

Appendix Table S2

Occupancy model comparisons for individual species (passerines and woodpeckers) with elevation (elev), red squirrels (resq), and year in the Long Range Mountains, Newfoundland, Canada (2016 and 2017). Each model contains a detection term(s) determined to be the best fit (all include site as a random effect), and an a priori set of occupancy terms. Null model appears in bold for ease of reference. Species included were detected at over 1.5% of surveys.

Species	Detection structure	Occupancy structure	K	AICc	Δ AICc	ω	Log Likelihood
American Robin (<i>Turdus migratorius</i>)	observer + day	elev	12	3201.51	0.00	0.41	-1588.68
	observer + day	elev + year	13	3202.30	0.79	0.27	-1588.06
	observer + day	resq	12	3204.01	2.50	0.12	-1589.93
	observer + day	resq + year	13	3204.50	2.98	0.09	-1589.16
	observer + day	null	11	3205.26	3.75	0.06	-1591.56
	observer + day	year	12	3205.82	4.31	0.05	-1590.83
Black-and-white Warbler (<i>Mniotilta varia</i>)	observer + day	year	12	1770.79	0.00	1.00	-873.31
	observer + day	elev + year	13	1813.70	42.92	0.00	-893.76
	observer + day	resq + year	13	1827.90	57.11	0.00	-900.86
	observer + day	elev	12	1881.39	110.60	0.00	-928.61
	observer + day	resq	12	1901.76	130.97	0.00	-938.80
	observer + day	null	11	1909.32	138.53	0.00	-943.59
Blackpoll Warbler (<i>Setophaga striata</i>)	observer + day	resq	12	4970.08	0.00	0.65	-2472.96
	observer + day	resq + year	13	4971.38	1.30	0.34	-2472.60
	observer + day	elev	12	4993.58	23.50	0.01	-2484.71
	observer + day	elev + year	13	4995.65	25.57	0	-2484.73
	observer + day	null	11	5208.98	238.90	0	-2593.42
	observer + day	year	12	5210.98	240.90	0	-2593.41
Black-throated Green Warbler (<i>Setophaga virens</i>)	observer + day	resq	12	421.11	0.00	0.50	-198.48
	Observer + day	resq + year	13	421.90	0.79	0.34	-197.86
	observer + day	elev	12	423.94	2.83	0.12	-199.89
	observer + day	elev + year	13	425.91	4.79	0.05	-199.86
	observer + day	null	11	565.46	144.34	0.00	-271.66
	observer + day	year	12	567.30	146.19	0.00	-271.57
Boreal Chickadee (<i>Poecile</i>)	observer + day	elev + year	12	1189.45	0.00	0.83	-582.64
	observer + day	resq + year	12	1192.80	3.35	0.16	-584.32

Species	Detection structure	Occupancy structure	K	AICc	Δ AICc	ω	Log Likelihood
<i>hudsonicus</i>	observer + day	elev	11	1197.67	8.22	0.01	-587.77
	observer + day	resq	11	1200.38	10.93	0.00	-589.12
	observer + day	year	11	1215.77	26.32	0.00	-596.82
	observer + day	null	10	1224.81	35.37	0.00	-602.35
Canada Jay (<i>Perisoreus canadensis</i>)	Cloud	null	8	1782.52	0.00	1.00	-883.22
	cloud	resq + year	10	1893.75	111.23	0.00	-936.81
	cloud	year	9	1894.28	111.76	0.00	-938.09
	cloud	elev + year	10	1895.56	113.04	0.00	-937.72
	cloud	resq	9	1939.20	156.68	0.00	-960.55
	cloud	elev	9	1939.84	157.32	0.00	-960.87
Common Yellowthroat (<i>Geothlypis trichas</i>)	wind	resq + year	10	718.92	0.00	1.00	-349.40
	wind	null	8	934.17	215.25	0.00	-459.05
	wind	elev + year	10	1003.04	284.12	0.00	-491.46
	wind	resq	8	1082.75	363.83	0.00	-533.34
	wind	year	9	1084.90	365.99	0.00	-533.41
	wind	elev	9	1087.24	368.32	0.00	-534.57
Dark-eyed Junco (<i>Junco hyemalis</i>)	day + time + observer	resq + year	14	4473.36	0.00	0.86	-2222.57
	day + time + observer	elev + year	14	4477.06	3.70	0.14	-2224.42
	day + time + observer	year	13	4485.03	11.66	0	-2229.42
	day + time + observer	resq	13	4514.72	41.36	0	-2244.27
	day + time + observer	elev	13	4516.02	42.66	0	-2244.92
	day + time + observer	null	12	4523.73	50.37	0	-2249.79
Downy Woodpecker (<i>Dryobates pubescens</i>)	cloud	null	8	173.81	0.00	1.00	-78.87
	cloud	resq	9	453.35	279.54	0.00	-217.63
	cloud	elev	9	456.57	282.76	0.00	-219.24
Fox Sparrow (<i>Passerella iliaca</i>)	observer + day	elev + year	13	6479.19	0.00	1.00	-3226.50
	observer + day	elev	12	6497.08	17.89	0.00	-3236.46
	observer + day	resq + year	13	6523.46	44.26	0.00	-3248.63
	observer + day	resq	12	6545.43	66.24	0.00	-3260.63
	observer + day	year	12	6628.79	149.60	0.00	-3302.31
	observer + day	null	11	6644.53	165.33	0.00	-3311.20
Gray-cheeked Thrush (<i>Catharus minimus</i>)	day + elev	elev	6	1543.60	0.00	0.62	-765.78
	day + elev	elev + year	7	1544.56	0.96	0.38	-765.25
	day + elev	resq + year	7	1561.97	18.37	0	-773.96
	day + elev	null	5	1640.85	97.25	0	-815.41

Species	Detection structure	Occupancy structure	K	AICc	Δ AICc	ω	Log Likelihood
Hermit Thrush (<i>Catharus guttatus</i>)	day + elev	year	6	1641.98	98.38	0	-814.97
	day + elev	resq	6	1740.99	197.39	0	-864.48
	observer + day	resq	12	4586.20	0.00	0.52	-2281.02
	observer + day	resq + year	13	4586.78	0.58	0.39	-2280.30
	observer + day	null	11	4591.21	5.01	0.04	-2284.54
	observer + day	year	12	4592.18	5.98	0.03	-2284.01
	observer + day	elev	12	4593.21	7.01	0.02	-2284.52
Lincoln's Sparrow (<i>Melospiza lincolnii</i>)	observer + day	elev + year	12	4594.18	7.98	0.01	-2284.00
	observer + day	resq + year	13	3641.95	0.00	0.98	-1807.88
	observer + day	elev + year	13	3650.26	8.31	0.02	-1812.04
	observer + day	resq	12	3663.37	21.42	0	-1819.61
	observer + day	elev	12	3669.09	27.14	0	-1822.47
	observer + day	null	11	3705.21	63.26	0	-1841.54
Magnolia Warbler (<i>Setophaga magnolia</i>)	observer + day	year	12	3687.61	45.66	0	-1831.73
	observer + day	elev	12	1531.40	0.00	0.72	-753.62
	observer + day	elev + year	13	1533.28	1.88	0.28	-753.55
	observer + day	resq	12	1598.93	67.53	0	-787.38
	observer + day	resq + year	13	1600.22	68.82	0	-787.02
	observer + day	null	11	1654.95	123.54	0	-816.40
Northern Waterthrush (<i>Parkesia noveboracensis</i>)	observer + day	year	12	1656.91	125.50	0	-816.37
	observer + day	null	11	4331.95	0.00	0.39	-2154.91
	observer + day	resq	12	4333.33	1.38	0.2	-2154.58
	observer + day	year	12	4333.91	1.96	0.14	-2154.88
	observer + day	elev	12	4333.97	2.02	0.14	-2154.90
	observer + day	resq + year	13	4335.31	3.35	0.07	-2154.56
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	observer + day	elev + year	13	4335.93	3.98	0.05	-2154.87
	observer	elev + year	12	766.34	0.00	1.00	-371.09
	observer	resq	11	881.44	115.10	0.00	-429.65
	observer	null	10	961.81	195.47	0.00	-470.85
	observer	elev	11	1056.66	290.32	0.00	-517.26
	observer	resq + year	11	1067.48	301.14	0.00	-522.67
Pine Grosbeak (<i>Pinicola enucleator</i>)	observer	year	11	1072.28	305.93	0.00	-525.07
	precipitation	elev + year	8	2428.65	0	0.69	-1206.29
	precipitation	resq + year	8	2430.66	2.01	0.25	-1207.29
	precipitation	year	7	2434.15	5.5	0.04	-1210.04

Species	Detection structure	Occupancy structure	K	AICc	Δ AICc	ω	Log Likelihood
Pine Siskin (<i>Spinus pinus</i>)	precipitation	elev	7	2438.05	9.4	0.01	-1212
	precipitation	resq	7	2440.73	12.08	0	-1213.34
	precipitation	null	6	2443.46	14.81	0	-1215.71
	time	resq + year	6	445.90	0.00	1.00	-216.93
	time	resq	5	488.92	43.02	0.00	-239.44
	time	null	4	489.65	43.76	0.00	-240.82
	time	elev	5	490.40	44.50	0.00	-240.18
	time	year	5	584.41	138.51	0.00	-287.19
	time	elev + year	6	699.43	253.54	0.00	-343.70
	Ruby-crowned Kinglet (<i>Regulus calendula</i>)	observer + day	elev + year	13	6503.72	0.00	1
observer + day		resq + year	13	6547.31	43.59	0	-3260.56
observer + day		elev	12	6557.22	53.49	0	-3266.52
observer + day		year	12	6591.96	88.24	0	-3283.90
observer + day		resq	12	6593.03	89.31	0	-3284.43
observer + day		null	11	6637.71	133.99	0	-3307.78
Rusty Blackbird (<i>Euphagus carolinus</i>)	wind	null	8	1572.90	0.00	1.00	-778.41
	wind	resq	9	1770.66	197.75	0.00	-876.28
	wind	resq + year	10	1772.58	199.68	0.00	-876.24
	wind	elev	9	1777.65	204.75	0.00	-879.78
	wind	year	9	1778.59	205.69	0.00	-880.25
	wind	elev + year	10	1779.59	206.69	0.00	-879.74
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	cloud	elev	9	521.91	0.00	0.42	-251.91
	cloud	resq	9	523.26	1.35	0.22	-252.58
	cloud	elev + year	10	523.54	1.63	0.19	-251.72
	cloud	resq + year	10	524.72	2.81	0.1	-252.30
	cloud	null	8	526.22	4.31	0.05	-255.07
	cloud	year	9	527.83	5.92	0.02	-254.87
Swainson's Thrush (<i>Catharus ustulatus</i>)	wind	resq	9	4094.82	0.00	0.64	-2038.37
	wind	resq + year	10	4096.62	1.79	0.26	-2038.25
	wind	elev	9	4099.76	4.94	0.05	-2040.83
	wind	elev + year	10	4101.31	6.49	0.02	-2040.60
	wind	null	8	4102.45	7.63	0.01	-2043.19
	wind	year	9	4103.99	9.17	0.01	-2042.95
Tree Swallow (<i>Tachycineta</i>)	day + elev	year	6	699.26	0.00	0.69	-343.61
	day + elev	elev + year	7	701.24	1.99	0.26	-343.59

Species	Detection structure	Occupancy structure	K	AICc	Δ AICc	ω	Log Likelihood
<i>bicolor</i>)	day + elev	null	5	705.18	5.93	0.04	-347.58
	day + elev	elev	6	707.10	7.84	0.01	-347.53
	day + elev	resq + year	7	972.02	272.76	0.00	-478.98
	day + elev	resq	6	975.82	276.57	0.00	-481.89
White-throated Sparrow (<i>Zonotrichia albicollis</i>)	observer + day	resq + year	13	5877.51	0.00	1	-2925.66
	observer + day	resq	12	5896.46	18.94	0	-2936.15
	observer + day	elev + year	13	5902.09	24.57	0	-2937.95
	observer + day	elev	12	5915.08	37.57	0	-2945.46
	observer + day	year	12	5963.34	85.82	0	-2969.59
	observer + day	null	11	5976.75	99.23	0	-2977.31
Wilson's Warbler (<i>Cardellina pusilla</i>)	observer + day + time	elev	13	475.77	0.00	0.71	-224.79
	observer + day + time	elev + year	14	477.74	1.96	0.27	-224.76
	observer + day + time	resq	13	483.51	7.74	0.01	-228.66
	observer + day + time	resq + year	14	485.31	9.54	0.01	-228.55
	observer + day + time	null	12	490.95	15.18	0.00	-233.40
	observer + day + time	year	13	492.88	17.11	0.00	-233.35
Winter Wren (<i>Troglodytes hiemalis</i>)	day + time + elev	year	7	981.30	0.00	0.32	-483.62
	day + time + elev	resq + year	8	981.98	0.67	0.23	-482.95
	day + time + elev	null	6	982.84	1.53	0.15	-485.40
	day + time + elev	elev + year	8	983.14	1.84	0.13	-483.53
	day + time + elev	resq	7	983.23	1.93	0.12	-484.59
	day + time + elev	elev	7	984.66	3.36	0.06	-485.30
Yellow-bellied Flycatcher (<i>Empidonax flaviventris</i>)	time	elev + year	6	5109.16	0.00	0.93	-2548.56
	time	year	5	5115.19	6.02	0.05	-2552.58
	time	resq + year	6	5116.24	7.08	0.03	-2552.10
	time	elev	5	5127.32	18.15	0	-2558.64
	time	null	4	5133.40	24.24	0	-2562.69
	time	resq	5	5134.88	25.72	0	-2562.43
Yellow-rumped Warbler (<i>Setophaga coronata</i>)	observer + day	elev + year	13	6078.59	0.00	0.39	-3026.20
	observer + day	year	12	6078.79	0.20	0.35	-3027.32
	observer + day	resq + year	13	6080.23	1.64	0.17	-3027.02
	observer + day	elev	12	6083.46	4.87	0.03	-3029.65
	observer + day	null	11	6083.63	5.03	0.03	-3030.75
	observer + day	resq	12	6084.87	6.28	0.02	-3030.35