

Appendix 1. Supplementary figures and tables

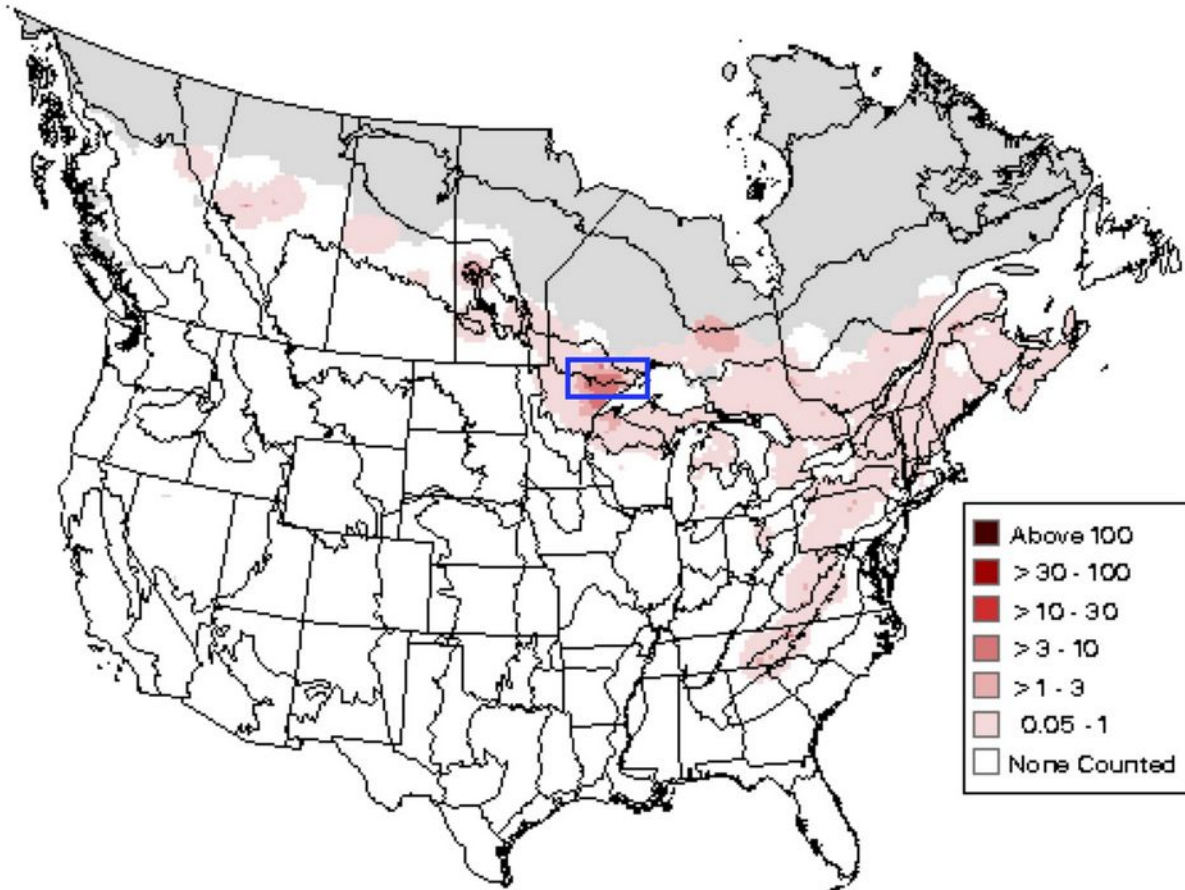


Figure A1.1. Breeding distribution and relative abundance of the Canada Warbler in North America based on the federal Breeding Bird Survey, 2011-2015 (Sauer et al. 2017). Ecoregion 4W is marked within Northwestern Ontario by the blue rectangle.

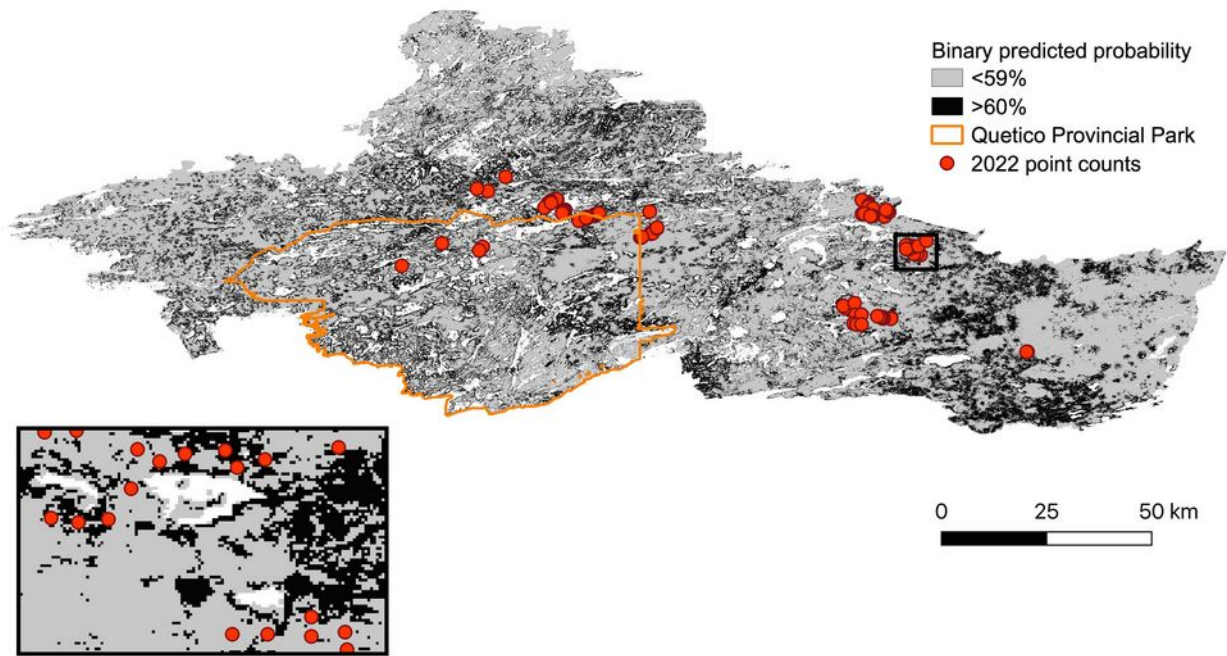


Figure A1.2. Binary distribution map of predicted Canada Warbler (*Cardellina canadensis*) probability of occurrence in Ecoregion 4W based on the model 2021. The model used a dataset of observations from 2001-2021 cross-validated with 25% random seed data. Red dots are point counts selected for survey in 2022 to field-validating the model. Black square shows a closer view of an area where the point counts were collected.

Table A1.1. Year distribution of 122 observations of Canada Warbler (*Cardellina canadensis*) for used as training dataset (2001-2021). Sources: eBird search from 2000-2020, OBBA (Ontario Breeding Bird Atlas 2001-2005), BBS (Breeding Bird Survey 2000-2020), Quetico Provincial Park (2024-2019), own field collected data in 2021.

Year	# observations	Source
2001	2	eBird
2003	36	eBird (4), OBBA (32)
2012	1	eBird
2013	4	eBird
2014	5	Quetico
2015	1	BBS
2016	2	eBird
2017	10	eBird (6), Quetico (4)
2018	8	eBird (5), Quetico (3)
2019	4	eBird (2), BBS (1) Quetico (1)
2020	5	eBird
2021	44	OBBA volunteers (1), own field data (43)

Table A1.2. Correlations coefficients (rho) for the 11 possible predictors of the Canada Warbler (*Cardellina canadensis*) SDM. BASI= bared soil index, CAN= canopy height, DEM= digital elevation model, DISTURB= years since disturbance, D_CONIF= distance to conifer forest, EVI= enhanced vegetation index, LST= land surface temperature, NDM= normalized moisture index, NDVI= normalized vegetation index, NDWI= normalized water index, WATER= distance to water bodies.

	BASI	CAN	DEM	DISTURB	D_CONIF	EVI	LST	NDMI	NDVI	NDWI	WATER
BASI	1										
CAN	-0.51	1									
DEM	-0.17	0.18	1								
DISTURB	-0.18	0.30	-0.06	1							
D_CONIF	-0.01	-0.02	-0.34	0.04	1						
EVI	-0.35	0.23	0.00	-0.05	0.20	1					
LST	-0.16	-0.04	0.26	-0.09	-0.32	0.04	1				
NDMI [§]	-0.85	0.51	0.08	0.15	0.11	0.70	0.03	1			
NDVI [§]	-0.79	0.38	0.28	0.04	-0.05	0.62	0.43	0.76	1		
NDWI	-0.27	0.22	-0.22	-0.25	-0.01	-0.18	-0.25	0.27	-0.15	1	
WATER	0.13	-0.09	-0.09	-0.04	-0.01	-0.07	0.01	-0.14	-0.09	-0.06	1

[§]Variables removed from the modeling process due to high correlation, r values ≥ 0.7 are marked in bold.

Table A1.3. Years of Canada Warbler (*Cardellina canadensis*) occurrences (2001-2022), and years since disturbance registered for that site.

Occurrence year	# occurrences	Year of disturbance (DISTURB covariate)
2001	2	
2003	35	
2012	1	
2013	4	
2014	5	
2015	1	
2016	2	no disturbance reported within the period of 2000-2020
2017	10	
2018	7	
2019	3	
2020	5	
2021	38	
2022	24	
2003	1	Disturbed in 2007
2018	1	Disturbed in 2015
2019	1	Disturbed in 2006
2021	3	Disturbed in 2006
2021	2	Disturbed in 2015
2021	1	Disturbed in 2018
2022	4	Disturbed in 2015
2022	2	Disturbed in 2017