

FMF Natural Disturbance Program Research

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Disturbance Rates and Cycles

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One of the most common questions asked concerning forest fire regimes is that of frequency of occurrence. There are two ways of considering this question. The most obvious summary is the average number of years between fire events (e.g., the cycle). One can also derive an estimate of the rates of burn through time. Both of these metrics are summarized in the table below for the study area.

The ecological natural subregions are a valuable means of stratifying the landscape. The differences between the rates of burning through time for each area suggest that fire is acting differentially at this scale. These differences can be related to climate, tree species dominance, and even historical lightning strikes. Natural subregions with higher fire cycles generally have cooler, wetter climates, and less lightning activity.

Disturbance Rates and Cycles for the FMF Study Area								
Period	Jasper N Park		Weldwood FMA			ANC FMA		
	Montane	Subalp.	Subalp	Lower F.	Upper F.	Subalp.	Lower F.	Upper F.
1931-50	8	6	1	2	2	0	9	2
1911-30	17	12	16	11	8	14	12	22
1891-1910	50	25	23	11	22	7	21	42
1871-90	20	4	27	53	51	38	75	57
1851-70	24	12	4	55	36	16	53	38
1831-50	6	5	27	67	47	74	66	50
1811-30	31	9	5	6	0	15	36	20
Cycle (yrs)	70-90	130-190	110-140	65-75	80-90	80-90	50-60	60-70
Area (ha)	80,000	400,000	245,000	296,000	587,000	20,000	193,000	151,000

During extreme periods of fire activity, trends are noted across several adjacent zones. For instance, between 1831 and 1850, all parts of the FMF on the east side of the mountains experienced extremely high levels of burning, while on the west side, fire activity was minimal. The one pattern consistent across all natural subregions is the tendency for burning activity to vary widely. In any one 20-year period, the amount of area burnt in any single landscape ranges between zero and more than 70%.

Finally, it is encouraging to note at least a moderate level of consistency between fire activity in adjacent, but identical natural subregions. The lower foothills area of both the Weldwood and ANC areas not only have the highest levels of overall fire activity, but the level of fire activity through time is moderately consistent. However, in general the ANC FMA has experienced higher levels of fire activity than has the Weldwood FMA.