

Forests in Change: **Lodgepole Pine Ecology, Fire Behavior, and Mountain Pine Beetle** **– The status of our knowledge –**

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The Mountain Pine Beetle Issue

Began in mid-1990s

Huge geographic area

**” British Columbia and Alberta to
Colorado**

Enormous consequences

” Impact on forest ecology

**” Protection of life, property, and other
values at risk**

Conflicting messages from science

Lougepole pine and mountain pine beetle background

Nature and magnitude of the epidemic

“ Historically unprecedented?

Reasons for concern

“ Safety and protection

“ Recreation/aesthetics

“ Climate change?

Can science aid deliberations and planning?

Approaching the problem using science

Front Range Roundtable

- “ Ponderosa pine science team
- “ Ecology workgroup, concerns about LPP

Colorado Bark Beetle Cooperative

- “ Lodgepole pine science team
- “ Joint FR Roundtable/CBBC ecology workgroup

Loughepole Pine Science Team

Convened workshop January 15-17, 2008

- “ Convened by The Nature Conservancy**
- “ Scientists from BC to CO**

Developed nine consensus talking points

Manuscript published 2009, addressing:

- “ What do we know with confidence?**
- “ What do we think we know but with less confidence?**
- “ What do we need to study more?**

Consensus talking points

A. Lodgepole pine forests are being heavily impacted by the mountain pine beetle epidemic

- “ Unprecedented scale in available records***
- “ Majority of larger trees, many smaller trees killed, most seedlings surviving***
- “ Mortality changing forest and fuel structure***

Consensus talking points

B. Not all lodgepole pine forests are the same

- “ *Pure stands*
- “ *Subalpine forests with lodgepole*
- “ *Mixed conifer forests with lodgepole*

Each type of forest has unique features of ecology and fire behavior

Consensus talking points

C. Forests are living systems subject to constant change

- “ Lodgepole pine forests governed by several natural disturbances, esp. fire and mountain pine beetle*
- “ Some changes are gradual and often unnoticed, some sudden and alarming*

Consensus talking points

- D. Lodgepole pine will not disappear from the southern Rocky Mountains**
- “ Lodgepole pines will still be present and providing ecological services and aesthetic and recreational benefits***
 - “ Their location and forest appearance may differ from those of recent forests***

Consensus talking points

- E. Active vegetation management is unlikely to stop the spread of the current mountain pine beetle outbreak**
 - “ Epidemic conditions resist human intervention, though vegetation management between outbreaks may help mitigate future mortality locally***

Consensus talking points

F. Large intense fires with extreme fire behavior are characteristic of lodgepole pine forests, though they are infrequent

“ Lodgepole pine fires under dry, windy conditions are a natural way for the species to regenerate

“ Such fires are responsible for extensive pure LPP stands

Consensus talking points

G. In forests killed by mountain pine beetles, future fires could be more likely than fires before the outbreak. Large intense fires with extreme fire behavior are again possible.

“ Considerable uncertainty exists about fire behavior after a mountain pine beetle epidemic

“ More research is needed to refine our understanding

Consensus talking points

- H. Mountain pine beetle outbreaks are not likely to cause increased erosion**
 - “ Soils are minimally disturbed and understory plants provide protection***
 - “ Water yield may increase***
 - “ All bets are off after fire, however***

Consensus talking points

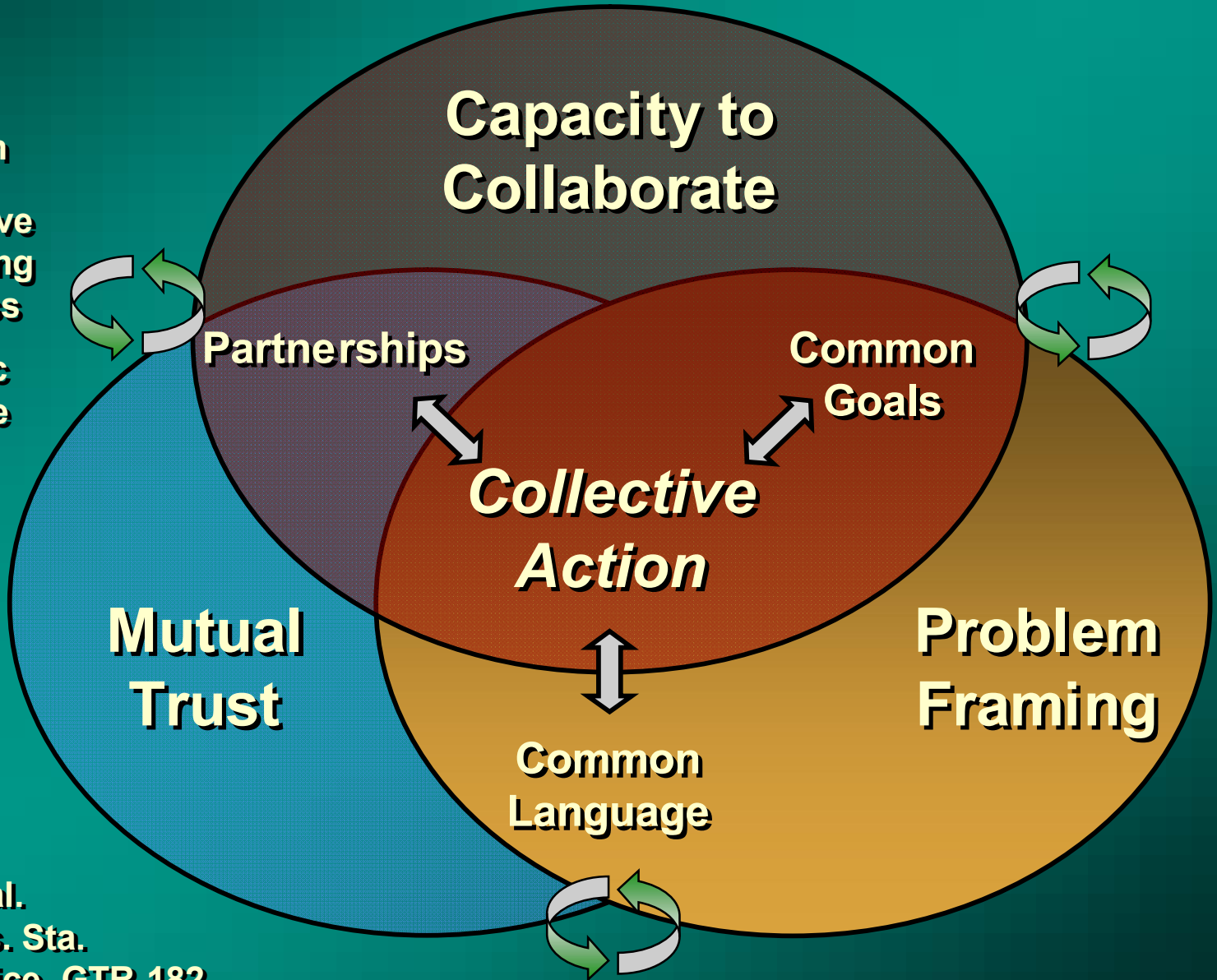
- I. **Climate changes will most likely contribute to substantial forest changes in the decades ahead**
 - “ ***Large fires and other significant disturbances may be anticipated***
 - “ ***Could be substantial changes in our forests***
 - “ ***Much more research is needed to clarify future scenarios***

Web-based Collaborative Process

 Open System

 Adaptive Learning Process

 Dynamic Dialogue



Developed by
Jeff Brooks et al.
Rocky Mtn. Res. Sta.
US Forest Service, GTR-182

Keys to Working Together

Collaboratively and continually:

- “ From the beginning, build inclusive stakeholder and partner relationships**
- “ Embrace a common knowledge base, and continuously improve it**
- “ Cross-walk knowledge and management**
- “ Take action collectively**