

ATLAS HANDBOOK

April 2009



SOUTH DAKOTA BREEDING BIRD ATLAS 2

www.rmbo.org/SDBBA2

The SD Breeding Bird Atlas Team

The second South Dakota Breeding Bird Atlas (SDBBA2) is a team effort, both organizationally and financially. . This project is funded by federal funding through State Wildlife Grant T-41, Study #2541, administered through the US Fish and Wildlife Service. The South Dakota Department of Game, Fish, and Parks is providing match funds.

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- South Dakota Ornithologists' Union
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1. INTRODUCTION

WHAT IS A BREEDING BIRD ATLAS?

The Breeding Bird Atlas (BBA) is a relatively simple, repeatable, grid-based survey that aims to monitor and document changes in the distribution of breeding birds on a large scale.

HISTORY OF BBA's IN SOUTH DAKOTA

The first South Dakota Breeding Bird Atlas began 20 years ago. During that ambitious project, 71 volunteers collected data over six years of fieldwork and submitted more than 24,000 breeding records, representing 219 bird species. The resulting resource has been extremely valuable in describing the status and distribution of South Dakota's breeding birds at the end of the 20th century. The first atlas database also is a baseline against which future changes in breeding bird populations will be measured.

GOALS and OBJECTIVES OF SDBBA2

In the past 20 years, South Dakota's landscape has changed and land-use changes in the upcoming few years could be staggering, with increasing Conservation Reserve Program land conversion, biofuels production, wind farm development, and urbanization, to name a few trends of concern. Most likely, these landscape-level changes are impacting our breeding birds and it is extremely important to document these impacts through a regular monitoring program, such as a Breeding Bird Atlas.

The **GOAL** of the second South Dakota Breeding Bird Atlas is to document the current distribution of every bird species that nests in South Dakota and to compare these distributions to those of the first Breeding Bird Atlas. These data, primarily collected by volunteers, will support efforts by conservation decision-makers, land-use planners, researchers, educators, students, and bird enthusiasts to maintain healthy bird populations and conserve avian diversity within the state.

The **OBJECTIVES** of the second atlas are to:

1. Document current distribution of all breeding bird species, including under-surveyed species such as owls and secretive marsh birds.
2. Assess changes in distributions of breeding birds since the first SD BBA.
3. Identify habitat associations and requirements for all breeding species.
4. Provide data for applications in public policy, planning, education, recreation, and research.
5. Increase public awareness and participation in birding and citizen science programs.

6. Encourage young people to participate in birding and citizen science projects.
7. Produce a report and interactive web site with species distribution maps and analyses.

Scientific questions to be addressed:

1. What is the current statewide distribution of occurrences and nesting of every breeding bird species?
2. What is the status and distribution of South Dakota's rare bird species?
3. Which species have declined or increased in distribution since 1988-1992?
4. Are non-native bird species increasing as a component of the state's avifauna?
5. What are the habitat associations or requirements of each breeding species?

ALL ABOUT ATLAS BLOCKS

Surveys are conducted in 3-mile by 3-mile randomly-selected 'blocks' of land. For SDBBA2, all 124 random blocks from the 1st atlas will be surveyed, as well as an additional 301 newly-selected blocks. The original 124 blocks were selected in 1988 and surveyed during 1988 - 1992. The state was divided into 62 equal-sized 'superblocks' and two townships were randomly selected within each superblock. The southwest quarter of the selected townships became the surveyed blocks. The boundaries of these blocks are section lines.

The 301 new blocks were selected using a spatially-balanced sampling design. This type of sampling design is random, but accounts for the fact that sites closer together are probably more similar and results in a sample distribution that is less clumped. A uniform 3x3 mile grid was placed on the entire state and the first 301 samples 'drawn' in this procedure constitute the 301 new blocks to be surveyed during the second atlas. One important assumption of spatially-balanced sampling is that blocks are surveyed in the order in which they are drawn. If they are not, the resulting design is not spatially balanced nor is it random. Thus, block # 276 can only be surveyed if blocks 1-275 are also surveyed. The boundaries of these blocks are NOT along section lines and these blocks often look 'crooked' on a map.

In addition to the random blocks, there are a small number of special blocks chosen because they contain rare habitats that are not represented in the randomly-chosen blocks. These blocks include forested buttes in Harding County, mountain mahogany shrubland in Custer Co., sagebrush in Fall River Co., bluffs of the Missouri River, and coteau forested ravines in Roberts Co.

The Block ID number for atlas blocks reflects the type of block: those that begin with '1R' are random blocks surveyed during the first atlas, those that begin with '2R' are random blocks newly-selected for the 2nd atlas, and those that begin with '2S' are special blocks selected for the 2nd atlas.

2. HOW TO ATLAS

Atlas surveys involve surveying all habitats within a block for bird presence and evidence of breeding for all bird species.

Focus of surveys. The primary focus of an atlas survey is to document all BREEDING birds in the block. Thus, migrants, non-breeding birds, and birds that are temporarily in the block (to forage, roost, flyovers, etc.) are NOT recorded during the survey. The entire block does not need to be surveyed; rather, efforts are focused on searching each habitat type within a block. Once a particular habitat type has been thoroughly surveyed, other parcels of that type within the block do not need to be surveyed, unless there is some reason to believe that there are different bird species in other parcels.

What to expect.

1. **Time**: Surveyors spend enough time on a block to ensure 'adequate coverage.' The general rule of thumb is to keep visiting a block until you do not document any new species. This will take from 15 - 40 hours of total time. Atlasers are asked to make at least 3 visits plus an 'owl visit' to each block. Visits should be at least 10 days apart and can be anytime during the course of the 5-year project.
2. **Equipment**: Binoculars and field forms are all that are required. Optional equipment include habitat maps such as topo maps or aerial photos, spotting scope, GPS unit, or cameras.
3. **Costs**: The major expense is gas to get to your atlas block. Some expenses for volunteer atlas work, including mileage, are tax deductible. See www.irs.gov for more information.
4. **Preparation**: Preparations before going into the field may include finding topographic or aerial photo maps of your blocks to determine locations of habitat types, determining access, determining land ownership and contacting land owners, and studying bird identification and atlas materials.
5. **Birding experience**: Conducting breeding bird surveys on a block is an extremely enjoyable and interesting experience. This is a great way to explore new areas and habitats, encounter new and unexpected species, observe interesting bird behavior during the most critical period of the avian life cycle, and contribute to our knowledge of South Dakota's birds.

BEFORE GOING INTO THE FIELD

Suggested preparations before going into the field include the following.

Choose your blocks. Go to the interactive South Dakota map online (www.rmbo.org/SDBBA2) to see where blocks are located. Or contact the atlas

coordinator with the counties that interest you and you will be sent county maps of block locations. Once you have chosen your blocks, contact the atlas coordinator to reserve your blocks and for block details.

Get information about your blocks. Try to learn as much as possible about access and habitat types within your block before actually doing the survey. You will be provided with coordinates of your block and general descriptions, as well as general maps of block location and broad habitat types within your block. With this information, you should be able to find topographic or aerial photos of your block online, at the library, or at offices of natural resource agencies. If there seems to be very limited access to some habitat types within the block, you may need to contact the county assessors office to find land owners. It also can be helpful to make a reconnaissance visit to the block before doing the survey.

Obtain and study the atlas materials ahead of time. Download the Atlas packet from the internet (www.rmbo.org/SDBBA2) or contact the atlas coordinator for your copy. The packet includes:

1. Atlas Handbook
2. Data forms (Block Visit data sheet, Extra Observations form, Rare Bird Report form)
3. Breeding and Habitat Codes
4. Species list with Safe Dates
5. Volunteer Agreement and Volunteer Hours forms
6. Landowner Letter
7. Sign for vehicle windshield

To save time and frustration in the field, thoroughly review all atlas materials ahead of time. Learn the breeding and habitat codes and become acquainted with the data sheets and types of information that you are asked to record.

Know what birds to expect. Although there will be some surprises during the atlas, knowing which species should occur in each habitat will help with identification and help you determine when a habitat type has been adequately covered.

CONDUCTING THE ATLAS SURVEY

When and how often to survey. Atlasers are asked to make at least 3 visits plus an 'owl visit' to each block during the breeding season. Suggested times are early part of breeding season, mid-season, and late season. Visits should be at least 10 days apart and can be anytime during the course of the 5-year project (i.e., not all visits have to be during the same year).

Adequate coverage - how much is enough? A block is considered 'adequately covered' if most or all breeding birds in the block have been recorded. Of course we don't know how many bird species breed in a particular block - that's why we are doing the atlas! As an alternative, we aim to spend enough time in all habitat types within the block so that we are able to detect most early breeders, late breeders, nocturnal or secretive species, rarer species, etc. The general rule of thumb is to keep visiting the block until you don't encounter any new species. Usually at least 15 hours are needed to thoroughly survey all habitat types in a block; some extremely diverse blocks may take up to 40 hours.

Materials and equipment.

1. Necessary materials:

- Block Visit data sheet (at least 3 copies per visit)
- pens or pencils
- maps of block or block coordinate information
- sign for vehicle dashboard
- copy of Atlas Handbook
- copies - Explanation of Breeding and Habitat Codes
- species list with safe dates
- copies of landowner letter

2. Optional materials:

- field notebook, clipboard
- bird ID materials (field guides, songs, etc.)

3. Necessary equipment:

- Binoculars

4. Optional equipment:

- spotting scope, tripod and/or car mount
- GPS unit
- audio equipment to broadcast calls (see CAVEATS for call broadcasting under Nesting Birds and Disturbance section)
- camera to document birds, habitats, nests, etc.

What to do when you get there.

To begin: When you arrive at the block, be sure to record when you begin searching for birds. If you have not been to the block before, we suggest that you spend the first part of the first visit going around as much of the block as possible to determine locations and types of habitats that you may wish to survey. Especially note if any habitat types are located in areas that require contacting landowners for access permission.

Strategy: You do not need to survey every inch of the block. The point is to search for breeding birds in all of the different habitat types on your block. Once you have surveyed one example of a habitat type, you do not need to survey that same habitat type in another portion of the block. For example, if you survey a pasture in the southeast corner of your block, you do not need to survey pastures in other areas of the block, unless you have reason to believe that other bird species may breed in the other pastures.

You will record every breeding bird species that you observe and then you will try to confirm breeding (see details below). Generally, there are around 30 - 75 species of breeding birds per block. It will take more than one visit to confirm breeding by even the common species. We suggest that you keep notes in a field notebook or on maps regarding where you saw a particular species, how many individuals, behavior notes, and other information that will help you or other surveyors during future visits.

Collecting and recording your data. Record your information on the Block Visit data form. Fill out a separate form for each visit to each block. Remember to record start and end times!

Nesting birds and disturbance. Be aware that your Atlas activities have the potential to disturb breeding birds. If you find a nest, minimize trampling of vegetation in the area. Broadcasting songs or calls of breeding species can upset territorial birds and disrupt their activities. Therefore, we urge you to only use broadcasts for owls and for secretive marshbirds (rails and bitterns).

Which species to record. Only record a species if your observation falls within that species 'safe date' (Appendix 4). This is to ensure that the birds you detect are not migrants. However, confirmed breeding can be recorded at any time. If you wish, note any interesting information in the 'Notes' column.

For each visit, record every species observed, even if you recorded or confirmed breeding by that species in a previous visit. This is so we can document timing of breeding. Record a species just once per visit, even if you see individuals of that species in more than one spot during the survey. In these cases, record the location, breeding, and habitat information for the 'highest' breeding code (farthest down the breeding code table) observed for that species during your visit.

Breeding codes and explanations. Bird observations are categorized as *Observed* but not breeding, *Possible* breeding, *Probable* breeding, or *Confirmed* breeding, based on a list of standardized criteria within that

species' breeding season (Appendix 2). For each observation, record the status code in the first column under 'Status & Behavior' and the behavior code in the second column. Be careful to distinguish between birds on territory and those that might just be flying over, foraging, or roosting at your site but breeding elsewhere. This is especially important with species that forage over a large area away from their breeding site such as raptors, swallows, and colonial waterbirds (herons, egrets, cormorants, pelicans, terns, and gulls).

Make efforts to *Confirm* breeding by as many species as possible. This may involve lengthy observations of individual birds.

Hybrids. South Dakota is famous for being a transition zone between eastern and western pairs of closely-related species and many of these species pairs hybridize. Recording these hybrids greatly contributes to our understanding of hybridization and transition zones. The species list for this atlas lists four hybrids which are often seen in South Dakota (Appendix 4). If you see hybrids which are not listed, provide detailed notes, drawings, photos, etc. to document your sighting.

Rare breeding birds. Species with CAPITALIZED names in the species list (Appendix 4) require additional documentation. Please use the SDOU Rare Birds Report to document details of your sighting.

Recording habitat. Record the habitat that BEST describes the area where you found a bird or its nest, using the categories and codes listed in Appendix 3. Write both the category code and the sub-category code, if there is one. For example, a bird seen in a wheat field would be recorded as '7b'. If you are uncertain which habitat code applies in a situation, describe the habitat in the notes section. If you find a nest, please provide details of the nest site (e.g., under a bridge, 30 ft up in a cottonwood tree).

Recording bird location. To map breeding bird distribution, we need to know bird location. If no location is given, we map the location as the center point of the block. For *Possible* and *Probable* observations, we encourage you to provide a more precise location but this is optional. Locations of *Confirmed* breeding observations are very important and we ask that you provide as precise a location as possible, such as latitude-longitude in decimal degrees (*dd.ddddd*, *-ddd.ddddd*), UTM coordinates, or Township-Range-Section-Quarter-section.

Other issues.

Volunteer Agreement and Volunteer Hours forms. Documenting your hours spent atlasing on the Volunteer Hours form is very important for helping to finance atlas activities. In doing so, you are supporting the atlas by allowing us to leverage your efforts as in-kind match for federal dollars that are covering much of the costs of the atlas.

Completing the Volunteer Agreement form is optional. The atlas coordinator will need basic contact information to communicate with you, which you can provide either by filling in the Volunteer Agreement form or by contacting the coordinator in some other way. If you wish to provide more information or to become an official RMBO volunteer, complete the entire form.

Land access issues. Know who owns a parcel of land before going onto it. This information can be obtained from the internet, county plat books, the county assessors office, or by inquiring at houses nearby. Locations of federal and state public lands are available from the South Dakota Hunting Atlas, issued annually by the Dept. of Game, Fish, and Parks or online at <http://www.sdgifp.info/Wildlife/PublicLands/PubLand.htm>

- *Private land:* Always talk to a landowner before going on private land. A landowner letter explaining the breeding bird atlas is included in the volunteer packet. Walk-in areas are privately-owned land which gives access permission to hunters. This permission is in effect only during hunting season, NOT during the period when most atlas surveys are conducted. You will need to contact the landowner to use walk-in areas for your surveys.
- *Tribal land:* Double-check land ownership on reservations. Tribal-owned or tribal-trust land is NOT public land. Do not go onto these properties without the express permission of tribal authorities. These areas often are posted or can be designated as 'USA Trust' on maps.
- *Public land:* You do not need permission to survey on federal public areas (Bureau of Land Management land, Waterfowl Production Areas, National Wildlife Refuges, Corps of Engineer land, National Parks, National Forest, or National Grasslands) or state public land (Game Productin Areas, state parks, or state recreation areas). Note that some public areas require an entrance fee. State-owned School & Public Lands are often leased for livestock grazing - we recommend that you treat these areas the same as you would for private land.
- *Section lines:* Section lines are the boundaries of Public Land Survey sections and occur every mile. In theory, section lines are public access. However, some counties have vacated miles of section lines, closing them to public access. If a section line is not clearly a road or 'prairie track', talk to the owner(s) of the land on either side to avoid disputes, especially if the section line is gated or is part of a pasture.

Submitting your data. Please send your data forms to the atlas coordinator by September 15. When sending data, make copies of your forms and send the originals. If you wish to enter your own data into an Excel spreadsheet, contact the coordinator for the template.

OBSERVATIONS OUTSIDE OF BLOCKS

Outside of blocks, the atlas encourages everyone to submit observations of CONFIRMED breeding by any species anywhere within the state. The Breeding Codes list (Appendix 2) explains which behaviors are considered a confirmation of breeding. Record these observations on the Extra Observations form. If you prefer to enter your data into the SDOU online database (www.sdou.org click on Seasonal Reporting), please make sure to include the specific location of the bird.

The South Dakota Natural Heritage Program tracks populations of certain rare, limited distribution, or declining species (Appendix 5). Record all *Possible, Probable, and Confirmed* breeding observations of these species outside of blocks on the Extra Observations Form.

CONTACT INFORMATION

For general information, to volunteer, or to submit data:

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email: SDatlascoordinator@rmbo.org

For general information, to make a donation, or to become a sponsor:

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More information, as well as downloads of Atlas materials, can be found at:
<http://www.rmbo.org/SDBBA2>.

Appendix 1

HELPFUL RESOURCES

Online:

- SDBBA2 web site: <http://www.rmbo.org/SDBBA2>
- South Dakota Ornithologists' Union: <http://www.sdou.org>
- South Dakota birds: <http://sdakotabirds.com>
- Birding in South Dakota: <http://travelsd.com/thingstodo/birding.asp>
- Peterson, Richard A. 1995. The South Dakota Breeding Bird Atlas. South Dakota Ornithologists' Union. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwr.usgs.gov/resource/distr/birds/sdatlas/sdatlas.htm>
- SDGFP Wildlife Diversity Program: www.sdqfp.info/Wildlife/Diversity/index.htm

Books:

- Backlund, Doug and Eileen Dowd-Stukel. 2006. Owls of South Dakota. South Dakota Dept. of Game, Fish and Parks, Wildlife Div. Rpt. No. 2007-01.
- Dowd-Stukel, Eileen. 2003. Shorebirds of South Dakota. South Dakota Dept. of Game, Fish and Parks, Wildlife Div. Rpt. No. 2003-13.
- Peterson, Richard A. 1995. The South Dakota Breeding Bird Atlas. South Dakota Ornithologists' Union. Aberdeen, SD.
- Tallman, D.A., D.L. Swanson, and J.S. Palmer. 2002. Birds of South Dakota. Midstates/Quality Quick Print, Aberdeen, SD. 441pp.

Field Guides:

1. A Field Guide to the Birds of Eastern and Central North America. by Roger Tory Peterson
2. A Field Guide to Western Birds. by Roger Tory Peterson
3. National Geographic Field Guide to the Birds of North America, 5th ed. by Jon L. Dunn.
4. Birds of North America, revised and updated (Golden Field guide). by Chandler Robbins
5. The Sibley Guide to Birds. by David Allen Sibley
6. The Sibley Guide to Birds of Eastern North America. by David Allen Sibley
7. The Sibley Guide to Birds of Western North America. by David Allen Sibley
8. The Sibley Guide to Bird Lives and Behavior. David Allen Sibley
9. A Field Guide to the Nests, Eggs and Nestlings of North American Birds, 2nd edition. by Colin Harrison
10. The Birder's Handbook: a Field Guide to the Natural History of North American Birds. by Paul Ehrlich, David Dobkin & Darryl Wheye. (possibly out of print).

Software (bird identification)

1. Guide to Birds of North America v.3.9 (windows) - Thayer's Birding Software
2. North American Bird Reference Book v. 5.0 - Lanius
3. Avisys Song - Avisys

Bird Song CDs:

Eastern and central U.S.

1. Bird Song Ear Training Guide: Who Cooks for Poor Sam Peabody? Learn to recognize songs of birds from the Midwest and Northeastern States. by John Feith.
2. Birding by Ear: Eastern and Central North America. by Richard Walton. (85 common species)
3. More Birding by Ear: Eastern and Central North America: a Guide to Bird-song Identification. by Richard Walton. (96 more species)
4. Stokes Field Guide to Bird Songs: Eastern region. by Donald Stokes
5. A Field Guide to Bird Songs: Eastern and Central North America (in association with Peterson Field Guide). by Cornell Lab of Ornithology

Western U.S.

1. Birding by Ear: Western. by Peterson Books
2. Backyard Bird Song (in association with Peterson Field Guides). by Richard Walton.
3. Stokes Field Guide to Bird Songs: Western Region. by Kevin Colver
4. Western Bird Songs. by Peterson Books.

Other

1. Voices of North American Owls. by Cornell Lab of Ornithology

Appendix 2

BREEDING STATUS & BEHAVIOR CODES

Status Code	Behavior Code	Description
Observed (O)	O	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.
	?	Species (male or female) observed in suitable habitat during its breeding season.
Possible (PO)	X	Singing male present in suitable habitat during its breeding season.
	M	Multiple males of a single species singing within a block in a single visit during their breeding season.
Probable (PR)	P	Pair observed in suitable nesting habitat during its breeding season.
	S	Song at same location on at least 2 occasions 7 or more days apart.
	T	Territory defense observed (chasing of individuals of same species) - presumed permanent territory.
	C	Courtship behavior, or copulation .
	N	Visiting potential nest -site.
	A	Agitated behavior or anxiety calls from adult.
	B	Nest building by wrens or eagles; hole excavation by woodpeckers.
	CN	Carrying nesting materials (sticks, grass, hair, etc.).
Confirmed (CO)	NB	Nest building by all species except eagles, wrens, woodpeckers.
	PE	Physiological evidence based on bird in hand: highly vascularized, edematous incubation/brood patch, or egg in oviduct.
	DD	Distraction display or injury feigning.
	UN	Used nests or eggshells found. CAUTION: these must be carefully identified to be accepted.
	PY	Precocial young . Flightless chicks of precocial species restricted to the natal area by limited mobility or dependence on adult.
	FL	Recently fledged young incapable of sustained flight, restricted to natal area by limited mobility or dependence on adult.
	ON	Occupied nest : adults entering or leaving a nest site in circumstances indicating an occupied nest. Use this code for nests too high or enclosed to view the contents.
	CF	Carrying food : adult carrying food for the chicks.
	FY	Adult feeding recently fledged young .
	FS	Adult carrying fecal sac .
	NE	Nest with eggs **
	NY	Nest with young seen or heard**

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

Appendix 3

HABITAT CODES

Habitat Categories	
1	Upland forest, woodland, shelterbelt, treeline 1a Deciduous 1b Coniferous 1c Mixed
2	Lowland forest, woodland (riparian, floodplain, woody draw) 2a Deciduous 2b Coniferous 2c Mixed
3	Shrubland 3a Upland (e.g., sagebrush, greasewood, sumac) 3b Lowland
4	Grassland 4a Pasture 4b Hayfield 4c Weedy field (invading shrubs, trees) 4d Undisturbed grassland
5	Wetland 5a Marsh (water with emergent vegetation) 5b Fen, wet meadow
6	Open water 6a Lake, pond 6b River, creek
7	Cropland 7a Row crop (corn, soybeans, sunflowers) 7b Wheat or small grains 7c Other
8	Special 8a Burned area with standing snags 8b Prairie dog town 8c Scattered single trees in grassland 8d Barren or very sparsely vegetated (sandbars, badlands, mudflats, etc.)
9	Human environment 9a Residential, buildings, yard, feedlot, abandoned farm 9b Mine, quarry, gravel pit 9c Road, ditch
10	Other (describe)

Appendix 4

Breeding Species List, Safe Dates, and Special Species

Common Name	AOU Code	Safe Dates
Canada Goose	CAGO	4/15 - 7/31
Trumpeter Swan	TRUS	5/1 - 7/31
Wood Duck	WODU	5/1 - 7/31
Mallard	MALL	5/1 - 7/31
Northern Pintail	NOPI	5/1 - 7/31
Common Merganser	COME	5/1 - 7/31
Gadwall	GADW	5/15 - 7/31
American Wigeon	AMWI	5/15 - 7/31
American Black Duck	ABDU	5/15 - 7/31
Blue-winged Teal	BWTE	5/15 - 7/31
Cinnamon Teal	CITE	5/15 - 7/31
Northern Shoveler	NSHO	5/15 - 7/31
Green-winged Teal	AGWT	5/15 - 7/31
Canvasback	CANV	5/15 - 7/31
Redhead	REDH	5/15 - 7/31
HOODED MERGANSER	HOME	5/15 - 7/31
Ruddy Duck	RUDU	5/15 - 7/31
Ring-necked Duck	RNDU	5/15 - 7/31
Lesser Scaup	LESC	5/15 - 7/31
BUFFLEHEAD	BUFF	5/15 - 7/31
COMMON GOLDENEYE	COGO	5/15 - 7/31
Gray Partridge	GRPA	3/1 - 7/31
Ring-necked Pheasant	RINP	3/1 - 7/31
Ruffed Grouse	RUGR	3/1 - 7/31
Greater Sage-Grouse	GRSG	3/1 - 7/31
Sharp-tailed Grouse	STGR	3/1 - 7/31

Common Name	AOU Code	Safe Dates
Greater Prairie-Chicken	GRPC	3/1 - 7/31
Wild Turkey	WITU	3/1 - 7/31
Northern Bobwhite	NOBO	3/1 - 7/31
COMMON LOON	COLO	6/1 - 7/31
Pied-billed Grebe	PBGR	5/1/ - 7/31
Horned Grebe	HOGR	6/1 - 7/31
Red-necked Grebe	RNGR	5/15 - 7/31
Eared Grebe	EAGR	5/15 - 7/31
Western Grebe	WEGR	5/15 - 7/31
Clark's Grebe	CLGR	5/15 - 7/31
American White Pelican	AWPE	5/1/ - 7/31
Double-crested Cormorant	DCCO	5/15 - 7/31
American Bittern	AMBI	5/25 - 7/31
Least Bittern	LEBI	6/1 - 7/31
Great Blue Heron	GBHE	4/15 - 7/31
Great Egret	GREG	6/1 - 7/31
Snowy Egret	SNEG	6/1 - 7/31
Little Blue Heron	LBHE	6/1 - 7/31
TRICOLORED HERON	TRHE	6/1 - 7/31
Cattle Egret	CAEG	6/1 - 7/31
Green Heron	GRHE	5/15 - 7/31
Black-crowned Night-Heron	BCNH	5/15 - 7/31
YELLOW-CROWNED NIGHT HERON	YCNH	6/1 - 7/31
GLOSSY IBIS	GLIB	5/15 - 7/31
White-faced Ibis	WFIB	5/15 - 7/31
Turkey Vulture	TUVU	5/1 - 7/31

Common Name	AOU Code	Safe Dates
Osprey	OSPR	5/15 - 7/31
Bald Eagle	BAEA	5/15 - 7/31
Northern Harrier	NOHA	5/1 - 7/31
Sharp-shinned Hawk	SSHA	5/15 - 7/31
Cooper's Hawk	COHA	4/15 - 7/31
Northern Goshawk	NOGO	4/15 - 7/31
RED-SHOULDERED HAWK	RSHA	5/1 - 7/31
Broad-winged Hawk	BWHA	5/15 - 7/31
Swainson's Hawk	SWHA	5/1 - 7/31
Red-tailed Hawk	RTHA	4/15 - 7/31
Ferruginous Hawk	FEHA	4/15 - 7/31
Golden Eagle	GOEA	3/1 - 7/31
American Kestrel	AMKE	4/15 - 7/31
Merlin	MERL	5/1 - 7/31
Peregrine Falcon	PEFA	5/15 - 7/31
Prairie Falcon	PRFA	4/15 - 7/31
YELLOW RAIL	YERA	6/1 - 7/31
KING RAIL	KIRA	6/1 - 7/31
Virginia Rail	VIRA	5/15 - 7/31
Sora	SORA	5/15 - 7/31
COMMON MOORHEN	COMO	6/1 - 7/31
American Coot	AMCO	5/1 - 7/31
SNOWY PLOVER	SNPL	5/15 - 7/31
Piping Plover	PIPL	5/1 - 7/31
Killdeer	KILL	5/1 - 7/31
MOUNTAIN PLOVER	MOUP	5/15 - 7/31
BLACK-NECKED STILT	BNST	6/1 - 7/31
American Avocet	AMAV	5/15 - 7/31
Willet	WILL	6/1 - 7/31
Spotted Sandpiper	SPSA	5/15 - 7/31

Common Name	AOU Code	Safe Dates
Upland Sandpiper	UPSA	5/15 - 7/31
Long-billed Curlew	LBCU	5/1 - 7/31
Marbled Godwit	MAGO	5/15 - 7/31
Wilson's Snipe	WISN	5/1 - 7/31
American Woodcock	AMWO	4/15 - 7/31
Wilson's Phalarope	WIPH	5/15 - 7/31
Franklin's Gull	FRGU	6/1 - 7/31
Ring-billed Gull	RBGU	6/1 - 7/31
California Gull	CAGU	6/1 - 7/31
HERRING GULL	HERG	6/1 - 7/31
CASPIAN TERN	CATE	6/1 - 7/31
Common Tern	COTE	6/1 - 7/31
Forster's Tern	FOTE	6/1 - 7/31
Least Tern	LETE	5/1 - 7/31
Black Tern	BLTE	6/1 - 7/31
Rock Pigeon	ROPI	3/1 - 8/31
BAND-TAILED PIGEON	BTPI	6/1 - 7/31
Eurasian Collared-Dove	EUCD	4/15 - 8/31
Mourning Dove	MODO	4/15 - 8/31
Black-billed Cuckoo	BBCU	6/1 - 7/31
Yellow-billed Cuckoo	YBCU	6/1 - 7/31
Barn Owl	BNOW	3/1 - 9/30
Eastern Screech-Owl	EASO	3/1 - 7/31
Great Horned Owl	GHOW	2/1 - 7/31
Burrowing Owl	BUOW	5/1 - 7/31
BARRED OWL	BDOW	4/1 - 7/31
Long-eared Owl	LEOW	3/1 - 7/31
Short-eared Owl	SEOW	5/1 - 7/31
Northern Saw-whet Owl	NSWO	4/1 - 7/31
Common Nighthawk	CONI	6/1 - 7/31

Common Name	AOU Code	Safe Dates
Common Poorwill	COPO	5/15 - 7/31
CHUCK-WILL'S-WIDOW	CWWI	6/1 - 7/31
Whip-poor-will	WPWI	6/1 - 7/31
Chimney Swift	CHSW	5/15 - 7/31
White-throated Swift	WTSW	5/1 - 7/31
Ruby-throated Hummingbird	RTHU	6/1 - 7/31
BROAD-TAILED HUMMINGBIRD	BTLH	5/25 - 7/15
Belted Kingfisher	BEKI	5/15 - 7/31
Lewis's Woodpecker	LEWO	5/1 - 7/31
Red-headed Woodpecker	RHWO	5/1 - 7/31
Red-bellied Woodpecker	RBWO	4/15 - 7/31
Yellow-bellied Sapsucker	YBSA	5/1 - 7/31
Red-naped Sapsucker	RNSA	5/1 - 7/31
Downy Woodpecker	DOWO	3/1 - 7/31
Hairy Woodpecker	HAWO	3/1 - 7/31
American Three-toed Woodpecker	ATTW	4/1 - 7/31
Black-backed Woodpecker	BBWO	4/1 - 7/31
Northern Flicker - Red-shafted	RSFL	4/15 - 7/31
Northern Flicker - Yellow-shafted	YSFL	4/15 - 7/31
Northern Flicker - hybrid	XFL	4/15 - 7/31
Pileated Woodpecker	PIWO	4/1 - 7/31
OLIVE-SIDED FLYCATCHER	OSFL	6/1 - 7/31
Western Wood-Pewee	WEWP	6/1 - 7/31
Eastern Wood-Pewee	EAWP	6/1 - 7/31
ALDER FLYCATCHER	ALFL	6/5 - 7/31
Willow Flycatcher	WIFL	5/25 - 7/31
Least Flycatcher	LEFL	5/25 - 7/31
HAMMOND'S FLYCATCHER	HAFL	6/1 - 7/31
Dusky Flycatcher	DUFL	5/25 - 7/31
Cordilleran Flycatcher	COFL	5/25 - 7/31
Eastern Phoebe	EAPH	4/15 - 7/31

Common Name	AOU Code	Safe Dates
Say's Phoebe	SAPH	5/1 - 7/31
Great Crested Flycatcher	GCFL	5/20 - 7/31
CASSIN'S KINGBIRD	CAKI	6/1 - 7/31
Western Kingbird	WEKI	5/20 - 7/31
Eastern Kingbird	EAKI	5/20 - 7/31
SCISSOR-TAILED FLYCATCHER	STFL	6/1 - 7/31
Loggerhead Shrike	LOSH	4/15 - 7/31
WHITE-EYED VIREO	WEVI	6/1 - 7/31
Bell's Vireo	BEVI	5/25 - 7/31
Yellow-throated Vireo	YTVI	5/25 - 7/31
Plumbeous Vireo	PLVI	5/25 - 7/31
Warbling Vireo	WAVI	5/25 - 7/31
Red-eyed Vireo	REVI	5/25 - 7/31
Gray Jay	GRAJ	3/1 - 7/31
Blue Jay	BLJA	4/15 - 7/31
Pinyon Jay	PIJA	4/1 - 7/31
Clark's Nutcracker	CLNU	4/1 - 7/31
Black-billed Magpie	BBMA	4/1 - 7/31
American Crow	AMCR	4/1 - 7/31
COMMON RAVEN	CORA	5/1 - 7/31
Horned Lark	HOLA	4/1 - 7/31
Purple Martin	PUMA	5/1 - 7/31
Tree Swallow	TRES	5/1 - 7/31
Violet-green Swallow	VGSW	5/15 - 7/31
Northern Rough-winged Swallow	NRWS	5/15 - 7/31
Bank Swallow	BANS	5/15 - 7/31
Cliff Swallow	CLSW	5/15 - 7/31
Barn Swallow	BARS	5/15 - 7/31
Black-capped Chickadee	BCCH	3/1 - 7/31
MOUNTAIN CHICKADEE	MOCH	5/15 - 7/31
TUFTED TITMOUSE	ETTI	6/1 - 7/31

Common Name	AOU Code	Safe Dates
Red-breasted Nuthatch	RBNU	4/1 - 7/31
White-breasted Nuthatch	WBNU	4/1 - 7/31
Pygmy Nuthatch	PYNU	4/1 - 7/31
Brown Creeper	BRCR	4/1 - 7/31
Rock Wren	ROWR	5/15 - 7/31
Canyon Wren	CANW	4/1 - 7/31
BEWICK'S WREN	BEWR	5/15 - 7/31
House Wren	HOWR	5/15 - 7/31
WINTER WREN	WIWR	6/1 - 7/31
Sedge Wren	SEWR	6/1 - 7/31
Marsh Wren	MAWR	5/15 - 7/31
American Dipper	AMDI	4/1 - 7/31
Golden-crowned Kinglet	GCKI	5/15 - 7/31
Ruby-crowned Kinglet	RCKI	4/15 - 7/31
Blue-gray Gnatcatcher	BGGN	5/25 - 7/31
Eastern Bluebird	EABL	5/1 - 7/31
Mountain Bluebird	MOBL	4/15 - 7/31
Townsend's Solitaire	TOSO	5/1 - 7/31
Veery	VEER	6/10 - 7/31
Swainson's Thrush	SWTH	6/10 - 7/31
HERMIT THRUSH	HETH	6/1 - 7/31
Wood Thrush	WOTH	6/1 - 7/31
American Robin	AMRO	4/15 - 7/31
Gray Catbird	GRCA	5/20 - 7/31
Northern Mockingbird	NOMO	5/15 - 7/31
Sage Thrasher	SATH	5/15 - 7/31
Brown Thrasher	BRTH	5/15 - 7/31
European Starling	EUST	4/15 - 7/31
Sprague's Pipit	SPPI	5/15 - 7/31
Cedar Waxwing	CEDW	6/1 - 7/31
BLUE-WINGED WARBLER	BWWA	5/25 - 7/31

Common Name	AOU Code	Safe Dates
GOLDEN-WINGED WARBLER	GWWA	5/25 - 7/31
NASHVILLE WARBLER	NAWA	5/20 - 7/31
Virginia's Warbler	VIWA	5/20 - 7/31
NORTHERN PARULA	NOPA	5/25 - 7/31
Yellow Warbler	YWAR	5/20 - 7/31
CHESTNUT-SIDED WARBLER	CSWA	5/25 - 7/31
Yellow-rumped Warbler	YRWA	5/25 - 7/31
PRAIRIE WARBLER	PRAW	5/25 - 7/31
CERULEAN WARBLER	CERW	5/25 - 7/31
Black-and-white Warbler	BAWW	5/25 - 7/31
American Redstart	AMRE	5/25 - 7/31
PROTHONOTARY WARBLER	PROW	5/25 - 7/31
Ovenbird	OVEN	5/25 - 7/31
KENTUCKY WARBLER	KEWA	5/25 - 7/31
MacGillivray's Warbler	MGWA	5/25 - 7/31
Common Yellowthroat	COYE	5/20 - 7/31
HOODED WARBLER	HOWA	5/20 - 7/31
Yellow-breasted Chat	YBCH	5/25 - 7/31
SUMMER TANAGER	SUTA	5/25 - 7/31
Scarlet Tanager	SCTA	6/1 - 7/31
Western Tanager	WETA	6/1 - 7/31
GREEN-TAILED TOWHEE	GTTO	5/25 - 7/31
Spotted Towhee	SPTO	5/15 - 7/31
Eastern Towhee	EATO	5/15 - 7/31
CASSIN'S SPARROW	CASP	5/25 - 7/31
Chipping Sparrow	CHSP	5/20 - 7/31
Clay-colored Sparrow	CCSP	5/25 - 7/31
Brewer's Sparrow	BRSP	5/15 - 7/31
Field Sparrow	FISP	5/20 - 7/31
Vesper Sparrow	VESP	5/20 - 7/31
Lark Sparrow	LASP	5/20 - 7/31

Common Name	AOU Code	Safe Dates
SAGE SPARROW	SAGS	5/25 - 7/31
Lark Bunting	LARB	5/20 - 7/31
Savannah Sparrow	SAVS	5/15 - 7/31
Grasshopper Sparrow	GRSP	5/20 - 7/31
Baird's Sparrow	BAIS	5/15 - 7/31
HENSLOW'S SPARROW	HESP	6/1 - 7/31
Le Conte's Sparrow	LCSP	6/1 - 7/31
Nelson's Sharp-tailed Sparrow	NSTS	6/1 - 7/31
Song Sparrow	SOSP	5/15 - 7/31
Swamp Sparrow	SWSP	5/15 - 7/31
Dark-eyed (White-winged) Junco	WWJU	5/1 - 7/31
MCCOWN'S LONGSPUR	MCLO	5/25 - 7/31
Chestnut-collared Longspur	CCLO	5/1 - 7/31
Northern Cardinal	NOCA	4/15 - 7/31
Rose-breasted Grosbeak	RBGR	5/25 - 7/31
Black-headed Grosbeak	BHGR	5/25 - 7/31
Hybrid - Black-headed x Rose-breasted Grosbeak	HGR	5/25 - 7/31
Blue Grosbeak	BLGR	6/1 - 7/31
Lazuli Bunting	LAZB	5/25 - 7/31
Indigo Bunting	INBU	6/1 - 7/31
Hybrid Lazuli x Indigo Bunting	HBU	5/25 - 7/31
Dickcissel	DICK	6/1 - 7/31
Bobolink	BOBO	5/20 - 7/31
Red-winged Blackbird	RWBL	4/15 - 7/31
Eastern Meadowlark	EAME	4/15 - 7/31
Western Meadowlark	WEME	4/15 - 8/5
Yellow-headed Blackbird	YHBL	5/15 - 7/31
Brewer's Blackbird	BRBL	5/15 - 7/31
Common Grackle	COGR	5/1 - 7/31

Common Name	AOU Code	Safe Dates
Great-tailed Grackle	GTGR	5/1 - 7/31
Brown-headed Cowbird	BHCO	5/1 - 7/31
Orchard Oriole	OROR	5/25 - 7/31
Bullock's Oriole	BUOR	5/25 - 7/31
Baltimore Oriole	BAOR	5/25 - 7/31
Hybrid - Baltimore x Bullock Oriole	HOR	5/25 - 7/31
PINE GROSBEAK	PIGR	5/1 - 7/31
Cassin's Finch	CAFI	5/1 - 7/31
House Finch	HOFI	5/1 - 7/31
Red Crossbill	RECR	3/1 - 7/31
White-winged Crossbill	WWCR	5/1 - 7/31
Pine Siskin	PISI	5/1 - 7/31
LESSER GOLDFINCH	LEGO	5/15 - 7/31
American Goldfinch	AMGO	6/1 - 8/30
Evening Grosbeak	EVGR	6/1 - 7/31
House Sparrow	HOSP	3/1 - 7/31

Appendix 5

Species Monitored by the SD Natural Heritage Program

Horned Grebe	Sharp-Shinned Hawk	Olive-Sided Flycatcher
Red-Necked Grebe	Cooper's Hawk	Cassin's Kingbird
Clark's Grebe	Northern Goshawk	Clark's Nutcracker
American White Pelican	Broad-Winged Hawk	Pygmy Nuthatch
Great Blue Heron	Swainson's Hawk	Brown Creeper
Great Egret	Ferruginous Hawk	American Dipper
Snowy Egret	Golden Eagle	Blue-Gray Gnatcatcher
Little Blue Heron	Merlin	Veery
Tricolored Heron	Peregrine Falcon	Wood Thrush
Green-Backed Heron	Prairie Falcon	Northern Mockingbird
Black-Crowned Night-Heron	Whooping Crane	Sage Thrasher
Yellow-Crowned Night-Heron	Mountain Plover	Sprague's Pipit
White-Faced Ibis	Long-Billed Curlew	Yellow-Throated Vireo
Piping Plover	American Woodcock	Black-And-White Warbler
Black-Necked Stilt	Barn Owl	Cerulean Warbler
California Gull	Burrowing Owl	Virginia's Warbler
Common Tern	Long-Eared Owl	Scarlet Tanager
Interior Least Tern	Northern Saw-Whet Owl	Brewer's Sparrow
Black Tern	Flammulated Owl	Baird's Sparrow
Least Bittern	Common Poorwill	Henslow's Sparrow
Bufflehead	Chuck-will's-widow	Le Conte's Sparrow
Hooded Merganser	Whip-Poor-Will	Sharp-Tailed Sparrow
Common Merganser	Ruby-Throated Hummingbird	Mccown's Longspur
Yellow Rail	Lewis' Woodpecker	Eastern Meadowlark
King Rail	Three-Toed Woodpecker	Cassin's Finch
Osprey	Black-Backed Woodpecker	
Bald Eagle	Pileated Woodpecker	

