

Management of Riparian Zones: *Terrestrial Ecosystem Considerations*

Riparian Disturbance Management Workshop
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David Andison
Bandaloop Landscape-Ecosystem Services



Summary

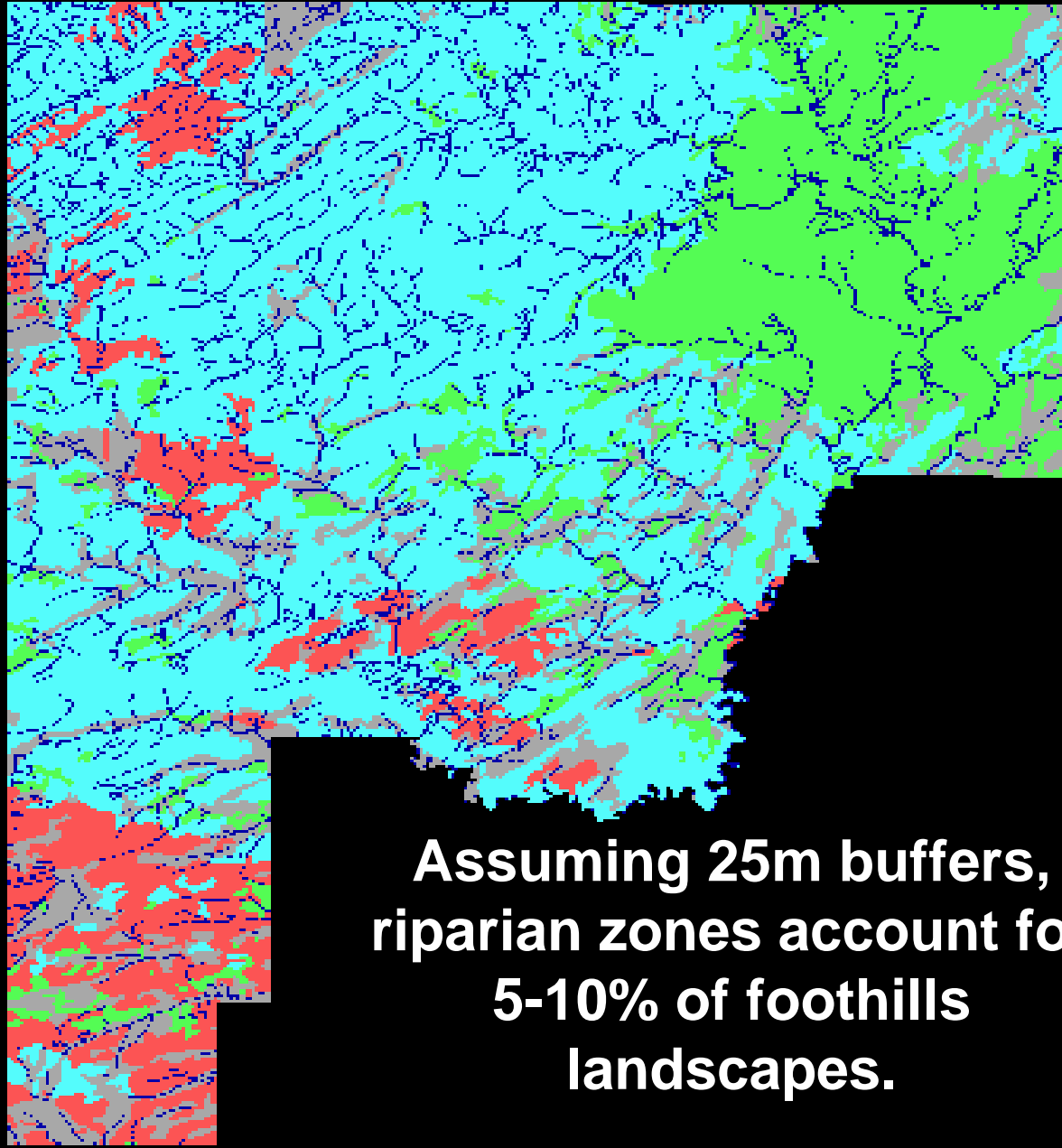
- There are potential (terrestrial) ecological risks from not disturbing riparian zones.

Are Riparian Zones Unique Terrestrial Landscape Features?

- higher moisture regimes
- more toe slopes, valleys, steep slopes
- more non-forested & white spruce
- less pine & aspen
- more rich eco-sites
- lower tree density

>> *unique habitat*

>> *more susceptible to soil erosion, rutting, & compaction.*



**Assuming 25m buffers,
riparian zones account for
5-10% of foothills
landscapes.**

What Do We Know About Natural Disturbance in Riparian Zones?

Do Riparian Zones Have More Old Forest?

<u>Landscape</u>	% Older Forest		
	<u>Overall</u>	<u>All Streams</u>	<u>Large Streams</u>
Lower Foothills	24	16	27
Upper Foothills	21	24	26
Sub-alpine	40	43	39
Montane	30	28	23

No.

Are Riparian Zones More Likely to be Associated with Fire Edges?

<u>Landscape</u>	<u>% of Pixels That are Fire Edges</u>		
	<u>Overall</u>	<u>All Streams</u>	<u>Large Streams</u>
Sub-Landscape 1	2.4	2.4	3.5
Sub-Landscape 2	2.4	2.6	2.8
Sub-Landscape 3	4.0	4.8	n/a
Sub-Landscape 4	3.2	3.2	2.6
Sub-Landscape 5	2.8	3.2	3.6
Sub-Landscape 6	2.9	3.0	2.8
Sub-Landscape 7	2.9	3.0	3.5

Weakly.

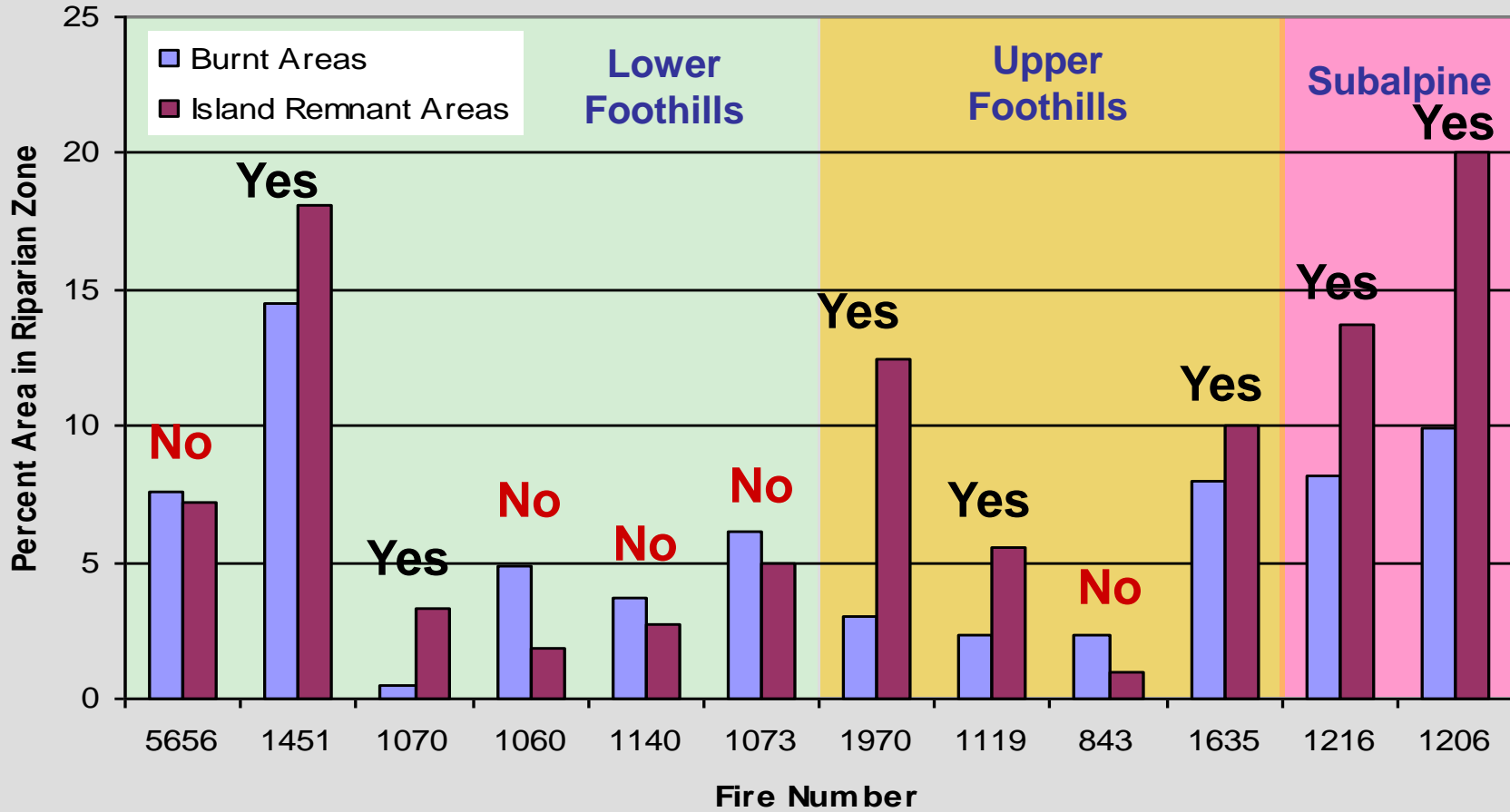
Riparian Edges More Likely to Form:

Steep sites, higher stream orders.

No Relationship to:

Tree species, tree density, riparian area width, soil moisture, slope, Rosgen stream classification.

Are Island Remnants More Likely to Form in Riparian Zones?



Weakly.



Riparian remnant islands more likely to form at wide streams, and on steep sites.

However, all evidence of the interaction between riparian zones and fire behaviour was quite weak.

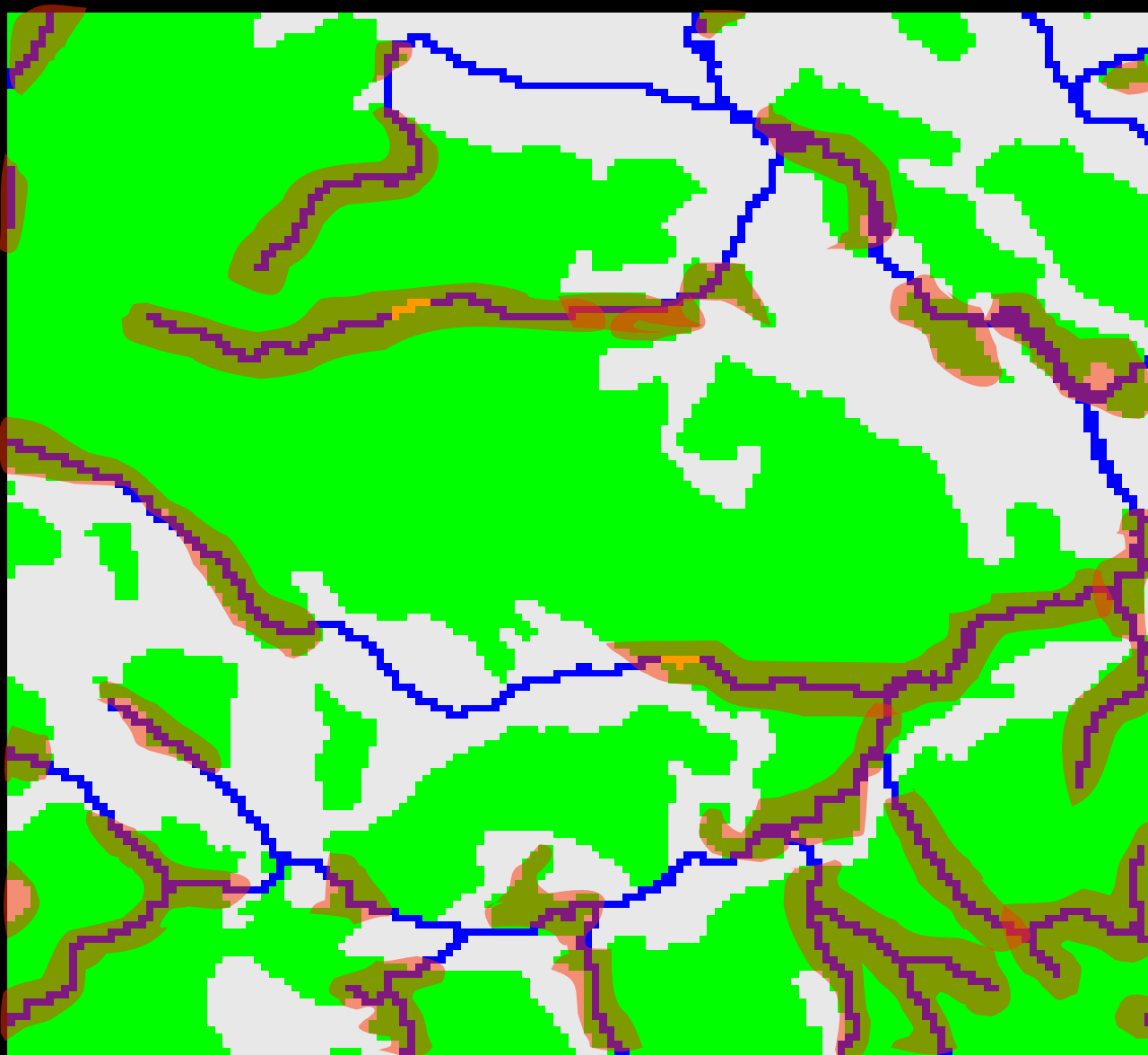
We found NO evidence that riparian zones are “safe sites”, or “refugia”.

In other words, fire is an active *process* in riparian zones.

What Happens if we Remove the Process of Disturbance from Riparian Zones?

- Tree ingress (changes habitat)
- Riparian zones all become “old”
 - No young riparian zone habitat
 - Fire, insect, disease risk increase
 - Old forest no longer representative (BC)
 - Fragmentation
 - Old forest is linear – no “interior”

Sample Operating Area



We protect riparian zones.

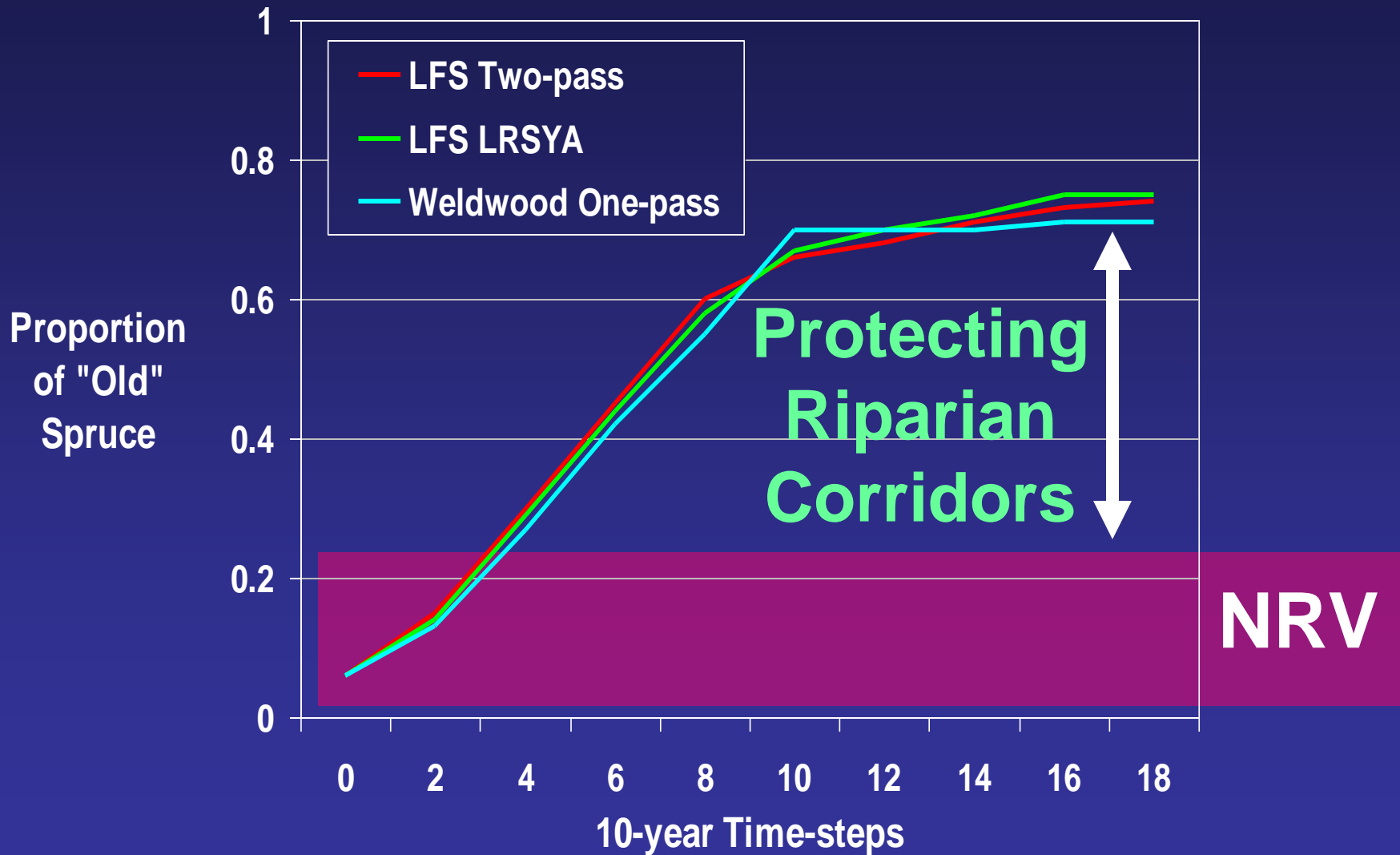
Therefore, riparian zones are perpetually old,

... which increases natural disturbance risk,

... and old forest patches are very small, with no interior,

... and upland old forest may be under-represented.

Long-Term Impacts of RZ Protection



So is “Protection” a Sustainable Management Option in Riparian Zones?

No.

There are very real ecological risks associated with a “protection” strategy.

N.B.

- “disturbance” NE “harvesting”
- forest fires disturb 25-33% of historical