

Standing dead mortality in old and mature coastal forest stands

This project was initiated to determine the rate of mortality of common coastal tree species across a range of site conditions. Mortality of canopy trees is part of the dynamics of old stands, and dead trees are important structural components of such stands. On the coast, old stands are being retained for non-timber purposes or remaining in the inventory for long periods due to the age structure of the management unit. In order to manage such stands, foresters require information on both rates of mortality and rates of transition from standing dead to fallen logs. This knowledge is applicable to a range of considerations, from the safety hazard posed by individual trees to the characteristics of wildlife tree patches.

Interviews with those developing policy and guidelines for wildlife trees and coarse woody debris retention found that most BC policies were based on information from the literature from the US Pacific Northwest. Subsequently, a protocol was developed to collect data relevant to the varied conditions in BC ecosystems (Resources Inventory Branch 1999). Since that time, data on dead trees have been collected during regular re-measurements of Ministry of Forests and Range growth and yield permanent sample plots (PSPs).

To augment this information, we have collected information on standing dead trees in 32 mature to old stands in the Coastal Forest Region. On Vancouver Island, stands were sampled in the Walbran, Nahmint and Nimpkish valleys and in the Sayward Provincial Forest. On the mainland, stands in the Squamish and Chilliwack valleys and on the Sechelt Peninsula were selected.

Interim results: standing or recently fallen dead trees

Percentage of standing dead or recently fallen trees (≥ 15 cm DBH)
in selected parts of the southern Coast Forest Region

Location	Forest Condition	Percent standing dead stems
Vancouver Island		
Walbran	OG	13.7
Nahmint	OG	19.0
Nimpkish	2 nd	22.5
Sayward Forest	2 nd	18.5
Mainland		
Chilliwack	2 nd	21.9
Squamish	OG	18.0
Sechelt Peninsula		
	OG	19.5
	2 nd	8.0

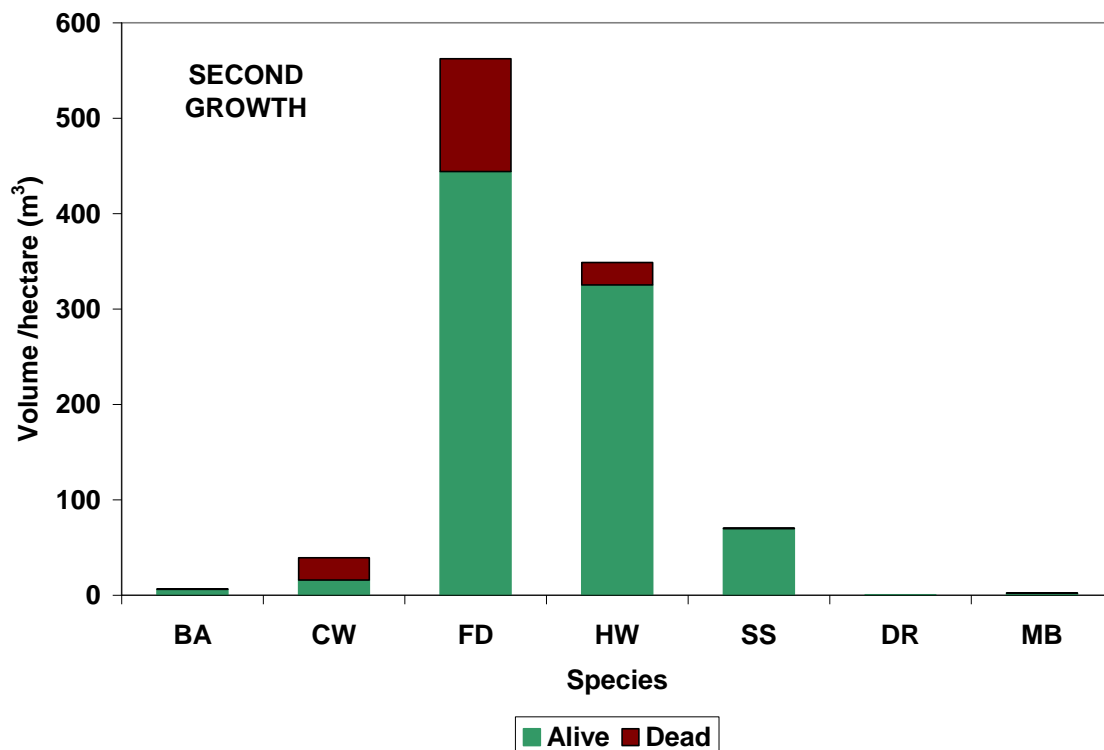
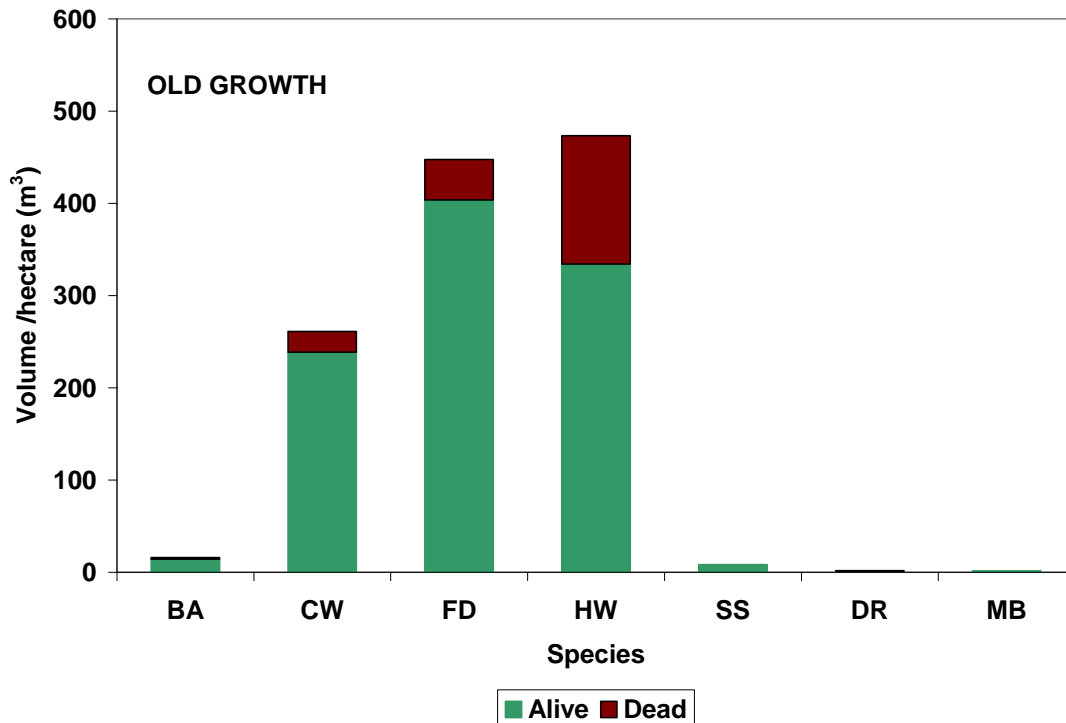
OG = old-growth stands, 2nd = second-growth stands

Number of stems per hectare of dead and alive for all stems
(≥15 cm DBH) and five species in seven locations in
selected parts of the southern Coast Forest Region

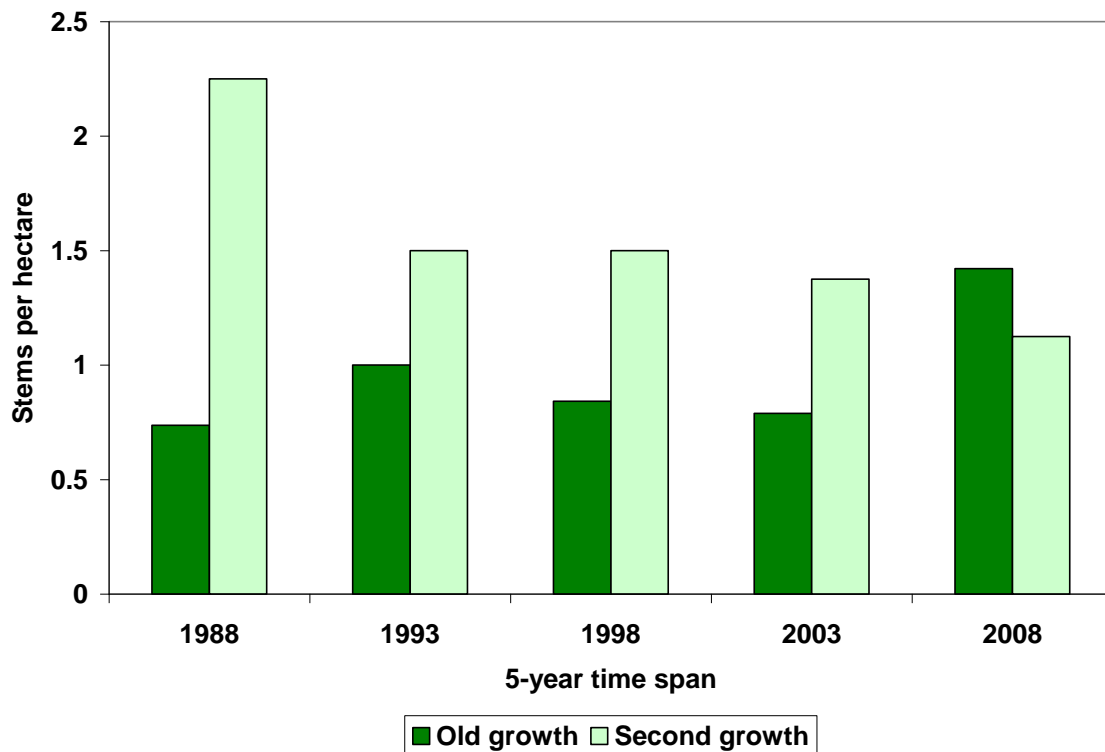
Location		Status	Amabilis fir	Western redcedar	Douglas -fir	Western hemlock	Sitka spruce	All
Walbran	OG	Alive	15.9	44.6	1.1	241.2	1.3	304
		Dead	3.1	6.9	2.4	35.8	0	48
Nahmint	OG	Alive	42.0	55.3	93.8	188.7		380
		Dead	6.0	7.2	27.1	48.6		89
Nimpkish	2nd	Alive	3.7	22.6	108.0	303.2	29.2	471
		Dead	2.9	9.4	46.7	71.0	4.4	137
Sayward	2nd	Alive		44.6	120.2	360.2		525
		Dead		1.3	41.9	75.7		119
Chilliwack	2nd	Alive	2.3	86.2	242.0	120.9		462
		Dead	3.4	24.4	68.1	23.9		129
Squamish	OG	Alive	20.0	103.8	58.3	147.8		335
		Dead	1.5	14.4	33.2	24.2		73
Sechelt	OG	Alive	3.7	.4	240.5	271.2		634
		Dead		14.8	102.5	36.2		153
	2nd	Alive	18.8	93.9	90.9	383.5		587
		Dead	6.3	7.6	3.8	33.5		51

OG = old-growth stands, 2nd = second-growth stands.

Standing volume of live and dead trees (≥ 15 cm DBH) in old-growth and 2nd-growth stands based on sampling in seven different areas of the southern Coast Forest Region. (BA = amabilis fir, CW = western redcedar, FD = Douglas-fir, HW = western hemlock, SS = Sitka spruce, DR = red alder, MB = bigleaf maple)



Time of death of standing dead trees or recently fallen trees (≥ 15 cm DBH) over the last two decades in 5-year intervals, based on sampling from seven different areas in the southern Coast Forest Region. Note that these trees had to have intact bark and no rot close to the bark, representing a biased group of possible age distributions.



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Literature cited

Resources Inventory Branch. 1999. Pilot study for dead tree information on growth and yield permanent sample plots. Resources Inventory Branch, Ministry of Forests. Victoria, B.C. Unpublished report. 18 p.