

# ABMI Data Platforms: Making ABMI Data Work for You

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*ABMI Information Forum*  
*January 30, 2019*

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*Alberta Biodiversity Monitoring Institute*



# Meeting Business Needs



*Recognize the need to deliver data and information to users in a format and/or context that meets their business needs.*

- **ABMI Data & Analytics Portal**
- Online Reporting
- **WildTrax**
- ABMI NatureLynx
- **Biodiversity Data Query Tool (custom reporting)**



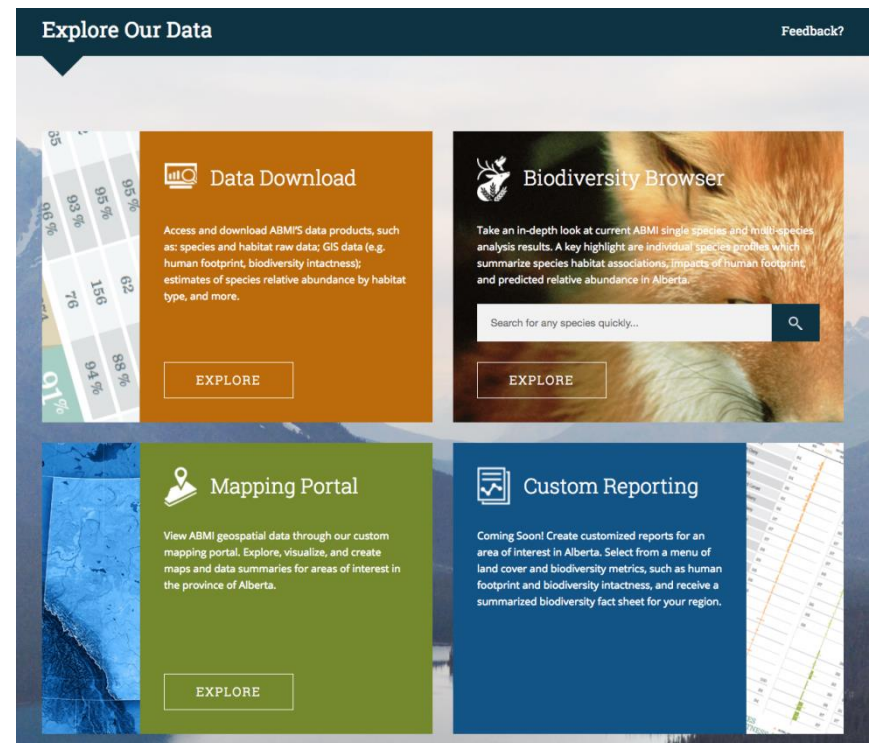
# Making ABMI Data Accessible



*ABMI Data & Analytics Portal: One stop shop for ABMI data and information*

Four modules:

1. Data download: raw data and derived data products; GIS data layers
2. Biodiversity Browser: 350+ (and growing) complete species profiles
3. Mapping portal: interactive web-based map viewer
4. Biodiversity Data Query Tool (in development)



Visit [abmi.ca/data](https://abmi.ca/data)

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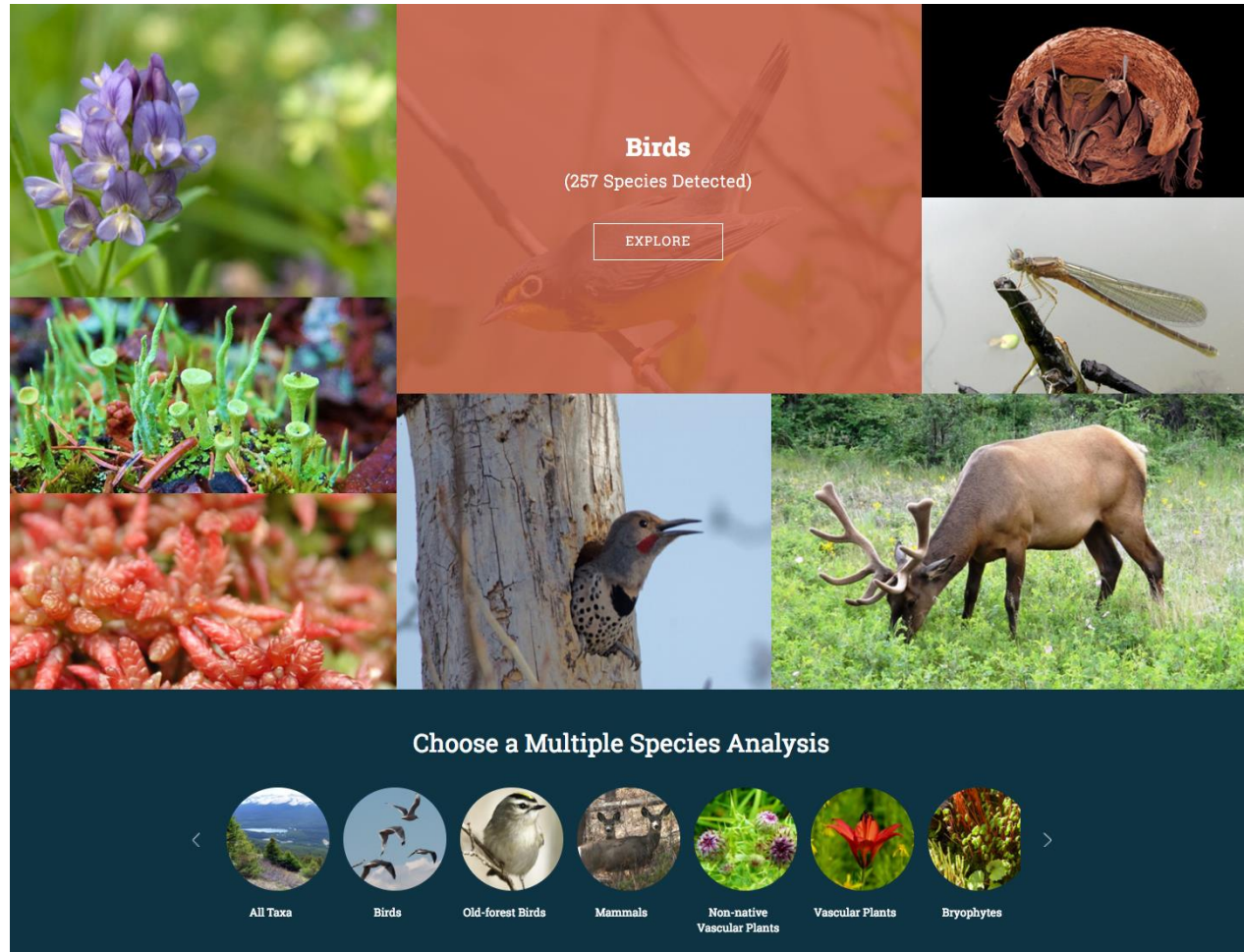
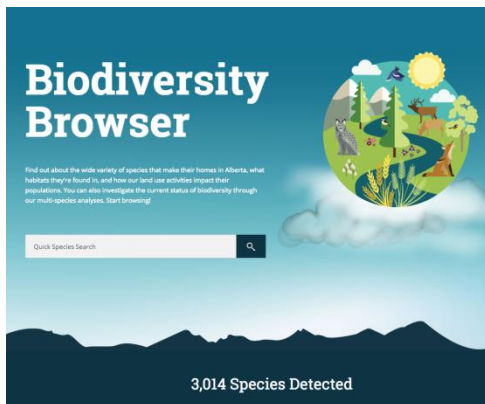
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# Biodiversity Browser



*Goal: to be the go-to reference as “Alberta’s Encyclopedia of Life”*



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# Biodiversity Browser





## Alder Flycatcher

*Empidonax alnorum*

The Alder Flycatcher is a small, plainly coloured bird commonly found in wet shrub habitats and early seral forests in the Boreal Forest, Foothills, and Parkland Natural Regions.

Conservation Status: AEP - Secure

Data Summary: Full

[Download Report](#)



Legend:

- ABMI Sites
- 186 Sites Sampled
- Alder Flycatcher (*Empidonax alnorum*) detected at 358 sites (1963-2013)

Regions: Boreal, Canadian Shield, Foothills, Grassland, Parkland, Rocky Mountain



[Introduction](#)[Habitat & Human Footprint Associations](#)[Impacts of Human Footprint](#)[Predicted Relative Abundance](#)[References & Credits](#)

## Introduction

Over its decade-plus of operations, the ABMI has generated a comprehensive dataset on Alberta's species, their habitats, and the extent and type of human footprint across the province. With this information, the ABMI has developed analyses to predict species' relative abundances and examine species' responses to vegetation and soil types, as well as human footprint in Alberta. These methods have been applied to hundreds of species; this profile provides summary results for one.

[Read More](#) ▾

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# Biodiversity Browser

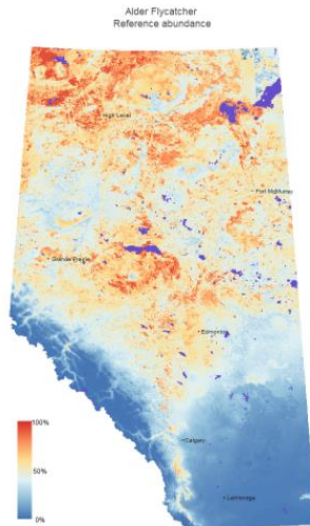


Methods ▾

Limitations ▾

Interpreting the Maps ▾

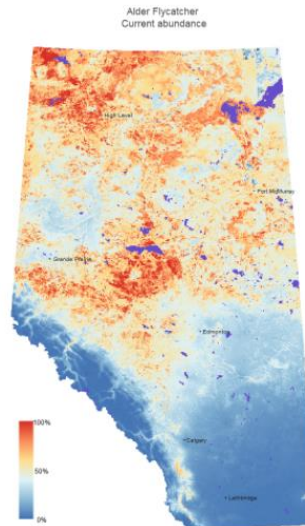
## Reference Conditions



[Download GIS Data](#)

- The reference condition shows the predicted relative abundance of the Alder Flycatcher after all human footprint had been backfilled based on native vegetation in the surrounding area.

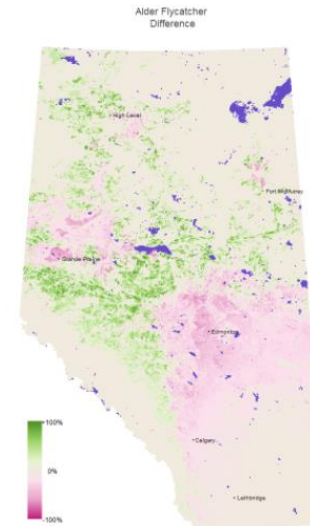
## Current Conditions



[Download GIS Data](#)

- The current condition is the predicted relative abundance of the Alder Flycatcher taking current human footprint (circa 2012) into account.

## Difference Conditions



[Download GIS Data](#)

- The Alder Flycatcher is predicted to be more abundant than expected across much of its range compared to reference conditions in the Boreal and Foothills Natural Regions. In the Parkland Natural Region, it is predicted to have lower abundance.

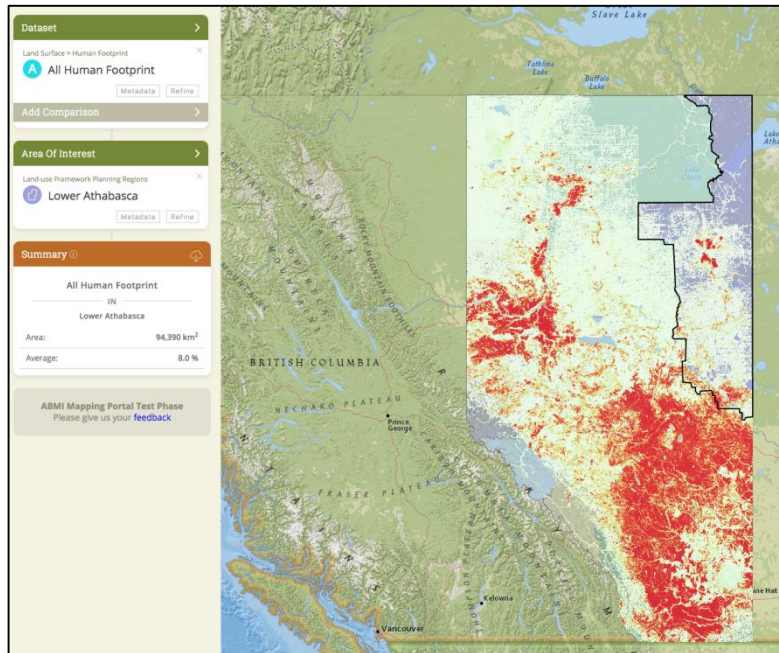
[Batch Download GIS Data](#)

[View in Mapping Portal](#)

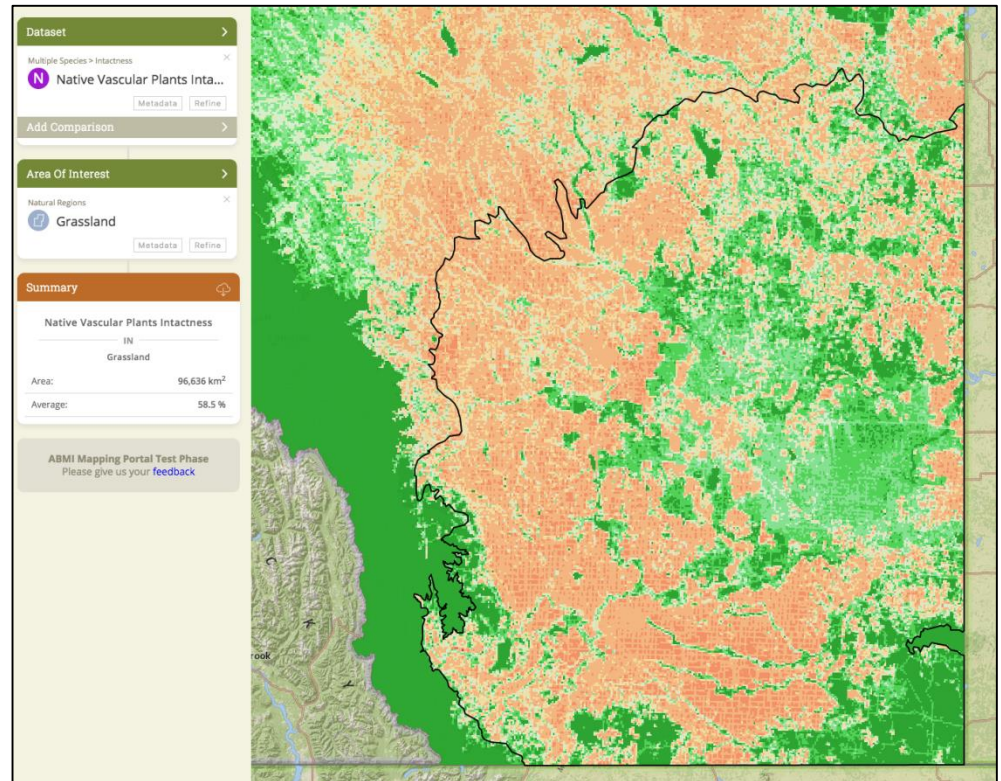
# Mapping Portal 1.0 (current)



## *Interactive Web-based map viewer*



Human Footprint Intensity in the  
Lower Athabasca Region



Native Vascular Plant Intactness in  
the Grassland Natural Region

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# Enhancing Mapping Portal Functionality



*Driven by stakeholder feedback (needs assessment workshops fall 2017)*

Users want to:

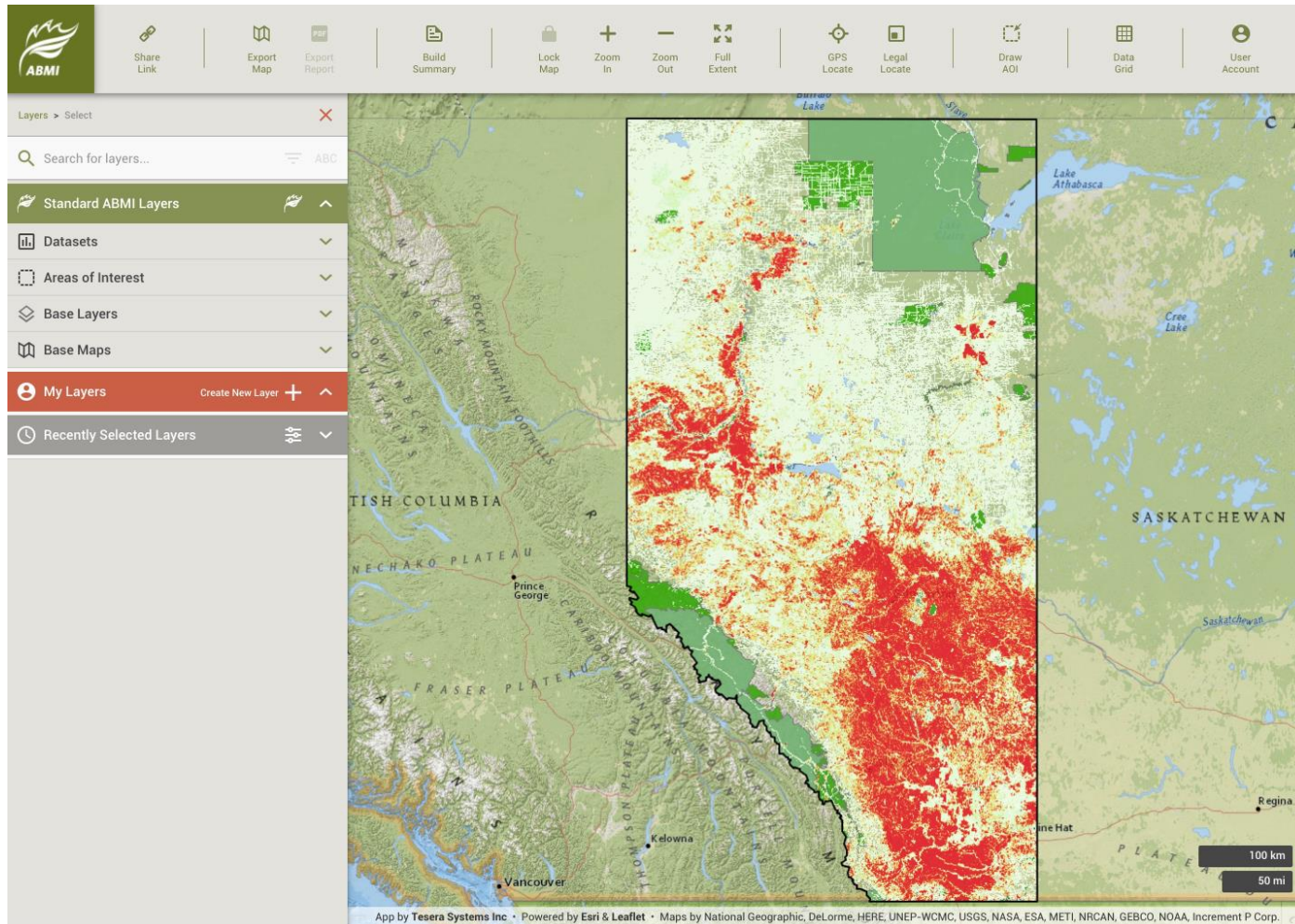
- Load and manipulate multiple layers
- Identify custom areas of interest
- Share data between ABMI platforms
- Upload user data

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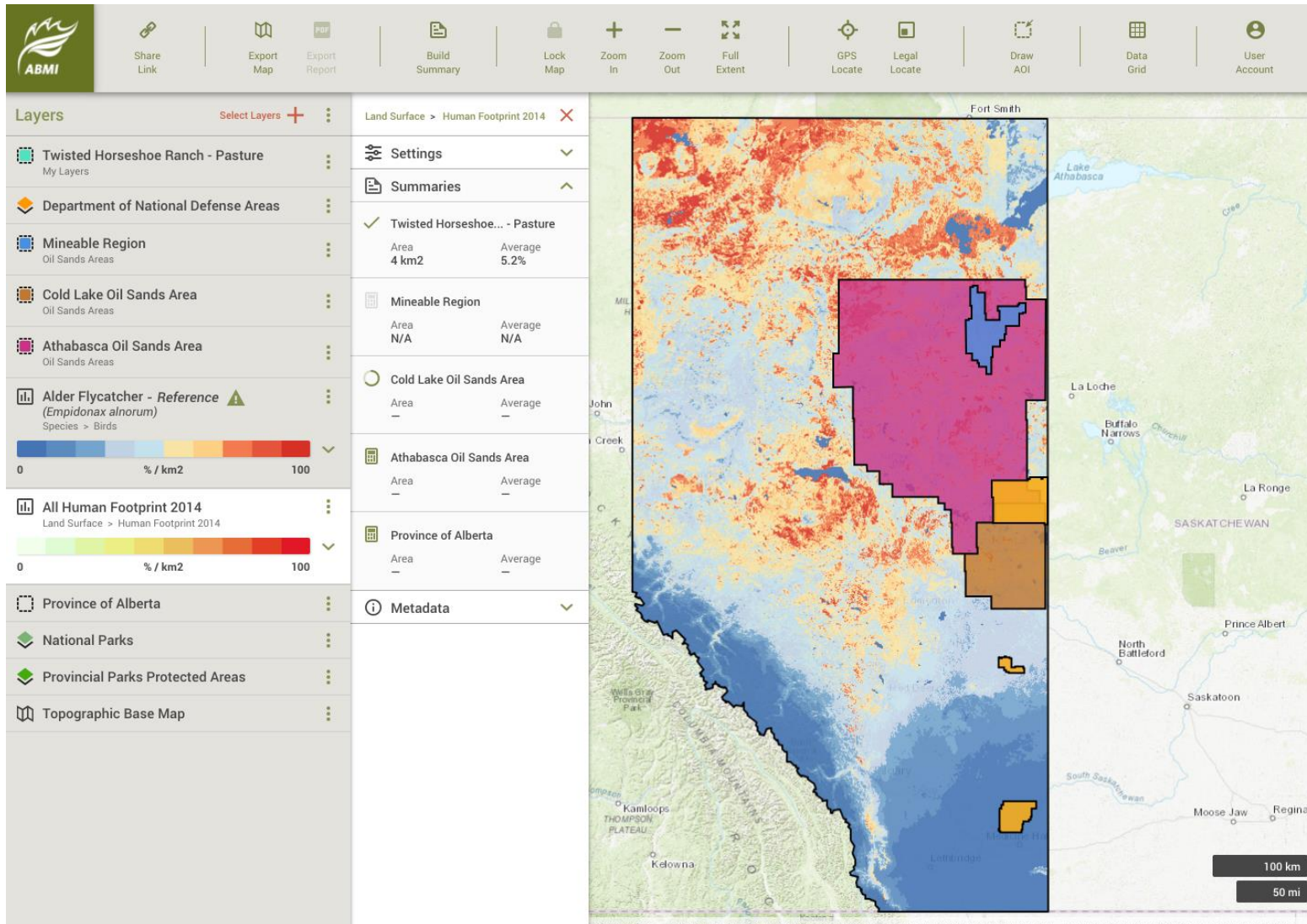


# Mapping Portal 2.0 (implementation underway)



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# Mapping Portal 2.0 (implementation underway)





# Supporting Data Integration



- WildTrax is a web-based environmental sensor network (and the platform to support it)
- Supports third-party projects and initiatives
- Facilitates data storage, management, and processing



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# WildTrax

## Alberta Biodiversity – See, Hear, Know



WildTrax

LOG IN

SENSORS PROJECTS ABOUT US RESOURCES CONTACT SIGN UP

Explore Your Backyard Alberta

What is Wildtrax?

Environmental sensors are increasingly being used to monitor environmental and ecological attributes across broad geographic scales such as monitoring changes to biodiversity. These sensors allow for the automated collection of data over extended periods of time resulting in the accumulation of large amounts of valuable data. We offer an online tool for the discovery, access, use and distribution of such data. [Learn more](#)

Log in to View Sensors Sign Up to Contribute

WildTrax

LOG IN

SENSORS PROJECTS ABOUT US RESOURCES CONTACT SIGN UP

Explore our data

Discover where our sensors have been deployed. Click on a map marker to find out more about a sensor deployment.

ALL ARIS REMOTE CAMERAS

Map showing sensor deployment locations across Western Canada (British Columbia, Alberta, Saskatchewan).

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# WildTrax

## Alberta Biodiversity – See, Hear, Know



### Project Management

- Project sponsors can identify project managers
- Managers can add/delete projects
- Managers can add/delete/manage taggers/transcribers

The screenshot displays the WildTrax web application interface. At the top, there's a navigation bar with the WildTrax logo, a welcome message 'WELCOME CORRINA | LOGOUT', and a dropdown menu 'INTRODUCTION'. A 'MY PROJECT' button is visible in the top right. The main content area shows a modal window titled 'Add User to Project'. This modal has two tabs: 'UPDATE PROJECT' and 'USER ASSIGNMENT'. The 'USER ASSIGNMENT' tab is active, showing a list of 'AVAILABLE USERS' with a dropdown menu and two buttons: 'Add User' and 'Add Admin'. To the right of the modal, there's a section titled 'ASSIGNED USERS' listing several users: 'guest@blah.com', 'rachel.buxton@colostate.edu', 'Alex MacPhail (Manager)', 'Jeff Allen', and 'Mike Packer (Manager)'. Below the modal, there's a table with columns: 'YEAR', 'PROJECT NAME', 'DUE DATE', 'STATUS', 'TOTAL TASKS', 'COMPLETED TASKS', and 'DETAILS'. The table contains one record for the year '2018' with the project name 'ABMI Demo', status 'Active', 28 total tasks, and 1 completed task. A 'Filter by' dropdown is set to 'ABMI Demo', and a 'Select status' dropdown is set to 'Active'. The table footer indicates 'One record'.

YEAR	PROJECT NAME	DUE DATE	STATUS	TOTAL TASKS	COMPLETED TASKS	DETAILS
2018	ABMI Demo		Active	28	1	



## Data Analysis and Processing

### Wildlife Cameras

Home / ARUs / AIEES-Wetland Project /

**ABMI-0272** [Edit](#) [Filter](#) [Search](#) [Select All](#) [Update All Untagged](#)

Date & Time: 2016-06-21 05:34:00

[Hide Number Panel](#)

1 2 3 4 ... 150

1 Start/setup | VNA | VNA

2 Start/setup | VNA | VNA

3 Start/setup | VNA | VNA

4 Start/setup | VNA | VNA

5 Untagged

6 Untagged

7 Untagged

8 Untagged

9 Untagged

Camera Capture

### ARUs

Home / ARUs / AIEES-Wetland Project /

**ABMI-0272-NE\_20160621\_053400** [Complete](#) [Next Task](#)

Date & Time: 2016-06-21 05:34:00

[SPECTROGRAMS](#) [MAPS & PHOTOS](#)

**LEFT**

**RIGHT**

0.0s of 3m

Sam Smith Samantha Smithsonian Sam Brith

**Info**

Open

Lock Delete

REPLICATE 1 ASSIGNMENT 50

TRANSCRIBER Choose an Transcriber

METHOD 14 | 2 min w fixed time

COMBO 0 VOLUME Level

RAIN Level

WIND Level

INDUSTRY Level

NOISE Level

AUDIO QUALITY

**Logged Sounds**

SPECIES	INDIVIDUAL	CONFIDENCE	START	DURATION	AC	VT
Light wind	Sam Smith	50%	0.5s	7.9s	-	-
Light wind	Sam Smith	50%	0.5s	7.9s	-	-
Light wind	Sam Smith	50%	0.5s	7.9s	-	-

bioacoustic unit





# WildTrax

## *Alberta Biodiversity – See, Hear, Know*



### ***Benefits of WildTrax Cameras***

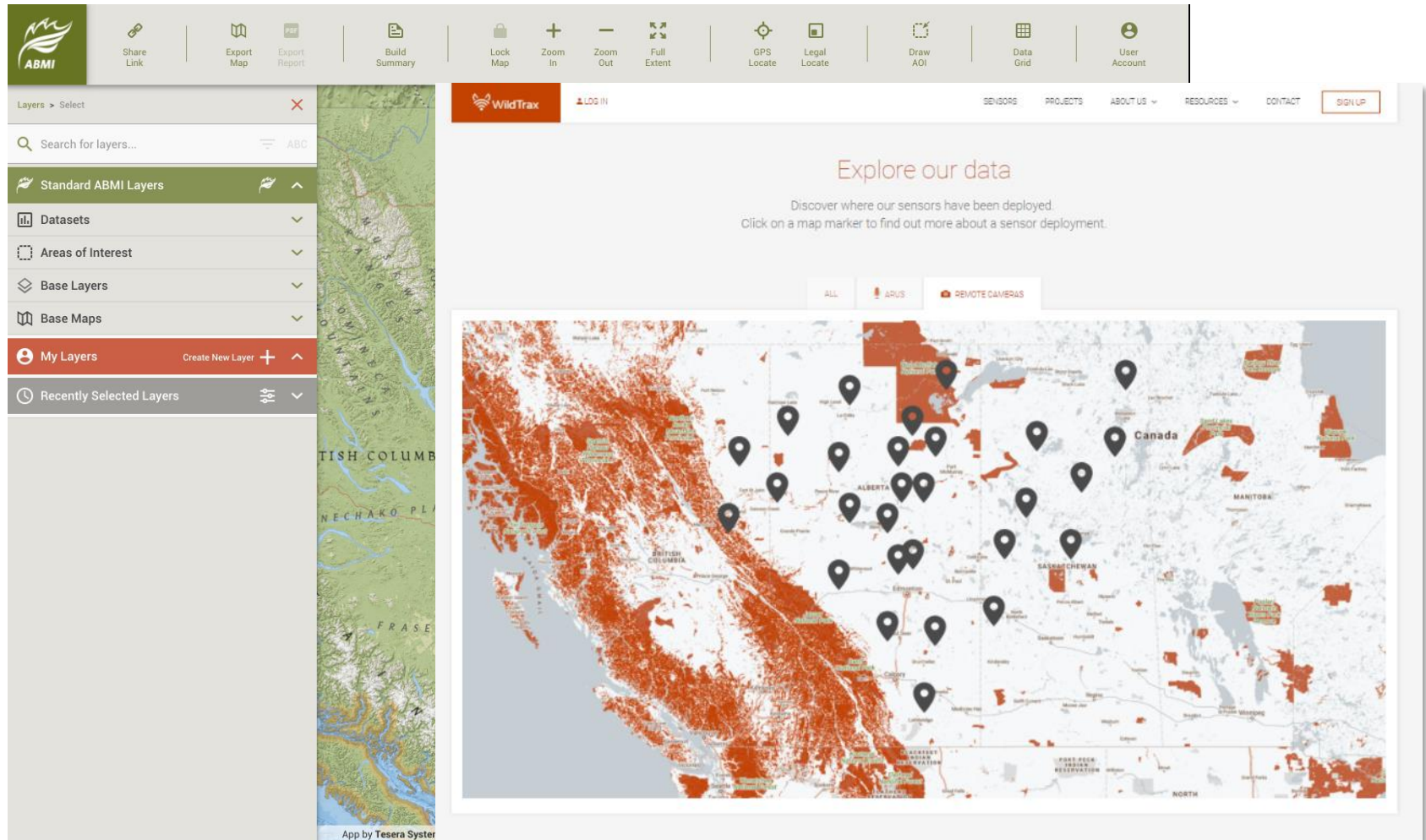
- Reduced per project tagging time (estimated at 90% reduction)
  - Pre-processing provided by autotaggers
  - Context dependent tagging: subsampling within a series
  - Simultaneous multiple-image tagging
- Reduced error rate through two-stage QAQC process
- Easy data download (step-by-step process)



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# WildTrax Data Visualization (Platform Integration)



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# Custom Reporting (In Development)



*Driven by stakeholder feedback (needs assessment workshops fall 2017)*

Users want to:

- Obtain basic summary information for their AOI (e.g. % human footprint)
- Understand where high value biodiversity areas to:
  - Guide development away from these areas
  - Prioritize areas for reclamation
- Run custom queries (e.g. Identify the region that meets the following criteria: seismic line density is  $<0.5 \text{ km/km}^2$ , high quality caribou habitat, high relative abundance of rusty blackbird)
- Generate an associated pdf and/or shapefile

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# Biodiversity Data Query Tool (In Development)



**ABMI BIODIVERSITY DATA QUERY TOOL****BASIC SUMMARIES****HIGH VALUE BIODIVERSITY AREAS****USER-DEFINED QUERIES**

## WELCOME TO THE ABMI BIODIVERSITY DATA QUERY TOOL

Introduction: What is it the BDQT and how to use it.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

**BASIC SUMMARIES**

How to Use This Tool

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

**HIGH VALUE BIODIVERSITY AREAS**

How to Use This Tool

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

**USER-DEFINED QUERIES**

How to Use This Tool

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

# Biodiversity Data Query Tool (In Development)



ABMI BIODIVERSITY DATA QUERY TOOL

BASIC SUMMARIESHIGH VALUE BIODIVERSITY AREASUSER-DEFINED QUERIES

BASIC SUMMARIES

SELECT FROM A PRE-DEFINED AREA

OR DEFINE AN AREA

SELECT FILE

UPLOAD

SELECT METRICS

✓ Example Checklist Item

✓ Example Checklist Item

✓ Example Checklist Item

○ Example Checklist Item

○ Example Checklist Item

RUN QUERY

Show apps

ADD TO CART

Continue Query >

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# Biodiversity Data Query Tool (In Development)



ABMI BIODIVERSITY DATA QUERY TOOL

BASIC SUMMARIESHIGH VALUE BIODIVERSITY AREASUSER-DEFINED QUERIES

BASIC SUMMARIES

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RUN QUERY

Show apps

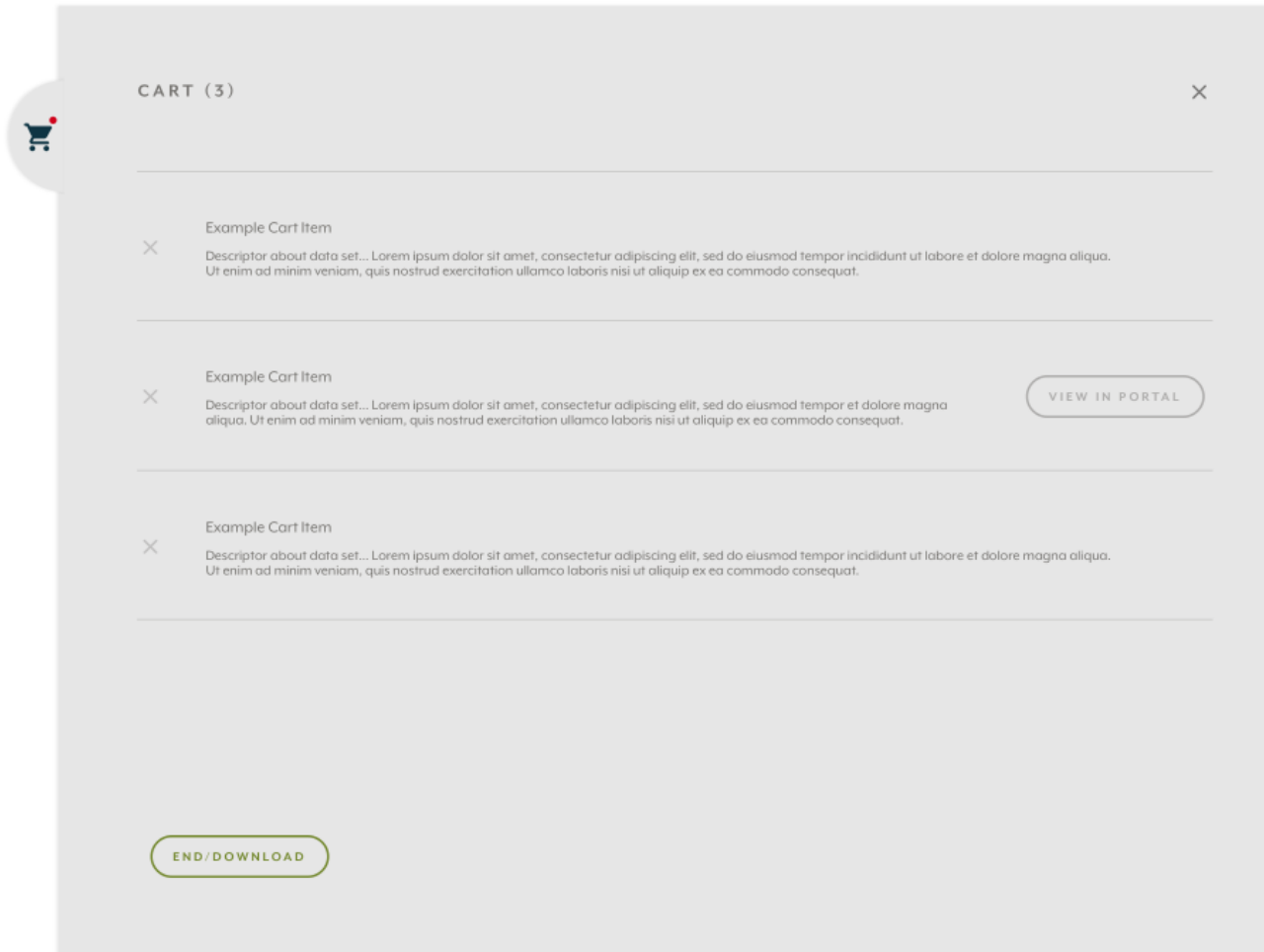
ADD TO CART

Continue Query >

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# Biodiversity Data Query Tool (In Development)



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# User-defined Queries



*Backend Database Under Construction; User Interface in Development*

Example:

Show me areas where seismic line density is  $<0.5 \text{ km/km}^2$  and overlaps caribou range and rusty blackbird habitat:

Query:

```
select o.lineardensity, o.geom  
from onesqkm_39attr_aoi o  
inner join aoi on o.aoiid = aoi.objectid  
where aoi.type = 'caribou'  
and o.lineardensity < 0.0005
```

Total query runtime: 1 secs 11 msec.  
54065 rows affected.

When records are consolidated with ST\_Collect:

```
select ST_Collect(o.geom)  
from onesqkm_39attr_aoi o  
inner join aoi on o.aoiid = aoi.objectid  
where aoi.type = 'caribou'  
and o.lineardensity < 0.0005
```

Total query runtime: 1 secs 168 msec.  
1 rows affected.

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# How can we make ABMI data work for you?

