

2025 Year End Report: *Protecting Species at Risk Habitat through Regional Natural Asset Management Planning*



GEORGIAN BAY
BIOSPHERE
MNIDOO GAMII



Ganawenim
Meshkiki

A person wearing a tan cap, glasses, and a red safety vest with green reflective stripes is holding a tablet. They are standing in a field of tall green grass with a forest of trees in the background. The tablet screen shows a web application with a sidebar menu and a main content area.

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1 Land Acknowledgment

Georgian Bay Mnidoo Gamii Biosphere (GBB) is situated within the Robinson-Huron Treaty of 1850 and Williams Treaty of 1923, and located on Anishinabek territory. We are grateful to work with Indigenous communities in this area who have been the caretakers of these lands and waters since time immemorial. We strive to work towards respectful and reciprocal relationships with all of our relations daily and through this work.

2 Executive Summary

Over the past 2 years, Georgian Bay Mnidoo Gamii Biosphere (GBB) has made significant progress under its four-year project, *Protecting Species at Risk Habitat through Regional Natural Asset Management Planning*, supported by Ganawenim Meshkiki (GMI). This project aims to develop an open-source habitat mapping database to enhance Species at Risk (SAR) conservation and address the dual challenges of development and climate change impacts in the Eastern Georgian Bay region.

Key Accomplishments in 2025

Collaboration and Engagement:

- Convened regular Project Steering Committee and Technical Working Group meetings with participation from First Nations, municipalities, conservation organizations, and academic institutions to guide decision-making and further align objectives.
- Engaged First Nation partners through land department meetings and engagements, ensuring adherence to data sovereignty principles through co-developed Memorandums of Understanding (MOUs).

Mapping, Modelling, and Tool Development:

- Collected ground-truthed data alongside University of Waterloo's Wildlife Ecohydrology and Conservation (WEC) Lab staff, across 3 First Nations (Moose Deer Point First Nation, Wasauksing First Nation, Shawanaga First Nation), 4 Provincial Parks, 12 Conservation Reserves and countless private, Crown and Treaty Lands, braiding Western science and Indigenous Knowledges.
- Mapped over 38 km² of habitats, consisting of more than 1,100 individual habitat polygons, as well as 92 wildlife observations, and 156 natural and human disturbances.

- Involved community members from Wasauksing First Nation and Moose Deer Point First Nation, who contributed a combined total of 171 volunteer ground-truthing hours.
- Completed the first iteration of the regional habitat model by researchers at the University of Waterloo's WEC Lab and McMaster University's Ecohydrology Lab.
- Scoped and begun drafting the first version of a Habitat Inventory Report (formally referred to as Natural Asset Inventory Report) (refer to Appendix A for the draft Table of Contents).
- Identified priority areas and data gaps for additional ground-truthing data collection in field season 2026 to validate and refine the habitat model, ensuring accurate representation of SAR habitats and ecosystem features across the region.

Outcomes and Next Steps

The project is building capacity for Indigenous communities, municipalities, conservation organizations, and academic institutions by providing improved tools to prioritize SAR habitat protection and integrate biodiversity knowledges into land use planning and care-taking efforts.

Looking ahead, GBB will continue to:

- Work with university researchers to refine the habitat model through quality assurance/quality control measures and enhanced field verification efforts to strengthen data accuracy and end-user confidence in applicability.
- Engage partners to ensure tools and data remain accessible, relevant, and responsive to regional priorities.
- Further scope opportunities for data hosting and sharing, land use policy integration, and development of additional SAR and climate risk tools.
- Seek funding opportunities to support fire risk modelling and braiding knowledges approaches to assessing habitat significance.
- Maintain regular working group meetings and workshops to sustain momentum and address evolving priorities.

By advancing SAR conservation through innovative mapping, collaboration, and robust field verification processes, this project is creating a strong foundation for biodiversity care-taking in the Eastern Georgian Bay region.

3 Project Background

With support from Ganawenim Meshkiki (GMI), our four-year *Protecting Species at Risk Habitat through Regional Natural Asset Management Planning* project is helping to provide an open-source habitat mapping database that will significantly assist with planning, research, mitigation, care-taking and Species at Risk (SAR) recovery in the Eastern Georgian Bay landscape. The mapping tools generated are intended to deepen our understanding of habitats (i.e., natural assets) in this region in order to facilitate effective management that enhances biodiversity and SAR conservation in the face of development and climate change threats.

Our project commits to generating high-quality spatial data and tools for SAR, ensuring scientific defensibility, accuracy, up-to-date information, and end-user compatibility, while honouring the principles of data sovereignty, as outlined by the First Nation Principles of OCAP® (Ownership, Control, Access and Possession). Furthermore, it will protect SAR habitat and conserve biodiversity by implementing strategies and solutions that foster collaboration and knowledge-sharing under effective governance structures. The objectives of this project are directly meeting four GMI funding priorities, as follows:

1. Identifying priority locations for SAR recovery actions, habitat connectivity and stewardship through advanced habitat mapping and modelling, field-verification and strategic working groups which direct the implementation of corresponding actions (e.g., land use planning and policy actions and recommendations, Best Management Practices for species and habitats, future roads monitoring, researching and/or mitigation, etc.);
2. Addressing physical threats on the landscape, such as habitat loss and fragmentation caused by development, by providing land managers and planners with SAR prioritization tools and appropriate support to implement corresponding actions;
3. Implementing actions to reduce over-wintering mortality of Eastern Massasauga rattlesnakes in identified areas using ecohydrological mapping and modelling; and,
4. Securing high priority areas through stewardship, land acquisition or other conservation measures (e.g. environmental zoning) in partnership with municipalities and the Land Trust, and as directed and informed by a Natural Asset Inventory and associated deliverables.

This project is also:

- Being carried out on the traditional lands of the Anishinaabek peoples under the Robinson Huron Treaty and Williams Treaty (Henvey Inlet First Nation, Magnetawan First Nation, Shawanaga First Nation, Wasauksing First Nation, Moose Deer Point First Nation, and Wahta First Nation). Many of these nations

are already partners in this work and are participating in their preferred capacity; and others are being engaged to participate in their preferred capacity;

- Building capacity for local Indigenous communities, municipalities and individuals to coordinate, participate, and facilitate SAR recovery actions through the use of tools that synthesize and/or generate knowledge and prioritize locations for Indigenous Knowledge protocols, SAR monitoring and mitigation, and community outreach; and
- Incorporating Indigenous knowledge and Anishinaabek world views to enhance understanding of local habitats and species, and inventory techniques and protocols in a way that is in line with Indigenous research protocols and data sovereignty (e.g., OCAP®). Our staff and regional partners have undergone OCAP® training and we continue to train new staff on Truth & Reconciliation, as well as braiding knowledges in our work.

4 Project Goals and Objectives

The primary objective of the project is to conduct a comprehensive Habitat Inventory (formally referred to as a Natural Asset Inventory), providing essential land cover mapping and modeling tools to address critical knowledge gaps related to Species at Risk (SAR) habitat use and availability across the landscape. Refer to Figure 1 for a map of the project area, which includes the entirety of the Biosphere boundary, Ecodistrict 5E-7, as well as the jurisdictional boundaries of intersecting municipalities and First Nation communities. The outcomes of this inventory will establish a foundation for evidence-based decision-making to support SAR conservation and management, as well as Natural Asset Management Planning (NAMP) initiatives and actions. The project is being carried out in phased stages, as outlined in subsequent sections.

Specific objectives of the NAMP project include:

1. Collaborate with partners to understand and address land management needs. This process will emphasize knowledge-sharing and actively involve diverse potential end-users across the region.
2. Generate high-quality spatial data and tools while upholding the principles of data sovereignty. This data will be scientifically robust, up-to-date, and compatible for end-users, ensuring ethical approaches to data sharing and sovereignty.
3. Facilitate knowledge-sharing through workshops and the development of user-friendly tools and resources. These efforts aim to support the conservation of biodiversity and habitats (i.e., natural assets) effectively.

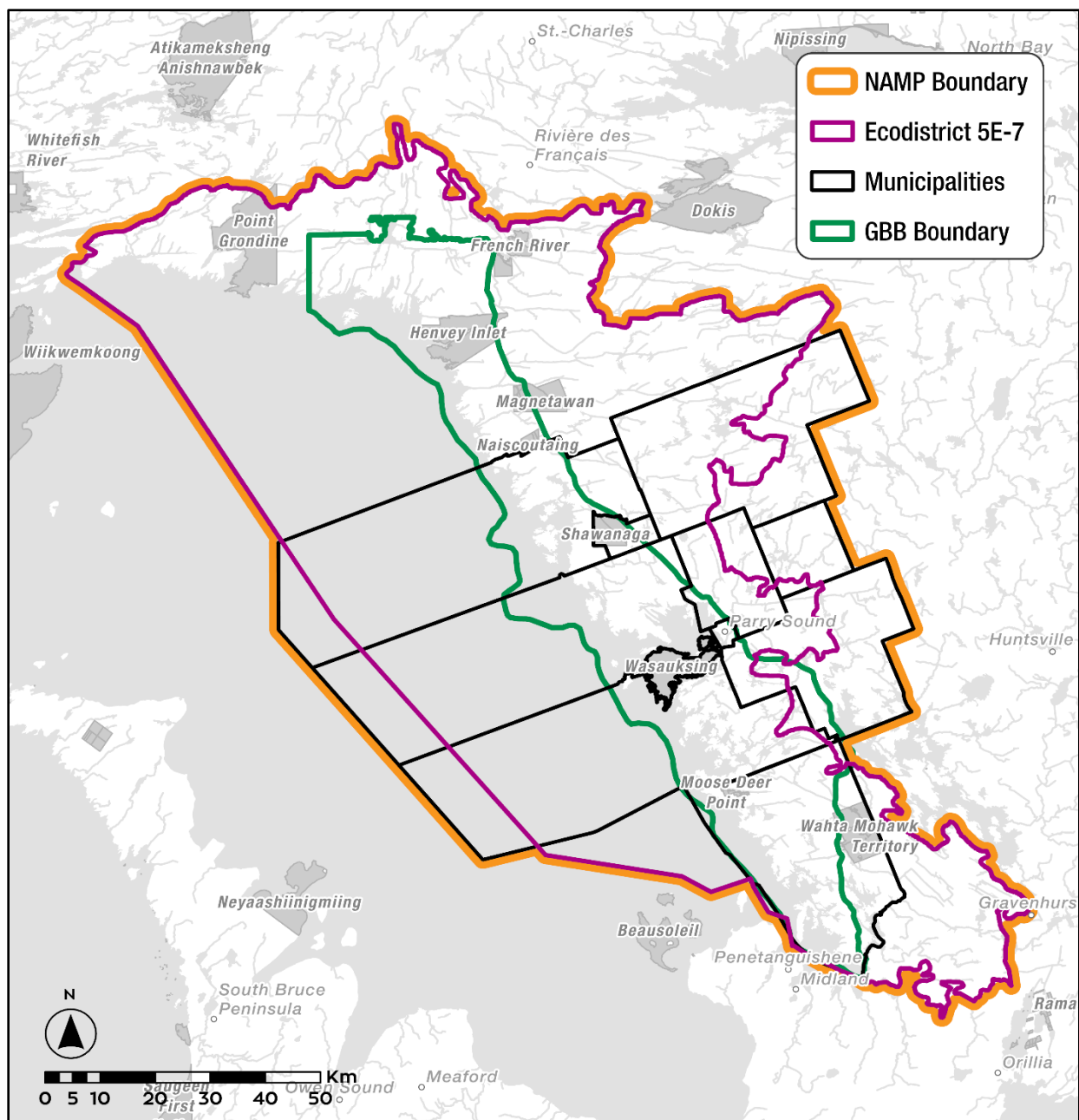


Figure 1. NAMP project study area (orange), with Ecodistrict 5E-7 boundary (purple), GBB boundary (green), municipal jurisdictions (black), and First Nation communities (grey).

5 Phase 1: Collaboration and Project Scoping

Although the first phase of the project was completed in 2024, engagement with working groups, committees, and partners continues. The project remains collaborative and actively embraces a ‘Braiding Knowledges’ approach, blending Western science and Indigenous Knowledges to ensure tools and strategies are widely and holistically adopted for sustainable SAR habitat management. This phase established governance

structures and engaged key partners through two main groups: a Project Steering Committee and three Technical Working Groups. The Steering Committee, meeting monthly, included decision-makers and key project staff from GBB, as well as technical experts from the University of Waterloo's WEC Lab and McMaster University's Ecohydrology Lab, guiding regional priorities and addressing community needs identified in scoping workshops. Three Technical Working Groups were developed to inform on technical guidelines, frameworks, and tools through workshops and individual consultations with regional experts:

1. The Data Hosting and Sharing Working Group with key project staff from GBB, the West Parry Sound Geography Network (WPSGN) and university researchers.
2. The Georgian Bay Opportunity for Shoreline and Island Mapping Working Group with key project staff from GBB, municipal planners, conservation organizations, and university researchers.
3. The Habitat Ground-truthing Working Group with key project staff from GBB and university researchers.

All groups operate under a draft Terms of Reference, which continues to evolve as engagement with communities and organizations progresses.

These ongoing collaborative structures set the stage for the extensive stakeholder engagement activities undertaken throughout 2025, which are detailed in the following subsection.

Stakeholder Engagements

Stakeholder engagement was a cornerstone of this phase of the project in 2024, involving First Nations, municipal governments, and conservation organizations. Participation from First Nations continues to be a priority, with a commitment to adhering to the principles of data sovereignty (OCAP®) to ensure the tools developed are relevant, accessible, and respectful of data sharing preferences. These efforts included land department meetings, and technical workshops and consultations.

Key stakeholder collaborations and engagements in 2025:

1. Technical Working Group: The 'Georgian Bay Opportunity' for Shoreline and Island Mapping (January 13, 2025)

Hosted collaboratively by the GBB, University of Waterloo's WEC Lab staff, and McMaster University's Ecohydrology Lab staff, this workshop centered on developing a coordinated strategy for the "Georgian Bay Opportunity." The session addressed the unique challenges and opportunities associated with

shoreline and island mapping across the region, emphasizing current data gaps, potential mapping and modelling solutions, technical alignment and integration into land use policy, and strategic application of the NAMP framework.

Participants included representatives from Georgian Bay Islands National Park, the District Municipality of Muskoka, Township of the Archipelago, and Ecophylla Consulting.

- Key outcomes:
 - Established clear objectives and deliverables for the Georgian Bay Opportunity within the broader NAMP project goals and outcomes.
 - Identified essential datasets, their sources, and technical parameters required for shoreline and island mapping, including considerations for flood elevation, bathymetry, and terrestrial data continuity.
 - Outlined a draft timeline for data collection, analysis, and model development to ensure alignment with the overall NAMP project schedule.
 - Explored the feasibility of developing a focused sub-project area in collaboration with GBINP as a potential pilot site for testing and refining model applications.
 - Confirmed the need for ongoing coordination between academic, municipal, and conservation partners to ensure outputs are both technically robust and applicable to end users across the Georgian Bay region.

2. Technical Working Group: Data Hosting and Sharing (January 21 & March 25, 2025)

This technical working group met to bring together members of the NAMP project team, university researchers, and key GIS experts from the WPSGN to determine the preferred architecture, governance model, and user experience strategy for data hosting, sharing, and long-term stewardship. Discussions focused on balancing accessibility with data sensitivity, particularly regarding Indigenous data governance and user-specific access levels.

- Key Outcomes:
 - Confirmed an ESRI-based hybrid solution using WPSGN infrastructure to manage data access and privacy.
 - Outlined a three-phase data structure: public repository, partner-only derived products, and selective final data sharing.

- Identified WPSGN and GBB as key partners for long-term data hosting and stewardship.
- Agreed on the need for a user experience and governance plan with defined user profiles and update protocols.
- Supported developing integrated ESRI tools (Hub, Story Map, Experience Builder) for both technical and public users.

3. Region Land Use Planning Workshop (January 23, 2025)

Hosted by the NAMP project team, this workshop brought together regional planners and municipal representatives to explore how NAMP data and tools can best support local land use planning and policy development. The discussion focused on improving municipalities' ability to identify, conserve, and manage ecological assets (i.e., habitats) through enhanced mapping and analysis. Participants included representatives from the Township of McDougall, Township of the Archipelago, Seguin Township, Town of Parry Sound, and Township of Carling.

- Key Outcomes
 - Confirmed wetlands as the top priority for updated and more accurate mapping across the region.
 - Identified the importance of connectivity between and within settlement areas for maintaining ecological connectivity.
 - Expressed strong interest in testing NAMP data layers to explore applications for conservation and development planning.
 - Recognized opportunities to integrate refined land cover and habitat mapping into Official Plans to strengthen environmental policy and decision-making.

4. Technical Working Group: Habitat Ground-truthing (February 6, 2025)

This focused working session brought together representatives from GBB, University of Waterloo's WEC Lab, and McMaster University's Ecohydrology Lab to coordinate and plan habitat ground-truthing activities for the 2025-2026 field seasons. The meeting aimed to establish a cohesive, regionally-aligned approach to data collection and validation amongst partners.

- Key outcomes:
 - Developed a two-year actionable plan outlining specific ground-truthing activities, timelines, and responsibilities among partners, setting the stage for continued planning at regular bi-weekly meetings.

- Identified and prioritized key habitat areas for verification to ensure consistency with NAMP objectives and regional priorities.
- Summarized available funding and identified additional budgeting needs to support coordinated fieldwork and data management.

5. 'Notice of Engagement' and 'Invitation to Collaborate' Letters to First Nations (February 13, 2025)

GBB initiated formal engagement with all sixteen First Nations whose traditional territories overlap with the NAMP project area in early 2025. Depending on their location in the region, each community received either a 'Notice of Engagement Letter' or an 'Invitation to Collaborate' letter outlining the project's objectives, opportunities for participation, and guiding principles for respectful partnership. These letters emphasized GBB's commitment to data sovereignty, the integration of Indigenous Knowledges, and the ethical handling of spatial data related to First Nations lands and territories.

- Key Outcomes:
 - Initiated dialogue with multiple First Nations to explore opportunities for collaboration and alignment with community priorities.
 - Reaffirmed commitment to OCAP® principles and ethical data governance.
 - Identified pathways for potential participation in future ground-truthing and data co-development activities.
 - Notified communities of an upcoming Information Sharing Webinar.

6. NAMP Information Sharing Webinar (March 19, 2025)

GBB hosted a NAMP Information Sharing Webinar for regional stakeholders including municipal and First Nation representatives to provide an overview of the project, including its purpose, goals, methodology, and expected outcomes, and to explore opportunities for collaboration. The session featured a 15-minute presentation followed by a 15-minute discussion and Q&A period.

- Key outcomes:
 - Provided an overview of data collection, hosting, and sharing practices to support informed engagement and decision-making.
 - Updated participants on current project progress and next steps.
 - Discussed how NAMP outputs could best support municipal and First Nations' land management priorities.

- Highlighted opportunities for participation in upcoming project activities, including ground-truthing, focus groups, technical workshops, and project updates.

7. NAMP Project Focus Group: Data Hosting and Sharing (March 25, 2025)

This workshop focused on long-term governance, data renewal cycles, and sustainable management of NAMP datasets beyond 2027. Discussions explored the pros and cons of static versus dynamic data models, service level expectations, and the handoff process for maintaining the model over time.

- Key Outcomes
 - Recognized the need for a defined renewal cycle with updates aligned to new orthoimagery and LiDAR releases, approximately every five years.
 - Emphasized establishing service level agreements to ensure consistency, reliability, and feedback integration into municipal workflows.
 - Agreed that dynamic updates improve responsiveness and data relevance but require dedicated resources and governance capacity.
 - Identified static model versions (v1.0, v2.0, etc.) as a practical approach for tracking major updates and ensuring transparency in revisions.
 - Highlighted the importance of Indigenous data governance principles (OCAP®) in guiding open data, ownership, and access.
 - Assigned follow-up actions to define the post 2027 data stewardship model and clarify the process for transitioning operational responsibility.

8. Ground-truthing Partner Meetings (April 7, April 17, and May 26th)

GBB met individually with Moose Deer Point First Nation, Wasauksing First Nation, and Shawanaga First Nation to share information about the NAMP project and explore opportunities for collaboration. Discussions centered on participation in ground-truthing activities, interest in sharing existing Ecological Land Classification (ELC) data, and ensuring the project aligns with each community's land management and stewardship goals.

- Key Outcomes:
 - Established interest in collaborative ground-truthing and the potential sharing of existing ELC data.
 - Confirmed commitment to data governance and sovereignty principles, ensuring community control over data use and storage.
 - Co-developed MOUs with each First Nation to formalize participation, roles, data-sharing protocols, and areas of collaboration.
 - Identified opportunities to tailor NAMP outputs to support community-specific land management and stewardship priorities.

9. Partner Ground-truthing Training Day (May 9, 2025)

GBB, University of Waterloo's WEC Lab, and McMaster University's Ecohydrology Lab co-hosted a Partner Ground-Truthing Training Day to build partner capacity for field verification under the NAMP project (see Figure 2 and Figure 3). Participants included key staff from Wasauksing First Nation, Shawanaga First Nation, Moose Deer Point First Nation, Grundy Lake Provincial Park, Georgian Bay Islands National Park, Georgian Bay Land Trust, and First Nation community member volunteers.

- Key Outcomes:
 - Delivered comprehensive ELC-based field-data collection training and overviewed the new Habitat Classification Guide, combining classroom and in-field components.
 - Enhanced partner capacity and confidence to support habitat classification and ground-truthing efforts.
 - Provided financial and logistical support to enable participation by First Nation and partner organizations.
 - Strengthened regional collaboration and consistency in data collection for mapping and modelling.



Figure 2. NAMP Ground-truthing Training Day (classroom training component).



Figure 3. NAMP Ground-truthing Training Day (in-field component).

10. Ground-truthing with the Ministry of Environment, Conservation and Parks (July 14, 2025)

A scoping meeting was held with four Ministry of Environment, Conservation and Parks (MECP) representatives to discuss their capacity and collaboration in the ground-truthing for the NAMP project. The session focused on data access, GIS tools, and planning for upcoming fieldwork.

- Key Outcomes:
 - Confirmed ArcGIS Online access and Field Maps Form setup for Ontario Parks staff to participate in data collection.
 - Reviewed and refined ground-truthing focus areas and existing mapped sites.
 - Discussed coordination for field activities across key parks and conservation reserves (e.g., Killarney Provincial Park, Noganosh Lake Provincial Park, Magnetawan River Provincial Park).
 - Established next steps for communication and field logistics to support MECP participation in the NAMP project.

11. Ground-truthing Summer Check-in and BBQ (July 25, 2025)

GBB hosted a mid-season Ground-Truthing Check-In and BBQ with partners from University of Waterloo's WEC Lab, McMaster University's Ecohydrology Lab, Wasauksing First Nation, Shawanaga First Nation, Moose Deer Point First Nation, Grundy Lake Provincial Park, Georgian Bay Islands National Park, Georgian Bay Land Trust, and local volunteers. The event provided an opportunity to reconnect, share updates on progress, and discuss feedback on the ground-truthing process.

- Key Outcomes:
 - Reviewed challenges from the field season, clarified and answered frequently asked questions.
 - Received feedback, and identified areas for improvement and training refinements for next year.
 - Strengthened partner collaboration and community connections through an informal, relationship-focused gathering.

12. Braiding Knowledges Scoping Sessions (numerous meetings with First Nation partners throughout August 2025 to October 2025)

Building on the NAMP partnership, University of Waterloo's WEC Lab led the development of a grant proposal to the Social Sciences and Humanities Research Council (SSHRC) aimed at further integrating braiding knowledges approaches into NAMP tools and ensuring alignment with community land management priorities. University of Waterloo's WEC Lab and key GBB staff worked collaboratively to engage Moose Deer Point First Nation, Shawanaga First Nation, and Wasauksing First Nation, with both Moose Deer Point First Nation and Shawanaga First Nation expressing keen interest in the opportunity.

- Key outcomes:
 - Identified shared priorities on habitat significance, ecosystem change, and restoration.
 - Outlined a seasonal engagement framework (visioning, workshops, open house) to support co-development.
 - Embedded OCAP® principles to uphold Indigenous data sovereignty and governance.
 - Developed a budget and logistics plan for honoraria, staff time, and land-based activities.
 - Strengthened connections between NAMP and community planning tools to ensure outputs support Indigenous stewardship and long-term decision-making.
 - Submitted the SSHRC grant proposal to conduct land-based workshops with Shawanaga First Nation and Moose Deer Point First Nation communities in 2026.

13. Steering Committee Meetings (reoccurring, weekly/biweekly)

GBB, University of Waterloo's WEC Lab, and McMaster University's Ecohydrology Lab continued to meet biweekly during the offseason, and weekly during the ground-truthing season to coordinate on project delivery.

- Key outcomes:
 - Provided strategic guidance to keep the project aligned with goals, timelines, and deliverables.
 - Facilitated collaboration and information sharing by guiding engagements between academic and Indigenous partners.
 - Reviewed and approved key decisions related to data management, communications, and field priorities.
 - Monitored progress and challenges, adapting workflows as needed to maintain momentum.

- Ensured transparency and accountability across all project components and partners.

Next Steps

Moving forward, the Steering Committee and Technical Working Group meetings will continue regularly, with schedules adjusted as needed to reflect project milestones and partner capacities. These efforts will provide the technical and policy tools necessary to advance SAR conservation and improve regional land use planning.

Building on the Land Use Policy Review that was generated in 2024, a Senior Advisor at GBB is currently outline key policy recommendations and tools for incorporating the Habitat (i.e., Natural Asset) Inventory insights into planning, with a focus on SAR protection. This report, formally referred to as a Policy Action and Implementation Report, will be incorporated into the Habitat Inventory Report as the “Discussion” section (refer to Appendix A), featuring case studies, providing guidance for integrating the findings into existing policies, and setting the stage for post-project collaboration and SAR recovery actions.

Municipal planners will be engaged in early 2026 to participate in an Environmental Protection Zoning Workshop, which will overview a summary of existing Environmental Protection (EP)/Environmentally Sensitive (ES) zones and discuss opportunities to strengthen those protection mechanisms through updated habitat mapping tools and other potential outputs, such as Candidate Significant Wildlife Habitat (SWH) mapping.

Pending the success of Post-Doctoral Fellow Brandon Van Huizen’s research grant application to the Liber Ero Fellowship Program, collaborative scoping sessions with First Nation partners will be undertaken to guide his work on fire risk modelling in relation to SAR refugia. Additionally, pending the success of PHD student Waverley Birch’s grant application to SSHRC, community land-based workshops on habitat significance will commence in 2026.

6 Phase 2: Spatial Modelling, Tool Creation and Field Verification

Beginning in 2024, Phase 2 of the project ran concurrently with Phase 1, and will continue to progress into 2026. It focuses on generating high-quality spatial data and tools, as well as validating the modelling work with field-verified records.

Compilation of Existing ELC Datasets

The 2024 Data Gap Analysis, completed by the University of Waterloo's WEC Lab and McMaster University's Ecohydrology Lab, identified the need for existing ELC datasets to support training of the NAMP habitat model. To address this, existing ecological and spatial datasets were compiled and standardized to ensure consistency in model development and mapping across the region. This process involved aligning and integrating ELC data from Georgian Bay Islands National Park, the Georgian Bay Land Trust, the District Municipality of Muskoka, Shawanaga First Nation, Wasauksing First Nation, and the Henvey Inlet First Nation Wind Centre.

Data Sharing Agreements (DSAs) were co-developed with partners in alignment with data-sovereignty principles to ensure that all datasets are accessed and managed ethically. Financial support was also provided to First Nation partners offering ELC datasets to adequately compensate for this work and facilitate dataset preparation, and sharing. These efforts ensured that community and partner-held data were incorporated respectfully and in alignment with the principles of data sovereignty.

Development of a Habitat Classification Guide & Data Collection Form

To support the 2025 ground-truthing season, the NAMP Steering Committee developed a comprehensive Habitat Classification Guide (Version 1 – May 2025), and subsequent Version 2 (June 2025) featuring one round of revisions that were informed by partner feedback (refer to Appendix B). Drawing on Ontario's ELC methodology for southern and central regions, as well as the Ontario Wetland Evaluation System, the guide was designed to standardize habitat identification and delineation across the project area. Building on lessons from the pilot modeling and partner input, the guide provides clear definitions for habitat systems, classes, and subclasses (refer to Table 1). The Guide was printed on write-in-the-rain field binders and 1 copy was provided to each participating partner team for easy reference in the field. By integrating these frameworks and refining classifications based on feedback, the Guide ensures consistent, accurate, and thorough data collection, supporting the development of a reliable and regionally-relevant Habitat Inventory.

To support the Habitat Classification Guide, GBB/WPSGN GIS staff, with input from the Ground-Truthing Technical Working Group, developed a draft ESRI Field Maps form to facilitate collaborative field-verification efforts among regional partners. This application enabled users to record ELC data for NAMP modelling and document additional stewardship observations, such as wildlife observations (i.e., flora, fauna, Species-at-Risk, and invasive species), signs of natural disturbance (i.e., wildfire, flooding, beaver activity), and signs of human disturbances (i.e., litter, unauthorized trails or structures).

The field form was finalized and used for ground-truthing amongst GBB, University of Waterloo WEC Lab staff, and participating partners in the spring of 2025.

Table 1. Habitat Classification Scheme.

High-level Class: ELC System	Subclass 1: ELC code/community class	Subclass 2: ELC community class to series	Subclass 3: ELC community series
1. Wetland (WE)	1. Ephemeral Pool (EAP)	1. Ephemeral Pool (EAP)	1. Ephemeral Pool (EAP)
	2. Peatland (PE)	2. Bog (BO)	2. Open Bog (BOO)
			3. Shrub Bog (BOS)
			4. Treed Bog (BOT)
		3. Fen (FE)	5. Open Fen (FEO)
			6. Shrub Fen (FES)
			7. Treed Fen (FET)
	3. Marsh (MA)	4. Marsh (MA)	8. Meadow Marsh (MAM)
			9. Emergent Marsh (MAE)
			10. Shallow Water Marsh (MAS)
	4. Swamp (SW)	5. Treed Swamp (SWT)	11. Deciduous Swamp (SWT-D)
			12. Coniferous Swamp (SWT-C)
			13. Mixed Swamp (SWT-M)
		6. Shrub/Thicket Swamp (SST)	14. Shrub/Thicket Swamp (SST)
2. Terrestrial (TE)	5. Forest (FO)	7. Coniferous Forest (FOC)	15. Coniferous Forest (FOC)
		8. Deciduous Forest (FOD)	16. Deciduous Forest (FOD)
		9. Mixed Forest (FOM)	17. Mixed Forest (FOM)
	6. Rock Barren (RB)	10. Treed Rock Barren (RAW-T)	18. Treed Rock Barren (RAW-T)
		11. Shrub Rock Barren (RAW-S)	19. Shrub Rock Barren (RAW-S)
		12. Open Rock Barren (RAO)	20. Bare Rock Barren (RAO-B)
			21. Moss/Lichen Rock Barren (RAO-M)

High-level Class: ELC System	Subclass 1: ELC code/community class	Subclass 2: ELC community class to series	Subclass 3: ELC community series
2. Terrestrial (TE)	7. Anthropogenic/ Constructed (CO)	13. Anthropogenic/Constructed (CO)	22. Residential (COR)
			23. Commercial/Industrial (COC)
			24. Transportation/Utilities (COT)
3. Aquatic (AQ)	8. Agricultural/Field (AG)	14. Agricultural/Field (AG)	25. Agricultural/Field (AG)
	9. Open Aquatic (OA)	15. Open Aquatic (OA)	26. Open Aquatic (OA)
	10. Shallow Aquatic (SA)	16. Shallow Aquatic (SA)	27. Shallow Aquatic (SA)

Ground-Truthing

Partners were engaged before and throughout the 2025 field season, with opportunities for ELC training and/or financial support to participate in ground-truthing activities. To strengthen field expertise and ensure consistent ecological data collection, GBB staff and University of Waterloo WEC Lab staff completed a five-day ELC training course in Lindsay, Ontario, offered by ECOPA Environmental in May 2025. This immersive program provided hands-on training in identifying and evaluating soils and vegetation, applying ecosite classification protocols, and using Ontario-specific ELC guides for southern and central regions. All participants successfully completed the optional ECOPA certification challenge, equipping the team with standardized skills to accurately classify habitats, support ground-truthing, and contribute to high-quality mapping outputs for the NAMP project.

In addition, one staff who leads the NAMP project at GBB, completed a five-day Ontario Wetland Evaluation System (OWES) course in North Bay to support wetland ecosystem classification. These collaborative training efforts strengthened technical capacity among the project team and partner organizations and ensured the collection of high-quality, regionally representative data.

The 2025 ground-truthing season marked a major milestone for the NAMP Project — the first full year of coordinated fieldwork across the region. Together, staff and partners monitored biodiversity, recorded habitat types, identified rare and invasive species, and documented natural and human disturbances, including wildfire, flooding, and unauthorized activities such as garbage dumping and wetland filling. These efforts generated the high-quality, ground-truthed data needed to train and refine the region's first habitat model and advance the development of the Habitat Inventory Report.

To ensure representative regional coverage and meet collective priorities, GBB coordinated field days with a wide range of partners, including First Nation land departments and community members, conservation organizations, Parks Canada and MECP staff, and academic researchers, to train participants and validate mapping outputs. The inaugural field season was a resounding success: over 38 km² of landscapes were mapped, more than 1,100 habitats were recorded, 156 natural and human disturbances documented, and 92 wildlife observations noted (refer to Figure 4 and Figure 5). These accomplishments span 3 First Nations, 3 Provincial Parks, 12 Conservation Reserves, and numerous private, Crown, and Treaty lands (see Appendix C for a detailed list of ground-truthed sites, and Figure 6 for a map of ground-truthed areas). Each partner who participated in ground-truthing currently maintains ownership

and access to their respectively collected ground-truthed datasets for their lands/territories through ArcGIS online access.

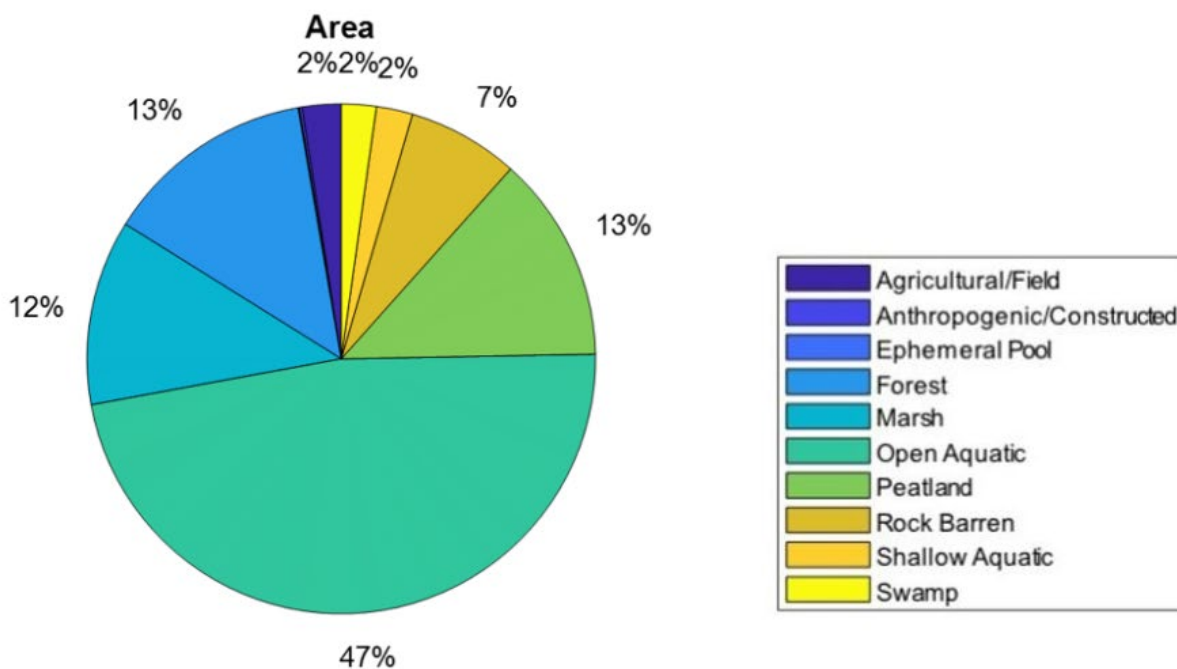


Figure 4. Percentage of total ground-truthed area covered by each habitat type.

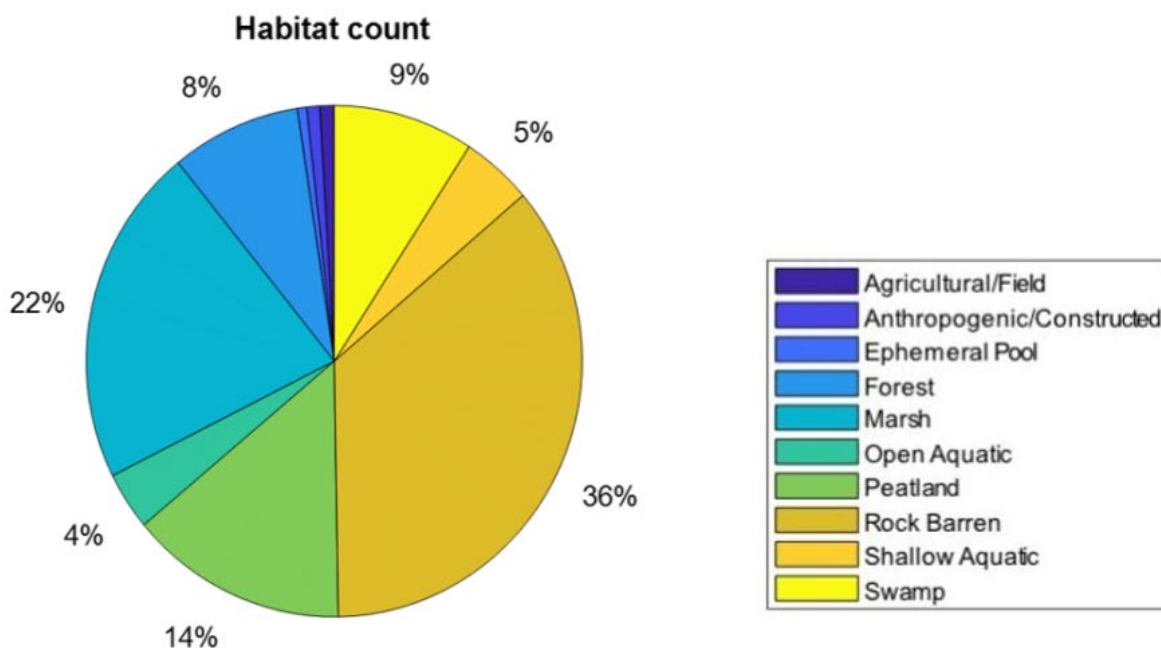


Figure 5. Percentage of total mapped habitats represented by each habitat type, indicating how frequently each type was identified and classified during field verification and mapping.

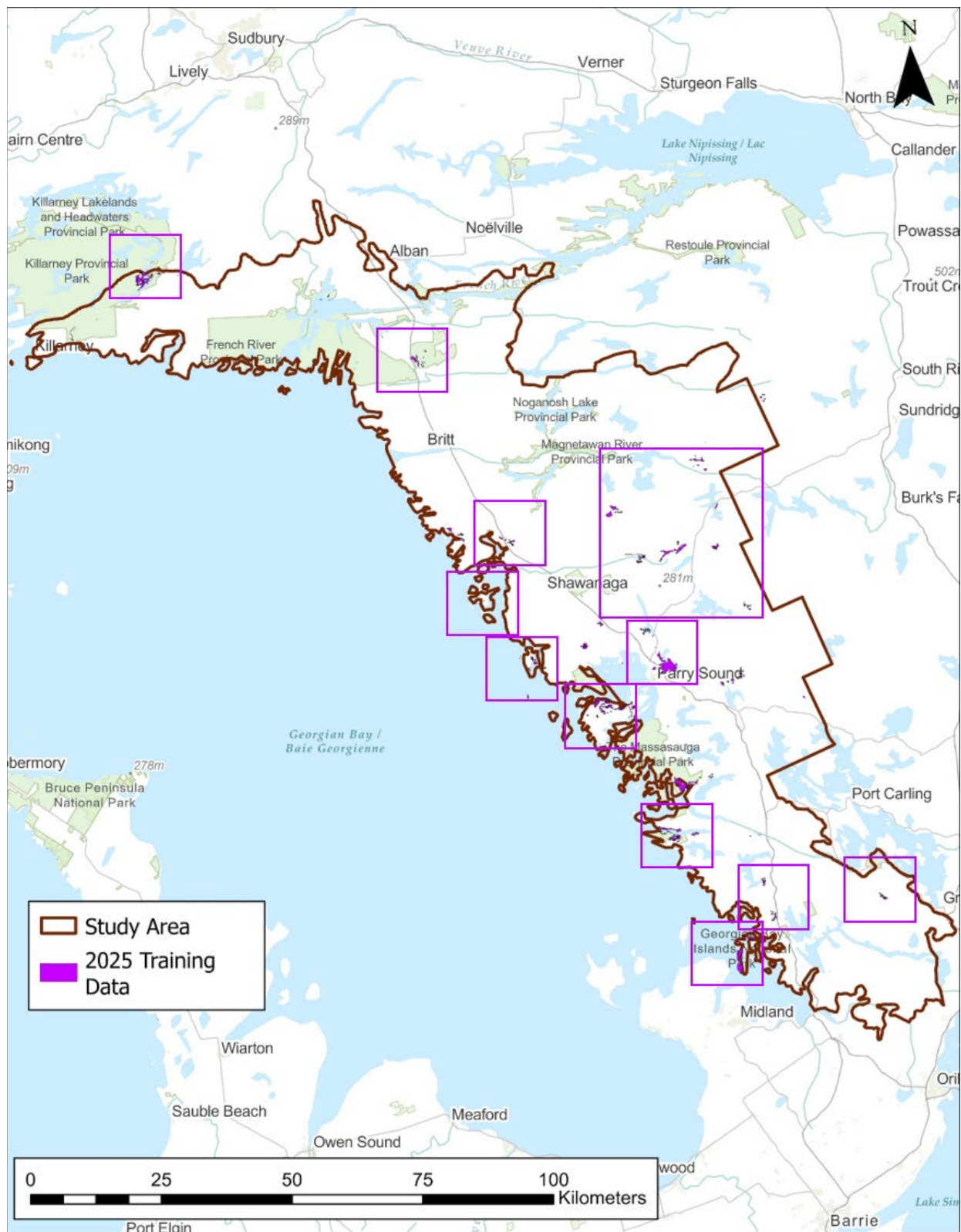


Figure 6. Map of ground-truthed areas in 2025.

Community members from Moose Deer Point First Nation and Wasauksing First Nation (see Figure 7) contributed over 171 hours of fieldwork, exemplifying the strength of community-led stewardship and collaboration central to this project. Operating under living MOUs co-developed with these Nations, honoraria were provided to community members in recognition of their leadership and participation. Their guidance and shared ecological knowledge fostered meaningful collaboration between Western and Indigenous Knowledges, enriching both the datasets and the interpretive framework of the project.



Figure 7. GBB staff, University of Waterloo WEC Lab staff and Wasauksing First Nation community members in the field.

In August 2025, GBB and the University of Waterloo WEC Lab also organized a three-day camping expedition in Killarney Provincial Park to work alongside park staff on field verification (see Figure 8, Figure 9, and Figure 10). Four field teams covered extensive areas of the park, enabling comprehensive validation across the northern extent of the

NAMP project area. This collaboration was highly successful and will continue with additional joint fieldwork planned for the 2026 season



Figure 8. University of Waterloo WEC Lab staff canoeing in Killarney Provincial Park.



Figure 9. University of Waterloo WEC Lab staff training MECP staff on data collection through the Field Maps form in Killarney Provincial Park.



Figure 10. University of Waterloo WEC Lab staff ground-truthing Silver Peaks in Killarney Provincial Park.

Modelling Methodology Reports

McMaster University's Ecohydrology Lab completed the first of two methodology reports summarizing the modelling work undertaken from January to March (refer to Appendix D). This report outlines progress since the October 2024 scoping workshop and the signing of the MOU in January 2025, with a focus on three core objectives:

1. Developing new methodologies and tools, including image segmentation approaches and machine-learning classifiers.
2. Scaling the classification process to larger and more diverse test areas across the region.
3. Developing and testing an R script to ensure the workflow is transparent, reproducible, and efficient.

The report also begins to address early components of the post-March 2025 objectives outlined in the MOU, including establishing a classification scheme and field data collection platform, and evaluating shoreline sensitivity to water level fluctuations.

Next Steps

Building on the successful 2025 ground-truthing season, the coming year will focus on expanding spatial coverage — particularly in gap areas and underrepresented habitats such as ephemeral pools — and refining the first iteration of the habitat model. The 2026 field season will prioritize collecting additional high-quality training data and validating the initial habitat model, which will support finalizing both the regional model and the accompanying Habitat Inventory Report (continue reading for a description of this report). Final products will include updated digital mapping layers, a NAMP project hub/webpage, and a detailed methodology report (the second of two methodology reports developed by McMaster University's Ecohydrology Lab).

To ensure consistency and improve data quality, the Habitat Classification Guide and Field Maps Form will be updated and redistributed based on questions, challenges, and feedback from field staff and partners. These revisions will clarify habitat definitions across systems, classes, and subclasses and integrate newly identified habitat types from the 2025 field season (i.e., beach/bar ecosystems). This will improve alignment among field teams and support continued refinement of the modelling framework.

Work will also begin on drafting the Habitat Inventory Report (draft Table of Contents provided in Appendix A). This report will be written for a non-technical audience and will clearly explain how the habitat mapping was developed — from ground-truthed data

collection through to model training and machine-learning classification — while building confidence in the quality and reliability of the resulting datasets. It will outline the methodology, summarize results, address OCAP considerations, and describe how the data should be interpreted and applied.

The report will also communicate the value of the NAMP habitat data for climate resilience, land-use planning, and biodiversity protection, including a dedicated section on how the mapping can be integrated into land-use policy and decision-making tools. It will align with CSA W218:23 standards and include updated land-cover mapping, which will be key to the development of future tools for Species-at-Risk habitats. A first draft is anticipated this winter, with finalization planned after the second field season and model refinements, followed by a workshop with regional partners.

Finally, over the winter, we will continue engaging with ground-truthing partners by sharing the interim habitat model with those who collected data on their lands so they can begin applying it to their land-management and care-taking priorities.

7 Phase 3: Knowledge Mobilization and Integration

Phase 3, launched in early 2024 and continuing through 2027, focuses on knowledge sharing, communication, and partner engagement to ensure NAMP results are accessible, understandable, and actionable across the region. Early in this phase, several foundational communication materials were developed, including a one-page Project Brief (refer to Figure 11), which continues to be shared at meetings and events to build awareness and strengthen collaboration.

Throughout 2025, two quarterly NAMP newsletters were distributed electronically to more than 100 partners and stakeholders, providing transparent updates on project progress, emerging results, and upcoming involvement opportunities (refer to Figure 12, and Figure 13). To further broaden outreach, two feature blog posts were published: [one on GBB's website](#) announcing the project launch and introducing early ground-truthing results, and another [on the State of the Bay website](#) highlighting the full 2025 field season and celebrating the collaborative partnerships driving the project's success.

Work is also underway on a dedicated NAMP project website, which will serve as the central hub for communication and data sharing. Once launched, it will provide access to progress reports, meeting summaries, newsletters, brochures, and other resources, ensuring partners and the public can easily follow developments and engage with project outputs. Collectively, these knowledge mobilization efforts aim to increase

transparency, improve data accessibility, and foster shared stewardship across the Georgian Bay Biosphere region.

In 2025, GBB staff also presented NAMP updates at several key regional forums. At the Climate Change and Health Symposium on September 24, the team demonstrated how NAMP data can support climate-resilient land-use planning, inform fire and flood risk assessments, and highlight the role of natural assets in mitigating climate impacts and maintaining ecosystem connectivity.

Two days later, on September 26, GBB presented at the District of Parry Sound Municipal Association meeting, introducing NAMP as a regionally coordinated tool for municipal planning, climate resilience, and environmental management. The session emphasized opportunities for data sharing and collaboration across municipalities and agencies.

Most recently, on November 7, 2025, GBB and University of Waterloo WEC Lab staff presented at the 13th Annual Long Point Biosphere Research and Conservation Conference, providing an overview of NAMP's goals, timeline, and habitat mapping workflow. The presentation highlighted the integration of existing ELC datasets with ground-truthed data, the habitat classification model in development, and anticipated outputs and applications to support biodiversity conservation and climate resilience. A recording of the presentation can be found [here](#).

Natural Asset Management Planning (NAMP)

Project Summary



GEORGIAN BAY
BIOSPHERE
MNIDOO GAMII

Purpose

Develop a database for land cover and habitat mapping,

a deeper understanding of natural assets and climate risks,

decision-making for land management, research, and care-taking efforts.

which will lead to...

which will support...



Objectives

1

Generate high-quality spatial data and tools, while respecting principles of data sovereignty.

2

Collaborate with partners to understand and address land management needs.

3

Facilitate knowledge-sharing through workshops and the creation of user-friendly resources.

Collaboration
& Project
Scoping

Spatial Modelling,
Tool Creation, &
Field Verification

Knowledge
Mobilization &
Integration

Timeline



2024



2024 -
2026



2025 -
2027

Proposed Tools & Applications



- Best Management Practices (BMPs) (i.e., roadwork, beaver pond management, culvert sizing, forestry management)
- Natural Heritage Planning (i.e., Environmentally Sensitive zones)
- Development screening
- Research & monitoring (i.e., SAR, ecohydrology, wildlife refugia, etc.)
- Regional emergency management

This project was undertaken with the financial support of
Ce projet a été réalisé avec l'appui financier de :



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



Ganawenim
Meshkiki

Figure 11. NAMP one-page project brief.



Figure 12. June 2025 NAMP Newsletter.

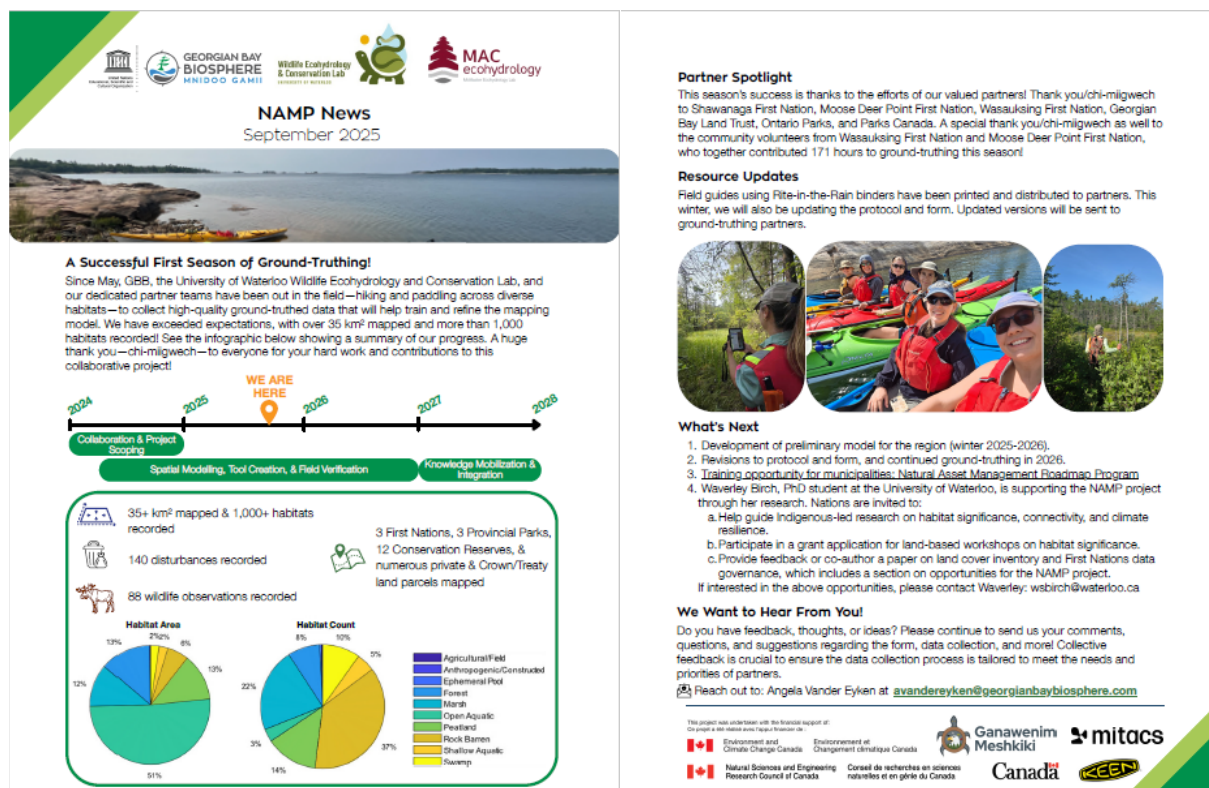


Figure 13. September 2025 NAMP Newsletter.

Next Steps

Two major training workshops will be organized to support the integration of the Habitat Inventory and modeling tools into decision-making for First Nations, municipalities, and conservation organizations. Through these workshops, we aim to provide partners with long-term support for land-use planning, Species-at-Risk habitat protection, best management practices, and environmental assessments.

8 Financials

As outlined in the GMI-GBB Contribution Agreement (No. 2024-06), the 2025 budget was \$183,000. We anticipate carrying forward some of these GMI funds into 2026, as we were successful with additional funding from Environment and Climate Change Canada (ECCC), which enabled GBB to redirect funds to ground-truthing partners, university contractors and field equipment for ground-truthing. The GMI carry forward amount will be used in 2026 to extend the coverage areas for ground-truthing, support partners in participating in ground-truthing, scope and develop additional derived products, and expand the modeling work by the universities. GBB's is still collecting and processing 2025 financial information, and while the exact amount is to be determined, it can be made available upon request from GMI at a later (if needed).

Fundraising will begin in 2026 to supplement existing grants and in-kind donations.