Riparian Management
Testing the Waters
Rick Bonar and Dave Andison
October 2004
Overview

- Foothills Model Forest riparian zone disturbance research
- Current Alberta riparian management
- Weldwood Natural Forest Management approach
- Application examples
Natural Disturbance Program

- Research to understand natural disturbances, in 9th year
- Multiple projects and scales
- Knowledge being used by partners to guide management
- Weldwood Natural Forest Management program
Why the Interest in Natural Disturbance?

- Forest fires are the main natural disturbance
- Managers of both protected and working forests want to approximate natural forest dynamics to conserve biodiversity
Other Riparian Disturbances

- Mountain Pine Beetle
  British Columbia
- Beavers
- Floods
- Harvest followed by flood
Riparian Areas are Unique

- 5-15% of Foothills landscapes
- Higher moisture regimes
- More toe slopes, valleys, steep slopes
- More spruce, less pine and aspen
- More rich ecosites
- Lower tree density

Do forest fires disturb riparian areas differently than uplands?
Do Riparian Areas have more Old Forest?

No

% Old Forest

Overall
Large Streams
Small Streams

Lower Foothills
Upper Foothills
Subalpine
Montane

Natural Sub-Region
Are Riparian Areas Associated with Fire Edges?

Very Weakly

% Pixels That are Fire Edges

Landscape Sample Number

Overall
All Streams
Large Streams
Are Island Remnants More Likely in Riparian Areas?

- Lower Foothills
- Upper Foothills
- Subalpine

<table>
<thead>
<tr>
<th>Fire Number</th>
<th>% in Riparian Area</th>
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<td>5656</td>
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<tr>
<td>1451</td>
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<tr>
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<td>1206</td>
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Riparian remnant islands are more likely to form on wide streams and steep sites.
Riparian Fire Research Summary

- 4 separate studies showed only minor differences between fire patterns in riparian and uplands.
- NO evidence that riparian areas are “fire refugia”.
- Fire is an active process in Foothills riparian areas.
What Happens if we Reduce Disturbance in Riparian Areas?

- A fundamental shift in stand dynamics
  - Tree ingress changes habitat
  - More old riparian habitat, less young
  - Fire, insect, disease risk may increase
  - Old forest is linear – no “interior”
  - Changes LWD dynamics

- A fundamental shift in aquatic dynamics?

- A fundamental shift in biotic response?
Weldwood policy:

All continuous scoured channels are streams
Variable-width buffer
Variable-width buffers
How to intelligently tinker in (disturb) riparian areas?
Natural Forest Management

- Managed forests that are as close to natural forests as practical
- Based on science – Foothills Model Forest research
- Other values and considerations influence NFM application – *guidance, not imitation*
Riparian Management Strategy

- Ecological definition of riparian zone
- No harvesting in sensitive riparian reserve zones
- Use harvesting to carefully manage riparian special management areas
- Continued emphasis on conservation of riparian values
Ecological Definition

Riparian Special Management Area

Buffer approach

Top of hillslope
Big Rivers
1990 white spruce shelterwood
Gregg River floodplain
2000 riparian trials
McLeod River floodplain
Strip Shelterwood
Many mid-size streams are in steep incised valleys – very little opportunity for logging as a disturbance method.
Small Creeks
Variable channels
Stream channel
Stream channel
Protected Ephemeral
Protected Ephemeral
<table>
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<th>Hidden Creek</th>
<th>12 Mile Creek</th>
<th>Winter Creek</th>
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<tbody>
<tr>
<td><strong>Basin area</strong></td>
<td>638 ha</td>
<td>3073 ha</td>
<td>1374 ha</td>
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<td><strong>% forest</strong></td>
<td>89%</td>
<td>86%</td>
<td>94%</td>
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<td><strong>% to be logged</strong></td>
<td>67%</td>
<td>48%</td>
<td>30%</td>
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Forest area within 30 m of a channel

Hidden Creek
19.6 ha

12 Mile Creek
94.3 ha

Winter Creek
58.7 ha
Area to be carefully harvested within 30 m of a channel

Hidden Creek
12.6 ha

12 Mile Creek
17.3 ha

Winter Creek
5.7 ha
Websites:
www.fmf.ab.ca
www.hintonforestry.weldwood.com
To Sustain Biodiversity Values

“Think Like a Fire”

Rick_Bonar@Weldwood.com
Andison@Bandaloop.ca