

The Ecological Monitoring Committee for the Lower Athabasca

3-Year Vision and 2014 Work Plan

Purpose

Initiated in 2010, the Ecological Monitoring Committee for the Lower Athabasca (EMCLA) focuses on improving the quality and consistency of monitoring that takes place to fulfill specific wildlife and biodiversity clauses in *Environmental Protection and Enhancement Act* (EPEA) approvals for oil sands developments.

The EMCLA enhances the value of regulated monitoring activities by moving beyond the focus on individual development projects to an integrated regional monitoring program. Key priorities include:

- Helping to fill gaps in existing regional monitoring systems
- Measurement harmonization including coordinating data collection amongst multiple development projects to ensure common protocols are applied
- Protocol development and standardization for rare/unusual species
- Ensuring the key principles of transparency, scientific credibility, and relevance form the basis of new monitoring programs

This program will significantly increase the amount of credible scientific information available to support sound environmental management and the selection of suitable monitoring protocols.

Structure and Operations

Members of the EMCLA include companies active in the oil sands industry in the Lower Athabasca Planning Region (LAPR), Alberta Environment and Sustainable Resource Development, and Environment Canada. Both the Alberta Biodiversity Monitoring Institute (ABMI) and Canada's Oil Sands Innovation Alliance (COSIA) are represented in a non-voting capacity to provide scientific and technical support. The ABMI's Regional Monitoring Coordinator oversees the Committee's administrative functions and serves as Project Manager for the EMCLA's activities.

Most EMCLA projects begin with a scoping year to determine the feasibility of monitoring a given species or aspect of a species. Each project operates independently with a specialized project team guided by project advisors drawn from academia, government, and the private sector that are considered experts in their field. Expert review is a cornerstone of the monitoring designs, monitoring activities, and all other scientific work overseen by the EMCLA.

3-Year Vision (2014-2016):

The EMCLA's aim is that the regional wildlife and biodiversity monitoring required as part of EPEA approvals held by oil sands operators is carried out in a coordinated, efficient way to produce valuable knowledge for wildlife and biodiversity management. The EMCLA selects specific EPEA approval wildlife and biodiversity clauses and develops projects that improve the quality of monitoring conducted to fulfill these clauses. The EMCLA will not

conduct projects related to clauses that are being coordinated by other groups (e.g. WHEC – the Wildlife Habitat Connectivity and Effectiveness Project) or that are largely local in nature (e.g. nest box monitoring), but instead focuses its resources on clauses that benefit from regional coordination, in keeping with regulatory requirements.

Prior to the development of the EMCLA, individual oil sands operators created wildlife and biodiversity plans for their lease sites and complied with other wildlife monitoring clauses set out in their *EPEA* approvals, often with little coordination between operators. This resulted in information that fulfills government requirements, but cannot readily be used to address questions relating to long-term trends in species abundance and distribution or develop suitable management options, because the methods used and data collected are not comparable.

Through individual monitoring and research projects, the EMCLA will ensure that specific wildlife and biodiversity monitoring carried out under *EPEA* approval clauses is coordinated between operators using standardized protocols, and provides regional context (off-lease monitoring) as necessary.

Relationship to the Joint Oil Sands Monitoring Program

In February 2012, the governments of Alberta and Canada released the *Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring* (JOSM). The plan outlines a path forward for a coordinated, government-led monitoring program for air, water, land, and biodiversity in the oil sands, with an annual budget of up to \$50 million dollars (at full implementation in 2015).

The work of the EMCLA now falls within the scope of the Terrestrial Biodiversity and Habitat Monitoring component of the JOSM. This has caused a fundamental shift in the EMCLA's operations. Previously, the EMCLA operated largely independently, taking input from its members and from regulatory/approvals officials. Now, the EMCLA's work is being integrated with the larger JOSM monitoring system. Therefore, the JOSM program will provide the EMCLA with its annual operating budget and program direction.

The JOSM system has established a governance structure that involves joint leadership provided by the federal and provincial governments beginning at the component level and continuing up to provincial and federal Assistant Deputy Ministers (ADMs). For the Terrestrial Biodiversity and Habitat Monitoring component, committees have been established to ensure effective management, program delivery, and stakeholder involvement. Representatives from the EMCLA actively contribute to these groups on a regular basis and will continue to do so to maximize integration and effectiveness of the JOSM biodiversity program. Through these groups, the EMCLA has been identified as mainly fulfilling the role of protocol development and standardization in the JOSM system. This role may evolve as the JOSM program matures.

While the EMCLA now operates as part of the JOSM, we propose that its existing governance and operations framework remain intact. Participation and support of the EMCLA is required under member companies' *EPEA* approvals, and as such, it should

continue to operate until such time as the approvals are altered to reflect the new JOSM program.

For 2014, the EMCLA plans to move ahead with two existing projects. The EMCLA plans to put any further work on the Caribou Project for 2014 on hold until range planning is complete. We will continue to be involved and contribute to integration with the rest of the JOSM system. The EMCLA is prepared to adapt so that our work can be part of a successful transition to a single, holistic monitoring system for the oil sands.

2014 Work Plan:

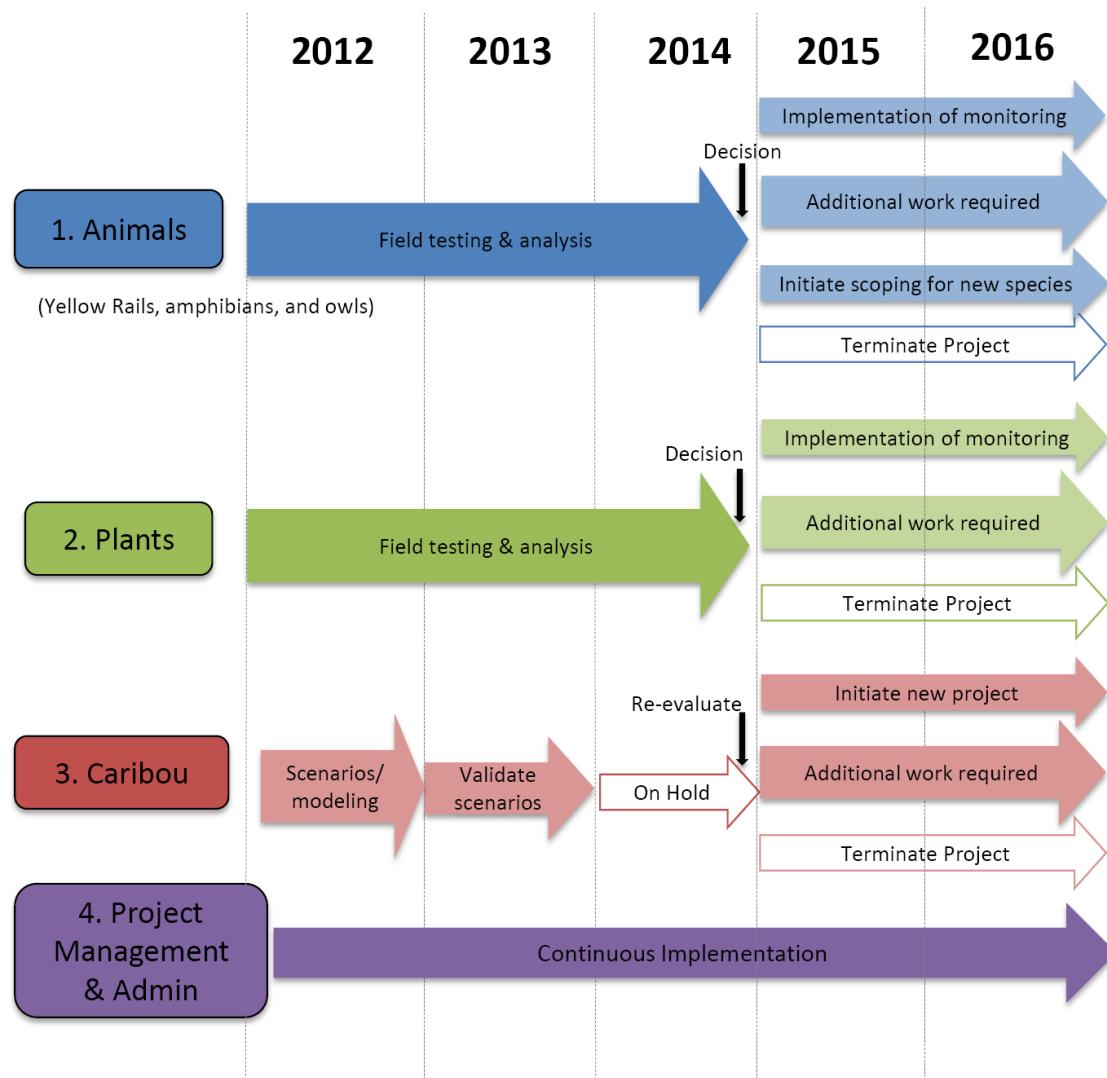
In 2014, the EMCLA proposes to continue two of our existing projects, while putting a third project on hold (see Figure 1):

- 1) Rare Animal Species: A Program for Monitoring Select Wildlife Species in the Lower Athabasca Planning Region of Alberta
- 2) Rare Plants: Developing a systematic rare plant monitoring system for the Lower Athabasca Planning Region of Alberta
- 3) Caribou Project: On hold pending finalization of caribou range plans

Details of each of these projects are provided on pages 5-8. In addition, the EMCLA will continue to support a Project Management function, with support for the Regional Monitoring Coordinator, supplied by ABMI.

Priorities were evaluated in 2013, and it was determined that no new projects would be initiated at this time. Discussions and evaluations of priorities will be on-going within JOSM and EMCLA.

The EMCLA 2014 budget is being allocated through JOSM. Budgeting and planning is currently underway within JOSM, and confirmation of the 2014 budget is expected by the end of October. As such, all EMCLA plans remain tentative pending budget confirmation.

Figure 1. Timeline for all EMCLA projects (2012- 2016)

I) Rare Animal Species: A Program for Monitoring Select Wildlife Species in the Lower Athabasca Planning Region of Alberta

The goal of this project is to design effective monitoring programs for species that are at risk or threatened in the LAPR. Monitoring programs should provide data that can improve management and help to ensure the sustainability of populations in this region. In 2011, the EMCLA selected the following three species or groups of species for preliminary assessment:

- Yellow Rail and other marsh birds
- Amphibians
- Owls

Following the 2011 assessment of existing data, protocols, and monitoring systems, a pilot study was initiated in 2012. Pilot fieldwork focused on:

- Methodological comparisons of traditional survey methods and automated acoustic recorders to see if recorders could provide a more cost-effective and logically feasible way of monitoring the target species in northeastern Alberta.
- A direct study of the effects of energy sector footprint on the target species using a matched impact-control design at 6-10 forested or wetland sites within 29 study areas ranging from Cold Lake to Fort McKay.

Analysis of the 2012 field season data indicated that the acoustic recorders were able to detect all 3 groups of interest. However, further work was required to understand optimal layout and placement of recorders to monitor these species effectively, in particular the Yellow Rail. In addition, many questions remained on the best way to distribute the recorders to maximize efficiency and increase the number of species detected.

Based on these findings, a second year of fieldwork was undertaken in 2013 with a focus on:

- Deploying recorders to predicted Yellow Rail habitat to evaluate detection levels and habitat preferences
- Testing the feasibility of integrating recording protocols with other monitoring programs (e.g. ABMI, oil sands company leases).
- Evaluation of core monitoring and biological questions related to species of interest

Analysis of the 2013 data is currently underway. Initial review indicates a great deal of improvement in Yellow Rail detection levels, and a strong potential for integration of Automated Recording Units (ARU's) into other existing monitoring systems (ARUs were tested on ABMI's grid, in on-lease company monitoring programs, and in a community based monitoring program). The EMCLA plans to focus future work on refinement of protocols for different species/groups of species and improving processing and data management protocols.

2014 Scope of Work

Building on the work accomplished in 2011-13, the project team will:

- Refine recommendations for implementation, including cost of implementation
- Collaborate with JOSM to determine potential delivery agent for implementation
- Further develop information management systems and technology to help deal with the massive quantity of data produced from recordings
- Contribute towards the creation of a central facility for storage & processing of recordings into an online and freely accessible database
- Compare human based vs. computer based sample processing

- Fieldwork in 2014 to address:
 - The potential for including playback with recorders
 - Differences in “hearing” distances in different types of environments
 - Remaining data collection needs to address current ecological questions of interest. Specifically, identify & validate habitat strata that would optimize sampling for Canadian Toad and Yellow Rail based on adaptive sampling as described for rare plants
 - Testing 3-D triangulation methods with multiple recorders to position exact locations of individual calling animals

2) Rare Plants: Developing a systematic rare plant monitoring system for the Lower Athabasca Planning Region of Alberta

The goal of this program is to design and implement an informative and effective rare plant monitoring program for the LAPR. To achieve this, the project team has adopted an adaptive sampling approach whereby existing plant location data are used to model the likely distributions of rare plant species. Those models are then used to inform (target) new survey sites. Information provided from these new surveys are then used to test and refine rare plant models and the ecological correlates of rarity to better understand their causes. The adaptive approach has previously been shown to be more cost-effective than traditional random or systematic sampling.

In 2012-13, the project team:

- Used existing rare plant location data for the Lower Athabasca region to develop predictive habitat models for target rare vascular plant species. The resulting models were used to generate sampling sites for 2012 surveys.
- Designed a sampling protocol to use at targeted survey sites.
- Conducted two seasons of fieldwork to sample rare plants from McClelland Lake in the north to the Bonnyville and Cold Lake areas in the south. At each plot an exhaustive (time-unlimited) vascular plant survey was completed and when rare plants were found they were documented.
- To better understand rarity, the time to detection (time accumulation curves) was recorded for each species detected in the plot.
- Initiated a methodological comparison with ABMI plots. This included an initial year of fieldwork at ABMI sites in 2013 using both the ABMI and EMCLA protocols on the same sites on the same day.

Data entry and analysis from 2012 and 2013 is ongoing and will continue into 2014. We were able to collect data at over 350 plots with information on over 70 rare species. Additional opportunities to refine and improve the monitoring design will be explored in 2014.

2014 Scope of Work

Building on the work accomplished in 2012-13, the project team will:

- Finalize analysis of the 2012-13 field data.

- Submit a manuscript for publication on the adaptive sampling model
- Use new rare plant occurrences to re-run predictive rare plant models. These will in turn be used as a basis for selecting (targeting) sampling sites for the 2014 field season.
- Develop new mapping methods and tools that identify potential rare plant occurrences (e.g. constraint mapping tools that can be used in Environmental Impact Assessmentss etc.).
- Examine in more detail the patterns of diversity (species accumulation curves) and rarity by habitat including estimates of the time required to detect the rarest group of species in a plot.
- Plan and execute a third season of fieldwork (June-August 2014). The purpose of the 2013 field season will be to:
 - Evaluate methodological differences between the protocols used from this project and standard ABMI vascular plant protocols.
 - Work with industry & consultants for pre-disturbance assessments for selected projects
 - Explore methods to effectively monitor specific populations of selected rare plant species (e.g. population trend monitoring).

3) Caribou: On-hold pending finalization of caribou range plans

In 2011-13, the EMCLA's caribou project focused on the relationship between caribou movement patterns and *in situ* oil sands extraction projects. In 2011, the project reviewed and summarized the current state-of-knowledge regarding the influence of linear features on caribou movement in northeastern Alberta and developed a spatially explicit model of range-scale caribou movements. The major challenge for this project was a lack of empirical caribou data in the vicinity of *in situ* oil sands projects, partly because these projects are not very extensive. However, it is anticipated that these projects will expand rapidly in the coming decades. To address this challenge, in 2012, the project focused on two types of simulations: 1) to forecast *in situ* project expansion and 2) to simulate how the proliferation of *in situ* projects may influence caribou movements and behavior. A workshop was held on August 15, 2012 with government and industry in attendance to help set parameters for simulating *in situ* expansion. These simulations were finished in late 2012, and 2013 work has been focused on validating the predictions using existing camera and winter tracking data. This work is expected to be completed by late 2013 with the final step being submission of a manuscript for publication.

2014 Scope of Work

Alberta Environment and Sustainable Resource Development is responsible for developing range plans for each caribou herd, with A La Peche/Little Smoky and Cold Lake being the priority herds. The EMCLA proposes to defer further caribou project activities until the Cold Lake range plan is published. The EMCLA will re-evaluate its caribou project annually, striving to align its activities with strategic priorities identified by range plans for caribou herds in the Lower Athabasca Region.

4) Project Management: Coordination, administration, and management of EMCLA activities

The ABMI's Regional Monitoring Coordinator will serve as the coordinator for the EMCLA. The Regional Monitoring Coordinator's duties for the EMCLA include:

- Administrative functions: organize EMCLA meetings; maintain proper communication with EMCLA members and committee representatives, and the financial management of EMCLA funds.
- Project Management: The Coordinator serves as the project manager for the EMCLA's projects. This includes managing contracts, project budgets, supporting communication between the EMCLA and the project team, and ensuring that projects are delivered on time and on budget.
- Field Logistics and Operations: The Coordinator will assist with organizing fieldwork, in collaboration with project staff.
- Coordination: helps to ensure that the EMCLA's activities are coordinated with those of the ABMI, government, and other organizations. This includes developing communication materials on behalf of the EMCLA. When necessary, the coordinator may represent the EMCLA at relevant workshops and conferences.