

Table S1. Collection information for *Columba livia*.

Location	Number of Hosts	Sampling years	Latitude	Longitude	Rehabilitation Centre
British Columbia					
Vancouver	30	March 2013– November 2014	49.28273	-123.121	Wildlife Rescue Association of BC
Alberta					
Calgary	27	January 2015–July 2015	51.04862	-114.071	Calgary Wildlife Rehabilitation Society
Trathmore	1	January 2015	51.05011	-113.38523	
Airdrie	1	July 2015	51.291668	-114.01442	
Okotoks	1	July 2015	50.72549	-113.975	
Edmonton	23	August 2015–December 2015 & April 2017	53.5461	-113.4938	Northern Alberta Wildlife Rehabilitation and Rescue
Saskatchewan					
Saskatoon	14	2016	52.13321	-106.67	Living Sky Wildlife Rehabilitation
Manitoba					
Winnipeg	30	April 2015– November 2015	49.89514	-97.1384	Wildlife Haven, Prairie & Wildlife Rehabilitation Centre
Southern Ontario					
Belleville	2	January 2017	44.16276	-77.3832	Sandy Pines Wildlife Centre
Kingston	3	January 201	44.23117	-76.486	
Toronto	6	May 2017	43.65323	-79.3832	Fatal Light Awareness Program
Nova Scotia					
Halifax	20	August 2015– October 2016	44.64876	-63.5752	Hope for Wildlife & Cobequid Wildlife Rehabilitation Centre
Greenwood	1	January 2016	44.97172	-64.9341	
Sackville	1	January 2016	45.8979	-64.3683	
Truro	2	June 2016–July 2016	45.36577	-63.2869	

Table S2. Results from pairwise Permutational Analysis of Variance tests examining differences in ectosymbionts assemblages infesting Rock Pigeons (*Columba livia*) (n = 162) sampled from seven different locations across Canada, $p < 0.05$ are in bold.

Pairs	Mites			Lice		
	F-value	R ²	Adjusted <i>p</i> -value	F-value	R ²	Adjusted <i>p</i> -value
Vancouver vs. Calgary	12.87	0.23	0.02	11.81	0.19	0.02
Vancouver vs. Edmonton	15.41	0.27	0.02	3.92	0.07	0.08
Vancouver vs. Saskatoon	9.58	0.23	0.02	3.32	0.07	0.25
Vancouver vs. Winnipeg	13.70	0.24	0.02	14.34	0.21	0.02
Vancouver vs. S. Ontario	8.59	0.19	0.02	3.08	0.09	0.57
Vancouver vs. Halifax	2.60	0.05	0.31	1.84	0.03	1.00
Halifax vs. Calgary	14.88	0.29	0.02	4.29	0.09	0.08
Halifax vs. Edmonton	13.83	0.29	0.02	1.11	0.02	1.00
Saskatoon vs. Halifax	9.27	0.27	0.02	0.68	0.02	1.00
Winnipeg vs. Halifax	13.81	0.27	0.02	6.28	0.12	0.02
S. Ontario vs. Halifax	8.28	0.21	0.02	1.17	0.04	1.00
Calgary vs. Edmonton	4.14	0.13	0.06	4.03	0.08	0.13
Calgary vs. Saskatoon	1.90	0.09	1.00	1.26	0.03	1.00
Calgary vs. Winnipeg	1.13	0.4	1.00	2.42	0.05	0.71
Calgary vs. S. Ontario	2.33	0.9	1.00	1.01	0.04	1.00
Edmonton vs. Saskatoon	0.93	0.05	1.00	0.85	0.02	1.00
Edmonton vs. Winnipeg	2.91	0.09	0.52	6.95	0.13	0.02
Edmonton vs. S. Ontario	0.72	0.03	1.00	1.00	0.04	1.00
Saskatoon vs. Winnipeg	0.48	0.02	1.00	2.78	0.07	0.46
Saskatoon vs. S. Ontario	0.68	0.05	1.00	0.86	0.05	1.00
Winnipeg vs. S. Ontario	1.14	0.05	1.00	1.58	0.05	1.00

Table S3. Environmental variables chosen through forward selection. A distance-based redundancy analysis was performed on the mite data and a redundancy analysis was performed on the louse data. P-values have been corrected for multiple comparisons using the Holm-Bonferroni method.

Environmental Variable	R ² adjusted	F-value	Adjusted <i>p</i> -value
dbRDA–Mites			
annual maximum temperature	0.0137	2.404	0.01
annual minimum temperature	0.0584	6.895	0.01
monthly maximum humidity	0.0210	3.144	0.01
RDA–Lice			
annual maximum temperature	0.228	39.661	0.001
annual minimum temperature	0.0113	2.991	0.3
annual average temperature	0.0419	8.781	0.003
monthly maximum humidity	0.0202	4.485	0.1
previous monthly minimum temperature	0.0153	3.678	0.2