

The Canadian Field-Naturalist

SUPPLEMENTARY MATERIALS:

The carcass zone: salmon contribution to tree rings in old-growth Sitka Spruce (*Picea sitchensis*) throughout coastal British Columbia

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TABLE S1. Watersheds surveyed in coastal British Columbia (see Figure 1) to examine the relationship between salmon carcasses and Sitka Spruce (*Picea sitchensis*) growth. Alternate watershed names given in brackets. Region: 1 = Mainland, 2 = Mid-coast Islands, 3 = Haida Gwaii. Trees = number of trees used in full dataset (in brackets = number of trees used in partial dataset). $\delta^{15}\text{N}$ = number of trees with nitrogen data (1950–1954, 1975–1979).

	ID code	Lat. (°N)	Long. (°W)	Region	Trees	$\delta^{15}\text{N}$
Aaltanhash River	AAL	53.147	128.477	1	3(3)	2
Allard Creek	ALL	51.465	127.327	1	2(2)	2
Amback Creek	AMB	51.698	127.044	1	5(3)	3
Arnoup Creek	ARN	52.972	128.681	2	4(3)	1
Ashlulum Creek	ASH	51.689	126.901	1	5(3)	3
Bag Harbour Creek	BAG	52.344	131.371	3	37(6)	20
Barnard Creek	BAR	53.054	129.119	2	6(3)	3
Belowe Creek	BEL	53.476	129.475	1	3(3)	0
Calvert Creek (Oatsoalis)	OAT	51.529	127.940	2	4(4)	1
Canoe Creek	CAE	51.260	127.015	1	8(3)	3
Canoon River	CAA	53.074	128.570	2	4(3)	3
Chuckwalla River	CHU	51.728	127.339	1	2(2)	1
Clatse Creek	CLA	52.335	127.837	1	7(6)	3
Cornwall East Arm Creek	EAR	53.161	128.891	2	3(3)	2
Cornwall West Arm Creek	WAR	53.138	128.977	2	2(2)	2
Dallery Creek	DAL	51.673	127.044	1	4(3)	3
Doos Creek Control	DOO	51.657	126.932	1	5(3)	2
Ensheshe River	ENS	54.509	130.225	1	6(4)	0
Evelyn Creek (Hawkes)	EVE	53.585	128.954	2	5(3)	3
Gil Creek	GIL	53.106	129.208	2	5(5)	0
Goin Creek	GOI	52.829	128.726	2	3(3)	2
Government Creek (Brown)	GOV	53.132	132.346	3	11(5)	8
Green River	GRE	52.996	128.381	1	7(4)	4
Gribbell Falls Control	GBC	53.388	128.923	2	2(2)	2
Harriet Creek	HAR	52.291	131.214	3	6(4)	0
Hartley Bay Creek	HBA	53.427	129.259	3	6(5)	0
Head Creek	DOM	53.143	128.474	1	3(3)	3
Hiellen River	HIE	54.069	131.793	3	6(5)	3
Hutton Left Hand Creek	HUT	52.488	131.582	3	4(3)	0
Ingram Creek	ING	52.624	128.030	2	3(3)	2
Johnston Creek	JOH	51.492	127.539	1	4(3)	1
Kainet Creek	KAI	52.756	127.881	1	10(5)	4
Khutze River	KHE	53.090	128.427	1	8(3)	6
Khutzeymateen River	KHN	54.626	129.895	1	21(3)	10
Kilbella River	KLB	51.705	127.340	1	3(3)	3

TABLE S1. *Continued.*

	ID code	Lat. (°N)	Long. (°W)	Region	Trees	δ ¹⁵ N
Kiltuish River	KLT	53.323	128.472	1	4(3)	2
Kishkosh Creek	KSK	53.577	129.350	1	14(6)	3
Kitkiata Creek	KTK	53.639	129.273	1	4(4)	3
Kitlope River	KTL	53.211	127.844	1	3(3)	3
Klekane River	KLE	53.247	128.687	1	5(3)	4
Koeye River	KOE	51.780	127.862	1	4(3)	1
Kostan Creek	KOS	52.579	131.716	3	7(5)	3
Kowesas River	KOW	53.338	128.120	1	3(3)	3
Kumealon Creek	KUM	53.872	129.964	1	5(3)	1
Kwatna River	KWA	52.108	127.374	1	5(3)	4
Kynoch Little Creek (Big)	KYN	52.756	127.887	1	5(3)	3
Lahou Creek	LAH	54.500	130.437	1	5(3)	2
Larch Creek	LAR	54.602	129.936	1	3(3)	3
Lockhard Gordon Creek	LOC	51.409	127.249	1	4(3)	4
Louscoone Creek	LOU	52.244	131.294	3	7(4)	0
Matheson Creek	MAT	52.439	131.475	3	11(4)	7
Mercer Creek	MER	53.583	132.900	3	21(7)	3
Mouse Creek	MOU	54.638	130.020	1	5(4)	3
Mussel River	MUS	52.918	128.034	1	15(3)	11
Nias Creek	NIA	52.923	128.744	2	4(3)	3
Nameless Creek	NAS	52.429	128.219	1	2(2)	1
Neekas Creek	NEE	52.474	128.162	1	19(6)	8
Oxalis Creek	OXA	52.273	131.321	3	6(4)	0
Packe Creek	PAC	52.916	128.744	2	3(3)	2
Poison Cove Creek	POI	52.900	128.021	1	3(3)	2
Quartcha Creek	QUA	52.515	127.841	1	9(4)	1
Riordan Creek	RIO	53.433	128.959	2	6(6)	4
Ripley Creek Control	RIP	52.429	127.892	1	3(3)	2
Roscoe Creek	ROS	52.478	127.744	1	7(3)	5
Salmon Bay Creek	SAC	52.482	128.195	1	2(2)	2
Salmon River, HG	SAR	52.703	131.816	3	16(6)	9
Sedmond Creek	SED	52.203	131.155	3	5(4)	4
Skaat Harbour Creek	SKL	52.389	131.429	3	6(3)	5
Skedans Creek	SKE	52.948	131.643	3	8(4)	2
Skowquiltz River	SKO	52.604	127.171	1	14(5)	0
Smokehouse Creek	SMO	51.289	127.048	1	6(3)	5
Surprise Creek	SUR	52.263	131.216	3	2(2)	2
Tankeeah River	TAN	52.298	128.262	1	3(3)	3
Tillhorn Creek	TIL	53.606	129.181	2	3(3)	0
Tsaytis River	TSA	53.239	127.870	1	3(3)	2
West Pine River	PIN	52.653	128.052	1	3(3)	2
Whalen Creek	WHA	53.247	129.072	2	6(4)	3
Windy Bay Creek, HG	WHG	52.692	131.458	3	15(6)	10
Windy Bay Creek, Pooley	WPO	52.775	128.203	2	3(3)	2

TABLE S2. General linear model analyses (full dataset) of basal area increment (BAI; 1945–1999) of old-growth Sitka Spruce (*Picea sitchensis*) against tree age (AGE), riparian slope (SLOPE), and carcass condition (CARCASS) for three geographical regions (Mainland, Mid-coast Islands, Haida Gwaii). Degrees of freedom (df), *F*-ratio (*F*), probability (*P*), partial eta squared (η), BAI normalized with a single square root.

Region	Parameters	BAI			
		df	<i>F</i>	<i>P</i>	η
Mainland, 271 trees, 47 rivers	Model	3	15.5	<0.001	0.15
	AGE	1	0.71	0.38	0.003
	SLOPE	1	20.50	<0.001	0.04
	CARCASS	1	11.3	<0.001	0.07
	Error	267			
Mid-Coast, 63 trees, 16 rivers	Model	3	15.4	<0.001	0.44
	AGE	1	13.18	<0.001	0.18
	SLOPE	1	4.6	<0.04	0.07
	CARCASS	1	9.2	<0.005	0.14
	Error	59			
Haida Gwaii, 168 trees, 16 rivers	Model	3	1.9	0.13	0.03
	AGE	1	4.1	<0.05	0.03
	SLOPE	1	0.04	0.84	0.00
	CARCASS	1	0.64	0.43	0.00
	Error	164			

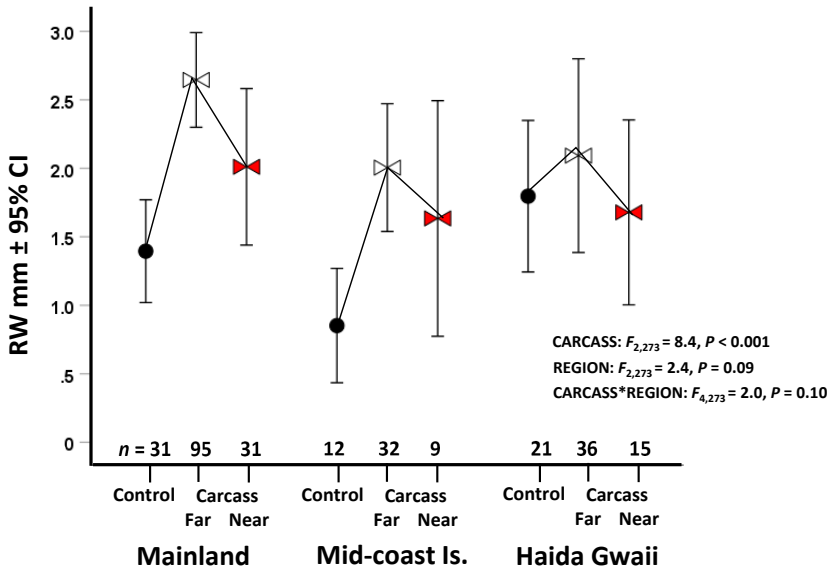


FIGURE S1. Partial data set ($n = 282$ trees). Regional and temporal (1945–1999) trends of Sitka Spruce (*Picea sitchensis*) ring width (RW) in relation to salmon carcass trees against adjacent control trees.

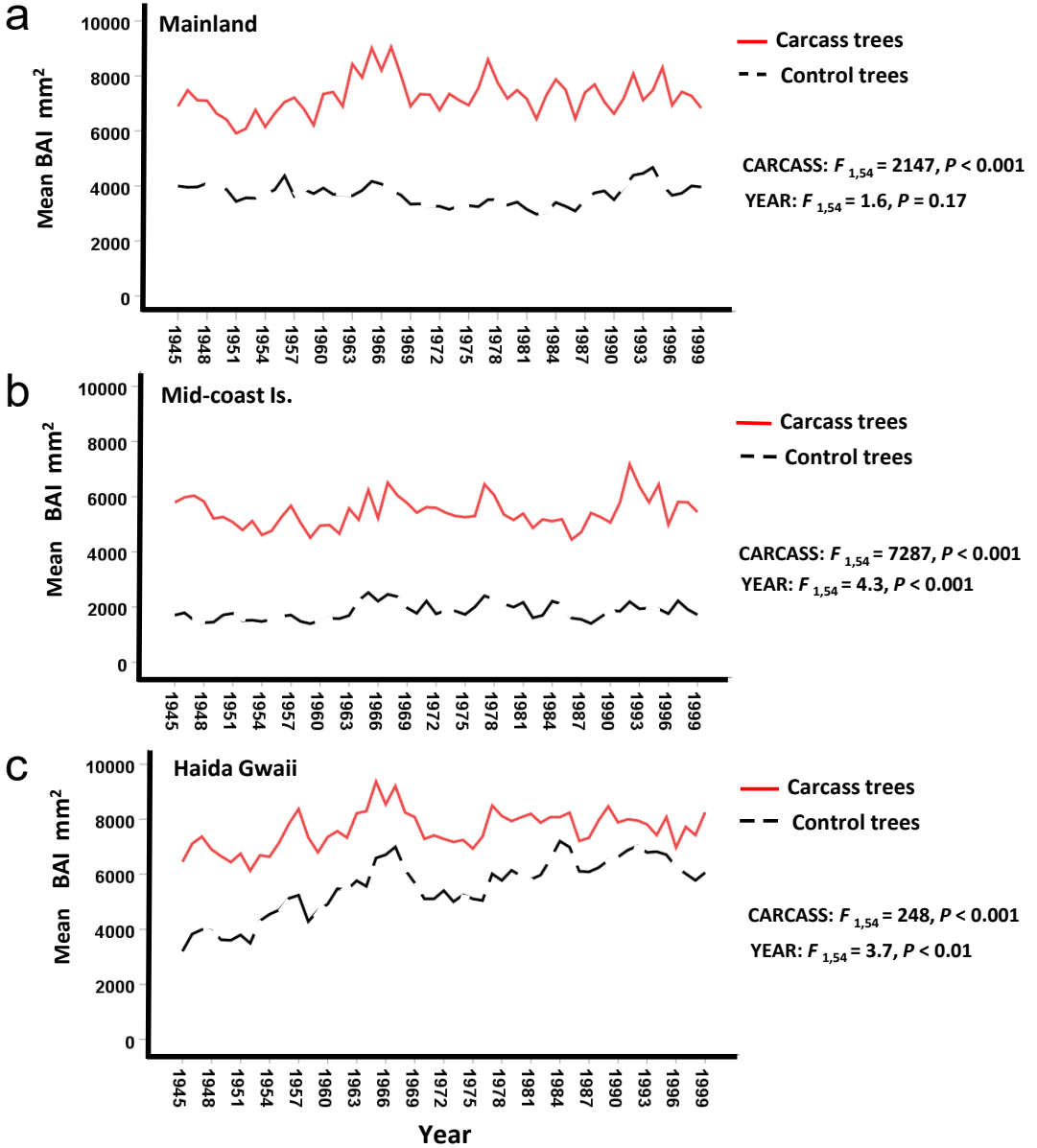


FIGURE S2. Full data set ($n = 502$ trees) of regional and temporal (1945–1999) trends for basal area increment (BAI) on Sitka Spruce (*Picea sitchensis*) in relation to salmon carcass trees against adjacent control trees.

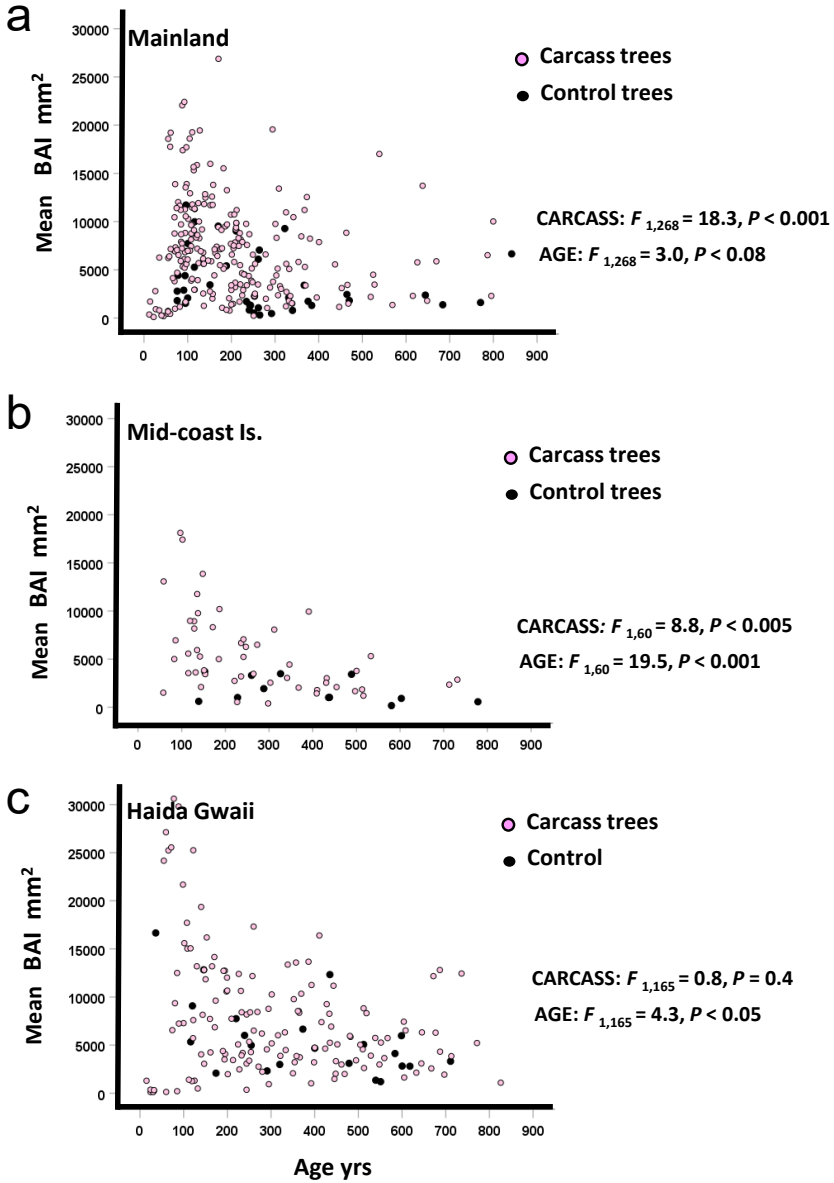


FIGURE S3. Full dataset ($n = 502$ trees) of relationship between mean basal area increment (BAI; 1945–1999) for each core in relation to tree age of Sitka Spruce (*Picea sitchensis*) separated for region and carcass occurrence.

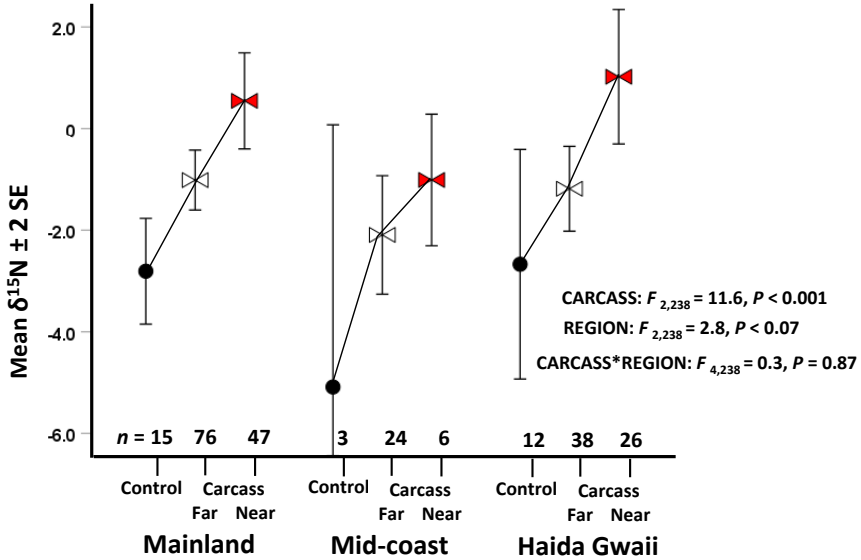


FIGURE S4. Full dataset ($n = 247$) of average $\delta^{15}\text{N}$ signatures for tree rings of riparian Sitka Spruce (*Picea sitchensis*) heartwood (1950–1954, 1975–1979) among regions in relation to salmon carcass occurrence.

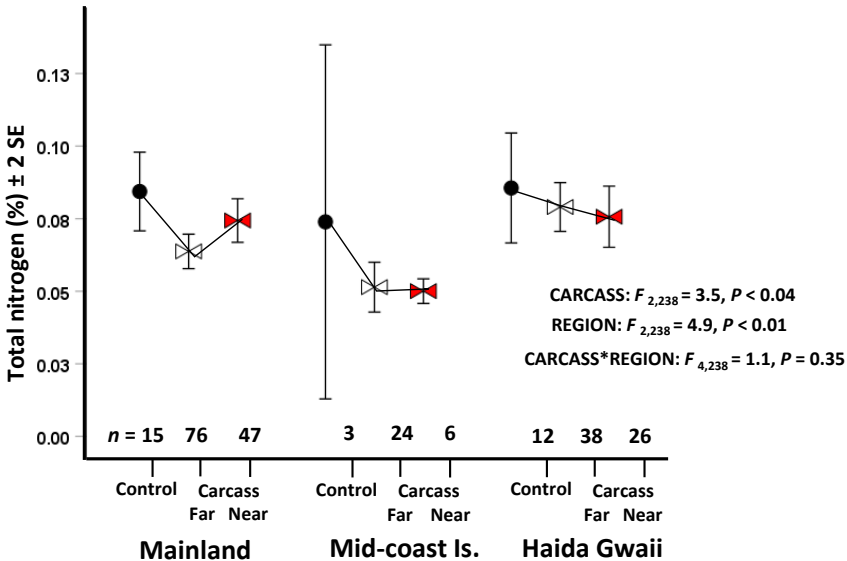


FIGURE S5. Full dataset ($n = 247$) of average total nitrogen for tree rings of riparian Sitka Spruce (*Picea sitchensis*) heartwood (1950–1954, 1975–1979) among regions in relation to salmon carcass occurrence.

