Appendix 4

Hierarchical distance modeling results for detection (top) and density (bottom) for Chestnut-sided Warbler (Table A4.1), Gray Catbird (Table A4.2), Ovenbird (Table A4.3), Rose-breasted Grosbeak (Table A4.4), Eastern Towhee (Table A4.5), Black-and-white Warbler (Table A4.6), Common Yellowthroat (Table A4.7), Field Sparrow (Table A4.8), and Red-eyed Vireo (Table A4.9). The top variable for predicting density represents our highest ranked model > 2 Δ AIC_c from the null (.). All models included detection probability (p) with associated detection covariates: Ordinal date ("date"), time of day ("time"), wind using the Beaufort wind index ("wind"; scale of 0-5), cloud cover ("cloud"; 0-100%), precipitation ("precip"; none, fog, mist, light rain, heavy rain, snow), and observer ("obs"; n = 4). Models included density (λ) with any influential covariates (See appendix 1 for list of covariates). Also shown are the number of model parameters (k), model weight (w), and Δ Akaike's Information Criterion adjusted for small sample size (ΔAIC_c).

Table A4.1

Chestnut-sided Warbler detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.)	4	0.00	0.27
p(obs)	7	0.26	0.24
p(cloud)	5	1.63	0.12
p(date)	5	1.89	0.10
p(wind)	5	2.04	0.10
p(time)	5	2.10	0.09
p(precip)	6	2.47	0.08

Chestnut-sided Warbler models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.), λ(horzveg)	5	0.00	0.64
p(.), λ(rubus)	5	1.53	0.30
p(.), λ(grass)	5	6.20	0.03
p(.), λ(vertveg)	5	8.21	0.01
p(.), λ(.)	4	8.79	0.01
p(.), λ(forb)	5	8.87	0.01
p(.), λ(fern)	5	10.49	0.00
p(.), λ(litter)	5	10.77	0.00
p(.), λ(vacc)	5	10.95	0.00

Table A4.2

Gray Catbird detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(obs)	6	0.00	0.99
p(.)	3	11.77	0.00
p(cloud)	4	12.80	0.00
p(wind)	4	13.05	0.00
p(date)	4	13.78	0.00
p(time)	4	13.84	0.00
p(precip)	5	13.85	0.00

Gray Catbird models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(obs), λ(horzveg)	7	0.00	0.30
p(obs), λ(rubus)	7	0.06	0.30
p(obs), λ(vertveg)	7	1.89	0.12
p(obs), λ(fern)	7	2.07	0.11
p(obs), λ(forb)	7	2.50	0.09
p(obs), λ(grass)	7	4.47	0.03
p(obs), λ(vacc)	7	4.93	0.03
p(obs), λ(.)	6	5.30	0.02
p(obs), λ(litter)	7	7.14	0.01

Table A4.3

Ovenbird detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(cloud)	4	0.00	0.46
p(precip)	5	1.89	0.18
p(.)	3	2.49	0.13
p(date)	4	3.16	0.10
p(wind)	4	4.60	0.05
p(time)	4	4.64	0.05
p(obs)	6	5.21	0.03

Ovenbird models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(cloud), λ(vertveg)	5	0.00	1.00
p(cloud), λ(grass)	5	16.49	0.00
p(cloud), λ(fern)	5	16.72	0.00
p(cloud), λ(.)	4	16.84	0.00
p(cloud), λ(horzveg)	5	17.34	0.00
p(cloud), λ(vacc)	5	18.75	0.00
p(cloud), λ(rubus)	5	18.77	0.00
p(cloud), λ(forb)	5	18.99	0.00
p(cloud), λ(litter)	5	19.01	0.00

Table A4.4

Rose-breasted Grosbeak detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(wind)	4	0.00	0.46
p(.)	3	1.64	0.20
p(time)	4	2.80	0.11
p(date)	4	3.53	0.08
p(cloud)	4	3.76	0.07
p(precip)	5	4.94	0.04
p(obs)	6	5.57	0.03

Rose-breasted Grosbeak models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.), λ(horzveg)	4	0.00	0.78
p(.), λ(vertveg)	4	2.58	0.22
p(.), λ(rubus)	4	12.48	0.00
p(.), λ(grass)	4	12.73	0.00
p(.), λ(litter)	4	14.58	0.00
p(.), λ(.)	3	14.65	0.00
p(.), λ(fern)	4	15.90	0.00
p(.), λ(vacc)	4	16.76	0.00
p(.), λ(forb)	4	16.79	0.00

Table A4.5

Eastern Towhee detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(wind)	5	0.00	0.34
p(.)	4	1.24	0.18
p(obs)	7	2.04	0.12
p(cloud)	5	2.04	0.12
p(time)	5	2.11	0.12
p(date)	5	3.33	0.06
p(precip)	6	3.55	0.06

Eastern Towhee models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.), λ(forb)	5	0.00	0.69
p(.), λ(litter)	5	2.73	0.18
p(.), λ(.)	4	5.72	0.04
p(.), λ(fern)	5	7.18	0.02
p(.), λ(vacc)	5	7.27	0.02
p(.), λ(horzveg)	5	7.66	0.01
p(.), λ(vertveg)	5	7.75	0.01
p(.), λ(rubus)	5	7.76	0.01
p(.), λ(grass)	5	7.79	0.01

Table A4.6

Black-and-white Warbler detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.)	4	0.00	0.33
p(cloud)	5	1.06	0.19
p(time)	5	1.69	0.14
p(date)	5	1.75	0.14
p(wind)	5	1.77	0.14
p(precip)	6	3.80	0.05
p(obs)	7	5.96	0.02

Black-and-white Warbler models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.), λ(.)	4	0.00	0.26
p(.), λ(litter)	5	1.89	0.10
p(.), λ(forb)	5	2.04	0.10
p(.), λ(vertveg)	5	2.04	0.09
p(.), λ(horzveg)	5	2.13	0.09
p(.), λ(grass)	5	2.16	0.09
p(.), λ(rubus)	5	2.18	0.09
p(.), λ(fern)	5	2.18	0.09
p(.), λ(vacc)	5	2.19	0.09

Table A4.7

Common Yellowthroat detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(wind)	5	0.00	0.63
p(.)	4	3.02	0.14
p(cloud)	5	3.14	0.13
p(time)	5	5.05	0.05
p(date)	5	5.21	0.05
p(obs)	7	21.72	0.00
p(precip)	6	44.12	0.00

Common Yellowthroat models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(wind), λ(.)	5	0.00	0.19
p(wind), λ(litter)	6	0.12	0.18
p(wind), λ(vertveg)	6	0.99	0.12
p(wind), λ(grass)	6	1.12	0.11
p(wind), λ(fern)	6	1.37	0.10
p(wind), λ(rubus)	6	1.43	0.09
p(wind), λ(vacc)	6	1.68	0.08
p(wind), λ(horzveg)	6	1.74	0.08
p(wind), λ(forb)	6	2.22	0.06

Table A4.8

Red-eyed Vireo detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(obs)	6	0.00	0.88
p(date)	4	4.08	0.11
p(.)	3	10.89	0.00
p(wind)	4	12.38	0.00
p(precip)	5	12.59	0.00
p(cloud)	4	12.80	0.00
p(time)	4	12.91	0.00

Red-eyed Vireo models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(obs), λ(vertveg)	8	0.00	0.37
p(obs), λ(.)	7	1.75	0.15
p(obs), λ(grass)	8	2.47	0.11
p(obs), λ(rubus)	8	2.93	0.09
p(obs), λ(vacc)	8	3.32	0.07
p(obs), λ(forb)	8	3.64	0.06
p(obs), λ(horzveg)	8	3.87	0.05
p(obs), λ(fern)	8	3.90	0.05
p(obs), λ(litter)	8	4.02	0.05

Table A4.9

Field Sparrow detection models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.)	3	0.00	0.34
p(time)	4	0.96	0.21
p(wind)	4	1.61	0.15
p(date)	4	2.16	0.12
p(cloud)	4	2.16	0.12
p(precip)	5	4.16	0.04
p(obs)	6	6.32	0.01

Field Sparrow models – Hierarchical Distance			
Model	k	ΔAIC_c	w
p(.), λ(grass)	4	0.00	0.44
p(.), λ(vertveg)	4	0.93	0.28
p(.), λ(horzveg)	4	3.55	0.08
p(.), λ(.)	3	4.27	0.05
p(.), λ(litter)	4	4.77	0.04
p(.), λ(forb)	4	4.95	0.04
p(.), λ(rubus)	4	5.05	0.04
p(.), λ(vacc)	4	6.04	0.02
p(.), λ(fern)	4	6.44	0.02