

ABMI's wetland collaborations

EPA Wetland MER Workshop

June 2025



EPA Wetland Business Needs \rightarrow Information \rightarrow

EPA Wetland Business Needs

Wetland Policy Implementation

Wetland Policy Performance

Regional & subregional Land Use Planning

> Condition of Environment Reporting

Wildlife & Species at Risk Management

Cumulative Effects Regulatory System (DIZ. Red Tape Reduction)

Nature Strategy

Carbon Sink Capacity Project

Water Management Strategy

Raw Datasets (various sources)

(Geospatial databases & maps:

Field/ Site Data

ABMI Ecosystem Health Program - wedland classification, wetland condition; water depth, basic WQ. vegetation, macroinverts, habitat, ARUs, remote cameras

OSM Wetland Monitoring Program - wedland classification, wetland condition, WT depth, basic WO. vegetation, macroinverts.

CWS Prairie Habitat Monitoring Program - AB Parkland & Prairies excluding GP & PR, stratified by habitat subregion, wetland habitat change monitoring for migratory bird conservation

FWMIS - Fish and Wildlife Management Information.

ACIMS- Alberta Conservation Information Management System - biodiversity species data, ecological communities,

EPA Regulatory datasets - EoE, DIDs+, other?

ABWRET-a- rapid wetland function assessment, wetland class & delineation

WAIR Report - wetland class and wetland boundaries, vegetation, plant species list - weeds, invasive species, soil oit data, basic wg, wetlands likely to be lost, use to validate old imagery?

Remote Sensing Data

LiDAR (commercial) - 3D vegetation height. composition, high resolution DEM

Optical (commercial) - Planet Scope

Optical (commercial) - SPOT

Satellite (publicly available) - LANDSAT. Sentinel 1. Sentinel 2. RADAR, other

Geospatial Products

various sources)

Alberta Wetland Inventory

 AMWI (provincial) - wetland class, boundaries - ABMI Wetland Inventory

- Wetland Inventory Pilot Projects (EPA-DUC-ABMI)

Historic wetland inventory/ Restorable

- Bow River Basin Inventories Modelled for WMU (Creed, 2015)

Prairie pothole historic wetland inventory (U Weterley to Seru under development

Human Footprint Inventory

Relative Environmental Pressure Tool

Environmentally Significant Areas Man north

PHJV Priority Area Maps

- high productivity waterfowl and waterbird

Watershed Resiliency and Restoration Priority Areas

Maps - drought, flood, WO priority

EPA Wetland Replacement Program Priority Areas Map
- S received from WRF in each

EPA Wetland Exceptional Areas Maps

- Needed to support AWP7, use ABWRET-e or other criteria?

ABWRET-E Maps Wetland Value GIS-based Metrics, Settled

Wetland Carbon Sink Maps - Under development

Species at Risk Habitat Maps - e.g. Piping Player Waterbodies

Wetland Indicators

Wetland Area Status & Change

Wetland area, disturbed, lost, protected, replaced Authorized and unauthorized

impacts.

OSM Wetland Disturbance

- Featland Land Cover Change

Wetland Functions/, Values / FS

 Use ABWRET-e models? (includes WO improvement, hydrological function, biodiversity & ecological health, human use & abundance)

> Wetland WQ Condition - SWO, Macroinvertebrates (OSM, ABMI)

Wetland Vegetation

Vegetation community indicators Moss - Biodiversity Intactness

Vegetation height (OSM, lidar) Leaf area index (OSM, Hatfield)

Fine-scale wetland monitoring.

Hydrological Conditions

Hydropatterns (ABMI)

Water Extent (UofLeth) Water Storage (Quan Cui, UotA)

Nater Isotopes (Gibson, ABMI)

Capacity EPA project (Calvo) RFP

Above ground biomass prairie wetlands (Uleth) Can Post project (The storing)

> EPA Biodiversity Indicators

 Native Cover Interior Habitat

EPA Evaluation & Reporting Products / Wetland Management

Wetland Policy Implementation

- Water Act Authorizations, EPEA authorizations (wetland reclamation) - Lands Act Authorizations (peat harvesting

policy on public land)

- EPO Compliance

Wetland Replacement Fund projects

Watershed Resiliency and Restoration Program

Land Trust Grant Program

Wetland Policy Performance Report E&R on Wetland Policy performance

Wetland Indicators (grea, value)

Condition of Environment Reporting

Wetland indicators (area, condition, ES/ functions)

Wetland research priorities and grants to

address key concerns & knowledge gaps

Regional & Subregional Plans, DIZ Plans

- Identify wetland conservation and restoration objectives/ priority areas, maps, limits. . Identify wetland indicators for monitoring change

Species at Risk Management Plans

 Critical wetland habitat mans Wetland conservation & restoration priority

Species habital models - habital thresholds

Nature Strategy Reporting

- Establish wetland indicators, objectives (e.g. maintain wetland area in SSR) and guidelines.

 Quantify wetland ES. Develop & apply system for Nature Credits &

conservation offsets.

Carbon Sink Capacity Reporting

Wetland indicators - wetland area & carbon sink canacity



EPA Wetland Monitoring Framework

Geospatial Wetland Raw Datasets Reports, etc. Datasets Indicators Water **Biodiversity** Wetland HFI Quality Indicators Atlas Wetland Taxonomic Science Expertise Inventory Letters **Species** HydroPatterns Habitat Models



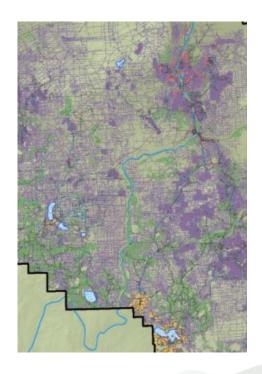
Existing Collaborations with EPA



Human Footprint Inventory

Collaboration with GoA since 2015

- 20 individual sublayers; 117 feature types
- OSM enhanced HFI
- Temporal HF
- Spectral harvest regeneration
- HFI is the foundation of many other products we produce with EPA & others





Alberta Biodiversity Indicators

Native cover, Interior habitat, Landscape connectivity, Stream connectivity

- Collaborative development with EPA Planning Branch
- Landscape level, scaleable, meant to inform management decisions, change over time
- Publically available via Open Govt.
- Links to COP 15 Global Biodiversity
 Framework





Wetland Inventories

Wetland Inventory Pilot: DUC and ABMI collab under contract for EPA

 Built off DUC and ABMI wetland mapping efforts (ABMI wetland inventory, DUC enhanced wetland classification)

- Used ABMI 3x7 for training data
- Field validation protocol development and implementation





Potential opportunities to utilize ABMI data, products, and expertise

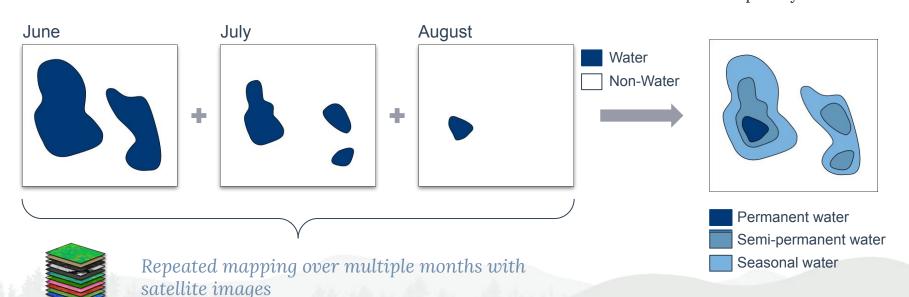
HydroPatterns

ABMI Webinar on June 24 @ noon!

Newer collaboration

Step 1: Mapped open water in each month

Step 2: Combined these maps into one map - HydroPatterns



Water Quality Data

Basic multiprobe parameters; isotopes; TN; TP; turbidity



Contents lists available at ScienceDirect

Journal of Hydrology: Regional Studies

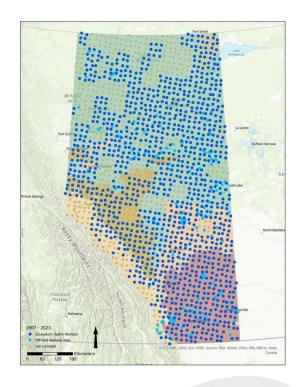
journal homepage: www.elsevier.com/locate/ejrh





Isotope-based water balance assessment of open water wetlands across Alberta: Regional trends with emphasis on the oil sands region

J.J. Gibson a,b,*, P. Eby a, S.J. Birks b,c, C. Twitchell d, C. Gray , J. Kariyeva e



Taxonomic Expertise

Aquatic macroinvertebrates, Bryophytes, Vascular plants

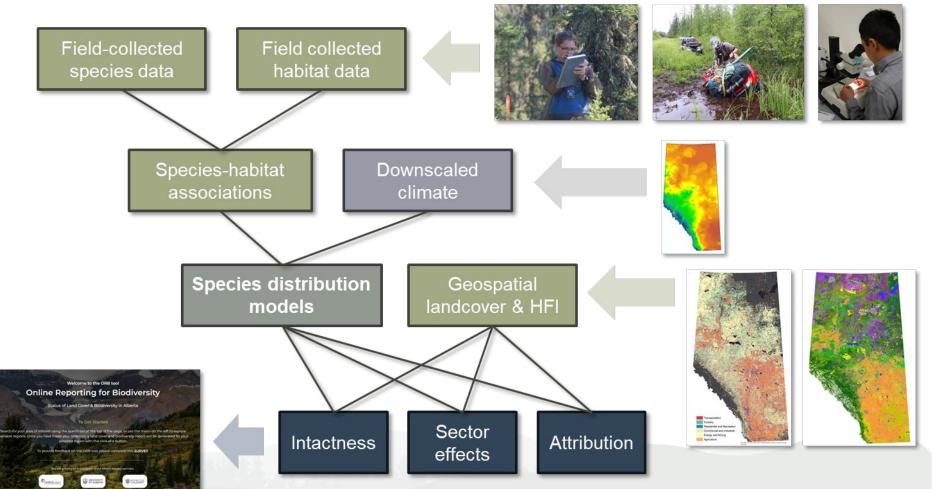
- In-house taxonomic expertise
 - Field collection
 - Identification (traditional and eDNA R&D)
- Extensive datasets & specimen collections



Tool: Species habitat models

Opportunity: Potential Indicator Development





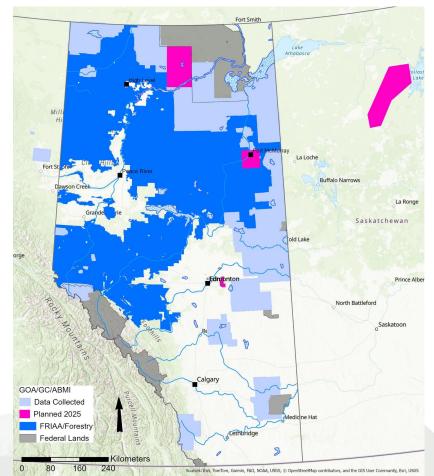
tute | It's Our Nature to Know



Lidar

In-house collection and processing abilities

- Data from forest industry and ABMI collected
- Products
 - o DEMs
 - Canopy estimates (cover, height)
 - Veg heights
 - o Tree tops



Community Based Monitoring and Engagement

CBME Vision: We support Indigenous-led biodiversity monitoring through meaningful partnerships with Indigenous communities to advance their own self-determined monitoring approaches.



ABMI Reporting

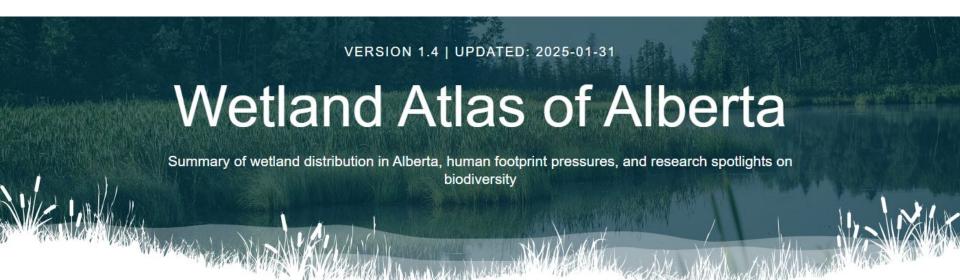


Wetland Atlas

ABMI and collaborator wetland work in Alberta

Updated twice a year - new beaver section with Glynnis Hood coming soon!

Three chapters (Regional wetland summaries, Pressures, Biodiversity)



Science Letters



ABMI Science Letters

EFFECTS OF 2023 WILDFIRES IN ALBERTA

ISSUE 8: MARCH, 2024

Effects of 2023 Wildfires in Alberta

Huggard, D., B. Allen & D.R. Roberts, Alberta Biodiversity Monitoring Institute



ABMI SCIENCE LETTERS

Factors Affecting Nutrient Variation in Alberta Prairie Wetlands. | Issue 3: May, 2015

Factors Affecting Nutrient Variation in Alberta Prairie Wetlands

M-C Roy Alberta Biodiversity Monitoring Institute.



Thank You!