

Appendix 1.

Table A1.1. Sample sizes for each focal species. Sample sizes represent number of surveys where each species was detected.

Species	Latin Name	Alpha Code	Paired SM2		Paired SM4	
			In-person	SM2	In-person	SM4
Pied-billed Grebe	<i>Podilymbus podiceps</i>	PBGR	93	81	52	51
Red-necked Grebe	<i>Podiceps grisegena</i>	RNGR	35	27	27	27
Virginia Rail	<i>Rallus limicola</i>	VIRA	41	22	8	6
Sora	<i>Porzana carolina</i>	SORA	128	129	76	85
Common Gallinule	<i>Gallinula galeata</i>	COGA	6	4	0	0
American Coot	<i>Fulica americana</i>	AMCO	16	14	15	17
Wilson's Snipe	<i>Gallinago delicata</i>	WISN	94	97	76	84
American Bittern	<i>Botaurus lentiginosus</i>	AMBI	62	40	19	14
Least Bittern	<i>Ixobrychus exilis</i>	LEBI	17	7	0	0
Sedge Wren	<i>Cistothorus platensis</i>	SEWR	43	37	44	42
Marsh Wren	<i>Cistothorus palustris</i>	MAWR	49	52	39	43
Clay-colored Sparrow	<i>Spizella pallida</i>	CCSP	38	35	41	45
LeConte's Sparrow	<i>Ammospiza leconteii</i>	LCSP	44	41	47	56
Nelson's Sparrow	<i>Ammospiza nelsoni</i>	NESP	43	36	8	11
Savannah Sparrow	<i>Passerculus sandwichensis</i>	SAVS	96	107	73	101
Song Sparrow	<i>Melospiza melodia</i>	SOSP	140	146	112	120
Swamp Sparrow	<i>Melospiza georgiana</i>	SWSP	21	22	24	23
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	YHBL	24	22	24	27
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	RWBL	49	50	51	53
Brown-headed Cowbird	<i>Molothrus ater</i>	BHCO	25	41	26	36
Common Yellowthroat	<i>Geothlypis trichas</i>	COYE	73	78	75	80
Yellow Warbler	<i>Setophaga petechia</i>	YEWA	26	27	28	29

Table A1.2. Maximum counts of each focal species obtained on a point count for each survey type.

Species	Paired SM2		Paired SM4	
	In-person	SM2	In-person	SM4
Pied-billed Grebe	3	3	2	2
Red-necked Grebe	8	4	8	3
Virginia Rail	2	1	--	--
Sora	5	4	3	4
American Coot	2	1	2	2
Wilson's Snipe	4	6	4	3
American Bittern	4	3	2	2
Sedge Wren	3	3	3	3
Marsh Wren	8	4	4	4
Clay-colored Sparrow	4	4	4	4
LeConte's Sparrow	3	3	3	3
Nelson's Sparrow	5	3	--	--
Savannah Sparrow	3	4	3	4
Song Sparrow	5	3	5	4
Swamp Sparrow	3	4	3	3
Yellow-headed Blackbird	30	10	30	10
Red-winged Blackbird	50	10	50	10
Brown-headed Cowbird	5	3	5	5
Common Yellowthroat	4	3	4	3
Yellow Warbler	3	4	3	4

Table A1.3. Effective detection radii for in-person counts and 95% confidence intervals.

Species	LCL	EDR_H (m)	UCL
Pied-billed Grebe	152	181	216
Red-necked Grebe	131	172	226
Virginia Rail	71	84	101
Sora	111	124	138
American Coot	82	112	153
Wilson's Snipe	123	143	165
American Bittern	121	144	171
Sedge Wren	67	79	93
Marsh Wren	62	70	79
Clay-colored Sparrow	66	77	90
LeConte's Sparrow	44	51	60
Nelson's Sparrow	71	81	92
Savannah Sparrow	56	62	68
Song Sparrow	66	71	77
Swamp Sparrow	67	83	102
Yellow-headed Blackbird	84	110	143
Red-winged Blackbird	83	97	113
Brown-headed Cowbird	68	85	105
Common Yellowthroat	58	65	72
Yellow Warbler	73	87	104

Table A1.4. Availability estimates for in-person (p_H) and ARU (p_A) paired surveys. Availability was calculated using maximum likelihood estimates of singing rates. Bold denotes species where survey type was found to have a significant effect on availability.

Species	Paired SM2 surveys						Paired SM4 surveys					
	LCL	p_H	UCL	LCL	p_A	UCL	LCL	p_H	UCL	LCL	p_A	UCL
Pied-billed Grebe	0.09	0.34	0.84	0.31	0.58	0.87	0.01	0.21	1	0.26	0.58	0.93
Red-necked Grebe	0.06	0.37	0.96	0.5	0.77	0.95	0.13	0.48	0.95	0.23	0.58	0.94
Virginia Rail	0.17	0.53	0.96	0	0.28	1	0.81	0.9	0.96	0.87	0.93	0.97
Sora	0.54	0.7	0.84	0.5	0.67	0.83	0.47	0.68	0.88	0.58	0.75	0.89
American Coot	0.79	0.95	1	0.17	0.67	1	0.7	0.93	1	0.36	0.76	0.99
Wilson's Snipe	0.87	0.93	0.97	0.91	0.96	0.98	0.81	0.9	0.96	0.87	0.93	0.97
American Bittern	0.77	0.89	0.96	0.76	0.9	0.98	0.19	0.64	0.99	0.51	0.86	1
Sedge Wren	0.89	0.96	0.99	0.82	0.93	0.99	0.9	0.96	0.99	0.96	0.99	1
Marsh Wren	0.94	0.97	0.99	0.98	0.99	1	0.97	0.99	1	0.99	1	1
Clay-colored Sparrow	0.93	0.97	0.99	0.98	0.99	1	0.93	0.97	0.99	0.98	0.99	1
LeConte's Sparrow	0.87	0.95	0.99	0.88	0.96	0.99	0.87	0.95	0.99	0.96	0.99	1
Nelson's Sparrow	0.57	0.77	0.92	0.76	0.9	0.98						
Savannah Sparrow	0.93	0.96	0.98	0.95	0.97	0.99	0.91	0.96	0.98	0.97	0.99	1
Song Sparrow	0.74	0.83	0.91	0.91	0.95	0.97	0.73	0.83	0.91	0.94	0.97	0.99
Swamp Sparrow	0.9	0.97	1	0.98	1	1	0.92	0.98	1	0.99	1	1
Yellow-headed Blackbird	1	1	1	1	1	1	1	1	1	1	1	1
Red-winged Blackbird	1	1	1	1	1	1	1	1	1	1	1	1
Brown-headed Cowbird	0.01	0.29	1	0.84	0.94	0.99	0	0	0.01	0.75	0.9	0.98
Common Yellowthroat	0.86	0.93	0.98	0.94	0.98	0.99	0.9	0.96	0.98	0.95	0.98	0.99
Yellow Warbler	0.96	0.99	1	0.99	1	1	0.96	0.99	1	0.97	0.99	1

Table A1.5. Estimated correction factors (δ) for SM2 surveys, with 95% confidence intervals. Maximum Likelihood Estimates are given, as well as results of calibration and validation values from repeated random subsampling. For details of calculations, see Methods.

Species	MLE Estimates			Repeated Random Sampling					
				Calibration			Validation		
	LCL	δ	UCL	LCL	δ	UCL	LCL	δ	UCL
Pied-billed Grebe	0.75	0.86	0.99	0.81	0.85	0.9	0.74	0.85	0.97
Red-necked Grebe	0.75	0.9	1.08	0.8	0.88	0.96	0.73	0.89	1.12
Virginia Rail	0.5	0.68	0.93	0.66	0.73	0.79	0.56	0.73	0.88
Sora	0.91	1	1.1	0.98	1	1.04	0.92	1	1.08
American Coot	0.65	0.92	1.3	0.74	0.89	1.09	0.58	0.89	1.27
Wilson's Snipe	0.86	0.98	1.1	0.96	0.99	1.02	0.92	0.99	1.07
American Bittern	0.67	0.81	0.99	0.73	0.78	0.84	0.67	0.77	0.88
Sedge Wren	0.81	0.98	1.18	0.89	0.95	1.01	0.82	0.94	1.06
Marsh Wren	0.85	0.98	1.12	0.93	0.98	1.04	0.87	0.99	1.14
Clay-colored Sparrow	0.9	1.07	1.25	1	1.07	1.12	0.98	1.07	1.22
LeConte's Sparrow	0.79	0.94	1.13	0.85	0.93	1.01	0.78	0.96	1.2
Nelson's Sparrow	0.64	0.77	0.91	0.72	0.76	0.81	0.67	0.77	0.89
Savannah Sparrow	0.91	1.02	1.15	0.99	1.02	1.06	0.94	1.02	1.1
Swamp Sparrow	0.79	0.99	1.26	0.94	1	1.09	0.83	1	1.16
Yellow-headed Blackbird	0.68	0.8	0.94	0.64	0.78	1.01	0.51	0.85	1.24
Red-winged Blackbird	0.68	0.76	0.85	0.68	0.76	0.88	0.57	0.77	1
Brown-headed Cowbird	0.91	1.13	1.4	1.02	1.12	1.27	0.9	1.17	1.69
Common Yellowthroat	0.86	0.98	1.13	0.96	1	1.04	0.92	1	1.1
Yellow Warbler	0.92	1.1	1.31	1.05	1.09	1.14	1	1.1	1.2

Table A1.6. Estimated correction factors (δ) for SM4 surveys, with 95% confidence intervals. Maximum Likelihood Estimates are given, as well as results of calibration and validation values from repeated random subsampling. For details of calculations, see Methods.

Species	MLE Estimates			Repeated Random Sampling					
	LCL	δ	UCL	Calibration			Validation		
				LCL	δ	UCL	LCL	δ	UCL
Pied-billed Grebe	0.82	0.97	1.15	0.9	0.94	1	0.8	0.92	1.04
Red-necked Grebe	0.81	0.98	1.2	0.89	0.98	1.12	0.77	0.97	1.23
Sora	1	1.13	1.27	1.05	1.08	1.11	0.98	1.06	1.14
American Coot	0.8	1.1	1.52	1	1.12	1.32	0.81	1.14	1.41
Wilson's Snipe	0.9	1.03	1.17	0.99	1.03	1.06	0.95	1.04	1.12
American Bittern	0.63	0.87	1.19	0.76	0.86	0.93	0.53	0.88	1.17
Sedge Wren	0.87	1.04	1.25	0.97	1.03	1.11	0.91	1.02	1.15
Marsh Wren	0.92	1.06	1.22	1.02	1.06	1.1	0.98	1.08	1.19
Clay-colored Sparrow	0.95	1.11	1.3	1.06	1.11	1.16	1	1.1	1.2
LeConte's Sparrow	0.92	1.08	1.29	1	1.06	1.12	0.96	1.09	1.28
Savannah Sparrow	1.05	1.18	1.32	1.14	1.19	1.25	1.07	1.19	1.32
Swamp Sparrow	0.75	0.95	1.2	0.88	0.95	1.02	0.77	0.94	1.14
Yellow-headed Blackbird	0.75	0.88	1.02	0.77	0.93	1.17	0.59	0.92	1.36
Red-winged Blackbird	0.71	0.78	0.87	0.69	0.81	0.96	0.56	0.8	1.09
Common Yellowthroat	0.88	1	1.15	0.95	0.99	1.02	0.92	1	1.11
Yellow Warbler	0.94	1.12	1.33	1.05	1.11	1.18	0.98	1.11	1.22

Fig. A1.1. In-person and uncorrected ARU estimates of species density (birds/ha). Calculations are based on GLM parameters of the 30% validation data subset within the repeated random subsampling framework. Each point represents one of 50 random subsamples. The line indicates 1:1 correspondence. Inset are histograms of GLM survey-effect estimates of δ using the 70% calibration data across all 50 subsamples. Where points tend to fall underneath the 1:1 line, δ is lower, and the larger the spread of the points the more uncertainty there is in the δ estimate. Figures are shown for each species and for both SM2 and SM4 densities. Graphs are labelled with 4-letter species codes (see Table A1).









