Supporting Information. Eric C. Palm, Michael J. Suitor, Kyle Joly, Jim D. Herriges, Allicia P. Kelly, Dave Hervieux, Kelsey L.M. Russell, Torsten W. Bentzen, Nicholas C. Larter, and Mark Hebblewhite. 2022. Increasing fire frequency and severity will increase habitat loss for a boreal forest indicator species. Ecological Applications.

Appendix S1.

Table S1. Animal care permit details for captures of female caribou (*Rangifer tarandus*) in eastern Alaska and northwestern Canada.

Region	Populations	Animal care permit #s
AB	Richardson, Yates	University of Montana, IACUC # 05606MHECS_010207
AK	Fortymile, Nelchina	2012-034, 2013-031, 2015-03, 2016-10
NT	Bistcho, Dehcho North, Dehcho South, Hay River Lowlands, Mackenzie, Pine Point-Buffalo Lake, Sahtu	Government of Northwest Territories Wildlife Act authority and internal permits and capture reviews.
YT	Clear Creek, Klaza, Kluane, Tay River	Government of Yukon Territory wildlife act authority and internal permits and capture reviews.

Table S2. Summary of available GPS location data from female caribou (*Rangifer tarandus*) in eastern Alaska and northwestern Canada prior to filtering for all resource selection analyses.

Ecotype	Region	Population	Years marked	# of animals	Mean # of years marked per animal	Mean # of locs per animal	Median relocation interval (hours)	Range of median relocation interval (hours)
Boreal	AB/NT	Bistcho	2006–2011	30	2.4	2046	8.0	8–16
Boreal	NT	Dehcho North	2007–2019	64	1.9	1781	8.0	2–25
Boreal	NT	Dehcho South	2007–2019	66	2.0	1699	8.0	4–24
Boreal	NT	Hay River Lowlands	2008–2019	86	2.1	1946	8.0	2–24
Boreal	NT	Mackenzie	2015–2019	37	2.2	5371	2.0	2–8
Boreal	NT	Pine Butte-Buffalo Lake	2015–2019	44	2.0	2241	8.0	2–8
Boreal	AB	Richardson	2008–2016	36	1.4	4632	2.0	2–23
Boreal	NT	Sahtu	2003–2011	16	2.6	1441	12.0	8–24
Boreal	AB	Yates	2014–2016	13	1.1	4674	2.0	2–23
Migratory	AK/YT	Fortymile	2013–2019	118	2.2	4357	2.5	1–26
Migratory	AK/YT	Nelchina	2012–2015	78	1.3	1707	4.0	4–12
Mountain	YT	Clear Creek	2017–2019	39	1.5	305	23.0	13–69
Mountain	YT	Klaza	2012–2019	43	1.6	1742	8.0	5–13
Mountain	YT	Kluane	2014–2018	12	2.6	3875	5.0	5–13
Mountain	YT	Tay River	2016–2018	39	1.9	550	23.0	23–46

Table S3. Summary of GPS location data from adult female caribou (*Rangifer tarandus*) in eastern Alaska and northwestern Canada used in resource selection analyses. We excluded the Nelchina population from the *within-burn RSA* summer model due to a lack of GPS locations within burns.

A. *Burn perimeter* and *burn severity RSAs*

| | | | | Summer | | | | Winter | | | |
| | | | | 24-hour scale | | Two-week scale | | 24-hour scale | | Two-week scale | |
Ecotype	Region	Population	Years marked	# of animals	Mean # of locs per animal	# of animals	Mean # of locs per animal	# of animals	Mean # of locs per animal	# of animals	Mean # of locs per animal
Boreal	AB/NT	Bistcho	2006–2011	29	264.4	28	20.8	30	498.8	28	38.7
Boreal	NT	Dehcho North	2007–2019	49	221.3	44	18.0	58	385.9	46	33.5
Boreal	NT	Dehcho South	2007–2019	56	181.0	50	15.8	65	376.2	52	32.8
Boreal	NT	Hay River Lowlands	2008–2019	71	195.2	61	16.9	85	381.8	67	34.3
Boreal	NT	Mackenzie	2015–2019	30	315.4	30	19.3	37	523.6	32	38.8
Boreal	NT	Pine Point-Buffalo L.	2015–2019	34	262.5	33	18.5	44	460.7	35	39.0
Boreal	AB	Richardson	2008–2016	30	255.8	26	16.0	36	386.6	27	27.5
Boreal	NT	Sahtu	2006–2011	14	278.3	13	23.5	15	392.3	14	30.5
Boreal	AB	Yates	2014–2016	8	258.4	8	14.6	8	496.8	8	28.2
Migratory	AK/YT	Fortymile	2013–2019	110	342.4	102	22.0	112	513.2	102	36.5
Migratory	AK/YT	Nelchina	2012–2015	64	173.6	55	13.7	77	232.6	38	27.4
Mountain	YT	Clear Creek	2017–2019	20	114.3	16	11.5	22	160.4	19	18.1
Mountain	YT	Klaza	2012–2019	33	173.9	32	13.1	43	345.7	41	26.2
Mountain	YT	Kluane	2014–2018	10	418.9	11	22.9	12	601.6	27	36.1
Mountain	YT	Tay River	2016–2018	32	180.7	8	16.0	36	265.6	29	24.8

B. *Within-burn RSA*

| | | | | Summer | | | | Winter | | | |
Ecotype	Region	Population	Years marked	# of animals	Mean # of locations per animal	Mean # of burns visited per animal	Median location interval within burns (hours)	# of animals	Mean # of locations per animal	Mean # of burns visited per animal	Median location interval within burns (hours)
Migratory	AK/YT	Fortymile	2013–2019	91	76.8	13.3	9.9	94	106.0	18.8	12.0
Migratory	AK/YT	Nelchina	2012–2015					30	47.1	5.5	12.6

| Mountain | YT | Klaza | 2012–2019 | 12 | 52.6 | 1.5 | 12.7 | 7 | 50.3 | 3.3 | 8.0 |
| Mountain | YT | Kluane | 2014–2017 | 4 | 74.8 | 1.5 | 15.1 | 17 | 153 | 1.6 | 16.5 |

Table S4. Fixed effect coefficients and 95% confidence intervals for covariates in resource selection analyses for female caribou (*Rangifer tarandus*) in eastern Alaska and northwest Canada. TPI indicates terrain position index. TRI indicates terrain ruggedness idex

A. *Burn perimeter RSA* (*n* = 15 populations). Land cover coefficients (including burn) indicate selection relative to the reference category of evergreen forest and are from models without functional responses.

Covariate	Summer						Winter					
	Two-week scale			24-hour scale			Two-week scale			24-hour scale		
	β	LCI	UCI	B	LCI	UCI	β	LCI	UCI	β	LCI	UCI
burn	−0.66	−1.04	−0.29	−0.31	−0.47	−0.15	−0.99	−1.16	−0.82	−0.61	−0.68	−0.53
fen	−0.52	−0.77	−0.26	−0.46	−0.65	−0.27	−0.63	−0.98	−0.28	−0.45	−0.68	−0.22
grass	0.24	−0.08	0.56	−0.19	−0.60	0.22	−0.20	−0.59	0.19	−0.26	−0.58	0.06
other	−0.40	−0.67	−0.13	−0.48	−0.61	−0.34	−0.71	−0.98	−0.45	−0.54	−0.70	−0.39
shrubs	−0.60	−0.98	−0.21	−0.59	−0.87	−0.31	−0.98	−1.39	−0.56	−0.59	−0.85	−0.33
sparse	0.26	0.15	0.37	0.16	0.13	0.19	−0.13	−0.22	−0.04	0.05	0.02	0.08
water	−5.02	−6.73	−3.31	−4.21	−4.99	−3.44	−3.26	−3.80	−2.72	−2.40	−2.75	−2.04
tree cover	−0.41	−0.63	−0.19	−0.27	−0.48	0.07	−0.60	−0.71	−0.49	−0.36	−0.45	−0.28
tree cover^2							−0.36	−0.39	−0.33	−0.23	−0.23	−0.22
TRI	−0.82	−0.63	−0.28	−0.55	−0.90	−0.20	−0.73	−1.20	−0.26	−0.34	−0.53	−0.15
TRI^2							−0.10	−0.12	0.08	−0.04	−0.04	−0.03
TPI	0.07	0.05	0.10	0.05	0.05	0.06	0.09	0.08	0.11	0.08	0.08	0.09
log sl	0.12	0.09	0.16	0.05	0.05	0.06	0.12	0.10	0.14	0.06	0.06	0.06

B. *Burn severity RSA* at the 24-hour spatiotemporal scale (*n* = 15 populations). Land cover coefficients indicate selection relative to the reference category of unburned evergreen forest.

Covariate	Summer			Winter		
	β	LCI	UCI	β	LCI	UCI
old burn	−0.45	−0.63	−0.28	−0.53	−0.66	−0.40
regrowth	−0.66	−0.96	−0.36	−0.50	−0.80	−0.20
unburned residual	−0.16	−0.29	−0.03	−0.07	−0.22	0.08
low severity	−0.26	−0.37	−0.15	−0.46	−0.59	−0.33
high severity	−0.50	−0.62	−0.37	−1.07	−1.23	−0.90
fen	−0.47	−0.65	−0.28	−0.46	−0.69	−0.23
grass	−0.22	−0.65	0.22	−0.27	−0.58	0.05
other	−0.47	−0.62	−0.33	−0.53	−0.68	−0.38

Covariate	β	LCI	UCI	β	LCI	UCI
shrubs	−0.60	−0.88	−0.32	−0.58	−0.83	−0.32
sparse	0.16	0.13	0.19	0.06	0.04	0.08
water	−4.21	−4.98	−3.44	−2.39	−2.73	−2.06
tree cover	−0.27	−0.47	−0.07	−0.35	−0.45	−0.24
tree cover^2				−0.23	−0.24	−0.22
TRI	−0.54	−0.91	−0.17	−0.33	−0.53	−0.13
TRI^2				−0.04	−0.04	−0.03
TPI	0.05	0.05	0.06	0.08	0.08	0.09
log sl	0.06	0.06	0.07	0.07	0.07	0.07

C. *Within-burn RSA* ($n = 4$ populations). Land cover categories represent pre-fire land cover, and their coefficients indicate selection relative to the reference pre-fire land cover category of evergreen forest.

Covariate	Summer (~10-hour scale)			Winter (~12-hour scale)		
	β	LCI	UCI	β	LCI	UCI
severity	−0.05	−0.11	0.02	−0.22	−0.28	−0.17
lichen	0.35	0.27	0.43	0.40	0.33	0.47
lichen^2	−0.03	−0.06	−0.00	−0.04	−0.06	−0.02
distance within perimeter	−0.58	−0.69	−0.47	−0.40	−0.49	−0.32
distance within perimeter^2	0.06	0.03	0.09	0.04	0.01	0.06
severity:tsf	0.04	−0.03	0.10	0.09	0.04	0.14
fen	0.57	0.38	0.76	0.02	−0.18	0.21
grass	0.86	0.67	1.04	0.39	0.22	0.57
other	−0.04	−0.54	0.46	−0.35	−0.71	0.01
shrubs	0.43	0.28	0.58	−0.20	−0.35	−0.06
sparse	0.54	0.31	0.76	0.07	−0.11	0.25
TRI	−0.10	−0.18	−0.03	−0.04	−0.10	0.02
TRI^2	−0.14	−0.19	−0.09	−0.07	−0.11	−0.04
TPI	0.08	0.03	0.14	0.03	−0.01	0.07

Table S5. Population-level random selection coefficients and their 95% confidence intervals (calculated using the sum of conditional and fixed effects variances) for burns (in the *burn perimeter RSA*) at two spatiotemporal scales and seasons, for female caribou (*Rangifer tarandus*) across 15 populations in western Canada and eastern Alaska. Values indicate log odds of selection relative to the reference land cover category of unburned evergreen forest and are from models without functional responses.

| Ecotype | Population | Summer | | | | | | Winter | | | | | |
| | | Two-week scale | | | 24-hour scale | | | Two-week scale | | | 24-hour scale | | |
		β	LCI	UCI	β	LCI	UCI	β	LCI	UCI	β	LCI	UCI
Boreal	Bistcho	−0.55	−1.47	0.36	−0.47	−0.91	−0.03	−0.78	−1.23	−0.32	−0.39	−0.60	−0.17
Boreal	Dehcho North	−0.46	−1.30	0.36	−0.37	−0.76	0.01	−1.33	−1.75	−0.91	−0.72	−0.91	−0.54
Boreal	Dehcho South	−1.08	−2.09	−0.08	−0.61	−1.09	−0.13	−1.03	−1.53	−0.52	−0.55	−0.76	−0.34
Boreal	Hay River Lowlands	−0.41	−1.24	0.41	−0.32	−0.70	0.05	−0.84	−1.23	−0.44	−0.52	−0.69	−0.34
Boreal	Mackenzie	0.56	−0.55	1.67	0.13	−0.36	0.62	−0.45	−0.91	0.00	−0.47	−0.68	−0.25
Boreal	Pine Point-Buffalo Lake	−0.45	−1.32	0.41	−0.23	−0.65	0.18	−0.73	−1.14	−0.32	−0.63	−0.82	−0.44
Boreal	Richardson	−0.53	−1.43	0.36	−0.22	−0.64	0.19	−1.29	−1.74	−0.84	−0.79	−0.99	−0.59
Boreal	Sahtu	−0.31	−1.27	0.64	−0.17	−0.65	0.30	−0.85	−1.37	−0.34	−0.54	−0.78	−0.31
Boreal	Yates	0.01	−1.11	1.15	0.02	−0.53	0.59	−0.84	−1.39	−0.30	−0.58	−0.82	−0.34
Migratory	Fortymile	−0.85	−1.64	−0.06	−0.28	−0.64	0.06	−1.17	−1.56	−0.79	−0.74	−0.91	−0.57
Migratory	Nelchina	−0.76	−1.98	0.46	−0.12	−0.65	0.39	−1.03	−1.49	−0.56	−0.61	−0.82	−0.41
Mountain	Clear Creek	−1.38	−2.89	0.11	−0.36	−0.91	0.17	−0.74	−1.29	−0.19	−0.59	−0.83	−0.35
Mountain	Klaza	−0.64	−1.63	0.35	−0.45	−0.90	0.00	−1.18	−1.65	−0.70	−0.66	−0.86	−0.45
Mountain	Kluane	−0.72	−1.89	0.44	−0.22	−0.77	0.33	−0.89	−1.47	−0.31	−0.54	−0.79	−0.28
Mountain	Tay River	−1.77	−3.07	−0.47	−0.76	−1.31	−0.21	−1.36	−1.85	−0.86	−0.62	−0.83	−0.41

Table S6. Delta AIC values for candidate models testing for functional responses to burns and those testing for the effect of ecotype on relative selection for burns for female caribou (*Rangifer tarandus*) across 15 populations in western Canada and eastern Alaska in the *burn perimeter RSA*. Bolded values indicate top models for each combination of spatiotemporal scale and season. df indicates degrees of freedom.

Model	df	Two-week scale		24-hour scale	
		Summer	Winter	Summer	Winter
First order functional response	33	**0.0**	9.0	**0.0**	7.1
Second order functional response	34	1.1	**0.0**	1.6	**0.0**
Burn:ecotype interaction	34	74.0	49.6	109.9	29.6
No functional response or interaction	32	78.6	47.4	109.4	27.2

Table S7. Population-level random selection coefficients and their 95% confidence intervals (calculated using the sum of conditional and fixed effects variances) for burn severity levels (in the *burn severity RSA*) at the 24-hour spatiotemporal scale during summer and winter for female caribou (*Rangifer tarandus*) across 15 populations in western Canada and eastern Alaska. Values indicate log odds of selection relative to the reference land cover category of unburned evergreen forest.

A. Summer

Ecotype	Population	Old burn			Regrowth			Residual			Low severity			High severity		
		β	LCI	UCI	β	LCI	UCI	β	LCI	UCI	β	LCI	UCI	β	LCI	UCI
Boreal	Bistcho	−0.45	−0.99	0.08	−0.78	−1.59	0.01	−0.16	−0.52	0.19	−0.38	−0.70	−0.07	−0.52	−0.86	−0.18
Boreal	Dehcho North	−0.47	−0.90	−0.04	−0.61	−1.28	0.05	−0.32	−0.67	0.02	−0.12	−0.40	0.16	−0.53	−0.84	−0.21
Boreal	Dehcho South	−0.70	−1.28	−0.13	−0.60	−1.35	0.14	−0.13	−0.51	0.24	−0.37	−0.71	−0.03	−0.49	−0.85	−0.13
Boreal	Hay River Lowlands	−0.43	−0.84	−0.03	−0.60	−1.32	0.11	−0.08	−0.42	0.25	−0.21	−0.52	0.08	−0.42	−0.77	−0.07
Boreal	Mackenzie	−0.45	−1.02	0.12	−0.50	−1.30	0.30	−0.01	−0.38	0.35	0.00	−0.36	0.35	−0.49	−0.84	−0.15
Boreal	Pine Point-Buffalo L.	−0.29	−0.72	0.14	−0.78	−1.46	−0.09	−0.34	−0.72	0.03	−0.26	−0.56	0.04	−0.65	−1.02	−0.29
Boreal	Richardson	−0.22	−0.65	0.21	−0.66	−1.33	0.00	−0.16	−0.50	0.17	−0.27	−0.56	0.01	−0.69	−1.06	−0.33
Boreal	Sahtu	−0.34	−0.86	0.18	−0.65	−1.37	0.05	−0.17	−0.56	0.20	−0.20	−0.55	0.15	−0.38	−0.78	0.01
Boreal	Yates	−0.07	−0.70	0.55	−0.65	−1.40	0.08	−0.17	−0.59	0.25	−0.28	−0.67	0.10	−0.40	−0.85	0.04
Migratory	Fortymile	−0.69	−1.10	−0.29	−0.27	−1.18	0.64	0.05	−0.25	0.35	−0.31	−0.57	−0.04	−0.28	−0.56	0.00
Migratory	Nelchina	−0.50	−1.13	0.12	−0.65	−1.40	0.08	−0.16	−0.57	0.24	−0.28	−0.66	0.10	−0.41	−0.84	0.02
Mountain	Clear Creek	−0.43	−1.04	0.18	−0.68	−1.42	0.06	−0.08	−0.51	0.35	−0.22	−0.61	0.16	−0.50	−0.91	−0.09
Mountain	Klaza	−0.45	−1.00	0.08	−0.70	−1.46	0.04	−0.15	−0.54	0.23	−0.28	−0.63	0.05	−0.41	−0.78	−0.04
Mountain	Kluane	−0.47	−1.09	0.13	−0.66	−1.40	0.08	−0.11	−0.53	0.30	−0.20	−0.58	0.18	−0.47	−0.87	−0.06
Mountain	Tay River	−0.54	−1.13	0.04	−0.64	−1.38	0.09	−0.14	−0.56	0.27	−0.35	−0.74	0.04	−0.61	−1.06	−0.17

B. Winter

Ecotype	Population	Old burn			Regrowth			Unburned residual			Low severity			High severity		
		B	LCI	UCI	β	LCI	UCI	β	LCI	UCI	β	LCI	UCI	β	LCI	UCI
Boreal	Bistcho	−0.34	−0.71	0.02	−0.29	−1.06	0.46	0.24	−0.11	0.60	−0.19	−0.49	0.11	−0.49	−0.90	−0.07
Boreal	Dehcho North	−0.72	−1.04	−0.41	−0.35	−1.04	0.33	−0.27	−0.61	0.07	−0.43	−0.72	−0.14	−1.12	−1.50	−0.73
Boreal	Dehcho South	−0.54	−0.91	−0.16	0.12	−0.83	1.07	0.03	−0.36	0.42	−0.27	−0.59	0.04	−0.55	−0.99	−0.12
Boreal	Hay River Lowlands	−0.57	−0.86	−0.29	−1.23	−2.06	−0.40	−0.14	−0.48	0.20	−0.46	−0.77	−0.16	−0.92	−1.33	−0.52
Boreal	Mackenzie	−0.92	−1.42	−0.42	−0.59	−1.33	0.15	0.12	−0.23	0.47	−0.08	−0.39	0.23	−1.14	−1.54	−0.73
Boreal	Pine Point-Buffalo L.	−0.48	−0.78	−0.18	−0.90	−1.60	−0.20	−0.53	−0.90	−0.17	−0.62	−0.94	−0.31	−1.10	−1.52	−0.69
Boreal	Richardson	−0.53	−0.84	−0.22	−0.38	−1.09	0.33	−0.31	−0.67	0.05	−0.88	−1.19	−0.57	−1.50	−1.92	−1.09
Boreal	Sahtu	−0.49	−0.88	−0.10	−0.15	−0.96	0.66	0.18	−0.24	0.61	−0.55	−0.93	−0.16	−1.14	−1.64	−0.64

Boreal	Yates	−0.58	−0.97	−0.19	−0.49	−1.64	0.65	0.13	−0.44	0.71	−0.48	−0.93	−0.02	−1.06	−1.66	−0.45
Migratory	Fortymile	−0.55	−0.84	−0.26	−0.83	−1.56	−0.10	−0.17	−0.49	0.15	−0.68	−0.96	−0.39	−1.14	−1.50	−0.78
Migratory	Nelchina	−0.41	−0.75	−0.08	−0.43	−1.27	0.40	−0.38	−0.78	0.01	−0.53	−0.87	−0.19	−0.86	−1.28	−0.44
Mountain	Clear Creek	−0.23	−0.75	0.28	−0.30	−1.22	0.61	0.05	−0.42	0.53	−0.54	−0.98	−0.09	−1.34	−1.89	−0.80
Mountain	Klaza	−0.65	−1.01	−0.29	−0.04	−0.98	0.89	0.17	−0.21	0.57	−0.52	−0.86	−0.18	−1.05	−1.48	−0.63
Mountain	Kluane	−0.22	−0.77	0.33	−0.50	−1.65	0.64	0.06	−0.47	0.59	−0.15	−0.57	0.25	−1.03	−1.54	−0.52
Mountain	Tay River	−0.48	−0.84	−0.12	−0.30	−1.36	0.75	0.05	−0.39	0.50	−0.31	−0.67	0.04	−1.07	−1.51	−0.62

Table S8. Spearman rank correlations for resource selection models for female caribou (*Rangifer tarandus*) in western Canada and eastern Alaska. For the *burn perimeter* and *burn severity RSAs*, models were fit using 14 of 15 populations, and model coefficients were used to predict RSF scores for the withheld population. Values for *burn perimeter RSA* are from top models with functional responses. For the *within-burn RSA*, models were fit to 90% of individual caribou, and model coefficients were used to predict RSF scores for the remaining 10% of animals.

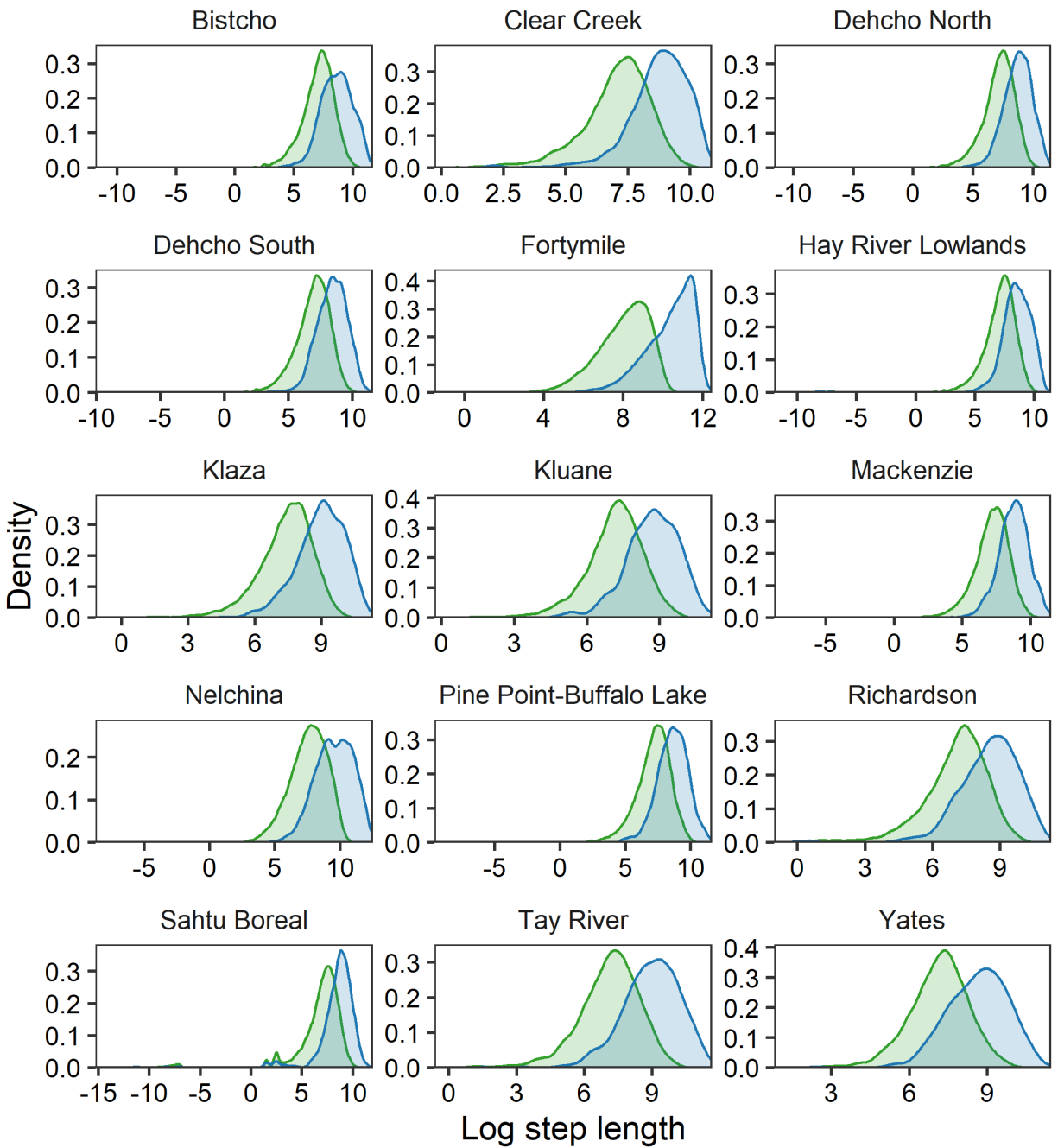| Ecotype | Population | Burn perimeter RSA | | | | Burn severity RSA | | Random fold | Within-burn RSA | |
| | | Summer | | Winter | | Summer | Winter | | Summer | Winter |
		Two weeks	24 hours	Two weeks	24 hours	24 hours	24 hours		10–15 hours	12–17 hours
Boreal	Bistcho	0.88	0.96	1.00	1.00	0.94	1.00	1	0.70	0.99
Boreal	Dehcho North	0.94	0.89	1.00	1.00	0.99	1.00	2	0.84	0.83
Boreal	Dehcho South	0.92	0.94	1.00	1.00	0.97	1.00	3	0.81	0.87
Boreal	Hay River Lowlands	0.63	0.02	1.00	0.99	0.13	1.00	4	0.71	0.83
Boreal	Mackenzie	0.77	0.47	0.78	0.34	0.84	0.88	5	0.53	0.87
Boreal	Pine Point-Buffalo Lake	0.79	0.55	0.99	1.00	0.76	1.00	6	0.81	0.79
Boreal	Richardson	0.92	0.92	0.96	1.00	0.98	0.99	7	0.77	0.77
Boreal	Sahtu Boreal	0.72	0.74	0.96	0.99	0.83	0.99	8	0.96	0.85
Boreal	Yates	0.63	0.49	0.99	0.99	0.04	1.00	9	0.70	0.54
Migratory	Fortymile	0.95	0.99	0.99	1.00	1.00	1.00	10	0.90	0.84
Migratory	Nelchina	1.00	1.00	0.98	1.00	1.00	1.00			
Mountain	Clear Creek	–0.19	0.92	0.88	0.82	0.87	0.86			
Mountain	Klaza	0.92	0.92	0.96	0.98	0.96	0.96			
Mountain	Kluane	0.86	0.98	0.87	0.96	0.98	0.95			
Mountain	Tay River	0.78	0.99	0.96	1.00	1.00	1.00			
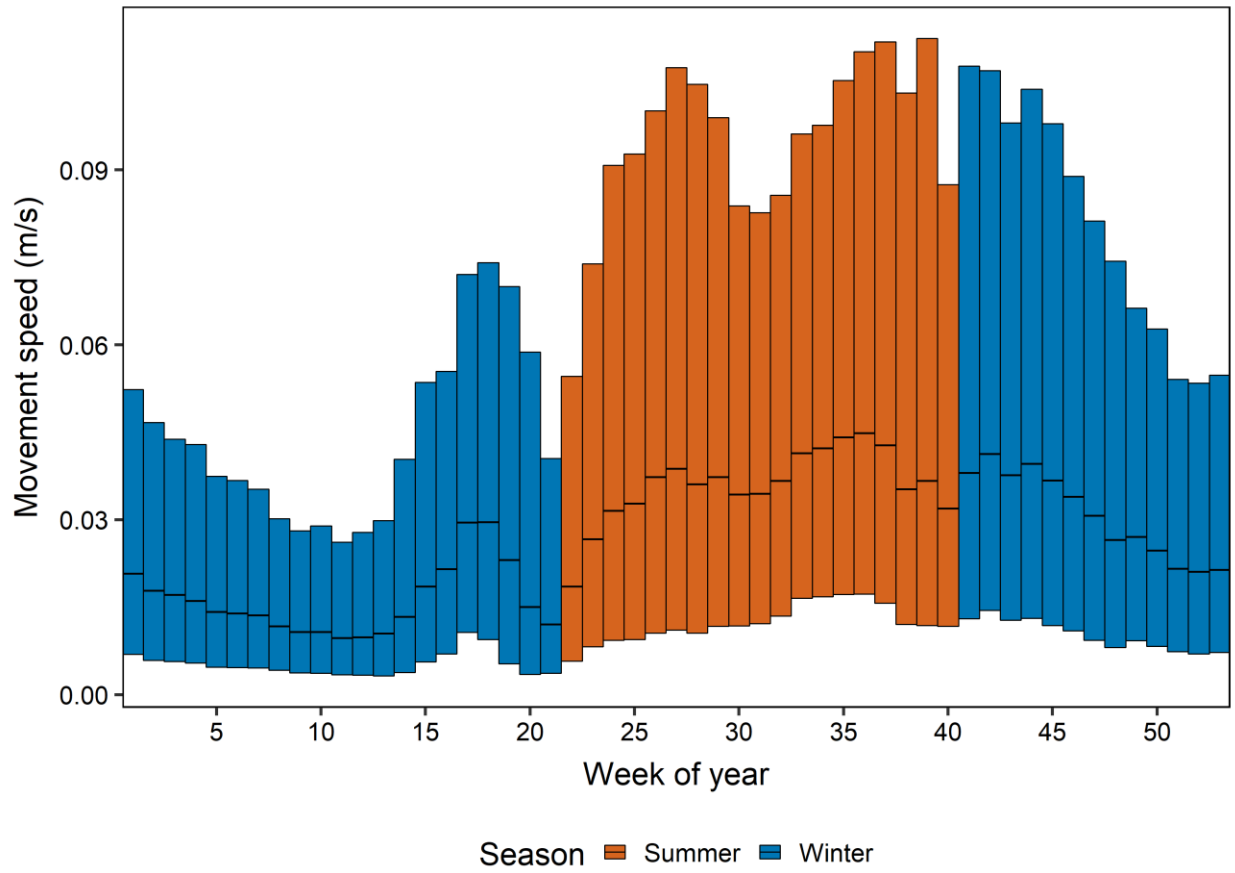
Fig. S1. Movement speeds by week of year across all 15 populations of caribou included in the *burn perimeter* and *burn severity RSAs*. Black horizontal bars indicate median values and colored bars represent values between 0.25 and 0.75 quantiles.

Fig. S2. Distribution of step lengths for female caribou in eastern Alaska and western Yukon shown by population and spatiotemporal scale.

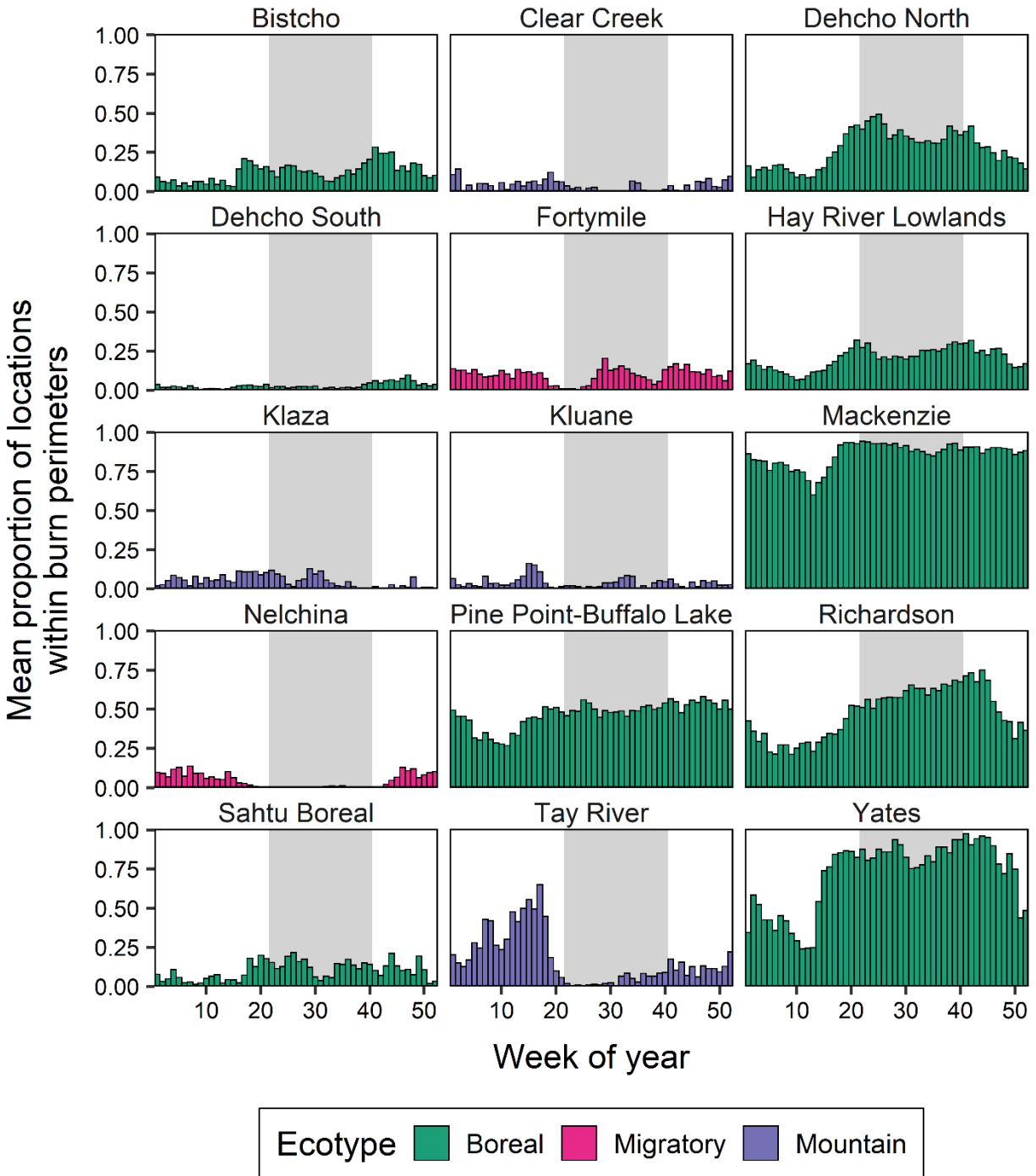Fig. S3. Proportion of GPS locations within burn perimeters by week of year for female caribou (*Rangifer tarandus*), averaged across all individuals within a population, from 15 populations in eastern Alaska and northwest Canada. Gray shaded areas depict summer season used for models.
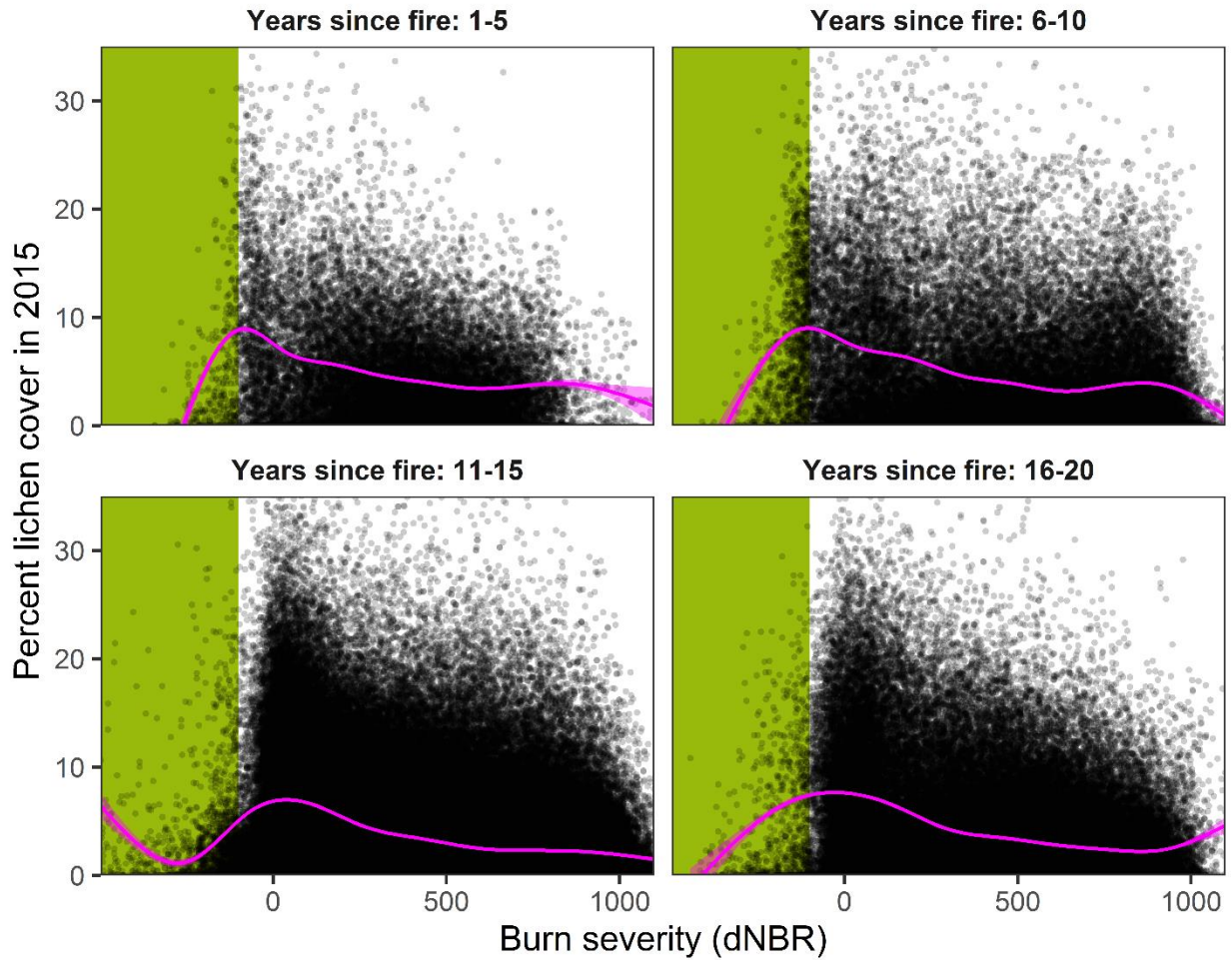
Fig. S4. Relationship between percent cover of terrestrial lichens estimated for year 2015 and burn severity within burns used by female caribou (*Rangifer tarandus*) in the Fortymile, Klaza, Kluane, and Nelchina populations in eastern Alaska and western Yukon. Data are separated into separate panels by number of years before 2015 that the fire occurred. Green shaded areas correspond to dNBR values between –500 and –100, which Key and Benson (2006) classified as "regrowth". Magenta lines depict cubic spline curves fit to the data.
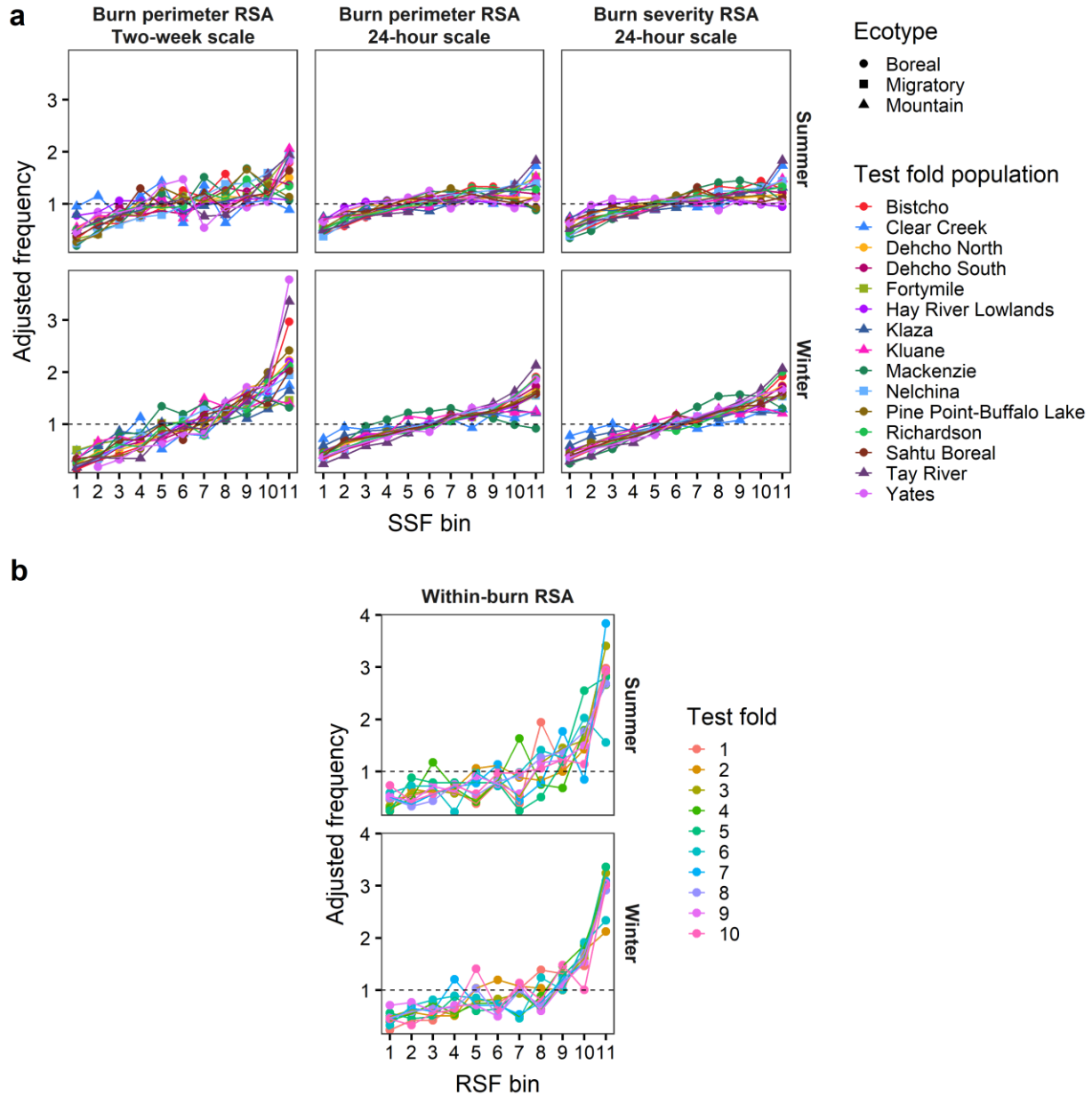
Fig. S5. Out-of-sample cross validation results from the *burn perimeter* and *burn severity RSA*s (a) and the *within-burn RSA* (b) for caribou in eastern Alaska and western Yukon. Adjusted frequencies for each test fold (or population) represent the cumulative frequency of predicted RSF scores for used locations that fall into each of 11 equal-interval bins (10 available location + 1 used location per stratum). Values above 1 indicate that cross-validated used locations occur at rates higher than expected by chance. For the *burn perimeter* and *burn severity RSAs*, models were fit using 14 of 15 populations, and model coefficients were used to predict RSF scores for the withheld population. Values for *burn perimeter RSA* are from top models with functional responses. For the *within-burn RSA*, models were fit to 90% of individual caribou, and model coefficients were used to predict RSF scores for the remaining 10% of animals.