

GWAAY.YAAY K'AAYSGUUXAN
HLA LLGAAY GWII SDIIHLA

RESTORING BALANCE TO
THE WHOLE OF THE ISLANDS

HAIDA GWII INVASIVE ALIEN
MAMMAL MANAGEMENT
SYMPOSIUM REPORT 2020



Archipelago Management Board

This symposium was hosted by the Archipelago Management Board in November 2020.

Archipelago Management Board
Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida
Heritage Site
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Overview

On November 16-18, 2020 the Archipelago Management Board (AMB), Council of the Haida Nation, Canada Wildlife Service, BC Parks, BC Ministry of Forests, Lands and Natural Resource Operations and Rural Development Contacts, and Parks Canada conducted the Invasive Alien Mammal Management Symposium, Gwaay.yaay k'aaysguuxan hla lgaay gwii sdiihlda - Restoring balance to the whole of the islands. This symposium was hosted by the AMB as part of the Conservation and Restoration program funding to Gwaii Haanas for work on invasive deer.

The purpose of the symposium was:

- To create a shared, clear and islands-wide vision for management of selected terrestrial mammalian Invasive Alien Species (IAS) (focus on Rats, Deer, Raccoons and Beaver) to guide future collaboration and action on Haida Gwaii.
- To identify members of the Haida Gwaii Mammalian Invasive Alien Species Technical Working Group to implement the vision and identify their initial goals.

All sessions took place virtually over videoconference. Nearly 50 participants attended the symposium from organizations with land management responsibility and organizations with research or business interests that aligned with the symposium goals, and 19 speakers gave presentations. The presentations were video recorded and summarized in graphic recordings.

The presentations and video recordings are stored here:

< <https://drive.google.com/drive/folders/1aO6UY0T9oZnANKkqjoCPRP0KbPWu6737?usp=sharing> >

< https://drive.google.com/drive/folders/1i71W1esl_J9j2eTD8PGhVDvWKKC47zW6?usp=sharing >

< <https://drive.google.com/drive/folders/1wYaV3RfcuFSHG0ebB7xDv6vpOWjaHoxM?usp=sharing> >

The symposium began with a public presentation attended by as many as 170 guests and presenters, to give the interested public a sense of how IAS have changed the cultural, ecological and economic values of Haida Gwaii and how restoration could create a brighter future.

The main part of the symposium ensued, with presentations on the planning context, community engagement, impacts of IAS, genetics and emerging technology, and economic opportunities of IAS management.

The group considered and revised a proposed vision statement for IAS management, and identified next steps to move toward realizing the vision.

The Need for a Shared Vision

The AMB identified the need for a shared vision of IAS management to enable collaboration and take a comprehensive, islands-wide approach at IAS to protect and restore cultural, ecological and economic values of Haida Gwaii. The AMB intended to provide the necessary information to inform the vision and gain agreement among the relevant organizations to share the vision and act to realize it through this symposium. The information gaps to be addressed by the symposium presenters were identified with a targeted interview process in early 2020.

The function of a vision is to **grab the attention** of the people and **pull them toward the future** to participate in realizing the vision.

The statement of the compelling vision of the future as you desire to see it needs then to be followed with a plan to pursue the vision and a structure and process to develop and implement the plan.

Presentations

Ernie Gladstone opened the **Story of How the Symposium Came to Be**.

- We are at a crossroads with IAS
- We are at a pause with new projects to re-establish a clear direction
- Need for an islands-wide approach
- Guidance and advice from the symposium participants
- Support from all levels of government, interagency approach
- Desired outcomes of the symposium:
 - Islands-wide vision
 - How to work together to implement the vision

Cindy Boyko provided direction for the symposium.

- We have learned a lot and have a lot to learn about restoration
- We need to tackle the question about where do we go from here
- The questions are difficult, with complicated relationships between IAS and culture and resource values (e.g. deer)
- Joining is the only way forward on this Earth, sharing what we know and caring for each other

Gaagwiis Jason Alsop spoke of the **Traditional Governance and Guidance** for IAS work

- IAS work is some of the most challenging and soul-searching work of our nation and on Haida Gwaii
- Management of IAS is another level than managing human impact, which humans can simply stop if they decide to end the impact. IAS work requires deliberate action to address, not simply ceasing an activity
- This work goes to **our role in the ecosystem**, providing the opportunity to reflect and question everything
- The Haida Land Use Vision and Gwaii Haanas Land-Sea-People Management Plan have guiding principles; this work needs to lean back and rely on these principles
- **Yahguudang** Respect —how to be respectful to the animals we want to remove, how to treat them, how to talk about them, how to respect non-target species, and how to respect the people doing this dangerous and arduous work
- **'Laa guu ga kanhlins** Responsibility—to be the stewards of our territory, to each other, to other beings, to pass along culture
- **Gina 'waadluxan gud ad kwaagid** Interconnectedness—complex relationships, look at all sides
- **Giid tljuus** Balance—striving to achieve, the past and the realistic future, the relationships and the opportunity for people in this work and balance the perspectives, local observations have value
- Challenge assumptions—ecosystem response, prey-predator relationships, human interactions, our interests as humans in this kind of work, our food sources, ability to perpetuate our culture, career success, academic reputation, opportunity to make money—lay our interests on the table
- Be open to leave behind what has not worked
- Truly bring these principles to bring a vision that strikes the balance

Laanas Tamara Davidson provided **context on the land use planning** that has gone on before

- Haida Land Use Values provides guidance on what to do; how we derived it was from talking to all the people
- We are looking forward—the physical and spiritual relationships which forms our culture
- Interconnectedness of native species and negative impacts of IAS are important to consider
- Traditional plants are a part of our culture and our future
- People with attachments to the land will be the ones who move us into the future

Gerry Morigeau evaluated the **impact of IAS** on the six values of Haida Land Use Values

- Tsuuaay Cedar
- Tsiin Salmon

- Taan Black Bear
- Xiit’lit Birds
- Kil Plants
- Sk’waii Beach
- He noted the inherent risk of the shifting baseline where people living on island now may not even realize what has been lost as the recollection of what was there passes out of living memory.

And explained that IAS management will require

- Biosecurity
- Restoration
- Mitigation

Ernie Gladstone described the **connection to the Gwaii Haanas Gina ’Waadluxan KilGuhlGa Land-Sea-People** management plan to IAS management. There are two specific mentions on invasive species he noted in the LSPP

Mariam Latofski-Robles described how **engaging the entire community in biosecurity** actions has succeeded on several islands in Mexico and on how a “rat spill” response can function and the challenges associated with it.

Held workshops with all sectors of the local communities

- Identified conservation targets
- Evaluated invasion pathways
- Developed a biosecurity strategy

To implement the strategy:

- Create capacity
- Use adaptive management—evaluation and planning update

Communication strategies have a narrow message and broad channels

Community support is key and takes time to build.

Paolo Sposimo presented experience of large-scale IAS work on islands in Italy.

- Plan at the archipelago scale
- Large, inhabited islands are challenging
- Biosecurity is key
- Active participation of local people in the eradication is key
- Reducing food sources
- Detecting surviving rats
- Individual bait station maintenance
- Benefits to local people—reduction of rodenticide, disease
- Meet face-to-face with all folks in critical situations
- It’s their eradication, not ours

Jean-Louis Martin reported on three decades of research on **deer** on Haida Gwaii.

- Obvious declining ecological trajectory in the absence of deer management
- Populations are maintained by canopy fall and intertidal browsing
- All native taxa are impacted and the impacts do not appear to plateau through time
- Soil profile is impaired with decreased depth, changes in nutrients and increased soil acidity in the presence of deer

Miranda Post and Kii’iljuus Barbara Wilson described their experiences working with communities on Haida Gwaii.

- Communicate early and cultivate champions
 - Those with respected opinions, knowledge holders
 - Start with an idea and be open to change and respect the possibility of hearing “no”
- Partnership and engagement work
 - Communicate project goals early in the process

- Co-develop and manage the project
- Engagement and outreach are different
 - Adapt, listen, adapt
- Use appropriate language and stunning visuals
- 7th grade reading level
- Photos and video
- Avoid loaded words
- Say thank you
- Share credit
- Acknowledge gratitude
- Offer appropriate gifts

David Bradley reported his research on **raccoons** in Haida Gwaii.

- Not much capture recorded presently as the pelts have no value
- Can swim 1km
- Engage in excess killing
- Cause of seabird colony abandonment in 5 of 7 known cases
- Pulse control periodically can be effective in providing temporary protection to seabird colonies

Chris Ashurst reported on the **work of BC Parks** on Haida Gwaii.

- BC Parks works with the Haida Nation on protecting key ecological & cultural values on Haida Gwaii.
- A key part of this work is surveying for & monitoring invasive species.
- Beaver: Management plan for Mayer Lake is likely to be occurring in the near future.
- Deer
- Raccoon
- Rats – BC Parks continue to monitor Langara, but are looking to build out a rapid response plan

Leandre Vigneault described the effects of **beaver** on salmon.

- Reduction of salmon spawning habitat, already limited amount of gravel buried by sediments
- Loss of access to upstream spawning areas, blocked by beaver dams
- Loss of riparian vegetation due to cutting and consumption
- Change in hydrology, with larger areas of standing water replacing terrestrial and riparian habitat

Laurie Wilson described the status of **burrow-nesting seabirds** (susceptible to depredation by rats) on Haida Gwaii for which there is good global population data. The invasion of rats to Ramsay is particularly worrying since its seabirds drive much of the positive population gain that has been observed for Ancient Murrelets and Cassin’s Auklets.

Many species experience less than 100% recovery after rodent eradications—what else is limiting the recovery of these populations?

Peter Sinkins outlined a **biosecurity strategy** to prevent invasions and re-invasions on high-value (seabird) islands

- Prioritizing islands for monitoring and management depending on probability of invasion or re-invasion
- Collecting data from camera monitoring stations
- Swimming distances of Norway rats and black rats indicate risk depending on proximity of seabird islands to source island
- What is known about interspecies competition between Norway and black rats?
- Why are no rats found in the interior of Moresby Island (where martens are present)?

- Mike Russello and Brock Burgess** discussed using **genetic techniques to evaluate invasion pathways** of IAS.
- Genomics can tell that rats have heavily structured populations amongst islands pointing to their relatively low dispersal
 - Origin of invasion research shows that there are at least two rat introductions with one in the late 1800s and one around 2000
 - Implications for biosecurity and planning of eradications are that there are defined eradication units that may allow for a successful removal since it is on the scale of the IAS movement
 - Analysis of failed eradications was done to determine origin of invading rats and to confirm whether it was survival of the old population or a reinvasion
 - Deer populations on Haida Gwaii have very low structure genomically showing their high dispersal ability. There are a few islands with isolation that could work for eradication, but generally reinvasion will occur
 - Reinvasion potential able to be estimated through modelling
 - When to cease culling can be determined with genetic data which has the advantage of working on the time scale of a management action (as opposed to plants which do not match that timescale)

- Ruth Wheadon** spoke about the **economic opportunities** of IAS management.
- Baru Farm
 - Deer processing
 - Venison distribution
 - Majority of off-island hunters spend money on travel
 - Legal and regulatory challenges will need to be solved to have a commercial market

- Jordan Munn** told his story about **IAS management as a business career**.
- A species may be viewed as a pest or as a resource depending on accessibility and impact
 - Pest detection dogs are key
 - Employment opportunities exist on Haida Gwaii but professional hunters would have to commit (10y for a dog) and gain experience elsewhere

Elements of the Vision

Peter Sinkins and the AMB provided a working draft of the vision, which the group considered and offered improvements (please see Annex Three). Peter and Robyn Irvine compiled the suggestions and returned with this statement of the vision:

- Inspired by Haida values of respect, interconnectedness, responsibility, and balance, the people of Haida Gwaii together confront the known threats of invasive species.
- Haida Gwaii, free of the impacts of IAS, will once again grow giant cedars for canoes and dens for bears, have a rich array of native plants for food and medicine, have flourishing seabird and songbird and insect populations and will have rich places for the youth and elders of all Haida Gwaii residents on which to give and receive.
- We envision the elimination of the unwanted impacts of beaver, deer, rats and raccoons by 2060 through sustained, sustainable and thoughtful effort.
- We choose to not suffer the continued and ongoing impacts of the cultural and ecological losses known to result from invasive alien species by acting now.
- We envision the strong island spirit of resilience and collaboration reaching out to the global community and building rich economic and cultural solutions that benefit the people of Haida Gwaii in responding to the challenge of invasive species.
- We envision strong, community-built and well supported biosecurity to prevent new invasions and maintain the gains we have attained.

After another round of suggestions from the group, this version surfaced:

- Inspired by Haida values of respect, interconnectedness, responsibility, and balance, the people of Haida Gwaii together confront the known threats of invasive species to restore the natural balance.
- In time, Haida Gwaii, free of the impacts of IAS, will once again grow giant cedars for canoes and dens for bears, have a rich array of native plants for food and medicine, have flourishing seabird and songbird and insect populations and will have rich places for the youth and elders of all Haida Gwaii residents on which to give and receive.
- We envision relief from of the unwanted impacts of beaver, deer, rats and raccoons by 2060 through sustained, sustainable and thoughtful effort.
- We choose to reverse the continued and ongoing impacts of the cultural and ecological losses known to result from invasive alien species by acting now while we still have time.
- We envision the strong island spirit of resilience and collaboration sharing with the global community and building rich economic and cultural solutions that benefit the people of Haida Gwaii and the continuance of our culture and ecological wholeness in responding to the challenge of invasive species.
- We envision strong, community-built, community-driven and well supported biosecurity to prevent new invasions and to protect the gains we have attained with the energy and capacity to carry on into the future.

To put the vision into action, the group reviewed this slate of activities for the AMB’s consideration:

- We will establish a steering committee with representation solicited from all land management and governments working on the unceded territory of the Haida Nation that will use this vision to support and guide the technical working group.
- We will establish a technical working group that will research, communicate and develop options for the community to select to meet the goals of the vision.
- That governance authority will be sought to support this vision and the steering committee and technical working group so there is the support to carry on this work in the sustained and long-term way it requires.

Conclusion

The group discussed ideas for making a positive difference moving forward. Recognizing repeated efforts to establish an IAS and citing a plan from 2003, several participants expressed interest in seeing concerted efforts and desired success stemming from this symposium.

- Be open to including other invasive alien mammal species in the upcoming planning. There may be opportunities to address other IAS while working on beaver, deer, raccoons and rats
- Draw on previous experience with IAS activities on Haida Gwaii—technical, communication, community engagement and funding
- Commit sufficient capacity, including a dedicated source of long-term, dependable funding and dedicated staff, at least one full-time leader from the community who can head up the effort, attract key agencies and individuals and keep moving toward the vision
- Align terrestrial IAS work with similar efforts in the marine environment
- To the extent possible, engage everyone on Haida Gwaii in restoring the islands to an original future, giving everyone an opportunity to become part of the effort to restore balance to the islands

Next Steps

- **Ernie Gladstone** explained that AMB members will convene with the results of this symposium to make decisions about **establishing the structure and process** for moving forward.
- In addition, the **AMB will circulate a final draft of the vision statement** to the participants of this symposium.

Acknowledgements

Barbara Wilson Kii’iljuus, who opened and closed each day’s session.
Sacred Knowledge Holders Gaajiaawa Linda Tollas and Margaret Edgars who attended the symposium

Planning Team

Stephanie Fung: public outreach, participant contact, logistics coordination
Robyn Irvine: project management, agenda design, agency contact
Peter Moore: technical assistance
Will Murray: agenda design, facilitation
Christine Pansino: contracting
Miranda Post: media relations, agenda layout
Kara Sieviewright: graphic recorder
Peter Sinkins: agency point of contact, presenter, session recording
Nadine Wilson: agenda design

Presenters

(in order of appearance in the agenda)

Andrew S. Wright, Conservation and documentary photographer
Kii’iljuus Barbara Wilson, AMB
Nancy Turner, University of Victoria
Cindy Boyko, AMB
Ernie Gladstone, AMB
Gaagwiis Jason Alsop, President of Council of the Haida Nation
Laanas Tamara Davidson, Former co-director of Haida Land Use Vision process
Gerry Morigeau, Council of the Haida Nation
Mariam Latofski-Robles, Conservación de las Islas
Paolo Sposimo, Nemo Ltd.
Jean-Louis Martin, Université de Montpellier
Miranda Post, Gwaii Haanas
David Bradley, Birds Canada
Chris Ashurst, BC Parks
Leandre Vigneault, Marine Toad Enterprises
Laurie Wilson, Canadian Wildlife Service
Peter Sinkins, Gwaii Haanas
Mike Russello, University of British Columbia Okanagan
Brock Burgess, University of British Columbia Okanagan
Gregg Howald, Coastal Conservation
Ruth Wheadon, BARU Enterprises
Jordan Munn, Trap and Trigger

Annex One: Symposium Agenda

Haida Gwaii Invasive Alien Mammal Management Symposium

November 16-18, 2020

(Due to CoVid-19 this event will take place online)

Symposium Vision of Success:

- Create a shared, clear and islands-wide vision for management of selected terrestrial mammalian Invasive Alien Species (IAS) (focus on Rats, Deer, Raccoons and Beaver) to guide future collaboration and action on Haida Gwaii.
- Identify members of the Haida Gwaii Mammalian Invasive Alien Species Technical Working Group to implement the vision and identify their initial goals.

Symposium facilitation team: Facilitator: Will Murray; Graphic Recording Artist: Kara Sievwright;
Facilitation support: Stephanie Fung; Technical support: Peter Moore

Day 1 - November 16, 2020

13:00-14:00	Speakers Series: Gwaay.yaay k'aaysguuxan hla lgaay gwii sdiihlda <i>Restoring Balance to the Whole of the Islands.</i> A public event on what we have lost and what can be gained through restoration projects. <i>Speakers: Kii'iljuus Barbara Wilson, Dr. Nancy Turner, Andrew Wright</i>
14:00-14:45	Break.
14:45-15:00	Symposium start – Login to Zoom link designated for Symposium
15:00- 15:05	Opening Prayer <i>Speaker: Kii'iljuus Barb Wilson</i>
15:05-15:20	Opening discussion: symposium goals, code of conduct, agenda <i>Speakers: Facilitator Will Murray</i>
15:20-15:30	Story of how the Symposium came to be <i>Speakers: Ernie Gladstone, Cindy Boyko</i>
15:30-15:45	Traditional governance and guidance for IAS work <i>Speaker: Gaagwiis Jason Alsop</i>
15:45-16:30	Planning context for the Symposium <ul style="list-style-type: none">• Historical work on Invasive Alien Species (IAS)• Haida Land Use Vision (HLUV): scope, goals, connections• Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan <i>Speakers: Tamara Davidson, Gerry Morigeau, Ernie Gladstone</i>
16:30-16:45	Presenting a draft IAS vision statement <i>Speakers: Ernie Gladstone, Cindy Boyko</i>

Day 2 - November 17, 2020

09:05-09:15	Opening prayer <i>Speaker: Kii'iljuus Barb Wilson</i>
09:15-09:25	Day 1 review – A recap of yesterday; draft AMB vision restated, code of conduct refresher; review goals <i>Speaker: Will Murray</i>

09:25-09:55	Biosecurity and community buy-in from Mexico: examples of biosecurity programs in Mexico; incursions and invasions, community engagement lessons <i>Speaker: Mariam Latofski-Robles</i>
9:55-10:20	Creating a vision for large scale conservation in Italy: building community buy-in <i>Speaker: Paolo Sposimo</i>
10:20-10:40	Health Break
10:40-11:15	Draft IAS vision statement (discussion #1) - discuss draft IAS vision statement in the context of morning presentations <i>Speakers: Will Murray and all participants</i>
11:15-11:30	Deer on Haida Gwaii: Lessons learned - challenges posed by deer to ecological integrity <i>Speaker: Jean Louis Martin</i>
11:30-12:00	Community communications: Lessons learned - what we have learned about engagement, outreach and messaging on Haida Gwaii <i>Speakers: Kii'iljuus Barbara Wilson & Miranda Post</i>
12:00-13:00	Lunch Break
13:00-13:05	Sign back in to Zoom
13:05-14:20	Draft IAS vision statement (discussion #2) –Consider what the AMB has developed thus far. Incorporate perspectives from today's speakers. Discuss and modify with regards to the work of your own organizations. Think about the structure of an all- islands vision and nested visions for particular governments or groups. Question: Does the vision stand? <i>Speakers: Will Murray and all participants</i>
14:20-14:35	Health Break
14:35-15:05	Raccoon management and IAS management in BC Parks <i>Speakers: David Bradley, Chris Ashurst</i>
15:05-15:20	Beaver interaction with fish <i>Discussion led by Leandre Vigneault</i>
15:20-15:35	Questions catch up – any additional questions from afternoon session? <i>Speakers: Will Murray and all participants</i>
15:35-16:30	Day 2 roll up – evaluation of vision with Beaver/Racoon information and rest of day two information. Summarize and review tomorrow's agenda <i>Speakers: Will Murray and all participants</i>

Day 3 - November 18, 2020

09:05-09:15	Opening prayer <i>Speaker: Kii'iljuus Barb Wilson</i>
09:15-09:45	Day 2 review: walk through goals and code of conduct and agenda; lightning review of previous discussions. Does the vision still stand? <i>Speaker: Will Murray</i>

9:45-10:05	Seabirds – global importance of Haida Gwaii and impacts of IAS on seabirds– <i>Speaker: Laurie Wilson</i>
10:05-10:25	Biosecurity – What are we learning in Gwaii Haanas? A snapshot of the preliminary outputs from our camera monitoring program; next steps <i>Speaker: Peter Sinkins</i>
10:25-10:45	Health Break
10:45-11:10	Genetic findings from rats and deer - What do we know from the DNA work on Haida Gwaii? How much do deer and rats move, and what are some implications for restoration? <i>Speakers: Dr. Mike Russello, Brock Burgess</i>
11:10 – 11:30	Emergent technologies in island conservation - What technologies can support biosecurity planning for Haida Gwaii? <i>Speakers: Gregg Howald</i>
11:30-12:00	Draft IAS vision statement (discussion #3) – Considering what we have learned thus far regarding biosecurity, genetics, emergent technologies, does the vision still stand? <i>Speaker: Will Murray</i>
12:00-13:00	Lunch Break
13:00-13:05	Sign back in to Zoom
13:05-13:25	Further review and discussion – Continued discussion of vision statement and questions. <i>Speaker: Will Murray</i>
13:25-14:00	Economic opportunities linked to IAS – What are the potential economic benefits of restoration? <i>Speakers: Ruth Wheadon, Jordan Munn</i>
14:00-14:45	Draft IAS Vision statement (discussion #4) - review and discuss <i>Speaker: Will Murray</i>
14:45-15:00	Health Break
15:00-16:15	Final revisit of draft IAS Vision statement - Summarize and identify technical working group members, steering committee members and preliminary schedule of meetings for the next year. Summary of themes and goals. Identify next steps and initial goals for working group. <i>Speakers: Will Murray and all participants</i>
16:15-16:30	Closing Prayer <i>Speaker: Kii’iljuus Barb Wilson</i>

Annex Two: Attendee and Speaker List

Technical Experts – Attendees List		
Council of the Haida Nation <ul style="list-style-type: none"> <i>Gaagwiis</i> Jason Alsop, CHN President <i>Ginn wadluu un uula isdaa ayaagang</i> Trevor Russ, CHN Vice-President Shawn Cowpar HNRC representative Stu Crawford, Marine Planning Program, EBM Monitoring Coordinator Gerry Morigeau, Protected Areas Operations Manager Jonas Prevost, Stewardship Technician Laurie Whitehead, Heritage and Natural Resource Department, Program Manager 	Gwaii Haanas Archipelago Management Board <ul style="list-style-type: none"> Cindy Boyko, CHN Rep Ernie Gladstone, PCA Rep Colin Masson, DFO Rep Alfred Setso, CHN Rep <i>Kii’iljuus</i> Barbara Wilson, CHN Rep Gwaii Haanas & Parks Canada <ul style="list-style-type: none"> Robyn Irvine, Restoration Ecologist, Protected Areas Establishment and Conservation Miranda Post, Public Relations and Communications Pete Sinkins, Ecologist Team Leader Nadine Wilson, Project Manager, Conservation Restoration Gwaii Haanas Basia Wojtaszek, A/Resource Conservation Manager BC Parks <ul style="list-style-type: none"> Chris Ashurst, Senior Park Ranger Erica McClaren, Conservation Specialist Lucy Stefanyk, Area Supervisor Canadian Wildlife Service <ul style="list-style-type: none"> Kevin Fort, Manager Mark Hipfner – Wildlife research scientist Greg McClelland, Wildlife biologist Laurie Wilson, Wildlife biologist Kerry Woo, Habitat restoration biologist MFLNRORD <ul style="list-style-type: none"> Sean Muise, Stewardship Officer Christine Rock, Ecosystems Biologist Berry Wijdeven, Senior Marine Policy Analyst 	BARU Enterprises <ul style="list-style-type: none"> Ruth Wheadon Birds Canada <ul style="list-style-type: none"> David Bradley Pete Davidson Coastal Conservation, BC <ul style="list-style-type: none"> Gregg Howald Conservación de las Islas, Mexico <ul style="list-style-type: none"> Mariam Latofski-Robles Federico Mendez-Sanchez Laskeek Bay Conservation Society (HG) <ul style="list-style-type: none"> Jacques Morin Jake Pattison Keith Moore Independent Biologist <ul style="list-style-type: none"> Neil Pilgrim Marine Toad Enterprises, Haida Gwaii <ul style="list-style-type: none"> Leandre Vigneault <ul style="list-style-type: none"> Nemo Ltd, Italy Paolo Sposimo Research Group on Invasive Species (HG) <ul style="list-style-type: none"> Tony Gaston Jean-Louis Martin Trap and Trigger, New Zealand <ul style="list-style-type: none"> Jordan Munn UBC-Okanagan <ul style="list-style-type: none"> Dr. Mike Russello, Professor, Conservation and Population Genetics Brock Burgess, Ph.D. candidate, Conservation and Population Genetics

Day One	Day Two	Day Three
Andrew S. Wright , Vancouver, BC Kii’iljuus Barbara Wilson , AMB, Haida Gwaii Nancy Turner , University of Victoria, BC Cindy Boyko , AMB, Haida Gwaii Ernie Gladstone , AMB, Haida Gwaii Gaagwiis Jason Alsop , President, Council of the Haida Nation, Haida Gwaii Laanas Tamara Davidson , former co-chair of land use planning, Council of the Haida Nation Gerry Morigeau , Council of the Haida Nation, Haida Gwaii	Mariam Latofski-Robles , Conservación de las Islas, Mexico Paolo Sposimo , Nemo Ltd.,Italy Jean-Louis Martin , Université de Montpellier, France Kii’iljuus Barbara Wilson , Council of the Haida Nation, Haida Gwaii Miranda Post , Gwaii Haanas, Haida Gwaii David Bradley , Birds Canada, Delta, BC Chris Ashurst , BC Parks Leandre Vigneault , Marine Toad Enterprises, Haida Gwaii	Laurie Wilson , Canadian Wildlife Service, Vancouver, BC Peter Sinkins , Gwaii Haanas, Haida Gwaii Mike Russello , UBC, Kelowna, BC Brock Burgess , Ph.D. candidate, UBC, Kelowna, BC Gregg Howald , Coastal Conservation, Kelowna, BC Jordan Munn , Professional Hunter, Trap and Trigger, NZ Ruth Wheadon , BARU Enterprises, Haida Gwaii

Annex Three: Visuals



Gwaii Haanas

National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site

Ministère des Forêts, de la Faune et des Parcs

Ministry of Forests, Land and Wildlife

Gwaii Haanas

Lessons Learned: The Journey of a Photographer, Naturalist, and Haida Knowledge Keeper

SPEAKER SERIES / 2020

Gwaay.yaay k'aaysguuxan hla lgaay gwii sdiihlda:

Restoring balance to the whole of the islands

Working together to protect native plants and animals

Speakers:
Kiriljuus Barbara Wilson
Dr. Nancy Turner
Andrew S. Wright

Where:
<https://us02web.zoom.us/j/83004729575>

When:
November 16th,
1-2pm PST

Contact:
Stephanie.Fung@canada.ca

Join us for a photographic, botanical and Haida knowledge journey all about invasive mammals. Hear about global and local efforts to restore balance and tackle introduced invasive species.

See stunning images by conservation and documentary photographer Andrew S. Wright as he offers a photo tour of global island ecosystems. Learn about Haida Gwaii impacts from Haida Knowledge Keeper Kiriljuus Barbara Wilson and Dr. Nancy Turner as they discuss invasive mammals like deer, rats, beaver and muskrats.

This is a free public information brought to you by the Gwaii Haanas Development Management Board

Canada

Haida Nation



GWIIIGUO RACCOON
• monitoring

TS'ING BEAVER

• introduced 1949 near Mayer Lake

• monumental cedar & crab apple

• exclosures temporary effective

• Working with Haida trappers

K'AAD DEER

• lack of resources to maintain exclosures

• songbirds can be killed in wire

• don't need more research

INVASIVE SPECIES MANAGEMENT

LESSONS LEARNED

survey & monitor invasive species

PARTNERSHIPS

Chris Ashurst
BC Parks

KAAGAN RATS → rapid response plan

• 1995 eradicated rats on Langara and still rat-free

• collaborate with lodges

• swim or hitch a ride

MUSKRATS & MICE

• Muskrats probably swam

• Mice probably hitched

• benefit for seed bank and public education



TS'ING/BEAVER INTERACTION WITH FISH

Leandre Vigneault

IMPACTS

1. Low lying areas of beaver habitat, little gravel impacts spawning

2. Lack of access upstream due to dams

3. Loss of riparian vegetation - slow regrowth especially logged areas

BENEFITS

Excellent fish habitat above dams especially for coho





COMMUNITY COMMUNICATIONS

Kiriljuus Barbara Wilson
Elected member of CHN, member of AMB & working with SFU

LESSONS LEARNED

Kiriljuus Barbara Wilson & Miranda Post
Communications with Gwaii Haanas

REMEMBER TO SAY HAAWA

• gift, recognize people

• create relationships with projects



CONSERVATION STORIES

What Works?

• Cultivate community champions

• respectful spokespeople

• Project must be relevant to community

• don't write your project in stone

• Prior permission - Be ready to accept NO

• LISTEN

• listen to what people want



GIVING and RECEIVING

• Outreach is different than ENGAGEMENT

• Partner with community groups

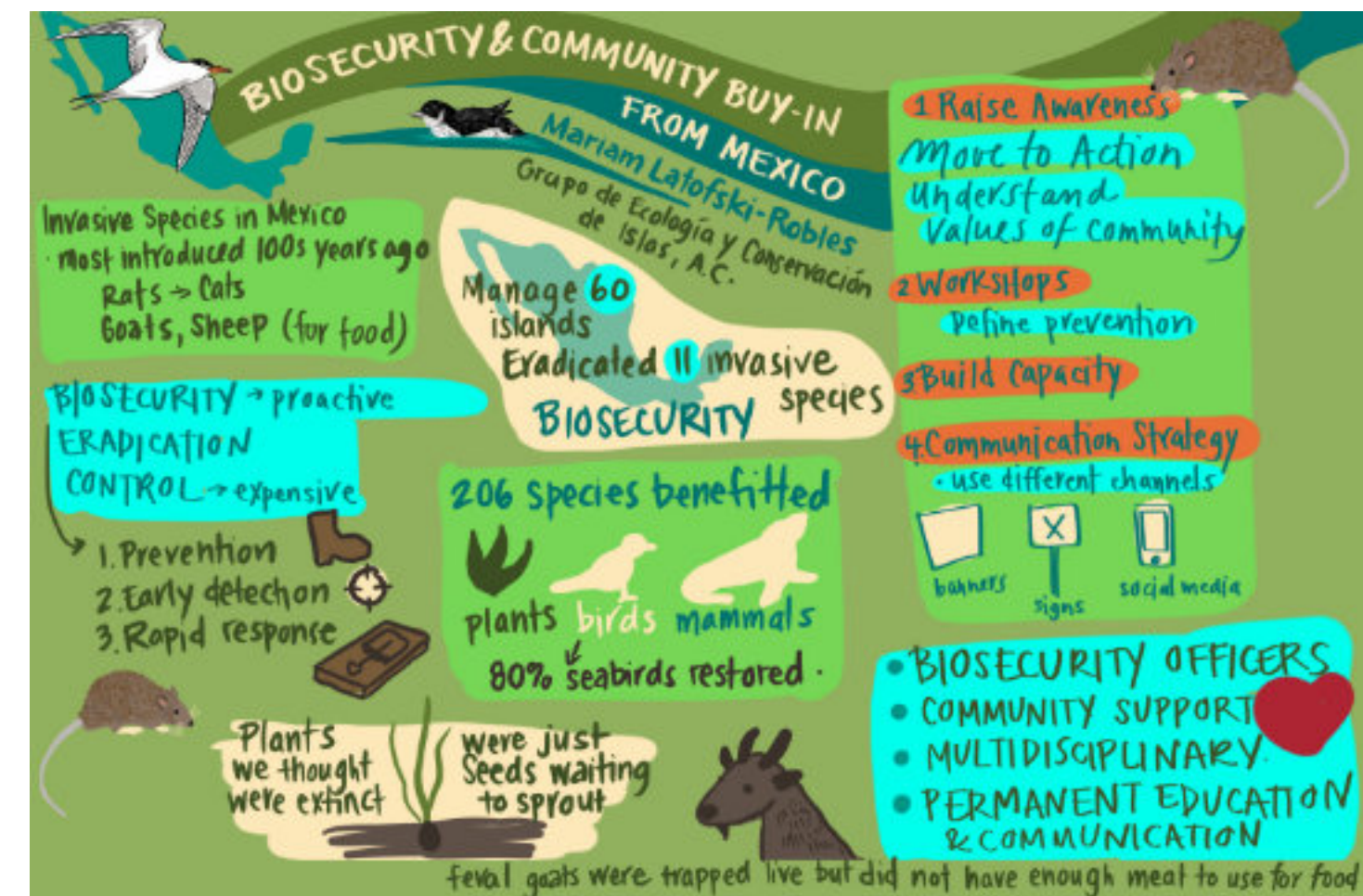
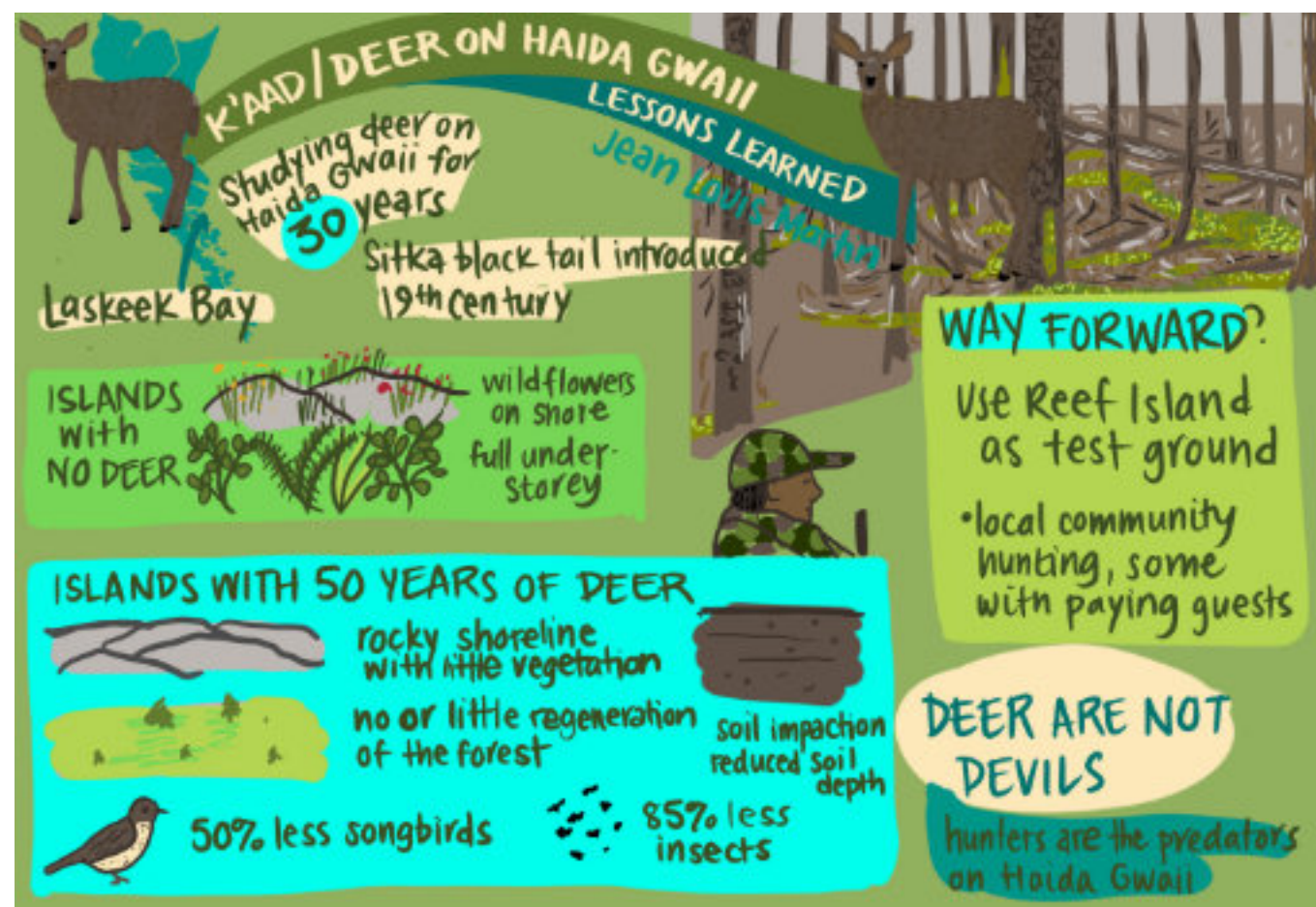
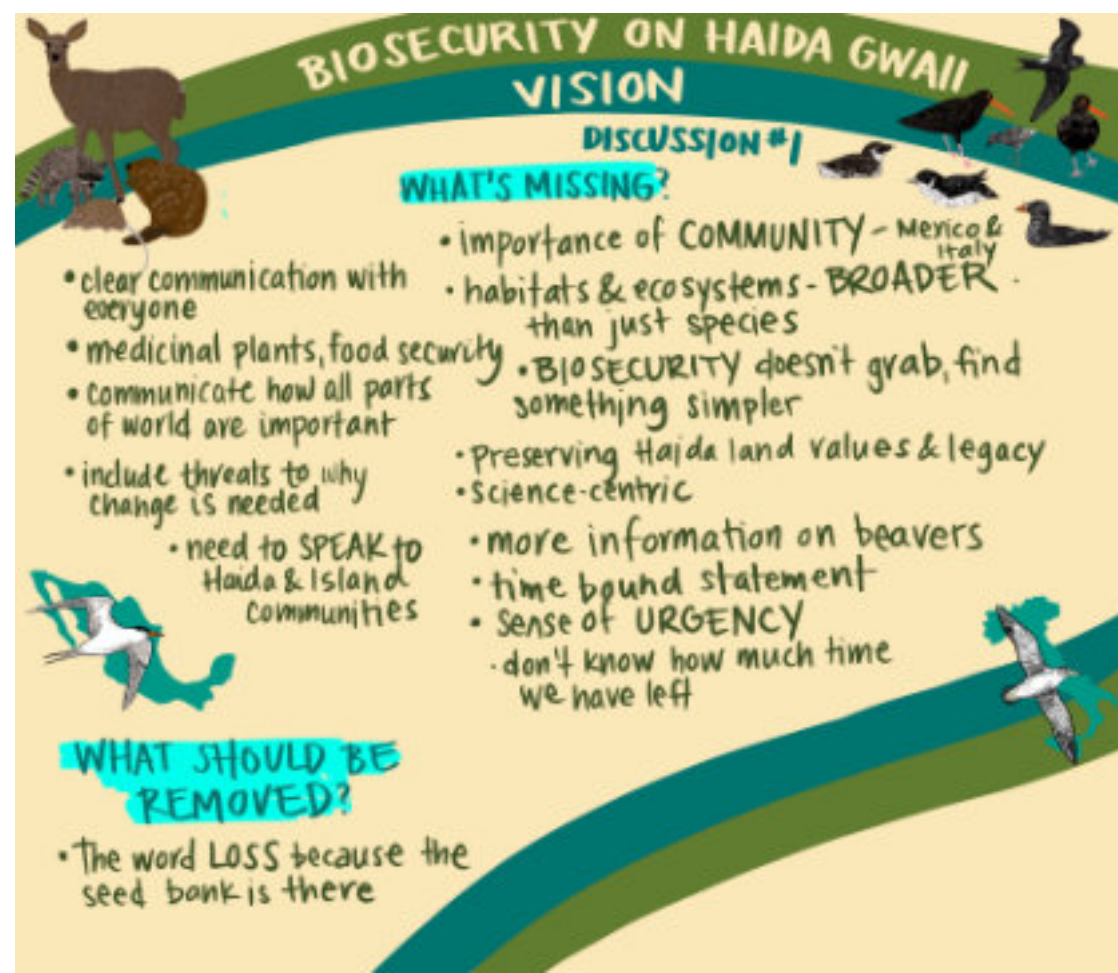
• Respect Intellectual property

• Give credit

• Have VISUALS tell the story

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GWIIGUU/RACCOON MANAGEMENT

David Bradley
Birds Canada

LESSONS LEARNED

RACCOONS ON HAIDA GWAI

- first introduced in 1940 for fur trade - Jungle Beach
- Raccoons not Valuable harvest anymore
- Research on their interactions with seabirds
- Swim within 1km

RACCOON SURVEYS

Langara
Englefield
Laskeek - 1 raccoon

removed 17 raccoons from Moresby

CONTROL

- spotlight shooting at night
- every 2-3 years
- focus on susceptible seabird islands

IMPACTS

- excess killing
- unknown impact of invertebrates
- Impact far greater
- cause colony abandonment

ECONOMIC OPPORTUNITIES LINKED TO IAS

Ruth Wheadon, BARV Farm

What are the Potential Economic Benefits of Restoration?

PROCESSING DEER MEAT

WHO?

- Local/off island hunters
- Conservation officers
- Conservation projects

ECONOMIC BENEFITS

- 5 subcontractors who process deer
- LFZS - mileage & honorarium
- Island businesses for off-island hunters

10 years

130 deer each year

back to hunter - donate to elders
Local Food to Schools - school lunches
- weekly hampers programs
- food, health, advocacy programs

Not just meat

- hides
- hoove rattles
- DNA study
- education

POTENTIAL

Haida Gwaii specific

- commercial deer Hunter Training Program
- meat
- premortem inspection

CHALLENGES:

- Community support - focus on local hunters rather than bag limits that encourage off-island hunters
- financial support for hard to reach areas
- traceability

parameters:

- deer has to be donated

BIOSECURITY: WHAT ARE WE LEARNING IN GWAI HAANAS?

Peter Sinkins, Gwaii Haanas

REMOTE CAMERA PROGRAM

- over 100 cameras
- monitor biosecurity
- have been able to monitor every island at least once
- 50,000 photos

1 rat
1 shrew
1 deer

14 days to detect all mammals on island

Were not detecting any rats on Moresby Island in Gwaii Haanas

RACCOON

300m swimming distance

NORWAY RAT

1500m swimming distance

also invade by boat

ISLAND INVASION RISK

22 islands monitored year round

We cannot keep track of all islands

TRIAGE

HIGH RISK
LOW VALUE
LOW RISK
HIGH VALUE

Other Variables...
genetics
Norway & Blackrat interaction

RAT MANAGEMENT AREAS

rats raccoons
rats deer
rats squirrels

never detect marten & rats together

RATS need WARMER WATER & SWIM PRACTICE

BLACK RATS

SWIM 200M

SWIMMING

is main way INVASIVES get to islands

EMERGENT TECHNOLOGIES IN ISLAND CONSERVATION

Gregg Howard, Coastal Conservation

ERADICATION ALL PROJECTS ARE SAME

PLACES ARE DIFFERENT

Tools might be different

NEED TO IMPROVE TOOL

- non-toxic
- species-specific toxicants
- humane toxicants
- animals just go to sleep
- rat specific toxin re-imagined
- gene tools
- contraceptives
- gene drive? - ethical considerations
- all males or all females

75% of extinctions happened on islands

Global Problem islands all over world

Eradication of invasives is proven conservation tool

Evidence that it helps people too

CLIMATE RESILIENCE

Marine-terrestrial links

guano → reefs

islands are whole ecosystems that can be restored

~800 RAT ERADICATIONS AROUND WORLD

- 90-95% success
- Longara Island rat eradication was one of largest in 1990s

BAIT CONTAINING RODENTICIDE

- not species specific
- cost
- animal welfare concerns
- nobody likes to use them

