# From Mammals to Mites: Biodiversity Management Frameworks for Alberta's Land Use Planning Regions

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CPANS Conference

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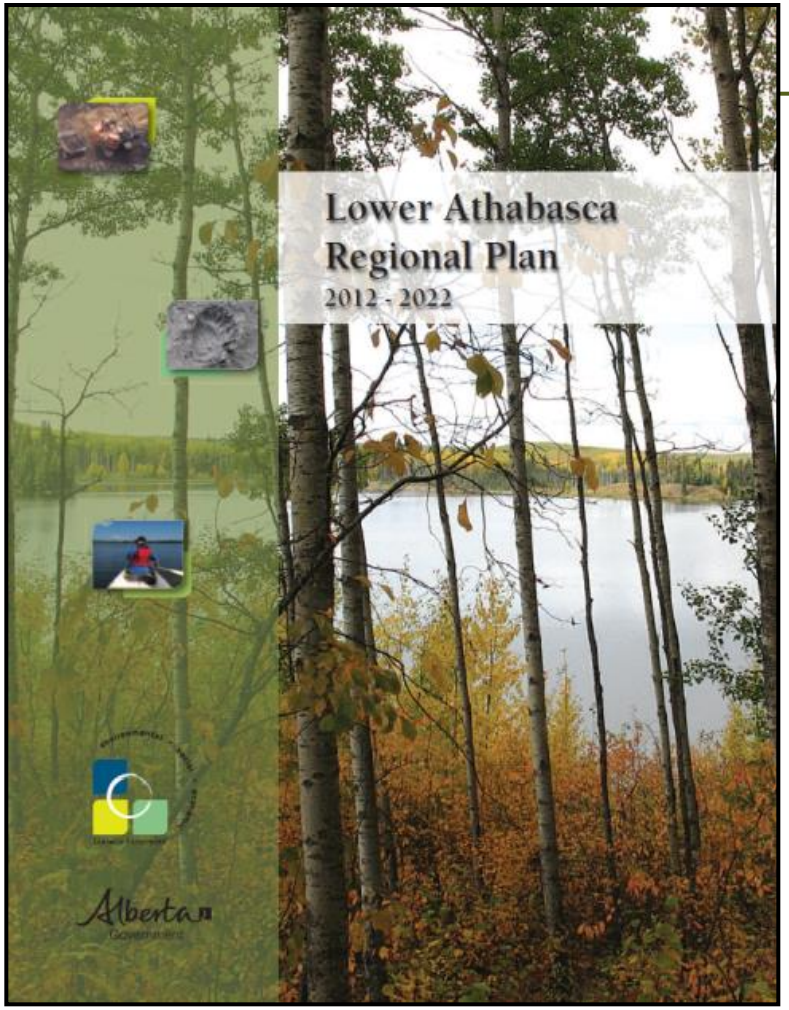
# Outline

- Overview: Biodiversity Management Framework
  - Context
  - Indicators and Triggers
  - Monitoring, Management Response and Reporting
  - Next Steps

# Lower Athabasca Regional Plan (2012)

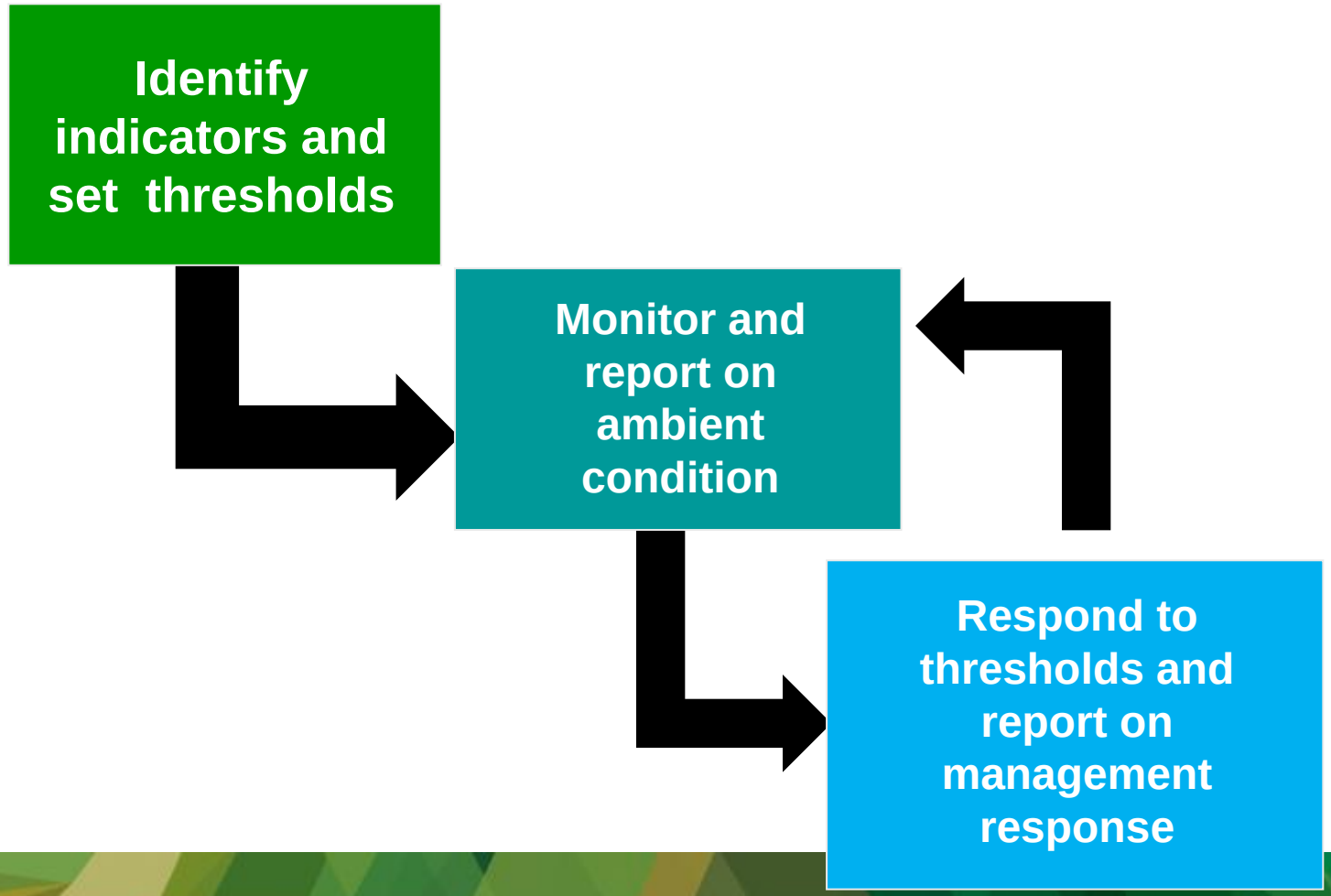



## Strategies include:

- Improving integration of industrial activities
- **Managing effects of development on air, water, land and biodiversity**
- Encouraging timely and progressive reclamation
- Creating new conservation areas
- Strengthening infrastructure planning
- Providing new recreation and tourism opportunities
- Inclusion of Aboriginal peoples in land-use planning

# Environmental Management Frameworks

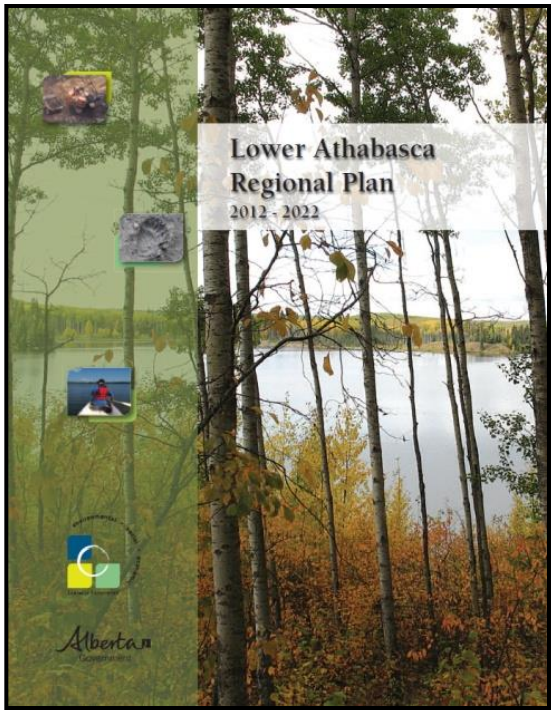
*Key Components & Processes*



# Lower Athabasca Region Biodiversity Management Framework

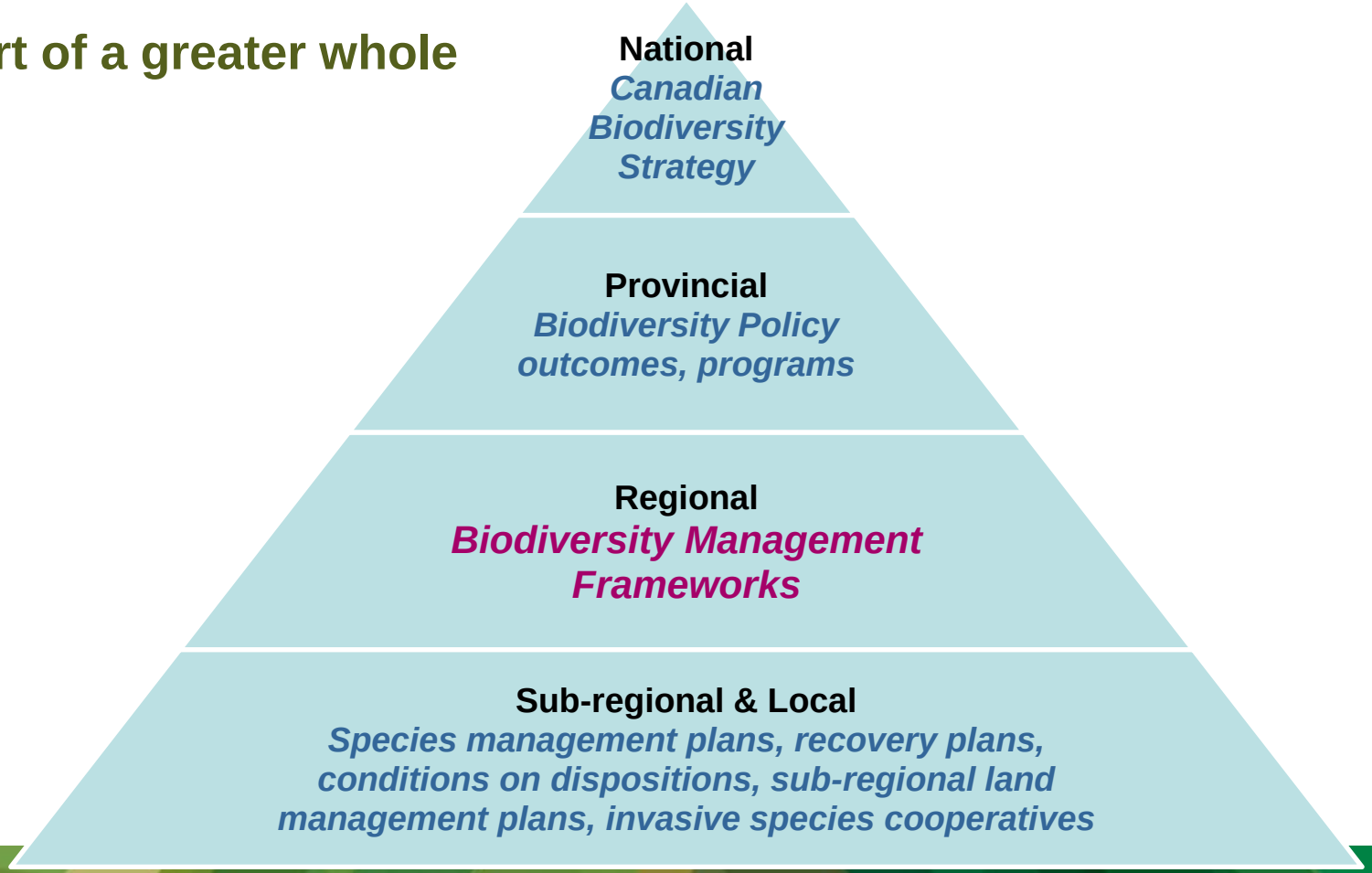
- **Intended to meet Outcome and Objectives established in Regional Plans**
  - **Outcome 3: Landscapes are managed to maintain ecosystem function and biodiversity**

- **A Biodiversity Management Framework is designed to manage *regional* cumulative effects on biodiversity**



# Lower Athabasca Region Biodiversity Management Framework

## Part of a greater whole



# Biodiversity Management Framework

## Objectives

***In abbreviated form...***

- **Maintain biodiversity and ecosystem function**
- **Avoid new 'species at risk' through proactive biodiversity management**
- **Incorporate and address feedback from stakeholders, First Nations and Metis**
- **Support continued economic and community growth**

# Biodiversity Management Framework

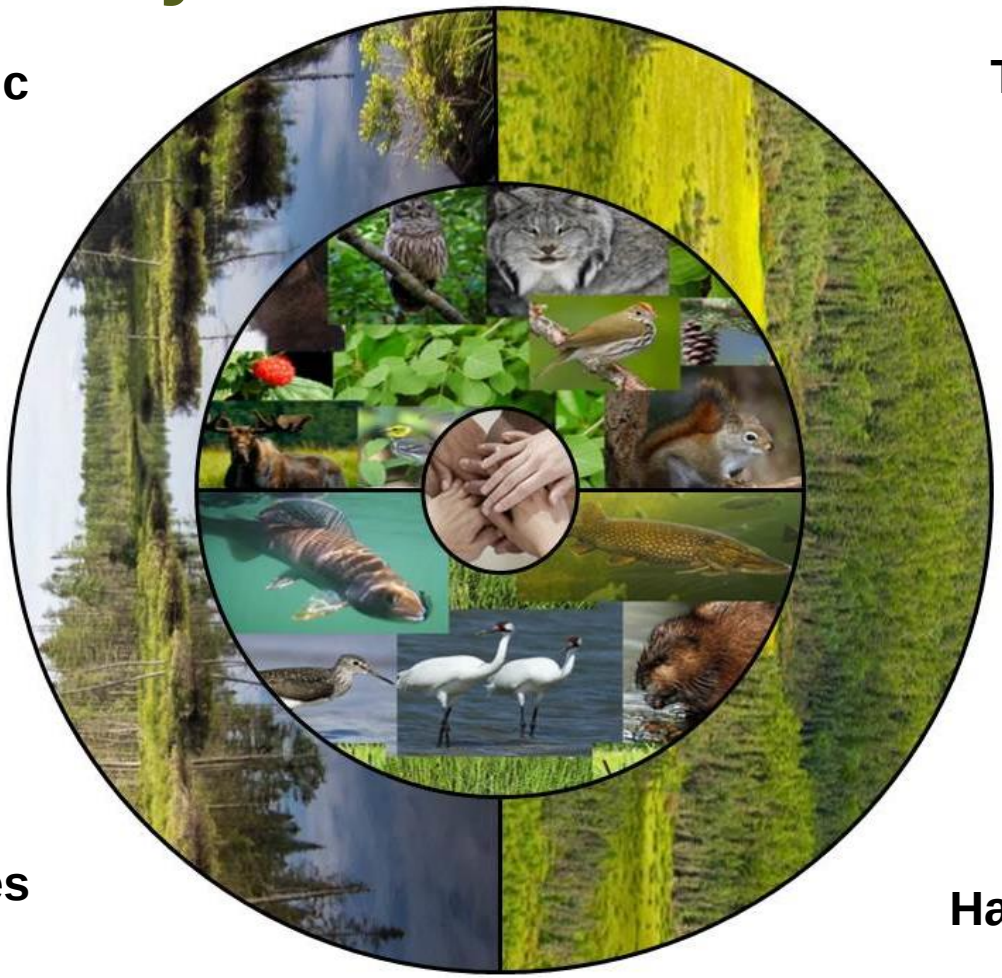
*Indicators and Triggers*

- **Indicators**
  - Measurable variables that represent valued components of biodiversity health
  - Provide information on overall regional biodiversity condition
  - Regional indicators represent key species, habitats and landscapes important to sustaining regional ecosystem health
- **Triggers**
  - Each indicator has trrigger values established under the framework
  - Triggers are used to assess the condition of indicators and our success in meeting regional biodiversity objectives
  - Crossing triggers identifies the need for a management response and possible management action

# Biodiversity Indicators

Aquatic

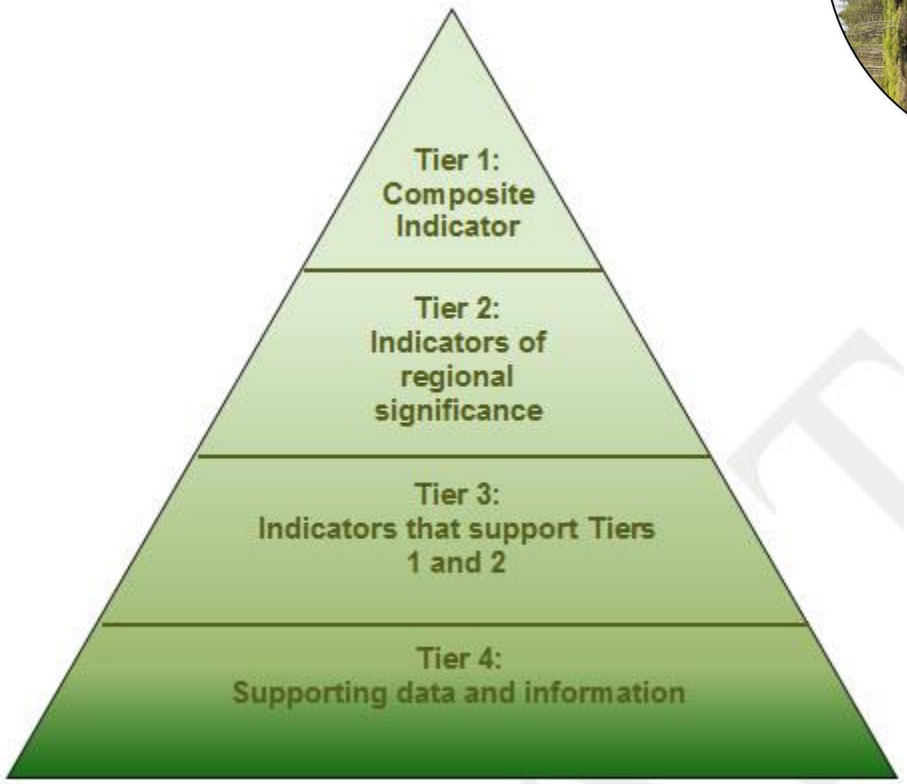
Terrestrial



Species

Habitats

# Biodiversity Indicators



# Biodiversity Triggers

## *Approach to setting triggers*

- The development of regional scale biodiversity triggers is a **new concept** for Alberta
- A **risk-based approach** is being proposed to set triggers – compare current condition to reference condition
  - The evaluation or risk is guided by the approach used by the International Union for the Conservation of Nature (IUCN) to define risk to species and ecosystems
  - The triggers are further informed by knowledge specific to each indicator, such as historical trends and anticipated stressors

# Biodiversity Monitoring

*Types of Information*

- **Geospatial Imagery:**
  - **For example:**
    - **Terrestrial and Aquatic Native Cover**
    - **Old Forest**
    - **Interior Habitat**

- **Field Monitoring Programs:**
  - **For example:**
    - **Terrestrial and Aquatic Intactness**
    - **Non-native vascular plants**
    - **Arctic Grayling**

***The BMF will use the best available data***

# Human Footprint

**- ABMI 2010 Wall-to-Wall Human Footprint**

- Human footprint on the landscape is a driver of biological change
- Many indicators are calculated based on human footprint:

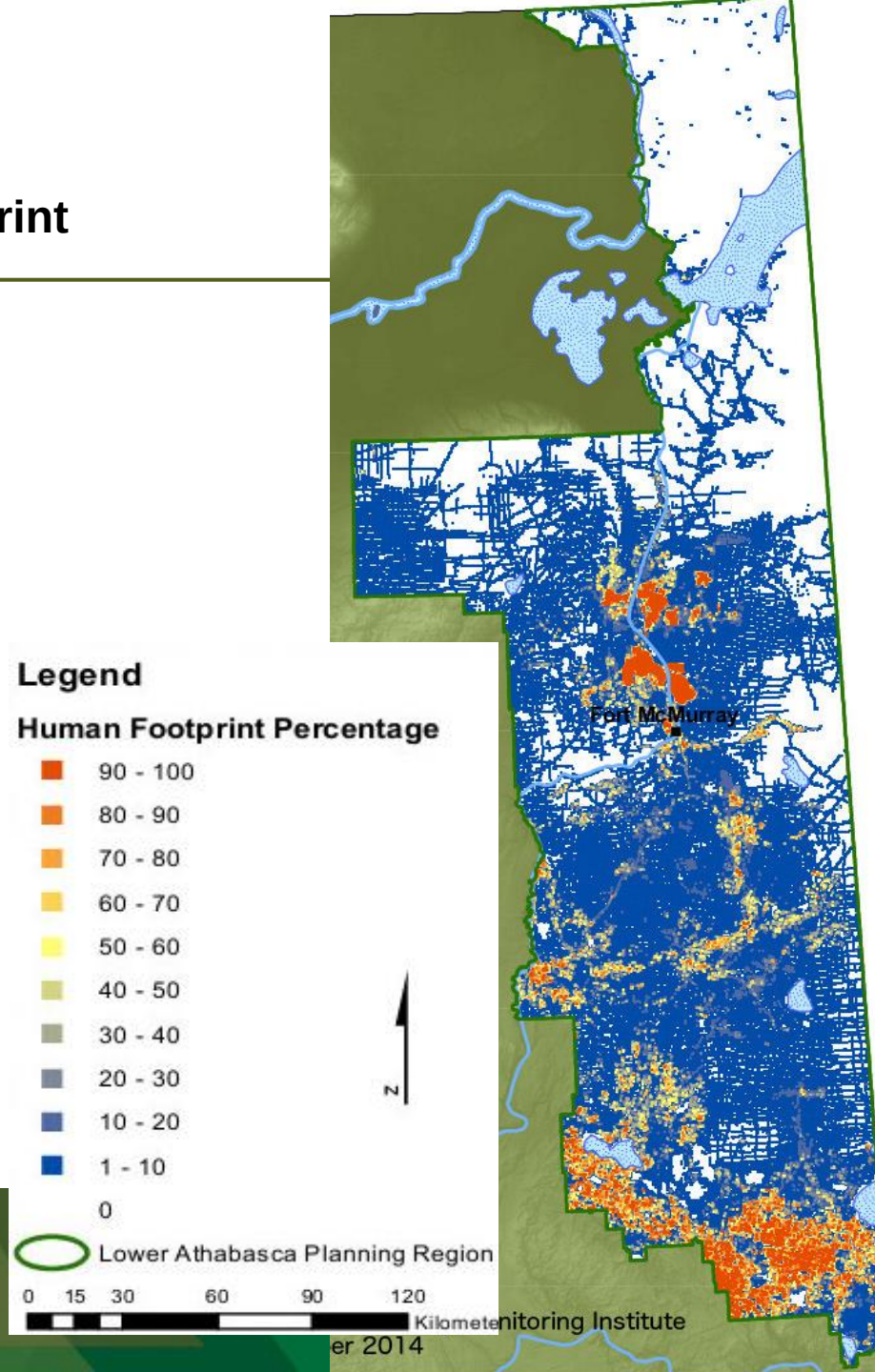
**Tier 1:**

- Native cover (terrestrial/ aquatic)
- Intactness (terrestrial / wetland)

**Tier 2:**

- Interior habitat

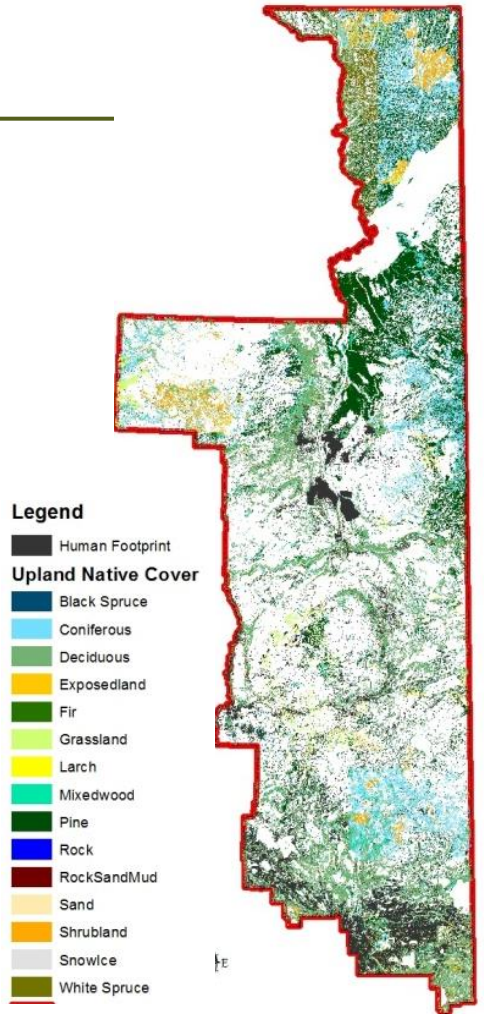
Approximately 7% of the Lower Athabasca Region is disturbed by human footprint



# Tier 1 Terrestrial Habitat:

## Total amount of terrestrial native cover

- **Total amount of undisturbed terrestrial habitat in the region**
  - Upland areas undisturbed by human footprint
- **Provides a clear picture of the amount of habitat being lost or converted**
- **Composite indicator composed of broad vegetation types**
  - For example: Changes in the amount of deciduous, mixedwood and coniferous forest habitat in the region (Tier 3)



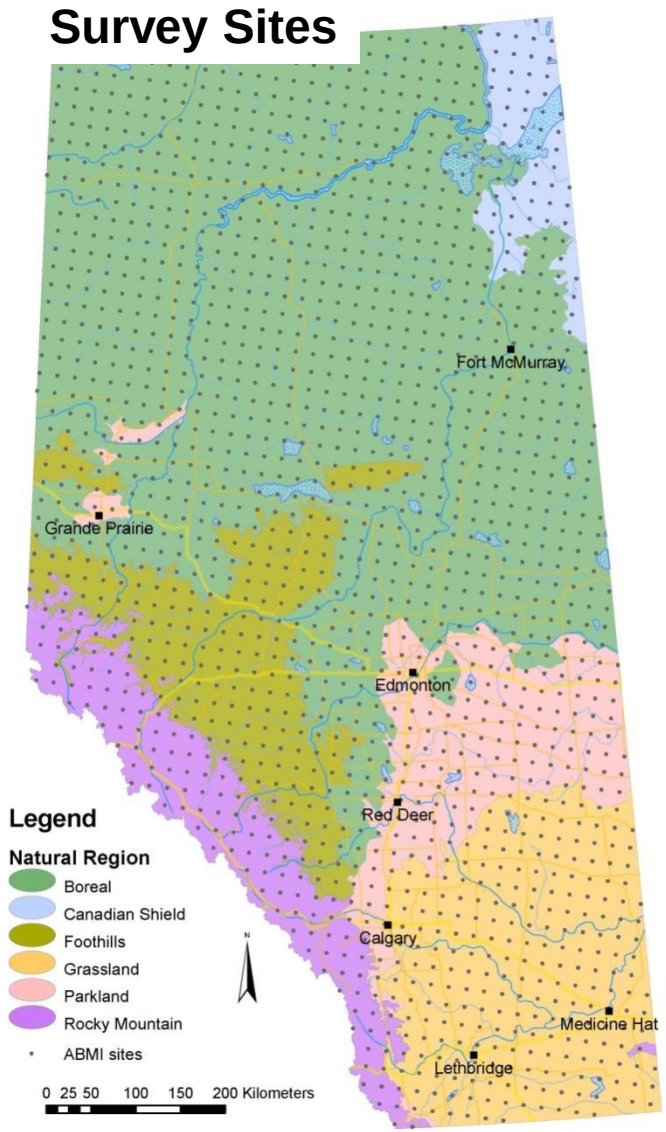
# Field Monitoring

ABMI monitors biodiversity by sampling permanent sites distributed evenly across Alberta

There are 235 sampling locations in the Lower Athabasca Region.

ABMI monitoring will inform:

- Terrestrial Biodiversity Intactness
- Aquatic Biodiversity Intactness
- Non-native Vascular Plants

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ALBERTA BIODIVERSITY MONITORING INSTITUTE

# Tier 1 Terrestrial Species:

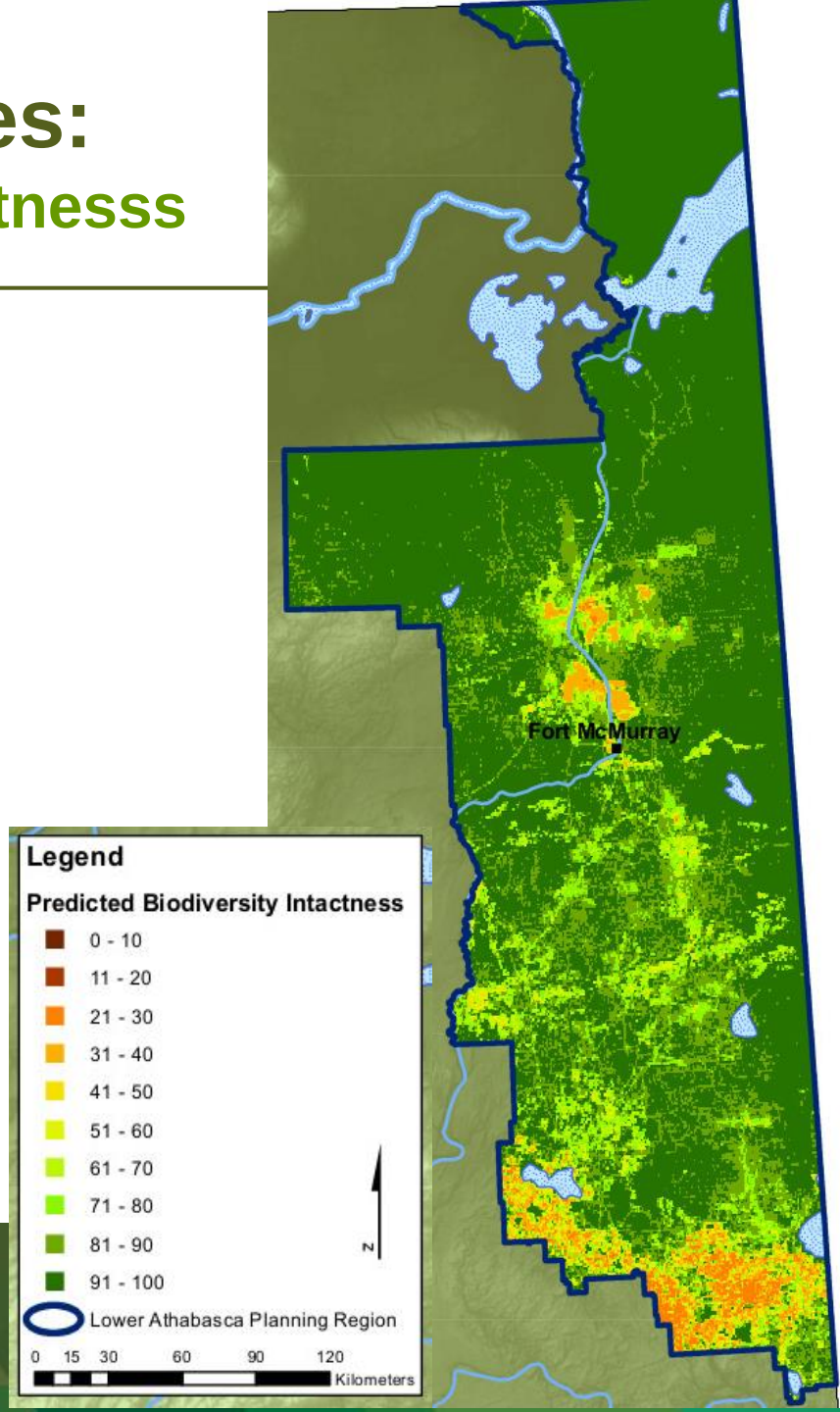
## Terrestrial Biodiversity Intactness

- **The current abundance of terrestrial species in the region**
  - Measured against the abundance that would be expected in an undisturbed area
- **Includes a wide array of species, for example:**
  - **Mammals:** Gray wolf, moose, Canada lynx, snowshoe hare
  - **Birds:** Ovenbird**,** Canada Warbler, Least Flycatcher, Ruby crowned Kinglet
  - **Vascular Plants:** Blueberry, Labrador Tea
  - **Mosses:** *Aulacomnium palustre, Drepanocladus aduncus, Plagiomnium cuspidatum, Scapania glaucocephala*
  - **Mites:** *Achipteria coleoptrata*


# Tier 1 Terrestrial Species:

## Terrestrial Biodiversity Intactnesss

- **Composite indicator**
  - Subcomponents of this indicator include vertebrates (birds & mammals), mites, plants, lichens and mosses (Tier 3s)
  - Species important to people, such as moose, deer, lynx, wild rose, willows and berries (Tier 3s)



# Field Monitoring

aemera.org

Alberta Environment and Sustainable Resource Development

Other programs monitor and assess fish and wildlife populations, such as:

– Ungulate surveys (e.g. moose, white-tailed deer and caribou)

– Fish surveys (e.g. fall walleye index netting)

This monitoring will inform:

- Moose (Tier 3)
- Fish community (Tier 2)

# Monitoring and Reporting

## *Ambient Condition Reporting Schedule*

- AEMERA will report on the status of biodiversity indicators; once the framework is finalized the first report is anticipated in 2 years
  - Many indicators are reliant on updates to the human footprint data
  - Other indicators are reliant on the field monitoring program and may be reported every 5 years

- Monitoring is conducted primarily by the Alberta Environmental Monitoring Evaluation and Reporting Agency (AEMERA), Alberta Biodiversity Monitoring Institute (ABMI) and Environment & Sustainable Resource Development

aemera.org

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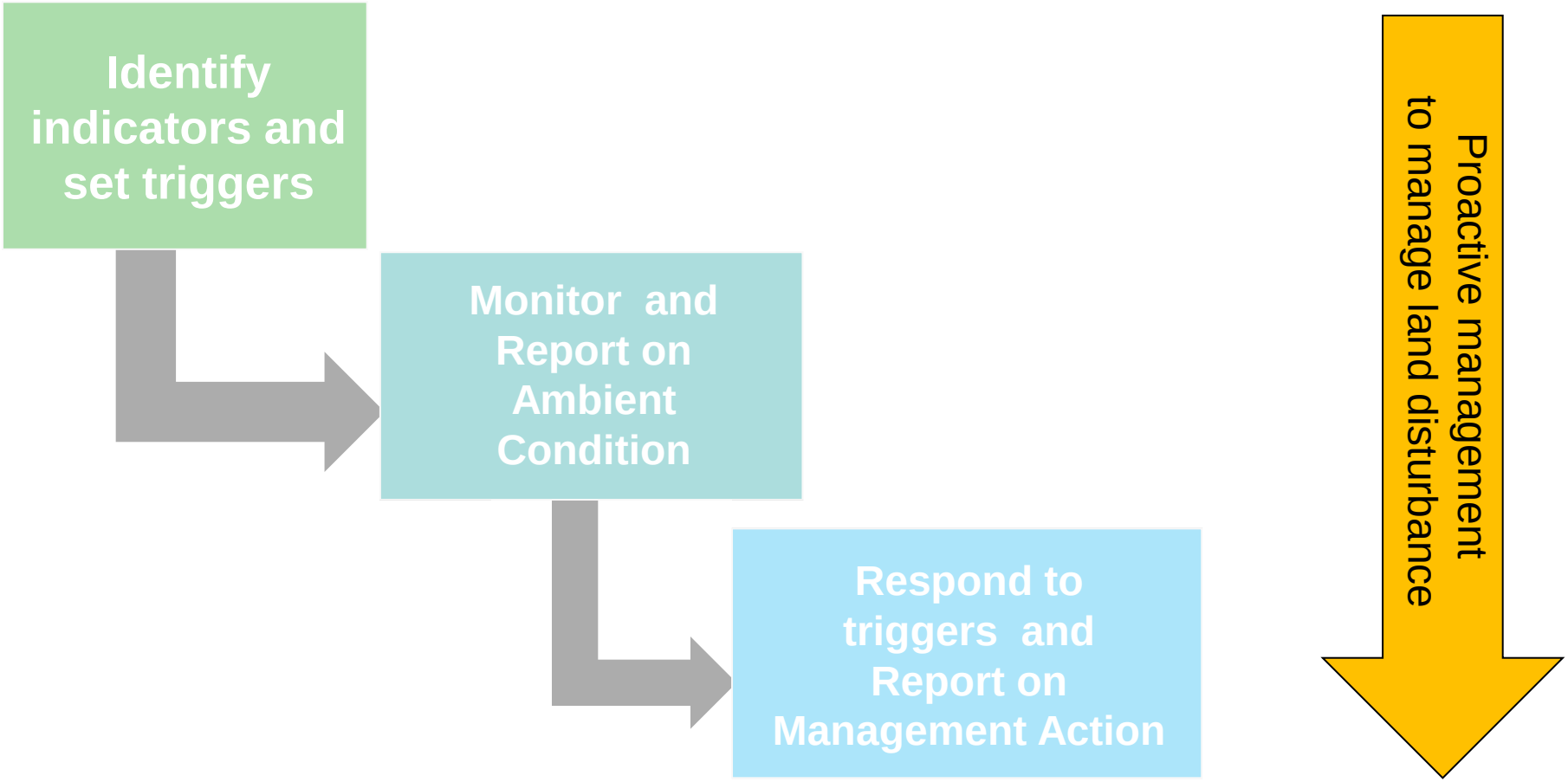
# Management Response

*Same reporting schedule as ambient condition*

- A management response is a set of steps that will be undertaken if the monitoring data exceeds a trigger for an indicator
- ESRD will lead and report on the status of the management response on the same schedule as AEMERA's report on ambient condition
  - Part of the management response is determining the need, if any, for management actions
  - Before determining the need for a management action, ESRD will review whether other initiatives are taking steps to address the issue.
- Management actions will become more stringent if an indicator moves into higher threshold levels
- Collaboration will be a part of both identifying and implementing management actions.

# Biodiversity Management Framework

*Key Components & Processes*



# Biodiversity Management Framework

## *Proactive Management Actions*

- Advance with proactive management actions now
- The Landscape Management Plan will be a primary means to guide proactive management actions
  - Practices and guidance on reducing the extent and duration of footprint (sharing of roads, restoration of seismic footprint)
  - Public motorized access management in Moose Lake & Richardson
- Other proactive actions include:
  - Establishment of conservation areas (in place)
  - Natural disturbance-based forestry – reducing ‘linear edge’

# Biodiversity Management Framework Next steps

- **Finalize and implement the Lower Athabasca Region Biodiversity Management Framework in 2015**
  - **Continued engagement throughout the implementation of the framework to better integrate First Nations and Métis community values**
  - **Ongoing development and refinement of indicators, triggers and supporting monitoring programs**

- **Initiate the South Saskatchewan and North Saskatchewan Region Biodiversity Management Framework development targeting completion of draft frameworks by the end of 2015**

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# Questions?

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