seminar**

Become an ASFWB Member

Regular Membership: $20/year
Student Membership: FREE!

To renew or become a new member, visit www.asfwb.ca or contact the Society's Treasurer, Ed Torenvliet (ed.torenvliet@gnb.ca) for other payment options.

Your membership supports:

- Hosting the Annual General Meeting and Spring Seminar,
- Disbursement of the ASFWB Research Grant,
- Scholarship Contributions

We hope to see you at the Spring Seminar in April 2021!

ASFWB Fish and Wildlife Research Grant

The ASFWB Fish and Wildlife Research Grant was established in the fall of 1994 to assist members who are conducting or supervising wildlife or fisheries research in Atlantic Canada. The grant provides funding up to **$500 annually for research projects**. Any aspect of fish and wildlife research will be considered, but projects with applied management goals will receive priority. Applicants must be members of the ASFWB. Projects that are largely government sponsored or funded are not eligible for this award.

Applications are OPEN (**Deadline is March 31 each year**).

For more information or **TO APPLY**, visit: http://asfwb.ca/the-asfwb-wall-of-fame/asfwb-fish-wildlife-research-grant/

Supporting Students in Atlantic Canada

ASFWB members have always been committed to helping advance the careers of Atlantic Canadian students in the field of biology. To this end, ASFWB has been integral in setting up scholarships that directly support top biology students at three universities in Atlantic Canada.

The David J. Cartwright Memorial Scholarship was established in 1991 at the University of New Brunswick, to honour David J. Cartwright who was a member and strong supporter of the ASFWB for many years and contributed to wildlife management in Atlantic Canada. The Cartwright scholarship is for students entering the final year of Forestry (Wildlife Option) or Science (Biology Option). The Donald G. Dodds Scholarship was established in 2010 at Acadia University with preference for graduate students in the Biology Department, though honours and undergraduate students are considered. Potential candidates for all scholarships should have combined scholastic ability with a demonstrated interest in biology and/or wildlife management. Disbursement is approximately $1000/ year.

Funds are currently being raised for the Gilbert R. Clements Scholarship at Holland College for graduating students entering the University of Prince Edward Island Wildlife Conservation Program. If you would like to support our students, consider making a donation –we're almost halfway to our goal! Contact Holland College today! https://hollandcollege.com/foundation/how-to-make-a-gift.html

Below are the most recent recipients of the award and scholarships

DATE	STUDENT	AWARD/ SCHOLARSHIP
2020	Emma D'Costa	David J. Cartwright Memorial Scholarship
2020	Elizabetha Tsitrin	ASFWB Donald G. Dodds Scholarship
n/a	**FUNDS BEING RAISED**	ASFWB Gilbert R. Clements Scholarship
2020	Courtney Burk	ASFWB Fish and Wildlife Research Grant

You can donate to our student scholarships online at **www.asfwb.ca**

Upcoming Events

Oct. 30th–Nov. 4th- McGowan Lake and Pleasant River BioBlitz — **Mersey Tobeatic Research Institute**

In celebration of Nova Scotia's new protected areas, MTRI has created a 9-day long BioBlitz from Friday, Oct. 30 to Monday, Nov. 9 in the new Katewe'katik and Pu'tlaqne'kati Wilderness Areas (McGowan Lake and Pleasant River). Help us get out, rediscover and capture the biodiversity of these areas! This event is free, hosted on iNaturalist and

Nov. 2nd–Katewe'katik Wilderness Area Day Trip BioBlitz — **Mersey Tobeatic Research Institute**

This day trip is designed to get people unfamiliar with the new protected areas out and exploring. It is also an opportunity to learn or become even more familiar with iNaturalist. Our staff will be there to help with any issues, answer questions and ID any species we may encounter while out. This trip will be limited to 25 people and registration is required. It is free but a small $5 donation helps MTRI keep these events coming! To register and for more

Nov. 4th–Mind the Boundary - Tips and Tricks — **Nature Trust of New Brunswick**

During this 1-hour webinar, you will learn how to locate property boundary lines, learn proper techniques for finding old boundary evidence, and learn how to update current boundary markings. Visit the NTNB website for more details.

Dec. 2nd–What They Leave Behind - Animal Tracks and More! — **Nature Trust of New Brunswick**

Join the Nature Trust and NatureKids NB on Wednesday, December 2nd for a free, family-friendly webinar about how to identify wildlife in New Brunswick based on what they have left behind. During this 1-hour webinar, you will learn about the keys to identifying animal tracks in the snow, what their scat can tell us, and more! Visit the NTNB

January 13th– Bird ID Workshop - Winter Birding — **Nature Trust of New Brunswick**

During this 1-hour webinar, you will learn how to identify finches, woodpeckers, owls, and more by their field

February 10th–Eco-regions and Their Importance for Conservation — **Nature Trust of New Brunswick**

During this 1-hour webinar, you will learn about the characteristics of eco-regions, what defines an eco-region,

February 24th-25th–New Brunswick Invasive Species Summit — **New Brunswick Invasive Species Council**

Bringing together government, NGOs, researchers, industry, and user-groups to identify how we can move invasive species management forward in New Brunswick.

February (Date TBD) - PEI Winter Woodlot Tour — **Hunter-Clyde Watershed Group**

A partnership between the Hunter-Clyde Watershed Group, Wheatley River Improvement Group, Central Queens Wildlife Federation, and Trout River Environmental Committee

The PEI Winter Woodlot Tour is a fun, family-friendly event where visitors can learn about topics including woodlot management, watershed restoration, invasive species, birds of prey, and much more. There will be free hot apple cider, guided nature walks, snowshoeing, and fun activities for kids. For more information visit www.winterwoodlottour.ca or visit our Facebook page "PEI Winter Woodlot Tour."

March 10th–Wildlife Photography Basics — **Nature Trust of New Brunswick**

During this 1-hour webinar, you will learn the basics of wildlife photography and how to take your own photos

April 7th–Identifying Invasive Species in New Brunswick — **Nature Trust of New Brunswick**

During this 1-hour webinar, you will learn about invasive species you can find in your own backyard, how to identify them, how they affect native wildlife, and more. Visit the NTNB website for more details.

Upcoming Events Continued

TBD– Register to be notified of events — **Mersey Tobeatic Research Institute**

The Mersey Tobeatic Research Institute has launched our fall and winter seminar series in two different designs this year! Both seminars are monthly, online and free for everyone. All you need to bring is your curiosity! To find out more follow MTRI's social media or email chad.simmons@merseytobeatic.ca to register.

(1) **Lunch N' Learn** is a kick of spice to your midday meal. We will explore inspiring organizations and compelling research in a discussion-based lunchtime chat. Tailored to your busy schedule; during our Lunch N' Learn everyone is free to come and go as needed. In 2020, we will focus on the threatened Annapolis sand barrens, prep for the annual Christmas bird count and find out how our noisy modern world is impacting birds.

(2) **Our Sit Back Seminars** are a more in-depth look into the people, organizations and science shaping our shared natural and cultural heritage. In 2020, these evening talks will delve into how NS research impacts global biodiversity monitoring, the invasion of invasive species and the gears at work in the Christmas tree industry.

Field Trips (Next event is Nov 5th) — **Nova Scotia Bird Society**

The NSBS hosts a number of field trips that are open to non-members as well as members. Chris Pepper and Kate Steele will be leading a Beginner Birding event on Nov 5th at Cole Harbour. Jason Daile will be leading a Winter Birds event on Dec 5th at Peggy's Cove. For more information or to register, visit:

Social Media Coordinator

We're looking for you!

We are looking for a talented Social Media Coordinator to raise the online presence of the Atlantic Society of Fish and Wildlife Biologists (ASFWB) and elevate social traffic and overall community engagement. If you are a tech-savvy student or young professional with an interest in communication strategies and interacting with members through online channels, we would like to hear from you.

This will be a volunteer-based position and require a maximum commitment of a few hours each month. The position is a 10-month term, with an anticipated start date of January 2021 and an end date of October 2021. You will be working with other members of the executive council, collaborating with the VP Student Affairs, Newsletter, and Website Manager to create consistent messaging and content.

Responsibilities:

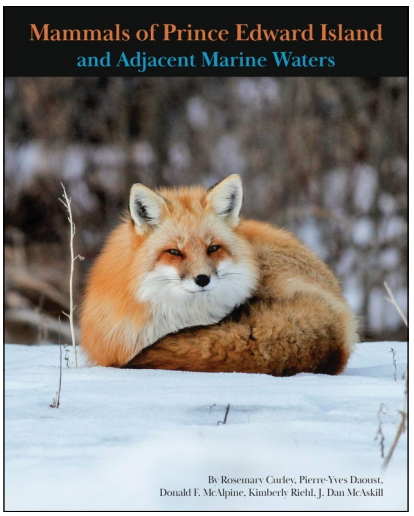
- Review, schedule, and publish social content.
- Create engaging content by sourcing images, writing compelling content, and connecting with other organizations within Atlantic Canada.
- Respond to audience comments and requests on social media platforms, such as Facebook and Instagram.
- Design posts to sustain readers' curiosity and generate interest around events (Newsletters, Spring meetings, Annual General Meetings, etc.)

This is a great opportunity to build up your experience working with different online platforms as well as network within ASFWB members from all around Atlantic Canada. You will be working with the executive committee who have a wide range of expertise and work across Atlantic Canada. This is a great opportunity to expand your contacts, gain experience in public communication, and contribute to a volunteer-based Society focused on fisheries and wildlife biology in Atlantic Canada.

Please submit a expression of interest (250-500 word) on why you are interested and what your level of experience is with social media by December 4, 2020 to asfwb.biolink@gmail.com.

Prince Edward Island Book Award—Congratulations!

Mammals of Prince Edward Island and Adjacent Marine Waters



The ASFWB would like to extend its congratulations to our VP-Program, Rosemary Curley, and her fellow co-authors, Pierre Yves Daoust, Donald F. McAlpine, Kimberly Riehl, and J. Dan McAskill, for their 2019 publication, Mammals of Prince Edward Island and Adjacent Marine Waters. The book was published by Island Studies Press at the University of Prince Edward Island.

Mammals of Prince Edward Island and Adjacent Marine Waters provides a complete overview of PEI's terrestrial and marine mammals, from shrews to whales. The book blends local history with scientific findings to provide comprehensive accounts for each species. Each account includes a description of the species, colour illustrations, range maps, species' history and status on PEI, information on the species' life history, and French and Mi'kmaq species names. Mammals of Prince Edward Island and Adjacent Marine Waters is an excellent resource, whether you are a trained biologist or an amateur naturalist.

The authors of Mammals of Prince Edward Island and Adjacent Marine Waters were the 2020 recipients of the Prince Edward Island Book Award, non-fiction category. For more information on the Mammals of Prince Edward Island and Adjacent Marine Waters, you can visit the UPEI Island Studies Press website.

Hear from a Scholarship Recipient: Elizabetha Tsitrin

Donald G. Dodds Scholarship 2020 Recipient

I am a marine biologist, artist, and photographer with a passion for adventure and ocean conservation. I started my research career at Dalhousie University, where I studied the vocalizations of long-finned pilot whales off the coast of Cape Breton Island. This was my introduction to fieldwork, and ignited my interests in bioacoustics and social ecology. I then went on to complete a Master's thesis at Acadia University, where I worked under the supervision of Dr. Mike Stokesbury to study the migration of Alewife from Gaspereau River into the Bay of Fundy using novel acoustic tracking technology.

I have been fortunate to have opportunities to present my research at several local and international conferences, and in the final year of my Master's to be nominated for the Donald G. Dodds Scholarship. As a young researcher establishing my career in the field, the additional support to finance my education has given me more opportunities to participate in conferences and conventions, where I could network with established researchers, find opportunities for collaboration, and learn more about the field that I love.

I aspire to continue working in aquatic ecology to enhance our knowledge of animal movements, behaviours, and interactions with the human world. I believe that my experience, and the support I have received during my studies, have given me a strong foundation from which to continue my work.

- Elizabetha Tsitrin

Good News!

Barn Swallow Rescue

Submitted by Leanne Tol, Farmland Birds Coordinator, Island Nature Trust

This summer, Island Nature Trust (INT) visited several Small Craft Harbours across PEI to get a better idea of what role they play for species at risk – in particular, the Barn Swallow, a species usually associated with old farm buildings, but has also been observed using the bait sheds at harbours as nesting habitat.

While out surveying Tignish Harbour, INT staff stumbled upon a pair of Barn Swallows that were acting territorial. Staff attempted to locate the nest to no avail until a couple of fishers pointed them in the direction of a lobster boat docked in the water. Sure enough, the swallows had a nest on top of a light fixture directly under the boat's canopy.

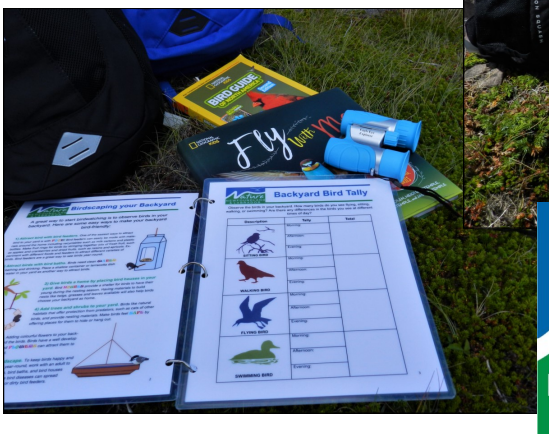
Much to the boat owner's surprise, these "Boat Swallows" started building a nest as soon as the spring lobster season wrapped up. The nest successfully hatched four chicks, but it was determined that they would not be fledged by the time the fall season got underway. Concerned about their survival, INT quickly built a temporary structure complete with a clay artificial nest. It took a team effort to set it up in a safe location near the boat and the nest and young were moved into the artificial nest.

INT staff then spent the day observing the pair, but despite hovering around the nest they were not observed feeding or acknowledging the young. At the end of the day the call was made, and the young were taken to the Atlantic Veterinary College (AVC) Wildlife Service at the University of Prince Edward Island for further care.

After arriving at the AVC Wildlife Service, they were fed every 20-30 minutes, and a week later they were fully feathered and starting to perch. They then moved to a larger enclosure and were fed about 20 meal worms each, every hour. Once they were ready for release, a suitable place was found; a barn with a nest and birds almost ready to fledge. In no time the four juveniles followed the surrogate parents outside and flew like acrobats in the sky. Since then they have been seen flying together with their newly fledged "siblings" – a success! See more photos of the "Boat Swallows" on page 21!

Birdwatching Backpacks

Nature Newfoundland & Labrador, alongside the Newfoundland & Labrador Public Library, launched the Birdwatching Backpack program in September 2020. Adults and children can borrow Birdwatching Backpack kits from the public library in St. John's, NL. The backpacks contain all the essentials for beginner birdwatchers. Backpacks include binoculars, instructions, tips for beginners, and local birdwatching hotspots. The backpacks for children also include extra activities, bird-themed picture books, and kid-friendly binoculars. Although, only available in St. John's, Nature newfoundland & Labrador are hoping to expand the Birdwatching Backpack program province-wide.



Nature NEWFOUNDLAND & LABRADOR

Death of Spartina?

Submitted by Rosemary Curley

The idea of well-defined salt marsh zones with three species of Spartina has never left me after hearing my ecology professor describe this many years ago. Indeed, there is a lot of truth in that picture, and Spartina is a largely predictable friend. However, it is not confined to salt marshes, for example, Spartina *pectinata* is the dominant floodplain grass in the St John River Valley, N.B. These plants are frequently referred to by scientific names alone. Upon entering a few Spartina records into iNaturalist, I discovered that the easy-to-spell name *Spartina pectinata*, (Prairie Cordgrass) has become *Sporobolus michauxianus* and *Spartina aterniflora* (Smooth Cordgrass) is referred to as *Sporobolus alterniflorus*. The Salt Meadow Cordgrass, *Spartina patens*, has become *Sporobolus pumilus*.

Now 38 botanists and friends (ie. other scientists from around the world) have collaborated to defend the hallowed name Spartina. In an article in Ecology in late 2019, they describe "the striking, global iconic history and use of the name Spartina for over 200 yr." Though the Permanent Nomenclature Committee of the International Association for Plant Taxonomy accepted the recommendation of a DNA-based phylogenetic study to rename the Genus, the authors point out that the procedure did not follow taxonomic rules. Spartina should have priority. Some Canadian journals are using the new names, but statistics of usage presented by the authors indicate support for renaming is limited since it was officially accepted by the Committee in 2015. For example "a search in Web of Science showed 4,626 papers under the topic "Spartina," while 690 papers were found using "Sporobolus." Other examples are given. I prefer Spartina. It is easy to spell, and the bland common names are unattractive. However, users of iNaturalist must accept Sporobolus to enter their data.

Reference:

Bortolus, Alejandro, Paul Adam, Janine B. Adams, Malika L. Ainouche, Debra Ayres, Mark D. Bertness, Tjeerd J. Bouma et al. "Supporting Spartina: Interdisciplinary perspective shows Spartina as a distinct solid genus." Ecology 100, no. 11 (2019): e02863. https://doi.org/10.1002/ecy.2863

The Wildlife Society's Certification Program

Submitted By Don Barnes, Chair, CSTWS Certification Committee

As working biologists, ASFWB members are increasingly aware of public perception. In our modern society, there is a growing expectation that scientists involved in natural resources research and management should be performing according to professional standards. In Canada, foresters and engineers have long recognized this fact of life and have instituted rigorous certification programs to proclaim their practitioners as professionals.

In 1977, to promote and strengthen professional standards amongst wildlife biologists, The Wildlife Society (TWS) initiated the Certified Wildlife Biologist® (CWB®) program. Prospective applicants are judged based on 4 considerations: 1) educational depth; 2) work experience; 3) TWS membership; and 4) commitment to TWS's Code of Ethics. To ensure the education and professional experience requirements were being met, TWS established the Certification Review Board (CRB). The CRB is an eight-member board with representation from Canada and 7 other TWS sections across the US.

TWS's certification program has two stages: 1) Associate Wildlife Biologist® (AWB®) and 2) CWB®. The AWB® is designed to ensure that students have the proper educational background upon graduation from a university. There are five biology categories (Wildlife Management, Wildlife Biology, Ecology, Zoology, and Botany) and six non-biology areas (Physical Sciences, Quantitative Sciences, Statistics, Humanities & Social Sciences, Communications, and Policy, Administration, and Law) which are needed to meet certification standards (see TWS website)

An AWB®, then, has ten years to acquire five years of experience as a wildlife biologist. Upon acquiring this experience, a CWB® application can be submitted to TWS (see TWS website).

To maintain a CWB®, every five years, the TWS member must show that they have performed in a professional manner according to guidelines set down by TWS.

The Canadian Section of The Wildlife Society (CSTWS) believes that students/biologists should have the opportunity to become wildlife professionals. In 2018, the CSTWS formed the Certification Committee, to raise the status of TWS certification in Canada.

In populating the Certification Committee, care was taken to ensure representation for all regions of Canada. Of special interest to Atlantic biologists is that there are two members from your region: Stephanie Walsh, who recently completed two years as President of ASFWB and Levi Newediuk who is a member of the TWS Newfoundland Chapter.

Since students are the backbone of any certification program, this recruitment initiative is of paramount importance. As wildlife educators and practitioners, it behooves us to encourage and provide our youth with the opportunity to become designated as professionals. Our hope is to stimulate enough interest to re-establish TWS Student Chapters in regional Colleges and Universities. Any members associated with colleges or universities who are interested in helping in our attempts to reach students, let me know.

Another initiative which CSTWS has undertaken is the creation of a committee closely aligned with the Certification Committee which will review the wildlife curricula at key universities across Canada. There are several academics who feel that our courses have veered away from the practical component they once had. This committee is in the early stages and will soon be involved in identifying key college/university educators interested in sharing in this task. If any of your members would like to be part of this Curriculum Review Committee, let me know.

In closing, I want to reiterate that the CSTWS would like to reconnect with Atlantic biologists. As an organization that represents wildlife biologists from all regions of Canada, CSTWS's ability to make a difference increases exponentially as our membership base expands nationally. Opening communication channels is a productive way to start making in-roads. Hopefully, this article will rekindle the desire to "kick start" the reconnection process. I invite your comments and thoughts.

Don Barnes, CWB®,
Chair, CSTWS Certification Committee,
CSTWSCertificationCommittee@gmail.com

Update on Hemlock Woolly Adelgid at Kejimkujik National Park, Nova Scotia

Author: Gavin Martens-Carpenter, Resource Conservation Officer, HWA Project Field Technician, Parks Canada (Kejimkujik NP&NHS)

Following the detection of Hemlock Woolly Adelgid (HWA) in Kejimkujik National Park and National Historic Site in 2018, Parks Canada began the race against time to understand and react to the threat of HWA, which is expected to wipe out 80% of Kejimkujik's Eastern hemlock within 3-10 years. Because this pest is of provincial and national concern, our team began working with partners in various government and non-government organizations through the Hemlock Woolly Adelgid Working Group – Maritimes (http://www.nshemlock.ca/node/294).

These partnerships will help group members make informed management decisions across the range of eastern hemlock in Canada, as well as collaborate on public engagement efforts.

Research

In order to measure the impacts and predict ecosystem responses to the loss of Eastern hemlock in Kejimkujik, we have been racing to ensure baseline data is recorded before conditions change too rapidly or information is permanently lost. Some of our baseline monitoring measures include forest temperatures, forest songbirds, stand composition, and recording regeneration changes in hemlock stands damaged by Pale Winged Gray almost 15 years ago. Our monitoring also includes early detection and rapid response (EDRR) insect funnel traps, which will help us detect new invasive species and improve our knowledge of native insect species. In 2018 these traps discovered two new species in Kejimkujik

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7358253/).

We also survey priority hemlock stands throughout the park to determine the extent and severity of HWA infestations. These surveys started in 2018, as soon as HWA was detected in the province. We have continued these survey each year with detections in 43 of 105 stands as of September 2020. This year we began recording baseline hemlock canopy health conditions to determine the current impacts of HWA infestations and rates of decline in Kejimkujik. Some of the indicators of hemlock decline include the loss of new growth (light green tips at the ends of branches), heavy needle loss, and a hazy grey appearance to forest understories. Through these surveys we have found trees throughout the park that are changing rapidly and showing signs of decline, including in Jeremy's Bay Campground.

Volunteers and Partnerships

Since the start of the project we have had tremendous volunteer support by students and staff at Nova Scotia Community College (NSCC) who helped re-establish our hemlock SIMAB (Smithsonian Institute Man and Biosphere) forest monitoring plot at Grafton Lake, which provides data on hemlock forest change since 1999. Students of Dalhousie University, NSCC, and other volunteers also assisted with early HWA detection surveys in 2019 and 2020.

Lynsay Spafford, a PhD candidate (StFX, MUN), installed three phenology cameras in Kejimkujik hemlock stands in August. These cameras will be used to remotely monitor subtle changes in hemlock canopy health and provide an early warning system for hemlock decline in some of our most remote stands. Additional phenocams have been installed by Parks Canada to monitor the phenology of other tree species to document how climate change is affecting park forests.

Due to limitations from COVID-19, which restricted the ability of our working group partners to complete field work, we provided additional support to the Canadian Forest Service by helping to set up research sites and collected data sample outside the park. These studies will test chemical effectiveness in reducing HWA and any non-target impacts. These studies are critical for helping to inform management decisions in Kejimkujik and across Nova Scotia.

Management Planning

In order to carefully respond to the immediate threat of HWA in Kejimkujik's Jeremys Bay Campground, a campground management plan was developed, including a silvicultural prescription that could be used to reduce visitor safety risk and increase campground forest diversity. Team members worked tirelessly through COVID isolation on this plan assessing outcomes, costs, impacts, and viability of a variety of potential hemlock management options. Following input from Mi'kmaq and public stakeholders, this plan lays the foundation for operational activities heading into 2021.

New Brunswick Invasive Species Council

Submitted By Pascale Ouellette, New Brunswick Invasive Species Council

The New Brunswick Invasive Species Council (NBISC) is a network of NGOs, government, industry, and recreational stakeholders working to strengthen existing partnerships and to coordinate efforts to create a unified provincial response to the emerging environmental, economic, and recreational threats of invasive species.

Eurasian water-milfoil information booth.

After being dormant for a few years, the NBISC gained momentum again in 2019 with the help of the Canadian Council on Invasive Species, a national network of partners working collaboratively across jurisdictional boundaries to support actions and share information that can help reduce the threat and impacts of invasive species. In this first year, we focused on implementing the CLEAN DRAIN DRY campaign: a public awareness campaign aimed at preventing the introduction and spread of aquatic invasive species. It is a call-to-action encouraging the users of New Brunswick's lakes and rivers to CLEAN, DRAIN, and DRY their boats, trailers, and other recreational equipment to stop 'aquatic hitchhikers', with particular concern around the rapid spread of Eurasian water-milfoil throughout the Saint John River and the prevention of zebra & quagga mussel introductions into the province. We have developed outreach materials, delivered ID workshops, engaged with user-groups such as anglers, and worked with partners to install signage at boat launches to remind users of these threats; keep an eye out for one in your area or let us know if you would like one to install!

Building on the success of our first year, we are currently developing additional campaigns that address terrestrial invasive species and proper firewood practices while continuing to build on the success of the CLEAN DRAIN DRY campaign.

CLEAN DRAIN DRY boat launch sign.

A main tenet of the NBISC is to enhance collaboration and build capacity around invasive species management in the province. Currently, there is little to very little direction in New Brunswick when it comes to invasive species prevention and management. Unlike in other provinces that have legislated mandates regarding invasive species, here in New Brunswick there are no formal frameworks to manage them and no direction given to governing bodies or landowners.. As a result, the roles and responsibilities for invasive species management are unclear.

While various initiatives are underway within different government departments, environmental organizations, and industry, these are often piecemealed, disconnected, and/or lacking the resources they need. By bringing these groups together, NBISC aims to optimize and expand on these efforts to move invasive species management forward on a provincial-scale. While our work focuses on New Brunswick, we are also working with our counterparts at the PEI and Nova Scotia Invasive Species Councils to increase regional coordination. If you are interested in invasive species issues, we encourage you to reach out to us or your local invasive species council; we would love to hear from you!

Eurasian water-milfoil training day with Kennebecasis Watershed Restoration Committee, Belleisle Watershed Coalition, and the Hammond River Angling Association.

SAVE THE DATE!

Join us February 24-25th 2021 for the New Brunswick Invasive Species Summit! We are bringing together government, NGOs, researchers, industry, and user-groups to identify how we can move invasive species management forward in the province. More details to come on https://www.nbinvasives.ca/.

Ecological Connectivity in Nova Scotia

Submitted By Caitlin Cunningham, Dalhousie University

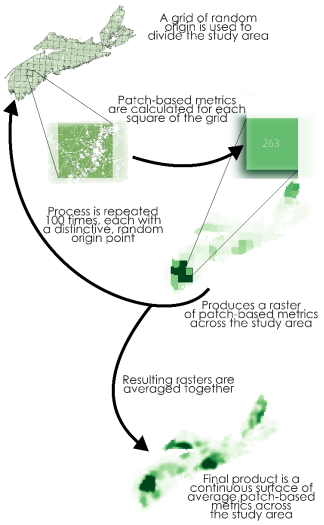
In 2016, the Eastern Canadian Premiers and New England Governors made a commitment to work across borders to maintain and restore ecological connectivity. As part of Nova Scotia's commitments to the resolution, a report on the state of connectivity in the province was recently released, in which I worked alongside John Brazner and Peter Bush from Nova Scotia Lands and Forestry, and Karen Beazley from Dalhousie University to measure and map the connectivity of natural ecosystems, forests and mature forests across the province. As in many jurisdictions, connectivity in Nova Scotia is impeded by roads, but as the influence of roads extends far beyond their edge, affecting wildlife behaviour and ecosystem composition for kilometers, we ran our analyses accounting for just the roads themselves, plus a 1- and 5-kilometer road effect zone.

We employed multiple methods to examine connectivity, including Circuitscape (which draws on electric circuit theory) to identify potential pinch points and five patch-based metrics (edge density, effective mesh size, mean perimeter-area ratio, median patch size, percentage class area) which were calculated across several analytical units (e.g. ecodistricts).

There were a couple of challenges with the patch-based analyses. First, the size and shape of the analytical units influenced results, sometimes producing unexpected or unintuitive results. For example, the ecodistrict encompassing the city of Halifax is one of the largest in the province, stretching across Halifax and Guysborough counties, so the highly fragmented landscapes of the city are overwhelmed by the more rural areas in the ecodistrict, resulting in lower fragmentation than expected. Second, unit boundaries do not always align with actual barriers on the landscape (e.g. a river), yet are treated as if they do in calculations, potentially falsely fragmenting contiguous patches.

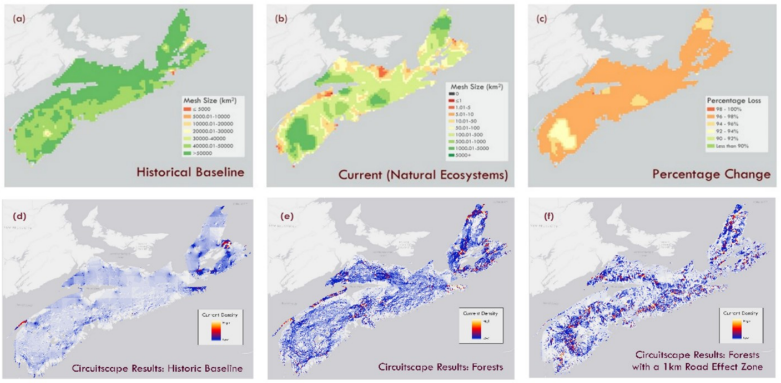
To overcome these challenges we developed a new method for examining changes in patch-based metrics across landscapes, combining a modified moving window with Moser et al.'s (2007) cross-boundary connections procedure. We used a grid of random origin to standardize the size and shape of the units for which the metric is calculated, and all patches wholly or partially within a grid cell were considered in their entirety in the calculation of the metric. The process was repeated 100 times, the results of which were averaged to produce a continuous surface of average values for the metric across the landscape.

Each analysis told its own story, offering unique insights into the state of connectivity across the province, but there were some general trends in the results. Most notably, connectivity has been greatly reduced across the province since European colonization, with 95+% reductions in most metrics, but in general connectivity has been best maintained on Cape Breton as well as in protected areas across the province.



Flow chart of the method developed to analyse patterns in patch-based metrics across landscapes.

We took a broad look at ecological connectivity, focusing on provincial-level trends, but the results could be used to set the context for finer scale research such as identifying candidate spots for wildlife road crossings. Additionally, only structural connectivity was looked at, leaving opportunity to examine functional connectivity for a particular species or suite of species.



A selection of some results including the effective mesh size surface for the historical baseline (a), present day (b), the difference between the two (c) and Circuitscape results for the historic baseline (d), forest (e) and forests with a 1 km road effect zone (f).

The full report can be viewed here: https://novascotia.ca/natr/forestry/programs/LandscapePlanning/Sept2020_ForestConnectivity.pdf

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Successful Augmentation of American Marten on Northern Cape Breton Island, Nova Scotia

Submitted By Dr. Lisa Doucette and Randy Milton, Wildlife Division, Nova Scotia Department of Lands and Forestry

Historically, American Marten (*Martes americana*) occurred throughout much of the forested areas of Nova Scotia including Cape Breton Island (CBI). However, numbers declined in recent decades and the Cape Breton Island population of American Marten was listed as endangered under the Nova Scotia Endangered Species Act in 2001. Following extensive surveys, by 2005 it appeared there were likely less than 50 individual marten remaining on CBI. There was no evidence of breeding and there had been extensive loss and degradation of suitable habitat from timber salvage operations following a massive spruce budworm infestation.

A marten augmentation plan was developed in 2006 following genetic testing and habitat evaluation. Between 2007 and 2009, 128 Marten (79M, 49F) were captured in northern New Brunswick and released at seven sites on CBI by the Nova Scotia Department of Lands and Forestry (NSDLF). In 2012 a Marten Habitat Management Zone was developed in CBI to better manage forestry operations and further protect marten habitat. American Marten in this region are generally associated with late-successional conifer-dominated forests and their optimal habitat appears to be in old forests. Due to these management actions, habitat forecasts predict there will be over 100,000 ha of marten habitat in northern areas of CBI by 2030.

Population monitoring has been ongoing to evaluate the survival and success of the released animals, including live trapping, snow track surveys, radio-tracking, and the use of trail cameras.

From January to March 2020, NSDLF intensified monitoring efforts to assess the dispersal and habitat use of marten in Cape Breton and to evaluate potential competition with Fisher (*Pekania pennanti*). Trail cameras baited with marten lure and beaver carcasses were deployed at 81 sites (162 cameras @ 2 cameras/site) for a minimum of three weeks. Sites were spaced at least 2.5 km apart in grid patterns to minimize the likelihood of recording the same animals at different sites.

Results are still being analyzed, but preliminary data shows marten present at nearly 50% of the sites and images of pairs provide evidence of breeding. Marten present in CBI today would be second or third generation offspring more than 10 years after the release. Concerns over competition with the larger fisher have been somewhat alleviated as the two species appear to be separated by elevation, with marten occupying habitat at higher altitudes. Publications are in preparation detailing the augmentation of the marten population and their current habitat use throughout the island.

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PEI Small and Medium-sized Mammal Monitoring— Recolonization by River Otter

Submitted By Matt Ginn, Wildlife Management Biologist, Fish and Wildlife, PEI Dept. of Environment, Water and Climate Change

The mammal community on PEI has undergone substantial change in the last ~200-300 years, due in large part to a small land mass and the conversion of forested land to agriculture. Landscape change has influenced the abundance and distribution of Island wildlife in both positive and negative ways. Large mammals, like black bear and caribou, are extirpated, whereas red fox, a native meso-carnivore, seems to be thriving. Other common PEI medium-sized mammals include raccoon, which also seems to be thriving, skunk, beaver and coyote. Whether through introduction (i.e., raccoon and skunk), reintroduction (i.e., beaver, a formerly extirpated native species), or natural colonization (i.e., coyote, which arrived on the Island in the 1980's), these species are now relatively common members of PEI's medium-sized mammal community.

This group of mammals is capable of profoundly influencing the ecosystems they are a part of. Beavers are capable of significantly altering their local geography, thereby affecting species and habitat diversity, and meso-carnivores like raccoon, skunk and fox can have considerable impact on local food webs. Aside from perhaps beaver, it is possible that the predominant mode of predation on this group is through hunting and trapping pressure, which may be experiencing declining trends over time on PEI. Given this circumstance, there is potential for meso-carnivores to place considerable predation pressure on lower trophic levels and ultimately place limitations on other populations in the community (e.g., reduced waterfowl productivity).

Based on this, and a desire for a better understanding of meso-carnivore distribution and status on PEI over time, the PEI Fish and Wildlife Section (PEI FW) has undertaken a long-term, Island-wide remote camera monitoring program. As part of the wider monitoring program, a determined effort employing slightly different methods has been established to gain a better grasp on the status of a more recent addition to PEI's fauna, believed to be a case of natural re-colonization by an extirpated species – river otter.

River otter is a native furbearer of PEI but believed to have been extirpated in the late 1800's. Based on recent evidence including accidental trapping, reports of sightings of live animals, and the discovery of a dead pup on a north shore beach in 2019, PEI FW undertook this camera trap program to track the presence and, hopefully, obtain evidence of successful breeding by river otter on PEI. Since initiation of the camera trap program PEI FW has obtained several images of river otter in watersheds along the north-central shore and in September 2020, images of a river otter litter were captured. A small collection of these images is provided.

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Heading to the field and need some reading material? Keep up to date with fish and wildlife research publications from Atlantic Canada and beyond. Paste the "doi" provided into your internet browser.

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Memories of Summer (NCC)

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Read about these Barn Swallows who nested on a lobster boat in Tignish Harbour, PEI on page 8! (Submitted by Island Nature Trust)

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