

Quantitative Methods for Identifying Ecological Benchmarks in Canada's Boreal Forest



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October 3, 2007

Paradigms in Conservation

Developed
Lands

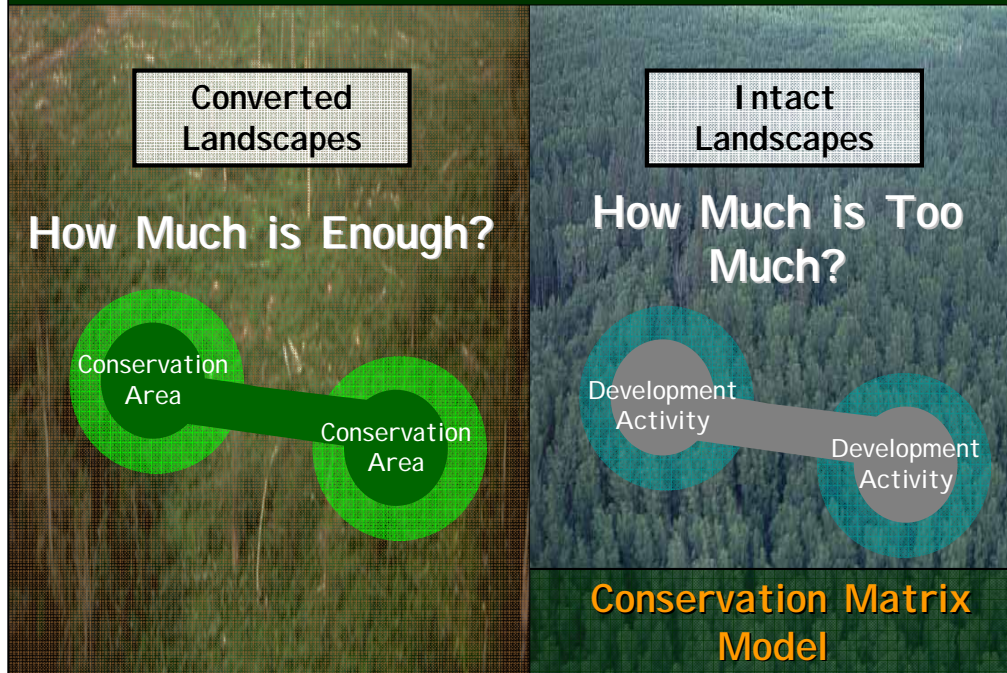
How Much is Enough?

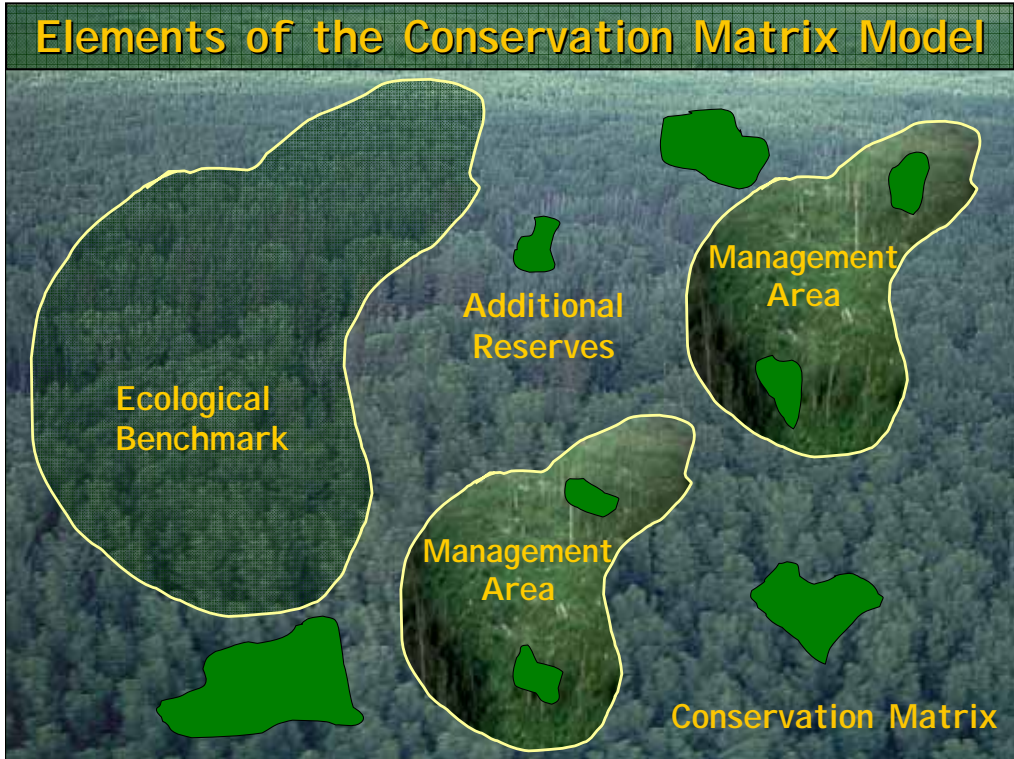
Conservation
Area

Conservation
Area

Classic Conservation
Model

Paradigms in Conservation







A New Model for Conservation Planning

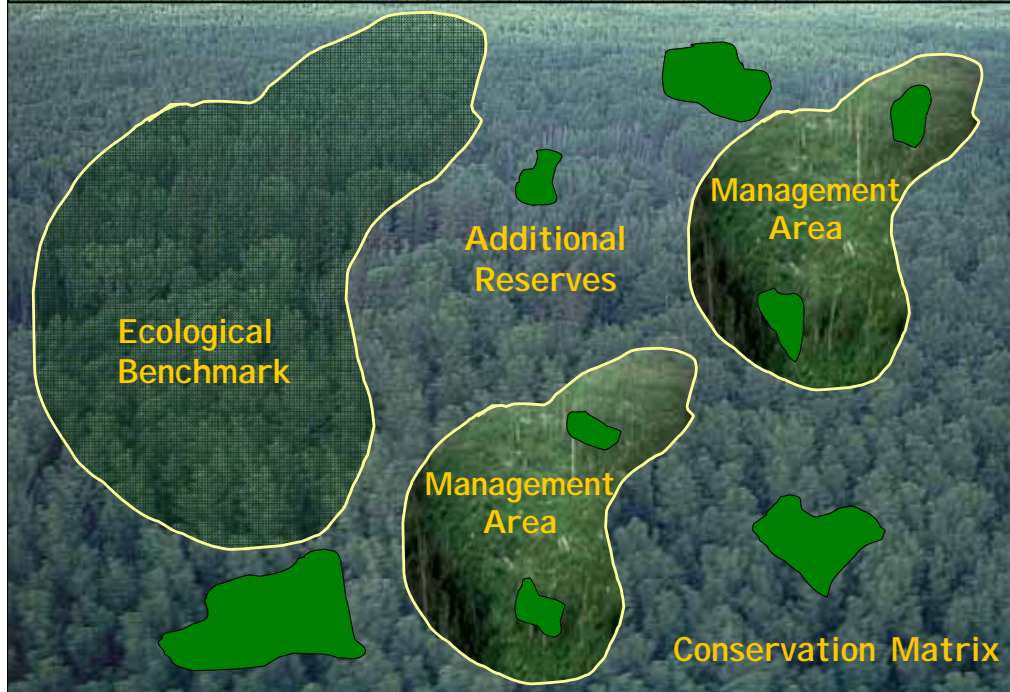
Proactive

Precautionary

Comprehensive

... managing for ABUNDANCE not scarcity

Elements of the Conservation Matrix Model



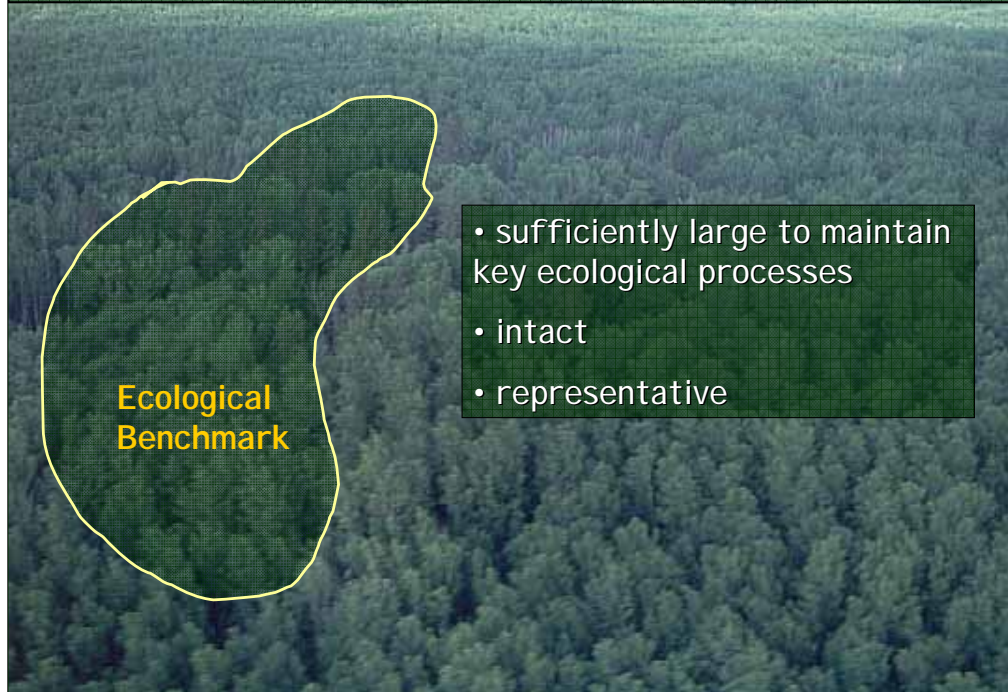
Role of Ecological Benchmarks



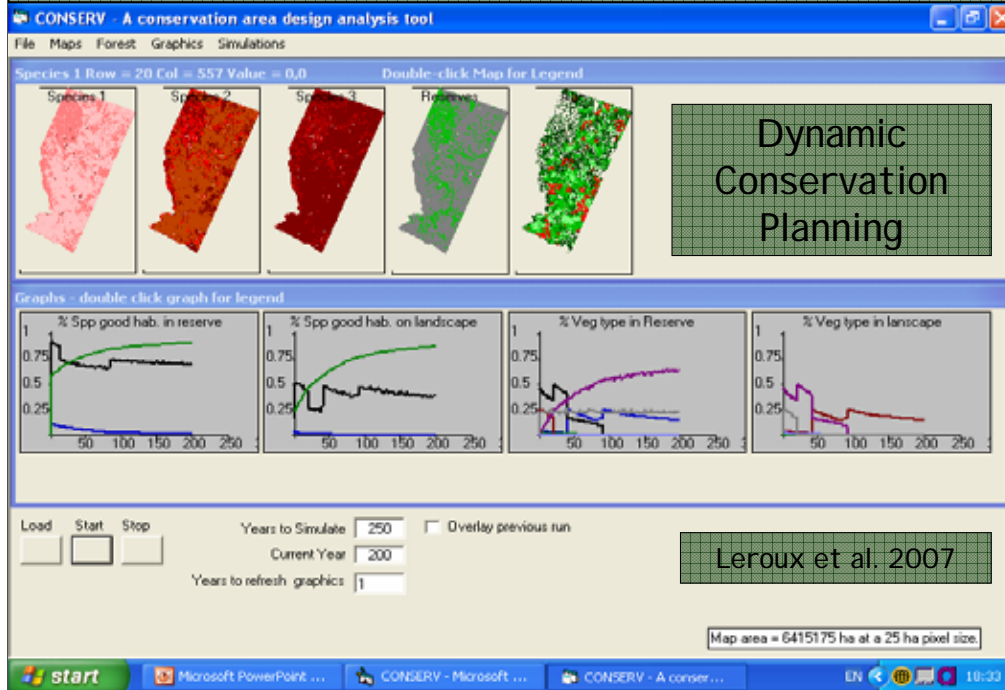
**Ecological
Benchmark**

- controls for development activities
- ecological baselines to help understand natural system dynamics
- anchors of a comprehensive conservation network

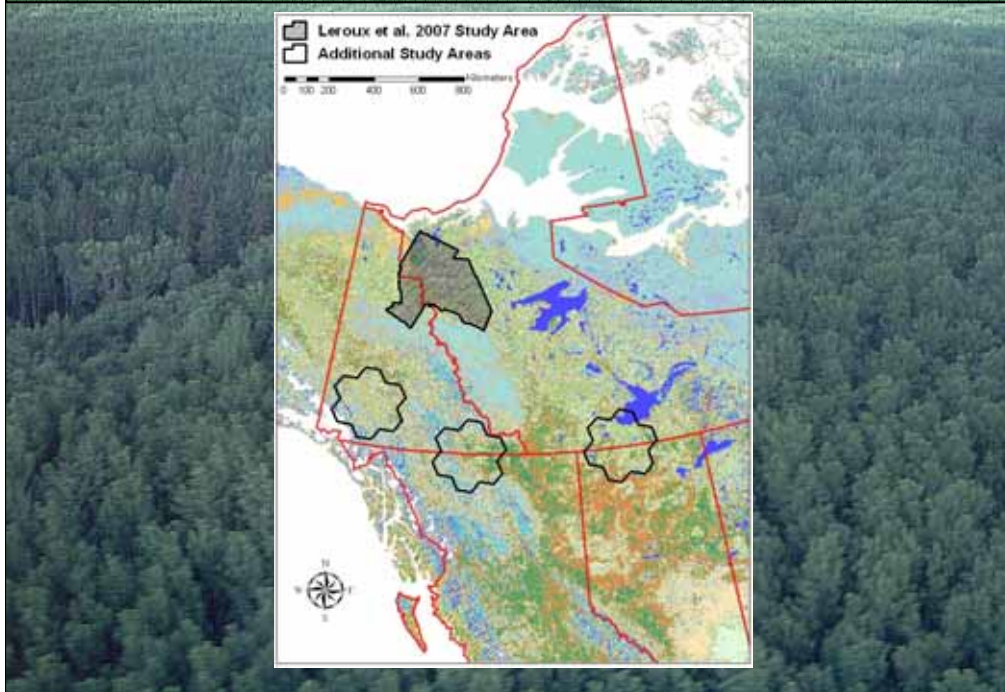
Properties of Ecological Benchmarks



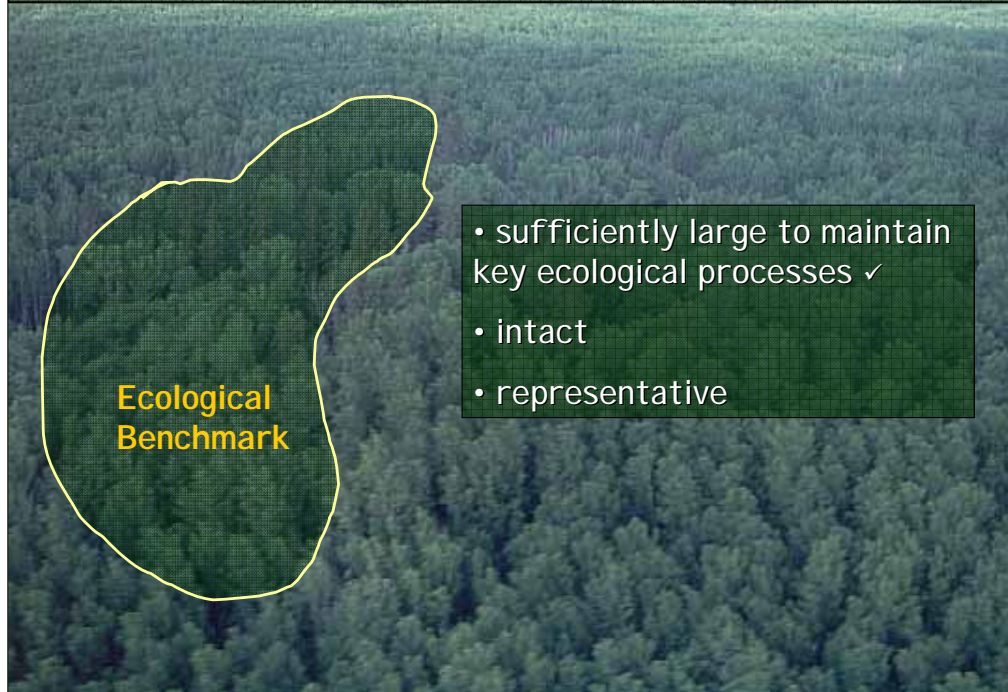
Approximating Ecological Benchmark Size



Approximating Ecological Benchmark Size

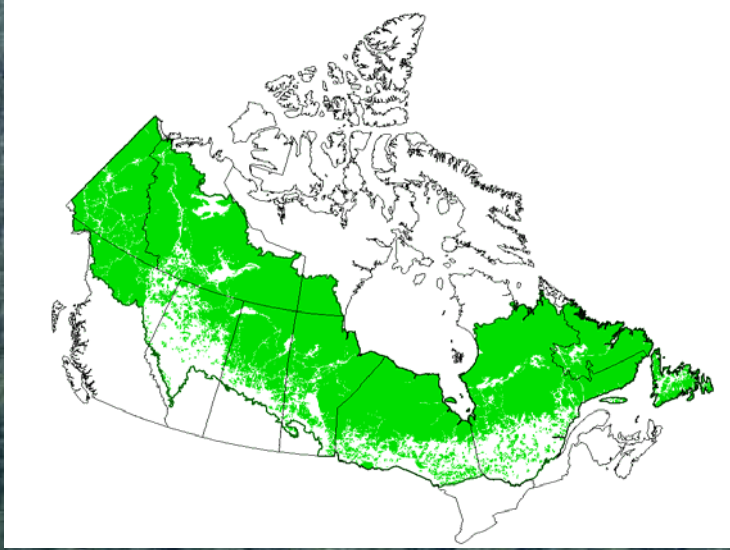


Properties of Ecological Benchmarks



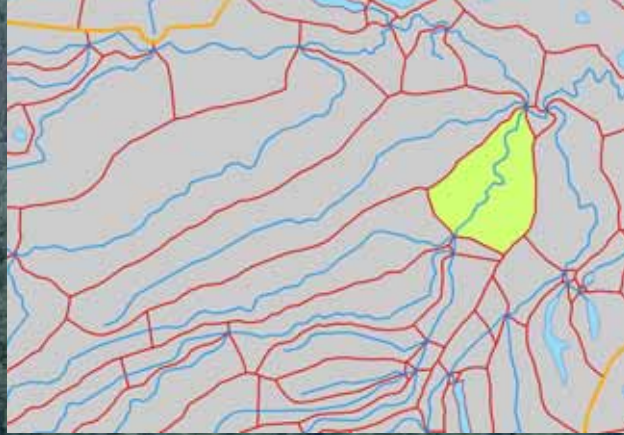
Constructing Ecological Benchmarks

Intactness



Constructing Ecological Benchmarks

Stream Network



Constructing Ecological Benchmarks



Builder Version: v1d.3

Cancel Builder

Tools

Potential Seeds: ADD, REMOVE, Load Seed File

Actual Seeds: 100044208 70000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000

Area Targets: 100044208 70000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000, 100073076 20000

Progress Information

Current Seed: 1004
Area Target: P0228485A

Seed: 12 of 450

Current Aggregation

Calculated to Age Equates: 294
M of Calculated to Age Equates: 4729
Area of Calculated to Age Equates: 288882230190
M of Calculated to Age Equates: 4.36078
Calculated Area: 821242064011
A.M. Mean Inhabence of Age Equates: 4.36078
Feeding and adding species are calculated.

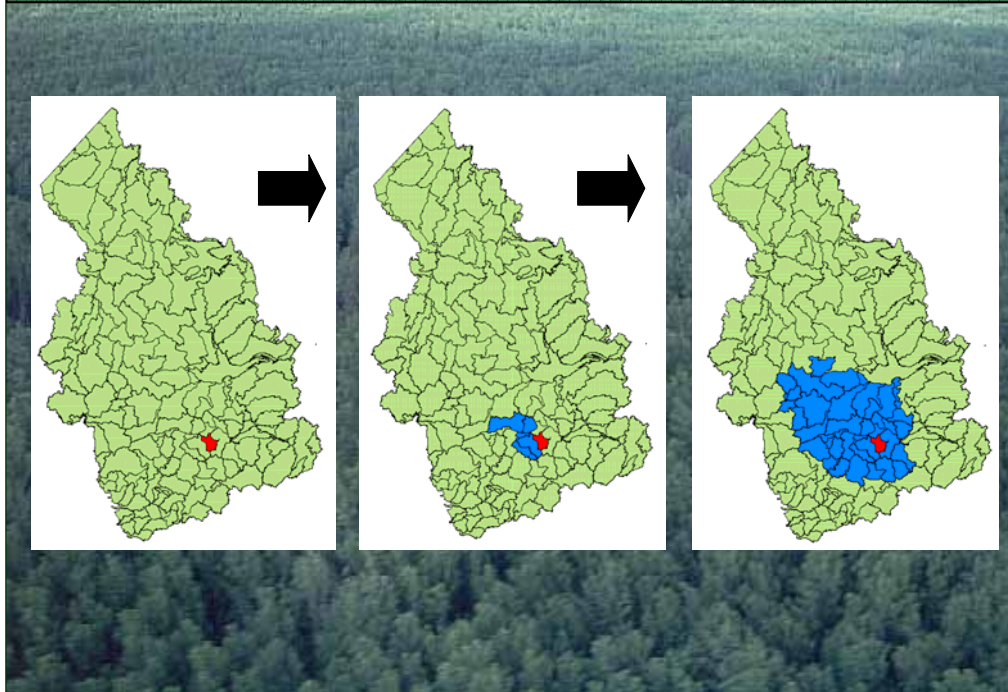
Thresholds: Calculated Values

SPR Bn: 8
Calculated Bn: 4729
Sub-Sub Bn: 4254
Stream Bn: 44021947
Name: P0228485A
Order 1: 48801611
Order 2: 44
Order 3: 44

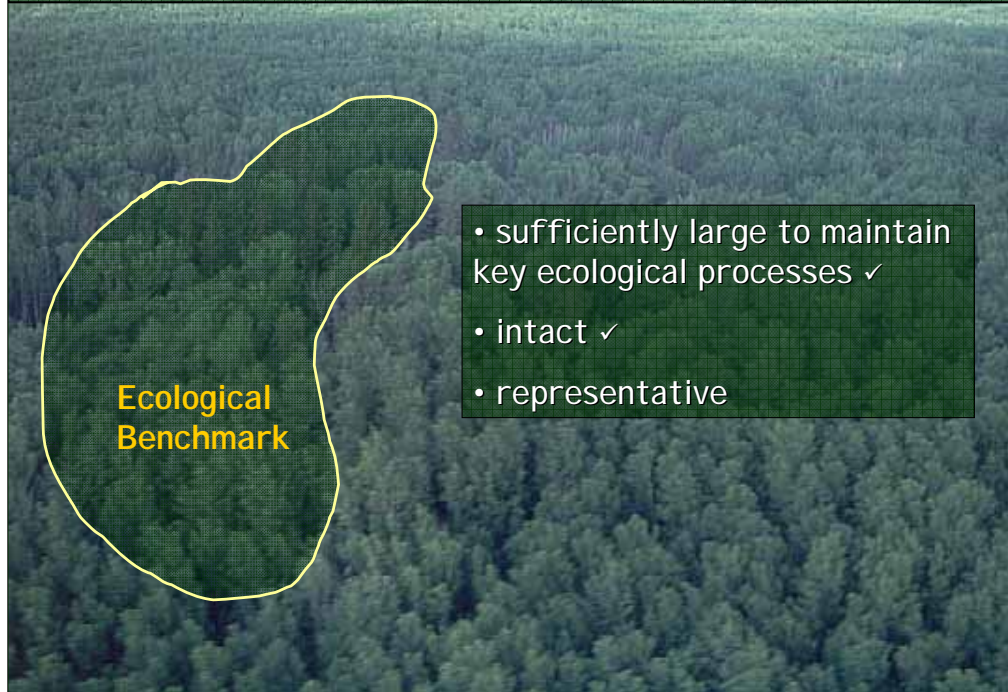
Output

6 5 0 11

Constructing Ecological Benchmarks



Properties of Ecological Benchmarks



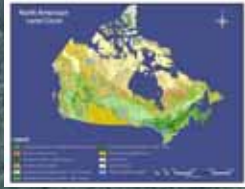
**Ecological
Benchmark**

- sufficiently large to maintain key ecological processes ✓
- intact ✓
- representative

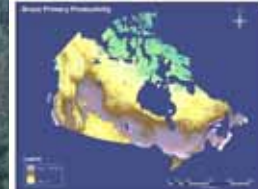
Ranking Criteria

Candidate Benchmarks are ranked based on their representation of the following biophysical attributes:

North American Land
Cover Classification



Gross Primary
Productivity



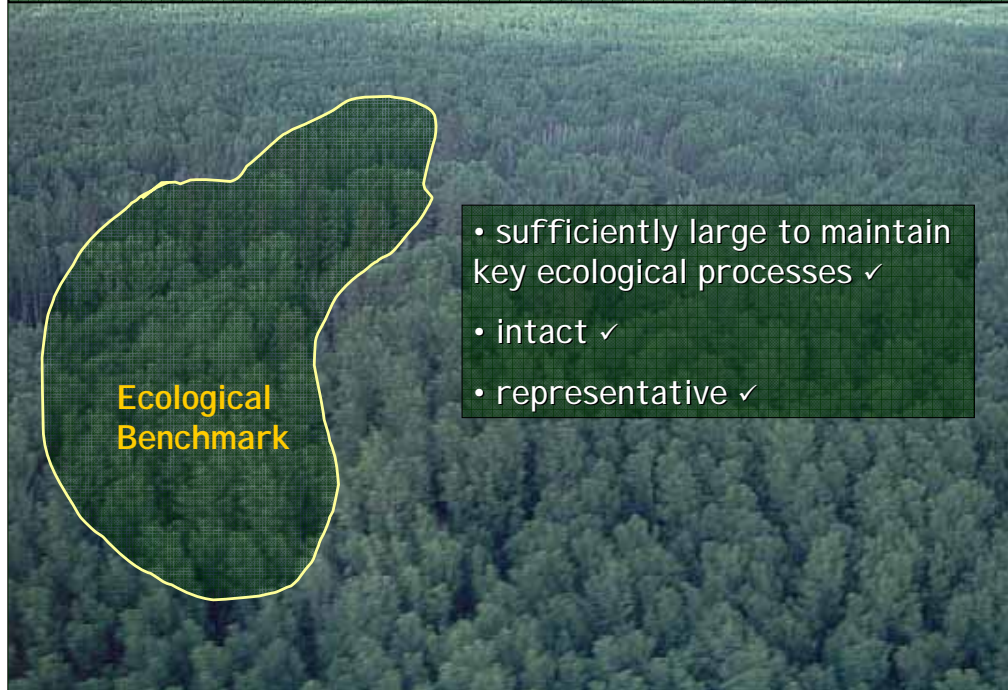
Climate Moisture
Index



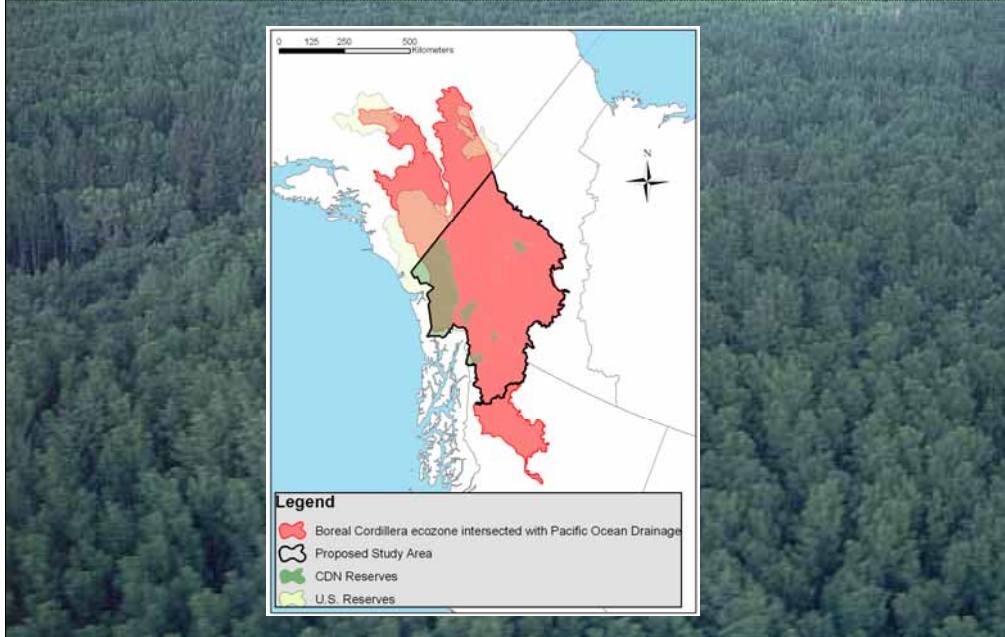
Lake Edge Density



Properties of Ecological Benchmarks



Identifying Ecological Benchmarks within an Existing Conservation Network



Acknowledgements

Thank you to my supervisor, Dr. Fiona Schmiegelow, and the rest of the BEACONS team!



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