SOMMET SUR LES ESPÈCES ENVAHISSANTES AU NB

NB INVASIVE SPECIES SUMMIT

Summit Report

February 24-25th, 2021

April 1st 2021

Hosted by the New Brunswick Invasive Species Council

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NEW BRUNSWICK INVASIVE SPECIES COUNCIL
CONSEIL DES ESPÈCES ENVAHISSANTES DU N.-B.

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1.0 Summary

The first New Brunswick Invasive Species Summit brought **101 participants** from across the province, neighbouring provinces and states together virtually on February 24th and 25th, 2021. The Summit was an opportunity to learn from each other and increase collaboration around invasive species management in New Brunswick.

The Summit featured:

- 21 speakers from New Brunswick, Nova Scotia, Alberta, British Columbia, Ontario, Maine and Pennsylvania;
- Participants representing federal and provincial government departments, environmental non-government organizations, watershed groups, Indigenous organizations, students, and much more; and,
- 73% of participants were from New Brunswick and 93% from Atlantic Canada.

Summit Planning Committee

The Summit was organized by the New Brunswick Invasive Species Council (NBISC) in response to various organizations' stated desire for increased learning & collaboration opportunities. This included the New Brunswick Alliance of Lake Associations who first proposed the idea of an invasive species conference. The NBISC applied for and received funding from various government funders to host the event and a Summit Planning Committee was established to guide objectives and assist with planning activities. Members included:

- Pascale Ouellette - NBISC Outreach Coordinator
- Kristin Elton - NBISC Project Coordinator
- Theresa Glanville - New Brunswick Alliance of Lake Associations
- Hal Mersereau - New Brunswick Alliance of Lake Associations
- Briana Cowie - New Brunswick Alliance of Lake Associations
- Arielle DeMerchant - NB Dept. of Natural Resources & Energy Development
- David Mazerolle - Parks Canada, Kouchibouguac National Park

Summit Objectives

The theme of the Summit was focused on advancing invasive species management in the province through the following objectives:

1. Increase connectivity amongst groups in NB doing work on invasive species
2. Raise general awareness of IAS issues within the province- beyond individual groups' scope/activities
3. Increase knowledge of IAS management strategies & techniques happening elsewhere
4. Collaboratively establish options for advancing IAS management in NB

Discussions at the Summit focused on several key topics that were identified through the NBISC's work as gaps in IAS management or knowledge in the province. Our Summit Planning Committee also provided input regarding what they wanted to see explored, and six main topics were chosen: 1) invasive species policy, 2) outreach and education, 3) IAS priority ranking protocols, 4) management and innovation in the field, 5) early detection and rapid response, and 6) mapping and reporting. A lunchtime Keynote Speaker was also arranged.

Participants had the opportunity to participate in interactive elements, including breakout groups and networking breaks. Participants were also encouraged to network amongst each other on the virtual platform.

The Summit was hosted with the primary objective of facilitating learning from each other. This was possible using Pheedloop, an online conference platform, as well as Miro and Mentimeter. Simultaneous interpretation was available throughout the Summit.

The day and a half Summit was concluded with a short debrief and exit survey.

2.0 Session Summaries

2.1 Policy

The purpose of this session was to explore invasive species policies in New Brunswick and beyond, as well as touch on aquatic species at risk in Canada.

Arielle DeMerchant, Habitat Biologist with the New Brunswick Department of Natural Resources and Energy Development explained that invasive species management at the government level in New Brunswick is interconnected across several Departments with multiple legislative acts that regulate forestry, crownlands, biodiversity and fisheries sectors.

Isabelle Thériault, Species at Risk Biologist with Fisheries and Oceans Canada (DFO) touched on the Species at Risk Act that was fully implemented by DFO in 2004. The act protects species identified as at-risk and their critical habitat by creating recovery reports and management plans that take into account the effects of invasive species. Ulrike Irlich, Invasive Species Biologist with DFO followed by discussing the policy behind the Aquatic Invasive Species program established in 2017. The program provides a national framework and is meant to assist provincial regulations. The program aims to protect marine ecosystems with four pillars of action: prevention, early detection, response and management/control.

Jeremy Downe, Senior Invasive Species Policy Analyst with the Ontario Ministry of Natural Resources and Forestry spoke about the Invasive Species Act that was put in place in 2015 and how establishing partnership & relationships is essential for success. Ontario has the most invasive species in Canada,

therefore this is a huge economic cost to the province, and the province is unique in that it is the only one in Canada that has a dedicated Invasive Species Act. Jeremy described the pros and cons of this approach: pros being that it theoretically brings everything under one umbrella to make things clearer and it provides some regulatory 'teeth' for enforcing rules. When asked what he would change in the act, Jeremy said that he's overall happy with the act however the program remains underfunded and because of the amount of invasive species in the province, more resources are needed.

To conclude the session, Kayvon Monjezi- Masters student at the University of New Brunswick- touched on his IAS policy analysis research he has been conducting in partnership with the NBISC . Kayvon undertook this research to analyse how New Brunswick could step toward establishing a provincial invasive species management strategy while using what is currently in place and learning from other provincial jurisdictions. His main recommendation was the need to develop a IAS Strategic Plan for the province as a first step.

A common theme throughout this session was the need for additional resources to better enforce existing policies or put in place more encompassing invasive species management policies.

2.2 Outreach and Education

The purpose of this session was to explore successful outreach strategies and impactful engagement and education. The session started with Ken Donnelly of Beyond Attitude Consulting speaking on behavioural change and tips for successful outreach. Ken explained the "Intention-Action Gap", whereby people understand what they should do, but ultimately don't, and communicated that in order to close this gap, it's important to identify and eliminate the barriers to action using research and not just assumptions. He also stressed that clear and simple reminders will support commitments.

Danielle Toperczer, Director of Programs and Communications with the Invasive Species Council of British Columbia (ISCBC) stressed the importance of effective messaging and resources when communicating with diverse audiences. The ISCBC hosts several programs including five behaviour change programs and a very successful youth volunteer program. This program's goal is to empower and inspire youth to invest in the health of their communities. The program is accessible to rural areas and includes web based components making participation attainable for a wilder range of British Columbians.

Shaylyn Wallace, Stewardship Coordinator with the Nature Trust of New Brunswick (NTNB), noted that they rely heavily on volunteers to help with invasive species removal activities. A big component of this program is properly educating the volunteers on details of terrestrial invasive species. Shaylyn noted that 44 out of 69 of their nature preserves had invasive species present. Since their invasive species removal initiatives launched in 2016, they have been able to start removal efforts at 12 nature preserves.

Hearing from Ken, Danielle and Shaylyn made it clear that successful outreach is achieved when communication is clear, accessible and effective. It was also noted that engagement is impactful when participants leave feeling educated and empowered about their local environment.

2.2.1 Mentimeter Brainstorming

To complement this session, we created a poll using Mentimeter.com to get participants thinking about who they could engage with on IAS issues within their networks, as well as what resources they would find useful for doing so.

Responses for who to engage included:

- Youth & school groups
- Municipalities
- Watershed groups
- Specific user-groups (ie. cross-country skiers, dog walkers, anglers, gardeners)
- Clubs (ie. 4-H, Botany Clubs)

Response for what resources would be useful included:

- Factsheets
- Displays
- Awareness materials to hand out (ie. boat stickers, keychains)
- Short videos for YouTube and social media channels
- Signage where activities take place
- Field ID resources
- Social media competitions
- Bioblitz

The full results can be found in the attached pdf entitled *'Outreach & Education Mentimeter Results'*.

2.3 Lunch Keynote Speaker

Karen Wickerson, Rat and Pest Program Specialist with Alberta Agriculture and Forestry delivered an informative and entertaining Keynote presentation on the Alberta rat control program that has been in place since 1951.

Alberta has a unique geography as entry of rats is limited by cold to the north, mountains to the west and low population density to the south. Their geographic advantage paired with their rat control program has resulted in Alberta remaining proudly rat-free.

Roof rats and Norway rats do hitchhike or travel overland into Alberta, however due to the program, these sightings are quickly addressed. When infestations are found, they are baited immediately. The

public is also involved in the program through educational posters and the reporting hotline. Karen clarified that Albertans are not allowed to have pet rats.

Karen concluded by noting that there are still gaps that exist in the program education wise. Newcomers to Canada and to Alberta may come from areas where rats are native or not invasive, therefore more education is needed on that front.

2.4 Picking the Right Targets: Assessment and Ranking of Invasive Species

Following these results, we split participants into five interactive breakout groups each themed with one of the top five ecosystems of concern to begin the discussions around establishing a Priority Invasive Species list in New Brunswick. Both participants and moderators were using the virtual platform called Miro which allows you to put your ideas on electronic sticky notes and collaboratively work with multiple people in real time. With so many invasive species out there, and limited resources to manage them, a question that is often raised is how do we know what species to focus our management efforts on? The purpose of this session was to start tackling this question.

To help us with this question we had David Mazerolle, Resource Management Officer II at Kouchibouguac National Park and well-known Botanist, talk about invasions in New Brunswick and important considerations in identifying and ranking priorities. David also noted that it's important to distinguish invasive species from exotic species. A small number of exotic species become invasive. He stated that the best predictor for whether a species will be invasive is if it has become invasive elsewhere. Invasibility of an area can also change over time; especially with climate change.

David noted that there are probably 75-100 problematic/invasive plant species in New Brunswick. He also made mention of how invasives have affected other taxa: 3 of our 7 bat species in NB are at risk because of the invasive fungus that causes white nose syndrome in bats, Chain Pickerel is found in all of our southern major rivers, over two years the Emerald Ash Borer made its way from Montreal to Nova Scotia, and much more.

When it comes to identifying and ranking priorities, the first step is to build a list of what is present in each ecosystem and what species are on your watch list (i.e. occurring in neighboring jurisdictions and has a potential to invade in the province). After that, David said we can build a ranking based on criteria such as invasiveness and invadability. Then, we can evaluate the management priority by assessing the feasibility of control or eradication.

David concluded by presenting a few invasive species ranking protocols that are currently in use and stating that outside of which protocol you choose to use, it's important to identify your goal and identify your key partners. He also noted that it's important to be ready for new unexpected species to show up. As a result, the ranking should be reassessed periodically.

2.4.1 Interactive Activity

Goal: The goal of this session's interactive activity was to begin the discussions around establishing a Priority Invasive Species list in New Brunswick and what that could look like.

We began by following David's presentation with a Mentimeter poll to determine which ecosystems participants are most concerned about being impacted by invasive species.

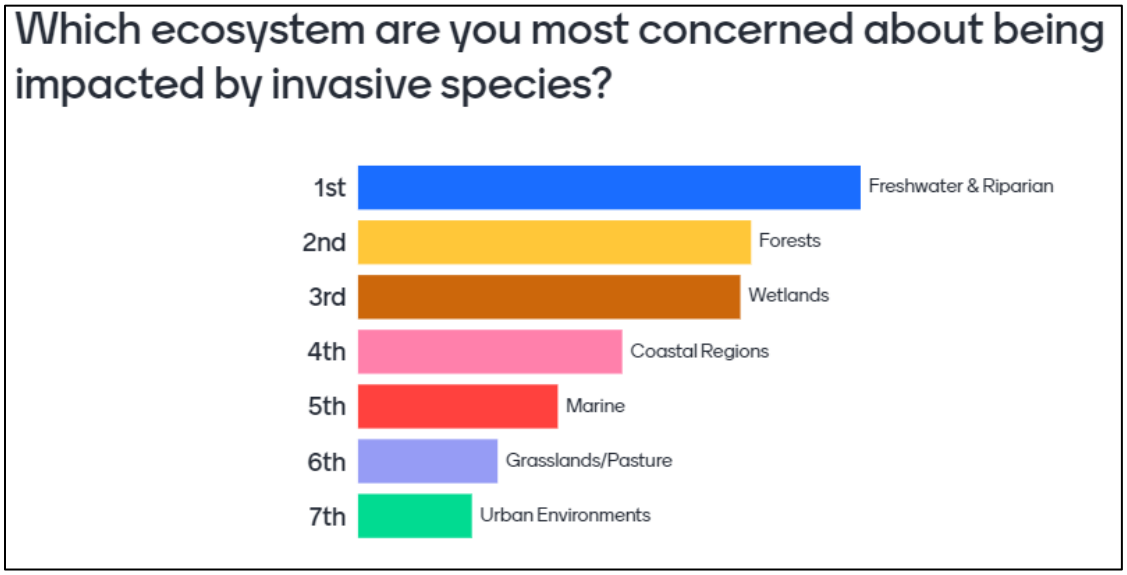

Figure 1: Results from participant poll asking 'Which ecosystem are you most concerned about being impacted by invasive species?".

This exercise was intended to get people thinking about what needs to be considered when assessing IAS threats, and begin discussions about how to establish a process for doing so. Moderators prompted participants into thinking about who would benefit from an assessment of priority invasive species in their ecosystem of evaluation, what factors should be considered when assessing the impact of different invasive species that affect the ecosystem, what key players should be involved in these assessments, and other topics as they arose.

Although each breakout group was tackling a unique ecosystem, there were many common themes throughout the discussions:

1) Who would benefit from an assessment of priority invasive species in their ecosystem?
    - Industry (fishing, forestry, aquaculture, woodlot owners, farmers)
    - Municipal, Provincial and Federal government agencies
    - Environmental groups (watershed, conservation, lake associations)
    - First Nations
    - Landowners
    - Parks Canada

- Infrastructure managers
- Recreational user

2) What factors should be considered when assessing the impact of different invasive species that affect the ecosystem?
    - Short and long term effects including ecological, socio-economic and cultural impacts
    - Invadability and invasiveness of the species
    - Pathways of spread
    - Whether it's too late to do anything if a species has already arrived
    - Climate change
    - Species At Risk presence
    - Specific vs. cumulative impacts (ie. ecosystem services)
    - Time & resource cost
    - What have other jurisdictions done?

3) Who should be involved in these assessments?
    - Municipal, Provincial and Federal government agencies
    - First Nations
    - Species-specific researchers
    - Non-government organizations
    - Industry (eg. farmers, woodlot owners, transportation)
    - User-groups (eg. anglers, nature clubs)

4) How should this process be organized?
    - Working group including key partners & diverse stakeholders identified above keeping in mind that key partners will vary per ecosystem
    - Create action and management plans
    - Strategic planning
    - Coordinated by the NBISC
    - Using a standardized framework such as the Open Standards for Conservation
    - Continuous review every couple of years or when new arrivals are detected

Groups were also asked to start brainstorming what invasive species should be assessed for impacts to their assigned ecosystem: the results of which can be found in the attached pdf entitled '*Picking The Right Targets Breakout Group Results'*, along with further details on the above questions in each group's detailed worksheet.

To conclude, when asked what the benefits are of prioritizing invasive species based on ecosystem, participants stated that it's a targeted approach that would focus management and awareness efforts as well as protect our industries and species at risk.

2.5 Advancements in On-the-Ground Invasive Species Management

The purpose of this session was to explore successes, innovations and advancements in the field of invasive species management. Our speakers covered a wide range of species: green crab, goldfish, flowering rush and hemlock woolly adelgid.

To speak on Green crab we had Gabrielle Beaulieu, Project Manager at Kejimkujik National Park Seaside present on a successful Coastal Restoration Resilience Project that has been in place since 2010 successfully recovering the tidal estuary that was impacted by the invasive European green crab. They trapped over 2 million green crab from 2009-2019. As a result, the water quality improved and important tidal estuary species such as eel grass recovered by 36% by 2016.

We then had Dr. Audrey Moores, Associate Professor at McGill University, present on her lab's work focused on using mechanochemistry to use green crab shells to make bioplastics. To widen the scope and reach of the Kejimkujik green crab project, the Park partnered with Dr. Audrey Moores lab to find ways to use green crabs as marketable products and as a means of invasive species waste management. Dr. Moores stated that it's clear we have a plastic problem in this day and age and in Canada, we also have a crustacean waste problem. This project is possible thanks to crowdfunding, Dr. Audrey Moores research and Parks Canada.

Melissa Logan and Meghan Myers of the City of St. Albert, Alberta spoke of their successful removal of over 2,500 lbs of goldfish from two stormwater facilities and 300 lbs of koi and goldfish from an artificial lake in the City of St. Albert. They realized that chemical application would be required to deal with the invasion when initial attempts via electrofishing and lowering water levels to promote freezing failed. They worked with Alberta Environment and Parks to obtain the proper permits to use the chemical treatment 'Rotenone'. The City of St. Albert also launched an educational campaign which included signage, news releases, direct landowner notice for residents within a 100m radius, social media and staff notifications. The campaign focused on educating residents as to why chemicals were needed, what the effects would be and promoting the "Don't Let It Loose" message to prevent an invasion like this from happening again.

Meghan and Melissa also touched on how flowering rush expands at a rate of approximately 30% per year. The city has begun efforts to remove and monitor flowering rush via hand-pulling however it's very labor intensive work and will take many years of continued resources to manage.

To conclude this session Donna Crossland, Hemlock Woolly Adelgid Coordinator at Kejimkujik National Park and National Historic Site, stated how important Hemlocks are in Kejimkujik;they provide a unique set of ecological forest conditions for salamanders, martens, moose, fungi, songbirds, and many other species. Donna said that one individual Hemlock Woolly Adelgid can start a population. They can kill hemlocks within 2-3years and they have no natural predators in North America.

Parks Canada has developed a management plan for the hemlock woolly adelgid. A working group that co-manages with the Mi'kmaq has also been created for the maritime provinces. Donna stated that the Nova Scotia hemlock initiative is modeled after the New York State initiative. Currently, additional control options such as biocontrols are being researched as silviculture alone is a preemptive approach.

Overall, the common themes amongst these presentations are establishing partnerships for increased collaboration, utilizing research to find new and innovative ways to tackle invasive species management, and that finding a management practice that works for your on-the-ground invasion is a trial and error, or trial and improve, process.

2.6 Early Detection and Rapid Response

The goal of this session was to learn about various approaches to Early Detection and Rapid Response in New Brunswick and other jurisdictions and begin exploring how these approaches could be established more widely in New Brunswick.

First off, we heard from Drew Carleton, Manager of Forest Health with the New Brunswick Department of Natural Resources and Energy Development, who spoke about how the province has responded to various forest IAS threats. Drew stated that roughly 40% of his time is spent on invasive species and that the Forest Health team works closely with the Canadian Food Inspection Agency to survey and manage forest pests in NB. Drew went through three case studies: Brown Spruce Longhorn Beetle, Emerald Ash Borer and Browntail Moth. In the case of Brown Spruce Longhorn Beetle, it was first discovered in New Brunswick in 2011 by CFIA in Kouchibouguac National Park using traps. In 2014, it was discovered again via traps however this did not trigger much of a response since it was only one beetle that was found. A year later two beetles were found in two traps indicating a possible population so CFIA started to regulate. The year after they found some beetles further north above the treatment zone. As a result, they worked with the local wood marketing board to set up 120 traps over a 3km radius and scan all spruce contents. Since 2016 only a couple beetles have been found at this site.

To follow we heard from Sara Stahlman, Extension Leader at Pennsylvania Sea Grant, on their development of an aquatic invasive species rapid response plan for Pennsylvania. With interagency support and approval, Pennsylvania Sea Grant was able to secure funding to develop mock rapid response exercises for state agencies and organizations involved with invasive species. The purpose of these mock exercises is to identify gaps and areas of improvement in the current rapid response plan and increase communication and coordination of the process. Pennsylvania's rapid response plan is currently being updated to address some gaps that were identified during these mock exercises. The plan covers site assessments, identifying objectives for the response, brainstorming response options, action plan development, post incident evaluation, and much more.

Kate Drier, University of New Brunswick Masters of Environmental Management Student, presented on her work regarding surveying terrestrial invasive species on protected lands. Kate noted that New

Brunswick currently lacks a rapid site assessment system to detect, classify and monitor invasive species. Through her research in collaboration with the Nature Trust of NB, the Department of Natural Resources and Energy Development and the NBISC, Kate was able to recommend that, although sampling methods inherently differ based on the plants you are surveying for, stratified continuous sampling and random plot sampling be used for determining the presence of invasive species in an area and that relative abundance is recorded while sampling. Ultimately Kate noted that you can better manage an invasive plant species once the extent of the species in an area is known, if it infringes on species of concern, and how aggressive the invasive species is.

2.6.1 Interactive Activity

Goal: The goal of this session's interactive activity was to probe participants into thinking about what Early Detection and Rapid Response processes could look like in New Brunswick, which questions remain unanswered, and how useful having a predetermined process could be.

Following the presentations, we split participants into five breakout groups that each had a different hypothetical scenario involving an invasive species introduction in the province:

1. *Zebra Mussels* have been identified in the Saint John River near Grand Falls. The mussels are believed to have come from the Great Lakes after hitching a ride on a recreational boat;
2. *Spotted Lantern Fly* has been identified in Rockwood Park in the Greater Saint John area. It's believed to have hitched a ride on nursery stock from the US;
3. A patch of *Kudzu* has been found in Bouctouche. It's believed to have been originally planted by a cottager who transplanted it from Alabama;
4. Various sightings of *Wild Pigs* in the Edmundston area have been reported to the NB Department of Natural Resources and Energy Development;
5. A small established population of *Round Goby* has been found in Belleisle Bay. It is believed to have arrived as live bait that was later discarded.

Breakout group moderators prompted participants to consider the following questions in order to begin exploring what information is needed for successful EDRR plans:

- How the species would be properly identified
- If the species were likely to spread
- What actions should be taken
- What organizations need to be involved
- How the EDRR efforts would be funded; and
- What can we be doing now in NB to advance EDRR

Both participants and moderators used the Miro virtual platform to put their ideas on virtual sticky notes and collaboratively work with others in their breakout group**.** Although presented with different scenarios and species, many common themes arose throughout the discussions:

- The need for a clearly defined lead organization
- EDRR plans should be developed with diverse stakeholder input and include clearly defined roles and responsibilities
- Reporting and surveillance mechanisms need to be in place
- Communication is key, for both public messaging and communication between stakeholders
- Risk assessments and an understanding of different species' impacts are required
- Strong desire for quick, on-the-ground responses (ie. surveying, monitoring, removal) and appetite for innovated solutions (eg. IAS detection dogs, garden plant exchange program)
- Question of who will fund these initiatives is a difficult one to answer, however one unique point was the idea to establish an emergency fund that can be accessed to enable EDRR when new detections occur

These discussions proved very valuable for providing insight into what IAS stakeholders in the province think EDRR processes should look like in New Brunswick and how they should be developed. It is our hope that this session and interactive activity created a greater appreciation for the benefit of having EDRR plans in place and will subsequently build momentum for establishing these processes.

To see each group's detailed worksheet, please refer to the attached pdf entitled '*EDRR Breakout Group Results'*.

2.7 Mapping and Reporting

The final topic of our Summit was one we get a lot of questions about: invasive species reporting and mapping. Unfortunately, there is limited data on IAS in NB and no centralized database of reports: most questions of "where is _x_ species in NB?" can only be answered by piecing together information from various government departments, private landowners, and conservation organizations.

As such, the NBISC has been investigating ways we can improve the state of reporting & mapping in NB, including working with the Nova Scotia and PEI Invasive Species Councils to explore the possibility of developing a Maritimes-wide IAS data management strategy. Part of this exploration has included looking at what other jurisdictions around us have done and how they utilize different reporting platforms.

As such, we invited Nancy Olmstead, Invasive Plant Biologist with the Government of Maine and Shelley Cooke, Project Manager with NatureServe, to share with us the ins and outs of iMapInvasives- the platform used by the State of Maine for IAS reporting- and their experience with this mapping tool.

iMapInvasives (iMap) is a web-based, flexible invasive species mapping tool and database that can serve a variety of user groups. It can store multiple types of data including survey areas, observations and treatment monitoring. iMap uses a subscription model, in which a province (or potentially a group of provinces) signs on to adopt iMap, pays a yearly fee, and allocates a portion of a staff person's time to actively manage the tool for that jurisdiction. Managing iMap for your jurisdiction entails data confirmation. iMap has no cost to be a registered user. You can also see the basic data without creating an account. The tool can also accommodate any kind of invasive species and can track treatment history in the same spot.

This presentation and in-depth walk-through was very useful as the maritime provinces Invasive Species Councils look into how to move forward with IAS reporting to ensure we have coordinated & accessible mapping and reporting capacities for years to come.

3.0 Analysis & Key Take-Aways

Throughout the Summit, various themes and insights emerged that will be useful to keep in mind as we move forward in our efforts as a province to better manage the threat of invasive species.

Particularly noteworthy is the way in which people seem to conceptualize the problem of invasive species, in that it tends to be with a very narrow focus. This was evidenced by the results of a word cloud exercise we did with participants at the beginning of the Summit to gage what comes to mind when people hear the term "invasive species"; while some overarching concepts were brought up (eg. 'introduced', 'harmful'), many of the responses were specific species or impacts. This inherently makes sense from the standpoint that those dealing with invasive species tend to be "in the thick of things" and very focused on one particular issue.

Figure 2: Word cloud developed from answers to the question "What word(s) come to mind when you think of invasive species?" asked at the beginning of the Summit.

However, the downfall to having such an isolated perspective is that we often miss out on the benefits that can be provided by having a more holistic view of IAS issues as a whole: the classic problem of not being able to see the forest for the trees. These benefits include being able to learn from others who are dealing with “similar but different” situations (eg. different species but same impact/different problem but same stakeholders), being able to identify common management gaps that can be addressed systemically, and identifying more opportunities for collaboration.

We repeated the word cloud activity at the end of the Summit and- despite some pessimistic views- we were happy to see that there appeared to be a shift towards broader concepts that can be applied to any IAS management issue. These included things like ‘partners’, ‘framework’, and ‘communication’, with the most prominent theme by far being ‘collaboration’.

Figure 3: Word cloud developed from answers to the question "NOW what word(s) come to mind when you think about invasive species?" asked at the end of the Summit.

Overall, the Summit highlighted that there is significant concern about invasive species in New Brunswick, but also that there is considerable appetite for improved management and enthusiasm for taking the steps to facilitate these improvements. When asked what their key takeaways from the Summit were, participants identified the need for the following:

- Collaborative management
- Communication
- Strategic planning
- Reporting and mapping
- EDRR plans
- Proactive management

As an organization focused on increasing collaboration and improving invasive species management in the province, this information is very useful to the NBISC; it provides insight into how we should plan our activities moving forward in order to ensure that our work benefits as many IAS stakeholders as possible.

The full list of responses to participants' key takeaways can be found in the attached pdf entitled 'Closing Session', along with what they found most interesting about the Summit.

4.0 Participant Feedback

Participants were invited to complete an exit survey to communicate their experiences and takeaways from the conference. Out of 101 participants, 50% responded to the exit survey. When asked about their overall experience, participants rated the conference organization 4.6 out of 5 (5 being great) and the conference content 4.5 out of 5. The interactive elements such as breakout groups and networking opportunities were rated a 3.9 out of 5 and the simultaneous translation services from English to French averaged 3.2 out of 5.

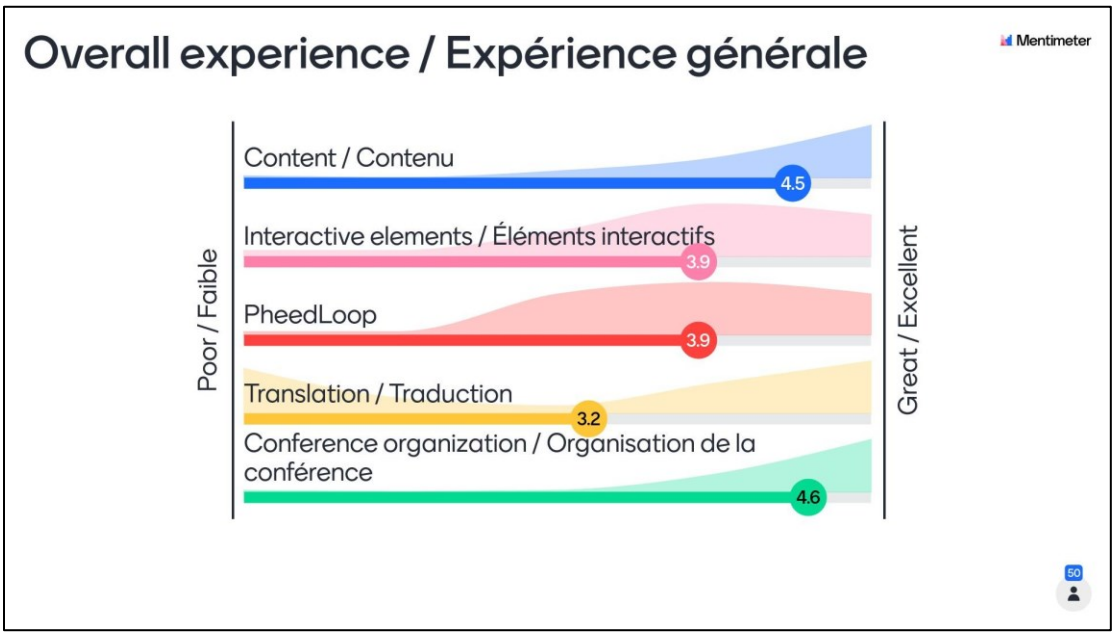

Figure 4: Participant feedback on various aspects of the Summit.

When asked to identify their favorite part of the conference, the common themes were:

- Learning from other jurisdictions;
- The variety of topics covered; and
- Speakers from various backgrounds.

Asked for areas of improvement, participants stated that:

- The Summit could have been broken down into smaller segments
- A tutorial video for Miro and pHeedloop sent prior to the Summit would have been helpful to aid with technical issues; and
- More time for the breakout group debriefs

Outside of the exit survey, some participants indicated that they would have liked each speaker to receive more time to elaborate on their work.

5.0 Conclusion

Overall, we believe that the first New Brunswick Invasive Species Summit was a tremendous success. We were able to bring together over 120 people to learn from other jurisdictions and explore how we can work collaboratively to move invasive species management forward in the province of New Brunswick, all from the safety and comfort of our own homes & offices.

Although needing to move this event online due to Covid-19 posed its fair amount of challenges, it is likely because the event was held online that we were able to bring in expertise from so many other jurisdictions and draw in as many participants as we did. While we certainly hope to be able to host the next Summit in-person, we will absolutely be taking the benefits of this year's virtual experience into consideration; we will seek ways to maintain the connections we have made to continuing fostering an environment of cross-jurisdictional learning and collaboration.

Hosting the Summit enabled us to significantly increase our network of partners and stakeholders; over 20 participants have reached out to the NBISC wanting to be involved with our work in some way, whether it be volunteering at events, providing expertise in their field, etc. This is a good indicator that the Summit served its purpose of creating momentum around improving invasive species management in the province and we are excited to take this momentum and build upon it in the years to come.

6.0 Acknowledgements

First off, we would like to thank the participants for their participation and continued support. Thank you to the speakers for their time, expertise and participation. For your hard work that made the Summit what it was, thank you to our Summit Planning Committee, and to the New Brunswick Invasive Species Council Steering Committee for their continued direction and support.

Last but not least, we thank our funders for helping to make this event possible: Fisheries and Oceans Canada's Habitat Stewardship Program (Aquatic), the New Brunswick Environmental Trust Fund, and the New Brunswick Wildlife Trust Fund.

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What stakeholders/specific groups could YOU engage with targeted invasive species messaging?

Mentimeter

youth, municipalities, fishers

university student unions

NGOs

School classes/Youth

Watershed

Watershed Groups

municipalities

general public

Schools

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What stakeholders/specific groups could YOU engage with targeted invasive species messaging?

Mentimeter

- Cross-country ski groups (trail cleaning in the fall)
- schools
- Community members through events
- Fish and Game Associations
- Politicians
- Watershed groups
- anglers
- City residents
- youth

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What stakeholders/specific groups could YOU engage with targeted invasive species messaging?

Mentimeter

- Hiking groups
- Paddling/Canoe Clubs
- sport fishing associations
- NGOs
- Watershed Groups
- pet stores and gardening centres
- NGOs
- General public
- hikers

38

What stakeholders/specific groups could YOU engage with targeted invasive species messaging?

Mentimeter

- Watershed groups
- 4-H organizations
- student (school/college/university)
- Municipal councils
- dog walking
- Hunting/angling communities
- NGOs
- pet stores
- eNGOs, federal departments, schools and educational programs, etc.

38

What stakeholders/specific groups could YOU engage with targeted invasive species messaging?

Mentimeter

garden nurseries

New Brunswick Botany Club. Canadian Land Reclamation Association. Directing WAWA permits applicants to appropriate resources.

38

What types of IAS outreach resources would you find useful for engaging your audience?

Mentimeter

- fact sheets
- boat stickers
- signs
- Posters
- social media
- Displays
- Field IDing cards
- keychains
- signage

35

What types of IAS outreach resources would you find useful for engaging your audience?

Mentimeter

- YouTube Videos
- Social media post templates
- TikTok and Instagram Reels
- short videos
- Stickers and pins
- stickers (bumper and window)
- Species specific pamphlets
- Association website
- Instagram stories with polls/surveys

35

What types of IAS outreach resources would you find useful for engaging your audience?

Mentimeter

Website, signs next to where activity takes place

social media competitions

well thought out, well located signage

social media posts

Awareness Days

iNaturalist BioBlitz

boot brush

social media

social media and conference in school

35

What types of IAS outreach resources would you find useful for engaging your audience?

Mentimeter

Short video content

great visuals

sample letters to landowners

We love brochures that open up as a poster - great for kids to put on their walls.

Swag for giveaways on Instagram/Facebook

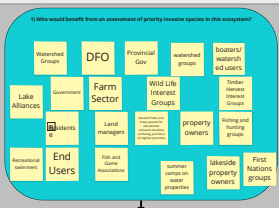
videos on particular species, the dangers they pose, eradication techniques

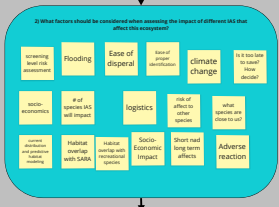
online reporting platform & map

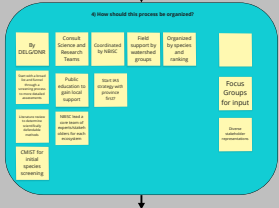
Field handbooks

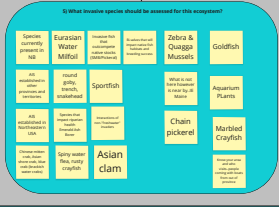
35

ECOSYSTEM: ___Freshwater_____



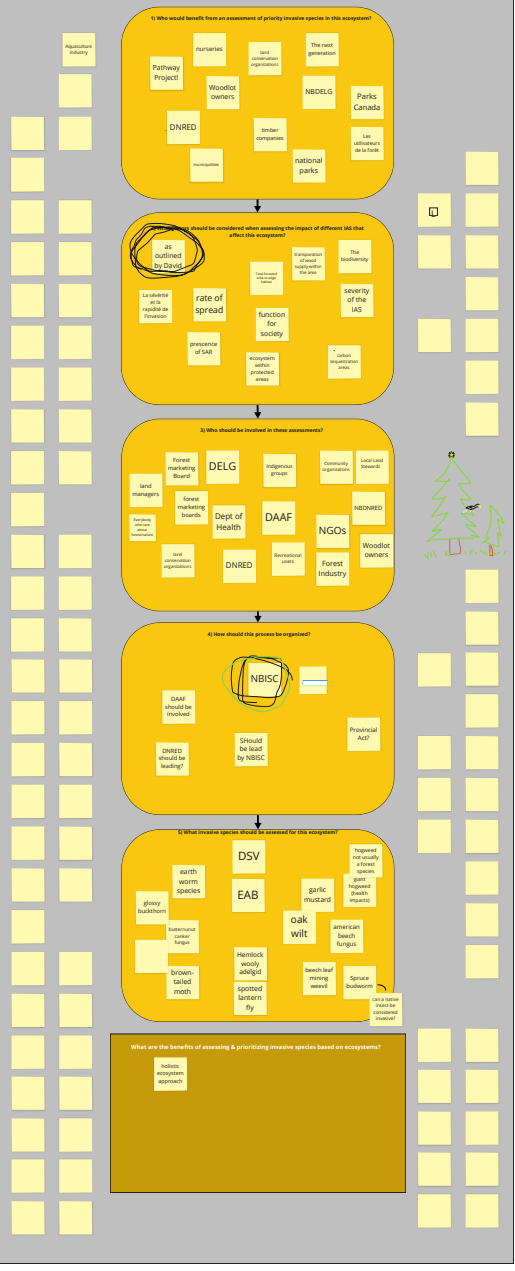






What are the benefits of assessing & prioritizing invasive species based on ecosystems?

ECOSYSTEM: _____Forests_____



ECOSYSTEM: ___Marine_____

1) Who would benefit from an assessment of priority invasive species in this ecosystem?

Industry
Fishing industry
Fisheries
Fishing & industry
DFO
Federal & provincial governments
Regulators like DFO
Fisheries and Oceans
Infrastructure - whoever maintains these
Marina owners/ managers
developers
municipalities
Coastal landowners
First Nations

2) What factors should be considered when assessing the impact of different IAS that affect this ecosystem?

Pathways
Extent of impact
Climate change
Likelihood of spread
Cumulative impacts of multiple species
economic cost
Species at risk affected
What others are doing in neighbouring provinces
Shipping
International travel - cruise ships
Potential partners and indigenous groups with decision making
impact on traditional use (social impacts)
Impact on Industry

3) Who should be involved in these assessments?

International Treaties - e.g. Ballast Water, etc)
Industry (fishing, but also other industry such as transport, tourism, communication infrastructure, etc)
Federal Departments: DFO, Transport Canada
DFO
Governing bodies like DFO/DAAF
Government
DFO, wildlife, fishing industry, Transport Canada, locals
pleasure craft operator groups
marinas
port authorities
Local knowledge holders
conservation groups and nations
First Nations
marine operators
Academic partners

4) How should this process be organized?

Evaluate possible methods, match to objectives
using mura.com
consultation from industry, indigenous people, public
Surveys
public input
Strategic Planning
Action orientated
workshops
Public and internal meetings
use a standardized, consistent approach
Open standards for conservation (Miradi) framework
steering committee

5) What invasive species should be assessed for this ecosystem?

Any alien species present
Watch list species from other regions
Codium
European Green Crab, tunicates
invasive
green crab
Green crab, zebra mussel?
Potentially clam, pleasure craft (e.g. Asian clam), Norway lobster, eastern mudd
Saltmarsh cordgrass (Gulf of part of the marine environment)
Phragmatesa, in salt marshes (links to marine systems)
Tunicates
quagga
Biofouling species
zebra muscle
Lionfish (AS from along the eastern seaboard, as far south as Florida (plus hurricanes, future thinking)

What are the benefits of assessing & prioritizing invasive species based on ecosystems?

Targeted approach to prevent IAS introduction and spread by focussing on particular pathways
Focussed legislative changes can be made
focus efforts
Supporting native species
Both ecosystem and species approaches are important for conservation and can be used together, depending on focus, scale
Different partners are operating in different ecosystems
Focussed outreach and awareness
Protect industry and mitigate costs to industry
Each ecosystem type would be impacted differently from potential invasion, therefore management/regulations should differ
control/ eradication methods are adapted to specific environment
Different ecosystems have different methods/vectors for spread of invasive species and factors that contribute to their success or establishing, so that may require s unique approach to manage that ecosystem
encouraging targeted management on established invasive species

IAS

ECOSYSTEM: ___Wetlands_____

1) Who would benefit from an assesment of priority invasive species in this ecosystem?

Local residents

Waterfowl Hunters

Landowners

ducks unlimited

government, NGO

Watershed Groups

Municipalities

Outdoor enthusiasts

Birdwatchers and wildlife photographers

Regulators: DELG, DFO

Local municipalities (water filtration systems)

parks managers

First Nations

2) What factors should be considered when assessing the impact of different IAS that affect this ecosystem?

Impact to other wetland functions

Climate change

ecological diversity

Ecosystem sensitivity

cost of time and resources

History (has the ecosystem been affected from saltwater to freshwater)? This may affect it's susceptibility to invasion

Presence of rare species

Species at risk

ecosystem services

speciesat risk

Recreational use of areas. Ability to monitor for new introductions or spread

Cost

3) Who should be involved in these assesments?

DEBD dept of nat res and energy dev

DELG dept of env. and local gov.

NGO

Federal

DFO if instream work is required

provincial

First Nations

local watershed associations

Watershed Groups

Municipalities

ECCC

DU

4) How should this process be organized?

create action and management plans

working group: should include federal and provincial governments, NGOs, academic, industry

inventory of mainmost concerning invasive species currently present in wetlands

review and reevaluate at regular intervals (maybe every 5 years)

working group

Open standards for conservation

First nations consultation

NB Invasive Species Council

5) What invasive species should be assessed for this ecosystem?

Reed Canary Grass

Purple Loosestrife

Thistles

woodland angelica

Glossy buckthorn

Emerald ash borer (floodplain forest)

phragmites (reeds)

insects

green crab

Quick Spreaders

Phragmites

nice

What are the benefits of assessing & prioritizing invasive species based on ecosystems?

SAR Protection

management

Protecting natural biodiversity

Focused effort, decisions, management

A targeted approach

pooling/le veraging resources

more specific actions

Better ecosystem services

Regulatory Priorities

ECOSYSTEM: ___Coastal_____

1) Who would benefit from an assessment of priority invasive species in this ecosystem?

- Bassins versant
- DFO
- Parcs nationaux
- Industrie des la pêche
- aquaculture

2) What factors should be considered when assessing the impact of different IAS that affect this ecosystem?

- impact ecologique
- sociale et economique
- modification des interactions trophiques
- santé des estuaires
- impact les espèces indigènes
- ecosystem function
- Amplitude des impacts - impact ecosystemes - mains ainsi terrestres
- amplitude de l'impact
- pH
- impact sur la chaine alimentaire
- modification de l'environnement

3) Who should be involved in these assessments?

- DFO
- Enviro Canada
- acteurs locaux : pêcheurs et autochtones
- Parcs Canada
- Org. de bassins versants locaux
- Organisation non-intergouvernemental
- Gouvernement locaux
- Académie - Rechercheurs

4) How should this process be organized?

- Organisation pour la coordination
- Un processus périodique - continue
- Des fonds
- Les acteurs peuvent changer

5) What invasive species should be assessed for this ecosystem?

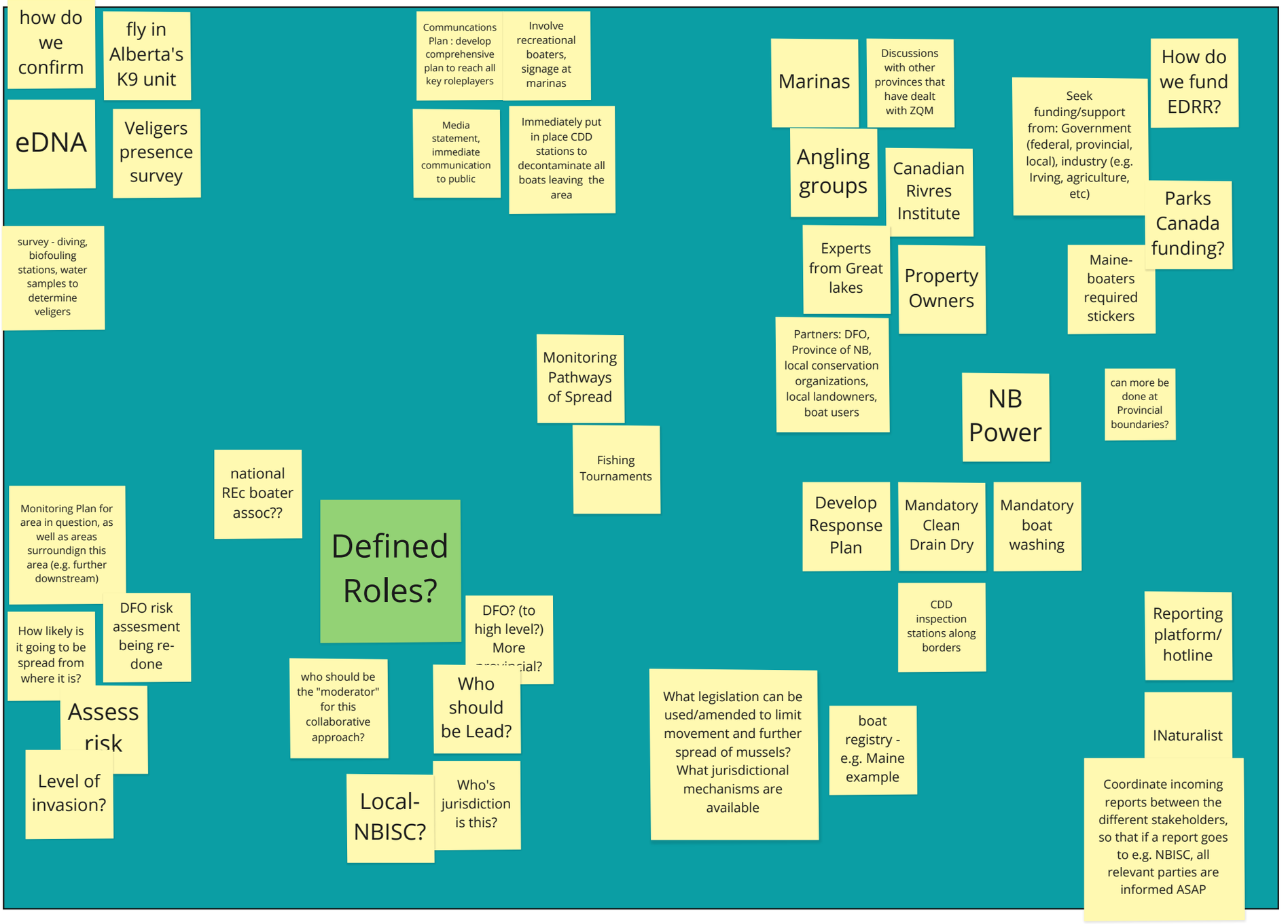
What are the benefits of assessing & prioritizing invasive species based on ecosystems?

Scenario #1

Zebra mussels have been identified in the Saint John River near Grand Falls. . The mussels are believed to have come from the Great Lakes after hitching a ride on a recreational boat.

What would an effective EDRR plan look like in New Brunswick?

Think about what information is needed, elements of the plan, actions, people who should be involved, etc.



Scenario #2

Spotted Lantern Fly has been identified in Rockwood Park in the Greater Saint John area. It's believed to have hitched a ride on nursery stock from the US.

What would an effective EDRR plan look like in New Brunswick?

Think about what information is needed, elements of the plan, actions, people who should be involved, etc.

Found by park employee or user

Reported through iNaturalist

Amateur naturalists or professional

CFIA survey

more through checks of plants at the borders to potentially find them before they arrive in our nurseries

ACTORS

City is contacted

CFIA informed

Media report

Nursey operations informed

DNR

DAAF

ACTION

Follow up surveys - extent of information

Confirm positive establishement

surviellance

Characterization survey to determine boundaries

Pheromone trapping

Movement restriction of host material

physical removal of egg masses

eDNA detecction

approved chemical treatments

Subsonic attraction/ rrepellant

Fruit tree removal

education and outreach

FUNDING?

CFIA

City of St. John

Education/ awareness

Federal agencies?

Industry (PR incentive)

Environmental Grants (ETF, WTF ect) through ACAP

Information sharing

NBISC

Provincial Govt

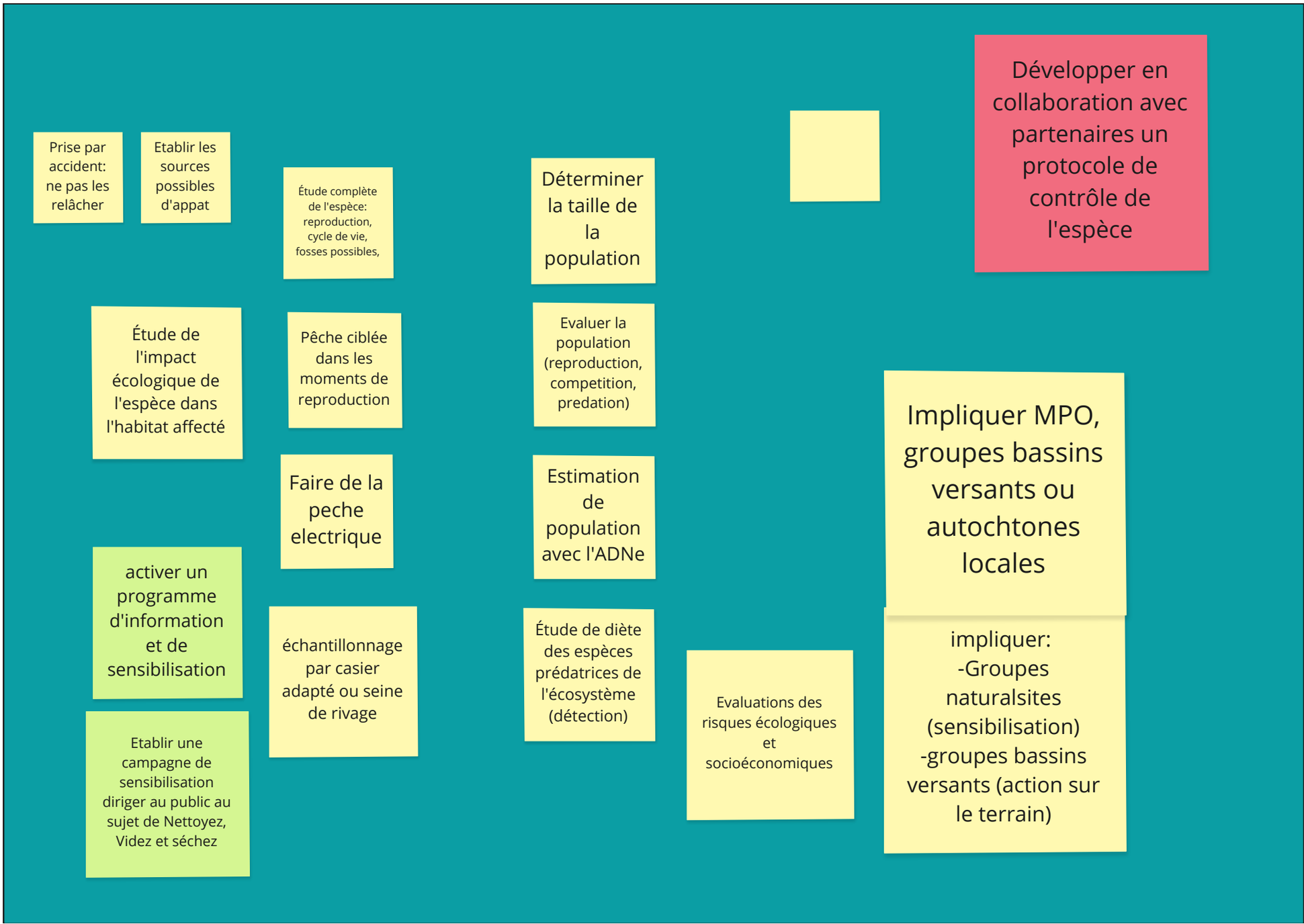
Working group

Scenario #3

A small established population of Round Goby has been found in Belleisle Bay. It is believed to have arrived as live bait that was later discarded.

What would an effective EDRR plan look like in New Brunswick?

Think about what information is needed, elements of the plan, actions, people who should be involved, etc.



Scenario #4

A patch of Kudzu has been found in Bouctouche. It's believed to have been originally planted by a cottager who transplanted it from Alabama.

What would an effective EDRR plan look like in New Brunswick?

Think about what information is needed, elements of the plan, actions, people who should be involved, etc.

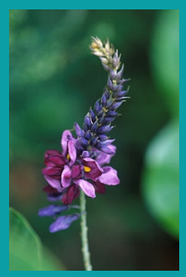


Photo of plant submitted to iNaturalist

speak with landowner to advise eradication

Notify local organizations and public to build awareness

survey immediate area to look for other occurences

Lit review to identify where it grows, how it spreads, etc.

detection is done. Time to eradicate

Talk to jurisdictions with existing kudzo EDRR plans

Will winter help eradicate the plant?

Figure out which ecosystems most at risk

if in municipality, maybe municipality should fund EDRR

Figure out which agency will take the lead

province should fund as potential agricultural pest

Consider starting the invasive species council's 'Plant Wise' program or other initiative

Potential replacement incentives for plants found in gardens - free native sp available for example

NBISC to organize volunteer detection/removal event

NBISC to apply for funding? Through __ grant

I have seen it. this is an extreme scenario. Not typical

Bring in Goats to eat it

Consider potential chemical treatment plan

Scenario #5

Various sightings of wild pigs in the Edmundston area have been reported to the NB Dept. Natural Resources & Energy Development.

What would an effective EDRR plan look like in New Brunswick?

Think about what information is needed, elements of the plan, actions, people who should be involved, etc.

landowners and agriculture

landowners reporting to DNR

hunters

ISC

Private Park Staff or visitors

Anglers

who (what individuals or organizations are likely to find this species first (ED)

risk of spread?

pig life cycle/mating habits

develop 'severity' scale

limited by seasons?

Assume high (see examples in prairies)

Identify high risk areas..

Public education

Figure out pathways of invasion

Actions? (initial response)

Species ID and survey extent of population

Focus effort on hotspots

coordinate mapping so know where they are

Consult other provinces dealing with same issue

ID Hot spots (ideal habitat)

If small numbers remove ASAP!

consult management plans from other provinces and adopt quickly

How will it be funded?

Consider hunting incentives in some areas

If impacting common good - gov

Who needs to be involved in response?

province, landowners, agriculture monitoring, nature preserve staf

hunters

general public (awareness)

provincial government

Private landowners

Multiple govt agencies (DNR, EVn, Public safety, DAFA, etc

local watershed groups

People who specialize in Wild Pic Management

Impacts

SAR (riparian)

farmers

Aquatic systems as they depend on riparian habitat

conservation efforts

Comms (How will information be provided to decision-makers, the public and partners in a timely manner)

NBISC - reps from prov, industry, NGO, feds

local radio interviews with experts

gov. social media

public forums/stakeh older consultations?

Social media

consistent messaging, info provided by one lead group

Political will for a strategy

Public pressure for political will

What can we be doing now in NB to advance EDRR?

Step 1 - coordinated strategy with gov buy in

Public Education

citizen science initiatives

emergency funds for management of new detections/threats

Identify clear LEAD agency

scenario planning

social media outreach

consult with other govt. bodies (etc) dealing with same issue. Learn from them

NOW what word(s) come to mind when you think about invasive species?

Mentimeter

What is your key take-away from the Summit? / What did you find most interesting?

Mentimeter

hope!

Future collaboration is necessary

The number of groups working on this

Lots of innovation coming

communication

Finding out what other groups are doing.

Collaboration and quick response are key

collaboration

RATS

What is your key take-away from the Summit? / What did you find most interesting?

Mentimeter

iMap Invasive tool for Atlantic Canada

Prioritizing

plans in place

amazing subject matter experts

Great resources

strategic planning

collaboration is KEY

survey methodology and tracking technology

Develop a case study

What is your key take-away from the Summit? / What did you find most interesting?

Mentimeter

Collaboration with stakeholders and other groups doing similar research, taking a closer look at those 'watch lists', etc.

communication is key

Mock Exercise for EDDR!

Funding is often an issue

Networking

organizations that have information on IS

collaborative management

desperately need EDRR strategies in NB

Communication

What is your key take-away from the Summit? / What did you find most interesting?

Mentimeter

I thought it was great! A wide variety of topics, I learnt lots about collaboration efforts between organizations and I loved the framework example from Pennsylvania

resources, photos of invasive species, different areas of invasion...land and water

early detection, proactive management and teamwork with many groups/organizations is critical for invasives. Identifying/agreeing on who/what agency is responsible under various scenarios is also important.

J'ai adorer les discussions durant les pauses! Les sujets étaient intéressants, j'ai malheureusement manqué la première journée. J'ai aimé la partie ou il parlait des façons d'échantillonnée, très pertinent pour mon travail a moi.