

Alberta Biodiversity Monitoring Institute
ANNUAL REPORT

12/13





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“Thanks to our Board of Directors



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& our Partners and Sponsors.”

- | | | | |
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Message from the Executive Director

Although the ABMI is not yet fully funded, we are making terrific progress toward becoming fully operational on a provincial scale. The past year has been our best financially with a total budget of approximately \$11 M: \$9 M targeted to the core program and \$2 M on applications.

The ABMI continued to expand its operations throughout Alberta. In total, we successfully collected data at 164 core ABMI sites, 16 special project sites (with Alberta-Pacific Forest Industries), 15 off-grid sites, and 129 winter tracking sites. Furthermore, we ramped up our remote sensing efforts to increase the efficiency and accuracy of how we monitor human footprint and habitat provincially.

Over the past year, the ABMI has also been successful in growing its applications business. We achieved this by understanding and delivering value to our existing and emerging stakeholders, a task critical to the success of any business. Application projects demonstrate the use of ABMI data and analyses to address land use management challenges. Last year, we initiated projects on rare plants and mammals, climate change adaptation, ecosystem services, and reclamation. In addition we established a caribou monitoring unit to address monitoring needs for this high profile species.

The ABMI underwent an administrative change last year. The ABMI was advised that it was no longer able to use the financial management systems of the University of Alberta. As a result, we began developing our own financial management and accounting systems to ensure the effective operations of the organization.

Simultaneous with the growth and evolution of the ABMI, the Government of Alberta's commitment to establish a

world-class environmental monitoring system has been maturing. Over the past year, considerable progress has been made in the planning, governance, and design of this monitoring system. Legislation was passed this year to enable the generation and collection of funds to finance the new provincial program. New legislation to formally establish the provincial monitoring entity is expected in the fall of 2013. The passage of this bill will herald a new era of environmental monitoring and management for the province of Alberta. The ABMI is excited to contribute to these developments and to be an integral part of the new monitoring system.

Certainly, the ABMI is well positioned to serve the needs of Alberta. We have a proven track record in biodiversity monitoring and the broad support of industry, government and environmental groups; we continue to produce scientifically credible products and services. The coming months will continue to be full of challenges. However, we look forward to working with both levels of government to make the new provincial monitoring system a success.

I want to share my sincere appreciation to those dedicated individuals who have invested time, energy, and resources into the development and operations of our Institute. Your leadership has been critical, and we thank you for your continued support.



Kirk Andries
Executive Director,
Alberta Biodiversity Monitoring Institute



“We had a great year.”

WE SUCCESSFULLY COLLECTED DATA AT:

164
CORE ABMI SITES

16
SPECIAL PROJECT SITES

15
OFF-GRID SITES

129
WINTER TRACKING SITES

Photo Credit: Stephanie Luider

Reports from the Centres

Alberta is home to more than 80,000 species including plants, animals, arthropods, bacteria, fungi, and algae.

The ABMI painstakingly collects, analyzes and reports on the status of more than 2000 of these species. To do this, the ABMI surveys 1656 site locations systematically located – every 20 km – across the province.

At each location, we collect data on both terrestrial and aquatic ecosystems. We also track changes in habitat structure and human development.

Over the years the ABMI's values have not changed: we deliver scientifically credible, value-neutral, independent, and publicly accessible data. Our purpose is to inform government, industry, environmental communities, First Nations and the public about what is happening in our environment so that we can make informed decisions and plan for the future.

80,000
SPECIES IN ALBERTA

Photo Credit: Glenn Bartley

Executive Office

The Executive Office keeps the Institute on track by ensuring that the program is being run efficiently and effectively. The Executive function works directly with the Board of Directors and liaises with our stakeholders. During 2012-13, we ensured deliverables met Board expectations, and we achieved the following results:

FINANCIAL RESOURCES

While the ABMI has been successful in securing funding for its annual operations (over \$11 M for the 2012/13 fiscal year), we continue to require funding that will allow us to grow to full capacity. This long-term challenge remains our number one priority.

PROVINCIAL MONITORING SYSTEM

The ABMI has been key to the development of Alberta's new provincial monitoring system. We successfully collected revenues for the Joint Oil Sands Monitoring (JOSM) initiative and have supported JOSM as committees were established and planning/reporting requirements emerged. We have also been working cooperatively with the Province as they develop their administrative systems for the provincial monitoring program.

PARTNER AGREEMENTS

The ABMI has been able to take advantage of the University of Alberta's finance and administration systems since 2007 but began the process of moving to self-managed finance and administration systems effective April 1, 2013. In preparation for this transition, the ABMI drafted new master agreements directly with its two other partners (Alberta Innovates Technology Futures and the Royal Alberta Museum),

began developing its own finance and administration policies and procedures, and worked with the University of Alberta to develop an updated Affiliated Institute Agreement. We also continued to work with a variety of partners to ensure we have sufficient space for all aspects of our operations.

COMMUNICATION AND OUTREACH

We continued to communicate with a variety of audiences, including government, industry, and other stakeholder groups, to emphasize the importance of the ABMI as part of Alberta's resource management systems.

OVERVIEW OF THE ABMI OPERATING LOCATIONS



Monitoring Centre

sites) at 15 terrestrial sites in the Parkland Natural Region and 15 wetland sites across northern Alberta. Off-grid data is used to develop scientifically credible reference conditions and biodiversity indices.

Field activity in 2012–13 focused on the Northeast and Northwest parts of the province, along with southern Alberta. Core data was collected at 54 sites in the NW, 58 sites in the NE and 52 sites in the far south. Complementary ABMI data was collected at 16 terrestrial locations for Alberta-Pacific Forest Industries. This complementary data collection activity was funded by the company and is being used to support its fine-scale effectiveness monitoring program.

Finally, we successfully prepared for the 2013 field season by selecting 200 new core sites, 45 new off-grid sites, securing equipment and developing operating plans. Our 2013 field operations are concentrated in northern Alberta including the Joint Oil Sands Monitoring (JOSM) region as well as in the prairies.

The Monitoring Centre is responsible for the complex system of biodiversity data collection throughout the province. As the primary function of the ABMI, data collection activities receive the dominant share of program resources. In the field, we implement spring and summer terrestrial surveys, summer wetland surveys, and winter mammal tracking surveys. The Monitoring Centre is also responsible for remote sensing data collection, processing, specimen sorting, and data verification. During the 2012–13 season we achieved the following results:

PROJECT MANAGEMENT

The Alberta Innovates Technology Futures facility in Vegreville provided the infrastructure for the Monitoring Centre to operate, including office, lab, and equipment storage space. In addition to our full-time and contract staff, we managed 38 part-time, seasonal staff to support data-collection and specimen-sorting activities throughout the summer. We continued to develop relationships with partnering organizations to support field-data-collection activities; Alberta Sustainable Resource Development (SRD) provided access to accommodations and helicopter fuel in remote locations while the University of Alberta provided access to their field station for summer work along with dormitories for August's sorting work in Edmonton. Numerous other post-secondary institutions provide access to dormitories for summer field staff accommodations.

DATA COLLECTION

2012/13 was a challenging season as the Monitoring Centre increased capacity by approximately 30%. Field work was again conducted from two regional bases of operation, one at the University of Alberta's Meanook Biological Research Station and the other staged out of Medicine Hat College's Brooks campus. Dry conditions in northwestern Alberta resulted in the large Hay/Zama fire that destroyed over 100,000 ha. This fire delayed the collection of summer data at some sites, while others were affected by the fire shortly after data collection.

Despite these operational challenges, we successfully collected data at 164 core terrestrial and wetland sites and 129 winter sites. The Monitoring Centre also successfully collected off-grid data (one-time surveys of specific types of

CORE DATA WAS COLLECTED AT:

54
SITES IN THE NORTHWEST

58
SITES IN THE NORTHEAST

52
SITES IN THE FAR SOUTH

Photo Credit: Sonya Poller

Processing Centre

The ABMI Processing Centre, located at the Royal Alberta Museum, plays a pivotal role in generating the Institute's species-level data while archiving ABMI specimens for future verification and research. The museum's highly specialized team of taxonomists and technicians provides the Institute's support network of laboratory, taxonomic, and curatorial expertise.

In 2012, the ABMI Processing Centre sorted, identified and archived 94,676 specimens and transcribed 283.5 hours of bird recordings — a workload increase of about 49% over the previous year. Since 2007, when the program became operational, this Centre has processed 355,215 specimens and transcribed more than 1100 hours of bird recordings.

In 2012, the ABMI Processing Centre recorded many species that were new to Alberta, new to Canada, and, in some cases, even new to science. In fact, this year marks the first newly discovered mite species to be named after the ABMI. *Oribatella abmi* (Behan-Pelletier & Walter, 2012) was collected in 2011 from site 1438 in southeastern Alberta, but made its formal scientific debut in the journal *Zootaxa* on August 21, 2012. In addition, the ABMI Processing Centre continues to make significant advances in developing taxonomic techniques (e.g., thin-layer chromatography, DNA barcoding, juvenile aquatic insect rearing), producing user-friendly taxonomic tools (e.g., reference collections, interactive species keys), and training new cadres of taxonomic specialists.



Science Centre

The Science Centre is responsible for maintaining and continuously improving scientific excellence in all areas of the ABMI and works closely with other ABMI Centres to develop new or improved data collection protocols, apply quality control, and conduct scientific audits. We are also responsible for advancing data analysis and interpretation so that the ABMI's communication products meet the evolving needs of decision makers. Our integrated team ensures that the scientific credibility of the Institute remains world class. During 2012–13 we achieved the following results:

REVISE FIELD DATA COLLECTION PROTOCOLS

We worked with the Application Centre and the University of Alberta to evaluate new monitoring protocols for birds, mammals and vascular plants. Remote cameras and audio recorders were tested as new ways to survey mammals, birds, and possibly amphibians. Protocols to integrate rare plant sampling into the ABMI were tested. Protocols for ecosite determination and grazing assessment that were developed for the prairies and parkland during 2011-12 were implemented during 2012-13.

REVISE LANDSCAPE INFORMATION

The 2007 map of human footprint throughout Alberta was verified and posted on the ABMI website. This footprint map was also updated to 2010 conditions. Two maps of native vegetation in Alberta were created: the first which shows native vegetation that presently exists, and the second with human footprint “backfilled” to show the native vegetation that was expected to have been present historically. To highlight change in human footprint during the past decade, human footprint was mapped at yearly intervals based on a grid of 1656 plots distributed systematically throughout Alberta. Wetlands and detailed vegetation are also being mapped every 5 years in these systematic plots.

DEVELOP THE BIODIVERSITY INDEX

During the past year, biodiversity intactness analyses were revised and results updated for mammals, birds, vascular plants, mosses, lichens and mites. As a consequence of determining how species abundance and biodiversity intactness differ among habitats and in relation to human development, spatial variation in species abundance and intactness can now be predicted throughout Alberta. Intactness for species has been predicted for all quarter-sections in Alberta, and can be summarized for areas as small as a quarter-section or as large as Land-Use Framework regions. We continue to explore analytical methods to assess trends over time in species abundance and biodiversity intactness. In addition, we are exploring analytical methods to measure biodiversity intactness at specific sites.

ENHANCE SCIENTIFIC PROFILE

During the past year we published 6 papers on ABMI research in peer reviewed journals, presented results at 5 international conferences, produced numerous ABMI reports, and participated in dozens of management workshops throughout Alberta. In addition, 8 research collaboration projects (3 of these spanning multiple years) were initiated.



Information Centre

The Information Centre is the hub of communication and information at the ABMI. This includes managing data and access to information products, developing publications, building stakeholder relationships, and ensuring the ABMI has access to private and public lands to conduct surveys. The Information Centre team expanded this year to include GIS and Access Coordinators. During 2012–13 we achieved the following results:

OUTREACH & PUBLICATIONS

“The Status of Landbirds in Alberta’s Boreal Plains Ecozone” report is the ABMI’s latest report. The Boreal Plains represents 58% of Alberta’s total land area and covers a vast expanse of northern Alberta including the communities of High Level, Fort McMurray, Peace River, Grande Prairie, and Cold Lake, and extending south, past Rocky Mountain House. Released September 26th, 2012, this report assessed the status of 74 landbird species and found them to be, on average, 80% intact. Alberta’s Boreal Plains Ecozone also encompasses nearly all of Canada’s oil sands, which are one of the largest deposits of hydrocarbons in the world. “The Status of Landbirds” report profiled the status of 74 common landbirds in Alberta’s oil sands region and found them to be, on average, 85% intact. The release of this report sets the stage for assessing trends in landbird species across the forests of northern Alberta including in the oil sands.

We continued to build relationships with stakeholders and engaged in extensive consultations and discussion forums in

preparation for reports detailing the status of biodiversity in the following areas:

- Athabasca Oil Sands
- Provincial Human Footprint
- Greater Oil Sands Region
- Lower Peace Planning Region
- Upper Peace Planning Region
- North Saskatchewan Planning Region
- Lower Athabasca Planning Region
- Foothills Natural Region

In December 2012, the 2nd ABMI Internal Forum was held for all ABMI staff members. The event provided an opportunity for information sharing, presentations and a discussion forum on key issues, namely internal communication strategies.

SURVEY SITE ACCESS

The ABMI successfully achieved access to approximately 180 survey sites (an increase of almost 28% over the previous year), 95 of which were established on private land or grazing dispositions in the White Zone. Two hundred and seventy information packages were distributed to landowners and disposition holders, providing them with information about the ABMI’s findings on their lands. The ABMI worked closely with numerous representatives from national, provincial and municipal jurisdictions for the purpose of negotiating long-term access to all of Alberta’s land bases. To support the 2013 field season, the ABMI required access to 200 permanent and 30 off-grid survey sites. This work was 80% complete by March 31, 2013.

WEBSITE AND DATA ACCESSIBILITY

The ABMI website (www.abmi.ca) has been regularly updated and maintained to reflect our core value of accessibility to information. More information on biodiversity applications is currently available, along with new product and protocol updates, raw data, and peer-reviewed publications. Database modifications to accommodate 2012 terrestrial, wetland, and remote sensing data represented the most significant work on our database this season. The database was also restructured

for efficient data loading and to host terrestrial and wetland off-grid data. New standard operating procedures were developed to streamline database-loading procedures and improve data quality assurance.

STREAMLINING FIELD DATA COLLECTION AND MANAGEMENT

In 2012-2013 we continued to develop custom software for electronic field data collection using field computers. Feedback from the 2012 field work was incorporated and improvements were made in preparation for full-scale field computer deployment in both terrestrial and aquatic protocols during the 2013 field season. As of May 2013, we are on track to collect 100% of terrestrial and wetland field data electronically. In addition, we aim to improve various collection and processing tasks, such as electronic data submissions to the ABMI Processing Centre and electronic sample tracking.

Application Centre

The Application Centre leads the development of products and services that go beyond the core business of the ABMI and supports a wide range of environmental planning and management needs. To do this, the ABMI draws on the strength of its wide interdisciplinary and cross-sectoral network to create teams of collaborators able to tackle the complex land management challenges facing Alberta. These projects demonstrate why the data collected by ABMI is so valuable: it supports a host of applications ranging from ecosystem service assessment to climate change adaptation and more.

In 2012/13, new funding commitments allowed the ABMI to launch two new projects, which expand the ABMI's capacity to demonstrate the value of its monitoring system to environmental management. Importantly, we have been able to extend our reach by collaborating with people and organizations that excel in research, technology development, and community engagement. Committed sponsors and gifted collaborators have led to unprecedented opportunities for ABMI to make a difference.

ECOLOGICAL MONITORING COMMITTEE FOR THE LOWER ATHABASCA

ABMI's Regional Monitoring Coordinator facilitated another successful year of projects under the EMCLA banner. Participation in the EMCLA is now a regulatory requirement for many of Alberta's oil sands operators, resulting in more coordinated monitoring of rare plants and animals, including caribou. Much of this monitoring is truly innovative:

- » By combining the latest statistical modelling approaches with original data from over 100 new sites in northeastern Alberta, the EMCLA has established a new standard for monitoring rare plants.

- » Vast improvements in data collection and worker safety have been made by deploying acoustic recording units to monitor animals that make sounds, especially those that vocalize at night such as owls, amphibians, and many marsh birds.
- » Careful analysis of movement data from radio-collared caribou in relation to industrial features on ABMI's new Human Footprint Map points to new policies for above-ground pipelines and other features that may affect the viability of caribou populations.

ECOSYSTEM SERVICE ASSESSMENT FOR ENVIRONMENTAL INNOVATION AND COMPETITIVENESS

This new multi-year project is developing spatially-explicit computer models to map the value of ecosystem services such as water filtration, forage production, pollination, and carbon storage. The project builds on analytical methods developed by the ABMI to condense complex environmental data into a simple yet credible metric, the Biodiversity Intactness Index. It also extends the reach of ABMI beyond biodiversity to include a suite of ecosystem services that are important to Albertans,

yet are often undervalued. Core funding for this project is provided by Alberta Innovates Bio Solutions and the Alberta Livestock and Meat Agency.

BIODIVERSITY MANAGEMENT AND CLIMATE CHANGE ADAPTATION

The goal of this project is to develop essential knowledge and tools to support the management of Alberta's biodiversity in a changing climate. Key achievements in 2012/13 include:

- » Initial assessments of the vulnerability of more than 125 of Alberta's native species to climate change
- » Initiating a resiliency-based action planning strategy to support climate change adaptation by local communities
- » Identifying extreme rainfall as key driver of nest success of the Burrowing Owl
- » Beginning field trials to examine the fitness of plant species, such as the Northern Blazing Star, planted outside their current climate conditions

Core funding for this project is provided by the Climate Change and Emissions Management Corporation.

ECOLOGICAL RECOVERY OF INDUSTRIAL SITES

The purpose of this project is to develop an integrated, scientifically robust and financially sustainable monitoring program to enable the assessment of ecological recovery of physical, chemical, and biological indicators at reclaimed industrial sites across Alberta. ABMI's current monitoring system provides an unprecedented opportunity to gauge the recovery of vegetation and soil against a library of reference information obtained on the systematic grid. This project is sponsored by Alberta Environment and Sustainable Resource Development and the Alberta Upstream Petroleum Research Fund.

Summarized Financial Statements

OF THE ALBERTA BIODIVERSITY MONITORING INSTITUTE

A photograph of a lynx sitting in a snowy, wooded area. The lynx is the central focus, looking directly at the camera. The background is a mix of snow and brown, dry vegetation. Overlaid on the image are various decorative elements: a large, stylized leaf shape in the center, a smaller leaf shape to the left, and several small circles of varying sizes scattered throughout. A small insect is visible in the upper left corner. The overall aesthetic is natural and artistic.

Photo Credit: Wayne Lynch

Report of the Independent Auditor on the Summary Financial Statements

To the Board of Directors
Alberta Biodiversity Monitoring Institute

The accompanying summary financial statements, which comprise the summary statement of financial position as at March 31, 2013, the summary statements of operations and net assets for the year then ended, are derived from the audited financial statements of Alberta Biodiversity Monitoring Institute for the year ended March 31, 2013. We expressed an unqualified opinion on those financial statements in our report dated September 12, 2013. Those financial statements, and the summary financial statements, do not reflect the effects of events that occurred subsequent to the date of our report on those financial statements.

The summary financial statements do not contain all the disclosures required by Canadian Accounting Standards for Not-for-Profit Organizations. Reading the summary financial statements, therefore, is not a substitute for reading the audited financial statements of Alberta Biodiversity Monitoring Institute.

Management's Responsibility for the Summary Financial Statements

Management is responsible for the preparation of a summary of the audited financial statements in accordance with Canadian Audit Standard (CAS) 810.

Auditor's Responsibility

Our responsibility is to express an opinion on the summary financial statements based on our procedures, which were conducted in accordance with Canadian Audit Standard (CAS) 810, "Engagements to Report on Summary Financial Statements."

Opinion

In our opinion, the summary financial statements derived from the audited financial statements of Alberta Biodiversity Monitoring Institute for the year ended March 31, 2013 are a fair summary of those financial statements, in accordance with Canadian Audit Standard (CAS) 810.

Coyle & Company
Chartered Accountants

September 12, 2013
Edmonton, Alberta

ALBERTA BIODIVERSITY MONITORING INSTITUTE

Summarized Financial Statements

As at and for the year ended March 31, 2013

	2013	2012
RESULTS FROM OPERATIONS		
REVENUE		
Government of Alberta	\$ 5,305,000	\$ 5,205,000
Government of Canada	-	105,000
Private sector	4,190,445	2,896,000
Interest income	18,364	24,514
	9,513,809	8,230,514
STAFFING		
Executive office	331,240	222,202
Science centre	484,992	401,915
Information centre	680,711	419,172
Date collection centre	1,759,177	1,353,420
Lab Processing and Identification centre	506,372	416,871
Application centre	409,253	219,164
	4,171,745	3,032,744
PROGRAM EXPENDITURES		
Executive office	107,577	95,228
Science centre	366,960	361,170
Information centre	193,687	215,242
Data Collection centre	3,547,777	2,609,800
Lab Processing and Identification centre	175,180	212,865
Application centre	1,512,845	303,484
Expense recoveries	(45,000)	(50,000)
	5,859,026	3,747,789
	(516,962)	1,449,981
EXCESS (DEFICIENCY) OF REVENUE OVER PROGRAM EXPENDITURES		
NET ASSETS - BEGINNING OF YEAR	2,292,294	842,313
NET ASSETS - END OF YEAR	\$ 1,775,332	\$ 2,292,294
FINANCIAL POSITION		
ASSETS		
Cash	\$ 623,056	\$ 279,118
Advances to the University of Alberta	100,278	727,492
Accounts receivable	178,670	1,592,850
Prepaid expenses	1,177,720	-
Short term investment	-	500,000
	\$ 2,079,724	\$ 3,099,460
LIABILITIES AND FUND BALANCES		
Accounts payable and accrued liabilities	\$ 64,392	\$ 507,166
Deferred revenue	240,000	300,000
NET ASSETS		
General Fund	1,775,332	2,292,294
	\$ 2,079,724	\$ 3,099,460

ON BEHALF OF THE BOARD

 Director
 Director



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