Fire Regime and Risk in The Kananaskis Valley

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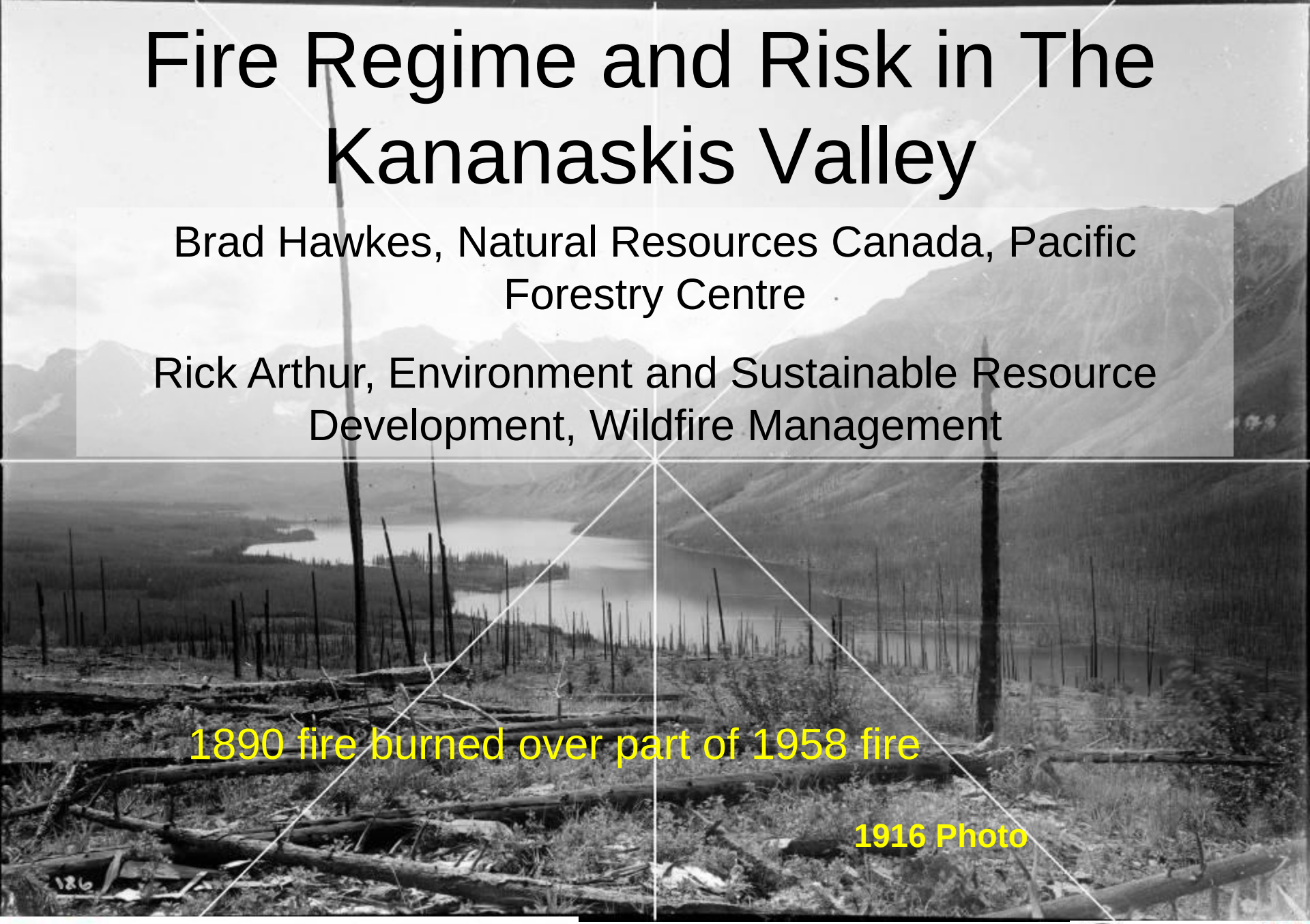


Dude Succession

1974

1981

2009

Talk Outline

People that have studied, observed, reported and potentially influenced the Historic Fire Regimes in Southern Rockies

Summarize historic and recent fire history studies in Kananaskis Valley and Mtn Parks

Fire Pattern and Direction – topographic influence on fire behaviour

Fire behaviour of the 1936 Galatea fire

How overlap of fires can be linked to surface woody fuel load

Future disturbance research priorities for Marmot Basin project? Fire, insects, windthrow, ?? Yellowstone 1988 wildfire and hydrology example

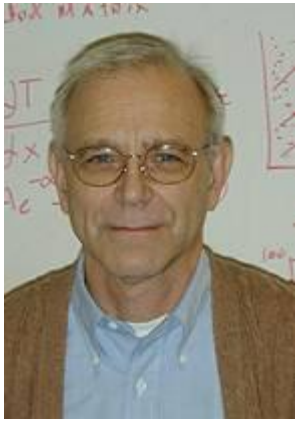
Studying, Observing, Reporting and Influencing Historic Fire Regimes in Southern Rockies

Pocaterra

Palliser

Rogeau

Arthur



Johnson/students

Van Wagner

Photo credit: Ric Arthur

Rummel

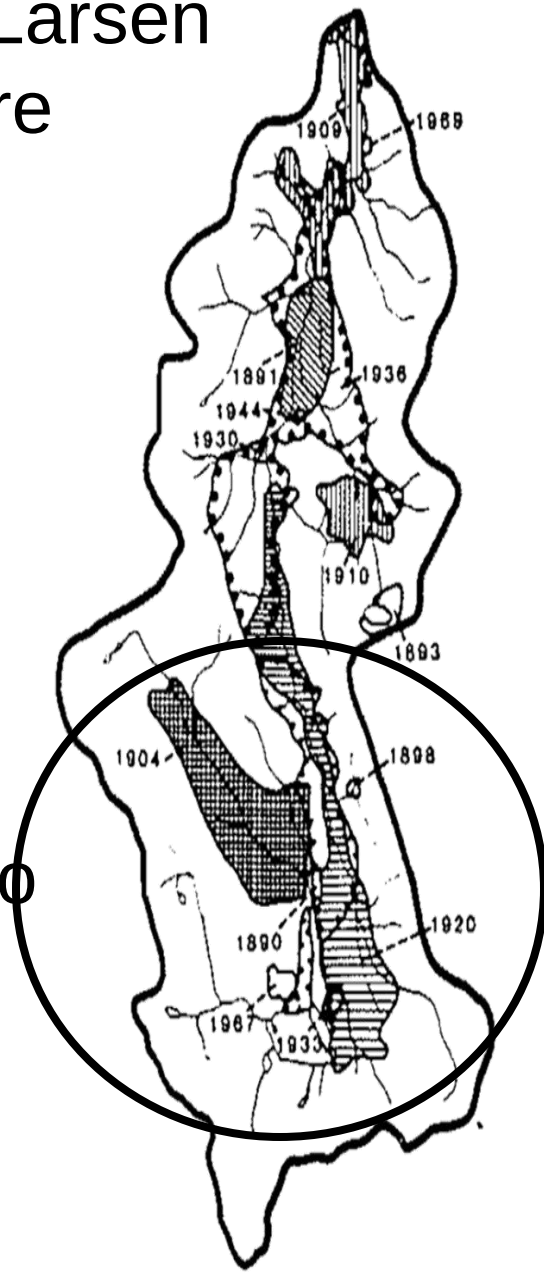
Hawkes

White

E.A. Johnson, K. Miyanishi, G.I Fryer, C.P.S. Larson, W.J. Reed, M.P. Rogeau, S. Jevons, C.E. Van Wagner, B.C. Hawkes, S. Barrett, C. White, M. Heathcott, and R. Arthur.

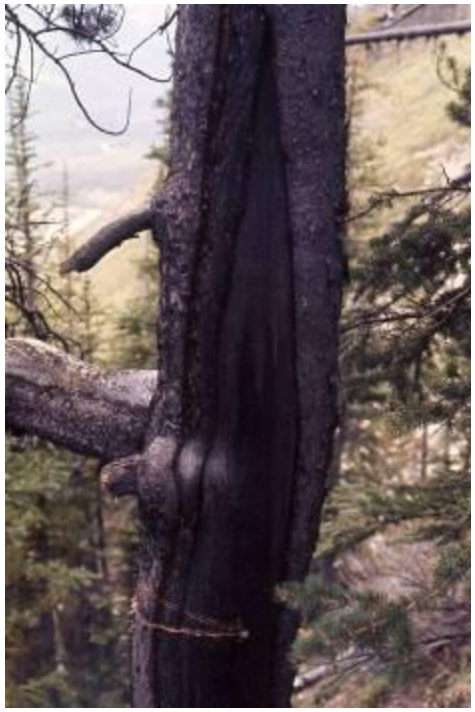
Reed, et al 1998 using Johnson and Larsen 1991 time since fire data for entire Kananaskis Valley

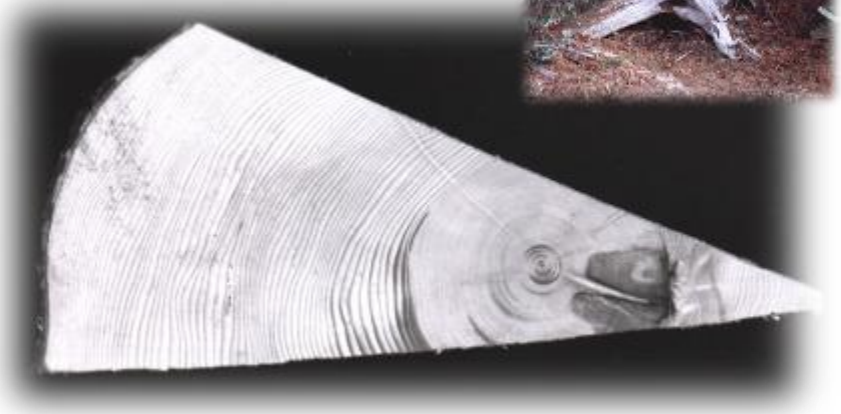
- time-since-fire map data (included Hawkes fire history in PL Prov Park)
- the study area regarded as homogeneous from a fire history perspective
- Bill Reed added additional analysis to determine significance of changes in fire cycle over time.
- Fire Cycle 131 yrs (87-192 yrs)



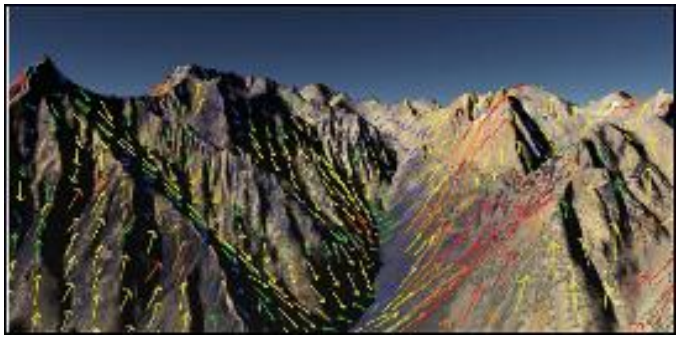
Historic Fire Cycles/Return Intervals

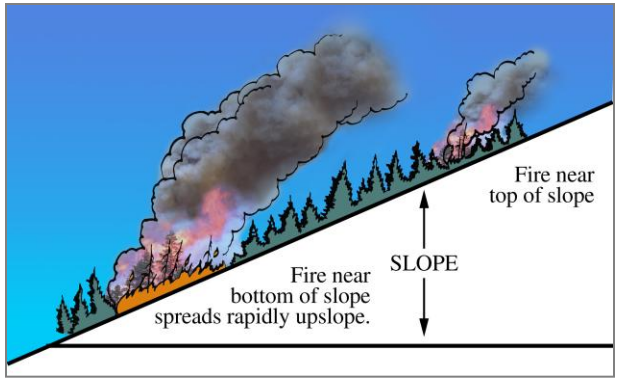
- PL Prov Park MFRI 123 (90-153)
- Kananaskis valley Reed et al FC 131 (87-192)
- Van Wagner et al (Mtn parks) FC 120 (65-175)

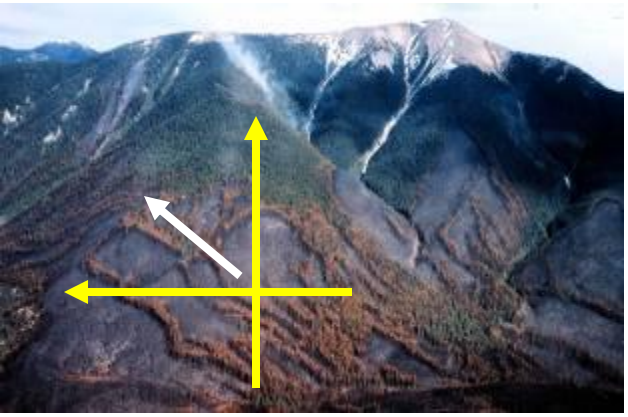


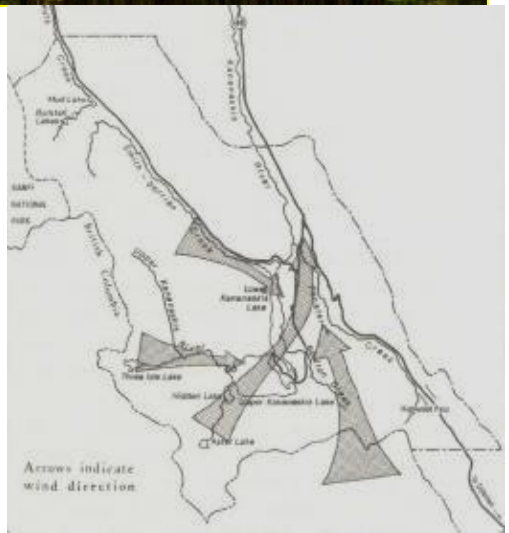


Topography and Fire Behaviour









Kananaskis Lookout 1966-1971 prevailing wind directions in July and August

1936 wildfire

Marmot Basin 8426 ha

Aug 9th 1pm to end of day

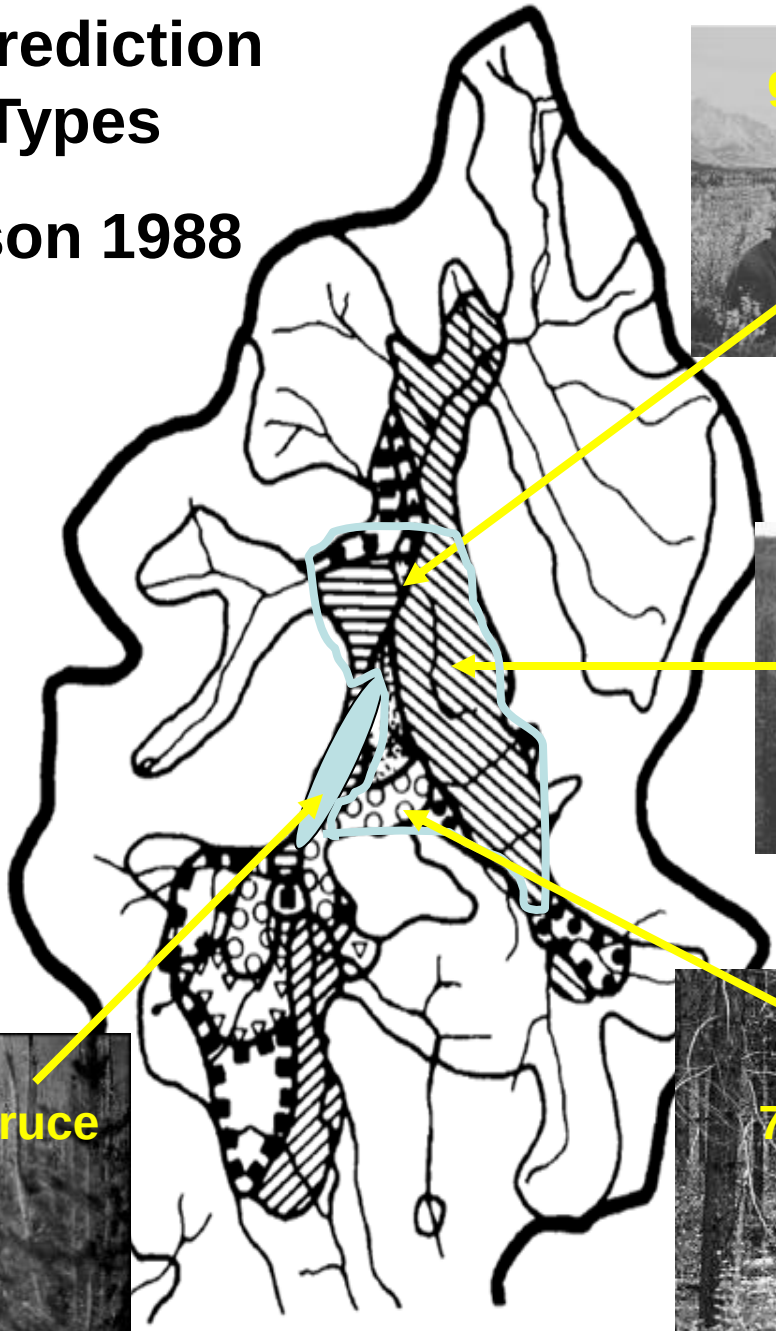
Aug 9th noon – 1pm in old burn

Fryer and Johnson 1988

Fire Behaviour Prediction System Fuel Types

Fryer and Johnson 1988

Year	Fuel type	
1925	C-4	≡
1920	C-4	///
1909	C-4	///
1891	C-3	
1881	C-3,2	ooo
1870	C-3	●●●
1865	C-2	▲▲▲
1850	C-2	▽▽▽
1808	C-3	●
1799	C-2	■■■



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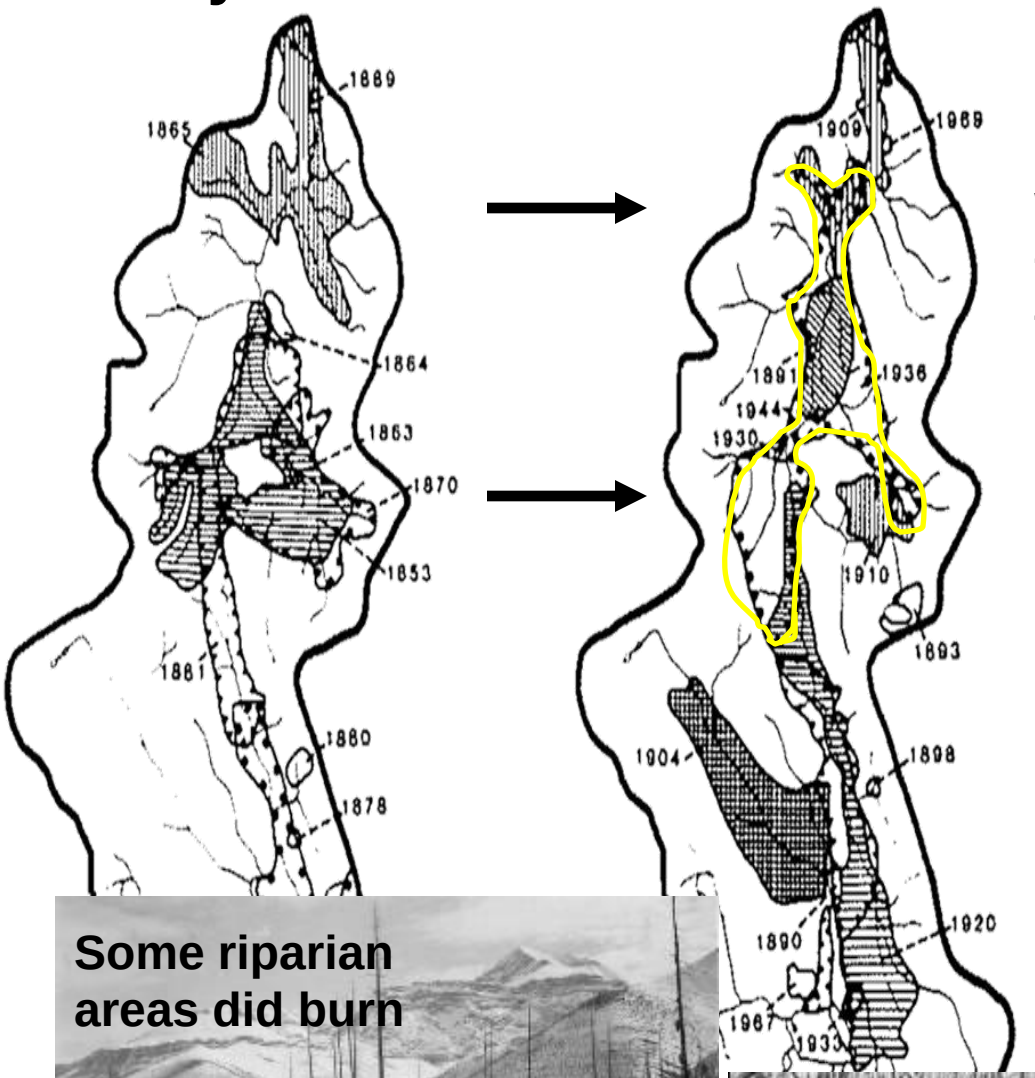
Fryer and Johnson 1988



1891-1910 stand origin burned by 1936 Galatea fire was previously burned 1853 – 1870

What would be the surface woody fuel load in 1936? What would be the tree density and height?

Riparian area left after 1936

Some riparian areas did not burn frequently

Some riparian areas did burn

Overlap of Fires in Kananaskis – surface fuel Hawkes 1979

Previous fires 1890 and 1858

3012 stems/ha

21 t/ha total surface woody

Previous fire 1858

15,346 stems/ha

57 t/ha total surface woody

Previous fire 1732

4521 stems/ha

150 t/ha total surface woody

Yellowstone 1988 wildfire created opportunity for paired watershed study