




EBM experiences in Québec

Jean-Pierre Jetté, ing.f.
Ministère des Forêts, de la Faune et des Parcs
Québec

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Where do we come from?

Technical path



1995

Step by step
implementation

Political path



1999

Environmental
controversy



2004

Inquiry Commission

2010 – Sustainable Forest
Management Act



2013 - Integrated forest
management plans

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Sustainable Forest Management Act

Section 1. This Act establishes a forest regime designed to

(1) implement sustainable forest management, in particular through ecosystem-based management

Section 4. For the purposes of this Act,

(2) ecosystem-based management means a management approach that consists in ensuring the preservation of the biodiversity and viability of ecosystems by reducing the gaps between managed forests and natural forests

Section 53.

These plans [integrated forest management plans] are founded on ecosystem-based management...

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Reducing the gaps

Basic assumption :

Do not put species in conditions they never experienced



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Reducing the gaps

Basic assumption :

Do not put species in conditions they never experienced

Not recreate past conditions :

But detect biodiversity components at risk

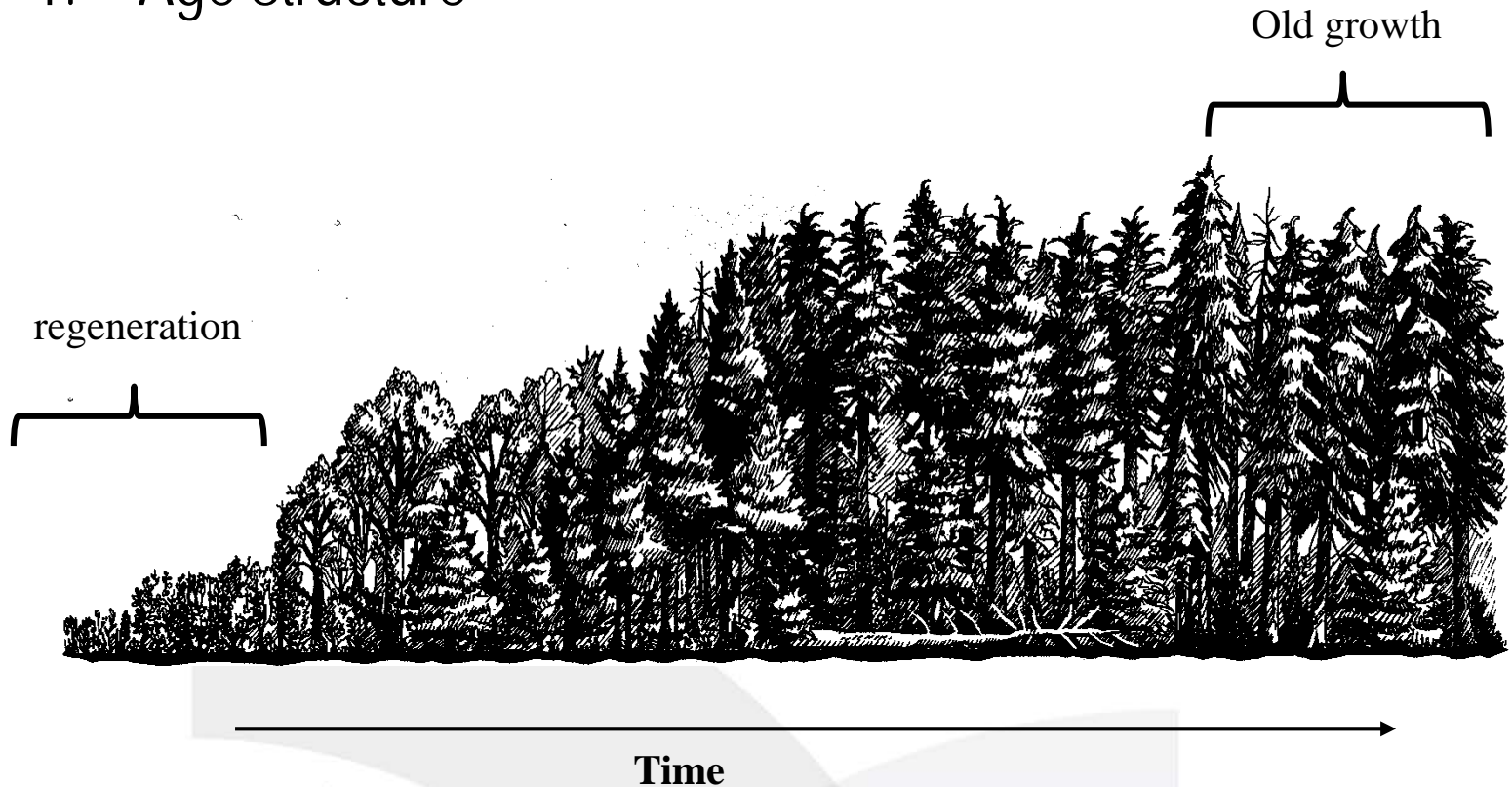


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Reducing the gaps: What are the issues?

1. Age structure



Reducing the gaps: What are the issues?

1. Age structure
2. Stand composition



Reducing the gaps: What are the issues?

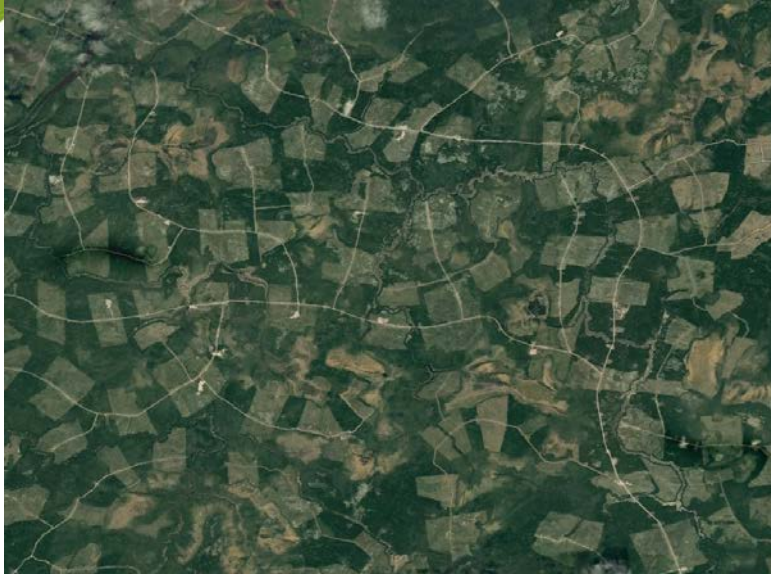
1. Age structure
2. Stand composition
3. Stand structure and dead wood



Reducing the gaps: What are the issues?

1. Age structure
2. Stand composition
3. Stand structure and dead wood
4. Spatial patterns

Spatial patterns



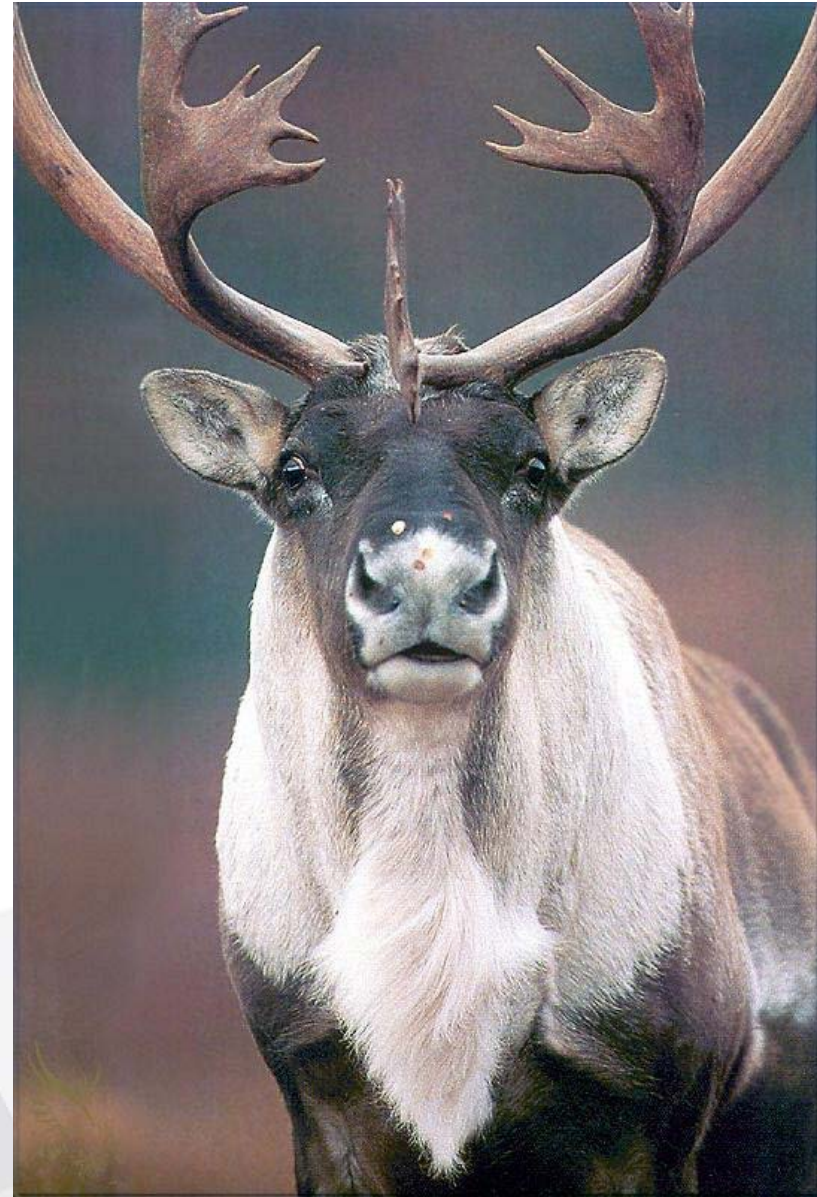
Reducing the gaps: What are the issues?

1. Age structure
2. Stand composition
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4. Spatial patterns
5. Wetlands and Riparian zones



Reducing the gaps: What are the issues?

1. Age structure
2. Stand composition
3. Stand structure and dead wood
4. Spatial patterns
5. Wetlands and Riparian zones
6. Species at risk



What did we learn?

To use an «issue/solution» approach is a good idea

- First define (describe) issues to get people to agree upon what the problems are, before arguing about what solution should be put in place
- Ecological issues are discussed at the same table along with all management issues
- Common solutions can be found within an integrated forest management plan

Keep it simple... but not necessarily stupid!

Forest management in Québec:

- Public land : 74 FMU / 360 000 km² / 1000' people involved
- Private land : 115 000 km² / 130 000 owners

Sometimes it looks like a big big boat with many many rows on it.
It's hard to make it turn!



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Change management is very important

Never underestimate

A provincial team was formed:

- Meet 3-4 times/year
- Acted as regional experts
- Feedbacks from the ground level

Many activities; presentations, documents, workshops....

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What are the lessons?

By simplifying we focused too much on ecosystem components rather than on ecological processes

By focusing on ecological issues, it has been hard to get many stakeholders to buy the EBM approach

EBM should be used as a tool to achieve many management goals; It has been often perceived as a target by itself

Wildlife managers

A greater interest for target species rather than ecosystem functions

What did we do ?

- Use sensitive species needs to «crosscheck» our EBM targets
- Try to work in synergy with wildlife managers needs

Synergy with outfitters needs



First nations values

- We should incorporate more socio-ecological values within EBM approach
- Ex: Mixedwood stands



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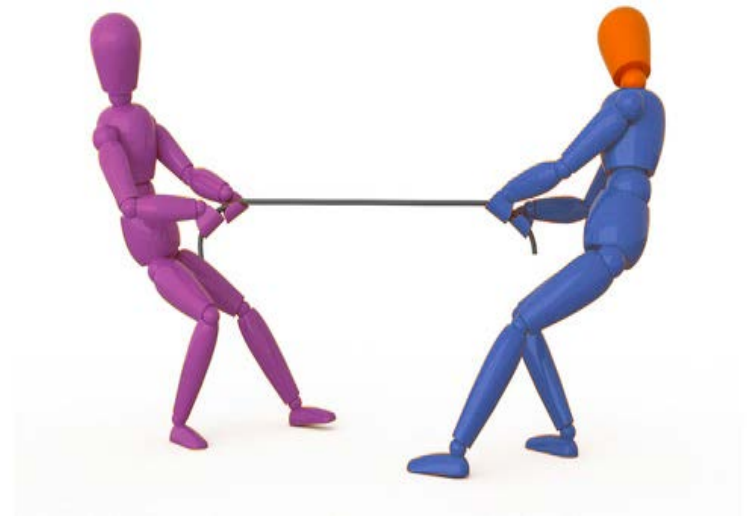


Wood production

For many people, EBM goals are always seen as a constraint to wood production

It is sometime true, but many time it is not

(At least, from a mid- and long-term perspective)



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Applied forest ecology

« As our knowledge of the forests has increased we have come to realize that the more we correlate our forest practices with the natural factors operative in the forest, the less expensive and hazardous forestry become »

S.H Spurr

Presented at a joint meeting of the Ecological Society of America and the Society of American Foresters in Philadelphia, December 27, 1940.

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EBM perspectives on wood production

Resistance and resilience to Spruce Budworm outbreak
and wood flow (East)

Reccurent
disturbance 30-40 yrs



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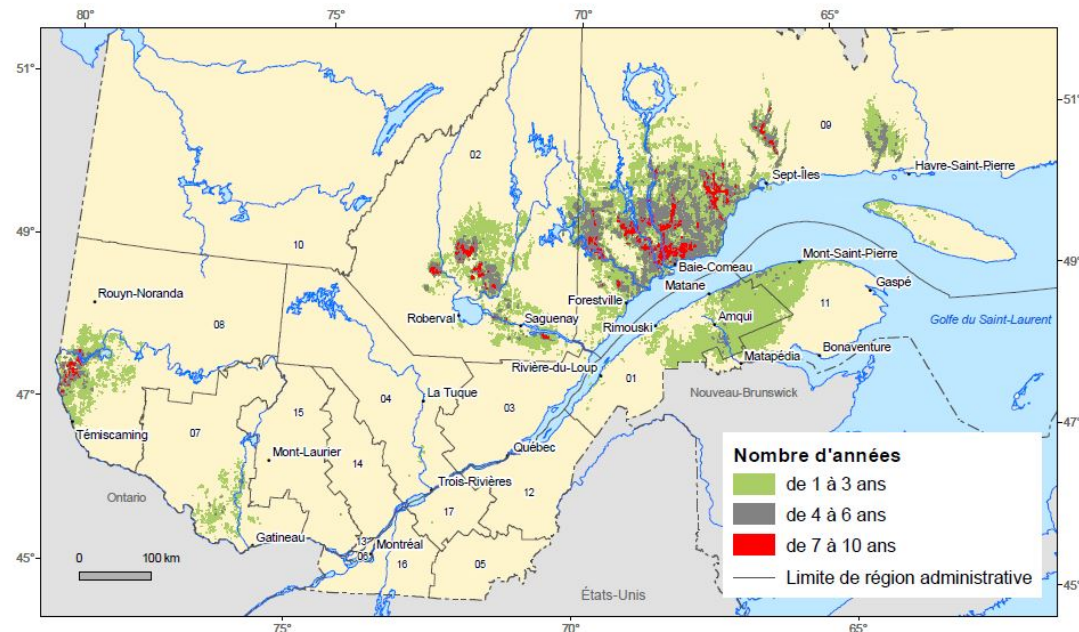
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EBM perspectives on wood production

Resistance and resilience to Spruce Budworm outbreak and wood flow (East)

Reccurent disturbance 30-40 yrs

Major effect on forests



Carte 5. Défoliation cumulative grave causée par la tordeuse des bourgeons de l'épinette au Québec pour la période 2006 à 2017

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Non-host species are important in the resistance/resilience process

Ecological issue :

Longlived species
rarefaction

Economical issue

Regulated wood flow



EBM perspectives on wood production

Regeneration failure in a fire ecosystem (Northwest)

Young stands are sensitive to regeneration failure due to limited seed production



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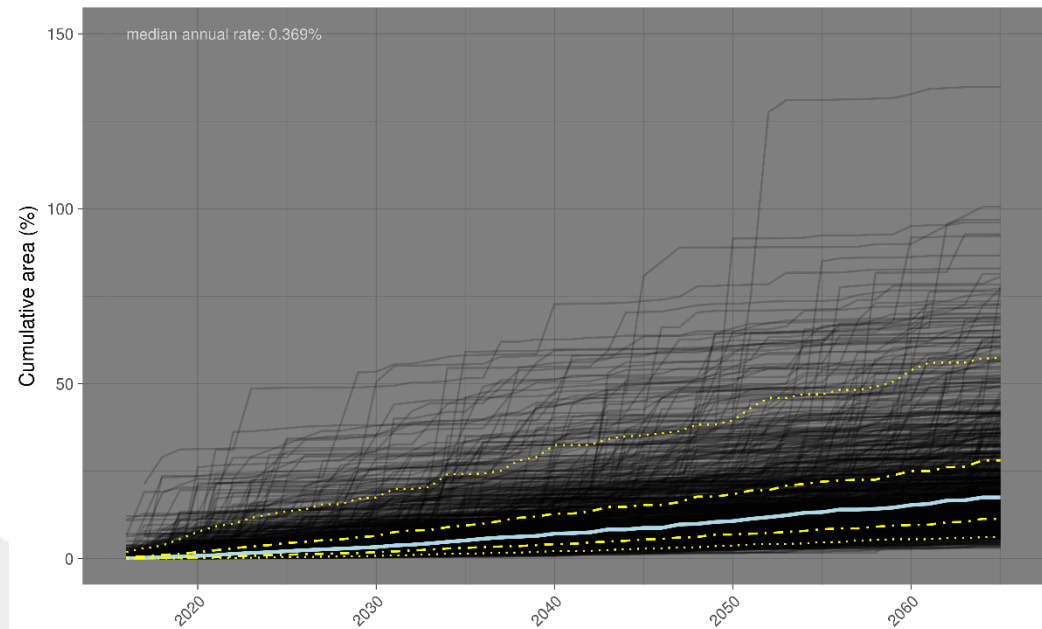
EBM perspectives on wood production

Regeneration failure in a fire ecosystem (Northwest)

Young stands are sensitive to regeneration failure due to limited seed production

Cumulative 50 years :
Equivalent to 18.45% of
productive area

Cumulative proportion of productive area where immature stands were burned
Median scenarios are highlighted in blue and percentiles 5%, 25%, 75% and 95% in yellow
(Total of 1000 realizations)



(Splawinsky, 2017)

Sexual maturity thresholds (years) - Black Spruce: 50
Jack Pine: 30

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Regeneration process

Ecological issue :

Closed cover ecosystem
rarefaction

Economical issue

Plantation budget (\$)

Road network
maintenance

Variable retention and
seed sources



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Main findings

« As our knowledge of the forests has increased we have come to realize that the more we correlate our forest practices with the natural factors operative in the forest, the less expensive and hazardous forestry become »

- EBM is a tool to achieve many sustainable forest management goals
- Focus on ecological processes : understand how the system works (operative factors)
- Incorporate socio-ecological values within the EBM framework

Climate change : the new challenge

EBM as a tool for adaptation

Uncertainty:
Reinforce natural resilience

Anticipation :
Vulnerability analysis



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