

Supplementary Material

Anthropogenic fire reduces migratory bird abundance and diversity at a stopover site

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Table S1: Estimates of the model explaining bird abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	0.165	0.058	0.047	0.283
fire_periodPostMfireperiod	-0.014	0.006	-0.028	-0.002
Year1	0.002	0.004	-0.007	0.010
Year2	-0.014	0.005	-0.023	-0.005
Year3	-0.026	0.005	-0.035	-0.017
Year4	-0.009	0.005	-0.017	0.000
Day	-0.000	0.000	-0.001	-0.000
fire_periodPostMfireperiod: Year1	0.009	0.007	-0.005	0.022
fire_periodPostMfireperiod: Year2	0.026	0.007	0.011	0.041
fire_periodPostMfireperiod: Year3	0.010	0.008	-0.006	0.027
fire_periodPostMfireperiod: Year4	0.017	0.010	-0.003	0.037

Table S2: Estimates of the model explaining bird species richness across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	0.023	0.010	0.004	0.043
fire_periodPostMfireperiod	-0.004	0.001	-0.006	-0.002
Year1	-0.002	0.001	-0.004	-0.000
Year2	-0.000	0.001	-0.002	0.002
Year3	-0.004	0.001	-0.006	-0.003
Year4	-0.002	0.001	-0.004	-0.001
Day	-0.000	0.000	-0.000	0.000
fire_periodPostMfireperiod: Year1	0.003	0.001	0.001	0.006
fire_periodPostMfireperiod: Year2	0.005	0.001	0.002	0.007
fire_periodPostMfireperiod: Year3	0.001	0.001	-0.001	0.004
fire_periodPostMfireperiod: Year4	0.006	0.002	0.003	0.010

Table S3: Estimates of the model explaining Long-tailed Rosefinch abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-15.566	3.770	-23.132	-8.170
fire_periodPostMfireperiod	-0.885	0.412	-1.683	-0.074
Year1	-0.537	0.254	-1.048	-0.050
Year2	-0.529	0.296	-1.133	0.051
Year3	-0.755	0.296	-1.358	-0.185
Year4	-0.905	0.287	-1.482	-0.357
Day	0.036	0.014	0.009	0.064
fire_periodPostMfireperiod: Year1	1.174	0.342	0.526	1.846
fire_periodPostMfireperiod: Year2	1.085	0.391	0.311	1.884
fire_periodPostMfireperiod: Year3	0.566	0.606	-0.708	1.643
fire_periodPostMfireperiod: Year4	0.843	0.702	-0.712	2.049

Table S4: Estimates of the model explaining Red-flanked Bluetail abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-8.597	3.008	-14.559	-2.431
fire_periodPostMfireperiod	-1.350	0.694	-3.010	-0.290
Year1	-0.544	0.220	-0.983	-0.117
Year2	0.061	0.219	-0.389	0.480
Year3	-0.655	0.230	-1.116	-0.214
Year4	-0.184	0.210	-0.592	0.231
Day	0.011	0.011	-0.012	0.033
fire_periodPostMfireperiod: Year1	0.639	0.974	-1.291	2.543
fire_periodPostMfireperiod: Year2	0.459	0.836	-1.061	2.223
fire_periodPostMfireperiod: Year3	0.584	0.865	-1.026	2.366
fire_periodPostMfireperiod: Year4	1.317	0.783	-0.061	3.040

Table S5: Estimates of the model explaining Pallas's Bunting abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-13.554	5.120	-23.684	-3.606
fire_periodPostMfireperiod	-1.012	0.555	-2.089	0.067
Year1	-0.532	0.322	-1.132	0.113
Year2	-1.076	0.618	-2.445	-0.004
Year3	-0.957	0.360	-1.666	-0.251
Year4	-0.907	0.358	-1.602	-0.202
Day	0.032	0.019	-0.005	0.069
fire_periodPostMfireperiod: Year1	0.660	0.456	-0.276	1.507
fire_periodPostMfireperiod: Year2	0.765	0.772	-0.707	2.383
fire_periodPostMfireperiod: Year3	0.463	0.712	-1.014	1.769
fire_periodPostMfireperiod: Year4	0.242	0.907	-1.705	1.865

Table S6: Estimates of the model explaining Marsh Tit abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-9.959	3.191	-16.158	-3.604
fire_periodPostMfireperiod	-0.329	0.455	-1.239	0.560
Year1	0.439	0.285	-0.100	1.008
Year2	0.519	0.355	-0.205	1.199
Year3	-0.402	0.349	-1.083	0.290
Year4	-0.292	0.320	-0.887	0.377
Day	0.012	0.012	-0.011	0.035
fire_periodPostMfireperiod: Year1	0.310	0.425	-0.554	1.136
fire_periodPostMfireperiod: Year2	-0.193	0.593	-1.389	0.958
fire_periodPostMfireperiod: Year3	0.265	0.654	-1.050	1.481
fire_periodPostMfireperiod: Year4	-0.040	0.789	-1.739	1.341

Table S7: Estimates of the model explaining Rustic Bunting abundance across five years for two time periods before and after the date of the fire in the fire year (fire year = Year 0).

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-2.893	3.630	-10.011	4.214
fire_periodPostMfireperiod	-0.412	0.710	-2.073	0.740
Year1	-0.152	0.230	-0.613	0.306
Year2	-0.149	0.259	-0.667	0.353
Year3	-0.975	0.314	-1.611	-0.368
Year4	-0.800	0.298	-1.407	-0.250
Day	-0.009	0.013	-0.035	0.017
fire_periodPostMfireperiod: Year1	-0.377	1.019	-2.426	1.609
fire_periodPostMfireperiod: Year2	-0.098	1.030	-2.269	1.912
fire_periodPostMfireperiod: Year3	0.466	1.300	-2.478	2.870
fire_periodPostMfireperiod: Year4	0.157	1.385	-3.002	2.623

Table S2: Estimates of the model explaining stopover duration of individual Long-tailed Rosefinches and Marsh Tits in the fire year and the year after fire.

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	11.821	2.318	7.260	16.340
fireyes	4.515	3.667	-2.422	12.018
Speciesmarshtit	-3.381	3.594	-10.458	3.841
fireyes:Speciesmarshtit	11.998	5.685	0.764	23.118

Table S3: Estimates of the model explaining fuel deposition rates of individual Long-tailed Rosefinches and Marsh Tits in the fire year and the year after fire.

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-0.084	0.074	-0.233	0.064
fireno	0.097	0.095	-0.092	0.286
Speciesmarshtit	0.098	0.113	-0.132	0.314
fireno:Speciesmarshtit	-0.190	0.146	-0.466	0.105

Table S4: Estimates of the model explaining change in fat score of individual Long-tailed Rosefinches and Marsh Tits in the fire year and the year after fire.

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	0.659	0.420	-0.171	1.469
fireno	-0.547	0.476	-1.517	0.379
Speciesmarshtit	0.884	0.678	-0.467	2.201
fireno:Speciesmarshtit	-0.359	0.760	-1.879	1.116

Table S5: Estimates of the model explaining change in muscle score of individual Long-tailed Rosefinches and Marsh Tits in the fire year and the year after fire.

	Estimate	Est.Error	Q2.5	Q97.5
Intercept	-0.353	0.158	-0.670	-0.044
fireno	0.287	0.174	-0.080	0.610
Speciesmarshtit	0.327	0.255	-0.184	0.826
fireno:Speciesmarshtit	-0.346	0.276	-0.880	0.213

Table S6: Number of birds caught per species, year and period as well as total number per species. Rows highlighted in bold are the species selected for the analysis of species specific fire effects.

	2011		2012		2013		2014		2015		
Species	1	2 (fire)	1	2	1	2	1	2	1	2	Total
Long-tailed Tit	136	35	349	121	19	90	14	1	381	36	1182
Pallas's Reed Bunting	199	100	168	114	7	15	51	10	89	3	756
Little Bunting	181	4	251	3	48	0	54	0	93	2	636
Long-tailed Rosefinch	101	82	82	152	24	55	43	11	41	11	602
Rustic Bunting	148	5	240	3	75	5	52	3	68	2	601
Red-flanked Bluetail	116	2	105	3	80	7	96	5	138	25	577
Pallas's Leaf Warbler	32	1	142	1	21	0	93	0	143	4	437
Dusky Warbler	58	1	96	0	76	0	80	0	90	7	408
Black-faced Bunting	29	0	229	0	54	2	46	0	34	0	394
Yellow-browed Warbler	44	0	87	0	20	1	54	0	175	3	384
Marsh Tit	17	11	119	70	19	7	31	6	37	5	322
Eurasian Tree Sparrow	49	71	53	67	1	16	15	4	11	17	304
Siberian Accentor	31	0	58	22	33	7	63	3	49	17	283
Siberian Rubythroat	5	0	81	0	22	0	55	0	16	0	179
Northern Great Tit	9	20	25	17	5	13	25	4	33	6	157
Brambling	11	1	104	0	22	3	1	0	13	0	155
Naumann's Thrush	28	14	28	2	9	1	7	0	50	13	152
Olive-backed Pipit	10	0	54	0	13	0	24	0	48	1	150
Eurasian Nuthatch	1	0	54	22	8	11	6	0	17	1	120
Azure-winged Magpie	4	5	57	15	0	0	5	12	2	1	101
Elegant Bunting	9	1	16	0	14	0	3	0	35	1	79
Azure Tit	11	7	8	12	0	2	12	3	18	2	75
Common Redpoll	0	0	0	21	8	40	0	0	0	0	69
Dusky Thrush	15	0	14	1	3	1	9	0	18	4	65
Willow Tit	0	0	14	2	20	7	3	0	13	3	62
Taiga Flycatcher	12	0	16	0	3	0	2	0	17	5	55
Black-browed Reed Warbler	7	0	21	0	2	0	8	0	3	0	41
Grey-backed Thrush	5	0	8	0	10	0	7	0	11	0	41
Common Rosefinch	6	0	17	0	2	0	0	0	10	2	37
Bluethroat	1	0	12	0	4	0	13	0	2	3	35
Pine Bunting	7	0	9	0	2	9	1	0	6	0	34
Japanese Reed Bunting	2	0	28	0	0	0	1	0	1	0	32
Buff-bellied Pipit	2	1	10	2	0	0	6	0	10	0	31
Pallas's Rosefinch	0	5	0	15	0	6	0	0	0	4	30
Lanceolated Warbler	2	0	17	0	3	0	4	0	3	0	29
Common Snipe	11	0	15	0	0	0	1	0	1	0	28
Yellow-browed Bunting	5	0	7	1	3	1	8	0	3	0	28
Eastern Great Tit	0	6	6	0	4	2	5	0	4	0	27
Radde's Warbler	3	0	6	0	11	0	1	0	5	0	26

[illegible]

Great Grey Shrike	1	0	0	0	0	0	0	0	0	0	1
Grey Nightjar	0	0	0	0	1	0	0	0	0	0	1
Japanese Waxwing	0	0	0	0	0	0	0	0	1	0	1
Northern Hawk Owl	0	0	0	0	0	0	0	0	1	0	1
Pallas's Grasshopper Warbler	0	0	1	0	0	0	0	0	0	0	1
Pine Grosbeak	0	0	0	0	0	1	0	0	0	0	1
Short-eared Owl	0	0	1	0	0	0	0	0	0	0	1
Siberian Bush Warbler	1	0	0	0	0	0	0	0	0	0	1
Yellow-browed warbler	1	0	0	0	0	0	0	0	0	0	1
Brambling	0	0	1	0	0	0	0	0	0	0	1



Figure S13: Mist-netting sites in the wetlands of Muraviovka Park, Russia, directly after fire (left) and in the year after fire (right). Note the lack of leaves on the shrubs and the reduction of the grass and litter cover in the fire year. Note also that soil and shrubs are black after fire but brown or yellowish in the year without fire. Photos by Wieland Heim.