

TABLE OF CONTENTS

BIBLIOGRAPHY	513
APPENDIX I. Summaries by Blocks.....	547
APPENDIX II. Summaries by Species.....	561
APPENDIX III. County Summaries.....	570
APPENDIX IV. Scientific names of plant species mentioned in text	572
APPENDIX V. Summary results of Occupancy analyses by species.....	573
APPENDIX VI. Top 5 occupancy analyses models by species.....	577
APPENDIX VII. Species Safe Dates	591
APPENDIX VIII. SDBBA2 Breeding Status and Breeding Behavior Codes and their description.....	595
APPENDIX IX. SDBBA2 Habitat Codes and their description	596

APPENDIX I. Summaries by Blocks

Tabulated summary data for each SDBBA2 block include number of years surveys were conducted on the block (Num Yrs), total number of visits (Num Visits), total time in hours, total number of species tallied except those in the 'observed' category (Num Spp), total number of species confirmed breeding (Num CO), proportion of species confirmed breeding (Prop CO), number of observed species, and results of the 1st BBA surveys (1988-1992), if conducted on that block.

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
1R0102	South Cave Hills	Harding	3	16	57.6	67	33	0.49	0	68	15	0
1R0103	Sand Coulee	Harding	4	6	12.9	40	12	0.30	0	44	4	2
1R0104	South Fork Moreau River at Harding Rd	Harding	2	5	14.2	40	14	0.35	0	56	15	4
1R0105	South of Owl Creek	Butte	1	1	4.80	23	5	0.22	4	43	18	2
1R0106	Jug Creek	Butte	2	4	5.3	19	2	0.11	0	22	7	2
1R0201	Fish Hatchery Gulch	Lawrence	5	15	62.0	57	14	0.25	2	51	8	1
1R0202	Nemo Road	Lawrence	2	9	33.4	50	13	0.26	0	46	15	1
1R0203	Silver City	Pennington	5	36	118.1	80	29	0.36	4	58	16	0
1R0204	South Fork Castle Creek	Pennington	4	10	37.7	34	9	0.26	0	31	6	1
1R0205	Pilger Mountain	Custer	3	8	31.7	40	3	0.08	0	42	9	1
1R0206	Craven-Red Canyon	Fall River	5	19	66.7	85	22	0.26	0	62	7	0
1R0207	Slate Spring Draw	Fall River	3	7	9.8	51	10	0.20	0	53	7	0
1R0208	Duck Creek	Fall River	2	4	20.1	41	4	0.10	0	40	4	1
1R0301	Lincoln Road	Harding	2	4	8.2	53	13	0.25	0	47	8	0
1R0302	Olson Mail Road	Perkins	1	5	9.2	42	6	0.14	0	41	9	0
1R0303	Red Willow Creek	Corson	1	3	6.0	45	10	0.22	2	32	3	0
1R0304	Meadow Creek	Corson	2	3	4.0	47	2	0.04	0	22	8	0
1R0305	Archambaudt Creek	Corson	1	3	8.7	46	3	0.07	3	33	8	0
1R0306	Date Road	Perkins	2	3	15.2	41	17	0.41	0	35	4	0
1R0307	Brushy Creek	Perkins	1	3	5.3	48	9	0.19	3	42	8	0
1R0308	Southwest Moreau Twp.	Perkins	1	3	6.3	61	8	0.13	0	29	4	0
1R0309	Sulphur Cutoff Road	Meade	4	5	12.3	57	19	0.33	2	59	21	0
1R0310	Middle Branch Beaver Dam	Meade	2	4	23.1	57	26	0.46	1	41	2	0

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
	Creek											
1R0311	Red Owl Rd	Meade	3	6	23.0	48	20	0.42	3	26	8	0
1R0312	Lemmon Creek	Meade	2	6	12.1	54	7	0.13	2	46	14	1
1R0401	Fourmile Creek	Meade	1	1	4.1	20	8	0.40	2	40	24	1
1R0402	Four Corners Road	Haakon	3	5	11.3	56	7	0.13	2	37	0	0
1R0403	Alkali Creek	Meade	2	6	17.6	62	29	0.47	1	52	14	1
1R0404	Hammann Lake	Pennington	2	4	8.2	78	11	0.14	2	41	5	2
1R0405	Antelope Creek Road	Meade	4	14	45.9	48	20	0.42	2	54	16	4
1R0406	Dirty Womans Creek	Haakon	2	3	9.5	52	10	0.19	0	48	15	0
1R0407	Baseline Road	Pennington	2	6	13.5	73	8	0.11	0	62	6	1
1R0408	Lake Hill Twp.	Pennington	2	5	22.3	65	16	0.25	0	47	12	1
1R0501	Weta	Jackson	3	9	25.4	49	13	0.27	0	41	14	0
1R0502	Fairburn	Custer	4	10	42.6	71	23	0.32	1	61	21	1
1R0503	Big Hollow Creek	Shannon	2	6	27.2	52	8	0.15	0	32	3	0
1R0504	Wanblee	Jackson	2	4	6.6	58	5	0.09	2	64	4	0
1R0505	No Flesh Creek	Bennett	4	15	40.1	82	18	0.22	1	53	9	0
1R0506	Swett	Bennett	2	4	22.4	39	9	0.23	0	26	5	0
1R0507	Madera Creek	Fall River	3	3	11.4	27	12	0.44	0	31	4	1
1R0508	North of Pine Ridge	Shannon	2	4	21.6	74	7	0.09	2	55	8	0
1R0601	White Shirt Creek	Corson	2	4	7.1	50	5	0.10	0	30	3	0
1R0602	Grand River-Firesteel Creek junction	Corson	3	4	5.3	62	4	0.06	0	54	5	1
1R0603	Little Moreau Rec Area	Dewey	2	6	12.7	68	11	0.16	4	72	3	3
1R0604	Jewitt Pond	Dewey	2	2	1.7	40	1	0.03	0	48	10	0
1R0605	Bear Creek	Dewey	2	3	6.3	63	6	0.10	0	39	1	0
1R0606	BIA 8-19 junction	Dewey	3	4	6.0	39	5	0.13	1	28	3	0
1R0701	Wagonbound Creek	Stanley	2	3	6.4	33	9	0.27	0	37	12	0
1R0702	Big Prairie Dog Creek	Stanley	2	6	18.2	51	18	0.31	0	53	17	2
1R0703	East Mitchell Creek	Haakon	2	3	14.5	51	11	0.22	0	47	17	0
1R0704	East Jackson	Jackson	3	3	9.1	35	6	0.17	0	42	14	0
1R0705	Draper	Jones	1	8	22.1	54	27	0.50	3	31	17	0
1R0706	West Bull Creek	Jones	3	6	9.9	52	23	0.44	0	50	17	1
1R0707	White River-Oak Creek Jct.	Tripp	3	4	15.5	54	10	0.19	1	47	7	2

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
1R0708	Pleasant Valley Twp.	Tripp	2	6	7.9	33	8	0.24	0	40	4	0
1R0801	Half Dome	Jackson	3	4	9.7	69	11	0.16	0	52	12	1
1R0802	Black Pipe	Mellette	3	6	11.8	63	21	0.33	0	67	6	0
1R0803	Southeast of LaCreek NWR	Bennett	3	6	4.6	44	4	0.09	3	32	4	1
1R0804	Spring Creek	Todd	3	5	19.8	51	7	0.14	1	47	7	0
1R0805	Hidden Timber	Todd	1	4	13.7	62	12	0.19	2	57	15	2
1R0806	Lost Creek	Tripp	3	7	18.7	70	15	0.21	0	55	16	1
1R0901	Artas	Campbell	2	3	8.3	56	15	0.27	5	49	7	0
1R0902	Glenham Road	Campbell	2	4	10.3	59	11	0.19	1	54	13	2
1R0904	Lowell Twp.	Potter	3	3	9.8	58	13	0.22	0	54	11	3
1R0905	Potts Dam GPA	Potter	7	7	21.2	66	24	0.36	6	56	23	3
1R0906	Bull Creek	Dewey	2	3	9.0	40	4	0.10	2	19	1	1
1R0907	Bretton Twp.	Hughes	1	7	24.6	53	23	0.43	0	48	16	0
1R0908	Bad River-War Creek junction	Stanley	3	6	17.2	68	10	0.15	2	64	27	0
1R1001	Mettler WPA	McPherson	2	4	9.1	64	16	0.25	3	58	7	2
1R1002	Belle Twp.	Edmunds	2	4	7.4	70	17	0.24	7	53	25	2
1R1003	Harmony Twp.	Edmunds	3	3	6.4	64	11	0.17	0	52	23	1
1R1004	Clark Twp.	Faulk	1	4	7.6	52	9	0.17	1	43	11	1
1R1101	LaFoon Twp.	Faulk	2	5	9.4	71	12	0.17	0	42	14	0
1R1102	Gerkin Lake	Faulk	3	9	19.8	77	27	0.35	2	61	20	5
1R1103	Loomis Twp.	Hyde	2	3	6.1	45	17	0.38	0	30	9	0
1R1104	Van Order Twp.	Hyde	1	7	20.0	47	22	0.47	1	42	19	0
1R1105	Campbell Creek	Buffalo	2	4	8.0	40	7	0.18	0	35	6	0
1R1106	Marlar Twp.	Jerauld	3	3	8.0	52	11	0.21	2	43	9	1
1R1107	Boyer GPA	Brule	3	11	40.4	87	36	0.41	7	49	1	0
1R1108	Bijou Hills	Brule	1	7	28.2	60	25	0.42	1	52	5	0
1R1201	Burke	Gregory	3	9	21.6	72	23	0.32	2	61	28	1
1R1202	Whetstone Bay	Gregory	4	8	23.3	67	16	0.24	2	66	29	1
1R1203	Putnam Raysby WPAs	Charles Mix	1	4	7.9	51	4	0.08	2	59	13	6
1R1204	Randall Creek	Gregory	4	4	12.0	55	11	0.20	1	54	25	0
1R1301	Columbia	Brown	4	20	29.7	68	25	0.37	4	62	24	4
1R1302	Groton Airport	Brown	2	6	18.9	68	16	0.24	4	42	12	1
1R1303	Mansfield WPA	Spink	3	5	8.9	80	15	0.19	4	64	20	7

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
1R1304	James River at 158 St.	Spink	3	4	5.6	54	9	0.17	1	56	19	0
1R1305	Hillside Colony	Spink	2	4	17.0	58	23	0.40	2	51	5	0
1R1306	Foster Creek	Spink	3	6	19.1	54	18	0.33	4	44	11	1
1R1401	Nance Twp.	Beadle	2	3	10.7	65	16	0.25	2	53	9	0
1R1402	Silver Creek	Beadle	2	3	9.1	67	20	0.30	0	58	7	0
1R1403	Elliott Twp.	Sanborn	2	5	11.5	63	13	0.21	1	49	13	0
1R1404	Firesteel Twp.	Aurora	3	4	10.3	53	17	0.32	1	41	7	2
1R1405	Southwestern Mitchell	Davison	3	7	19.7	58	13	0.22	1	50	10	0
1R1406	Rome Twp.	Davison	2	3	9.9	57	18	0.32	0	44	16	2
1R1501	Dayton Crow Creek Ditch	Marshall	3	6	17.0	76	20	0.26	5	64	18	2
1R1502	East Renziehausen	Marshall	2	4	12.0	74	18	0.24	7	58	16	2
1R1503	Little Minnesota River	Roberts	2	4	11.2	73	15	0.21	3	40	2	0
1R1504	Diamond GPA	Roberts	3	7	17.9	78	18	0.23	6	63	7	6
1R1505	Butler	Day	3	7	14.4	80	16	0.20	6	59	12	3
1R1506	Rusk Twp.	Day	2	4	6.4	71	17	0.24	10	67	19	5
1R1601	Garfield Twp.	Clark	2	6	19.1	70	23	0.33	2	46	8	0
1R1602	Evans WPA	Clark	1	2	6.3	48	4	0.08	1	53	9	2
1R1603	Timber Creek	Deuel	2	6	19.9	63	16	0.25	1	52	9	1
1R1604	I29 - Hwy 22 junction	Deuel	2	4	9.4	53	4	0.08	1	60	14	2
1R1605	Johnsons Slough-Halligan-Gustafson	Hamlin	3	8	28.4	84	26	0.31	7	56	9	9
1R1606	Six Mile Creek	Brookings	3	6	7.9	51	7	0.14	0	56	16	1
1R1607	North Deer Creek	Brookings	3	6	16.5	58	19	0.33	4	60	12	2
1R1608	Lake Whitewood	Kingsbury	1	4	15.5	67	15	0.22	8	53	5	6
1R1609	Winfred Twp.	Lake	2	5	18.2	65	11	0.17	4	58	14	5
1R1610	Egan Twp.	Moody	1	3	17.2	50	11	0.22	2	62	19	1
1R1611	Vermillion Twp.	Miner	2	3	9.7	55	19	0.35	5	60	4	1
1R1612	Clear Lake	Minnehaha	3	7	40.7	70	20	0.29	8	59	7	3
1R1701	Tschetter Slough	McCook	1	3	12.7	67	13	0.19	5	64	17	0
1R1702	Wall Lake	Minnehaha	5	43	83.2	60	33	0.55	5	60	21	4
1R1703	East of Rowena	Minnehaha	3	12	23.9	58	16	0.28	2	49	15	0
1R1704	Pleasant Twp.	Hutchinson	2	4	8.7	52	9	0.17	1	55	14	1
1R1705	Lone Tree Creek	Hutchinson	4	6	11.6	59	8	0.14	1	55	10	0

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
1R1706	Walshtown Twp.	Yankton	2	6	13.3	71	35	0.49	2	57	9	2
1R1707	Lewis and Clark Lake	BonHomme	2	5	21.4	79	14	0.18	4	56	17	1
1R1708	Myron Grove	Clay	4	10	25.6	78	32	0.41	0	71	28	3
2R0001	Plum Creek	Corson	3	4	3.2	44	2	0.05	1	---	---	---
2R0002	Pearl Creek	Beadle	2	4	15.6	46	16	0.35	2	---	---	---
2R0003	Northeast Rapid City	Pennington	4	22	45.4	68	28	0.41	2	---	---	---
2R0004	Exit 242	Roberts	2	2	5.0	68	11	0.16	1	---	---	---
2R0005	Glover Twp.	Edmunds	2	4	13.3	61	14	0.23	6	---	---	---
2R0006	Mullen Twp	Jones	2	5	10.3	42	11	0.26	1	---	---	---
2R0008	Northeast of Batesland	Bennett	2	6	26.5	40	11	0.28	0	---	---	---
2R0009	Sand Creek	Hand	3	3	9.9	68	11	0.16	2	---	---	---
2R0010	East of La Plant	Dewey	2	3	6.6	40	7	0.18	1	---	---	---
2R0011	North Ethan	Hanson	2	3	10.0	61	9	0.15	0	---	---	---
2R0012	Red Shirt	Shannon	2	4	8.7	52	5	0.10	1	---	---	---
2R0013	North of Doland	Spink	1	3	17.4	52	18	0.35	1	---	---	---
2R0014	Southwest of Buffalo	Harding	1	6	13.6	21	9	0.43	4	---	---	---
2R0015	Dry Run-County line	Spink	2	5	16.3	75	12	0.16	9	---	---	---
2R0016	North Fork Bad River	Haakon	2	5	17.9	55	25	0.45	0	---	---	---
2R0017	Northeast Lyman	Lyman	1	4	14.4	55	10	0.18	1	---	---	---
2R0018	Irish Creek	Ziebach	2	6	9.8	52	9	0.17	1	---	---	---
2R0019	Little Beaver Creek	Lincoln	3	9	32.4	62	15	0.24	0	---	---	---
2R0020	Crow Creek northwest of Belle Fourche	Butte	2	3	4.2	24	6	0.25	1	---	---	---
2R0021	North Lake Poinsett	Hamlin	2	8	24.7	71	18	0.25	5	---	---	---
2R0022	Foster Road	Perkins	2	6	17.1	66	20	0.30	0	---	---	---
2R0023	Gooseneck	Shannon	2	3	5.8	55	1	0.02	2	---	---	---
2R0024	Mattison Twp.	Haakon	3	4	7.6	25	9	0.36	1	---	---	---
2R0025	Crystal Lake Twp.	Aurora	2	3	9.9	55	19	0.35	2	---	---	---
2R0026	Olson Creek	Campbell	2	5	14.0	73	12	0.16	8	---	---	---
2R0027	Bruce	Brookings	3	12	33.0	69	29	0.42	2	---	---	---
2R0029	Syverson-Buss WPAs	Marshall	2	5	13.3	67	22	0.33	6	---	---	---
2R0030	Camp Crook Road	Butte	2	5	17.0	38	12	0.32	2	---	---	---
2R0031	Allison Twp.	Brown	2	4	8.0	74	11	0.15	3	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0032	Hwy 63 at 206 St.	Stanley	2	4	9.2	36	13	0.36	0	---	---	---
2R0033	West side Rattlesnake Butte	Tripp	2	7	20.8	36	7	0.19	0	---	---	---
2R0034	Middle Pearl Creek	Beadle	2	4	14.7	51	15	0.29	2	---	---	---
2R0035	Cicero Peak	Custer	4	12	40.2	58	9	0.16	0	---	---	---
2R0036	Goodwill Twp.	Roberts	3	4	9.6	82	9	0.11	1	---	---	---
2R0037	Wagner Road	Harding	1	6	20.7	48	10	0.21	0	---	---	---
2R0038	Green Lake	Potter	3	5	10.0	62	16	0.26	4	---	---	---
2R0039	Ring Thunder	Mellette	3	6	21.3	44	14	0.32	1	---	---	---
2R0040	East White Horse Creek	Todd	2	7	19.1	65	14	0.22	4	---	---	---
2R0041	Zink WPA	Jerauld	2	5	18.7	68	15	0.22	3	---	---	---
2R0042	BIA 802	Dewey	3	5	3.1	26	2	0.08	2	---	---	---
2R0043	Daneville Twp.	Turner	2	4	13.7	64	16	0.25	1	---	---	---
2R0044	Rock Creek	Hanson	2	5	19.9	55	11	0.20	1	---	---	---
2R0045	Spring Creek Road	Custer	3	9	23.9	40	17	0.43	0	---	---	---
2R0046	Crocker	Clark	2	5	12.3	72	28	0.39	5	---	---	---
2R0047	Fairview-Alden Twps.	Hand	2	8	26.1	77	25	0.32	4	---	---	---
2R0048	Bear-in-the-Lodge Creek	Jackson	2	4	10.8	51	7	0.14	2	---	---	---
2R0049	Northeast of Mission	Todd	2	3	5.7	61	8	0.13	1	---	---	---
2R0050	East Sully	Sully	3	4	8.9	53	10	0.19	2	---	---	---
2R0051	West of Dupree	Ziebach	3	6	13.5	56	10	0.18	0	---	---	---
2R0053	Tri-county junction	Meade	3	5	5.7	46	7	0.15	2	---	---	---
2R0054	Lake Cochrane	Deuel	3	6	9.0	59	18	0.31	1	---	---	---
2R0055	141 St.	Harding	2	5	17.6	58	13	0.22	1	---	---	---
2R0056	Southeast Fall River County	Fall River	2	2	15.4	29	14	0.48	0	---	---	---
2R0057	Spring Lake	Walworth	4	5	11.2	86	20	0.23	7	---	---	---
2R0058	Takini	Ziebach	3	5	7.6	40	10	0.25	0	---	---	---
2R0059	South Mud Lake	Brule	2	6	20.9	73	10	0.14	7	---	---	---
2R0060	Myer's Bay	Campbell	2	7	31.9	63	17	0.27	4	---	---	---
2R0061	West of Wagner	Charles Mix	2	4	8.5	55	10	0.18	0	---	---	---
2R0062	Hart Hansen WPAs	Lake	3	7	22.7	63	24	0.38	5	---	---	---
2R0064	South Kidder	Marshall	2	4	9.6	62	16	0.26	6	---	---	---
2R0065	South Cottonwood Creek	Butte	1	3	8.0	44	4	0.09	2	---	---	---
2R0066	West Hanson Twp.	Brown	3	4	7.2	63	14	0.23	10	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0067	Lance Creek	Stanley	2	5	15.9	35	12	0.34	1	---	---	---
2R0068	100th meridian	Tripp	2	4	8.2	21	4	0.19	0	---	---	---
2R0069	Pooley Creek	Miner	2	4	13.5	44	14	0.32	1	---	---	---
2R0070	Northeast Deerfield Lake	Pennington	5	21	72.0	75	16	0.21	0	---	---	---
2R0071	Grand River National Grassland	Perkins	3	8	26.4	43	20	0.47	2	---	---	---
2R0072	South Fork Snake Creek at Hwy 47	Faulk	2	7	14.4	65	7	0.11	2	---	---	---
2R0073	Johnny Creek	Jones	2	4	10.0	56	25	0.45	1	---	---	---
2R0074	Rhoades Twp.	Gregory	3	4	11.3	52	13	0.25	0	---	---	---
2R0075	Heckel Creek	Bennett	1	2	6.0	32	7	0.22	0	---	---	---
2R0076	Ree Heights	Hand	4	6	10.9	62	9	0.15	0	---	---	---
2R0077	Sutton GPA	Sully	1	3	4.9	41	5	0.12	0	---	---	---
2R0078	University Road	Clay	4	9	32.0	71	37	0.52	1	---	---	---
2R0079	Sharon-Wittenberg Twps.	Hutchinson	3	3	9.1	64	17	0.27	1	---	---	---
2R0080	Cedar Butte	Pennington	3	11	32.7	75	27	0.36	5	---	---	---
2R0081	East Lohner-Vincent GPA	Day	3	6	13.6	66	20	0.30	7	---	---	---
2R0082	Ludlow	Harding	2	8	15.9	55	18	0.33	1	---	---	---
2R0083	Freedom Twp.	Faulk	1	3	9.2	64	15	0.23	3	---	---	---
2R0084	Black Pipe Creek-County line	Jackson	2	7	39.9	62	21	0.34	2	---	---	---
2R0085	Campbell Creek at Hwy 34	Hyde	2	5	15.4	45	8	0.18	0	---	---	---
2R0086	Firesteel	Dewey	2	10	23.1	65	7	0.11	2	---	---	---
2R0087	Union Center	Minnehaha	2	3	14.0	58	11	0.19	3	---	---	---
2R0088	Alkali Creek II	Meade	2	4	20.0	51	15	0.29	0	---	---	---
2R0089	Overland WPA	Codington	2	4	13.3	58	17	0.29	0	---	---	---
2R0090	Beaver Dam Creek	Meade	2	3	21.2	49	26	0.53	0	---	---	---
2R0091	West Pine Ridge	Shannon	3	9	39.7	67	15	0.22	3	---	---	---
2R0092	West WPA - south unit	Edmunds	3	6	13.8	70	16	0.23	2	---	---	---
2R0093	Hilland	Haakon	2	3	14.1	54	26	0.48	0	---	---	---
2R0094	West side Twin Butte	Brule	2	4	13.2	35	5	0.14	1	---	---	---
2R0095	Hwy 63 at state border	Corson	2	4	7.2	47	3	0.06	2	---	---	---
2R0096	West Flandreau	Moody	2	4	24.5	63	20	0.32	3	---	---	---
2R0097	White Owl	Meade	3	4	14.2	43	22	0.51	0	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0098	Owens Creek GPA	Day	3	6	10.3	54	15	0.28	1	---	---	---
2R0099	Harding Road	Harding	2	5	15.5	39	14	0.36	0	---	---	---
2R0100	White Draw	Fall River	3	13	43.6	67	13	0.19	2	---	---	---
2R0101	West Sully	Sully	2	5	9.0	35	12	0.34	0	---	---	---
2R0103	Southwest Lower Brule	Lyman	2	3	4.1	46	6	0.13	0	---	---	---
2R0104	Sherman-Riverside Twps.	Corson	2	3	4.6	41	6	0.15	0	---	---	---
2R0105	Bryant	Hamlin	3	8	25.2	84	28	0.34	7	---	---	---
2R0106	Carroll Creek	Custer	3	12	40.1	48	13	0.27	0	---	---	---
2R0107	Southwest of Gettysburg	Potter	1	5	21.3	69	31	0.45	2	---	---	---
2R0108	Oak Creek	Mellette	2	6	14.6	69	14	0.20	0	---	---	---
2R0109	Coffee Creek	Bennett	4	5	12.9	38	8	0.21	1	---	---	---
2R0110	East side Collins Slough	Hand	3	3	9.7	56	15	0.27	5	---	---	---
2R0111	Trail City	Dewey	2	5	11.0	73	12	0.16	2	---	---	---
2R0112	Northwest of Bridgewater	McCook	2	4	16.3	47	8	0.17	1	---	---	---
2R0113	Bouquet Table	Pennington	3	7	15.6	48	6	0.13	2	---	---	---
2R0114	Bocheck Rasmussen GPAs	Hamlin	2	5	12.5	62	12	0.19	5	---	---	---
2R0115	Glendale Colony	Spink	3	7	25.3	75	17	0.23	5	---	---	---
2R0116	Lake Waggoner	Haakon	2	11	32.0	71	34	0.48	2	---	---	---
2R0117	Black Pipe Creek	Todd	3	5	23.2	64	14	0.22	0	---	---	---
2R0118	North of Highmore	Hyde	1	5	16.0	51	24	0.47	1	---	---	---
2R0119	Green Grass Creek	Dewey	2	4	5.5	34	3	0.09	0	---	---	---
2R0120	Turkey Ridge Creek	Turner	2	4	20.8	49	14	0.29	1	---	---	---
2R0121	Harvey Springs	Lawrence	5	15	60.5	48	11	0.23	0	---	---	---
2R0123	Gruwell - Mud Butte Roads	Butte	1	4	12.4	41	14	0.34	0	---	---	---
2R0124	BIA 41	Shannon	2	5	18.5	42	9	0.21	1	---	---	---
2R0125	Greenway	Campbell	2	5	18.2	52	18	0.35	0	---	---	---
2R0126	Cherry Creek	Ziebach	2	4	6.9	51	6	0.12	1	---	---	---
2R0127	White Lake town	Aurora	2	3	11.6	66	13	0.20	2	---	---	---
2R0128	High Bank Creek	Corson	2	4	14.2	45	13	0.29	0	---	---	---
2R0129	Beaver Creek at county line	Yankton	2	7	26.7	71	14	0.20	4	---	---	---
2R0130	Deer Creek	Brookings	3	6	9.7	57	5	0.09	0	---	---	---
2R0131	West of Elm Springs	Meade	1	4	13.9	37	9	0.24	0	---	---	---
2R0132	Homer Twp.	Day	5	11	23.9	72	29	0.40	3	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0133	Granger Creek	Harding	2	4	14.3	29	12	0.41	0	---	---	---
2R0134	Cheyenne River	Fall River	3	11	29.8	76	13	0.17	1	---	---	---
2R0135	Howard Twp.	McPherson	2	5	15.9	69	8	0.12	4	---	---	---
2R0136	La Framboise	Stanley	3	21	48.3	73	27	0.37	8	---	---	---
2R0137	Fairfax	Gregory	2	7	31.0	69	11	0.16	1	---	---	---
2R0138	Lewis Hill	Lyman	2	4	10.1	59	14	0.24	4	---	---	---
2R0139	Little Soldier Creek	Corson	1	4	13.5	56	5	0.09	0	---	---	---
2R0140	Northeast edge Huron	Beadle	2	5	24.9	72	29	0.40	3	---	---	---
2R0141	Battle Creek	Custer	2	4	6.9	51	9	0.18	0	---	---	---
2R0142	Cottonwood Lake	Roberts	2	3	7.8	71	14	0.20	2	---	---	---
2R0143	Logan Twp.	Potter	1	3	7.2	50	10	0.20	2	---	---	---
2R0144	Northwest of Okaton	Jones	3	5	8.7	40	21	0.53	2	---	---	---
2R0145	Yellow Bear Canyon	Bennett	3	9	22.6	74	12	0.16	2	---	---	---
2R0146	Grand-Whiteside Twps.	Beadle	2	6	17.7	65	25	0.38	3	---	---	---
2R0147	Blackfoot	Dewey	2	4	12.1	82	8	0.10	9	---	---	---
2R0148	Southwest Big Sioux Twp.	Union	4	9	27.6	68	31	0.46	2	---	---	---
2R0149	Twelve Mile Creek	Davison	3	3	7.8	54	10	0.19	0	---	---	---
2R0150	Far East Custer County	Custer	2	4	13.9	40	6	0.15	1	---	---	---
2R0151	South Clark	Clark	4	10	24.6	78	23	0.29	7	---	---	---
2R0152	Gallup Creek	Harding	1	1	4.7	34	6	0.18	0	---	---	---
2R0153	Dry Run	Spink	3	5	15.5	64	15	0.23	2	---	---	---
2R0154	Big Foote Road	Pennington	3	5	16.5	57	13	0.23	0	---	---	---
2R0155	Raber Twp.	Hughes	2	5	9.9	67	23	0.34	2	---	---	---
2R0156	Thunder Butte Road	Ziebach	3	4	7.1	53	5	0.09	0	---	---	---
2R0157	Long Creek at Vermillion River	Turner	3	4	7.6	53	15	0.28	0	---	---	---
2R0158	Indian Creek northeast of Orman Dam	Butte	3	5	13.0	37	10	0.27	2	---	---	---
2R0159	Appleby	Codington	2	4	9.0	38	8	0.21	1	---	---	---
2R0160	Moreau Twp.	Perkins	2	4	6.3	57	11	0.19	2	---	---	---
2R0161	Kyle	Shannon	3	8	23.2	57	10	0.18	0	---	---	---
2R0162	10/45 GPA	McPherson	3	7	19.0	71	17	0.24	11	---	---	---
2R0163	Wilburn Creek	Haakon	3	10	17.1	59	23	0.39	5	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0164	Tielebein GPA	Aurora	3	3	7.4	57	8	0.14	0	---	---	---
2R0166	West of Volga	Brookings	3	4	6.2	57	10	0.18	3	---	---	---
2R0167	East Elm-Hay Creeks	Meade	2	9	17.7	55	20	0.36	4	---	---	---
2R0168	Whitestone Lake	Roberts	2	4	11.0	92	16	0.17	3	---	---	---
2R0169	BLM Fourmile Creek	Butte	2	2	7.0	21	8	0.38	3	---	---	---
2R0170	254 Ave.	Stanley	2	4	8.6	41	13	0.32	0	---	---	---
2R0171	Landing Creek	Gregory	2	9	27.7	74	13	0.18	1	---	---	---
2R0172	Thunder Hawk	Corson	3	4	7.2	56	11	0.20	0	---	---	---
2R0173	Redstone Creek at James River	Sanborn	2	8	24.6	81	23	0.28	5	---	---	---
2R0174	Lame Johnny Creek	Custer	2	5	6.9	30	2	0.07	3	---	---	---
2R0175	Kilborn Twp.	Grant	2	5	14.6	62	14	0.23	5	---	---	---
2R0176	Fredlund Twp.	Perkins	4	14	45.7	64	25	0.39	0	---	---	---
2R0177	South of Spring Lake	Walworth	3	3	6.1	62	6	0.10	10	---	---	---
2R0179	Southeast of Keyapaha	Tripp	3	6	8.6	46	9	0.20	0	---	---	---
2R0181	Anina-Viola Twps.	Jerauld	1	5	14.4	56	10	0.18	6	---	---	---
2R0182	Fox Creek at Lake Oahe	Dewey	4	11	6.6	40	6	0.15	5	---	---	---
2R0183	Jct. Hwy 46-448 Ave.	Yankton	2	5	17.9	68	18	0.26	0	---	---	---
2R0184	Lisbon-Beulah Twps.	Davison	1	2	9.9	68	10	0.15	1	---	---	---
2R0185	Box Elder Creek	Pennington	1	13	31.3	47	16	0.34	1	---	---	---
2R0186	East side Conde	Spink	1	3	5.5	58	5	0.09	2	---	---	---
2R0188	Dove Creek	Faulk	3	10	19.9	76	27	0.36	3	---	---	---
2R0189	Cut Creek	Jackson	2	7	22.1	50	8	0.16	1	---	---	---
2R0190	114 St.	Todd	1	4	13.8	39	5	0.13	0	---	---	---
2R0191	Harrold Twp.	Hughes	3	4	12.4	56	15	0.27	2	---	---	---
2R0192	Flint Rock Creek	Perkins	4	5	4.8	38	4	0.11	0	---	---	---
2R0193	Skunk Creek	Minnehaha	4	7	25.8	67	28	0.42	2	---	---	---
2R0194	Eightmile Creek	Butte	3	5	9.8	18	4	0.22	0	---	---	---
2R0195	North Fork Moreau River	Butte	1	3	11.9	58	3	0.05	3	---	---	---
2R0196	East of Salt Lake	Campbell	2	4	7.8	54	12	0.22	3	---	---	---
2R0197	Clayton Draw	Ziebach	2	5	14.9	43	6	0.14	1	---	---	---
2R0198	Smith Creek	Buffalo	1	7	21.3	75	15	0.20	1	---	---	---
2R0199	East of Pollock	Campbell	2	4	11.3	76	20	0.26	10	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0200	Avon Twp.	BonHomme	1	4	13.2	55	17	0.31	1	---	---	---
2R0201	Floyd Gaarder GPA	Brookings	3	5	16.2	65	14	0.22	6	---	---	---
2R0202	Big Canyon	Pennington	2	4	12.5	58	5	0.09	0	---	---	---
2R0203	Dayton Twp.	Marshall	3	4	9.5	97	19	0.20	12	---	---	---
2R0204	South Fork Moreau River at old Hwy 79	Butte	4	7	15.1	52	10	0.19	0	---	---	---
2R0205	Putney Slough	Brown	3	7	8.9	75	14	0.19	5	---	---	---
2R0206	Sansarc Road	Stanley	3	5	19.7	38	9	0.24	0	---	---	---
2R0207	Red Hills	Tripp	3	5	16.3	60	23	0.38	2	---	---	---
2R0208	Walker	Corson	3	6	15.9	65	5	0.08	5	---	---	---
2R0209	South of Lake Thompson	Miner	2	6	22.8	72	17	0.24	7	---	---	---
2R0210	FR 383	Pennington	3	6	34.1	41	8	0.20	0	---	---	---
2R0211	Butcher Creek	Perkins	2	8	17.1	61	6	0.10	2	---	---	---
2R0212	VenJohn WPA	Hand	2	9	29.4	87	13	0.15	4	---	---	---
2R0213	Williams Creek Twp.	Jones	3	4	6.2	39	20	0.51	1	---	---	---
2R0214	Carlock	Gregory	2	4	19.0	63	15	0.24	1	---	---	---
2R0215	Little Turtle Creek	Hand	3	5	9.6	46	7	0.15	1	---	---	---
2R0216	East Branch Stove Creek Bay	Dewey	2	5	12.2	36	11	0.31	0	---	---	---
2R0217	Virginia Twp.	Union	3	4	11.6	60	19	0.32	1	---	---	---
2R0218	Bridgewater	McCook	2	4	8.6	59	20	0.34	1	---	---	---
2R0219	Conata Basin Road	Pennington	3	7	14.9	35	11	0.31	0	---	---	---
2R0220	Jct. 149 St - 449 Ave.	Grant	2	5	7.8	76	11	0.14	7	---	---	---
2R0222	South Fork Snake Creek at 164 St.	Spink	2	4	13.8	70	20	0.29	4	---	---	---
2R0223	Jct. Hwys 73-44	Jackson	2	3	5.3	26	5	0.19	2	---	---	---
2R0224	Wolf Creek	Buffalo	3	4	7.7	27	6	0.22	2	---	---	---
2R0225	Red Earth Creek	Ziebach	2	6	9.2	40	3	0.08	1	---	---	---
2R0226	Colton Creek	Minnehaha	2	3	7.6	51	19	0.37	0	---	---	---
2R0227	East of Sturgis	Meade	2	6	20.8	73	17	0.23	4	---	---	---
2R0228	Mahoney Creek	Codington	3	5	19.0	43	9	0.21	3	---	---	---
2R0229	Jct. Hwy 73-157 St.	Perkins	5	6	5.3	45	7	0.16	0	---	---	---
2R0230	Northeast of Hillsvie	McPherson	2	5	8.6	61	19	0.31	6	---	---	---
2R0231	Mixes Food Creek	Pennington	1	4	12.7	66	6	0.09	1	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0232	Platte Creek	Charles Mix	1	6	25.7	77	9	0.12	2	---	---	---
2R0233	Maple Leaf	Corson	2	5	7.8	57	6	0.11	1	---	---	---
2R0234	Pipestone Creek	Moody	3	8	37.7	55	14	0.25	2	---	---	---
2R0235	Middle-of-Nowhere	Meade	1	3	6.7	42	15	0.36	1	---	---	---
2R0236	Southwest Drywood Lake	Roberts	3	4	8.6	101	18	0.18	6	---	---	---
2R0238	FR 9A	Fall River	3	5	16.1	35	9	0.26	1	---	---	---
2R0239	Dry Branch Creek	Brown	2	3	6.5	78	16	0.21	3	---	---	---
2R0240	Road 1806	Stanley	2	5	23.0	48	13	0.27	2	---	---	---
2R0241	Northwest Rose Twp.	Lyman	4	4	6.9	45	11	0.24	0	---	---	---
2R0242	CC Lee GPA	Corson	3	5	11.8	62	7	0.11	1	---	---	---
2R0243	Kopperud WPA	Kingsbury	3	7	31.1	75	32	0.43	6	---	---	---
2R0244	Dewey Road	Custer	2	6	18.5	44	4	0.09	0	---	---	---
2R0245	Elida Twp.	Potter	2	4	14.7	63	17	0.27	5	---	---	---
2R0246	Northwest of Okreek	Todd	2	2	9.6	35	5	0.14	1	---	---	---
2R0247	Tuthill	Bennett	4	9	17.3	63	19	0.30	5	---	---	---
2R0248	Northeastern Buffalo County	Buffalo	2	3	11.7	63	18	0.29	0	---	---	---
2R0249	Southwest of White Horse	Dewey	2	6	15.4	55	8	0.15	0	---	---	---
2R0250	Pierre Creek at James River	Hanson	3	4	10.7	62	20	0.32	2	---	---	---
2R0251	Palmer Unit	Shannon	2	2	8.6	50	18	0.36	1	---	---	---
2R0252	Willow Lake	Clark	4	9	27.7	74	31	0.42	7	---	---	---
2R0253	Scranton Road	Harding	1	4	13.3	52	12	0.23	0	---	---	---
2R0254	James River at Ashton	Spink	3	5	9.4	67	13	0.19	4	---	---	---
2R0255	Word Road	Jackson	1	8	29.1	68	33	0.49	0	---	---	---
2R0256	Crazy Horse Canyon	Todd	3	6	20.7	70	10	0.14	0	---	---	---
2R0257	Holabird	Hyde	3	3	9.1	53	13	0.25	1	---	---	---
2R0258	South of Lantry	Ziebach	1	5	15.1	61	16	0.26	3	---	---	---
2R0259	West Fork Vermillion River	Turner	1	3	11.7	58	13	0.22	2	---	---	---
2R0260	Higgins Gulch	Lawrence	3	13	22.3	42	11	0.26	1	---	---	---
2R0261	Cabin Creek	Butte	1	3	11.9	64	7	0.11	2	---	---	---
2R0263	West of Artas	Campbell	2	3	3.4	58	9	0.16	2	---	---	---
2R0264	East of Milesville	Haakon	1	4	15.7	63	12	0.19	0	---	---	---
2R0265	Patten-Pleasant Valley Twps.	Aurora	2	3	6.5	52	17	0.33	0	---	---	---
2R0266	Mahto Road	Corson	1	4	14.1	77	12	0.16	1	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0267	Scotland Twp.	BonHomme	3	10	37.6	48	16	0.33	0	---	---	---
2R0268	Wurning Road	Meade	2	4	7.3	47	11	0.23	0	---	---	---
2R0269	Newport Twp.	Marshall	4	8	10.0	85	34	0.40	4	---	---	---
2R0270	Sheep Creek-Slim Buttes	Harding	3	7	23.2	88	11	0.13	2	---	---	---
2R0271	Northern Angostura Reservoir	Fall River	4	7	13.5	67	14	0.21	5	---	---	---
2R0272	Brown-Edmunds County line	Edmunds	2	5	10.8	70	16	0.23	4	---	---	---
2R0273	War Creek Road	Stanley	2	23	66.6	46	22	0.48	4	---	---	---
2R0274	Pease Creek Rec Area	Charles Mix	3	8	20.1	63	15	0.24	0	---	---	---
2R0275	White River-Bailey Twp.	Lyman	2	3	20.7	56	15	0.27	2	---	---	---
2R0276	South of Bullhead	Corson	3	4	4.4	50	5	0.10	0	---	---	---
2R0277	Foster Creek at 191 St.	Beadle	2	5	11.3	57	10	0.18	3	---	---	---
2R0278	Summer Creek	Pennington	4	17	66.4	69	22	0.32	0	---	---	---
2R0279	Cottonwood Slough	Roberts	3	4	8.3	76	14	0.18	8	---	---	---
2R0280	Bull Hook Creek	Perkins	4	14	25.5	46	21	0.46	1	---	---	---
2R0281	Jct. 342 Ave-141 St.	Edmunds	1	4	10.8	73	18	0.25	1	---	---	---
2R0282	Southwest Red Fish Twp.	Mellette	2	4	13.1	24	5	0.21	0	---	---	---
2R0284	Northeast of Allen	Bennett	3	3	10.4	56	3	0.05	0	---	---	---
2R0285	Theresa-Fairfield Twps.	Beadle	1	7	28.5	71	36	0.51	5	---	---	---
2R0286	Potter-Walworth County Line	Walworth	3	3	5.0	44	2	0.05	6	---	---	---
2R0287	Choteau Creek	Douglas	2	9	26.8	65	12	0.18	0	---	---	---
2R0288	Spring Canyon	Custer	2	5	9.1	51	14	0.27	0	---	---	---
2R0289	Harrison Twp.	Spink	3	5	14.3	66	8	0.12	6	---	---	---
2R0290	Pointed Butte	Harding	2	5	17.6	47	17	0.36	0	---	---	---
2R0291	Mellette Twp.	Spink	2	4	15.2	71	26	0.37	10	---	---	---
2R0292	Dugout Draw	Jackson	3	5	17.1	51	13	0.25	3	---	---	---
2R0294	Bass Dam	Lyman	2	8	22.5	45	15	0.33	2	---	---	---
2R0295	Tourney Creek	Ziebach	2	4	5.2	46	7	0.15	0	---	---	---
2R0296	Exit 68	Lincoln	2	3	6.6	44	9	0.20	0	---	---	---
2R0297	False Bottom Creek	Lawrence	2	4	18.0	62	19	0.31	2	---	---	---
2R0298	Bullhead Run at I29	Deuel	3	4	7.7	55	7	0.13	1	---	---	---
2R0299	Besler Management Unit	Perkins	2	6	16.5	56	12	0.21	1	---	---	---
2R0300	White Horse Creek	Shannon	2	4	13.4	81	10	0.12	0	---	---	---
2R0301	Jct. Hwy 10/45 - 112 St.	McPherson	2	7	13.3	85	21	0.25	7	---	---	---

Block ID	Block Name	County	Num Yrs	Num Visits	Total Time	Num Spp	Num CO	Prop CO	Num Obs	BBA1 Num Spp	BBA1 Num CO	BBA1 Num Obs
2R0302	Mitchell Creek	Haakon	2	4	12.4	30	3	0.10	1	---	---	---
2R0303	Grandview Twp.	Douglas	2	9	31.9	77	24	0.31	1	---	---	---
2R0304	Blue Blanket Lake	Walworth	2	4	7.7	83	27	0.33	8	---	---	---
2R0305	Running Water Twp.	BonHomme	3	4	13.0	59	19	0.32	1	---	---	---
2R0306	East Lake Preston	Kingsbury	4	9	29.9	75	35	0.47	4	---	---	---
2R0308	Roy Lake GPA	Marshall	3	3	8.3	82	16	0.20	8	---	---	---
2R0309	Kinghorn Road	Butte	3	5	10.2	30	6	0.20	1	---	---	---
2R0312	Nicholas Creek	Lyman	1	1	4.1	21	4	0.10	0	---	---	---
2R0313	Sand Creek at County Line	Sanborn	1	3	12.1	56	12	0.21	2	---	---	---
2R0314	Song Dog Drive	Custer	4	10	21.0	86	7	0.08	0	---	---	---
2R0315	Hurricane Lake	Roberts	2	5	14.2	67	9	0.13	4	---	---	---
2R0316	Hay Creek	Perkins	1	5	15.6	49	10	0.20	0	---	---	---
2R0317	Swan Lake	Walworth	1	2	4.3	79	21	0.27	6	---	---	---
2R0318	Gray Eagletail Creek	Mellette	1	3	14.9	60	19	0.32	0	---	---	---
2R0319	Lost Creek 2	Tripp	1	2	10.7	57	12	0.21	0	---	---	---
2R0320	Grant Twp.	Beadle	1	3	12.0	60	19	0.32	2	---	---	---
2R0321	St. Basil Church	Dewey	1	4	14.3	64	19	0.30	4	---	---	---
2S0001	Sica Hollow	Roberts	4	8	34.9	99	22	0.22	7	---	---	---
2S0002	Little Bend	Sully	4	12	29.9	52	9	0.17	4	---	---	---
2S0003	North Cave Hills	Harding	5	23	99.0	61	32	0.52	1	---	---	---
2S0004	West Short Pines	Harding	5	10	48.5	39	15	0.38	0	---	---	---
2S0005	Slim Buttes	Harding	5	32	130.3	64	31	0.48	0	---	---	---
2S0006	Boles Canyon	Custer	5	45	158.9	79	27	0.34	1	---	---	---
2S0007	Dry Creek prairie dog colony	Fall River	4	6	29.2	43	10	0.23	1	---	---	---
2S0008	Southwest Fall River County	Fall River	3	4	15.3	42	6	0.14	0	---	---	---

APPENDIX II. Summaries by Species

Tabulated summary results for each species observed during the second South Dakota Breeding Bird Atlas include total number of records, total number of confirmed (CO) breeding records, number (Num Blks) and percent (Pct Blks) of blocks the species was recorded, number of extra observations, number of confirmed breeding extra observations, number of counties the species was recorded, and number of counties with confirmed breeding records.

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Canada Goose	316	209	218	50.1	114	98	95	64	55
Trumpeter Swan	15	7	4	0.9	0	11	7	11	4
Wood Duck	187	80	144	33.1	40	43	40	60	40
Gadwall	382	187	279	64.1	87	103	100	62	44
American Wigeon	128	24	110	25.3	13	18	11	38	14
American Black Duck	3	1	1	0.2	0	2	1	3	1
Mallard	552	336	377	86.7	168	175	168	66	64
Blue-winged Teal	453	290	316	72.6	157	137	133	65	56
Cinnamon Teal	12	2	3	0.7	0	9	2	8	2
Northern Shoveler	306	158	221	50.8	73	85	85	58	42
Northern Pintail	283	123	221	50.8	63	62	60	57	41
Green-winged Teal	138	23	120	27.6	10	18	13	49	14
Canvasback	56	18	41	9.4	7	15	11	30	12
Redhead	143	42	122	28.0	22	21	20	49	24
Ring-necked Duck	41	6	34	7.8	0	7	6	22	5
Lesser Scaup	68	18	45	10.3	3	23	15	36	8
Bufflehead	6	1	4	0.9	1	2	0	6	1
Hooded Merganser	24	9	10	2.3	3	14	6	16	7
Common Merganser	3	1	1	0.2	0	2	1	1	1
Ruddy Duck	125	20	111	25.5	10	14	10	46	17
Northern Bobwhite	46	1	11	2.5	0	35	1	12	1
Gray Partridge	84	15	59	13.6	8	25	7	37	14
Ring-necked Pheasant	393	180	347	79.8	142	46	38	65	50
Ruffed Grouse	17	4	2	0.5	1	15	3	3	2
Greater Sage-Grouse	45	3	3	0.7	1	42	2	3	2

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Sharp-tailed Grouse	270	70	162	37.2	44	108	26	42	28
Greater Prairie-Chicken	73	9	28	6.4	1	45	8	26	6
Wild Turkey	153	53	125	28.7	28	28	25	49	33
Common Loon	3	1	1	0.2	1	2	0	3	1
Pied-billed Grebe	268	169	174	40.0	80	94	89	61	51
Horned Grebe	18	5	4	0.9	0	14	5	3	2
Red-necked Grebe	35	16	11	2.5	6	24	10	7	5
Eared Grebe	116	70	44	10.1	11	72	59	35	24
Western Grebe	122	85	50	11.5	21	72	64	42	32
Clark's Grebe	23	10	9	2.1	2	14	8	16	9
Double-crested Cormorant	224	107	124	28.5	8	100	99	53	30
American White Pelican	110	6	104	23.9	0	6	6	44	5
American Bittern	92	7	83	19.1	1	9	6	40	4
Least Bittern	35	2	23	5.3	1	12	1	19	2
Great Blue Heron	371	144	235	54.0	11	136	133	65	43
Great Egret	80	28	50	11.5	0	30	28	30	14
Snowy Egret	29	13	16	3.7	1	13	12	14	7
Little Blue Heron	7	1	2	0.5	0	5	1	3	1
Tricolored Heron	1	0	0	0.0	0	1	0	1	0
Cattle Egret	58	13	43	9.9	1	15	12	25	8
Green Heron	36	6	20	4.6	2	16	4	21	5
Black-crowned Night- Heron	81	19	59	13.6	3	22	16	27	12
Yellow-crowned Night- Heron	1	0	0	0.0	0	1	0	1	0
Glossy Ibis	8	3	4	0.9	0	4	3	6	2
White-faced Ibis	45	12	34	7.8	1	11	11	16	7
Turkey Vulture	217	3	211	48.5	0	6	3	53	3
Osprey	27	17	6	1.4	1	21	16	9	4
Bald Eagle	191	154	36	8.3	7	155	147	49	45
Northern Harrier	278	32	256	58.9	14	22	18	58	19
Sharp-shinned Hawk	11	1	7	1.6	1	4	0	7	1
Cooper's Hawk	110	16	62	14.3	6	48	10	43	14

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Northern Goshawk	45	13	4	0.9	2	41	11	5	3
Broad-winged Hawk	19	1	7	1.6	1	12	0	5	1
Swainson's Hawk	283	76	232	53.3	33	51	43	56	26
Red-tailed Hawk	500	153	390	89.7	45	110	108	66	50
Ferruginous Hawk	105	17	61	14.0	1	44	16	30	9
Golden Eagle	119	49	66	15.2	6	53	43	22	16
Virginia Rail	102	21	82	18.9	8	20	13	47	15
Sora	175	10	154	35.4	4	21	6	55	9
Common Gallinule	5	2	0	0.0	0	5	2	2	1
American Coot	269	187	190	43.7	113	79	74	60	52
Sandhill Crane	1	1	0	0.0	0	1	1	1	1
Black-necked Stilt	7	2	1	0.2	0	6	2	4	2
American Avocet	133	77	66	15.2	19	67	58	35	28
Snowy Plover	5	4	0	0.0	0	5	4	2	1
Piping Plover	194	184	7	1.6	3	187	181	18	12
Killdeer	469	234	413	94.9	183	56	51	66	64
Spotted Sandpiper	157	17	122	28.0	2	35	15	57	11
Willet	80	28	51	11.7	5	29	23	28	12
Upland Sandpiper	407	83	376	86.4	55	31	28	65	35
Long-billed Curlew	120	16	60	13.8	8	60	8	23	10
Marbled Godwit	189	32	145	33.3	7	44	25	44	17
Wilson's Snipe	119	7	100	23.0	4	19	3	42	5
American Woodcock	11	1	3	0.7	0	8	1	10	1
Wilson's Phalarope	204	40	168	38.6	16	36	24	47	22
Franklin's Gull	76	7	65	14.9	1	11	6	30	4
Ring-billed Gull	90	11	79	18.2	0	11	11	30	7
California Gull	35	6	24	5.5	0	11	6	19	5
Herring Gull	4	3	1	0.2	0	3	3	4	3
Least Tern	111	96	8	1.8	3	103	93	14	11
Caspian Tern	7	3	3	0.7	0	4	3	4	3
Black Tern	134	28	93	21.4	16	41	12	47	12
Common Tern	20	9	9	2.1	0	11	9	13	5
Forster's Tern	56	20	32	7.4	6	24	14	26	8

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Rock Pigeon	255	12	246	56.6	7	9	5	66	11
Eurasian Collared-Dove	227	18	77	17.7	6	150	12	64	15
Mourning Dove	470	197	424	97.5	161	46	36	66	62
Yellow-billed Cuckoo	80	9	60	13.8	3	20	6	38	9
Black-billed Cuckoo	76	5	63	14.5	3	13	2	39	4
Barn Owl	34	25	4	0.9	1	30	24	18	13
Eastern Screech-Owl	58	8	27	6.2	0	31	8	27	4
Great Horned Owl	313	118	203	46.7	29	110	89	66	45
Burrowing Owl	325	222	89	20.5	40	236	182	37	28
Barred Owl	5	2	3	0.7	0	2	2	4	2
Long-eared Owl	54	26	14	3.2	0	40	26	14	7
Short-eared Owl	59	10	33	7.6	2	26	8	22	4
Northern Saw-whet Owl	71	37	19	4.4	4	52	33	8	1
Common Nighthawk	240	9	224	51.5	1	16	8	53	8
Common Poorwill	32	3	16	3.7	1	16	2	13	2
Chuck-will's Widow	1	0	0	0.0	0	1	0	1	0
Eastern Whip-poor-will	7	0	2	0.5	0	5	0	6	0
Chimney Swift	117	5	49	11.3	0	68	5	56	4
White-throated Swift	26	3	18	4.1	2	8	1	8	3
Ruby-throated Hummingbird	17	4	6	1.4	1	11	3	12	4
Broad-tailed Hummingbird	11	3	4	0.9	1	7	2	3	2
Belted Kingfisher	112	18	95	21.8	13	17	5	48	14
Lewis's Woodpecker	29	9	6	1.4	3	23	6	6	2
Red-headed Woodpecker	256	82	197	45.3	48	59	34	64	43
Red-bellied Woodpecker	37	9	25	5.7	0	12	9	24	8
Yellow-bellied Sapsucker	18	8	6	1.4	0	12	8	7	3
Red-naped Sapsucker	32	14	12	2.8	7	20	7	6	3
Downy Woodpecker	180	31	157	36.1	18	23	13	59	21
Hairy Woodpecker	174	26	155	35.6	14	19	12	60	19
American Three-toed Woodpecker	24	6	2	0.5	0	22	6	3	2
Black-backed	44	4	5	1.1	1	39	3	5	2

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Woodpecker									
Northern Flicker	362	59	340	78.2	47	22	12	66	36
Pileated Woodpecker	5	0	3	0.7	0	2	0	2	0
American Kestrel	236	35	220	50.6	28	16	7	59	26
Merlin	15	2	9	2.1	1	6	1	7	1
Prairie Falcon	51	10	28	6.4	3	23	7	12	3
Western Wood-Pewee	78	15	60	13.8	9	18	6	13	8
Eastern Wood-Pewee	58	9	46	10.6	3	12	6	31	6
Alder Flycatcher	3	0	0	0.0	0	3	0	1	0
Willow Flycatcher	200	23	189	43.4	16	11	7	58	16
Least Flycatcher	149	12	135	31.0	5	14	7	48	7
Dusky Flycatcher	63	4	14	3.2	1	49	3	5	2
Cordilleran Flycatcher	48	10	13	3.0	2	35	8	5	4
Eastern Phoebe	91	25	70	16.1	12	21	13	45	16
Say's Phoebe	146	49	112	25.7	32	34	17	32	20
Great Crested Flycatcher	86	15	69	15.9	8	17	7	33	10
Cassin's Kingbird	11	1	2	0.5	0	9	1	5	1
Western Kingbird	410	186	378	86.9	155	32	31	66	52
Eastern Kingbird	445	203	416	95.6	178	29	25	66	64
Loggerhead Shrike	177	57	137	31.5	33	40	24	39	23
Bell's Vireo	104	23	81	18.6	10	23	13	34	17
Yellow-throated Vireo	17	5	4	0.9	2	13	3	10	5
Plumbeous Vireo	31	7	18	4.1	4	13	3	6	4
Warbling Vireo	288	30	273	62.8	23	15	7	66	20
Red-eyed Vireo	106	10	81	18.6	3	25	7	40	8
Gray Jay	52	3	12	2.8	1	40	2	3	3
Pinyon Jay	19	1	3	0.7	0	16	1	5	1
Blue Jay	196	32	173	39.8	19	23	13	60	23
Clark's Nutcracker	24	1	4	0.9	0	20	1	3	1
Black-billed Magpie	90	11	51	11.7	4	39	7	23	11
American Crow	223	17	211	48.5	8	12	9	61	10
Horned Lark	395	72	386	88.7	65	9	7	66	27
Purple Martin	87	71	23	5.3	11	64	60	41	37

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Tree Swallow	293	110	271	62.3	89	22	21	66	45
Violet-green Swallow	46	15	30	6.9	6	16	9	8	7
Northern Rough-winged Swallow	186	46	164	37.7	29	22	17	54	26
Bank Swallow	148	50	120	27.6	22	28	28	49	32
Cliff Swallow	425	269	287	66.0	131	138	138	63	60
Barn Swallow	453	210	408	93.8	169	45	41	66	61
Black-capped Chickadee	171	42	144	33.1	19	27	23	57	18
Red-breasted Nuthatch	39	11	33	7.6	6	6	5	11	4
White-breasted Nuthatch	128	31	105	24.1	13	23	18	46	14
Pygmy Nuthatch	22	3	8	1.8	2	14	1	7	2
Brown Creeper	77	2	11	2.5	1	66	1	5	2
Rock Wren	69	17	37	8.5	12	32	5	19	9
Canyon Wren	30	4	3	0.7	2	27	2	5	2
House Wren	367	90	336	77.2	66	31	24	66	42
Pacific Wren	5	0	0	0.0	0	5	0	2	0
Sedge Wren	169	7	156	35.9	1	13	6	48	5
Marsh Wren	160	18	145	33.3	12	15	6	52	12
Blue-gray Gnatcatcher	27	9	7	1.6	2	20	7	10	7
American Dipper	38	33	0	0.0	0	38	33	2	1
Golden-crowned Kinglet	16	2	5	1.1	0	11	2	2	1
Ruby-crowned Kinglet	27	3	10	2.3	1	17	2	4	3
Eastern Bluebird	186	56	129	29.7	28	57	28	59	39
Mountain Bluebird	76	27	45	10.3	19	31	8	14	9
Townsend's Solitaire	69	11	17	3.9	2	52	9	6	4
Veery	20	1	4	0.9	0	16	1	5	1
Swainson's Thrush	48	3	9	2.1	0	39	3	4	1
Hermit Thrush	2	0	1	0.2	0	1	0	2	0
Wood Thrush	8	3	2	0.5	0	6	3	5	2
American Robin	443	284	386	88.7	231	57	53	66	65
Gray Catbird	186	45	158	36.3	24	28	21	61	28
Brown Thrasher	395	132	361	83.0	104	34	28	66	54
Sage Thrasher	11	2	3	0.7	0	8	2	6	2

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Northern Mockingbird	37	1	20	4.6	1	17	0	26	1
European Starling	394	218	361	83.0	189	33	29	66	65
Sprague's Pipit	54	2	16	3.7	1	38	1	13	2
Cedar Waxwing	186	43	155	35.6	19	31	24	60	28
Chestnut-collared Longspur	203	63	168	38.6	40	35	23	41	24
McCown's Longspur	2	0	0	0	0	2	0	2	0
Ovenbird	57	9	34	7.8	4	23	5	15	6
Golden-winged Warbler	1	0	0	0.0	0	1	0	1	0
Blue-winged Warbler	2	0	0	0.0	0	2	0	1	0
Black-and-White Warbler	18	1	8	1.8	1	10	0	8	1
Prothonotary Warbler	1	1	0	0.0	0	1	1	1	1
Virginia's Warbler	17	1	2	0.5	1	15	0	2	1
MacGillivray's Warbler	25	5	9	2.1	1	16	4	4	2
Common Yellowthroat	328	24	316	72.6	19	12	5	66	21
American Redstart	68	8	43	9.9	4	25	4	24	7
Yellow Warbler	382	83	349	80.2	57	33	26	66	37
Chestnut-sided Warbler	3	1	0	0.0	0	3	1	1	1
Yellow-rumped Warbler	40	20	28	6.4	13	12	7	9	6
Yellow-breasted Chat	92	11	75	17.2	6	17	5	28	9
Spotted Towhee	138	34	122	28.0	24	16	10	32	17
Eastern Towhee	15	2	8	1.8	0	7	2	8	2
Cassin's Sparrow	7	1	2	0.5	0	5	1	3	1
Chipping Sparrow	320	92	295	67.8	73	25	19	65	43
Clay-colored Sparrow	146	26	124	28.5	8	22	18	36	10
Brewer's Sparrow	32	11	20	4.6	8	12	3	6	3
Field Sparrow	152	38	128	29.4	24	24	14	51	24
Vesper Sparrow	291	31	282	64.8	28	9	3	63	17
Lark Sparrow	288	119	249	57.2	88	39	31	58	39
Lark Bunting	250	95	217	49.9	67	33	28	40	19
Savannah Sparrow	202	17	191	43.9	8	11	9	51	12
Grasshopper Sparrow	416	128	393	90.3	109	23	19	66	41
Baird's Sparrow	92	2	25	5.7	1	67	1	11	2

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Henslow's Sparrow	11	0	6	1.4	0	5	0	7	0
Le Conte's Sparrow	83	3	30	6.9	0	53	3	14	2
Nelson's Sparrow	66	1	22	5.1	1	44	0	16	1
Song Sparrow	257	52	244	56.1	40	13	12	63	32
Swamp Sparrow	52	5	47	10.8	2	5	3	19	5
Dark-eyed Junco	23	12	17	3.9	11	6	1	6	5
Scarlet Tanager	12	5	5	1.1	2	7	3	7	4
Western Tanager	45	12	25	5.7	8	20	4	8	7
Northern Cardinal	75	20	40	9.2	4	35	16	31	13
Rose-breasted Grosbeak	93	15	76	17.5	6	17	9	38	11
Black-headed Grosbeak	111	21	85	19.5	10	26	11	28	14
Blue Grosbeak	181	20	153	35.2	10	28	10	52	17
Lazuli Bunting	67	4	47	10.8	2	20	2	17	4
Indigo Bunting	98	9	81	18.6	5	17	4	48	6
Lazuli - Indigo Bunting hybrid	6	0	5	1.1	0	1	0	6	0
Dickcissel	366	55	349	80.2	46	17	9	66	39
Bobolink	330	53	309	71.0	39	21	14	64	31
Red-winged Blackbird	483	296	416	95.6	235	67	61	66	65
Eastern Meadowlark	12	3	6	1.4	0	6	3	5	2
Western Meadowlark	495	338	425	97.7	275	70	63	66	63
Yellow-headed Blackbird	283	127	242	55.6	93	41	34	64	47
Brewer's Blackbird	123	37	104	23.9	26	19	11	29	16
Common Grackle	429	305	382	87.8	262	47	43	66	66
Great-tailed Grackle	28	5	18	4.1	0	10	5	20	5
Brown-headed Cowbird	489	109	431	99.1	59	58	50	66	43
Orchard Oriole	418	162	386	88.7	140	32	22	66	58
Bullock's Oriole	57	14	41	9.4	8	16	6	12	7
Baltimore Oriole	232	81	202	46.4	59	30	22	56	39
Bullock's-Baltimore Oriole hybrid	1	0	1	0.2	0	0	0	1	0
House Finch	139	16	49	11.3	4	90	12	59	13
Cassin's Finch	19	1	6	1.4	0	13	1	4	1

Species	Total Num Record	Total Num CO	Num Blks	Pct Blks	Num Blks CO	Num Extra Obs	Num Extra Obs CO	Num County	Num County CO
Red Crossbill	56	7	35	8.0	5	21	2	12	3
White-winged Crossbill	7	0	1	0.2	0	6	0	2	0
Pine Siskin	44	6	19	4.4	3	25	3	14	6
Lesser Goldfinch	7	1	1	0.2	0	6	1	3	1
American Goldfinch	376	45	360	82.8	36	16	9	66	29
Evening Grosbeak	3	1	1	0.2	0	2	1	2	1
House Sparrow	331	151	305	70.1	126	26	25	66	56

APPENDIX III. County Summaries

Tabulated South Dakota Breeding Bird Atlas 2 summary data by county, including the number of species tallied in the county, excluding 'Observed' species, number and proportion of species that were confirmed breeding in the county, the number of atlas blocks, survey visits and total survey time in that county, and the rank of that county among all counties for total number of species, with rank #1 being the county with the highest number of species and rank #66 being the county with the lowest number of species.

County	Num Species	Num CO	Prop CO	Num Blocks	Num Visits	Total Time	Num Spp Rank
Aurora	98	50	0.51	5	16	46	46
Beadle	111	62	0.56	9	40	145	35
Bennett	144	87	0.60	9	59	163	6
Bon Homme	103	47	0.46	4	23	85	41
Brookings	105	50	0.48	6	40	90	40
Brown	139	77	0.55	6	46	79	8
Brule	120	63	0.53	4	29	103	24
Buffalo	108	41	0.38	4	18	49	38
Butte	126	69	0.55	13	50	131	14
Campbell	126	67	0.53	8	37	105	15
Charles Mix	110	71	0.65	4	23	62	36
Clark	108	54	0.50	5	32	90	39
Clay	93	62	0.67	2	19	58	53
Codington	92	40	0.43	3	14	41	54
Corson	123	72	0.59	16	64	135	17
Custer	150	91	0.61	12	130	414	4
Davison	89	33	0.37	4	15	47	58
Day	122	83	0.68	5	34	69	21
Deuel	103	46	0.45	4	20	46	42
Dewey	137	67	0.49	15	75	146	9
Douglas	95	42	0.44	2	19	59	49
Edmunds	114	55	0.48	6	26	63	28
Fall River	155	93	0.60	11	84	273	2
Faulk	100	51	0.51	6	38	80	45
Grant	113	35	0.31	2	11	22	30
Gregory	112	54	0.48	7	49	146	33
Haakon	117	66	0.56	10	52	152	25
Hamlin	95	39	0.41	4	30	91	50
Hand	117	49	0.42	6	34	96	26
Hanson	84	32	0.38	3	12	41	62
Harding	142	101	0.71	17	152	519	7
Hughes	109	67	0.61	3	16	47	37
Hutchinson	87	30	0.34	3	13	29	60
Hyde	96	61	0.64	5	23	67	48
Jackson	121	60	0.50	10	54	175	23
Jerauld	92	29	0.32	3	13	41	55

County	Num Species	Num CO	Prop CO	Num Blocks	Num Visits	Total Time	Num Spp Rank
Jones	88	54	0.61	6	32	67	59
Kingsbury	97	57	0.59	3	21	77	47
Lake	85	34	0.40	2	12	41	61
Lawrence	123	79	0.64	5	56	196	18
Lincoln	90	48	0.53	2	12	39	57
Lyman	113	55	0.49	7	27	83	31
Marshall	134	70	0.52	7	34	80	10
McCook	84	32	0.38	3	11	38	63
McPherson	124	81	0.65	5	28	66	16
Meade	155	84	0.54	16	86	266	3
Mellette	92	46	0.50	5	24	76	56
Miner	80	33	0.41	3	13	46	66
Minnehaha	112	87	0.78	6	75	195	34
Moody	82	38	0.46	3	15	79	65
Pennington	176	100	0.57	16	180	554	1
Perkins	130	97	0.75	14	87	217	13
Potter	117	68	0.58	6	28	84	27
Roberts	145	83	0.57	10	44	126	5
Sanborn	94	36	0.38	3	16	48	52
Shannon	134	65	0.49	9	47	167	11
Spink	123	58	0.47	13	60	183	19
Stanley	133	87	0.65	10	83	233	12
Sully	102	59	0.58	4	24	53	43
Todd	123	54	0.44	8	34	122	20
Tripp	114	59	0.52	8	45	111	29
Turner	84	37	0.44	4	15	54	64
Union	95	55	0.58	2	13	39	51
Walworth	122	68	0.56	5	17	34	22
Yankton	102	51	0.50	3	19	58	44
Ziebach	113	47	0.42	9	45	89	32

APPENDIX IV. Scientific names of plant species mentioned in text

Common Name	Scientific Name
Cottonwood	<i>Populus deltoides</i>
Hackberry	<i>Celtis occidentalis</i>
Elm	<i>Ulmus species</i>
Boxelder	<i>Acer negundo</i>
Ash, green ash	<i>Fraxinus pennsylvanicus</i>
Ironwood	<i>Ostrya virginiana</i>
Black locust	<i>Robinia pseudoacacia</i>
Walnut	<i>Juglans species</i>
Aspen	<i>Populus tremuloides</i>
Birch	<i>Betula papyrifera</i>
Willow	<i>Salix species</i>
Hawthorn	<i>Crataegus species</i>
Russian olive	<i>Elaeagnus angustifolia</i>
Plum	<i>Prunus americana</i>
Chokecherry	<i>Prunus virginiana</i>
Cherry	<i>Prunus species</i>
Maple	<i>Acer species</i>
Mountain mahogany	<i>Cercocarpus montanus</i>
Skunkbrush sumac	<i>Rhus aromatica</i>
Buffaloberry	<i>Shepherdia argentea</i>
Ponderosa pine	<i>Pinus ponderosa</i>
Juniper, red cedar	<i>Juniperus species</i>
Spruce, white spruce	<i>Picea glauca</i>
Big sagebrush	<i>Artemisia tridentata</i>
Fringed sagewort	<i>Artemisia frigida</i>
Sand sage	<i>Artemisia ludoviciana</i>
Greasewood	<i>Sarcobatus vermiculatus</i>
Cattail	<i>Typhus species</i>
Bulrush	<i>Scirpus species</i>
Reeds	<i>Phragmites species</i>

APPENDIX V. Summary results of occupancy analyses by species

Species	Number Detections	Detection Probability	Mean Occupancy
Canada Goose	54	0.659	0.43
Wood Duck	42	0.566	0.36
Gadwall	78	0.771	0.62
American Wigeon	23	0.566	0.18
Mallard	99	0.882	0.83
Blue-winged Teal	88	0.887	0.70
Northern Shoveler	55	0.686	0.43
Northern Pintail	57	0.686	0.43
Green-winged Teal	34	0.472	0.30
Canvasback	7	0.804	0.06
Redhead	36	0.556	0.33
Ring-necked Duck	6	0.703	0.05
Lesser Scaup	11	0.591	0.10
Ruddy Duck	30	0.664	0.26
Gray Partridge	10	0.037	0.79
Ring-necked Pheasant	98	0.905	0.82
Sharp-tailed Grouse	41	0.421	0.38
Wild Turkey	28	0.591	0.25
Pied-billed Grebe	44	0.802	0.36
Eared Grebe	7	0.569	0.06
Western Grebe	10	0.370	0.12
Double-crested Cormorant	33	0.594	0.29
American White Pelican	19	0.592	0.19
American Bittern	22	0.713	0.19
Great Blue Heron	70	0.520	0.65
Great Egret	15	0.718	0.14
Cattle Egret	9	0.465	0.09
Black-crowned Night-heron	9	0.532	0.09
Turkey Vulture	35	0.543	0.28
Northern Harrier	59	0.625	0.47
Cooper's Hawk	9	0.278	0.17
Swainson's Hawk	56	0.595	0.43
Red-tailed Hawk	95	0.628	0.84
Ferruginous Hawk	15	0.378	0.14
Golden Eagle	14	0.298	0.18
Virginia Rail	25	0.545	0.24
Sora	32	0.701	0.27

Species	Number Detections	Detection Probability	Mean Occupancy
American Coot	49	0.807	0.41
American Avocet	12	0.599	0.10
Killdeer	114	0.953	0.93
Spotted Sandpiper	29	0.366	0.31
Willet	8	0.768	0.05
Upland Sandpiper	101	0.855	0.81
Long-billed Curlew	14	0.494	0.13
Marbled Godwit	39	0.635	0.32
Wilson's Snipe	31	0.684	0.26
Wilson's Phalarope	41	0.761	0.35
Franklin's Gull	16	0.519	0.16
Ring-billed Gull	20	0.672	0.18
Black Tern	19	0.340	0.25
Forster's Tern	7	0.501	0.07
Rock Pigeon	64	0.624	0.56
Eurasian Collared-dove	23	0.578	0.16
Mourning Dove	117	0.983	0.98
Yellow-billed Cuckoo	10	0.252	0.17
Black-billed Cuckoo	9	0.352	0.10
Eastern Screech-owl	5	0.213	0.07
Great Horned Owl	48	0.436	0.54
Burrowing Owl	19	0.699	0.16
Short-eared Owl	7	0.478	0.05
Common Nighthawk	61	0.666	0.52
Chimney Swift	7	0.207	0.11
Belted Kingfisher	33	0.470	0.32
Red-headed Woodpecker	49	0.659	0.44
Red-bellied Woodpecker	5	0.541	0.06
Downy Woodpecker	39	0.543	0.32
Hairy Woodpecker	39	0.525	0.36
Northern Flicker	99	0.801	0.82
American Kestrel	43	0.493	0.43
Prairie Falcon	6	0.168	0.11
Western Wood-pewee	11	0.909	0.09
Eastern Wood-pewee	8	0.686	0.09
Willow Flycatcher	59	0.763	0.51
Least Flycatcher	35	0.690	0.29
Eastern Phoebe	17	0.398	0.20
Say's Phoebe	24	0.652	0.18
Great Crested Flycatcher	16	0.386	0.18
Western Kingbird	102	0.838	0.84

Species	Number Detections	Detection Probability	Mean Occupancy
Eastern Kingbird	111	0.955	0.94
Loggerhead Shrike	29	0.643	0.24
Bell's Vireo	24	0.819	0.20
Warbling Vireo	67	0.786	0.56
Red-eyed Vireo	17	0.699	0.15
Blue Jay	49	0.641	0.43
Black-billed Magpie	10	0.554	0.09
American Crow	55	0.717	0.47
Horned Lark	104	0.855	0.83
Tree Swallow	70	0.722	0.61
Violet-green Swallow	7	0.643	0.06
N. Rough-winged Swallow	45	0.690	0.38
Bank Swallow	16	0.548	0.15
Cliff Swallow	73	0.726	0.58
Barn Swallow	110	0.907	0.88
Black-capped Chickadee	38	0.598	0.34
Red-breasted Nuthatch	5	0.866	0.05
White-breasted Nuthatch	28	0.564	0.24
Rock Wren	6	0.795	0.06
House Wren	101	0.875	0.83
Marsh Wren	41	0.899	0.35
Sedge Wren	34	0.891	0.30
Eastern Bluebird	21	0.715	0.16
Mountain Bluebird	9	0.850	0.09
American Robin	105	0.812	0.86
Gray Catbird	43	0.643	0.35
Brown Thrasher	94	0.884	0.79
Northern Mockingbird	5	0.441	0.05
European Starling	98	0.847	0.78
Cedar Waxwing	40	0.619	0.33
Chestnut-collared Longspur	45	0.871	0.35
Yellow Warbler	94	0.891	0.78
Common Yellowthroat	90	0.906	0.76
American Redstart	5	0.634	0.05
Yellow-rumped Warbler	5	0.797	0.05
Yellow-breasted Chat	19	0.633	0.20
Spotted Towhee	36	0.774	0.31
Chipping Sparrow	77	0.739	0.65
Clay-colored Sparrow	31	0.754	0.26
Brewer's Sparrow	5	0.722	0.04

Species	Number Detections	Detection Probability	Mean Occupancy
Field Sparrow	31	0.839	0.27
Vesper Sparrow	66	0.792	0.56
Lark Sparrow	58	0.836	0.48
Lark Bunting	51	0.830	0.40
Savannah Sparrow	50	0.786	0.41
Grasshopper Sparrow	110	0.879	0.92
Baird's Sparrow	9	0.809	0.06
Le Conte's Sparrow	6	1.000	0.06
Song Sparrow	68	0.890	0.58
Swamp Sparrow	6	0.284	0.10
Northern Cardinal	11	0.340	0.14
Rose-breasted Grosbeak	17	0.501	0.17
Black-headed Grosbeak	28	0.558	0.23
Blue Grosbeak	41	0.731	0.36
Lazuli Bunting	15	0.590	0.12
Indigo Bunting	21	0.632	0.18
Dickcissel	83	0.902	0.69
Bobolink	86	0.833	0.70
Red-winged Blackbird	117	0.968	0.97
Western Meadowlark	116	0.959	0.97
Yellow-headed Blackbird	66	0.864	0.56
Brewer's Blackbird	18	0.753	0.15
Common Grackle	103	0.943	0.83
Brown-headed Cowbird	119	0.946	1.00
Orchard Oriole	108	0.921	0.84
Bullock's Oriole	8	0.581	0.07
Baltimore Oriole	61	0.672	0.51
House Finch	6	0.177	0.11
Red Crossbill	6	0.713	0.06
American Goldfinch	99	0.880	0.82
House Sparrow	77	0.801	0.61

APPENDIX VI. Top 5 occupancy analyses models by species

(Highlighted model is model used to create predicted occupancy map for that species)

Species	Model	K	AIC	ΔAIC
Canada Goose (54)	Developed + Lat + Long	5	349.43	0.00
	Ag + Developed + Lat + Long	6	352.11	2.68
	Ag + Developed + Water + Lat + Long	7	354.65	5.22
	Ag + Developed + Water + Riparian + Lat + Long	8	355.58	6.15
	Ag + Lat + Long	5	356.06	6.63
Wood Duck (42)	Hardwood + Developed + Water + Riparian + Lat + Long	8	292.09	0.00
	Hardwood + Water + Riparian + Lat + Long	7	293.04	0.95
	Developed + Water + Riparian + Lat + Long	7	295.89	3.79
	Water + Riparian + Lat + Long	6	298.83	6.74
Gadwall (78)	Ag + Grass + Water + Lat + Long	7	371.68	0.00
	Water + Lat + Long	5	372.75	1.08
	Grass + Water + Lat + Long	6	374.58	2.90
	Ag + Water + Lat + Long	6	377.20	5.53
	Ag + Grass + Lat + Long	6	377.60	5.93
	Grass + Lat + Long	5	377.88	6.20
American Wigeon (23)	Water + Grass + Lat + Long	6	191.35	0.00
	Water + Ag + Lat + Long	6	191.56	0.21
	Ag + Grass + Lat + Long	6	191.78	0.43
	Water + Ag + Grass + Lat + Long	7	191.99	0.64
Mallard (99)	Water + Lat + Long	5	316.85	0.00
	Grass + Lat + Long	5	317.40	0.55
	Grass + Water + Developed + Lat + Long	7	317.55	0.70
	Ag + Lat + Long	5	317.99	1.15
	Grass + Water + Lat + Long	6	318.04	1.19
	Riparian + Lat + Long	5	318.05	1.20
	Grass + Riparian + Lat + Long	6	318.84	2.00
	Ag + Grass + Water + Lat + Long	7	308.96	0.00
Blue-winged Teal (88)	Grass + Lat + Long	5	309.97	1.01
	Water + Lat + Long	5	310.48	1.52
	Ag + Lat + Long	5	310.51	1.55
	Grass + Water + Lat + Long	6	312.13	3.16
	Ag + Grass + Water + Lat + Long	7	349.75	0.00
Northern Shoveler (55)	Ag + Water + Lat + Long	6	350.13	0.38
	Water + Lat + Long	5	353.44	3.69
	Grass + Water + Lat + Long	6	353.64	3.89
	Ag + Grass + Water + Lat + Long	7	349.19	0.00
Northern Pintail (57)	Ag + Grass + Water + Riparian + Lat + Long	8	349.36	0.16
	Grass + Lat + Long	5	354.99	5.80
	Grass + Riparian + Lat + Long	6	355.42	6.22
	Grass + Water + Riparian + Lat + Long	6	357.14	7.94
Green-winged Teal (34)	Water + Ag + Grass + Lat + Long	7	277.22	0.00
	Water + Ag + Lat + Long	6	280.34	3.11
	Water + Lat + Long	5	280.36	3.14

Species	Model	K	AIC	ΔAIC
	Grass + Lat + Long	5	280.69	3.46
	Water + Grass + Lat + Long	6	282.17	4.95
Canvasback (7)	Water + Riparian + Lat + Long	6	79.91	0.00
	Grass + Lat + Long	5	80.54	0.64
	Grass + Water + Riparian + Lat + Long	7	80.59	0.68
	Ag + Water + Riparian + Lat + Long	7	81.43	1.52
	Water + Lat + Long	5	82.19	2.28
Redhead (36)	Water + Lat + Long	5	260.36	0.00
	Water + Riparian + Lat + Long	6	260.53	0.16
	Grass + Water + Riparian + Lat + Long	7	260.90	0.53
	Ag + Water + Riparian + Lat + Long	7	260.99	0.63
	Ag + Grass + Water + Riparian + Lat + Long	8	263.34	2.97
Ring-necked Duck (6)	Water + Lat + Long	5	74.63	0.00
	Water + Riparian + Lat + Long	6	76.47	1.84
Lesser Scaup (11)	Water + Lat + Long	5	105.63	0.00
Ruddy Duck (30)	Water + Riparian + Lat + Long	6	233.97	0.00
	Water + Lat + Long	5	235.77	1.80
Gray Partridge (10)	Ag + Grass + Lat + Long	6	97.69	0.00
	Ag + Lat + Long	5	101.05	3.36
	Grass + Lat + Long	5	101.05	3.36
Ring-necked Pheasant (98)	Ag + Lat + Long	5	249.06	0.00
	Grass + Lat + Long	5	249.92	0.87
	Ag + Grass + Lat + Long	6	252.16	3.10
	Ag + Grass + Developed + Shrub + Lat + Long	8	252.35	3.30
	Ag + Grass + Developed + Lat + Long	7	252.99	3.93
Sharp-tailed Grouse (41)	Grass + Lat + Long	5	267.81	0.00
	Ag + Grass + Lat + Long	6	268.14	0.34
	Ag + Lat + Long	5	268.44	0.64
Wild Turkey (28)	Conifer + Hardwood + Riparian + Lat + Long	7	211.84	0.00
	Conifer + Hardwood + Developed + Riparian + Lat + Long	8	213.05	1.21
	Ag + Conifer + Hardwood + Riparian + Lat + Long	8	213.47	1.63
	Ag + Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	9	214.52	2.68
	Ag + Conifer + Hardwood + Developed + Riparian + Lat + Long	9	214.83	2.99
	Conifer + Riparian + Lat + Long	6	218.03	6.19
Pied-billed Grebe (44)	Water + Riparian + Lat + Long	6	268.58	0.00
	Water + Lat + Long	5	270.42	1.84
Eared Grebe (7)	Water + Lat + Long	5	89.78	0.00
	Water + Riparian + Lat + Long	6	91.53	1.75
Western Grebe (10)	Water + Riparian + Lat + Long	6	102.65	0.00
	Water + Lat + Long	5	103.11	0.46
	Riparian + Lat + Long	5	110.47	7.82
Double-crested Cormorant (33)	Water + Lat + Long	5	241.70	0.00
	Water + Riparian + Lat + Long	6	254.01	12.31
American White Pelican (19)	Water + Lat + Long	5	177.27	0.00
	Water + NonVeg + Lat + Long	6	178.64	1.37
American Bittern	Grass + Lat + Long	5	183.84	0.00

Species	Model	K	AIC	ΔAIC
(22)	Water + Ag + Lat + Long	6	186.09	2.25
	Water + Grass + Lat + Long	6	186.15	2.31
	Water + Ag + Grass + Lat + Long	7	187.29	3.45
Great Blue Heron (70)	Conifer + Water + Riparian + Lat + Long	7	420.24	0.00
	Riparian + Water + Lat + Long	6	420.66	0.42
	Conifer + Hardwood + Water + Riparian + Lat + Long	8	421.14	0.90
	Conifer + Water + Lat + Long	6	423.39	3.15
	Hardwood + Water + Riparian + Lat + Long	7	424.10	3.87
Great Egret (15)	Water + Lat + Long	5	106.44	0.00
	Water + Hardwood + Lat + Long	6	108.12	1.68
	Water + Riparian + Lat + Long	6	108.58	2.13
	Riparian + Lat + Long	5	113.18	6.74
	Riparian + Hardwood + Lat + Long	6	114.06	7.62
Cattle Egret (9)	Water + Ag + Lat + Long	6	96.11	0.00
	Water + ConiferHardwood + Lat + Long	6	98.27	2.16
	Water + Ag + ConiferHardwood + Lat + Long	7	98.40	2.29
	Water + Ag + Grass + Lat + Long	7	99.00	2.89
Black-crowned Night-heron (9)	Water + Lat + Long	5	101.52	0.00
Turkey Vulture (35)	Grass + NonVeg + Hardwood + Riparian + Lat + Long	8	247.55	0.00
	Grass + NonVeg + Hardwood + ConiferHardwood + Riparian + Lat + Long	9	248.84	1.29
	Ag + Grass + NonVeg + Hardwood + ConiferHardwood + Riparian + Lat + Long	9	250.25	2.70
	Grass + NonVeg + Riparian + Lat + Long	7	250.30	2.76
	Grass + NonVeg + ConiferHardwood + Riparian + Lat + Long	8	251.08	3.53
Northern Harrier (59)	Ag + Grass + Lat + Long	6	350.78	0.00
	Water + Ag + Grass + Lat + Long	7	352.15	1.37
	Water + Grass + Lat + Long	6	352.35	1.57
	Riparian + Ag + Grass + Lat + Long	7	352.48	1.70
	Water + Riparian + Ag + Grass + Lat + Long	8	353.71	2.93
Cooper's Hawk (9)	Conifer + Developed + Lat + Long	6	98.12	0.00
	Conifer + Hardwood + Developed + Lat + Long	7	100.04	1.93
	Conifer + ConiferHardwood + Hardwood + Developed + Lat + Long	8	101.75	3.64
	Conifer + Lat + Long	5	104.47	6.35
	Conifer + Hardwood + Lat + Long	6	105.02	6.90
Swainson's Hawk (56)	Ag + Grass + Hardwood + Lat + Long	7	334.81	0.00
	Ag + Grass + Lat + Long	6	336.76	1.95
	Ag + Hardwood + Lat + Long	6	339.10	4.29
	Grass + Hardwood + Lat + Long	6	344.85	10.04
Red-tailed Hawk (95)	Ag + Conifer + Lat + Long	6	469.87	0.00
	Ag + Grass + Conifer + Lat + Long	7	469.97	0.10
	Ag + Grass + Conifer + NonVeg + Lat + Long	8	471.06	1.20
	Ag + Grass + Conifer + Developed + Lat + Long	8	471.27	1.40
	Ag + Grass + Lat + Long	6	472.05	2.18
Ferruginous Hawk (15)	Grass + Lat + Long	5	137.89	0.00
	Grass + Ag + Lat + Long	6	138.55	0.66

Species	Model	K	AIC	ΔAIC
	Grass + SparseVeg + Lat + Long	6	139.37	1.48
	Grass + SparseVeg + Ag + Lat + Long	7	140.01	2.12
Golden Eagle (14)	Grass + Lat + Long	5	123.25	0.00
	Grass + NonVeg + Ag + Shrub + Lat + Long	8	123.92	0.67
	Grass + NonVeg + Ag + Lat + Long	7	123.92	0.67
	Grass + NonVeg + Lat + Long	6	125.09	1.84
	Grass + SparseVeg + NonVeg + Ag + Shrub + Lat + Long	9	125.72	2.47
Virginia Rail (25)	Water + Lat + Long	5	215.48	0.00
	Riparian + Lat + Long	5	216.46	0.98
	Water + Riparian + Lat + Long	6	216.66	1.18
Sora (32)	Water + Lat + Long	5	242.11	0.00
	Riparian + Lat + Long	5	242.18	0.07
	Water + Riparian + Lat + Long	6	243.94	1.83
American Coot (49)	Water + Riparian + Lat + Long	6	276.88	0.00
	Water + Lat + Long	5	280.02	3.14
American Avocet (12)	Ag + NonVeg + Lat + Long	6	131.84	0.00
	Water + Ag + NonVeg + Lat + Long	7	132.69	0.86
Killdeer (114)	Ag + Grass + Water + Riparian + Developed + NonVeg + Lat + Long	10	152.19	0.00
	Ag + Grass + Water + Riparian + NonVeg + Lat + Long	9	154.58	2.40
	Ag + Grass + Lat + Long	6	157.30	5.11
	Ag + Grass + Water + Lat + Long	7	157.73	5.55
	Ag + Grass + NonVeg + Lat + Long	7	158.27	6.08
Spotted Sandpiper (29)	Water + Lat + Long	5	235.80	0.00
	NonVeg + Riparian + Lat + Long	6	237.72	1.92
	NonVeg + Water + Lat + Long	6	237.86	2.06
	Water + Riparian + Lat + Long	6	238.71	2.91
	NonVeg + Water + Riparian + Lat + Long	7	240.32	4.52
Willet (8)	Grass + Riparian + Lat + Long	6	65.13	0.00
	Water + Riparian + Lat + Long	6	66.00	0.87
	Grass + Water + Riparian + Lat + Long	7	67.56	2.43
	Grass + Water + Lat + Long	6	69.36	4.23
	Ag + Grass + Water + Lat + Long	7	69.58	4.45
Upland Sandpiper (101)	Ag + Grass + Lat + Long	6	335.00	0.00
	Grass + Lat + Long	5	343.72	8.72
Long-billed Curlew (14)	Grass + Water + Lat + Long	6	130.93	0.00
	Grass + Lat + Long	5	133.53	2.60
Marbled Godwit (39)	Grass + Lat + Long	5	280.24	0.00
	Ag + Grass + Lat + Long	6	280.63	0.39
	Ag + Grass + NonVeg + Lat + Long	7	281.60	1.36
	Ag + Lat + Long	5	281.66	1.42
	Ag + Grass + Water + NonVeg + Lat + Long	8	281.88	1.64
Wilson's Snipe (31)	Grass + Lat + Long	5	244.42	0.00
	Riparian + Lat + Long	5	245.42	1.00
	Grass + Water + Riparian + Lat + Long	7	248.97	4.55
	Water + Riparian + Lat + Long	6	249.13	4.71
	Ag + Grass + Water + Riparian + Lat + Long	8	249.83	5.41
Wilson's Phalarope	Water + Riparian + Lat + Long	6	269.42	0.00

Species	Model	K	AIC	ΔAIC
(41)	NonVeg + Water + Riparian + Lat + Long	7	269.71	0.29
	NonVeg + Water + Lat + Long	6	271.57	2.15
	NonVeg + Riparian + Lat + Long	6	274.33	4.91
Franklin's Gull (16)	Water + Lat + Long	5	150.12	0.00
	Water + Riparian + Lat + Long	6	151.97	1.85
Ring-billed Gull (20)	Water + Riparian + Lat + Long	6	159.53	0.00
	Water + Lat + Long	5	160.39	0.86
	Water + NonVeg + Riparian + Lat + Long	7	160.68	1.15
	Water + NonVeg + Lat + Long	6	161.43	1.90
Black Tern (19)	Water + Grass + Riparian + Lat + Long	7	146.30	0.00
	Riparian + Lat + Long	5	166.94	20.64
	Grass + Lat + Long	5	169.22	22.92
	Grass + Riparian + Lat + Long	6	169.55	23.26
	Water + Riparian + Lat + Long	6	170.48	24.19
Forster's Tern (7)	Water + Riparian + Lat + Long	6	79.01	0.00
	Water + Lat + Long	5	80.43	1.42
	Water + Riparian + NonVeg + Lat + Long	7	81.25	2.24
	Water + NonVeg + Lat + Long	6	81.77	2.76
Rock Pigeon (64)	Ag + NonVeg + Lat + Long	6	388.64	0.00
	Ag + NonVeg + Developed + Lat + Long	7	389.13	0.49
	Ag + Lat + Long	5	389.80	1.17
	Ag + Developed + Lat + Long	6	390.31	1.68
	Developed + Lat + Long	5	391.48	2.84
Eurasian Collared-dove (23)	Developed + Lat + Long	5	176.34	0.00
	Ag + Developed + Lat + Long	6	177.48	1.14
	Ag + ConiferHardwood + Developed + Lat + Long	7	177.78	1.44
	Ag + Lat + Long	5	190.85	14.52
Mourning Dove (117)	Ag + Grass + Lat + Long	6	85.62	0.00
	Ag + Lat + Long	5	443.38	357.76
	Grass + Lat + Long	5	447.26	361.64
Yellow-billed Cuckoo (10)	Grass + Hardwood + Riparian + Lat + Long	7	98.30	0.00
	Grass + Hardwood + Lat + Long	6	104.24	5.94
	Hardwood + Riparian + Lat + Long	6	104.50	6.19
Black-billed Cuckoo (9)	Riparian + Lat + Long	5	104.31	0.00
	Grass + Hardwood + Riparian + Lat + Long	7	105.62	1.30
	Hardwood + Lat + Long	5	105.73	1.42
	Hardwood + Riparian + Lat + Long	6	105.77	1.46
	Ag + Grass + Hardwood + Lat + Long	7	105.87	1.56
	Ag + Grass + Riparian + Lat + Long	7	106.22	1.90
Eastern Screech-owl (5)	Developed + Lat + Long	5	57.73	0.00
	Developed + Hardwood + Lat + Long	6	57.82	0.09
	Riparian + Lat + Long	5	57.99	0.26
	Riparian + Hardwood + Lat + Long	6	58.03	0.30
	Developed + Riparian + Hardwood + Lat + Long	7	59.54	1.81
	Developed + Riparian + Lat + Long	6	59.57	1.84
Great Horned Owl (48)	Ag + Grass + Conifer + Lat + Long	7	340.33	0.00
	Ag + Grass + Developed + Conifer + Hardwood + Lat + Long	9	340.37	0.05

Species	Model	K	AIC	ΔAIC
	Ag + Grass + Developed + Conifer + Lat + Long	8	340.41	0.09
	Ag + Grass + Developed + Conifer + ConiferHardwood+ Hardwood + Lat + Long	10	342.26	1.93
	Ag + Grass + Lat + Long	6	347.50	7.18
Burrowing Owl (19)	Grass + Lat + Long	5	176.95	0.00
	NonVeg + Lat + Long	5	177.61	0.66
	Grass + SparseVeg + Lat + Long	6	178.66	1.72
	Grass + NonVeg + Lat + Long	6	178.93	1.98
	Grass + NonVeg + SparseVeg + Lat + Long	7	179.91	2.96
Short-eared Owl (7)	Grass + Lat + Long	5	67.44	0.00
	Ag + Grass + Lat + Long	6	68.92	1.48
	Grass + Shrub + Lat + Long	6	70.05	2.61
	Ag + Grass + Shrub + Lat + Long	7	70.30	2.86
Common Nighthawk (61)	Grass + Lat + Long	5	359.49	0.00
	Ag + Grass + Lat + Long	6	361.47	1.99
	Ag + Lat + Long	5	362.28	2.80
	Ag + Grass + NonVeg + Lat + Long	7	362.38	2.90
	Ag + Grass + Developed + Lat + Long	7	362.39	2.91
Chimney Swift (7)	Developed + Ag + Lat + Long	6	73.30	0.00
	Developed + Lat + Long	5	73.87	0.57
Belted Kingfisher (33)	Riparian + Lat + Long	5	270.56	0.00
	Water + Riparian + Lat + Long	6	272.67	2.12
Red-headed Woodpecker (49)	Riparian + Lat + Long	5	303.44	0.00
	Ag + Riparian + Lat + Long	6	305.04	1.60
	Grass + Lat + Long	5	305.63	2.19
	Ag + Lat + Long	5	305.72	2.28
	Grass + Riparian + Lat + Long	6	306.04	2.59
Red-bellied Woodpecker (5)	Hardwood + Lat + Long	5	65.60	0.00
	Hardwood + Developed + Lat + Long	6	65.88	0.28
	Hardwood + Riparian + Lat + Long	6	66.30	0.70
	Hardwood + Riparian + Developed + Lat + Long	7	66.72	1.12
Downy Woodpecker (39)	Conifer + Developed + Lat + Long	6	277.73	0.00
	Conifer + Riparian + Developed + Lat + Long	7	279.59	1.86
	Conifer + Hardwood + Developed + Lat + Long	7	279.94	2.21
	Conifer + Hardwood + Riparian + Developed + Lat + Long	8	280.59	2.86
	Conifer + ConiferHardwood + Hardwood + Riparian + Developed + Lat + Long	9	282.88	5.15
Hairy Woodpecker (39)	Conifer + Riparian + Developed + Lat + Long	7	288.50	0.00
	Conifer + Hardwood + Riparian + Developed + Lat + Long	8	290.19	1.69
	Conifer + ConiferHardwood + Hardwood + Riparian + Developed + Lat + Long	9	292.83	4.33
	Riparian + Developed + Lat + Long	6	294.54	6.04
	Hardwood + Riparian + Developed + Lat + Long	7	296.18	7.68
Northern Flicker (99)	Hardwood + Riparian + Lat + Long	6	396.94	0.00
	Developed + Riparian + Lat + Long	6	397.94	1.00
	Developed + Hardwood + Riparian + Lat + Long	7	398.89	1.95
	Developed + Hardwood + ConiferHardwood + Riparian + Lat + Long	8	399.63	2.69

Species	Model	K	AIC	ΔAIC
	Hardwood + Developed + Lat + Long	6	401.64	4.70
American Kestrel (43)	Hardwood + Riparian + Lat + Long	6	325.95	0.00
	Ag + Grass + Hardwood + Riparian + Lat + Long	8	328.47	2.52
	Grass + Hardwood + Shrub + Riparian + Lat + Long	8	328.87	2.92
Prairie Falcon (6)	Grass + Lat + Long	5	60.77	0.00
	Ag + Grass + NonVeg + Lat + Long	7	62.48	1.70
	Grass + Shrub + Lat + Long	6	62.63	1.85
	Grass + Ag + Lat + Long	6	62.86	2.09
	Ag + Grass + NonVeg + Shrub + Lat + Long	8	65.44	4.67
Western Wood-pewee (11)	Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	8	59.13	0.00
	Hardwood + Riparian + Lat + Long	6	61.50	2.37
	Conifer + ConiferHardwood + Riparian + Lat + Long	7	61.71	2.58
	ConiferHardwood + Hardwood + Riparian + Lat + Long	7	61.78	2.65
	Conifer + ConiferHardwood + Hardwood + Lat + Long	7	69.34	10.21
Eastern Wood-pewee (8)	Hardwood + Lat + Long	5	80.07	0.00
	Hardwood + ConiferHardwood + Lat + Long	6	81.98	1.91
	Hardwood + ConiferHardwood + Conifer + Lat + Long	7	83.91	3.83
Willow Flycatcher (59)	Water + Lat + Long	5	339.42	0.00
	Shrub + Lat + Long	5	340.26	0.85
	Hardwood + Water + Lat + Long	6	340.98	1.56
	Shrub + Water + Lat + Long	6	341.39	1.97
	Hardwood + Shrub + Water + Lat + Long	7	342.77	3.35
Least Flycatcher (35)	Developed + Riparian + Lat + Long	6	265.76	0.00
	Riparian + Lat + Long	5	266.93	1.16
	Hardwood + Riparian + Lat + Long	6	267.79	2.02
	Shrub + Riparian + Lat + Long	6	268.43	2.67
	Shrub + Riparian + Developed + Lat + Long	7	268.54	2.77
Eastern Phoebe (17)	Hardwood + Water + Lat + Long	6	135.78	0.00
	Hardwood + Riparian + Lat + Long	6	137.98	2.21
	Hardwood + Riparian + Water + Lat + Long	7	138.50	2.72
	Hardwood + Developed + Riparian + Water + Lat + Long	8	139.43	3.65
	Hardwood + Developed + Riparian + Lat + Long	7	139.54	3.76
Say's Phoebe (24)	Ag + Grass + Lat + Long	6	185.59	0.00
	Ag + Grass + NonVeg + Lat + Long	7	187.34	1.76
	Ag + Grass + Developed + NonVeg + Lat + Long	8	189.38	3.80
	Ag + Grass + Developed + NonVeg + SparseVeg + Lat + Long	9	190.22	4.63
Great Crested Flycatcher (16)	Hardwood + ConiferHardwood + Riparian + Lat + Long	7	132.32	0.00
	Riparian + Lat + Long	5	137.73	5.41
	Hardwood + Riparian + Lat + Long	6	139.95	7.63
	ConiferHardwood + Riparian + Lat + Long	6	140.28	7.96
	Hardwood + Lat + Long	5	141.57	9.25
Western Kingbird (102)	Ag + Grass + Lat + Long	6	347.91	0.00
	Ag + Grass + Shrub + Hardwood + Lat + Long	8	352.27	4.36
	Ag + Grass + Shrub + Lat + Long	7	352.43	4.52
	Grass + Shrub + Lat + Long	6	353.71	5.80
Eastern Kingbird	Grass + Lat + Long	5	164.77	0.00

Species	Model	K	AIC	ΔAIC
(111)	Ag + Lat + Long	5	165.12	0.35
	Ag + Grass + Lat + Long	6	166.70	1.92
	Ag + Grass + Hardwood + Developed + Lat + Long	8	167.08	2.31
	Ag + Grass + ConiferHardwood + Hardwood + Developed + Lat + Long	9	167.84	3.07
Loggerhead Shrike (29)	Ag + Grass + Lat + Long	6	225.40	0.00
	Grass + Lat + Long	5	225.87	0.47
	Ag + Grass + Shrub + Lat + Long	7	227.59	2.19
	Grass + Shrub + Lat + Long	6	227.75	2.35
	Ag + Lat + Long	5	229.48	4.08
Bell's Vireo (24)	Water + Lat + Long	5	174.25	0.00
	Water + Shrub + Lat + Long	6	175.57	1.32
	Water + Riparian + Lat + Long	6	175.64	1.39
	Water + Shrub + Riparian + Lat + Long	7	177.22	2.97
	Riparian + Lat + Long	5	178.11	3.86
Warbling Vireo (67)	Conifer + Developed + Riparian + Lat + Long	7	345.92	0.00
	Conifer + Hardwood + Developed + Riparian + Lat + Long	8	347.46	1.54
	Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	8	348.52	2.61
	Conifer + ConiferHardwood + Hardwood + Developed + Riparian + Lat + Long	9	348.86	2.94
	Hardwood + Riparian + Lat + Long	6	352.56	6.64
Red-eyed Vireo (17)	Hardwood + Riparian + Lat + Long	6	155.86	0.00
	ConiferHardwood + Hardwood + Riparian + Lat + Long	7	157.43	1.57
	Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	8	159.11	3.24
	Conifer + Hardwood + Riparian + Lat + Long	7	159.90	4.04
Blue Jay (49)	ConiferHardwood + Lat + Long	5	317.58	0.00
	ConiferHardwood + Developed + Lat + Long	6	318.15	0.56
	ConiferHardwood + Hardwood + Developed + Lat + Long	7	319.46	1.88
	Developed + Lat + Long	5	320.04	2.46
	Hardwood + Developed + Lat + Long	6	321.00	3.42
Black-billed Magpie (10)	Grass + Shrub + Conifer + Riparian + Lat + Long	8	101.17	0.00
	Grass + Conifer + Riparian + Lat + Long	7	101.60	0.43
	Grass + Shrub + Conifer + Hardwood + Riparian + Lat + Long	9	103.00	1.83
	Grass + Shrub + SparseVeg + Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	11	107.76	6.58
	Grass + Shrub + Conifer + Lat + Long	7	111.02	9.85
	Grass + Conifer + Lat + Long	6	111.07	9.90
American Crow (55)	Developed + Ag + Lat + Long	6	350.73	0.00
	Developed + Ag + Hardwood + Lat + Long	7	350.90	0.17
	Developed + Ag + Hardwood + Conifer + ConiferHardwood + Lat + Long	9	353.08	2.34
	Developed + Ag + Hardwood + Conifer + Lat + Long	8	354.13	3.40
Horned Lark (104)	Ag + Grass + NonVeg + Lat + Long	7	339.86	0.00
	Ag + Grass + NonVeg + SparseVeg + Lat + Long	8	342.82	2.96
	Grass + NonVeg + Lat + Long	6	344.53	4.67
	Ag + Grass + Lat + Long	6	345.17	5.31

Species	Model	K	AIC	ΔAIC
	Ag + NonVeg + Lat + Long	6	346.47	6.61
Tree Swallow (70)	Water + Lat + Long	5	374.03	0.00
	Hardwood + Riparian + Lat + Long	6	374.22	0.19
	Hardwood + Water + Lat + Long	6	374.54	0.50
	Water + Riparian + Lat + Long	6	376.23	2.20
	Hardwood + Water + Riparian + Lat + Long	7	376.56	2.53
Violet-green Swallow (7)	Conifer + Riparian + Lat + Long	6	62.68	0.00
	Conifer + ConiferHardwood + Riparian + Lat + Long	7	63.46	0.78
	Conifer + NonVeg + Riparian + Lat + Long	7	64.98	2.30
	Conifer + ConiferHardwood + Hardwood+ NonVeg + Riparian + Lat + Long	9	65.46	2.78
	Conifer + ConiferHardwood + NonVeg + Riparian + Lat + Long	8	65.99	3.31
Northern Rough-winged Swallow (45)	Ag + Grass + NonVeg + Riparian + Lat + Long	8	309.48	0.00
	Ag + Grass + NonVeg + Riparian + Water + Lat + Long	9	311.18	1.71
	Grass + Water + Lat + Long	6	311.90	2.42
	Ag + Grass + NonVeg + Lat + Long	7	312.28	2.80
	Ag + Grass + Riparian + Water + Lat + Long	8	312.40	2.92
Bank Swallow (16)	Water + NonVeg + Lat + Long	6	163.17	0.00
	Water + Lat + Long	5	163.45	0.28
	Grass + Lat + Long	5	163.51	0.34
	Water + Grass + Lat + Long	6	164.94	1.77
	Water + Riparian + Lat + Long	6	165.86	2.69
Cliff Swallow (73)	Grass + Developed + Lat + Long	6	400.86	0.00
	Grass + Lat + Long	5	401.14	0.27
	Ag + Lat + Long	5	401.54	0.68
	Ag + Grass + Lat + Long	6	402.00	1.14
	Ag + Grass + NonVeg + Developed + Water + Lat + Long	9	402.09	1.23
	Ag + Grass + Developed + Lat + Long	7	402.12	1.25
	Ag + Grass + NonVeg + Water + Lat + Long	8	402.71	1.85
	Grass + NonVeg + Lat + Long	6	402.84	1.98
Barn Swallow (110)	Grass + Developed + Lat + Long	6	244.46	0.00
	Ag + Grass + Developed + Lat + Long	7	245.42	0.96
	Grass + Riparian + Developed + Lat + Long	7	247.36	2.90
	Ag + Developed + Lat + Long	6	247.49	3.03
	Ag + Grass + Riparian + Developed + Lat + Long	8	247.79	3.33
Black-capped Chickadee (38)	Conifer + Hardwood + Lat + Long	6	267.56	0.00
	Conifer + Hardwood + Developed + Lat + Long	7	268.65	1.09
	Conifer + Lat + Long	5	274.47	6.91
	Conifer + Developed + Lat + Long	6	274.79	7.23
	Conifer + ConiferHardwood + Developed + Lat + Long	7	276.58	9.03
Red-breasted Nuthatch (5)	Conifer + Lat + Long	5	31.34	0.00
	Conifer + ConiferHardwood + Lat + Long	6	32.50	1.16
White-breasted Nuthatch (28)	ConiferHardwood + Riparian + Lat + Long	6	223.09	0.00
	ConiferHardwood + Hardwood + Riparian + Lat + Long	7	224.27	1.19
	ConiferHardwood + Hardwood + Developed + Riparian + Lat + Long	8	226.25	3.17
	Hardwood + Riparian + Lat + Long	6	226.87	3.78

Species	Model	K	AIC	ΔAIC
	Hardwood + Developed + Riparian + Lat + Long	7	228.20	5.12
Rock Wren (6)	NonVeg + SparseVeg + Lat + Long	6	43.99	0.00
	NonVeg + Lat + Long	5	47.53	3.54
	SparseVeg + Lat + Long	5	50.70	6.71
House Wren (101)	Conifer + Shrub + Riparian + Developed + Lat + Long	8	323.62	0.00
	Conifer + Shrub + Riparian + Lat + Long	7	323.69	0.07
	Conifer + ConiferHardwood + Shrub + Riparian + Developed + Lat + Long	9	325.51	1.89
	Conifer + ConiferHardwood + Hardwood + Shrub + Riparian + Developed + Lat + Long	10	326.89	3.27
	Conifer + Riparian + Lat + Long	6	327.22	3.60
Marsh Wren (41)	Riparian + Lat + Long	5	187.47	0.00
	Water + Riparian + Lat + Long	6	188.54	1.07
	Water + Lat + Long	5	188.69	1.22
Eastern Bluebird (21)	Grass + Lat + Long	5	165.17	0.00
	Grass + Developed + Lat + Long	6	166.88	1.71
	Ag + Grass + Lat + Long	6	167.24	2.07
	Grass + Developed + Hardwood + Lat + Long	7	167.85	2.69
	Ag + Lat + Long	5	168.29	3.12
Mountain Bluebird (9)	Ag + Grass + Conifer + ConiferHardwood + Hardwood + Shrub + Lat + Long	10	68.13	0.00
	Ag + Grass + Conifer + ConiferHardwood + Lat + Long	8	68.51	0.38
	Ag + Grass + Conifer + ConiferHardwood + Shrub + Lat + Long	9	68.73	0.61
	Ag + Grass + Lat + Long	6	68.83	0.70
	Ag + Conifer + Lat + Long	6	70.40	2.27
American Robin (105)	Developed + Hardwood + Conifer + ConiferHardwood + Riparian + Lat + Long	9	255.03	0.00
	Developed + Hardwood + ConiferHardwood + Lat + Long	7	256.72	1.70
	Developed + Hardwood + Conifer + ConiferHardwood + Lat + Long	8	259.61	4.58
Gray Catbird (43)	Shrub + Developed + Lat + Long	6	302.15	0.00
	Hardwood + Shrub + Developed + Lat + Long	7	303.53	1.38
	Shrub + Developed + Riparian + Lat + Long	7	304.26	2.10
	Hardwood + Shrub + Developed + Riparian + Lat + Long	8	305.74	3.59
Brown Thrasher (94)	Conifer + Shrub + Lat + Long	6	311.50	0.00
	Conifer + Lat + Long	5	313.57	2.06
	Conifer + Shrub + Developed + Lat + Long	7	313.64	2.13
	Conifer + Hardwood + Shrub + Developed + Lat + Long	8	314.96	3.46
	Conifer + ConiferHardwood + Hardwood + Shrub + Developed + Lat + Long	9	316.60	5.10
Northern Mockingbird (5)	Grass + Shrub + Lat + Long	6	64.23	0.00
	Grass + Lat + Long	5	64.33	0.09
	Ag + Grass + Shrub + Lat + Long	7	64.95	0.71
	Ag + Grass + Lat + Long	6	65.15	0.92
	Ag + Shrub + Lat + Long	6	65.24	1.01
	Shrub + Lat + Long	5	65.30	1.07
European Starling (98)	Riparian + Developed + Lat + Long	6	342.24	0.00
	Ag + Riparian + Developed + Lat + Long	7	343.03	0.78

Species	Model	K	AIC	ΔAIC
	Ag + Hardwood + Riparian + Developed + Lat + Long	8	344.91	2.67
	Ag + Riparian + Lat + Long	6	346.24	4.00
	Ag + Hardwood + Riparian + Lat + Long	7	346.64	4.39
Cedar Waxwing (40)	Riparian + Developed + Lat + Long	6	291.30	0.00
	Riparian + Lat + Long	5	291.81	0.51
	Hardwood + Riparian + Developed + Lat + Long	7	292.07	0.77
	Hardwood + Riparian + Lat + Long	6	292.88	1.58
	Hardwood + Water + Riparian + Developed + Lat + Long	8	293.04	1.74
	Water + Riparian + Developed + Lat + Long	7	293.36	2.06
	Water + Riparian + Lat + Long	6	293.39	2.09
Chestnut-collared Longspur (45)	Grass + Lat + Long	5	212.23	0.00
	Ag + Grass + Lat + Long	6	213.73	1.50
	Grass + SparseVeg + Lat + Long	6	214.11	1.88
	Ag + Grass + SparseVeg + Lat + Long	7	215.42	3.19
	Ag + Lat + Long	5	218.15	5.92
Common Yellowthroat (90)	Water + Grass + Lat + Long	6	256.35	0.00
	Water + Riparian + Grass + Lat + Long	7	258.76	2.40
	Grass + Lat + Long	5	259.32	2.97
	Water + Riparian + Grass + Shrub + Lat + Long	8	260.01	3.66
	Riparian + Grass + Lat + Long	6	260.97	4.62
American Redstart (5)	Hardwood + ConiferHardwood + Lat + Long	6	69.55	0.00
	Hardwood + ConiferHardwood + Riparian + Lat + Long	7	71.58	2.03
	Hardwood + Riparian + Lat + Long	6	71.76	2.21
Yellow Warbler (94)	ConiferHardwood + Hardwood + Riparian + Lat + Long	7	311.20	0.00
	Hardwood + Shrub + Riparian + Lat + Long	7	311.93	0.73
	ConiferHardwood + Hardwood + Shrub + Riparian + Lat + Long	8	312.47	1.27
	Hardwood + Water + Riparian + Lat + Long	7	312.61	1.41
	Hardwood + Shrub + Water + Riparian + Lat + Long	8	313.70	2.50
Yellow-rumped Warbler (5)	Conifer + Lat + Long	5	36.35	0.00
	Conifer + ConiferHardwood + Lat + Long	6	37.30	0.95
	ConiferHardwood + Lat + Long	5	37.58	1.23
Yellow-breasted Chat (19)	Hardwood + Riparian + Lat + Long	6	185.83	0.00
	ConiferHardwood + Hardwood + Riparian + Lat + Long	7	186.72	0.89
	Hardwood + Shrub + Riparian + Lat + Long	7	187.39	1.56
	ConiferHardwood + Shrub + Riparian + Lat + Long	7	188.91	3.08
	ConiferHardwood + Hardwood + Shrub + Riparian + Lat + Long	8	189.88	4.05
Spotted Towhee (36)	Grass + Hardwood + Shrub + Riparian + Lat + Long	8	228.16	0.00
	Grass + Conifer + Hardwood + Shrub + Lat + Long	8	228.94	0.78
	Grass + Conifer + ConiferHardwood + Hardwood + Shrub + Lat + Long	9	230.60	2.44
	Grass + Shrub + Lat + Long	6	230.74	2.58
	Grass + Conifer + Shrub + Lat + Long	7	231.35	3.18
Chipping Sparrow (77)	Conifer + Lat + Long	5	394.59	0.00
	Conifer + Developed + Lat + Long	6	395.08	0.48
	Conifer + ConiferHardwood + Lat + Long	6	396.11	1.51
	Conifer + ConiferHardwood + Developed + Lat + Long	7	396.55	1.95

Species	Model	K	AIC	ΔAIC
Clay-colored Sparrow (31)	Grass + Lat + Long	5	163.40	0.00
	Grass + Hardwood + Lat + Long	6	165.88	2.48
	Grass + Shrub + Lat + Long	6	168.12	4.71
	Grass + Shrub + Hardwood + Lat + Long	7	169.37	5.97
Brewer's Sparrow (5)	Ag + Lat + Long	5	45.80	0.00
	Shrub + Lat + Long	5	46.09	0.29
	Grass + Lat + Long	5	46.43	0.63
	Ag + Grass + Lat + Long	6	48.27	2.46
	Ag + Shrub + Lat + Long	6	48.94	3.13
Field Sparrow (31)	Grass + Shrub + Lat + Long	6	198.41	0.00
	Grass + Lat + Long	5	199.35	0.94
	Shrub + Lat + Long	5	203.56	5.15
Vesper Sparrow (66)	Grass + SparseVeg + Lat + Long	6	335.56	0.00
	Ag + SparseVeg + Lat + Long	6	337.07	1.51
	Ag + Grass + SparseVeg + Lat + Long	7	337.53	1.97
	Grass + Lat + Long	5	338.14	2.58
	Ag + Grass + Lat + Long	6	340.11	4.55
Lark Sparrow (58)	Grass + Lat + Long	5	294.97	0.00
	Grass + Shrub + Lat + Long	6	295.19	0.22
	Ag + Grass + Shrub + Lat + Long	7	296.01	1.04
	Ag + Lat + Long	5	296.84	1.87
	Ag + Grass + Lat + Long	6	297.00	2.03
Lark Bunting (51)	Ag + Grass + Lat + Long	6	230.05	0.00
	Ag + Grass + Shrub + Lat + Long	7	234.82	4.76
	Grass + Lat + Long	5	236.75	6.70
	Ag + Lat + Long	5	243.60	13.55
Savannah Sparrow (50)	Ag + Grass + Riparian + Lat + Long	7	259.93	0.00
	Ag + Lat + Long	5	260.89	0.96
	Ag + Grass + Lat + Long	6	264.20	4.27
	Grass + Lat + Long	5	264.21	4.28
Grasshopper Sparrow (110)	Grass + Lat + Long	5	294.32	0.00
Baird's Sparrow (9)	Grass + Lat + Long	5	63.57	0.00
	Grass + Riparian + Lat + Long	6	67.53	3.96
Le Conte's Sparrow (6)	Grass + Riparian + Lat + Long	6	39.76	0.00
	Water + Riparian + Lat + Long	6	40.18	0.41
	Grass + Water + Lat + Long	6	45.11	5.34
Song Sparrow (68)	Shrub + Riparian + Lat + Long	6	224.45	0.00
	Grass + Riparian + Lat + Long	6	228.76	4.30
	Ag + Grass + Shrub + Hardwood + Riparian + Lat + Long	9	230.08	5.62
	Ag + Grass + Riparian + Lat + Long	7	230.31	5.85
	Grass + Shrub + Riparian + Lat + Long	7	231.42	6.97
Swamp Sparrow (6)	Grass + Water + Lat + Long	6	63.72	0.00
	Shrub + Water + Lat + Long	6	64.49	0.77
	Grass + Shrub + Water + Lat + Long	7	64.77	1.05
Northern Cardinal (11)	Hardwood + Developed + Lat + Long	6	96.76	0.00
	Hardwood + Lat + Long	5	97.11	0.35

Species	Model	K	AIC	ΔAIC
	Hardwood + Riparian + Developed + Lat + Long	7	97.80	1.05
	Hardwood + Conifer + Riparian + Developed + Lat + Long	8	99.19	2.43
	Hardwood + Shrub + Riparian + Developed + Lat + Long	8	99.32	2.57
Rose-breasted Grosbeak (17)	Hardwood + Lat + Long	5	146.87	0.00
	Hardwood + ConiferHardwood + Lat + Long	6	148.52	1.65
Black-headed Grosbeak (28)	Riparian + Lat + Long	5	198.75	0.00
	Shrub + Riparian + Lat + Long	6	199.71	0.95
	Hardwood + Riparian + Lat + Long	6	199.76	1.01
	Hardwood + Shrub + Riparian + Lat + Long	7	200.47	1.72
	ConiferHardwood + Hardwood + Shrub + Riparian + Lat + Long	8	202.62	3.87
Blue Grosbeak (41)	Ag + Conifer + Lat + Long	6	262.01	0.00
	Ag + Grass + Conifer + Lat + Long	7	262.32	0.32
	Grass + Conifer + Lat + Long	6	262.86	0.86
	Grass + Conifer + Riparian + Lat + Long	7	263.40	1.40
	Ag + Conifer + Riparian + Lat + Long	7	263.46	1.46
	Ag + Conifer + Shrub + Lat + Long	7	263.67	1.67
	Ag + Grass + Conifer + Riparian + Lat + Long	8	263.87	1.87
Lazuli Bunting (15)	Hardwood + Riparian + Lat + Long	6	129.16	0.00
	Hardwood + Shrub + Lat + Long	6	129.49	0.34
	Hardwood + Riparian + Shrub + Lat + Long	7	130.01	0.85
Indigo Bunting (21)	Hardwood + Lat + Long	5	165.24	0.00
	Hardwood + Shrub + Lat + Long	6	167.55	2.30
Dickcissel (83)	Grass + Lat + Long	5	296.51	0.00
	Ag + Lat + Long	5	296.91	0.39
	Ag + Grass + Lat + Long	6	298.00	1.49
Bobolink (86)	Ag + Grass + Lat + Long	6	341.15	0.00
	Grass + Lat + Long	5	341.57	0.41
Red-winged Blackbird (117)	Ag + Riparian + Lat + Long	6	114.55	0.00
	Ag + Grass + Lat + Long	6	115.55	1.01
	Ag + Grass + Shrub + Water + Riparian + Lat + Long	9	115.99	1.45
	Grass + Riparian + Lat + Long	6	116.12	1.57
	Ag + Water + Lat + Long	6	116.20	1.66
	Ag + Grass + Water + Lat + Long	7	116.42	1.88
Western Meadowlark (116)	Ag + Grass + Lat + Long	6	129.77	0.00
	Grass + Lat + Long	5	131.60	1.83
Yellow-headed Blackbird (66)	Riparian + Lat + Long	5	295.14	0.00
	Water + Riparian + Lat + Long	6	296.80	1.66
	Water + Lat + Long	5	298.15	3.01
Brewer's Blackbird (18)	Ag + Water + Lat + Long	6	134.91	0.00
	Ag + Grass + Lat + Long	6	135.46	0.56
	Grass + Water + Lat + Long	6	135.88	0.97
	Ag + Grass + Water + Lat + Long	7	136.75	1.84
	Ag + Grass + Shrub + Lat + Long	7	137.37	2.47
Common Grackle (103)	Ag + Developed + Grass + Lat + Long	7	211.04	0.00
	Ag + Developed + ConiferHardwood + Hardwood + Shrub + Lat + Long	9	211.43	0.39
	Ag + Grass + Lat + Long	6	212.07	1.03

Species	Model	K	AIC	ΔAIC
	Ag + Developed + Hardwood + Shrub + Lat + Long	8	212.79	1.75
	Ag + Developed + ConiferHardwood + Hardwood + Shrub + Grass + Lat + Long	10	212.91	1.87
	Ag + Developed + Shrub + Grass + Lat + Long	8	212.94	1.90
Brown-headed Cowbird (119)	Ag + Grass + Lat + Long	6	159.89	0.00
	Ag + Grass + Conifer + Lat + Long	7	161.89	2.00
	Ag + Grass + Shrub + Conifer + Lat + Long	8	163.89	4.00
	Ag + Grass + Shrub + Developed + Conifer + Lat + Long	9	165.89	6.00
	Ag + Grass + Shrub + Developed + Conifer + Hardwood + Lat + Long	10	167.89	8.00
Orchard Oriole (108)	Ag + Grass + Hardwood + Developed + Shrub + Riparian + Lat + Long	10	227.62	0.00
	Ag + Grass + Hardwood + Developed + Riparian + Lat + Long	9	229.87	2.24
	Ag + Grass + Hardwood + Shrub + Riparian + Lat + Long	9	230.42	2.79
	Ag + Grass + Hardwood + Riparian + Lat + Long	8	230.47	2.84
	Ag + Grass + Hardwood + Developed + Lat + Long	8	239.68	12.05
Bullock's Oriole (8)	Conifer + Lat + Long	5	81.29	0.00
	Conifer + Riparian + Lat + Long	6	83.27	1.98
	Riparian + Lat + Long	5	84.92	3.63
	Conifer + Hardwood + Riparian + Lat + Long	7	84.99	3.70
	Conifer + ConiferHardwood + Hardwood + Riparian + Lat + Long	8	87.73	6.44
Baltimore Oriole (61)	Hardwood + Lat + Long	5	326.15	0.00
	Hardwood + Riparian + Lat + Long	6	327.81	1.66
	Hardwood + Developed + Lat + Long	6	327.99	1.84
	Developed + Hardwood + Riparian + Lat + Long	7	329.93	3.78
	Riparian + Lat + Long	5	333.63	7.48
House Finch (6)	Ag + Developed + Conifer + Lat + Long	7	70.27	0.00
	Ag + Developed + Conifer + ConiferHardwood + Lat + Long	8	71.00	0.73
	Ag + Developed + Lat + Long	6	74.32	4.05
	Developed + Lat + Long	5	75.51	5.24
	Ag + Lat + Long	5	79.08	8.81
Red Crossbill (6)	Conifer + ConiferHardwood + Lat + Long	6	53.63	0.00
	Conifer + Lat + Long	5	55.18	1.55
American Goldfinch (99)	Ag + Grass + Hardwood + Shrub + Riparian + Lat + Long	9	310.43	0.00
	Water + Ag + Grass + Hardwood + Shrub + Riparian + Lat + Long	10	312.34	1.91
	Ag + Grass + Hardwood + Riparian + Lat + Long	8	315.26	4.83
House Sparrow (77)	Developed + Lat + Long	5	340.00	0.00
	Developed + Ag + Lat + Long	6	341.54	1.54

APPENDIX VII. Species Safe Dates

Common Name	Safe Dates	Common Name	Safe Dates
Canada Goose	4/15 - 7/31	Least Bittern	6/1 - 7/31
Trumpeter Swan	5/1 - 7/31	Great Blue Heron	4/15 - 7/31
Wood Duck	5/1 - 7/31	Great Egret	6/1 - 7/31
Gadwall	5/15 - 7/31	Snowy Egret	6/1 - 7/31
American Wigeon	5/15 - 7/31	Little Blue Heron	6/1 - 7/31
American Black Duck	5/15 - 7/31	Tricolored Heron	6/1 - 7/31
Mallard	5/1 - 7/31	Cattle Egret	6/1 - 7/31
Blue-winged Teal	5/15 - 7/31	Green Heron	5/15 - 7/31
Cinnamon Teal	5/15 - 7/31	Black-crowned Night-Heron	5/15 - 7/31
Northern Shoveler	5/15 - 7/31	Yellow-crowned Night-Heron	6/1 - 7/31
Northern Pintail	5/1 - 7/31	Glossy Ibis	5/15 - 7/31
Green-winged Teal	5/15 - 7/31	White-faced Ibis	5/15 - 7/31
Canvasback	5/15 - 7/31	Turkey Vulture	5/1 - 7/31
Redhead	5/15 - 7/31	Osprey	5/15 - 7/31
Ring-necked Duck	5/15 - 7/31	Bald Eagle	5/15 - 7/31
Lesser Scaup	5/15 - 7/31	Northern Harrier	5/1 - 7/31
Bufflehead	5/15 - 7/31	Sharp-shinned Hawk	5/15 - 7/31
Hooded Merganser	5/15 - 7/31	Cooper's Hawk	4/15 - 7/31
Common Merganser	5/1 - 7/31	Northern Goshawk	4/15 - 7/31
Ruddy Duck	5/15 - 7/31	Broad-winged Hawk	5/15 - 7/31
Northern Bobwhite	3/1 - 7/31	Swainson's Hawk	5/1 - 7/31
Gray Partridge	3/1 - 7/31	Red-tailed Hawk	4/15 - 7/31
Ring-necked Pheasant	3/1 - 7/31	Ferruginous Hawk	4/15 - 7/31
Ruffed Grouse	3/1 - 7/31	Golden Eagle	3/1 - 7/31
Greater Sage-Grouse	3/1 - 7/31	Virginia Rail	5/15 - 7/31
Sharp-tailed Grouse	3/1 - 7/31	Sora	5/15 - 7/31
Greater Prairie-Chicken	3/1 - 7/31	Common Gallinule	6/1 - 7/31
Wild Turkey	3/1 - 7/31	American Coot	5/1 - 7/31
Common Loon	6/1 - 7/31	Sandhill Crane	none
Pied-billed Grebe	5/1 - 7/31	Black-necked Stilt	6/1 - 7/31
Horned Grebe	6/1 - 7/31	American Avocet	5/15 - 7/31
Red-necked Grebe	5/15 - 7/31	Snowy Plover	5/15 - 7/31
Eared Grebe	5/15 - 7/31	Piping Plover	5/1 - 7/31
Western Grebe	5/15 - 7/31	Killdeer	5/1 - 7/31
Clark's Grebe	5/15 - 7/31	Spotted Sandpiper	5/15 - 7/31
Double-crested Cormorant	5/15 - 7/31	Willet	6/1 - 7/31
Amer. White Pelican	5/1 - 7/31	Upland Sandpiper	5/15 - 7/31
American Bittern	5/25 - 7/31	Long-billed Curlew	5/1 - 7/31

Common Name	Safe Dates
Marbled Godwit	5/15 - 7/31
Wilson's Snipe	5/1 - 7/31
American Woodcock	4/15 - 7/31
Wilson's Phalarope	5/15 - 7/31
Franklin's Gull	6/1 - 7/31
Ring-billed Gull	6/1 - 7/31
California Gull	6/1 - 7/31
Herring Gull	6/1 - 7/31
Least Tern	5/1 - 7/31
Caspian Tern	6/1 - 7/31
Black Tern	6/1 - 7/31
Common Tern	6/1 - 7/31
Forster's Tern	6/1 - 7/31
Rock Pigeon	3/1 - 8/31
Eurasian Collared-Dove	4/15 - 8/31
Mourning Dove	4/15 - 8/31
Yellow-billed Cuckoo	6/1 - 7/31
Black-billed Cuckoo	6/1 - 7/31
Barn Owl	3/1 - 9/30
Eastern Screech-Owl	3/1 - 7/31
Great Horned Owl	2/1 - 7/31
Burrowing Owl	5/1 - 7/31
BARRED OWL	4/1 - 7/31
Long-eared Owl	3/1 - 7/31
Short-eared Owl	5/1 - 7/31
Northern Saw-whet Owl	4/1 - 7/31
Common Nighthawk	6/1 - 7/31
Common Poorwill	5/15 - 7/31
Chuck-Will's-Widow	6/1 - 7/31
Eastern Whip-poor-will	6/1 - 7/31
Chimney Swift	5/15 - 7/31
White-throated Swift	5/1 - 7/31
Ruby-throated Hummingbird	6/1 - 7/31
Broad-tailed Hummingbird	5/25 - 7/15
Belted Kingfisher	5/15 - 7/31
Lewis's Woodpecker	5/1 - 7/31
Red-headed Woodpecker	5/1 - 7/31
Red-bellied Woodpecker	4/15 - 7/31

Common Name	Safe Dates
Downy Woodpecker	3/1 - 7/31
Hairy Woodpecker	3/1 - 7/31
Amer. Three-toed Woodpecker	4/1 - 7/31
Black-backed Woodpecker	4/1 - 7/31
Northern Flicker	4/15 - 7/31
Pileated Woodpecker	4/1 - 7/31
American Kestrel	4/15 - 7/31
Merlin	5/1 - 7/31
Prairie Falcon	4/15 - 7/31
Western Wood-Pewee	6/1 - 7/31
Eastern Wood-Pewee	6/1 - 7/31
Alder Flycatcher	6/5 - 7/31
Willow Flycatcher	5/25 - 7/31
Least Flycatcher	5/25 - 7/31
Dusky Flycatcher	5/25 - 7/31
Cordilleran Flycatcher	5/25 - 7/31
Eastern Phoebe	4/15 - 7/31
Say's Phoebe	5/1 - 7/31
Great Crested Flycatcher	5/20 - 7/31
Cassin's Kingbird	6/1 - 7/31
Western Kingbird	5/20 - 7/31
Eastern Kingbird	5/20 - 7/31
Loggerhead Shrike	4/15 - 7/31
Bell's Vireo	5/25 - 7/31
Yellow-throated Vireo	5/25 - 7/31
Plumbeous Vireo	5/25 - 7/31
Warbling Vireo	5/25 - 7/31
Red-eyed Vireo	5/25 - 7/31
Gray Jay	3/1 - 7/31
Pinyon Jay	4/1 - 7/31
Blue Jay	4/15 - 7/31
Clark's Nutcracker	4/1 - 7/31
Black-billed Magpie	4/1 - 7/31
American Crow	4/1 - 7/31
Horned Lark	4/1 - 7/31
Purple Martin	5/1 - 7/31
Tree Swallow	5/1 - 7/31
Violet-green Swallow	5/15 - 7/31

Common Name	Safe Dates
Yellow-bellied Sapsucker	5/1 - 7/31
Red-naped Sapsucker	5/1 - 7/31
Cliff Swallow	5/15 - 7/31
Barn Swallow	5/15 - 7/31
Black-capped Chickadee	3/1 - 7/31
Red-breasted Nuthatch	4/1 - 7/31
White-breasted Nuthatch	4/1 - 7/31
Pygmy Nuthatch	4/1 - 7/31
Brown Creeper	4/1 - 7/31
Rock Wren	5/15 - 7/31
Canyon Wren	4/1 - 7/31
House Wren	5/15 - 7/31
Pacific Wren	6/1 - 7/31
Sedge Wren	6/1 - 7/31
Marsh Wren	5/15 - 7/31
Blue-gray Gnatcatcher	5/25 - 7/31
American Dipper	4/1 - 7/31
Golden-crowned Kinglet	5/15 - 7/31
Ruby-crowned Kinglet	4/15 - 7/31
Eastern Bluebird	5/1 - 7/31
Mountain Bluebird	4/15 - 7/31
Townsend's Solitaire	5/1 - 7/31
Veery	6/10 - 7/31
Swainson's Thrush	6/10 - 7/31
Hermit Thrush	6/1 - 7/31
Wood Thrush	6/1 - 7/31
American Robin	4/15 - 7/31
Gray Catbird	5/20 - 7/31
Brown Thrasher	5/15 - 7/31
Sage Thrasher	5/15 - 7/31
Northern Mockingbird	5/15 - 7/31
European Starling	4/15 - 7/31
Sprague's Pipit	5/15 - 7/31
Cedar Waxwing	6/1 - 7/31
Chestnut-collared Longspur	5/1 - 7/31
McCown's Longspur	none
Ovenbird	5/25 - 7/31
Golden-winged Warbler	5/25 - 7/31
Blue-winged Warbler	5/25 - 7/31
Black-and-white Warbler	5/25 - 7/31
Prothonotary Warbler	5/25 - 7/31

Common Name	Safe Dates
N. Rough-winged Swallow	5/15 - 7/31
Bank Swallow	5/15 - 7/31
MacGillivray's Warbler	5/25 - 7/31
Common Yellowthroat	5/20 - 7/31
American Redstart	5/25 - 7/31
Yellow Warbler	5/20 - 7/31
Chestnut-sided Warbler	5/25 - 7/31
Yellow-rumped Warbler	5/25 - 7/31
Yellow-breasted Chat	5/25 - 7/31
Spotted Towhee	5/15 - 7/31
Eastern Towhee	5/15 - 7/31
Cassin's Sparrow	5/25 - 7/31
Chipping Sparrow	5/20 - 7/31
Clay-colored Sparrow	5/25 - 7/31
Brewer's Sparrow	5/15 - 7/31
Field Sparrow	5/20 - 7/31
Vesper Sparrow	5/20 - 7/31
Lark Sparrow	5/20 - 7/31
Lark Bunting	5/20 - 7/31
Savannah Sparrow	5/15 - 7/31
Grasshopper Sparrow	5/20 - 7/31
Baird's Sparrow	5/15 - 7/31
Henslow's Sparrow	6/1 - 7/31
Le Conte's Sparrow	6/1 - 7/31
Nelson's Sparrow	6/1 - 7/31
Song Sparrow	5/15 - 7/31
Swamp Sparrow	5/15 - 7/31
Dark-eyed Junco	5/1 - 7/31
Scarlet Tanager	6/1 - 7/31
Western Tanager	6/1 - 7/31
Northern Cardinal	4/15 - 7/31
Rose-breasted Grosbeak	5/25 - 7/31
Black-headed Grosbeak	5/25 - 7/31
Blue Grosbeak	6/1 - 7/31
Lazuli Bunting	5/25 - 7/31
Indigo Bunting	6/1 - 7/31
Dickcissel	6/1 - 7/31
Bobolink	5/20 - 7/31
Red-winged Blackbird	4/15 - 7/31
Eastern Meadowlark	4/15 - 7/31
Western Meadowlark	4/15 - 8/5

Common Name	Safe Dates
Virginia's Warbler	5/20 - 7/31
Brewer's Blackbird	5/15 - 7/31
Common Grackle	5/1 - 7/31
Great-tailed Grackle	5/1 - 7/31
Brown-headed Cowbird	5/1 - 7/31
Orchard Oriole	5/25 - 7/31
Bullock's Oriole	5/25 - 7/31
Baltimore Oriole	5/25 - 7/31
House Finch	5/1 - 7/31

Common Name	Safe Dates
Yellow-headed Blackbird	5/15 - 7/31
Cassin's Finch	5/1 - 7/31
Red Crossbill	3/1 - 7/31
White-winged Crossbill	5/1 - 7/31
Pine Siskin	5/1 - 7/31
Lesser Goldfinch	5/15 - 7/31
American Goldfinch	6/1 - 8/30
Evening Grosbeak	6/1 - 7/31
House Sparrow	3/1 - 7/31

APPENDIX VIII. SDBBA2 Breeding Status and Breeding Behavior Codes and their descriptions

A lower 'Certainty Number' indicates a higher certainty of a successful breeding attempt.

Status Code	Behavior Code	Certainty Number	Description
Observed (O)	O	24	Species (male or female) observed during its breeding season (within safe dates), but no evidence of breeding. Not in suitable nesting habitat - examples are vultures, raptors, colonial nesters not at nesting colony
Possible (PO)	?	23	Species (male or female) observed in suitable habitat during its breeding season
	X	22	Singing male present in suitable habitat during its breeding season
Probable (PR)	M	21	Multiple males of a single species singing within a block in a single visit during their breeding season
	P	20	Pair observed in suitable nesting habitat during its breeding season
	S	19	Song at same location on at least 2 occasions 7 or more days apart
	T	18	Territory defense observed (chasing of individuals of same species) - presumed permanent territory
	C	17	Courtship behavior, or copulation
	N	16	Visiting potential nest-site
	A	15	Agitated behavior or anxiety calls from adult.
	B	14	Nest building by wrens or eagles; hole excavation by woodpeckers
Confirmed (CO)	CN	13	Carrying nesting materials (sticks, grass, hair, etc.)
	NB	12	Nest building by all species except eagles, wrens, woodpeckers
	PE	11	Physiological evidence based on bird in hand: highly vascularized, swollen incubation/brood patch, or egg in oviduct
	DD	10	Distraction display or injury feigning
	UN	9	Used nests or eggshells found. CAUTION: these must be carefully identified to be accepted
	PY	8	Precocial young. Flightless chicks of precocial species restricted to the natal area by limited mobility or dependence on adult
	FL	7	Recently fledged young incapable of sustained flight, restricted to natal area by limited mobility or dependence on adult
	CF	6	Carrying food: adult carrying food for the chicks
	ON	5	Occupied nest: adults entering or leaving a nest site in circumstances indicating an occupied nest. Used for nests too high or enclosed to view the contents
	FY	4	Adult feeding recently fledged young
	FS	3	Adult carrying fecal sac
	NE	2	Nest with eggs**
NY	1	Nest with young seen or heard**	

** Presence of cowbird eggs or chicks is confirmation of both cowbird and host species.

APPENDIX IX. SDBBA2 Habitat Codes and their descriptions

Code	General Habitat Type	Specific Habitat Type
1	Upland forest, shelterbelt, tree line	a. Deciduous b. Coniferous c. Mixed
2	Lowland forest, woody draw, riparian	a. Deciduous b. Coniferous c. Mixed
3	Shrubland	a. Upland b. Lowland
4	Grassland	a. Pasture b. Hayfield c. Weedy field-invading shrubs, trees d. Undisturbed (e.g., CRP)
5	Wetland	a. Marsh b. Fen, wet meadow
6	Open water	a. Lake, pond b. River, creek
7	Cropland	a. Row crop (corn, soybean, sunflower) b. Wheat or small grains c. Other d. Alfalfa
8	Special	a. Burned area with standing snags b. Prairie dog town c. Scattered single trees d. Barren or very sparsely vegetated (sandbar, badlands, mudflat) e. Cliff, bank
9	Human environment	a. Residential, buildings, yard, feedlot, park b. Mine, quarry, gravel pit c. Road, ditch, bridge
10	Other	a. Flyover --- Other (describe)