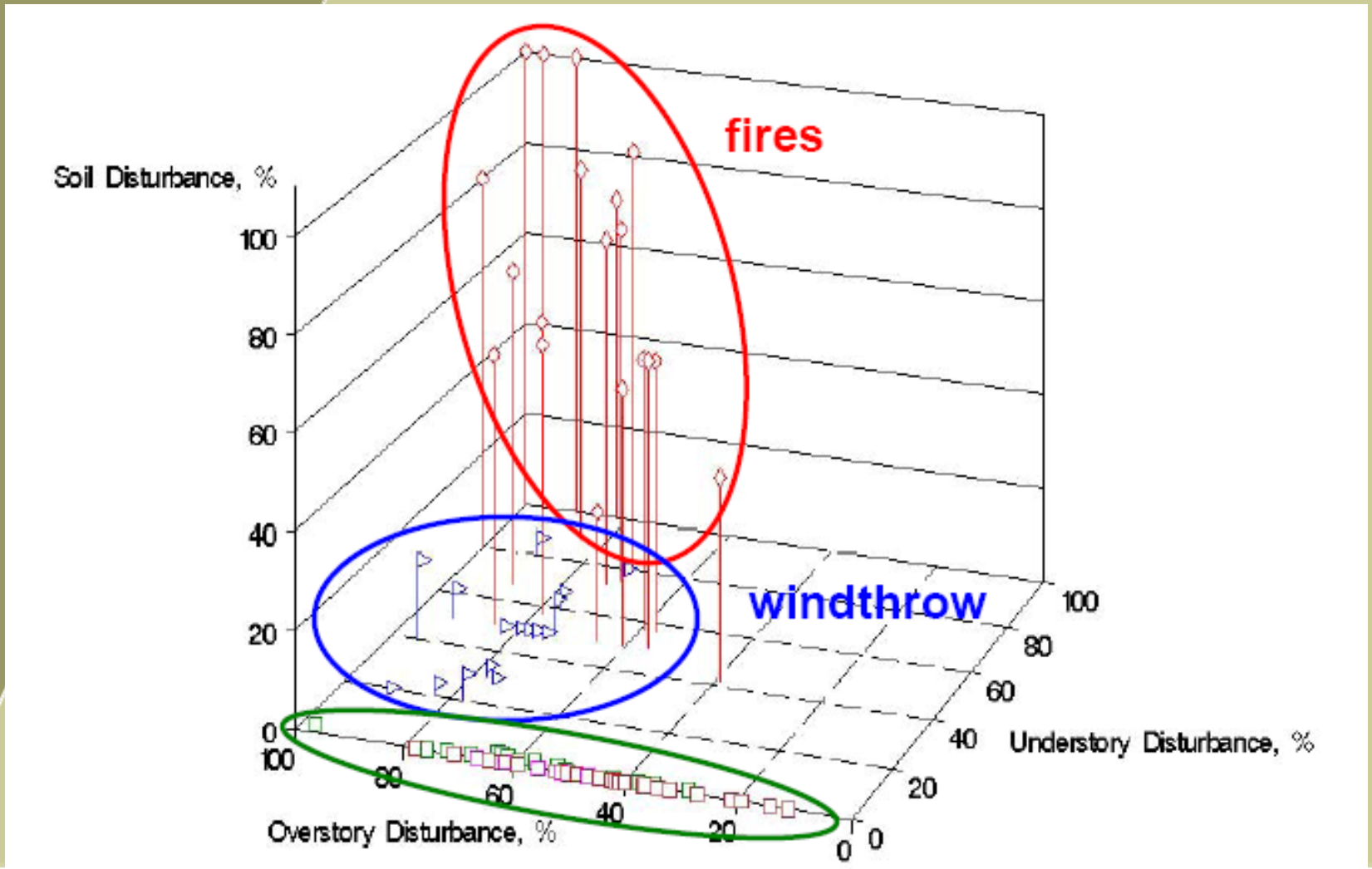
Some Principles of Disturbance Ecology

1) "catastrophe" ← → "opportunity"

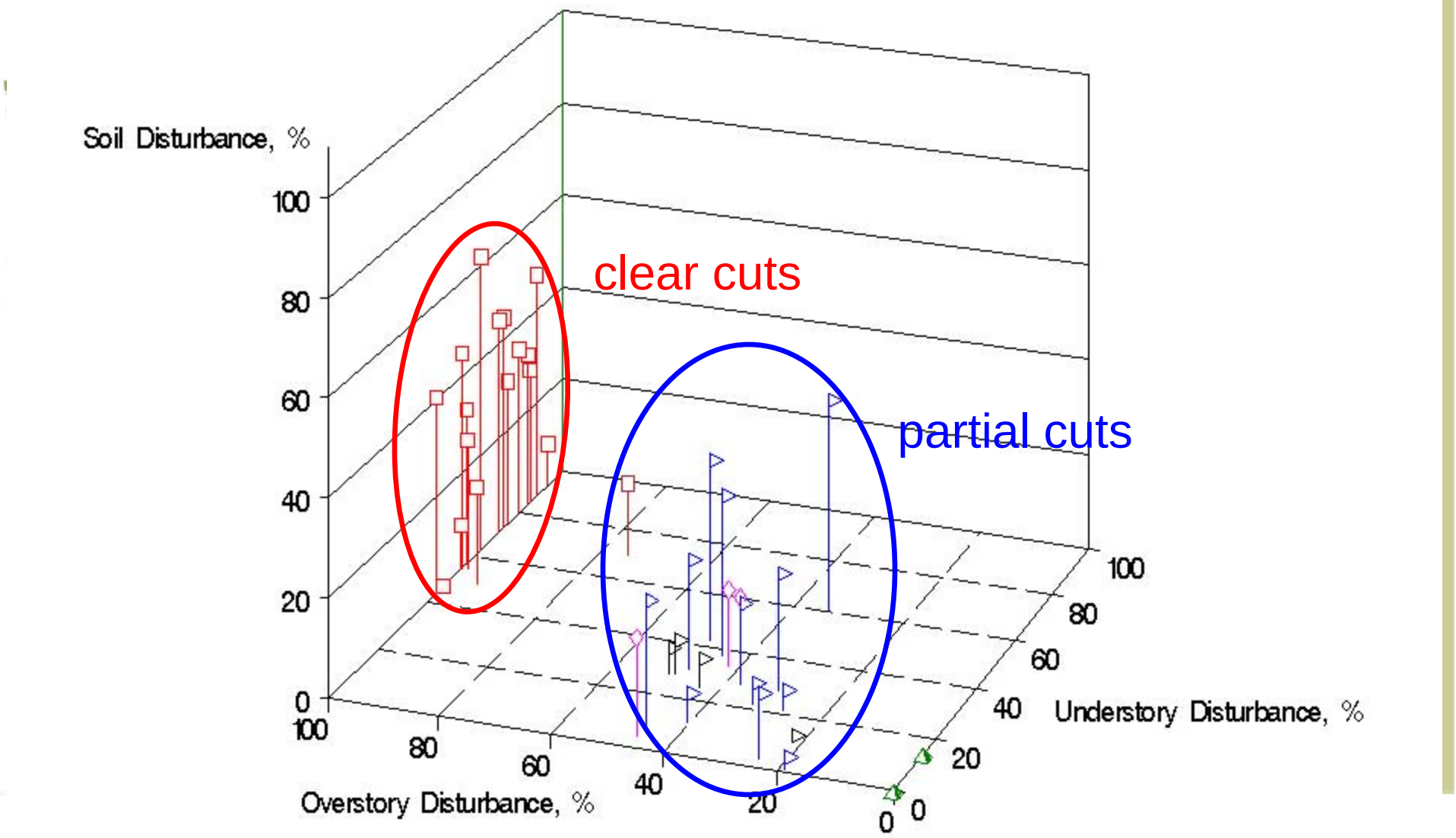
- Mortality
- Removal of organic matter
- Biomass consumption

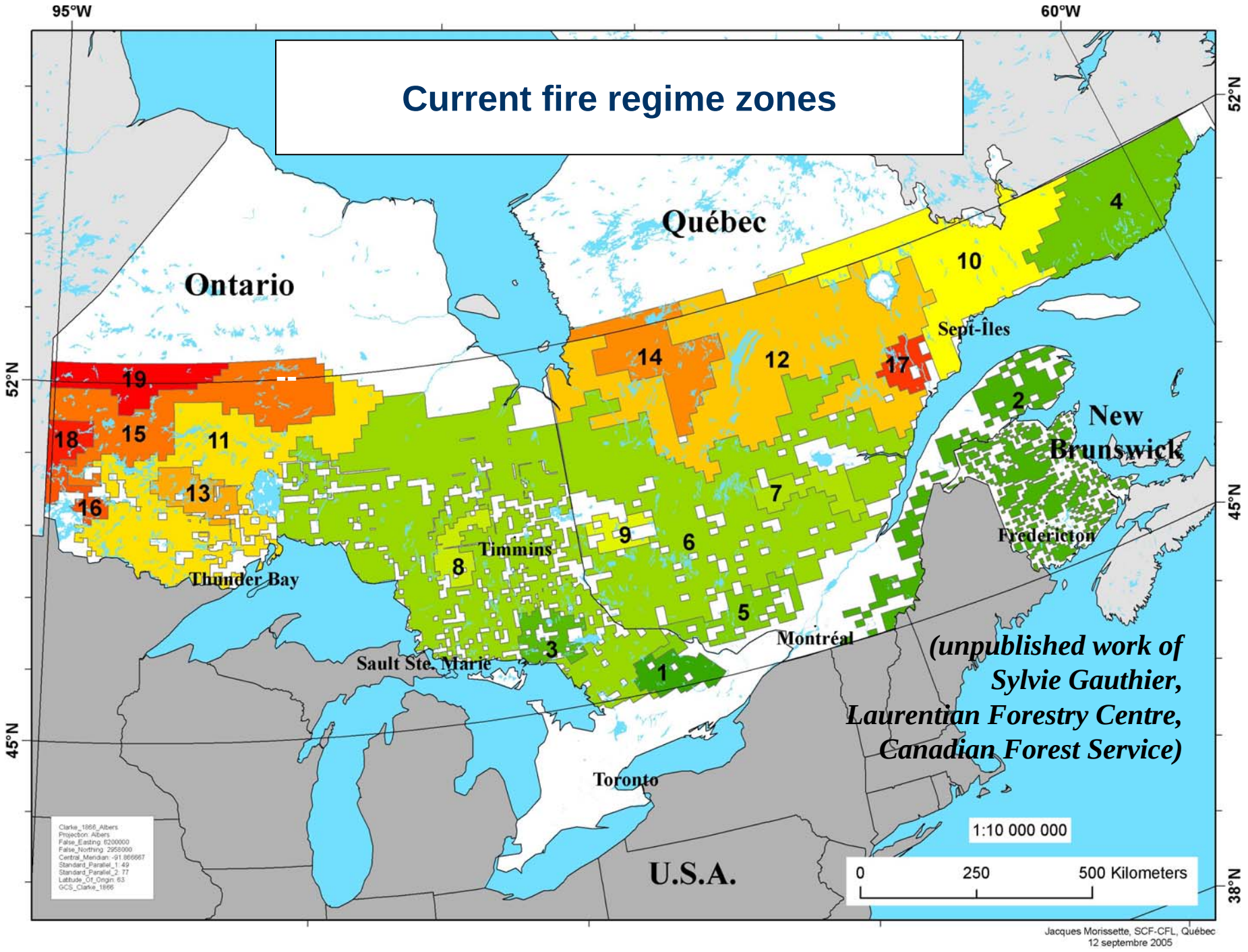
- Regeneration
- New space available
- Nutrient cycling

Describing Disturbances

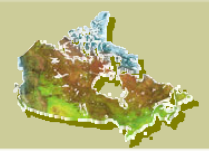


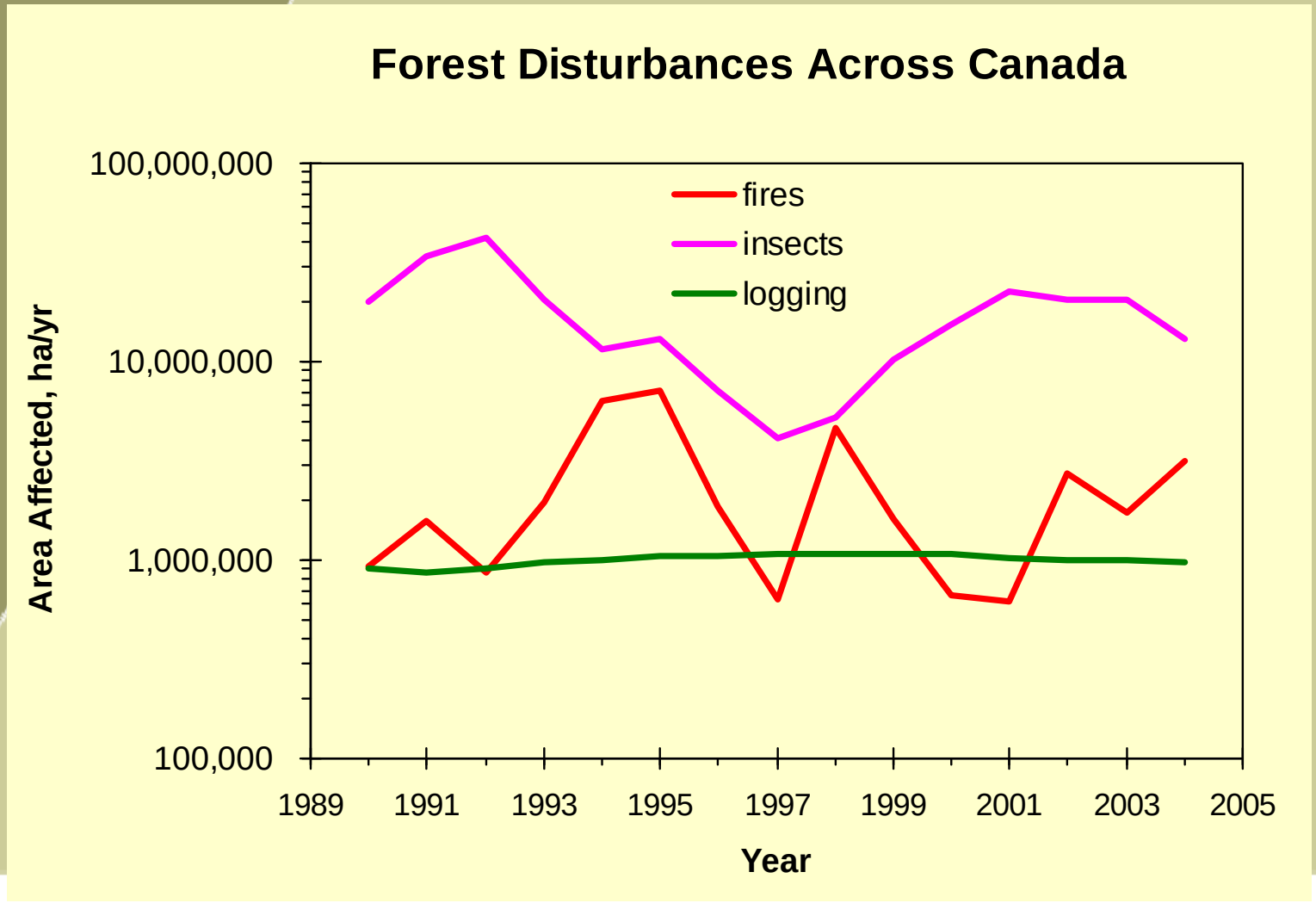
Logging Disturbances in Central B.C.




Current fire regime zones
95°W
60°W
52°N
45°N
38°N
Québec
Ontario
New Brunswick
U.S.A.
Sept-Îles
Timmins
Thunder Bay
Sault Ste. Marie
Montréal
Fredericton
Toronto
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
(unpublished work of Sylvie Gauthier, Laurentian Forestry Centre, Canadian Forest Service)
1:10 000 000
0
250
500 Kilometers
Jacques Morissette, SCF-CFL, Québec
12 septembre 2005

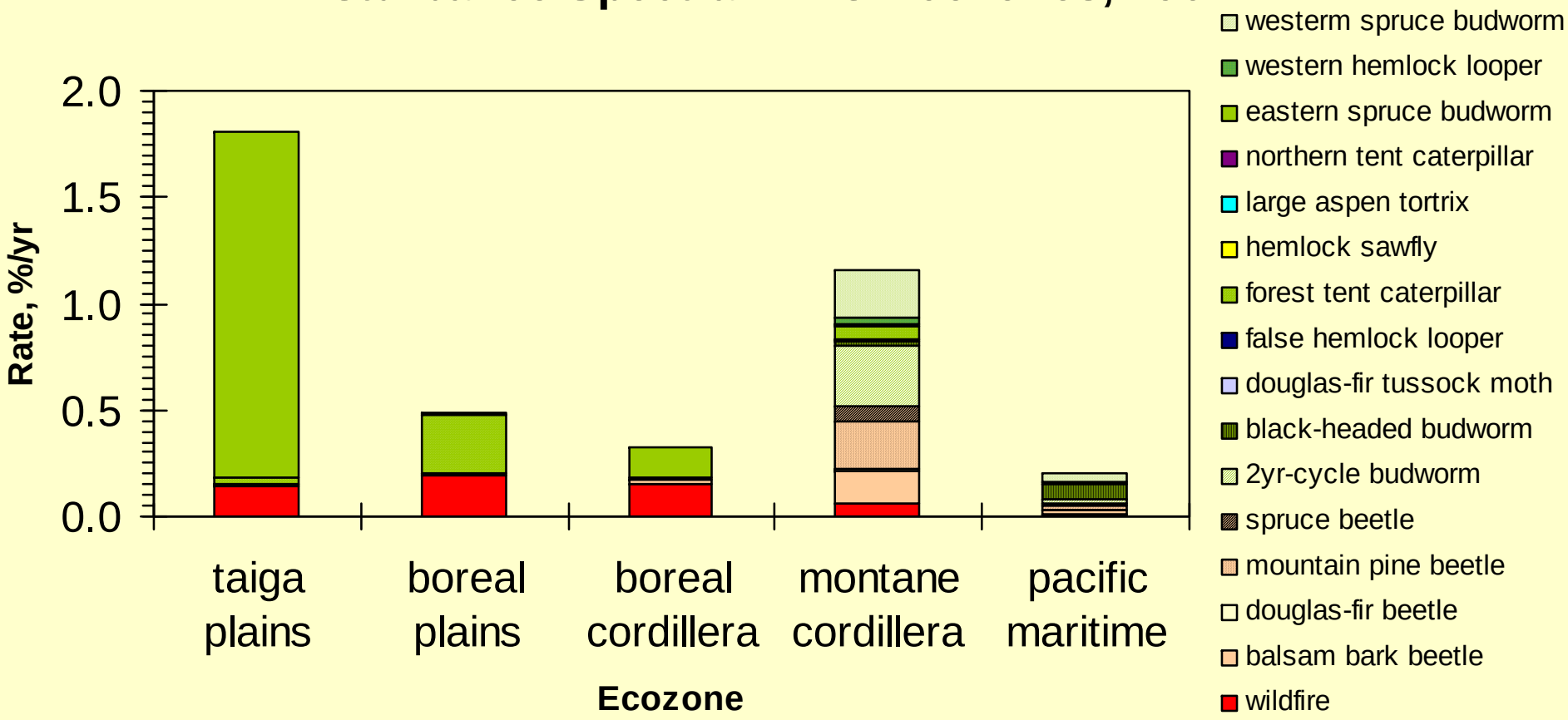
Insects THE Most Important Disturbance to Canada's Forests





(Canadian Council of Forest Ministers 2006, http://nfdp.ccfm.org/compendium/data/)

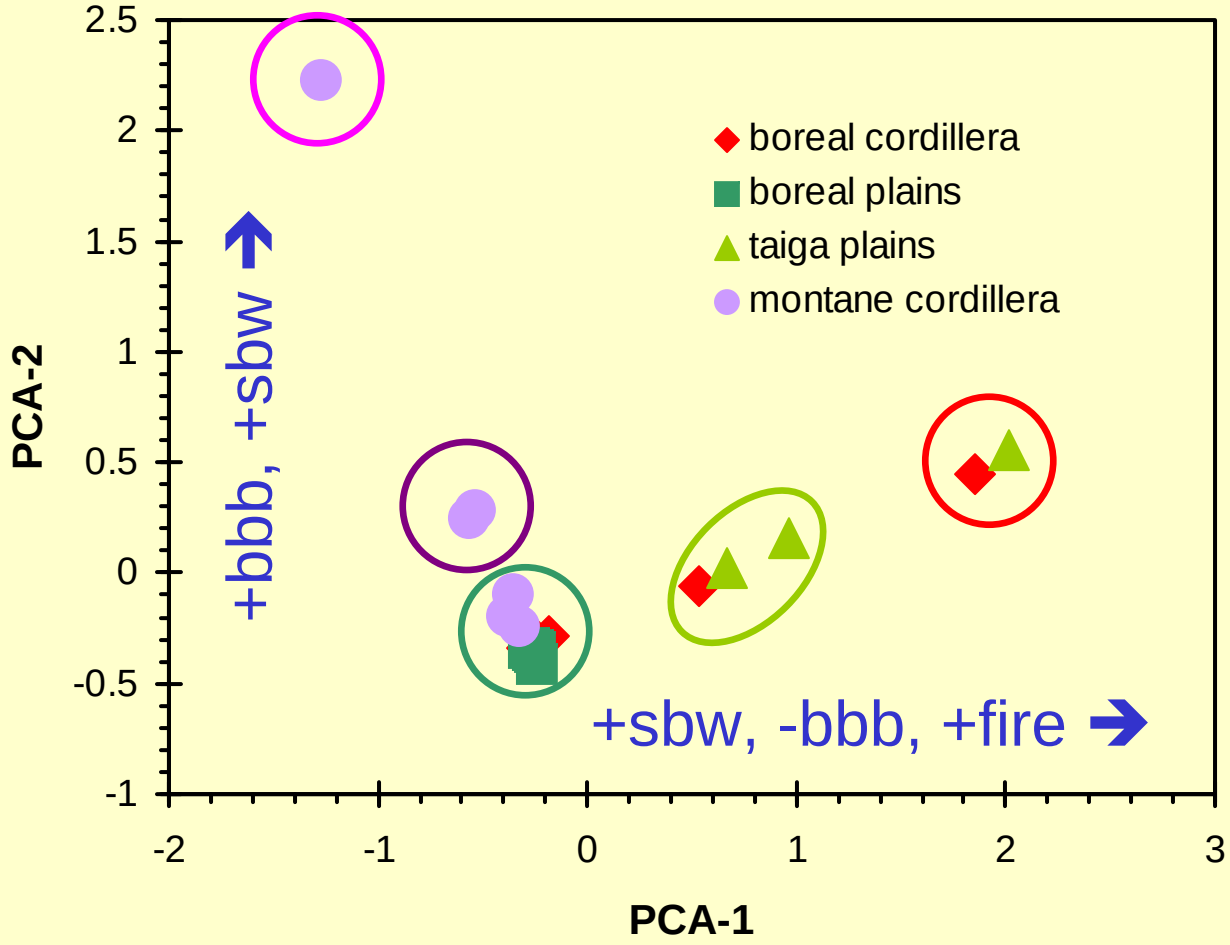
Disturbance Spectra in BC Ecozones, 1961-2000

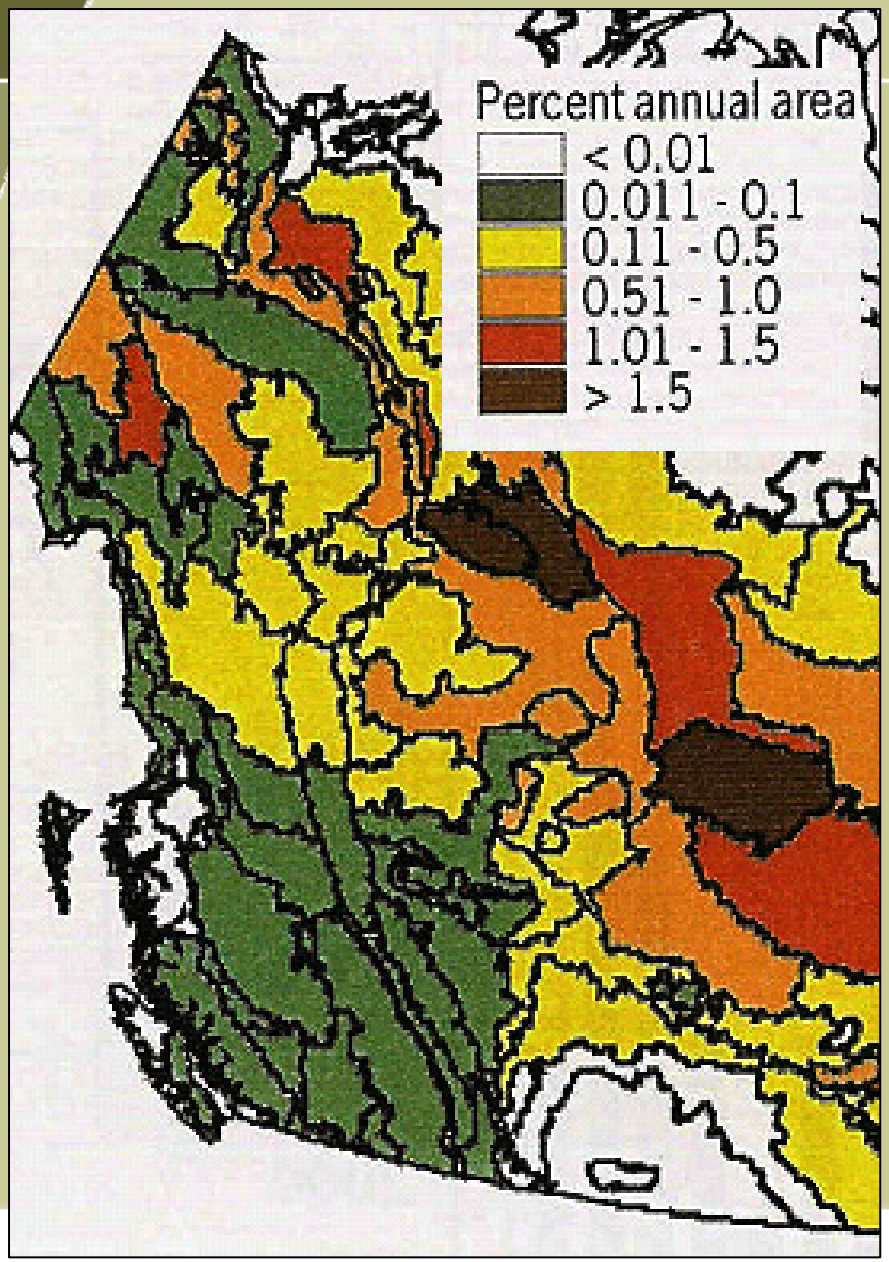


Insects With Disturbance Interval < Fire Return Interval

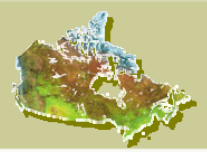
Taiga Plains	Boreal Plains	Boreal Cordillera	Montane Cordillera	Pacific Maritime
eastern spruce budworm	forest tent caterpillar	(insects, collectively)	2-year cycle budworm	mountain pine beetle
			balsam bark beetle	western spruce budworm
			forest tent caterpillar	
			mountain pine beetle	
			spruce beetle	
			western spruce budworm	

Principal Components Analysis (15 insect spp.) of Ecoregion Disturbance Spectra





(Stocks et al. 2002)



- most sbw, fire; no bbb
- sbw, fire
- little bbb, some fire
- more bbb, less fire
- most bbb; no sbw or fire