Ecosystem Based
Management in
the Boreal Forest

HEALTHY
LANDSCAPES
PROGRAM

MENU

Ecosystem Management Emulating Natural Disturbance (EMEND)

Long-term study of forest disturbance effects on biodiversity and ecosystem function

ORGANIZATION:

UNIVERSITY OF ALBERTA

PARTNERS:

**CANFOR
MERCER INTERNATIONAL INC.
WEYERHAEUSER
GOVERNMENT OF ALBERTA
FRI RESEARCH**

YEARS:

1997–PRESENT

LOCATION:

NORTHWESTERN ALBERTA

ECOSYSTEM BASED MANAGEMENT:

PROCESS:MONITORING

Adaptive monitoring of natural patterns

STRATEGY:MANAGEMENT FOCUS

Blend of demonstration trials and focus on outcomes

PROCESS:KNOWLEDGE ACQUISITION

There is a wide range of studies and collaborative research groups

DOWNLOAD CASE STUDY

Overview

EMEND is an experiment to test how harvest methods and fire affect the boreal forest. Trials are conducted at scales relevant for real-world harvest blocks (patches are from 0.6 to 5.9 ha) and will be conducted for decades. Teams of researchers have been measuring timber volumes, wildlife, plant and soil responses to disturbance treatments since EMEND began in 1997.

Photo credit: fRI Research

Background

The Ecosystem Management Emulating Natural Disturbance (EMEND) Project is a large-scale harvest experiment to test effects of managed disturbance elements (residual forest structure, forest regeneration) in the boreal forest.

This project asks the question, "how can forest harvest and regenerative practices best maintain biotic communities, spatial patterns of forest structure and functional ecosystem integrity in comparison with mixed-wood landscapes that have originated through wildfire and other inherent natural disturbances". It answers this question through a replicated experiment at the forest stand spatial scale.

" EMEND is the first of its kind and is believed to be the largest single site, manipulative forestry experiment in the world. "

Photo credit: Evan Wise, Unsplash.com

Innovation

Large scale, long term manipulative experiments are difficult to pull-off for a whole host of reasons. The EMEND experiment is answering some fundamental questions about the response of the boreal forest ecosystem to harvest at a representative spatial and temporal scale. Their innovation is walking the walk. Combined with adaptive management monitoring and disturbance modeling done elsewhere in the service of EBM, EMEND is demonstrating disturbance effects in replicated trials.

" We seek to determine how practical forest harvest and regenerative practices can best maintain biotic communities... "

Photo credit: fRI Research

Discovery

There is a long list of research results from EMEND, with dozens of publications and research bulletins. Some highlights for EBM include their work on natural disturbance patterns of forest retention. Key to their work is inclusion of natural disturbances and variation. Natural disturbances provide a baseline for studying patches within harvest blocks because they show just how variable patches can be.

MORE DETAILS

Where in the wheel?

It may seem counterintuitive to test the premise of EBM in the boreal forest with experiments repeating the spatial patterns of traditional forestry. But EBM is pattern and process. So understanding how ecosystems respond to the array of disturbance types and small -scale patterns that will be used at larger scales in more natural spatial arrangements has real value.

ECOSYSTEM BASED MANAGEMENT:
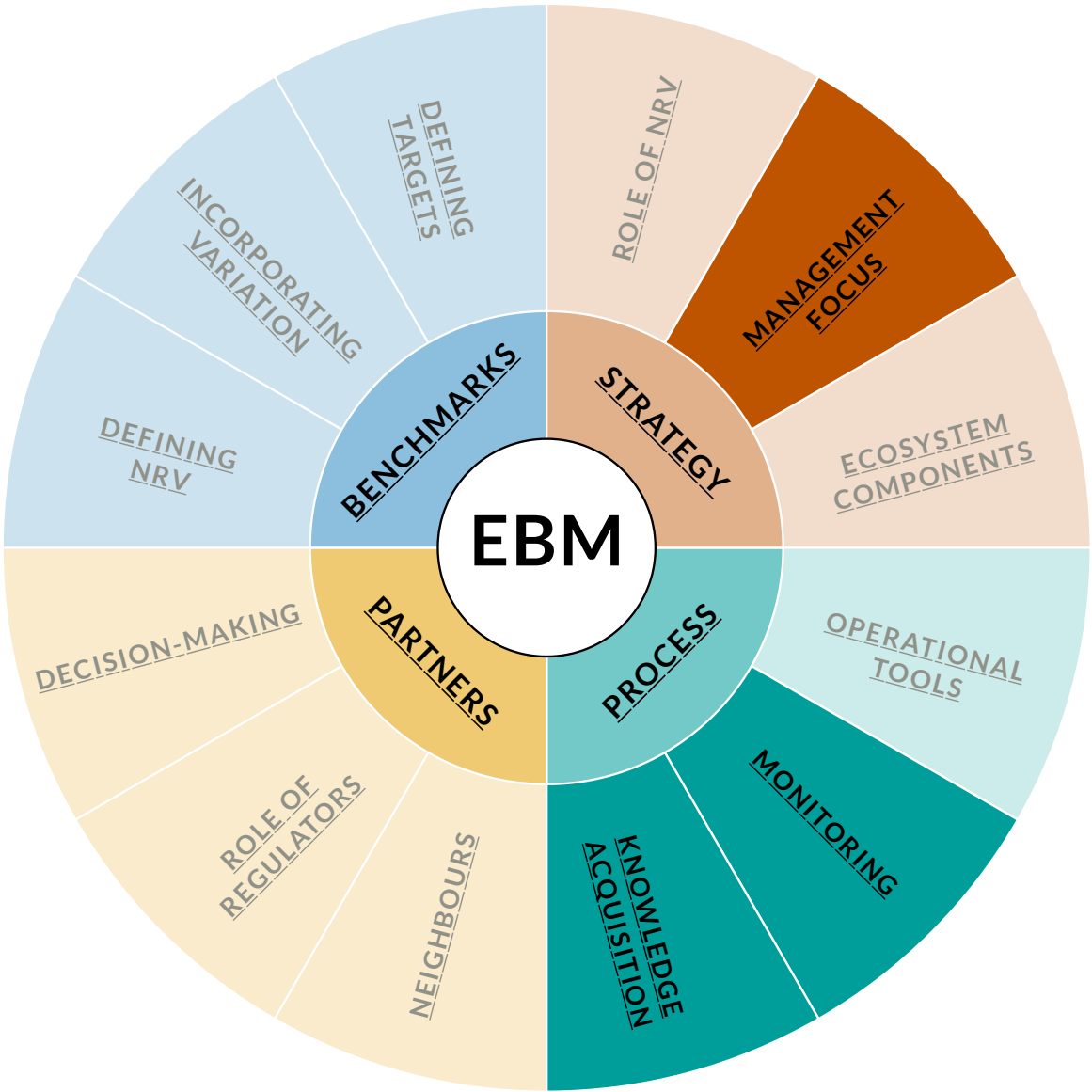
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