

**THREATENED, ENDANGERED, AND NONGAME  
BIRD AND MAMMAL INVESTIGATIONS**

**Wyoming Game and Fish Department  
Nongame Program  
Biological Services Section**

**Annual Completion Report**

**Period Covered:  
15 April 2006 to 14 April 2007**

**Edited by: Andrea Orabona Cerovski**

**May 2007**

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## INTRODUCTION

The Nongame Program of the Wyoming Game and Fish Department (Department) was initiated in July 1977. This report summarizes data collected from 15 April 2006 to 14 April 2007 on various nongame bird and mammal surveys and projects conducted by Department personnel, other government agencies, non-governmental organizations, and individuals in cooperation with the Department. Cooperating agencies and individuals are listed in the individual completion reports, but we recognize that the listing does not completely credit the valuable contributions of the many cooperators, including Wyoming Game and Fish Department District Wildlife Biologists and members of the public.

In October of 1987, a Nongame Strategic Plan was distributed; this plan was updated and renamed in May of 1996. The 1996 Nongame Bird and Mammal Plan (Plan) presents objectives and strategies for the management and study of nongame birds and mammals in Wyoming. As part of the State Wildlife Grants funding program to provide long-term conservation planning for those species most in need, information was gleaned from the Plan and other pertinent sources and compiled into A Comprehensive Wildlife Conservation Strategy for Wyoming, which was approved by the Wyoming Game and Fish Commission on 12 July 2005. This Nongame Annual Completion Report presents information in four major sections similar to these planning efforts: threatened and endangered species, species of greatest conservation need, raptors taken for falconry, and other nongame surveys.

This report serves several purposes. First, it provides summaries of nongame surveys for the benefit of other agencies and individuals that need this information for management purposes. Second, it provides a permanent record of summarized data for future use. Although some of this information is in lengthy tables, it was felt that these data should be published rather than kept in the files of the Nongame Program staff. Some information, such as Bald Eagle and Ferruginous Hawk nest sites and bat roost locations, is sensitive and is not provided in this document. Those needing this information for purposes that will lead to better management of these species can request the data from the Nongame Program staff.

Common bird names used in this report follow the most recent American Ornithologists' Union guidelines and supplements cited in Appendix I. Mammal names follow the "Revised checklist of North American mammals north of Mexico, 1997" cited in Appendix I. Scientific names for birds and mammals are presented in Appendix I.

## **THREATENED AND ENDANGERED SPECIES**

# **BALD EAGLE COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Threatened Species / State Wildlife Grants Funding – Bald Eagle

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Laurie Van Fleet, Nongame Biologist  
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## **INTRODUCTION**

The Bald Eagle (*Haliaeetus leucocephalus*) is currently classified as a threatened species. The Wyoming Game and Fish Department (Department) initiated statewide surveys in 1978. Significant numbers of nesting and wintering eagles were located, crucial habitat was delineated, and appropriate management recommendations were provided.

## **POPULATION TRENDS – NESTING**

The distribution of nesting Bald Eagles in Wyoming was presented in previous Annual Completion Reports. Bald Eagles nesting in northwestern Wyoming are part of a significant nesting population in the Rocky Mountain West. The population extends into Idaho and Montana. A Bald Eagle Working Team for the Greater Yellowstone Ecosystem (GYE) was formed to aid in coordinating management and data collection.

Statewide results are presented in Table 1. Objectives have been exceeded since 1987 and the population has continued to increase. Surveys in 2006 attained adequate production data for 118 nesting territories, with 88 pairs producing 95 young. However, we have now recorded over 145 locations where Bald Eagles have nested in the State since 1978, when nesting Bald Eagles could be located in only 20 locations statewide.

**LITERATURE CITED**

McEneaney, T. 2006. Yellowstone Bird Report, 2006. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming. YCR-NR-2007-01.

**Table 1. Production of Bald Eagles in Wyoming, 2006.**

	Wyoming Portion of GYE <sup>a</sup>	North Platte <sup>b</sup> (S of I-80)	Other Areas <sup>c</sup>	Statewide Total
Population Index				
Territories Checked	103	--	15	118
Number Occupied	75	--	13	88
Percent Occupied	73	--	87	75
Number of Young Fledged	76	--	19	95
Young Fledged/Occupied Territory	1.0	--	1.4	1.1

<sup>a</sup> Includes 35 pairs that fledged 6 young in Yellowstone National Park (McEneaney 2006).

<sup>b</sup> Occupancy and production surveys were not conducted on the North Platte in 2006.

<sup>c</sup> Includes Green River, Wind River, Popo Agie River, Big Horn Basin, Casper, Sheridan, Cody, and Lusk areas. Nests checked for occupancy but not production were not included in final table.

**BLACK-FOOTED FERRET RELEASES IN THE SHIRLEY BASIN/ MEDICINE  
BOW MANAGEMENT AREA, WYOMING  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME MAMMALS: Endangered Species – Black-Footed Ferret

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Rene L. Schell, Nongame Biologist  
Martin Grenier, Nongame Mammal Biologist

**INTRODUCTION**

From 1991 to 1994, 228 black-footed ferrets were released in Shirley Basin, Wyoming. Black-footed ferret releases were terminated in 1994 as a result of a sylvatic plague epizootic and a declining white-tailed prairie dog population in Primary Management Zone 1 (PMZ 1). Survey efforts outside of PMZ 1 in recent years have documented an increasing prairie dog population within the Shirley Basin/Medicine Bow prairie dog complex (Grenier et al. 2006a). Partly due to this increase in prairie dog populations, black-footed ferret releases were initiated again in the fall and winter of 2005/2006. At that time, 140 ferrets were released into two new areas within the Shirley Basin/Medicine Bow Black-footed Ferret Management Area (Grenier et al. 2006b).

Black-footed ferret releases were continued for a second year during the fall and winter of 2006/2007. An initial shortage of captive black-footed ferrets precluded us from releasing ferrets at both locations in 2006. The Shirley Rim site (Figure 1) was selected as the priority site in 2006 because prairie dog colonies are larger and closer in proximity than the Arlington site. Shirley Rim is approximately 15 miles (24 km) northwest of the established population at the Shirley Basin site. All ferrets released were captive-born animals.

The goal of these releases is to continue working to establish a meta-population of black-footed ferrets within the Shirley Basin/Medicine Bow Black-footed Ferret Management Area (Management Area). The establishment of a meta-population should protect ferrets in the Management Area against stochastic events (e.g. sylvatic plague, canine distemper) by increasing the distribution of the species and introducing additional genetics into the population.

## **METHODS**

All landowners were contacted prior to the initiation of releases in their area for support and permission. Black-footed ferrets were hand released onto known prairie dog colonies. Burrows were located during the twilight hours prior to the releases on most occasions. In January, when deeper snows covered prairie dog burrows, burrows were located the morning of the release and flagged to facilitate identification after dark.

The U.S. Fish and Wildlife Service Ferret Conservation Center (FCC) and the Turner Endangered Species Fund raised and preconditioned all black-footed ferrets prior to being released. All ferrets were picked up from the FCC near Carr, Colorado the day of releases.

Ferrets were released into the burrows from pet kennels, which were used to transport the captive ferrets to the release site. Burrow location was recorded using a handheld GPS unit (Garmin 12XL). Any prairie dog remains still in the pet kennel after the ferret had been released were tossed into the prairie dog burrow into which the ferret had been released. If more than one release site was used on a given day, ferrets were split as evenly as possible between the sites by age and sex. Releases were planned for the twilight hours of the day and often carried on after dark.

## **RESULTS**

Between 11 September 2006 and 17 January 2007, 110 black-footed ferrets were released into the Management Area (Table 1). All of the ferrets were captive-born. Black-footed ferrets were released on both private and public lands.

The smallest number of ferrets released on a given day was 10 and the largest number was 18. Black-footed ferrets released on each colony are summarized by age and sex in Table 1. Colonies where black-footed ferret releases occurred are shown in Figure 1. Details on each of the 110 released black-footed ferrets are presented in Table 2.

## **DISCUSSION**

These releases marked the second year of a two-year black-footed ferret release effort. In the event that canine distemper and sylvatic plague are documented in areas where ferrets were released, all contingency plans that were developed for the original Shirley Basin population will be followed (Luce and Oakleaf 1994a, 1994b).

Ferrets are allocated by the U.S. Fish and Wildlife Service to recovery partners through a competitive ranking process. The initial shortage of captive black-footed ferrets was due to an increase in allocation requests by ferret recovery partners. Several sites (e.g. Kansas and Wind Cave National Park) were initially ranked ahead of Wyoming for allocations. However, due to logistical problems (e.g. political and legal), allocations

were not awarded to these sites and instead were awarded to Shirley Basin. This resulted in a significant increase in the number of ferrets received in 2006. Unfortunately, due to the short notice of the availability of ferrets, it was logistically easier to release all ferrets at one location.

After release, ferrets appeared to behave normally. Several were observed hunting and exploring, and a few did not surface again during the brief period observers were present. No effort was made to do 30-day post release surveys in 2006.

This approach is designed to evaluate the feasibility of a low-cost, hands-off approach to black-footed ferret reintroduction. If this approach is successful, it will greatly increase the ability to reduce costs associated with this reintroduction program. This approach is consistent with objectives and guidelines set forth in the Shirley Basin/Medicine Bow Management Plan (SBWG 1991).

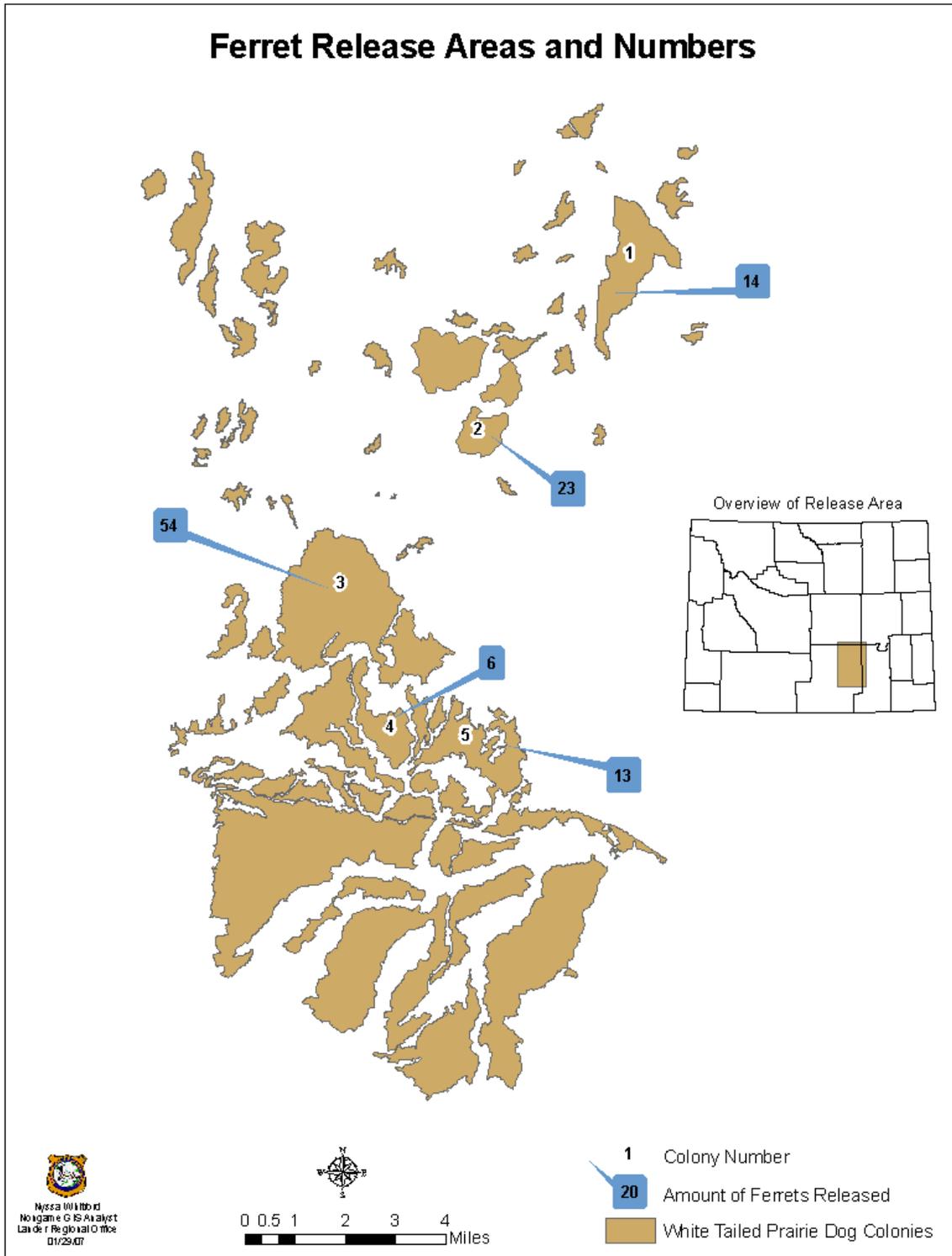
## **ACKNOWLEDGEMENTS**

The Wyoming Game and Fish Department extends special thanks to the Bates Creek Cattle Company, George Ranch, and the Q Creek Land and Cattle Company, for generously allowing access to their property for the release of black-footed ferrets during the fall of 2006. Thanks are extended to Nyssa Whitford, the Department's Nongame Program GIS Analyst, for creating the map in this document. We would also like to thank the Bureau of Land Management for their continued support of recovery efforts within the Management Area. Thanks are also extended to the Turner Endangered Species Fund for their assistance with preconditioning the captive born kits for Wyoming. Lastly, the Department would like to recognize and thank the Barrett Oil Company and Biodiversity Conservation Alliance for providing financial support for this project.

## **LITERATURE CITED**

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- Luce, B., and B. Oakleaf. 1994a. Shirley Basin/Medicine Bow black-footed ferret management area sylvatic plague contingency plan. Pages 97-100 in B. Luce, B. Oakleaf, E.T. Thorne, and E.S. Williams, editors. Black-footed Ferret Reintroduction in Shirley Basin, Wyoming, 1993 Annual Completion Report. Wyoming Game and Fish Department, Cheyenne. 114pp.
- Luce, B., and B. Oakleaf. 1994b. Shirley Basin/Medicine Bow black-footed ferret management area canine distemper contingency plan. Pages 101-105 in B. Luce, B. Oakleaf, E.T. Thorne, and E.S. Williams, editors. Black-footed Ferret Reintroduction in Shirley Basin, Wyoming, 1993 Annual Completion Report. Wyoming Game and Fish Department, Cheyenne. 114pp.
- (SBWG) Shirley Basin/Medicine Bow Black-footed Ferret Working Group. 1991. A Cooperative Management Plan for Black-footed Ferrets in Shirley Basin/Medicine Bow, Wyoming. Wyoming Game and Fish Department, Cheyenne.



**Figure 1. Approximate locations and numbers of black-footed ferrets released at Shirley Rim site within the Shirley Basin/ Medicine Bow Black-footed Ferret Management Area, Wyoming, 2006.**

**Table 1. Black-footed ferrets released at each colony by age and sex in the Shirley Basin/Medicine Bow Black-footed Ferret Management Area, Wyoming, 2006.**

Colony Number	Adult Female	Adult Male	Juvenile Female	Juvenile Male	Total
1	4	0	2	8	14
2	6	4	9	4	23
3	9	3	18	24	54
4	1	0	1	4	6
5	1	0	8	4	13
Total	21	7	38	44	110

**Table 2. Black-footed ferrets released in the Shirley Basin/Medicine Bow Black-footed Ferret Management Area, Wyoming during the fall of 2006.**

Date	Release Site	Place of Origin <sup>1</sup>	BFF #	Age/Sex	Transponder # Head	Transponder # Rear
9/11/06	3	FCC	3768	AF	124-811-524A	
9/11/06	3	FCC	3769	AF	124-775-321A	
9/11/06	2	FCC	3914	AF	049-033-278	
9/11/06	2	FCC	3949	AF	032-617-835	
9/11/06	1	FCC	3951	AF		107-114-830
9/11/06	2	FCC	3979	AF	042-818-770	
9/11/06	2	FCC	4006	AF	057-030-324	
9/11/06	3	FCC	3850	AM	057-043-782	
9/11/06	3	FCC	3939	AM	056-889-279	
9/11/06	2	FCC	4117	AM	056-842-637	
9/11/06	2	FCC	4424	AM	068-857-336	068-827-784
9/11/06	3	FCC	4920	AM	107-279-858	107-127-824
9/11/06	3	FCC	5116	JF		057-261-782
9/11/06	3	FCC	5121	JF		056-895-298
9/11/06	2	FCC	5122	JF		057-360-380
9/11/06	2	FCC	5119	JM		057-127-361
9/11/06	3	FCC	5120	JM		057-592-374
9/18/06	4	FCC	4287	AF	056-862-336	098-812-795
9/18/06	4	FCC	5117	JF		056-894-849
9/18/06	3	FCC	5118	JF		056-851-337
9/18/06	3	FCC	5186	JF	107-123-071	
9/18/06	4	FCC	5115	JM		057-269-330
9/18/06	3	FCC	5127	JM		057-371-074
9/18/06	3	FCC	5132	JM		056-863-875
9/18/06	3	FCC	5133	JM		056-871-098
9/18/06	4	FCC	5182	JM	107-126-844	
9/18/06	4	FCC	5183	JM	107-115-608	
9/18/06	4	FCC	5185	JM	107-309-084	
10/10/06	1	FCC	3735	AF	048-782-288	
10/10/06	1	FCC	4360	AF	065-881-357	
10/10/06	3	FCC	5360	JM		081-377-768
10/10/06	1	FCC	5128	JF		057-003-007
10/10/06	3	FCC	5198	JF	145-163-191A	
10/10/06	3	FCC	5205	JF	145-339-124A	
10/10/06	3	FCC	5239	JF		098-603-583
10/10/06	3	FCC	5271	JF		107-285-842
10/10/06	3	FCC	5157	JM	145-179-214A	
10/10/06	3	FCC	5195	JM	145-248-717A	
10/10/06	1	FCC	5196	JM	136-018-361A	
10/10/06	1	FCC	5201	JM	136-176-244A	
10/10/06	1	FCC	5225	JM		098-071-312
10/10/06	3	FCC	5226	JM		098-111-579
10/10/06	1	FCC	5227	JM		098-080-306
10/10/06	1	FCC	5267	JM		107-269-565
10/10/06	3	FCC	5268	JM		107-115-041
10/24/06	1	FCC	3734	AF	048-603-369	
10/24/06	3	FCC	4582	AF	069-382-360	

**Table 2. Continued.**

Date	Release Site	Place of Origin <sup>1</sup>	BFF #	Age/Sex	Transponder # Head	Transponder # Rear
10/24/06	3	FCC	5265	JF	107-263-639	
10/24/06	1	FCC	5377	JF		098-078-538
10/24/06	1	FCC	5199	JM	136-217-194A	
10/24/06	3	FCC	5202	JM	145-471-632A	
10/24/06	3	FCC	5261	JM	107-127-796	
10/24/06	3	FCC	5262	JM	107-285-597	
10/24/06	3	FCC	5290	JM		098-635-856
10/24/06	3	FCC	5291	JM		098-788-285
10/24/06	1	FCC	5297	JM	107-123-515	
10/24/06	1	FCC	5298	JM	107-256-606	
11/16/06	3	FCC	4465	AF	076-811-614	076-638-524
11/16/06	2	FCC	5279	JF		107-261-010
11/16/06	3	FCC	5222	JF		098-534-060
11/16/06	2	FCC	5312	JF	107-262-559	
11/16/06	3	FCC	5223	JF		098-341-036
11/16/06	2	FCC	5162	JF	145-511-111A	
11/16/06	3	FCC	5154	JF		056-890-591
11/16/06	2	FCC	5163	JF	145-165-296A	
11/16/06	3	FCC	5435	JM		081377261
11/16/06	2	FCC	5434	JM		074306533
11/16/06	3	FCC	5311	JM	107-286-518	
11/16/06	2	FCC	5276	JM		107-305-627
12/5/06	2	FCC	4401	AF	069-382-624	
12/5/06	3	FCC	4575	AF	057-537-348	
12/5/06	3	FCC	4212	AF	057-554-076	098-799-104
12/5/06	3	FCC	4031	AF	056-874-563	
12/5/06	2	FCC	4381	AF	088-004-297	
12/5/06	2	FCC	3946	AM	056-892-815	
12/5/06	2	FCC	5056	AM	032-618-822	
12/5/06	2	FCC	5450	JF	081-378-284	
12/5/06	2	FCC	5394	JF	NONE GIVEN	NONE GIVEN
12/5/06	2	FCC	UNK	JF	A107-290-553	
12/5/06	2	FCC	5382	JF		081-379-008
12/5/06	3	FCC	5461	JF		081-378-559
12/5/06	3	FCC	5422	JF		074-288-094
12/5/06	2	FCC	5275	JM		107-296-552
12/5/06	3	FCC	5410	JM		081-376-518
12/5/06	3	FCC	5209	JM	042-768-636	
12/5/06	3	FCC	5406	JM		074-035-596
12/5/06	3	FCC	5420	JM		073-771-326
12/19/06	3	FCC	4459	AF	080-014-043	057-544-629
12/19/06	3	FCC	5022	AF		107-256-091
12/19/06	3	FCC	5465	JF		081-378-768
12/19/06	3	FCC	5124	JF	042-804-842	
12/19/06	3	FCC	5373	JF		07-3623-597
12/19/06	3	FCC	5464	JF		081-377-600
12/19/06	3	FCC	5210	JM	043-312-115	
12/19/06	3	FCC	5430	JM		073-618-625

**Table 2. Continued.**

Date	Release Site	Place of Origin <sup>1</sup>	BFF #	Age/Sex	Transponder # Head	Transponder # Rear
12/19/06	3	FCC	5426	JM		074-256-566
12/19/06	3	FCC	5419	JM		073-327-552
1/17/07	5	FCC	4650	AF	102-620-545	107-306-880
1/17/07	5	FCC	5142	JF		107-269-298
1/17/07	5	FCC	5416	JF		073-771-278
1/17/07	5	FCC	5417	JF		073-829-769
1/17/07	5	FCC	5418	JF		073-352-302
1/17/07	5	FCC	5460	JF		081-377-514
1/17/07	5	FCC	5466	JF		081-377-814
1/17/07	5	FCC	5472	JF		081-376-631
1/17/07	5	FCC	5474	JF		081-377-106
1/17/07	5	FCC	5392	JM		070-022-013
1/17/07	5	FCC	5412	JM		073-771-258
1/17/07	5	FCC	5448	JM	107-278-877	081-376-560
1/17/07	5	FCC	5462	JM		081-377-596

# **SPOTLIGHTING FOR FREE RANGING BLACK-FOOTED FERRETS IN THE SHIRLEY BASIN/MEDICINE BOW MANAGEMENT AREA, WYOMING COMPLETION REPORT**

STATE OF WYOMING

NONGAME MAMMALS: Endangered Species – Black-footed Ferret

PERIOD COVERED: 15 April 2006 - 14 April 2007

PREPARED BY: Martin Grenier, Nongame Mammal Biologist  
Laurie Van Fleet, Nongame Biologist  
Bob Oakleaf, Nongame Coordinator  
Rene Schell, Nongame Biologist  
Matt Wells, Nongame Biologist

## **INTRODUCTION**

From 1991 to 1994, 228 black-footed ferrets were released in Shirley Basin, Wyoming. Black-footed ferret releases were terminated in 1994 as a result of a sylvatic plague epizootic and a declining prairie dog population. Spotlight surveys for black-footed ferrets were conducted in 1991-1997, 2000-2001, and again in 2003-2006. No black-footed ferret surveys were conducted in 1998, 1999, and 2002. Attempts were made to capture and mark all ferrets located during the 2003-2006 surveys.

Following the initial releases (1991-1994), black-footed ferrets persisted in Shirley Basin at low levels ( $\leq 24$  ferrets detected per survey) in the presence of sylvatic plague and canine distemper epizootics. Since 1997, when only five ferrets were detected, the minimum number alive (Krebs 1966, MNA) has increased dramatically each year. Shirley Basin remains the longest running reintroduction site in North America, spanning nearly 15 years.

## **METHODS**

Spotlight survey areas were established prior to the start of surveying based on available time and personnel and the interspersion of two-track and other roads within Shirley Basin. Surveyors were assigned survey areas based on accessibility. Areas accessible only by foot were approximately 300 acres (121 ha) in size. Survey areas accessible entirely or partially by vehicle were approximately 600 acres (242 ha) in size. Actual survey areas varied by prairie dog colony and were highlighted on photocopies of 7.5-minute quadrangle maps.

Spotlighting surveys on individual survey areas were conducted for three consecutive nights (Clarke et al. 1984, Campbell et al. 1985, USFWS 1989). Vehicles equipped with roof-mounted Lightforce 1,000,000 candle power spotlights and/or hand held 200,000 to 400,000 candle power Q Beam spotlights were repeatedly driven along two-track roads in prairie dog colonies, along county roads, and State Highways 77 and 487 where they traversed prairie dog towns. Sections of prairie dog towns that were not surveyable from a vehicle were traversed by personnel wearing a backpack unit. Backpack units were equipped with a 12-volt gel-cell battery (Dynasty # U1-31) and a 200,000-candle power Q Beam spotlight or a Lightforce Walkabout portable spotlight kit with a 30-watt spotlight. Batteries were recharged as necessary.

## RESULTS

Surveys were planned for a total of 12 days during August and September 2006. During the 12 nights of surveys, personnel spent a total 1033.25 hours spotlighting. Survey efforts are summarized in Table 1. A total of 290.25 hours were spent spotlighting from vehicles and an additional 743 survey hours were on foot. Survey hours were approximately 2000 to 0100 and 0200 to 0600 (MST) each night. In 2006, 18 prairie dog colonies were surveyed in their entirety, encompassing 20,862 acres (8,370 ha) (Figure 1). Colonies  $\leq 150$  acres (61 ha) were not surveyed. We estimate that about 15% of the potential prairie dog acreage in Shirley Basin was surveyed during the summer of 2006. Over 379 observations of ferrets were made during the survey. A minimum of 193 discreet black-footed ferrets and 45 ferret litters were observed (Table 2). Of the 193 ferrets observed, a minimum of 39 were adults and 50 were kits. A minimum of 186 non-discreet black-footed ferrets were observed (Table 2). Approximate ferret litter and adult male locations are presented in Figure 2.

Concurrent with spotlight surveys, 119 ferrets were captured (Table 3). Captured black-footed ferrets were immobilized using isoflurane (Kreeger et al. 1998) and injected with AVID® passive integrated transponder implants (PIT-tags) and uniquely marked with hair dye. Blood samples were collected from ferrets in 2006 and are presented in Table 4. Blood samples were taken from 102 of 119 captured ferrets. Ferrets were assigned to juvenile or adult age classes by palpation of the sagittal crest, examination of dentition and tooth wear, and reproductive status (Thorne et al. 1985). Following a brief recovery period, ferrets were returned to the burrow from which they were captured. All ferrets captured were in good physical condition. Most ferrets had very few ( $\leq 10$ ) ectoparasites (e.g. fleas and ticks).

Sightings of species other than black-footed ferrets during summer surveys totaled 429. Observation times are presented in Table 5. Swift fox, badger, and long-tailed weasel were the most commonly observed species (Figure 3). Swift fox required only 4 survey hours per observation while red fox required 517 survey hours per observation (Figure 4). No attempt was made to eliminate repeat sightings of non-target species. One ferret was observed approximately every 2.7 hours, and a discreet black-footed ferret was observed only once per 5.6 survey hours (Figure 4).

## **DISCUSSION**

Spotlighting has been, and remains an effective technique for locating black-footed ferrets (Campbell et al. 1985, Hnilicka and Luce 1992). However, this technique was not developed to monitor population trends. It was developed to determine distribution and reproduction, and to observe individual behaviors. As such, the current MNA reported lacks a variance estimate necessary to track changes in population size. Despite this drawback, the MNA estimate has increased dramatically in recent years, indicating an increase in the black-footed ferret population in Shirley Basin. It is assumed that an unknown proportion of the black-footed ferret population remains undetected during the surveys, but no correction method exists for the MNA estimates. Efforts are underway, with cooperation from the University of Wyoming, to compare the MNA estimate to a more robust mark-recapture estimate.

Surveys results since 2000 indicate that the black-footed ferret population in the Shirley Basin/Medicine Bow Management Area is recovering from the stochastic events (e.g. sylvatic plague, canine distemper, flooding) that caused population declines prior to 1997. The increase in detections of black-footed ferrets in the last four survey years is believed to be a result of increased prairie dog abundance in Shirley Basin. The ferret population is currently increasing in abundance and distribution within the study area. We suspect that distribution and abundance is also increasing outside of the study area, although no data exist to quantify this change.

The capture data indicate that ferrets are in very good physical and reproductive condition. All observed and captured adult females either showed signs of lactation or were observed in the presence of juveniles. We detected no physical abnormalities or genetic defects in 2006 ( $n = 118$ ). A few animals tested positive for tularemia ( $n = 7$ ) and distemper ( $n = 3$ ); however, we do not believe these results to be major sources of concern. Undoubtedly, a small fraction of individuals will always show titers, as these diseases are common in Shirley Basin. We do not, however, believe that these results indicate that major epizootics recently occurred in Shirley Basin.

Survey timing for ferrets represents a balance between several factors, including age and independence of juveniles. As the survey season progresses, juvenile ferrets become increasingly easier to capture; however, it becomes increasingly difficult to determine litter kinship. The time period in which we conducted our surveys (i.e. mid-August to mid-September) remains the best time for achieving MNA estimate of this population. Juveniles are sufficiently independent that they are readily captured; yet few individuals migrate outside of the surveyor's boundary during the three-night survey block.

## **ACKNOWLEDGEMENTS**

Special thanks are extended to the Heward Ranch and Q Creek Land and Cattle Company who generously allowed access to their property for black-footed ferret

spotlight surveys during the summer of 2006. We would also like to thank the following Department personnel: T. Filipi, J. Henningsen, J. Jennings, J. Kettley, L. Knox, B. Krueger, E. Rose, E. Tretters, and the following volunteers: K. Andres, T. Barrier, V. Biasotti, S. Gray, A. Marcus, R. Pigg, S. Sutherland, J. Whiteman, and M. Wilson, as well as T. Livieri of Prairie Wildlife Research, for their assistance during the surveys.

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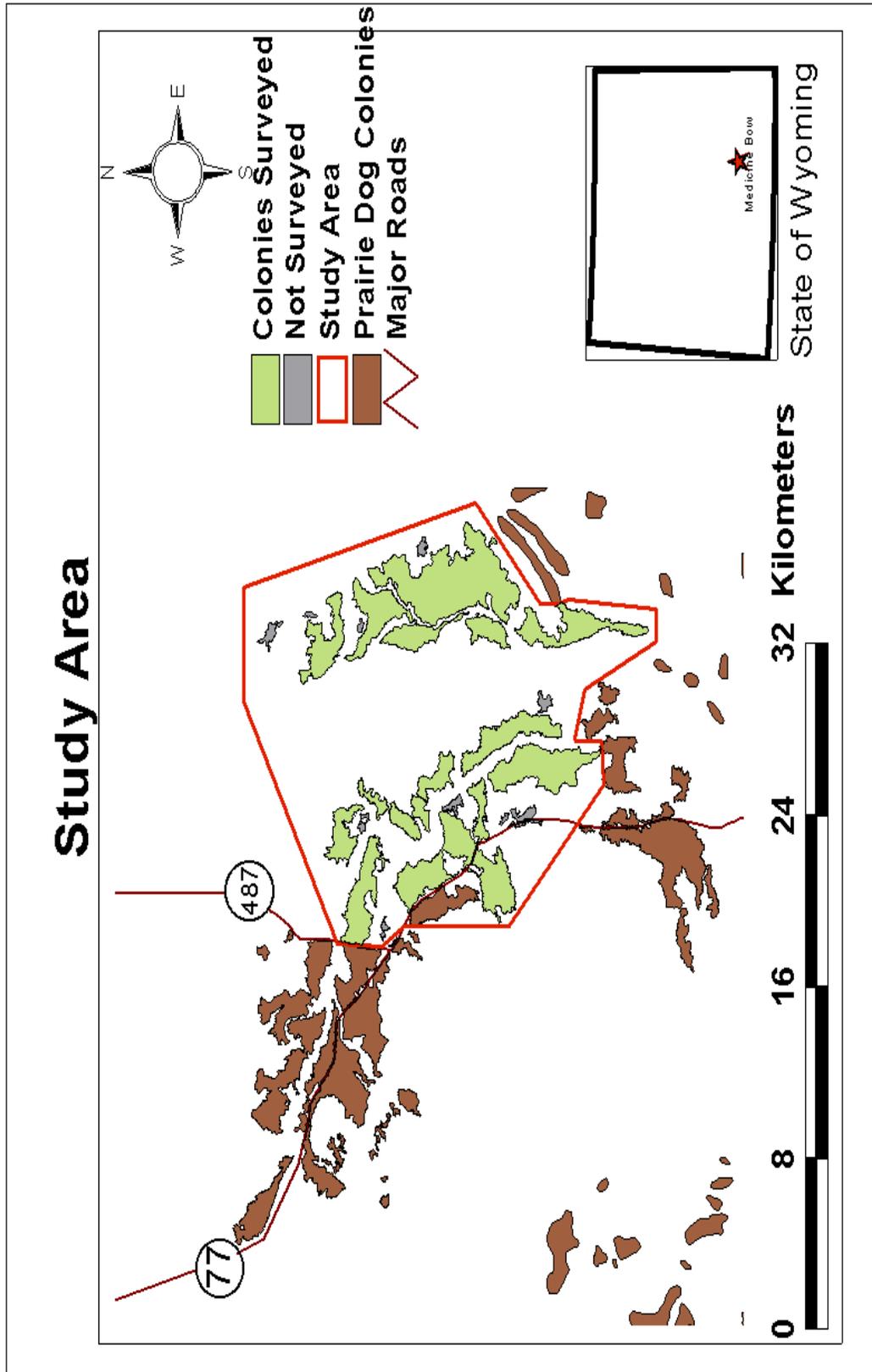


Figure 1. White-tailed prairie dog colonies surveyed in Shirley Basin, Wyoming, 2006.

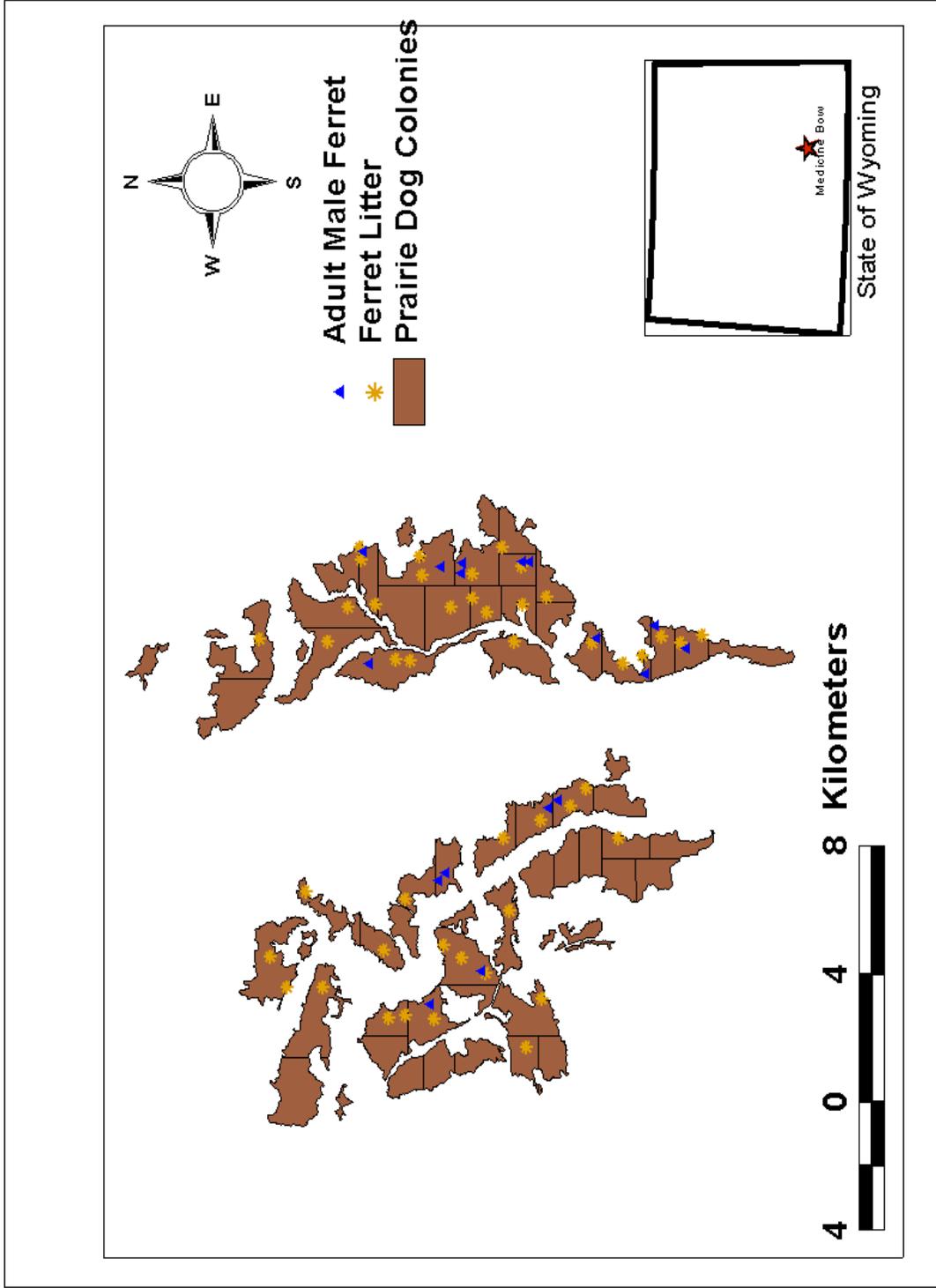


Figure 2. Locations of black-footed ferret litters and adult males in Shirley Basin, Wyoming, 2006.

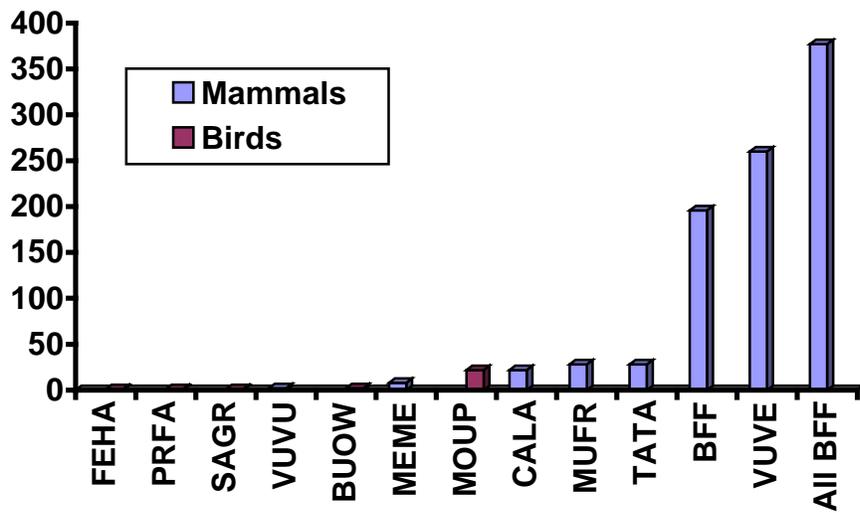


Figure 3. Number of sightings of all species observed during spotlight surveys in Shirley Basin, Wyoming, 2006.

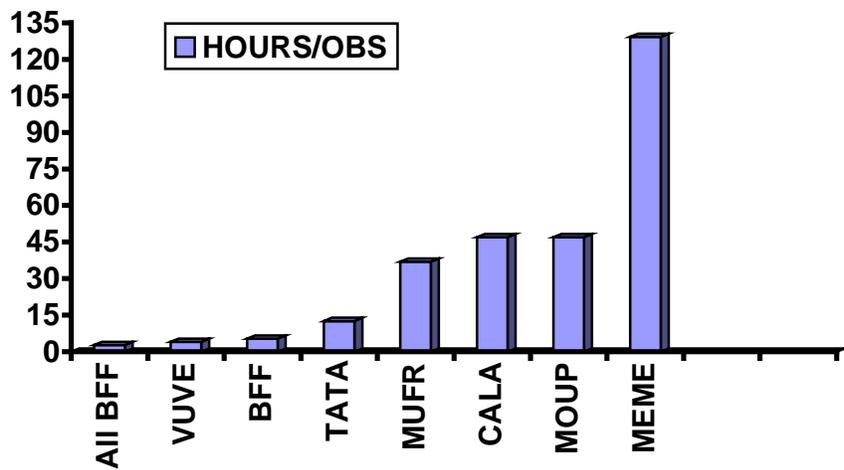


Figure 4. Number of hours surveyed per observation for each of the 10 most commonly observed species during 1033.25 hours of spotlight surveys in Shirley Basin, Wyoming, August 2006.

**Table 1. Black-footed ferret observations during spotlight surveys conducted in August and September in Shirley Basin, Wyoming, 2006.**

*Discrete Sightings*

Obs #	Date	Obs time	Colony	Observer	Age	Sex	Comments
1	8/15/2006	3:45	520-3	J.Jennings			
2	8/15/2006	3:45	520-3	J.Jennings			
3	8/15/2006	3:45	520-3	J.Jennings			
4	8/15/2006	4:35	520-3	J.Jennings			
5	8/15/2006	1:14	520-1	M.Grenier			
6	8/15/2006	1:24	520-1	M.Grenier	J	F	
7	8/15/2006	3:02	520-1	M.Grenier	J	M	
8	8/15/2006	3:06	520-1	M.Grenier	A	M	
9	8/15/2006	3:20	520-1	M.Grenier	J	M	
10	8/15/2006	3:35	520-1	M.Grenier	J	F	
11	8/15/2006	3:45	520-1	M.Grenier	J	M	
12	8/15/2006	3:47	520-1	M.Grenier	J	F	
13	8/15/2006	3:49	520-1	M.Grenier			
14	8/16/2006	20:35	520-1	M.Grenier			escaped
15	8/16/2006	1:56	520-1	M.Grenier	J	M	
16	8/16/2006	3:55	520-1	M.Grenier	A	F	
17	8/16/2006	3:58	520-1	M.Grenier	J	M	
18	8/16/2006	4:58	520-1	M.Grenier	J	F	
19	8/15/2006	2:54	519-1	E.Rose			escaped
20	8/16/2006	21:38	519-1	E.Rose	J	M	
21	8/16/2006	21:38	519-1	E.Rose			
22	8/17/2006	21:15	519-1	E.Rose			
23	8/17/2006	2:26	519-1	E.Rose			
24	8/15/2006	22:00	519-2	S.Gray			
25	8/15/2006	00:30	519-2	S.Gray	A	F	
26	8/15/2006	3:00	519-2	S.Gray			
27	8/15/2006	3:00	519-2	S.Gray			
28	8/17/2006	21:15	519-2	S.Gray	J	M	
29	8/17/2006	21:15	519-2	S.Gray	J	M	
30	8/15/2006	00:30	529	T.Filipi			
31	8/15/2006	3:30	529	T.Filipi			
32	8/15/2006	4:45	529	T.Filipi			
33	8/16/2006	2:30	529	T.Filipi	J	M	
34	8/16/2006	2:30	529	T.Filipi			
35	8/16/2006	3:30	529	T.Filipi	J	M	
36	8/16/2006	3:35	529	T.Filipi			
37	8/17/2006	21:10	529	T.Filipi	A	F	
38	8/17/2006	21:10	529	T.Filipi	J	M	
39	8/17/2006	3:45	529	T.Filipi			unmarked

**Table 1. Continued.**

*Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
40	8/15/2006	3:52	510-2	J.Kettley			
41	8/15/2006	1:10	509-1	L.Knox	A	F	
42	8/15/2006	1:10	509-1	L.Knox			
43	8/15/2006	3:09	509-1	L.Knox			
44	8/15/2006	3:09	509-1	L.Knox			
45	8/15/2006	4:35	518	E.Tretter			
46	8/15/2006	2:15	527-1	B.Krueger			
47	8/16/2006	4:20	527-1	B.Krueger			
48	8/16/2006	4:20	527-1	B.Krueger			
49	8/15/2006	4:50	509-2	J.Whiteman			
50	8/16/2006	20:40	509-2	J.Whiteman			
51	8/16/2006	20:40	509-2	J.Whiteman			
52	8/17/2006	20:40	509-2	J.Whiteman	J	F	
53	8/17/2006	20:40	509-2	J.Whiteman	J	M	
54	8/17/2006	23:40	509-2	J.Whiteman	A	M	unmarked
55	8/21/2006	2:50	517-2	L.Knox	A	M	
56	8/23/2006	3:54	517-2	L.Knox	A	M	
57	8/21/2006	3:50	515	M.Grenier	A	F	
58	8/23/2006	20:10	515	M.Grenier	J	M	
59	8/23/2006	20:10	515	M.Grenier			unmarked
60	8/21/2006	21:05	517-1	M.Grenier	J	F	
61	8/21/2006	21:45	517-1	M.Grenier	J	M	
62	8/21/2006	4:20	521-3	B.Krueger			
63	8/21/2006	4:50	521-3	B.Krueger			
64	8/22/2006	20:45	521-1	K.Andres			
65	8/22/2006	21:00	521-1	K.Andres			
66	8/23/2006	20:30	521-1	K.Andres			
67	8/22/2006	5:00	521-3	B.Krueger			
68	8/22/2006	5:00	521-3	B.Krueger			
69	8/22/2006	5:00	521-3	B.Krueger			
70	8/23/2006	22:40	510-4	E.Rose	J	M	
71	8/23/2006	23:25	510-4	E.Rose			
72	8/23/2006	4:25	510-4	E.Rose			
73	8/21/2006	4:15	509-3	V.Biacotti			
74	8/21/2006	4:15	509-3	V.Biacotti			
75	8/21/2006	5:34	509-3	V.Biacotti			
76	8/22/2006	22:26	509-3	V.Biacotti			
77	8/23/2006	4:30	509-3	V.Biacotti	J	M	
78	8/21/2006	2:30	520-2	R.Schell	A	F	
79	8/21/2006	4:00	520-2	R.Schell			unmarked

**Table 1. Continued.**

*Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
80	8/21/2006	4:00	520-2	R.Schell	J	M	
81	8/21/2006	4:00	520-2	R.Schell			
82	8/22/2006	20:45	520-2	R.Schell	A	F	
83	8/22/2006	20:45	520-2	R.Schell			
84	8/22/2006	20:45	520-2	R.Schell			
85	8/23/2006	20:25	520-2	R.Schell			
86	8/23/2006	21:00	520-2	R.Schell	J	F	
87	8/23/2006	21:00	520-2	R.Schell			
88	8/23/2006	21:00	520-2	R.Schell	J	M	
89	8/23/2006	22:25	520-2	R.Schell			not sure of mark
90	8/24/2006	1:50	520-2	T.Liveri	A	F	
91	8/24/2006	1:50	520-2	T.Liveri			
92	8/24/2006	1:50	520-2	T.Liveri			
93	8/29/2006	3:40	554-1	T.Filipi			3 individuals
94	8/29/2006	4:20	554-1	T.Filipi			3 individuals
95	8/29/2006	4:20	554-1	T.Filipi			3 individuals
96	8/30/2006	20:50	554-1	T.Filipi			
97	8/30/2006	20:50	554-1	T.Filipi			
98	8/30/2006	5:33	551-1	L.Knox			
99	8/29/2006	4:05	551-2	J.Kettley			escaped, dug around
100	8/30/2006	23:30	551-2	J.Kettley			
101	8/29/2006	20:35	558	T.Barrier			unknown burrow
102	8/29/2006	22:40	558	T.Barrier			unknown burrow
103	8/30/2006	2:35	558	T.Barrier			triggered trap
104	8/29/2006	20:35	555	R.Schell	A	M	
105	8/29/2006	20:37	555	R.Schell			
106	8/29/2006	20:37	555	R.Schell			
107	8/29/2006	20:40	555	R.Schell	J	M	
108	8/29/2006	20:45	555	R.Schell	A	F	
109	8/29/2006	20:45	555	R.Schell	J	F	
110	8/30/2006	3:45	555	R.Schell	J	F	
111	8/30/2006	5:50	555	R.Schell			unmarked
112	8/30/2006	5:55	555	R.Schell			unmarked
113	8/30/2006	6:05	555	R.Schell			unmarked
114	8/29/2006	4:45	559-1	M.Wilson			
115	8/29/2006	5:30	559-1	M.Wilson			
116	8/29/2006	5:30	559-1	M.Wilson			
117	8/30/2006	21:15	559-1	M.Wilson			
118	8/31/2006	6:15	559-1	M.Wilson			
119	8/29/2006	21:30	554-2	B.Oakleaf			

**Table 1. Continued.**

*Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
120	8/29/2006	21:30	554-2	B.Oakleaf			
121	8/29/2006	21:45	554-2	B.Oakleaf			
122	8/29/2006	22:00	554-2	B.Oakleaf			
123	8/29/2006	4:15	559-4	E.Tretter			
124	8/29/2006	4:15	559-4	E.Tretter	A	F	
125	8/30/2006	20:36	559-4	E.Tretter	J	M	
126	8/30/2006	20:36	559-4	E.Tretter			
127	8/30/2006	20:36	559-4	E.Tretter	A	F	
128	8/30/2006	20:50	559-4	E.Tretter	A	M	
129	8/31/2006	4:15	559-4	E.Tretter			
130	8/29/2006	22:50	559-3	E.Rose	A	F	
131	8/29/2006	5:10	559-2	B.Krueger			
132	8/30/2006	3:49	559-3	E.Rose	A	M	
133	8/31/2006	20:31	559-3	E.Rose	J	F	
134	8/31/2006	22:43	559-3	E.Rose	J	M	unmarked
135	8/29/2006	23:35	559-2	B.Krueger			
136	8/29/2006	5:30	559-2	B.Krueger			
137	8/29/2006	5:30	559-2	B.Krueger			
138	8/30/2006	20:20	559-2	B.Krueger			
139	8/30/2006	20:20	559-2	B.Krueger			
140	8/30/2006	5:20	559-2	B.Krueger	A	F	
141	9/5/2006	2:30	556-4	B.Oakleaf	J	M	
142	9/6/2006	00:15	556-6	R.Schell			
143	9/6/2006	00:15	556-6	R.Schell			unknown burrow
144	9/7/2006	2:45	556-3	E.Rose			unknown burrow
145	9/7/2006	3:30	556-3	E.Rose	A	F	
146	9/7/2006	3:30	556-3	E.Rose			
147	9/5/2006	23:20	556-4	B.Oakleaf	J	F	
148	9/5/2006	00:15	556-3	E.Rose	J	M	
149	9/5/2006	3:40	556-3	E.Rose	A	F	
150	9/5/2006	4:30	556-3	E.Rose			
151	9/6/2006	20:13	556-3	E.Rose	A	F	
152	9/6/2006	22:26	556-3	E.Rose	A	M	
153	9/6/2006	00:45	556-3	E.Rose	J	M	
154	9/5/2006	0:10	556-2	L.Knox	A	F	
155	9/5/2006	2:30	556-2	L.Knox	J	F	
156	9/6/2006	21:10	556-2	L.Knox	J	F	
157	9/6/2006	22:13	556-2	L.Knox	J	M	
158	9/6/2006	22:50	556-2	L.Knox	A	M	
159	9/5/2006	00:55	556-2	L.Knox	J	M	

**Table 1. Continued.**

*Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
160	9/5/2006	00:55	556-2	L.Knox	A	F	
161	9/5/2006	03:15	556-2	L.Knox	J	F	
162	9/5/2006	03:15	556-2	L.Knox	J	M	
163	9/5/2006	20:30	556-6	R.Schell	J	M	
164	9/7/2006	3:00	556-7	E.Tretter	A	F	
165	9/7/2006	3:30	556-6	R.Schell			
166	9/5/2006	21:00	556-8	J.Kettley			
167	9/5/2006	21:00	556-8	J.Kettley			
168	9/5/2006	21:00	556-8	J.Kettley			
169	9/5/2006	21:30	556-8	J.Kettley	A	M	
170	9/5/2006	22:15	556-7	E.Tretter			
171	9/5/2006	22:30	556-5	T.Filipi	J	F	
172	9/5/2006	22:50	556-8	J.Kettley	A	M	
173	9/5/2006	4:00	556-8	J.Kettley	A	M	
174	9/6/2006	21:15	556-8	J.Kettley	J	F	
175	9/6/2006	2:45	556-8	J.Kettley			
176	9/6/2006	2:45	556-8	J.Kettley			
177	9/6/2006	2:45	556-8	J.Kettley			
178	9/6/2006	2:45	556-8	J.Kettley	J	M	
179	9/7/2006	23:15	556-8	J.Kettley	A	F	
180	9/5/2006	1:00	556-10	J.Henningsen	J	M	
181	9/6/2006	5:20	556-10	J.Henningsen			
182	9/7/2006	21:10	556-10	J.Henningsen	J	F	
183	9/7/2006	22:45	556-10	J.Henningsen	J	M	
184	9/5/2006	1:42	556-7	E.Tretter	A	F	
185	9/6/2006	22:58	556-7	E.Tretter			
186	9/6/2006	2:10	556-7	E.Tretter			
187	9/6/2006	4:28	556-7	E.Tretter	A	F	
188	9/7/2006	21:15	556-7	E.Tretter			
189	9/7/2006	2:50	556-7	E.Tretter	J	F	
190	9/7/2006	5:50	556-7	E.Tretter			
191	9/5/2006	3:30	556-5	T.Filipi	A	M	
192	9/6/2006	23:55	556-5	T.Filipi	A	M	
193	9/6/2006	00:07	556-5	T.Filipi	A	F	

**Table 1. Continued.**

*Non-Discrete Sightings*

Obs #	Date	Obs time	Colony	Observer	Age	Sex	Comments
1	8/16/2006	2:50	520-3	J.Jennings	J	F	
2	8/16/2006	2:50	520-3	J.Jennings	J	M	
3	8/16/2006	3:00	520-3	J.Jennings	J	M	
4	8/16/2006	3:35	520-3	J.Jennings			
5	8/16/2006	4:25	520-3	J.Jennings	A	F	
6	8/16/2006	20:20	520-1	M.Grenier	A	M	SB0551
7	8/16/2006	1:59	520-1	M.Grenier	A	F	
8	8/16/2006	2:55	520-1	M.Grenier	J	M	
9	8/16/2006	2:55	520-1	M.Grenier	J	F	
10	8/16/2006	3:15	520-1	M.Grenier	J	F	
11	8/16/2006	4:26	520-1	M.Grenier	J	M	
12	8/17/2006	20:48	520-1	M.Grenier	J	M	
13	8/17/2006	20:48	520-1	M.Grenier	J	F	
14	8/16/2006	4:45	519-1	E.Rose			same as #37
15	8/17/2006	20:52	519-1	E.Rose			dug around trap
16	8/17/2006	21:31	519-1	E.Rose			
17	8/17/2006	2:26	519-1	E.Rose			
18	8/16/2006	21:00	519-2	S.Gray	A	F	
19	8/16/2006	2:05	529	T.Filipi			
20	8/16/2006	2:40	529	T.Filipi			
21	8/16/2006	5:05	529	T.Filipi			
22	8/16/2006	5:15	529	T.Filipi			
23	8/17/2006	20:35	529	T.Filipi			
24	8/17/2006	20:40	529	T.Filipi			
25	8/17/2006	20:45	529	T.Filipi			
26	8/17/2006	20:45	529	T.Filipi			
27	8/17/2006	2:35	529	T.Filipi			
28	8/17/2006	4:20	529	T.Filipi			same as 2 bff 4
29	8/17/2006	5:15	529	T.Filipi			same as 1 bff 3
30	8/16/2006	2:49	510-2	J.Kettley			escaped
31	8/16/2006	3:49	510-2	J.Kettley			same as previous
32	8/17/2006	3:30	510-2	J.Kettley			
33	8/16/2006	2:44	509-1	L.Knox			3 in 1 hole
34	8/16/2006	2:44	509-1	L.Knox			3 in 1 hole
35	8/16/2006	2:44	509-1	L.Knox			3 in 1 hole
36	8/16/2006	2:44	509-1	L.Knox			unmarked
37	8/17/2006	20:48	509-1	L.Knox	A	F	
38	8/17/2006	20:48	509-1	L.Knox	J	F	
39	8/16/2006	2:56	518	E.Tretter			
40	8/17/2006	20:35	518	E.Tretter	A	F	

**Table 1. Continued.**

*Non-Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
41	8/17/2006	3:36	518	E.Tretter	A	F	
42	8/16/2006	20:50	527-1	B.Krueger	A	F	
43	8/17/2006	20:20	527-1	B.Krueger			
44	8/17/2006	21:00	527-1	B.Krueger	J	F	not sure of any mark
45	8/17/2006	2:30	527-1	B.Krueger	A	F	
46	8/17/2006	5:15	527-1	B.Krueger	A	F	
47	8/16/2006	20:40	509-2	J.Whiteman	A	F	
48	8/17/2006	20:40	509-2	J.Whiteman			
49	8/17/2006	20:40	509-2	J.Whiteman			
50	8/17/2006	22:25	509-2	J.Whiteman	A	F	
51	8/17/2006	22:30	509-2	J.Whiteman	J	F	
52	8/17/2006	2:50	509-2	J.Whiteman	A	F	
53	8/15/2006	1:30	520-2	T.Liveri			
54	8/16/2006	20:40	520-2	T.Liveri	A	F	
55	8/16/2006	2:45	520-2	T.Liveri	A	M	
56	8/16/2006	2:50	520-2	T.Liveri	J	M	
57	8/16/2006	2:50	520-2	T.Liveri			
58	8/16/2006	2:50	520-2	T.Liveri	J	M	
59	8/23/2006	20:23	517-2	L.Knox	A	M	
60	8/23/2006	5:08	517-2	L.Knox	A	M	
61	8/23/2006	20:10	515	M.Grenier	A	F	
62	8/21/2006	20:20	517-1	S.Buskirk	A	F	
63	8/22/2006	3:00	517-1	S.Buskirk			
64	8/22/2006	3:00	517-1	S.Buskirk			
65	8/22/2006	3:00	517-1	S.Buskirk			
66	8/24/2006	3:56	517-1	S.Buskirk			marked
67	8/24/2006	4:09	517-1	S.Buskirk	A	F	
68	8/24/2006	4:56	517-1	S.Buskirk			
69	8/22/2006	20:45	521-1	K.Andres	J	F	
70	8/23/2006	20:30	521-1	K.Andres			
71	8/23/2006	20:30	521-1	K.Andres			
72	8/23/2006	2:45	521-1	K.Andres	J	F	
73	8/23/2006	3:15	521-1	K.Andres			
74	8/23/2006	3:15	521-1	K.Andres			
75	8/24/2006	20:20	521-1	M.Grenier	J	M	
76	8/24/2006	20:40	521-1	M.Grenier	J	F	
77	8/24/2006	0:27	521-1	M.Grenier	A	F	
78	8/24/2006	2:38	521-1	M.Grenier	A	F	
79	8/24/2006	2:39	521-1	M.Grenier			
80	8/23/2006	22:50	521-3	B.Krueger	J	F	

**Table 1. Continued.**

*Non-Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
81	8/23/2006	5:00	521-3	B.Krueger			
82	8/22/2006	20:37	509-3	V.Biacotti	A	M	
83	8/22/2006	21:30	509-3	V.Biacotti			
84	8/22/2006	5:15	509-3	V.Biacotti			
85	8/23/2006	20:30	509-3	V.Biacotti	A	M	red X
86	8/23/2006	20:55	509-3	V.Biacotti			
87	8/23/2006	20:55	509-3	V.Biacotti			
88	8/23/2006	21:56	509-3	V.Biacotti			
89	8/23/2006	2:46	509-3	V.Biacotti			
90	8/30/2006	21:05	509-3	M.Grenier	J	F	unmarked
91	8/30/2006	21:05	509-3	M.Grenier	J	M	unmarked
92	8/30/2006	22:20	509-3	M.Grenier	A	F	
93	8/30/2006	3:15	509-3	M.Grenier	A	M	orange I
94	8/30/2006	3:50	509-3	M.Grenier			SB0566?
95	8/22/2006	20:05	520-2	R.Schell	A	F	
96	8/22/2006	4:45	520-2	R.Schell			
97	8/23/2006	4:00	520-2	R.Schell	J	M	
98	8/23/2006	4:00	520-2	R.Schell	J	M	
99	8/23/2006	5:50	520-2	R.Schell			
100	8/24/2006	20:30	520-2	T.Liveri			
101	8/24/2006	20:30	520-2	T.Liveri			
102	8/24/2006	20:30	520-2	T.Liveri			
103	8/24/2006	1:15	520-2	T.Liveri	A	F	
104	8/24/2006	4:15	520-2	T.Liveri	J	M	
105	8/24/2006	4:15	520-2	T.Liveri	A	F	
106	8/30/2006	20:50	554-1	T.Filipi			
107	8/30/2006	20:50	554-1	T.Filipi			
108	8/30/2006	20:50	554-1	T.Filipi	J	M	
109	8/30/2006	23:26	554-1	T.Filipi	A	F	
110	8/30/2006	5:35	554-1	T.Filipi			dug around trap
111	8/30/2006	6:10	554-1	T.Filipi			dug around trap
112	8/30/2006	6:10	554-1	T.Filipi			dug around trap
113	8/31/2006	20:30	554-1	T.Filipi			unmarked
114	8/31/2006	23:15	554-1	T.Filipi	A	F	
115	8/31/2006	3:40	554-1	T.Filipi			unmarked
116	8/31/2006	3:40	554-1	T.Filipi			unmarked
117	8/31/2006	4:35	554-1	T.Filipi			
118	8/31/2006	5:55	554-1	T.Filipi			
119	8/30/2006	23:30	551-2	J.Kettley	A	F	
120	8/31/2006	4:00	551-2	J.Kettley	J	F	

**Table 1. Continued.**

*Non-Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
121	8/31/2006	4:00	551-2	J.Kettley	A	F	
122	8/29/2006	22:40	558	T.Barrier			unknown burrow
123	8/29/2006	0:45	558	T.Barrier	J	F	same as 2240?
124	8/29/2006	4:45	558	T.Barrier			same as 2035
125	8/29/2006	3:17	555	R.Schell			unknown burrow
126	8/29/2006	4:44	555	R.Schell	J	M	
127	8/29/2006	4:44	555	R.Schell	A	F	
128	8/30/2006	20:20	555	R.Schell	J	M	
129	8/31/2006	20:05	555	R.Schell	A	F	
130	8/31/2006	20:10	555	R.Schell	J	M	
131	8/31/2006	3:50	555	R.Schell	A	M	
132	8/31/2006	4:05	555	R.Schell			
133	8/30/2006	20:45	559-1	M.Wilson	A	F	
134	8/30/2006	21:00	559-1	M.Wilson	A	M	
135	8/30/2006	21:15	559-1	M.Wilson	J	M	
136	8/31/2006	22:15	559-1	M.Wilson	J	M	
137	8/31/2006	22:20	559-1	M.Wilson			unmarked
138	8/30/2006	21:00	554-2	B.Oakleaf			
139	8/31/2006	21:00	554-2	B.Oakleaf			
140	8/31/2006	21:00	554-2	B.Oakleaf			
141	8/31/2006	21:30	554-2	B.Oakleaf			
142	8/31/2006	3:58	559-4	E.Tretter	A	M	
143	8/31/2006	5:44	559-4	E.Tretter	A	F	marked with black
144	8/31/2006	5:45	559-4	E.Tretter	A	M	
145	8/30/2006	20:36	559-3	E.Rose	A	M	
146	8/31/2006	20:31	559-3	E.Rose	A	F	
147	8/31/2006	23:38	559-3	E.Rose			
148	8/30/2006	20:20	559-2	B.Krueger			
149	8/30/2006	21:00	559-2	B.Krueger			
150	8/31/2006	20:20	559-2	B.Krueger	J	F	
151	8/31/2006	20:20	559-2	B.Krueger	J	M	
152	8/31/2006	1:00	559-2	B.Krueger	A	M	orange Y
153	9/7/2006	0:30	556-3	E.Rose	J	M	
154	9/7/2006	2:30	556-3	E.Rose			unmarked
155	9/6/2006	22:48	556-3	E.Rose			
156	9/6/2006	5:29	556-3	E.Rose			
157	9/7/2006	3:06	556-3	E.Rose	A	M	
158	9/6/2006	20:26	556-2	L.Knox	J	F	
159	9/6/2006	20:55	556-2	L.Knox			
160	9/6/2006	20:55	556-2	L.Knox			

**Table 1. Continued.**

*Non-Discrete Sightings*

<b>Obs #</b>	<b>Date</b>	<b>Obs time</b>	<b>Colony</b>	<b>Observer</b>	<b>Age</b>	<b>Sex</b>	<b>Comments</b>
161	9/6/2006	20:55	556-2	L.Knox			
162	9/6/2006	4:30	556-2	L.Knox	J	F	orange I (eli)
163	9/7/2006	3:45	556-2	L.Knox	J	F	green U
164	9/7/2006	3:45	556-2	L.Knox	J	M	green V
165	9/6/2006	5:15	556-2	L.Knox			
166	9/6/2006	5:15	556-2	L.Knox			
167	9/7/2006	20:30	556-2	L.Knox	A	M	
168	9/7/2006	20:45	556-2	L.Knox	J	M	
169	9/7/2006	21:00	556-2	L.Knox	J	M	green ^ mark
170	9/7/2006	22:30	556-2	L.Knox			
171	9/6/2006	20:00	556-6	R.Schell	J	M	06 recap from 509-3 & 556-7
172	9/6/2006	21:15	556-7	E.Tretter	J	F	
173	9/7/2006	0:00	556-8	J.Kettley			
174	9/7/2006	0:00	556-8	J.Kettley			
175	9/7/2006	0:00	556-8	J.Kettley			
176	9/7/2006	22:00	556-8	J.Kettley	A	M	black T
177	9/7/2006	0:15	556-8	J.Kettley	J	F	
178	9/7/2006	2:15	556-8	J.Kettley	J	M	
179	9/5/2006	21:40	556-7	E.Tretter	J	M	06 recap from 509-3
180	9/6/2006	20:55	556-7	E.Tretter	J	M	06 recap from 509-3
181	9/6/2006	6:10	556-7	E.Tretter			same as 2258
182	9/7/2006	20:10	556-7	E.Tretter	J	F	
183	9/7/2006	0:14	556-7	E.Tretter	A	M	green X
184	9/7/2006	4:48	556-7	E.Tretter	A	F	
185	9/7/2006	22:45	556-7	E.Tretter	J	M	SB0632
186	9/7/2006	23:34	556-7	E.Tretter	A	F	SB0573

**Table 2. Black-footed ferret captures in Shirley Basin, Wyoming, summer 2006.**

Capture #	Transponder Anterior	Transponder Posterior	Date	Colony #	Observer	Shirley Basin #	Age	Sex
1	070090362	066119546	8/15/06	519-2	S.Gray	SB0431	A	F
2	065369872	065552076	8/15/06	509-1	L.Knox	SB0550	A	F
3	081102025		8/15/06	520-1	M.Grenier	SB0551	A	M
4	066016789	069885843	8/15/06	520-1	M.Grenier	SB0601	J	F
5	070109802		8/15/06	520-1	M.Grenier	SB0602	J	M
6	081263597	081102809	8/15/06	520-1	M.Grenier	SB0603	J	F
7	081095040		8/15/06	520-1	M.Grenier	SB0604	J	M
8	081098350		8/15/06	520-1	M.Grenier	SB0605	J	M
9	081112042	081107625	8/15/06	520-1	M.Grenier	SB0606	J	F
10	065631276	066079013	8/16/06	520-3	J.Jennings	SB0319	A	F
11	072282586	071895319	8/16/06	520-2	R.Schell	SB0402	A	F
12	065770803	066059556	8/16/06	509-2	J.Whitman	SB0437	A	F
13	081104859	081104355	8/16/06	527-1	B.Krueger	SB0552	A	F
14	081105305		8/16/06	520-2	T.Liveri	SB0553	A	M
15	081057636	081056837	8/16/06	520-1	M.Grenier	SB0554	A	F
16	081055623	081056081	8/16/06	520-1	M.Grenier	SB0555	A	F
17	081080019		8/16/06	520-1	M.Grenier	SB0607	J	M
18	081056781		8/16/06	ELI	E.Rose	SB0608	J	M
19	081073033	081055025	8/16/06	520-3	J.Jennings	SB0609	J	F
20	081056841		8/16/06	529	T.Filipi	SB0610	J	M
21	081072785		8/16/06	529	T.Filipi	SB0611	J	M
22	081107611		8/16/06	520-2	T.Liveri	SB0612	J	M
23	081261016		8/16/06	520-2	T.Liveri	SB0613	J	M
24	081105347		8/16/06	520-3	J.Jennings	SB0614	J	M
25	081103540		8/16/06	520-3	J.Jennings	SB0615	J	M
26	081262613	081093598	8/16/06	520-1	M.Grenier	SB0616	J	F

**Table 2. Continued.**

<b>Capture #</b>	<b>Transponder Anterior</b>	<b>Transponder Posterior</b>	<b>Date</b>	<b>Colony #</b>	<b>Observer</b>	<b>Shirley Basin #</b>	<b>Age</b>	<b>Sex</b>
27	081260634		8/16/06	520-1	M.Grenier	SB0617	J	M
28	071553085	072049285	8/17/06	529	T.Filipi	SB0405	A	F
29	081261347	081093057	8/17/06	518-1	E.Tretter	SB0556	A	F
30	081081095		8/17/06	509-2	J.Whitman	SB0557	A	M
31	081094330	081056604	8/17/06	509-2	J.Whitman	SB0618	J	F
32	081072381		8/17/06	529	T.Filipi	SB0619	J	M
33	081057332		8/17/06	509-2	J.Whitman	SB0620	J	M
34	081073549	081073037	8/17/06	509-1	L.Knox	SB0621	J	F
35	081073105		8/17/06	519	S.Gray	SB0622	J	M
36	081089369	081089100	8/17/06	527-1	B.Krueger	SB0623	J	F
37	081089587		8/17/06	519	S.Gray	SB0624	J	M
38	065553364		8/21/06	517-2	L.Knox	SB0519	A	M
39	081261347	081093057	8/21/06	517-1	S.Bus Kirk	SB0556	A	F
40	081079788	081056851	8/21/06	515	M.Grenier	SB0558	A	F
41	081079803	081056104	8/21/06	517-1	M.Grenier	SB0625	J	F
42	081056824		8/21/06	517-1	M.Grenier	SB0626	J	M
43	081073789	081089321	8/22/06	520-2	R.Schell	SB0559	A	F
44	081073555		8/22/06	509-3	V.Biacotti	SB0560	A	M
45	081056775	081055827	8/22/06	521-1	K.Andres	SB0627	J	F
46	081093061	081259772	8/23/06	521	B.Oakleaf	SB0561	A	F
47	081261872		8/23/06	515-1	M.Grenier	SB0628	J	M
48	081095865	081258086	8/23/06	520-2	R.Schell	SB0629	J	F
49	081100855		8/23/06	510	E.Rose	SB0630	J	M
50	081262314	081260826	8/23/06	521-3	B.Krueger	SB0631	J	F
51	081093572		8/23/06	509-3	V.Biacotti	SB0632	J	M
52	081095793		8/23/06	520-2	R.Schell	SB0633	J	M

Table 2. Continued.

Capture #	Transponder Anterior	Transponder Posterior	Date	Colony #	Observer	Shirley Basin #	Age	Sex
53	081262577	081106567	8/23/06	521-1	K.Andres	SB0634	J	F
54	066006103		8/24/06	517-2	L.Knox	SB0525	A	M
55	081073853	081089030	8/24/06	520-2	T.Filipi	SB0562	A	F
56	081073593		8/24/06	521-1	K.Andres	SB0635	J	M
57	107346117	107359370	8/29/06	559-3	E.Rose	SB0427	A	F
58	107582840	107317522	8/29/06	555-1	R.Schell	SB0428	A	F
59	081262521		8/29/06	555-1	R.Schell	SB0563	A	M
60	081261881	081108005	8/29/06	559	E.Tretter	SB0564	A	F
61	081258079	081073573	8/29/06	555-1	R.Schell	SB0636	J	F
62	081078298		8/29/06	555-1	R.Schell	SB0637	J	M
63	081094534	081112595	8/29/06	554	T.Filipi	SB0638	J	F
64	072099542	071619025	8/30/06	554-1	T.Filipi	SB0418	A	F
65	107344333		8/30/06	559-2	B.Krueger	SB0426	A	M
66	107329573	107575056	8/30/06	559-4	E.Tretter	SB0429	A	F
67	081056018		8/30/06	559	E.Tretter	SB0565	A	M
68	081057108	081089261	8/30/06	559-2	B.Krueger	SB0566	A	F
69	081073367	081104059	8/30/06	551-2	J.Kettley	SB0567	A	F
70	081107099		8/30/06	559-3	E.Rose	SB0568	A	M
71	081074290		8/30/06	559-1	M.Wilson	SB0569	A	M
72	081089869	081089822	8/30/06	559-1	M.Wilson	SB0570	A	F
73	081093770	081057565	8/30/06	555-1	R.Schell	SB0639	J	M
74	081102304		8/30/06	554-1	T.Filipi	SB0640	J	M
75	081261273	081106806	8/30/06	555	R.Schell	SB0641	J	F
76	081072365		8/30/06	559-1	M.Wilson	SB0642	J	M
77	081058272		8/30/06	559-4	E.Tretter	SB0643	J	M
78	081056302		8/31/06	559-3	E.Rose	SB0644	J	M

Table 2. Continued.

Capture #	Transponder Anterior	Transponder Posterior	Date	Colony #	Observer	Shirley Basin #	Age	Sex
79	081072277	081057300	8/31/06	559-3	E.Rose	SB0645	J	F
80	081056584	081056028	8/31/06	551-2	J.Kettley	SB0646	J	F
81	081079793	081074304	8/31/06	559-2	B.Krueger	SB0647	J	F
82	081073127	081057377	8/31/06	559-2	B.Krueger	SB0571	A	F
83	071820782	072085094	9/5/06	556-3	E.Rose	SB0325	A	F
84	107368846		9/5/06	556-8	J.Kettley	SB0420	A	M
85	107365601	107349808	9/5/06	556-2	L.Knox	SB0507	A	F
86	107333586		9/5/06	556-8	J.Kettley	SB0508	A	M
87	071811532		9/5/06	556-8	J.Kettley	SB0572	J	M
88	072109627	071862877	9/5/06	556-7	E.Tretter	SB0573	A	F
89	071858350		9/5/06	556-5	T.Filipi	SB0574	A	M
90	071543610	072086611	9/5/06	556-1	L.Knox	SB0575	A	F
91	081093572		9/5/06	556-7	E.Tretter	SB0632	J	M
92	081056620	072084020	9/5/06	556-8	T.Filipi	SB0648	J	F
93	072087795	071533045	9/5/06	556-2	L.Knox	SB0649	J	F
94	071552820		9/5/06	556-10	J.Henningsen	SB0650	J	M
95	072047058		9/5/06	556-4	B.Oakleaf	SB0651	J	M
96	071879780		9/5/06	556-1	L.Knox	SB0652	J	M
97	071872797		9/5/06	556-1	L.Knox	SB0653	J	M
98	071835618	072014258	9/5/06	556-3	B.Oakleaf	SB0654	J	F
99	072068071		9/5/06	556-3	E.Rose	SB0655	J	M
100	071627265	071574529	9/5/06	556-1	L.Knox	SB0656	J	F
101	072280328	071768050	9/6/06	556-2	L.Knox	SB0407	A	M
102	071800612		9/6/06	556-3	E.Rose	SB0576	A	M
103	072270610		9/6/06	556-5	T.Filipi	SB0577	A	M
104	072076802	071858265	9/6/06	556-3	E.Rose	SB0578	A	F

Table 2. Continued.

Capture #	Transponder Anterior	Transponder Posterior	Date	Colony #	Observer	Shirley Basin #	Age	Sex
105	081110827	081102563	9/6/06	556-7	E.Tretter	SB0579	A	F
106	071582888		9/6/06	556-2	L.Knox	SB0657	J	M
107	071557115	072078266	9/6/06	556-2	L.Knox	SB0658	J	F
108	081104535	081109321	9/6/06	556-8	J.Kettley	SB0659	J	F
109	081111893		9/6/06	556-3	E.Rose	SB0660	J	M
110	081113063		9/6/06	556-8	E.Tretter	SB0661	J	M
111	081261002		9/6/06	556-6	R.Schell	SB0662	J	M
112	071544816	071819289	9/7/06	556-5	T.Filipi	SB0326	A	F
113	081118771	081118350	9/7/06	556-8	J.Kettley	SB0580	A	F
114	081104882	081103022	9/7/06	556-6	E.Tretter	SB0581	A	F
115	081112054	081260881	9/7/06	556-7	E.Tretter	SB0663	J	F
116	081119633		9/7/06	556-1	R.Pigg	SB0664	J	M
117	081102091		9/7/06	556-10	J.Henningsen	SB0665	J	M
118	081263635	081263266	9/7/06	556-8	J.Kettley	SB0666	J	F
119	081102334	081265016	9/7/06	556-7	E.Tretter	SB0667	J	F
120	081119629	081106777	9/7/06	556-10	J.Henningsen	SB0668	J	F
121	081265048		9/7/06	556-8	J.Kettley	SB0669	J	M

**Table 3. Nontarget observations during spotlight surveys in Shirley Basin, Wyoming, 2006. <sup>a</sup>**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
0:23	21:30	0:00	22:15	0:20	0:50	2:55	3:15	0:25	0:05	0:43
0:29	22:26	0:10		0:30	0:55		5:15		0:07	2:45
0:30		0:20		2:30	1:00				0:10	3:05
0:30		0:30		2:50	2:20				0:12	3:35
0:35		0:40		2:50	2:40				0:12	20:50
0:59		2:12		3:05	2:45				0:15	22:00
1:30		2:38		3:10	3:15				0:15	22:09
2:10		2:40		3:23	3:25				0:15	22:50
2:15		2:55		3:35	3:35				0:16	
2:30		3:00		4:14	3:50				0:20	
2:30		3:10		4:15	4:07				0:30	
2:34		4:10		5:27	4:30				0:30	
2:35		5:00		20:27	4:35				0:40	
2:45		20:55		20:30	20:35				0:40	
2:47		21:35		20:35	21:27				0:43	
2:48		21:45		20:40	21:30				0:45	
2:50		22:00		20:45	22:00				0:46	
3:00		22:00		20:46	22:09				0:50	
3:10		22:30		21:00	22:29				1:00	
3:10		22:50		21:11	22:50				1:17	
3:15		23:01		21:20	23:29				1:23	
3:15		23:38		21:38	23:50				1:52	
3:15				21:40					2:10	
3:17				22:00					2:15	
3:20				22:00					2:15	
3:30				22:02					2:18	
3:40				22:30					2:20	
3:42				23:20					2:23	
3:55									2:25	
4:00									2:26	
4:10									2:30	
4:15									2:31	
4:20									2:33	
4:45									2:39	
5:00									2:40	
5:42									2:45	
5:45									2:55	
6:00									2:57	
20:25									3:00	
20:30									3:01	

**Table 3. Continued.**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
20:30									3:03	
20:30									3:15	
20:30									3:15	
20:30									3:15	
20:35									3:16	
20:43									3:17	
20:45									3:17	
20:45									3:20	
20:45									3:24	
20:48									3:28	
20:50									3:30	
20:59									3:35	
21:05									3:35	
21:11									3:36	
21:12									3:37	
21:15									3:40	
21:15									3:40	
21:20									3:41	
21:30									3:45	
21:30									3:45	
21:30									3:47	
21:31									3:50	
21:35									3:58	
21:42									4:00	
21:45									4:02	
21:51									4:02	
21:52									4:05	
22:00									4:08	
22:21									4:10	
22:30									4:12	
22:45									4:15	
22:50									4:15	
22:50									4:20	
22:54									4:20	
23:07									4:27	
23:15									4:35	
23:20									4:46	
23:20									4:49	
23:28									4:51	
23:28									4:54	
23:45									4:58	

**Table 3. Continued.**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
23:50									5:00	
									5:01	
									5:10	
									5:11	
									5:11	
									5:15	
									5:20	
									5:20	
									5:25	
									5:30	
									5:30	
									5:35	
									5:40	
									5:47	
									20:05	
									20:15	
									20:21	
									20:21	
									20:23	
									20:27	
									20:30	
									20:30	
									20:30	
									20:37	
									20:40	
									20:40	
									20:45	
									20:45	
									20:45	
									20:48	
									20:50	
									20:50	
									20:50	
									20:50	
									20:50	
									20:51	
									20:55	
									21:00	
									21:00	
									21:00	
									21:00	

**Table 3. Continued.**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
									21:01	
									21:01	
									21:05	
									21:05	
									21:08	
									21:10	
									21:15	
									21:15	
									21:15	
									21:16	
									21:20	
									21:20	
									21:20	
									21:22	
									21:25	
									21:25	
									21:30	
									21:30	
									21:30	
									21:30	
									21:31	
									21:32	
									21:35	
									21:35	
									21:35	
									21:35	
									21:35	
									21:36	
									21:39	
									21:39	
									21:40	
									21:40	
									21:40	
									21:40	
									21:40	
									21:41	
									21:42	
									21:45	
									21:45	
									21:45	
									21:45	
									21:46	
									21:48	
									21:48	
									21:49	
									21:50	
									21:50	
									21:54	
									21:55	
									21:55	
									21:56	

**Table 3. Continued.**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
									21:56	
									21:59	
									22:00	
									22:00	
									22:04	
									22:04	
									22:08	
									22:10	
									22:11	
									22:15	
									22:15	
									22:15	
									22:15	
									22:17	
									22:18	
									23:18	
									0:18	
									22:22	
									22:25	
									22:25	
									22:25	
									22:25	
									22:27	
									22:30	
									22:30	
									22:30	
									22:30	
									22:31	
									22:31	
									22:35	
									22:35	
									22:40	
									22:40	
									22:41	
									22:44	
									22:46	
									22:47	
									22:47	
									22:48	
									22:50	
									22:50	
									22:50	
									22:53	
									22:55	
									22:55	
									22:55	
									22:55	
									23:00	
									23:00	
									23:00	
									23:00	

**Table 3. Continued.**

BAD	BUOW	COY	FEHA	LTW	MOUP	PRFA	RFOX	SAGR	SFOX	SKU
									23:09	
									23:10	
									23:10	
									23:10	
									23:11	
									23:11	
									23:12	
									23:13	
									23:15	
									23:16	
									23:18	
									23:20	
									23:23	
									23:24	
									23:30	
									23:30	
									23:31	
									23:35	
									23:35	
									23:35	
									23:37	
									23:38	
									23:38	
									23:38	
									23:40	
									23:40	
									23:40	
									23:40	
									23:41	
									23:45	
									23:45	
									23:45	
									23:45	
									23:47	
									23:48	
									23:48	
									23:48	
									23:48	
									23:50	
									23:54	
									23:55	
									23:55	
									0:00	
									0:15	
									0:16	
<i>Totals:</i>										
82	2	22	1	28	22	1	2	1	260	8

<sup>a</sup> Key for observed species:

- |                         |                          |                            |
|-------------------------|--------------------------|----------------------------|
| BAD = Badger            | LTW = Long-tailed Weasel | SAGR = Greater Sage-Grouse |
| BUOW = Burrowing Owl    | MOUP = Mountain Plover   | SFOX = Swift Fox           |
| COY = Coyote            | PRFA = Prairie Falcon    | SKU = Striped Skunk        |
| FEHA = Ferruginous Hawk | RFOX = Red Fox           |                            |

**Table 4. Serology results for black-footed ferrets captured in 2006.**

<b>Disease Type</b>	<b>Number Tested</b>	<b>Number positive</b>	<b>Shirley Basin #</b>	<b>Titer Level</b>	<b>Age</b>	<b>Sex</b>	<b>Previously Vaccinated</b>
<b>Sylvatic Plague</b>	102	0					No
<b>Tularemia</b>	102	7	0402	1:128	A	F	No
			0507	1:128	A	F	No
			0568	1:1024	A	M	No
			0570	1:512	A	F	No
			0576	1:128	A	M	No
			0636	1:512	J	F	No
			0637	1:128	J	M	No
<b>Canine Distemper</b>	102	13	317	1:2048	A	M	Yes
			325	1:256	A	F	Yes
			326	1:64	A	F	Yes
			402	1:128	A	F	Yes
			407	1:64	A	M	Yes
			420	1:64	A	M	Yes
			426	1:8	A	M	Yes
			429	1:32	A	F	Yes
			431	1:32	A	F	Yes
			507	<1:4	A	F	No
			508	<1:4	A	M	No
			519	1:128	A	M	Yes
			525	<1:4	A	M	No

# **CANADA LYNX SURVEYS IN WYOMING COMPLETION REPORT**

STATE OF WYOMING

NONGAME MAMMALS: Threatened Species / State Wildlife Grants Funding –  
Canada Lynx

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Martin Grenier, Nongame Mammal Biologist  
Laurie Van Fleet, Nongame Biologist  
Bob Oakleaf, Nongame Coordinator

## **INTRODUCTION**

The Wyoming Game and Fish Department (Department) conducted surveys for Canada lynx during the winter of 2005-2006. In addition, we attempted to capture and radio collar lynx to continue building on our knowledge of habitat use in Wyoming. Efforts were coordinated with the U.S. Forest Service (USFS), Bridger-Teton and Shoshone National Forests. Studies by other research groups with other objectives were likely to document the presence or absence of lynx during 2005-2006 and added to our results.

## **METHODS, RESULTS, AND DISCUSSION**

The Department conducted surveys by snowmachine in four areas near Togwotee Pass: the Flagstaff drainage, Long Creek, Sheridan Creek, and several drainages in the Wyoming Range (Figure 1). Approximately 1,046 miles (1,683 km) of snow machine trails were searched in the four areas from November 2005 to April 2006 (Table 1). Lynx were previously recorded in all of these areas during Department surveys, 1994 – 2000 (Laurion and Oakleaf 2000). Hair and scat samples associated with lynx tracks were submitted to the Wildlife Genetics Laboratory, Rocky Mountain Research Station, USFS in Missoula, MT for DNA analysis to verify species identification and if possible individual origin.

In addition to snow tracking, the Department attempted to trap and radio collar lynx with trap sets located in the Long Creek and Flagstaff areas. Trap sets consisted of five traps and were set along routes where recent lynx tracks were observed. Box traps were used to capture lynx (Kolbe et al. 2003). These lightweight traps were constructed of PVC pipe and chicken wire and were easily transported by snow machine for on site set

up. Traps were placed under the canopy of large conifer and covered with pine boughs on sides and top of trap and baited with road-killed deer and beaver castor. Visual attractants such as compact discs and grouse wings were hung nearby with monofilament fishing line. Traps were checked every 24-36 hours and rebaited and/or reset if necessary.

Lynx tracks were observed on 13 occasions: once on the Flagstaff Road and 12 times in the Long Creek area (Table 2). The Flagstaff track was confirmed as a male previously recorded by a study in Yellowstone National Park and work in the Flagstaff area in 2004/2005 (Nate Berg, Endavor Wildlife Research Foundation, personal communication). DNA from samples associated with tracks (Kim Johnson, USFS Jackson, personal communication), telemetry locations, and captures in the Long Creek area all confirmed Long Creek lynx were a male and female lynx from Quebec released in Colorado in an effort to establish a lynx population in that state. No lynx tracks or sightings were observed in Sheridan Creek or any of the Wyoming Range surveys during winter 2005/2006.

The Absaroka Beartooth Wolverine Project surveyed approximately 557 miles (896 km) total using snowmachines [520 miles (837 km)] and snowshoes [37 miles (60 km)] (Table 3). Transects were located in Sunlight, Muddy, Gilbert, Pilot and Republic Creeks. No lynx tracks or sightings were observed during these surveys (Jason Wilmot, Absaroka Beartooth Wolverine Project, personal communication).

The Wildlife Conservation Society conducted wolverine trapping and track surveys in the Greater Yellowstone area including the Teton, Togwotee Pass, Teton Wilderness, Gros Ventre, and the Snake River areas. Approximately 1,376 miles (2,214 km) of surveys were conducted on snowmachines, 820 miles (1,320 km) on snowshoes or skis, and 214 miles (334 km) were combined ski/snowmachine surveys (Table 3). One lynx track was observed near Togwotee Pass during a trap check (Robert Inman, Wildlife Conservation Society, personal communication).

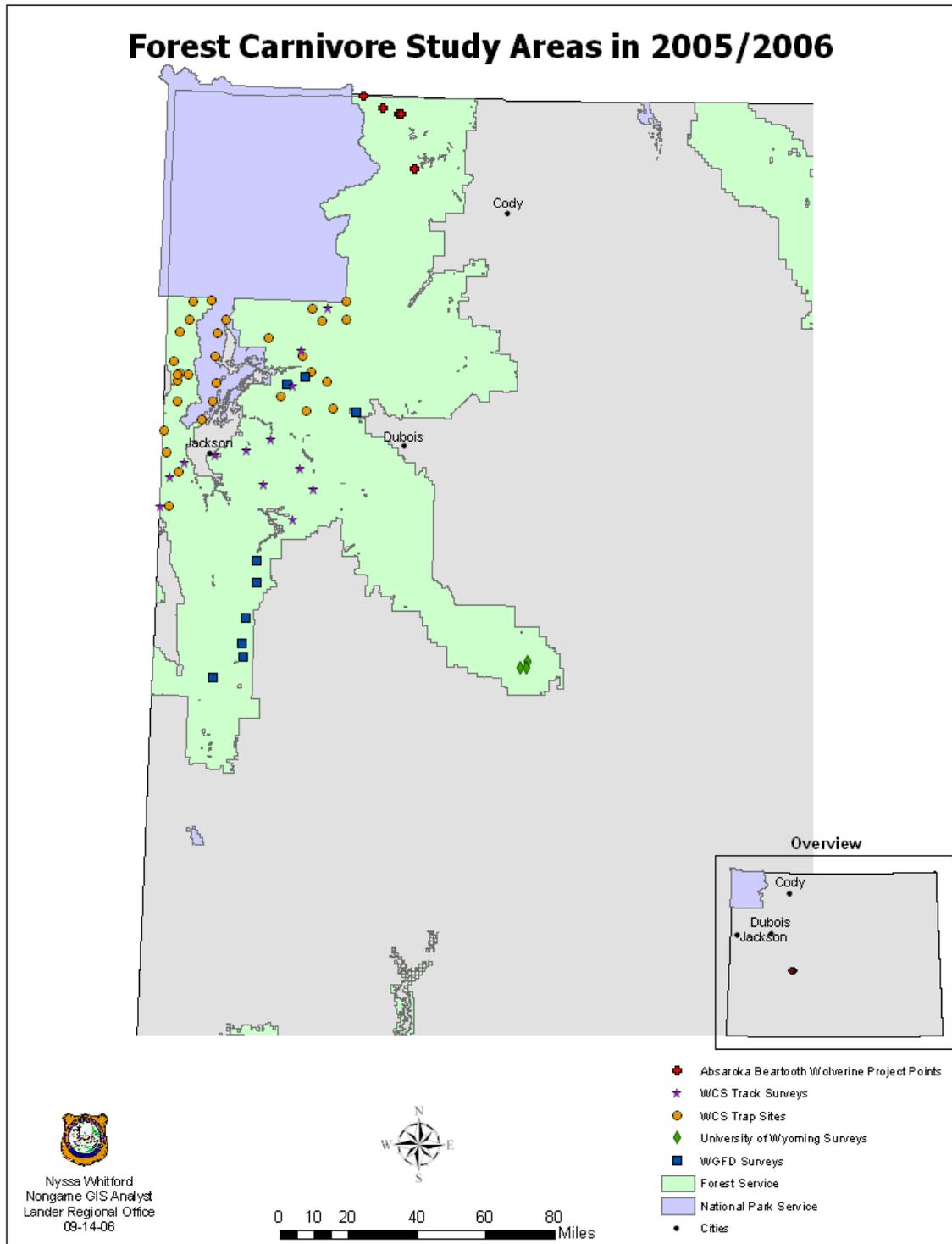
John P. Whiteman, University of Wyoming Department of Zoology and Physiology, conducted snowtrack surveys in the Medicine Bow National Forest and the southern Wind River Mountains from December 2005 through March 2006. A total of 7.98 miles (12.85 km) were surveyed along 20 routes by ski/snowshoe in the Medicine Bow Forest and 1.6 miles (2.5 km) in the Southern Wind River Mountains of the Shoshone National Forest (surveys were conducted on snowshoes during three visits totaling 1.6 miles (2.5 km) searched) (Table 3). No lynx tracks or sightings were observed during these surveys (John Whiteman and Steven Buskirk, University of Wyoming, personal communication).

Between November 2005 and April 2006, a total of 3,977 miles (6,400 km) of snow tracking surveys were conducted using snowmachines [2,942 miles (4,735 km)], ski/snowshoes [858 miles (1,381 km)], and a snowmachine/ski combination [214 miles (344 km)]. Only one lynx of Wyoming origin was located.

A total of 203 trap nights was utilized between February 2006 and March 2006 (Table 2). Two marten were captured at the Togwotee Pass site, and trap doors were found closed five times with no animals present. The Colorado male lynx was captured six times at the Long Creek site. On 26 February 2006, the male was anesthetized, bled, measured, weighed, and refitted with a satellite radio collar supplied by Tanya Shenk, Colorado Division of Wildlife. The female lynx approached traps several times but was never caught. Habitat use and movements of translocated lynx was not part of our objectives. Trapping in the area used by the translocated lynx would have been avoided; however, origin of lynx using the Long Creek area was not confirmed prior to establishing traps and logistics in that area. In April and May, the female was closely monitored, however, to determine denning and potential reproduction because behavior of the male and female indicated a breeding pair. The female did seem to localize on 9 May 2006 and 16 May 2006 and again on May 22. On 23 May, using techniques that successfully located three dens of radio collared lynx in the Wyoming Range (Laurion and Oakleaf 2000), observations indicated that she was not successful. Long distance dispersal of both the male and female followed within a few days.

#### **LITERATURE CITED**

- Kolbe, J. A., J. R. Squires, and T. W. Parker. 2003. An effective box trap for capturing lynx. *Wildlife Society Bulletin* 31(4):980-985.
- Laurion, T., and B. Oakleaf. 2000. Wyoming lynx inventories completion report. Pages 108-128 in *Threatened, Endangered, and Nongame Bird and Mammal Investigations*. Wyoming Game and Fish Department, Cheyenne. 249pp.



**Figure 1. Forest carnivore study areas in Wyoming, 2005-2006.**

**Table 1. Wyoming Game and Fish Department (WGFD) 2005-2006 snowtrack surveys in areas where lynx had been previously documented (Laurion and Oakleaf 2000).**

Agency	Survey Area	Snowmachine Distance (miles)	Ski/Snowshoe Distance (miles)	Combined Ski/Snowmachine Distance (miles)	Number of Repetitions	Lynx Sign (tracks/visual)
WGFD	Togwotee Pass	288			21	1T
	Long Creek	211			21	12T/6V
	Sheridan Creek	10			1	0
	Dry Beaver Creek	73			1	0
	Horse Creek	112			2	0
	LaBarge Creek	94			1	0
	Wyoming Range	153			2	0
	All Routes (Wyo. Range)	105			1	0
	<i>Total</i>	<i>1,046</i>				<i>13T/6V</i>

**Table 2. Wyoming Game and Fish Department snow track surveys for Canada lynx and other forest carnivores in western Wyoming during the winter of 2005-2006.**

Survey Area	Survey Date	Distance (miles)	Snow Conditions <sup>a</sup>	Lynx Tracks Found	Other Carnivore Tracks <sup>b</sup> / Comments
Togwotee Pass	11/2/2005	2	+	N	C
	11/3/2005	8	+/-	Y	C
	11/4/2006	9	+/-	N	
	2/3/2006	9	+	N	C, M
	2/14/2006	12	+/-	N	C, M, W
	2/21/2006	12	-	N	C
	2/22/2006	12	-/+	N	C, M
	2/24/2006	13	-	N	
	2/25/2006	13	-/+	N	M
	2/26/2006	15		N	M
	2/27/2006	12	-	N	C
	2/28/2006	12	-	N	C, M
	3/1/2006	13	+/-	N	
	3/2/2006	16	+	N	C, M
	3/3/2006	13	+/-	N	C
	3/4/2006	13	-	N	M in trap #3
	3/5/2006	49	+/-	N	
	3/6/2006	12	-	N	
3/7/2006	16	+/-	N	C, M	
3/8/2006	12	-/+	N		
3/9/2006	15	+/-	N	C, M	
Long Creek	2/8/2006	7	-	Y (2 sets)	W
	2/14/2006	7	+/-	N	C
	2/16/2006	7	+/-	N	
	2/17/2006	7	+	Y	
	2/21/2006	7	-	Y	C
	2/22/2006	7	-	Y	L, male captured/released
	2/24/2006	8	-	N	

**Table 2. Continued.**

Survey Area	Survey Date	Distance (miles)	Snow Conditions <sup>a</sup>	Lynx Tracks Found	Other Carnivore Tracks <sup>b</sup> / Comments
Long Creek (continued)	2/25/2006	8	-/+	Y	L, male captured in #5, female tracks at #4 & #5
	2/26/2006	8	-/+	Y	L, processed male lynx/released
	3/1/2006	8	+/-	N	M
	3/2/2006	7	+	N	C
	3/3/2006	7	+	N	
	3/4/2006	53	-	Y	L, male released from #3
	3/5/2006	8	+/-	N	
	3/6/2006	5	-	N	
	3/7/2006	7	+/-	Y	C, L male in #4
	3/8/2006	11	-	Y	C, L male in #4
	3/9/2006	6	-/+	N	C
	3/10/2006	5	+/-	Y	C, L male in #4
	2/16/2006	10	+/-	N	C
<b>Total</b>	<b>43 surveys</b>	<b>509 miles</b>	<b>----</b>	<b>13 lynx detections</b>	<b>----</b>

<sup>a</sup> Snow conditions are summarized: + excellent conditions to observe fresh and recognizable tracks, +/- good conditions, -/+ fair conditions, - poor conditions.

<sup>b</sup> Other carnivore tracks observed included: C = coyote, M = marten, W = wolf.

**Table 3. Additional studies with high potential for locating lynx.**

Agency	Survey Area	Snowmachine Distance (miles)	Ski/Snowshoe Distance (miles)	Combined Ski/Snowmachine Distance (miles)	Number of Repetitions	Lynx Sign (tracks/visual)
Absaroka Beartooth Wolverine Project	Sunlight Creek	249.05	10.5		25	0
	Muddy Creek	90.7	6.9		21	0
	Gilbert Creek	66.96	4.8		15	0
	Pilot Creek	0	5.6		28	0
	Pilot Creek to Stateline	113.9	2.6		25	0
	Republic Creek				1	0
	<i>Total</i>	<i>519.9</i>	<i>36.65</i>			
Wildlife Conservation Society	Tetons	1328	258	30.1	Unknown	0
	Togwotee Pass		13.5	16.8	Unknown	1T
	Teton Wilderness		548.5		Unknown	0
	Teton Wilderness Access	48			Unknown	0
	Gros Ventre			111.2	Unknown	0
	Snakes			55.9	Unknown	0
		<i>Total</i>	<i>1376</i>	<i>820</i>	<i>214</i>	
University of Wyoming	Laramie Ranger District, Medicine Bow NF		6.65		Unknown	0
	Platte River Wilderness, Medicine Bow NF		1		Unknown	0
	Savage Run Wilderness, Medicine Bow NF		0.31		0	0
	Southern Wind River Mtns., Shoshone NF		1.6		0	0
		<i>Total</i>		<i>9.58</i>		

**SPECIES OF GREATEST CONSERVATION NEED**

# **PEREGRINE FALCON NEST SURVEYS COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Peregrine Falcon

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Bob Oakleaf, Nongame Coordinator  
Terry McEneaney, Yellowstone National Park Ornithologist  
Susan Patla, Nongame Biologist  
Laurie Van Fleet, Nongame Biologist

## **INTRODUCTION**

Plans to re-establish a nesting population of Peregrine Falcons were developed from analysis of historical distribution and evaluation of potential habitat during survey work (1978-1980). The goal of reintroduction was to establish and maintain a self-sustaining breeding nucleus in the wild. Objectives were to annually release approximately 15 peregrines and establish 30 breeding pairs in Wyoming by 1996. The program was coordinated with Idaho and Montana to ensure maximum results to reestablish this species. During 2006, peregrine surveys were conducted with funding assistance from a cooperative agreement with the U.S. Fish and Wildlife Service.

## **RESULTS AND DISCUSSION**

Results of Peregrine Falcon reintroduction and monitoring efforts are detailed in previous Nongame Completion Reports and annual reports completed by The Peregrine Fund, Inc. In Wyoming, 384 Peregrine Falcons were released (1980-1995), with at least 325 (85%) surviving to dispersal (1 month post-release). No peregrines have been released since 1995 because objectives were attained in 1994-1995.

Following extirpation and subsequent reintroductions of Peregrine Falcons, nesting was first documented in 1984. Between 1984 and 2005, 663 nesting attempts were observed at 75 sites in Wyoming. Over 1,076 young were produced with a minimum of 1.6 young fledged per nesting attempt. Surveys during 2006 recorded 61 sites fledging at least 101 young (1.7 young/pair). This statewide total includes results from 29 pairs in Yellowstone National Park that fledged 49 young in 2006 (McEneaney 2007). A summary of monitoring results during recent years is presented in Table 1.

## LITERATURE CITED

McEneaney, T. 2007. Yellowstone Bird Report, 2006. National Park Service.  
Yellowstone Center for Resources, Yellowstone National Park, Wyoming, YCR-  
NR-2003-01.

**Table 1. Peregrine Falcon productivity in Wyoming, 1998 – 2006.**

Year	Known	Number of Nest Sites			Young Fledged	Young per Occupied Site
		Checked	Occupied	Successful		
1998	47	44	44	35	84	1.9
1999	47	42	42	25	57	1.4
2000	52	46	46	40	83	1.8
2001	56	42	42	39	81	1.9
2002	63	60	59	49	97	1.6
2003	67	58	58	50	107	1.8
2004	72	66	65	56	130	2.0
2005	75	64	64	45	99	1.7
2006	85	61	61	44	101	1.7

# **SURVEYS OF THE COMMON LOON IN WYOMING COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Common Loon

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## **INTRODUCTION**

The Common Loon is classified as a Wyoming Game and Fish Department (Department) Species of Greatest Conservation Need with a Native Species Status of one because of its public appeal, vulnerability to human disturbance and environmental degradation, and its limited abundance and restricted distribution in Wyoming (Department 2005). Loons can be observed statewide during spring and fall migration and nonbreeding loons can be found throughout the state during the summer. However, suitable breeding habitat is restricted to the northwest corner of Wyoming and is easily lost or degraded due to human disturbance and habitat changes. In 2006, known nesting areas were surveyed to document loon nesting and productivity.

## **METHODS**

The timeline for Common Loon surveys is as follows: lake occupancy surveys are conducted in early to mid-June, production surveys are conducted in mid- to late July, and follow up surveys to determine initial survival of young are conducted in mid-to late August. Surveys are scheduled to be compatible with aerial Common Loon surveys conducted in Yellowstone National Park (McEneaney 2007), allowing statewide loon nesting data to be compiled.

Adult and young loons are best observed during early morning and early evening hours. Observers sit quietly in an area that provides a vantage point over the lake to be surveyed and search the lake and adjacent shoreline for loon activity. Each lake is surveyed for 45 minutes to one hour to ensure that loons that are not immediately visible are not overlooked. Observers record the number of adult and young loons detected, loon activity and behavior (e.g. diving, hunting, feeding self or young, calling, flying, loafing, agitated, defensive), and other species observed or heard. Additional comments, such as human activity; location of paved, dirt, and two-track roads; and shoreline habitat, are also recorded.

## **RESULTS AND DISCUSSION**

Seven lakes outside of Yellowstone National Park with a past history of Common Loon breeding activity were surveyed for adult nesting pairs and production of young in 2006 (Table 1). During the June lake occupancy survey, adult loon pairs were observed on five of the seven lakes. During the July productivity survey, a single adult loon or adult loon pairs were observed on five of the seven lakes and a total of four loonlets were observed on two lakes. During the August follow up survey, adult loons were observed on three of the seven lakes, and a total of three young loons were observed on two lakes.

Summary data for previous years are also presented in Table 1.

In Yellowstone National Park, 39 Common Loon adults were observed in 2006; 9 pairs attempted to nest, fledging 6 young on 4 lakes (McEneaney 2007) (Table 2).

Common Loon nesting and production data for Wyoming are presented in Table 2.

In addition to loon surveys in 2006, the Nongame Bird Biologist met with personnel from the Caribou-Targhee National Forest to discuss loon nesting lake issues, recreational use, management, and public education and outreach opportunities to ensure that loons continue to nest and raise young at these important historical breeding sites.

## **ACKNOWLEDGEMENTS**

The Department would like to acknowledge the following Department personnel for their valuable contributions to the 2006 Common Loon monitoring efforts: Tim Fuchs, Lee Knox, Susan Patla, Rene Schell, and Matt Wells.

## **LITERATURE CITED**

McEneaney, T. 2007. Yellowstone Bird Report, 2006. Yellowstone Center for Resources, National Park Service, Yellowstone National Park, Wyoming. YCR-2007-01.

(Department) Wyoming Game and Fish Department. 2005. A Comprehensive Conservation Wildlife Strategy for Wyoming. Wyoming Game and Fish Department, Cheyenne.

**Table 1. Summary of Common Loon nesting (June), productivity (July), and recruitment (August) surveys from 1987 through 2006. Excludes Yellowstone National Park. Adult loons are depicted by the letter A and juvenile loons are depicted by the letter J.**

Year	Arizona Lake		Bergman Reservoir		Fish Lake		Indian Lake		Junco Lake		Loon Lake		Moose Lake		Total Loons	
	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J
1987	1	2	2	1	0	0	2	2	1	1	2	1	2	2	10	9
1988	2	1	2	2	0	0	2	1	2	2	2	2	2	2	12	10
1989	2	- <sup>a</sup>	2	-	NS <sup>b</sup>	NS	4	1	2	1	2	2	2	-	14	4
1990	4	-	2	-	NS	NS	2	2	2	1	2	1	2	2	14	6
1991	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1992	2	-	2 <sup>c</sup>	-	2	-	2	1? <sup>d</sup>	2	-	2	? <sup>e</sup>	2	?	12	?
1993	2	-	2 <sup>c</sup>	?	1	?	3	-	2	-	2	1	2	?	12	?
1994	2	1	2	-	2	-	0	0	0	0	2	1	2	1	10	3
1995	2	1	2 <sup>c</sup>	-	0	0	2	-	0	0	1	2	0	0	5	3
1996	2	-	1 <sup>c</sup>	-	2 <sup>f</sup>	-	2	1	2	-	2	2	2	-	10	3
1997	2	1	0	0	1	-	2	2	0	0	2	2	2	1	9	6
1998	0	0	0	0	0	0	1	2	0	0	1	-	2	1	4	3
1999	2	2	0	0	2	-	2	2	0	0	2	-	2	-	10	4
2000	2	1	1 <sup>c</sup>	0	2 <sup>f</sup>	-	2	2	2	1	2	1	2	-	10	5
2001	0	0	0	0	2 <sup>f</sup>	-	2	1	2	-	2	1	2	1	8	3
2002	1	0	1 <sup>c</sup>	0	1 <sup>f</sup>	0	2	1	2	-	2	1	1	-	8	2
2003	2	1	1 <sup>c</sup>	0	1	0	2	1	1	-	2	0 <sup>g</sup>	2	2	10	4
2004	2	0	2 <sup>c</sup>	0	3 <sup>f</sup>	0	4	0	1	0	2	2	2	0	11	2
2005	2	0	1 <sup>c</sup>	0	2	0	2	2	0	0	2	0 <sup>g</sup>	2	0	10	2
2006	2	0	2 <sup>c</sup>	0	3 <sup>f</sup>	0	2	2	0	0	2	2	2	0	8	4

<sup>a</sup> A dash (-) indicates that loonlets were not observed during the survey; however, due to the secretive nature of loons, juveniles may have been present but hidden from view.

<sup>b</sup> NS = not surveyed.

<sup>c</sup> Most likely the adult(s) from the Indian Lake pair using this site for foraging; not included in total.

<sup>d</sup> A nest with 1 egg was observed; it is unknown if the egg hatched and the juvenile loon survived.

<sup>e</sup> A question mark (?) indicates that a June nesting status survey was conducted only; these lakes were not surveyed in July so productivity was unknown.

<sup>f</sup> Most likely the same individual(s) that use several lakes in the vicinity of Fish Lake for foraging and/or nesting; not included in total.

<sup>g</sup> Increased human activities that are incompatible with nesting may be responsible for this pair's failure to produce young this year.

**Table 2. Common Loon nesting, productivity, and recruitment data for Wyoming, 1987-2006.**

Year	Non-Yellowstone Nat'l Park			Yellowstone National Park			Wyoming Total		
	# Pairs	# w/ Young	# Lakes Young	# Pairs	# w/ Young	# Lakes Young	# Pairs	# w/ Young	# Lakes Young
1987	6	9	6	NA <sup>a</sup>	NA	NA	IN <sup>b</sup>	IN	IN
1988	6	10	6	NA	NA	NA	IN	IN	IN
1989	6	4	3	NA	NA	NA	IN	IN	IN
1990	6	6	4	11	9	9	17	15	13
1991	NS <sup>c</sup>	NS	NS	9	NA	NA	IN	IN	IN
1992	6	NS	NS	11	6	4	17	IN	IN
1993	5	NS	NS	12	6	4	17	IN	IN
1994	5	3	3	12	12	8	17	15	11
1995	3	3	2	13 <sup>d</sup>	8	12	16	11	14
1996	5	3	2	5	4	4	10	7	6
1997	4	6	4	5	6	5	9	12	9
1998	2	3	2	12	8	6	14	11	8
1999	4	4	2	14	2	2	18	6	4
2000	5	5	4	9	8	9	14	13	13
2001	4	3	3	9	7	9	13	10	12
2002	3	2	2	9	5	4	12	7	6
2003	4	4	4	8	1	1	12	4	5
2004	5	2	1	9	3	2	14	5	3
2005	5	2	1	8	4	3	13	6	4
2006	4	4	2	9	6	4	13	10	6

<sup>a</sup> NA = data are not available.

<sup>b</sup> IN = state totals are incomplete.

<sup>c</sup> NS = not surveyed.

<sup>d</sup> Two pairs nested on the same lake.

# **COLONIAL WATERBIRD SURVEYS COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Colonial Waterbirds

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## **SUMMARY**

Ritter and Cerovski (1990) summarized all known information at that time on colonial nesting waterbirds in Wyoming. In 2006, an intensive survey was conducted at previously occupied breeding sites considered to be the most important for colonial nesting waterbirds in Wyoming. Data collected during the 2006 surveys are presented in Figure 1 and Table 1. Data from Yellowstone National Park (YNP) (McEaney 2007) and the American White Pelican nesting colonies are included, but data on Great Blue Heron rookeries are excluded because they were not intensively surveyed during 2006. A summary of the most important breeding sites for colonial waterbird Species of Special Concern with a Native Species Status of 1-4 is presented in Table 2.

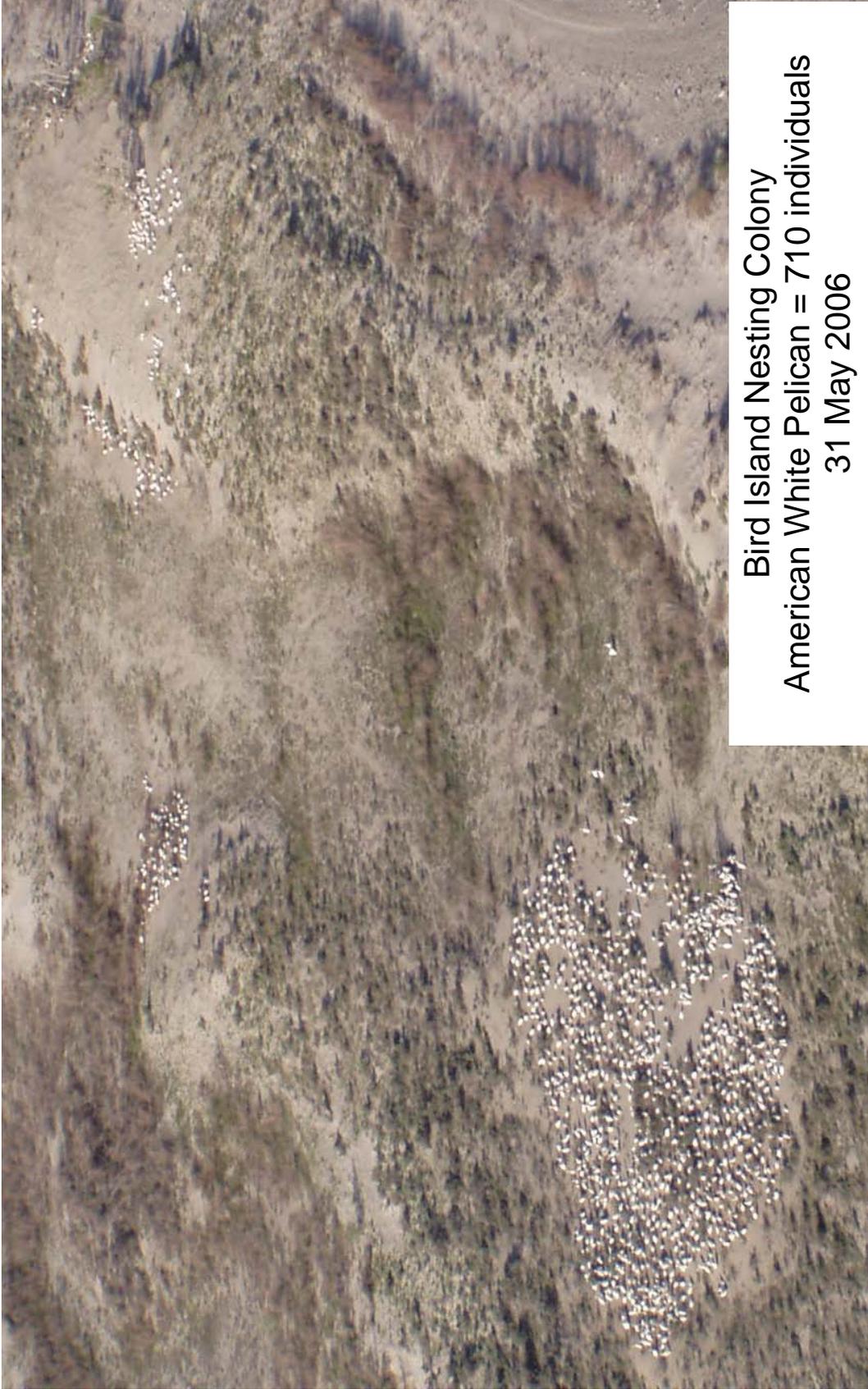
## **ACKNOWLEDGEMENTS**

The Department would like to thank the landowners and land managers who graciously allow us to continue long-term monitoring of colonial nesting waterbirds on their property. Without their cooperation and interest in these species, data collection would not be possible. The Department would also like to acknowledge the following individuals for their valuable contributions to the 2006 colonial waterbird monitoring effort: Greg Anderson (Department), Quinn Cerovski (volunteer), and Laurie Van Fleet (Department).

## **LITERATURE CITED**

McEneaney, T. 2007. Yellowstone Bird Report, 2006. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming. YCR-2007-01.

Ritter, S. A., and A. O. Cerovski. 1990. Update on the status and distribution of colonially nesting waterbirds in Wyoming. Nongame Special Report. Wyoming Game and Fish Department, Lander. 81pp.



Bird Island Nesting Colony  
American White Pelican = 710 individuals  
31 May 2006

**Figure 1. Aerial photograph of the Pathfinder Reservoir Bird Island American White Pelican nesting colony, 31 May 2006.**

**Table 1. Summary of colonial nesting waterbird surveys in Wyoming, 2006.**

Location		Total		
Survey Date		Number	Nest	Number
Observer(s)	Colonial Nesting Waterbird	Adults	Estimate	Young
Survey Technique	Species			
Water Level Condition				
<u>Ambler Spring</u> <sup>a</sup>				
29 June 2006	Black-crowned Night-Heron	24	12	
A. Cerovski / Q. Cerovski	Forster's Tern	16	8	
Canoe	White-faced Ibis	10	5	
Water level normal (dammed spring)				
<u>Bamforth Lake</u>				
No survey conducted due to on-going drought; water level very low; nesting island has been a peninsula for the past several years				
<u>Bucklin Reservoir</u>				
No survey conducted; volunteer was going to conduct survey but was unable to				
<u>Caldwell Lake</u>				
29 June 2006	American White Pelican	1	0	
A. Cerovski / Q. Cerovski	Black-crowned Night-Heron	1	0	
Canoe	Black Tern	2	1	
Water level is good; may be a bit high for emergents for nesting	Forster's Tern	4	2	
	Western Grebe	6	0	
	White-faced Ibis	1	0	
<u>Cokeville Meadows NWR</u> <sup>b</sup>				
22 June 2006	American Bittern	1	0	
A. Cerovski / R. Lockwood / J. Gray / B. Dayton / D. Transtrum / S. Johnson	Black Tern	28	14	
	Forster's Tern	2	0	
Foot	White-faced Ibis	8	0	
Water level has rebounded slightly				
<u>Hutton NWR – Rush Lake</u>				
29 June 2006	Black-crowned Night-Heron	24	12	
A. Cerovski / Q. Cerovski	Forster's Tern	9	5	
Canoe	White-faced Ibis	36	18	
Water level is ideal for nesting				

**Table 1. Continued.**

Location		Total		
Survey Date	Colonial Nesting Waterbird Species	Number Adults	Nest Estimate	Number Young
<u>Kay Ranch Lake</u>				
29 June 2006	Forster's Tern	7	4	
A. Cerovski / Q. Cerovski				
Foot				
<u>Ocean Lake</u>				
15 June 2006	American White Pelican	220	0	
L. Van Fleet / G. Anderson /	Clark's Grebe	30	0	
Motorboat	Double-crested Cormorant	100	active	
Water level is higher than it has been in previous years	Western Grebe	8	0	
<u>Old Eden Reservoir</u>				
17 June 2006	No colonial waterbirds nesting or present			
L. Van Fleet				
Foot				
Reservoir is dry; water fluctuations make it difficult to establish this as a continuous breeding site				
<u>Pathfinder Reservoir, Bird Island</u>				
31 May 2006	American White Pelican	710	710	
B. Oakleaf				
Aerial (photographs taken)				
Island is a peninsula due to drought-induced low water level				
<u>Pilger Lake</u>				
28 June 2006	Black-crowned Night-Heron	3	2	
A. Cerovski / Q. Cerovski	White-faced Ibis	15	8	
Foot				
Water level is good for nesting				
<u>Sand Mesa Ponds</u>				
15 June 2006	No colonial waterbirds nesting or present			
L. Van Fleet				
Foot				
Ponds are dry				

**Table 1. Continued.**

Location		Total		
Survey Date		Number	Nest	Number
Observer(s)	Colonial Nesting Waterbird	Adults	Estimate	Young
Survey Technique	Species			
Water Level Condition				
<u>Soda Lake (Yant's Puddle) <sup>c</sup></u>				
June 2006	Caspian Tern	active		
A. Cerovski				
Ground (spotting scope)				
Remediation work is nearly complete; canoe survey should be reinstated in 2007				
<u>Webb Lake</u>				
29 June 2006	No colonial waterbirds nesting or present			
A. Cerovski				
Foot				
Lake level is very low and emergents are mostly dry due to drought				
<u>Yellowstone Nat'l Park, Molly Islands</u>				
May, June, Aug., Sept. 2006	American White Pelican	854	352	362
T. McEaney	Caspian Tern	0	0	0
Motorboat and aerial	Double-crested Cormorant	220	102	261
Water level is normal; no flooding and snowmelt was gradual				

<sup>a</sup> Formerly called Aurora Lake.

<sup>b</sup> Formerly Bear River Marshes.

<sup>c</sup> Site was surveyed from a distance using a spotting scope due to inaccessibility to the lake by canoe during remediation work.

**Table 2. Important nesting sites in Wyoming for colonial waterbird Species of Special Concern with a Native Species Status of 1 – 4.**

County Nesting Site	Species Code <sup>a</sup>										
	AMBI	AWPE	BCNH	BLTE	CAEG	CATE	FOTE	FRGU	SNEG	WEGR/ CLGR	WFIB
<u>Albany County</u>											
Ambler Spring			X				X		X		X
Bamforth Lake		X	X			X			X		
Caldwell Lake	X		X	X			X				X
Carroll Lake			X				X				
Hutton Lake NWR – Rush Lake	X		X	X	X		X		X		X
Kay Ranch Lake			X				X				
Pilger Lake			X				X				X
Webb Lake			X								
<u>Bighorn County</u>											
Lovell Lakes										X	
Renner Reservoir										X	
Wardell Reservoir										X	
<u>Carbon County</u>											
Beaver Creek Reservoir			X								
Bucklin Reservoir			X							X	
Lufkin Pond/Chastain Reservoir			X								
Pathfinder Reservoir Bird Island		X				X					
<u>Fremont County</u>											
Ocean Lake	X						X			X	
<u>Goshen County</u>											
Hawk Springs Reservoir			X								
<u>Lincoln County</u>											
Cokeville Meadows NWR	X		X	X			X	X			X
<u>Natrona County</u>											
Soda Lake Islands			X			X			X		
<u>Park County</u>											
Beck Lake										X	
<u>Sweetwater County</u>											
Old Eden Reservoir			X						X		X
<u>Teton County</u>											
Christian Pond	X										
Yellowstone Lake Molly Islands		X				X					
<u>Uinta County</u>											
Rollins Reservoir										X	

<sup>a</sup> Species Code: AMBI = American Bittern, AWPE = American White Pelican, BCNH = Black-crowned Night-Heron, BLTE = Black Tern, CAEG = Cattle Egret, FOTE = Forster's Tern, FRGU = Franklin's Gull (added to Species of Special Concern list in 2004), SNEG = Snowy Egret, WEGR/CLGR = Western Grebe and Clark's Grebe, WFIB = White-faced Ibis. Great Blue Heron (Native Species Status 4) rookery sites are not included in this table.

**ROCKY MOUNTAIN POPULATION OF TRUMPETER SWANS –  
WYOMING FLOCK  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need / State Wildlife Grants  
Funding – Trumpeter Swan

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Susan Patla, Nongame Biologist

**INTRODUCTION**

This report summarizes management activities and monitoring data for Trumpeter Swans in Wyoming for the 2006 nesting season and the 2006/2007-winter season. Trumpeter Swans in Wyoming are considered, for management purposes, a breeding segment of the Tri-State Area Flocks in the U.S. segment of the Rocky Mountain Population (RMP) of Trumpeter Swans [U.S. Fish and Wildlife Service (USFWS) 1998]. Monitoring swans in western Wyoming requires interagency coordination and effort; in the Acknowledgements section we provide a list of individuals who provided data for this effort.

This year's report contains updates of tables contained in previous annual reports, but extensive text sections have been abbreviated or eliminated. For background and historical data, readers should refer to earlier annual completion reports. These are available from the Wyoming Game and Fish Department (Department) Nongame Program, Lander Regional Office or Jackson Regional Office.

**ROCKY MOUNTAIN POPULATION WINTER SURVEY RESULTS 2006/2007**

Tri-State Area winter aerial surveys in 2007 were completed 21 January-1 February (Dubovsky 2007). The Department flew Wyoming's survey outside of Yellowstone National Park (YNP) on 30-31 January. In the Tri-State area, a total of 4,619 Trumpeter Swans were counted: 3,604 white birds (yearlings and older age classes) and 893 cygnets (Table 1). Cygnets comprised 19% of the total, equal to the 1974-2006 average. The number of total swans counted in the Tri-State represents the first decrease since 2002, and a 15% decrease from the previous year. See Dubovsky (2007) for discussion of possible confounding factors in Montana and Idaho.

In Wyoming, a record number of swans were counted (n=1,024 including YNP, or n=855 outside of YNP) (Table 1). Of the total swans counted in Wyoming, 16% were in YNP (n=169), 49% along the Snake River in the vicinity of Jackson, Wyoming (n=504), 19% on the Salt River (n=193), and 14% in the Green River drainage including Boulder and Daniel (n=18) and Seedskaadee National Wildlife Refuge (NWR) (n=128). An additional 12 swans (1%) were counted west of Dubois in the Central Flyway. Cygnets comprised 18% of the total number of swans counted in Wyoming, compared to 14% the previous year (Table 1).

## **TRI-STATE FALL SURVEY RESULTS AND PRODUCTIVITY TRENDS – 2006**

A cooperative inter-agency survey effort is conducted annually in September to obtain a total count of Trumpeter Swans in the U.S. Breeding Segment of the RMP using both aerial and ground surveys. Results are published by the USFWS (Dubovsky 2006). Aerial surveys in 2006 were conducted from 11-19 September. Department personnel flew the Wyoming portion outside of YNP and YNP personnel flew YNP on 11 September.

Total number of resident swans (adults plus cygnets) in the Tri-state Area Flocks in 2006 was the highest count since 1992, but only slightly above last year's total of 453 (Table 2). The 459 total swans counted within the Tri-State Area in 2006 were distributed as follows among the three states: 34% in Wyoming (n=154), 37% in Idaho (n=171), and 29% in Montana (n=134). In Wyoming, cygnets comprised 17% of flocks compared to 13% in Montana and 23% in Idaho (Table 2).

## **WYOMING FLOCK PRODUCTION OUTSIDE YELLOWSTONE NATIONAL PARK – 2006**

A total of 114 white birds (adults/subadults) and 26 cygnets were counted in Wyoming outside of YNP in September 2006 (Table 2). Compared to the previous year, this represents a 28% increase in number of white birds, but a 26% decrease in cygnets. The number of adult/subadults represents a record high for Wyoming and reflects increases in the Green River expansion flock that accounted for 51% of the total number of white birds observed. Seven white birds were also found in the Salt River drainage, a high number for recent fall surveys.

In 2006, to document occupancy and productivity, the Department conducted aerial surveys on 5 June and 10 July, in addition to conducting numerous ground surveys during the nesting season. Pairs occupied 24 sites, 18 pairs initiated incubation, 12 pairs hatched young, and 8 fledged at least one young (Table 3). All productivity parameters exceeded 1990-2004 means (Table 3). Productivity of successful nests (n=12, those that hatched at least one egg) measured 2.75 young hatched/successful pair and 2.17 young fledged/successful pair.

Although the total number of young hatched (n=33) was 39% less than the record number produced in 2004 (n=54), productivity remained robust compared to the early 1990s. Increased productivity can be attributed to the Green River expansion flock that produced 65% of young fledged in 2006. Most of this production is due to Seedskaadee NWR; three pairs on the refuge accounted for 82% (n=14) of production in the expansion area and 54% of the state's total production.

Comparison of productivity data from the core area (Snake River drainage) with the Green River expansion flocks shows that while more pairs occupy sites in the core, a smaller proportion of pairs nest and produce young, and successful nests in the core hatch and fledge fewer young. In the core area with 15 occupied nest sites, 73% nested (n=11), 40% hatched (n=6), and 27% fledged young (n=4). In the Green River expansion area with nine occupied sites, 78% nested (n=7), 67% hatched (n=6), and 44% fledged young (n=4). Successful nests in the core hatched 2.16 young/nest and fledged 1.5 young/nest. This was much lower than the expansion area that produced 3.33 young/successful nest and fledged 2.83 young/nest.

Table 4 provides a summary of occupancy and productivity data for individual nesting territories in Wyoming over the last decade, 1996-2006. Following are site-specific notes for some of the 2006 nesting territories:

**Indian Lake, Caribou-Targhee National Forest (CTNF)** – a pair nested on the northwest corner of the lake. The pair was observed on 26 June at the far north end of the lake with one active cygnet about one week old. The cygnet was not seen after this date.

**Rock Lake, Caribou-Targhee National Forest (CTNF)** – this was the first year a nest attempt occurred on this lake after a pair occupied and molted on site last year. The last year a pair had occupied this site was 1991. By 10 July, the water level was low and the pair was gone.

**Junco Lake, Caribou-Targhee National Forest (CTNF)** – this is the first time a pair attempted to nest on this lake since the early 1990s. On 10 July during an aerial survey, two eggs were observed in the nest with the adults standing nearby. No adults or young were seen in early September.

**Upper Glade Creek Marsh, J.D. Rockefeller Parkway (GTNP)** – this was a new nest site in 2005, but the pair failed to produce young. No pair or nest structure was seen on 5 June 2006, but a pair was seen later in June and on the 10 July flight. The site is located close to Camp Site #8 on the JDR Parkway (Ashton-Flagg Ranch Road or Reclamation Road). Management issues include possible human disturbance and water level fluctuations later in the season. The pair had deserted the site by early September in 2005 and 2006.

**Glade Cliff Slough, Grand Teton National Park (GTNP)** – this was a new site for 2006 and may be the same pair that occupied a site east of the river along Nickel and Dime Creek just south of Steamboat Mountain since 2002. The site is on a large, old separated oxbow slough located near the north end of the cliffs on the west side of the Snake River. It is not

visible from the river. The pair initiated nesting this year but if they produced young, they were gone by the 10 July flight. This is a remote site, far from possible human disturbance, and the water level appeared good this year.

**Glade Creek South, GTNP** – an adult was still on the nest on 10 July this year, but no young were observed later so, if young hatched, they did not survive. The pair continues to nest in a dense willow flat in a river slough north of Tusker Island. This nest site is prone to flooding in high water years. It cannot be seen from the river.

**Swan Lake, GTNP** – no nest attempt was observed again this year. The pair moved around the area earlier in the season but no swans were seen by the fall flight.

**Christian Pond, GTNP** – no swans were observed again on this site throughout the season. Water depth continues to decrease and this wetland will likely disappear if this trend continues. An assessment of hydrology and recreation use is needed.

**Two Ocean Lake, GTNP** – a pair occupied this site, but there was no evidence of nesting activity. This site may be prone to human disturbance early in the season.

**Elk Ranch Reservoir, GTNP** – a pair has not nested successfully at this site since 1998 and the water level has been decreasing. A water management plan needs to be developed, with an emphasis on swans and waterfowl, if possible.

**Hedrick Pond, GTNP** – water remains low at this site and only one swan was observed early in the season. A hydrological assessment of this wetland would be useful.

**Highway Pond, National Elk Refuge (NER)** – no pair nested in this pond but a pair nested in the marsh east of the Flat Creek overlook. Another pair of subadults stayed in the area of the overlook and Visitor Center most of the season.

**Main Marsh Flat Creek, NER** – three pairs occupied the main marsh area (including the one mentioned above) and produced young. One pair lost one of three young hatched. The other two pairs fledged three and one young, respectively.

**Pierre's Ponds, NER** – a pair occupied the site early, but did not appear to build a nest and was not there consistently later in the season. This pair may have been moving between Romney and Pierre's Ponds. The river is threatening to take out the dike at the west Pond.

**Romney Ponds, NER** – there appeared to be a pair of immature swans that used these ponds, and perhaps other wetlands on the refuge, during the season. It is not known if immature pairs are interacting with established older pairs early in the nesting season, possibly disrupting nest attempts.

**Puzzleface Pond (formerly Skyline)** – only very occasional use by swans was observed during the summer season. There needs to be an assessment of water level management and food resources at this site.

**Kibby Pond, Alpine** – no swans were observed on site this season, and human activity/construction has increased at this new subdivision. This was the only nest site on private land in the Salt River valley and it appears to be no longer suitable for swan nesting.

**Lily Lake, BTNF** –no swan use was observed this year. Lack of security, low water level, and poor vegetation diversity at this site reduce the chances for successful nesting by swans.

**Enos Lake, BTNF** – four yearlings (likely a sibling group possibly from Pinto 2005) occupied Enos Lake this year in June and July, but were gone by early September.

**Atlantic Creek, BTNF** – no swan use was observed this year, although water levels appeared adequate.

**Upper Slide Lake, BTNF** – a pair nested at the traditional nest side on the south side of the lake but no young were produced. The adults were off the nest by June 22.

**Mosquito Lake, BTNF** – a pair was on site in open water at the north end of the lake in early June; on 10 July, the pair, a group of three, and a single swan were observed from the air.

**Mud Lake, BTNF** – two young were hatched this year and appeared to be about one week old on 10 July. The family group was observed in the narrow inflow ditch. In September, two adult pairs were seen but no cygnets. Cause of failure is not known, feeding in narrow channels often appears to result in loss of small young as observed at other sites such as Puzzleface and Arizona Lake in past years. A wetland improvement project has been planned for this site and needs funding.

**Carney Ranch, Green River** – for the third year in a row, a pair nested on site but failed this year to produce young. Sale and potential development of this property may result in loss of this site in the future.

**Kitchen Reservoir, CL Bar Ranch** – a pair produced three young on the main (south) reservoir, and an immature pair molted on the reservoir pond to the north. One of the immature pair has a yellow leg band, which could not be read but is likely F05, a captive yearling released by the Department in 2003.

**Kendall Wetland** – a pair used this site inconsistently over the nesting season. Lack of quality forage is likely limiting swan nesting here.

**Barden (Oliver) Slough** – a pair occupied this site but did not initiate nesting. Cold water temperatures appear to limit forage production at this site until later in the season. Another pair was seen early along the New Fork River south of the airport.

**La Barge, Exxon Road Pond** – no swan use; the pond was drained over winter and only partially filled this summer. Restoration work included draining the pond over winter to

control carp, and installation of a new outflow ditch and control structure. With the low water level, there was an excellent response of sago pondweed growth by July, but later in the year, the water appeared turbid again suggesting that carp were not eliminated.

**Seedskadee NWR** – four pairs nested this year: three on the main Hawley Unit and one on the recently refilled Hamp Unit. The old pair in Pool 6, after producing seven young last year, appears to have been replaced by a new pair that nested but did not produce young. The female of the old pair is estimated to be at least 17 years old; she is a leucistic bird with pale yellow legs and her mate had one leg band. SNWR staff reported seeing a pair with these characteristics along the main river during the nesting season. The Pool 1 pair produced two leucistic cygnets for the fourth year in a row. Five total hatched, but one was lost early in the season; both white morph young survived. Pool 2 nest produced six young, the largest brood in Wyoming this year.

## **MORTALITIES**

Compared to last year's record high number of winter mortalities documented (n=49), few mortalities were reported during the 2006/2007 winter season (Table 5). Exact cause of death could not be determined, but intact birds found were emaciated. Lab analyses of swan carcasses submitted to the state lab last year indicated that four swans died from starvation, three from colibacillosis (all found in Evan's ponds within a few days of each other in late spring), and two had coccidian (intestinal protozoan) infections severe enough to have contributed to poor nutritional condition or secondary disease. In addition, one bird was diagnosed with a bone infection and another with heartworm. (Data on swan mortalities provided by Cynthia Tate, Wyoming State Veterinary Lab.)

## **SIGHTINGS OF MARKED SWANS**

Observations of marked Trumpeter Swans in Wyoming are summarized in Table 6. The total number of neck-collared swans reported continues to decline, likely as a result of loss of older collars and birds. One unusual report was of a collared swan on the Woodruff Narrows Reservoir. The southwest corner of the state should be surveyed more thoroughly in future years to document swan migration in November. No swans were reported from Brown's Park Refuge in Colorado, which froze up early this year.

## **HABITAT IMPROVEMENT PROJECTS**

We received funding from the Department's Habitat Trust Grant Program in 2005 to engineer and construct a water control structure and implement carp removal at a swan nest site on a private ranch in the LaBarge area. This was one of the high priority projects in the Upper Green River Trumpeter Swan Summer Habitat Improvement Project (Lockman 2005). With assistance from the regional Habitat and Access crew, water was diverted

during the winter of 2005/2006 to drain the shallow wetland pond. Construction and installation of the water control structure was completed in April of 2006.

Three proposals for swan wetland restoration projects in the Pinedale area for the Green River Trumpeter Swan Summer Habitat Project were submitted for funding through the NRCS Wetland Reserve Program (WRP) and the Wyoming Wildlife Natural Resource Trust Fund (WWNRT) in January 2007. Matching funds have been obtained from the WRP program for two projects on private land, and we are awaiting word from the WWNRT.

## **RANGE EXPANSION EFFORTS IN WYOMING – SALT RIVER**

For the second year in a row, a record number of swans were observed in the Salt River drainage during the Mid-Winter Survey: 158 adults and 35 cygnets. The highest concentration in February of 2006 occurred along the river south of Grover Highway down to Swift Creek (n=70).

The only existing known nest site on private land appears to have been lost this year as a result of subdivision construction, placing homes around the edge of the wetland marsh south of the town of Alpine. A pair was seen farther south in May in a flooded field north of Jackknife, but not later in the summer. Seven swans were observed on the fall survey – a pair and two singles at the Alpine wetland complex and three between Alpine and Etna.

The formation of the Star Valley Land Trust, affiliated with the Wyoming Stock Growers Agricultural Land Trust, may create funding opportunities in the future to develop wetland restoration projects for swan summer and winter habitat improvements.

## **RANGE EXPANSION EFFORTS IN WYOMING – GREEN RIVER**

Again this year, the number of young fledged in the Green River basin range expansion area (n=17) exceeded that in the core Snake River/Jackson area (n=9). Nine sites were occupied by pairs in the Green River basin: five in the northern sections of the Green and New Fork Rivers in the Pinedale/Cora/Boulder area, and four south of the Fontenelle Dam at Seedskadee NWR. Seven pairs nested, six hatched young (n=20), and four fledged young (n=17). Brood loss occurred again at Mud Lake, our highest priority site for wetland restoration/improvements.

On the fall 2006 survey, a total of 18 swans were observed on the Green River north of the Warren Bridge (16 adults, 3 cygnets), 4 on the New Fork River, and 53 on the Green River on Fontenelle Reservoir (n=15) and down through Seedskaadee NWR (24 adults, 14 cygnets). The total fall swan count was 75 (58 adults, 17 cygnets). The 15 trumpeters observed at the south end of Fontenelle Reservoir represented the largest group of subadults observed this fall.

On the Mid-Winter Survey, we again observed a record number of swans (n=146; 116 adults, 30 cygnets). Seventeen adults and one cygnet wintered along Forty Rod Creek near the Daniel Fish Hatchery, the most northern wintering habitat that stays open along the Green River corridor.

## **FUTURE MANAGEMENT OBJECTIVES**

The Department's Nongame Program will focus on developing and funding wetland habitat improvement and restoration projects in the Green River (Lockman 2005), Salt River, and Snake River drainages. This will require forming multiple partnerships and seeking funding from a wide variety of sources. Given the growing summer and winter swan population in the state, and continuing drought conditions, it is urgent that the Department plays a lead role in swan habitat work. To obtain funding needed for costly habitat work, large-scale grants from the North American Wetlands Conservation Act and the recently developed Wildlife Natural Resource Trust Fund should be developed.

Another future management goal is to assess the continued decline in the number of nesting pairs and productivity in the core Snake River area. It is hoped that a research project can be developed with the University of Wyoming to conduct a viability/risk analysis of this segment of Wyoming's resident population.

## **ACKNOWLEDGEMENTS**

The Department would like to thank the following individuals for their valuable contributions to the Trumpeter Swan monitoring effort: Sue Wolff, Kathy McFarland and Sarah Dewey (GTNP), Eric Cole (NER), Lamont Glass and Carol Damberg (Seedskaadee NWR), Lance Koch (BTNF), Pat Hnilicka (USFWS), Bill Long (Wyoming Wetlands Society), Dave Stinson (Sky Aviation), Bert Raynes (Jackson Hole Bird Club), and Pegi and Doug Sobey (Department volunteers). Many other Department personnel and interested citizens contributed observations of swans throughout the state, and we appreciate their contributions to the program.

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**Table 1. Mid-winter Trumpeter Swan survey for the Rocky Mountain Population in Wyoming and the Tri-State Area, 1988-2007.**

<b>Year</b>	<b>Age Group</b>	<b>Yellowstone National Park</b>	<b>Snake River</b>	<b>Other Wyoming</b>	<b>Wyoming Total</b>	<b>Tri-State Total</b>
1988	Adult	67	107	8	182	1317
	Cygnet	18	25	3	46	413
	Total	85	132	11	228	1730
1989	Adult	96	182	15	293	1452
	Cygnet	21	32	7	60	291
	Total	117	214	22	353	1743
1990	Adult	78	154	15	247	1591
	Cygnet	32	42	4	78	416
	Total	110	196	19	325	2007
1991	Adult	61	187	38	286	1589
	Cygnet	14	34	13	61	342
	Total	75	221	51	347	1931
1992	Adult	108	63	141	312	1731
	Cygnet	4	17	13	34	472
	Total	112	80	154	346	2203
1993	Adult	178	222	71	471	1780
	Cygnet	39	55	9	103	455
	Total	217	277	80	574	2235
1994	Adult	137	198	55	390	1882
	Cygnet	24	60	14	98	644
	Total	161	258	69	488	2526
1995	Adult	141	256	71	468	2012
	Cygnet	41	61	30	132	668
	Total	182	317	101	600	2680
1996	Adult	130	255	89	474	2129
	Cygnet	24	72	12	108	580
	Total	154	327	101	582	2709
1997	Adult	74	224	59	420	2268
	Cygnet	3	62	16	105	431
	Total	77	286	75	525	2699

**Table 1. Continued.**

<b>Year</b>	<b>Age Group</b>	<b>Yellowstone National Park</b>	<b>Snake River</b>	<b>Other Wyoming</b>	<b>Wyoming Total</b>	<b>Tri-State Total</b>
1998	Adult	NS <sup>a</sup>	142	124	266	1756
	Cygnets	NS	26	13	39	307
	Total	NS	168	139	305	2063
1999	Adult	291	187	131	609	2698
	Cygnets	54	44	21	119	772
	Total	345	231	152	728	3470
2000	Adult	87	161	46	294	2694
	Cygnets	13	60	5	78	746
	Total	100	221	51	372	3440
2001	Adult	53	251	117	421	3198
	Cygnets	11	38	25	74	719
	Total	64	289	142	495	3917
2002	Adult	131	337	110	578	3814
	Cygnets	13	61	11	85	54
	Total	144	398	121	663	4360
2003	Adult	146	254	100	500	3365
	Cygnets	34	45	13	92	532
	Total	180	299	113	592	3897
2004	Adult	149	307	155	611	3785
	Cygnets	33	18	40	91	746
	Total	182	325	195	702	4531
2005	Adult	124	367	194	685	4147
	Cygnets	30	109	57	196	1143
	Total	154	476	246	881	5290
2006	Adult	121	413	242	776	4203
	Cygnets	14	58	53	125	1209
	Total	135	471	295	901	5412
2007	Adult	144	420	280	844	3604
	Cygnets	25	84	71	180	893
	Total	169	504	351	1024	4619

<sup>a</sup> NS = not surveyed.

**Table 2. Fall Trumpeter Swan survey results for the Tri-State Area, 1988-2006. <sup>a</sup>**

Year	Age Group	Montana	Idaho	Wyoming YNP	Wyoming Outside YNP	Tri-State Total
1988 <sup>b</sup>	Adult	268	87		109	464
	Cygnets	77	28		32	137
	Total	345	115		141	601
1989	Adult	294	101	25	85	505
	Cygnets	23	16	5	16	60
	Total	317	117	30	101	565
1990	Adult	245	92	25	70	432
	Cygnets	108	28	3	8	147
	Total	353	120	28	78	559
1991	Adult	176	138	30	70	414
	Cygnets	60	26	3	2	91
	Total	236	164	33	5	505
1992	Adult	156	109	26	99	390
	Cygnets	74	8	4	6	92
	Total	230	117	30	105	482
1993	Adult	60	94	26	68	248
	Cygnets	16	6	0	8	30
	Total	76	100	26	76	278
1994	Adult	70	79	30	60	239
	Cygnets	48	49	5	18	120
	Total	118	128	35	78	359
1995	Adult	84	118		105	307
	Cygnets	17	21		17	55
	Total	101	139		122	362
1996	Adult	95	127	20	74	316
	Cygnets	36	20	1	6	63
	Total	131	147	21	80	379
1997	Adult	90	112	18	92	312
	Cygnets	22	19	0	17	58
	Total	112	131	18	109	370
1998	Adult	105	110	20	69	304
	Cygnets	35	37	3	15	90
	Total	140	147	23	84	394

**Table 2. Continued.**

Year	Age Group	Montana	Idaho	Wyoming YNP	Wyoming Outside YNP	Tri-State Total
1999	Adult	120	103	20	69	312
	Cygnets	21	23	0	12	56
	Total	141	126	20	81	368
2000 <sup>c</sup>	Adult	127	102	20	69	318
	Cygnets	24	40	7	26	97
	Total	151	142	27	95	413
2001 <sup>d</sup>	Adult	140	124	17	81	362
	Cygnets	9	23	0	22	54
	Total	149	147	17	103	416
2002 <sup>e</sup>	Adult	76	103	22	72	273
	Cygnets	18	14	4	17	53
	Total	94	117	26	89	326
2003	Adult	89	100	16	86	291
	Cygnets	29	27	4	35	95
	Total	118	127	20	121	386
2004	Adult	89	112	16	74	291
	Cygnets	32	23	2	37	94
	Total	121	135	18	111	385
2005	Adult	112	136	18	89	355
	Cygnets	40	22	1	35	98
	Total	152	158	19	124	453
2006	Adult	117	132	14	114	377
	Cygnets	17	39	0	26	82
	Total	134	171	14	140	459

<sup>a</sup> Data from Gomez 2000 and Department Annual Completion Reports.

<sup>b</sup> Wyoming Outside YNP for these years includes data for entire state including YNP.

<sup>c</sup> Wyoming Outside YNP results do not include 12 yearlings and 5 cygnets (grafted to Kitchen Reservoir pair when one day old) released in summer 2000 (Wyoming Wetland Society captive flock).

<sup>d</sup> Wyoming Outside YNP results do not include three yearlings and five cygnets (grafted to Kitchen Reservoir pair when one day old) released in 2001 (Wyoming Wetland Society captive flock). Note: one cygnet was lost at Skyline Pond after fall survey flight.

<sup>e</sup> Wyoming Outside YNP results do not include five yearlings released in 2002 (Wyoming Wetland Society captive flock).

**Table 3. Occupancy and production of Trumpeter Swan nesting territories in Wyoming outside of Yellowstone National Park, 1990-2006. Mean and standard deviation are shown for the period 1990-2005.**

<b>Year</b>	<b>Sites Occupied</b>	<b>Nesting Pairs</b>	<b>Pairs with Hatchlings</b>	<b>Pairs with Fledglings</b>	<b>Number Hatched</b>	<b>Number Fledged</b>
1990	19	13	4	3	11	8
1991	22	8	2	2	3	2
1992	29	10	5	3	17	9
1993	24	11	7	5	15	8
1994	20	13	8	5	29	18
1995	22	12	7	5	25	15
1996	21	13	5	4	12	4
1997	26	16	3	4	22	17
1998	25	18	10	7	26	15
1999	24	15	6	6	19	12
2000	26	16	10 <sup>a</sup>	9 <sup>a</sup>	35	26 <sup>a</sup>
2001	28	17	10 <sup>a</sup>	8 <sup>a</sup>	29	21 <sup>a</sup>
2002	24	10	9	8	23	17
2003	26	18	13	11	42	35
2004	22	17	14	11	54	37
2005	24	16	11	10	38	35
<i>1990-2005</i>						
<i>Mean</i>	<i>23.9</i>	<i>13.9</i>	<i>7.8</i>	<i>6.3</i>	<i>25.0</i>	<i>17.4</i>
<i>SD</i>	<i>2.8</i>	<i>3.1</i>	<i>3.5</i>	<i>2.9</i>	<i>12.9</i>	<i>10.9</i>
2006	24	18	12	8	33	26

<sup>a</sup> Does not include Kitchen pair, where eggs were collected and five-day-old young were grafted to a pair successfully in 2000 (four fledged) and 2001 (five fledged).

**Table 4. Trumpeter Swan territorial site occupancy and production status for Wyoming outside Yellowstone National Park, 1996-2006. <sup>a</sup>**

Site	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Caribou-Targhee National Forest</b>											
Ernest Lake	---	---	---	---	---	---	NB	NB	---	NB	---
Bergman Marsh				N51	N43	N00C	---	NB	---	---	---
Indian Lake	N20	N10	N00	---	---	---	N33	N33	N55	N00	N10
Widget Lake	---	---	---	---	---	---	---	F	---	---	---
Loon Lake					OL	---	---	F	---	---	---
Rock Lake	1A	1A	---	---	---	---	---	---	OL	OM	N00
Junco Lake	---	OM	---	---	---	---	---	---	---	---	N00
Fish Lake	---	---	---	---	---	---	---	---	---	---	---
Squirrel Meadows					OL	OL	NB	---	---	OL	---
Moose Lake							NB	---	---	---	---
Alpine Wetland	---	N10	---	---	---	OL	1A	NB	NB	NB	NB
<b>Grand Teton National Park</b>											
Upper Glade Marsh (new in 2006)										N00	OM
Steamboat (new in 2002)							N43	OM	---	N00	---
Glade Cliff Slough (new in 2006)											N00
Glade South	OM	OM	OM	N11	O	N22	OM	N00	N10	N22	N00
Christian Pond	N00	N44	N22	N42	N42	OM	1A	---	---	---	---
Arizona Lake	1A	---	---	---	---	---	---	---	---	OM	N20
Emma Matilda	---	---	---	---	---	OM	1A	NB	---	---	NB
Two Ocean Lake	---	---	---	---	N42	N53	N32	N30	N00	OM	OM
Swan Lake	N00	N00	N00	N00	O	N00	O	N00	N33	NB	OL
Hedrick Pond	N00	N00	N00	N00	N20	N20C	O	O	---	NB	1A
Elk Ranch	N00	N55	N21	OM							
Cow Lake	OM	OM	O	---	---	---	---	---	---	---	---
Spread Cr. Ponds	1A	---	---	---	---	---	NB	---	---	---	---
Cygnets Lake	---	---	---	---	---	---	---	---	---	---	---
Polecat Slough	---	---	---	---	---	---	---	---	---	---	---
<b>National Elf Refuge</b>											
Hwy Pond	N50	OM	N00	O	N44	N32	N11	N10	---	N00	---
NE Marsh	N43	N00	N11	N00	N31	N00	N42	N33	N44	---	N32
SE Marsh				N00	N32	OM	N00	N11	N43	O	N11
Central Marsh						N33	N00	---	N22	N44	N33
Pierre's Ponds	N11	N00	N40	---	N00	OM	N11	N33	OM	O	OM
Romney Ponds									OM	OL	NB
<b>Jackson area</b>											
Skyline/Puzzleface	OM	OM	OM	OM	OM	N30	OM	OM	O	NB	---
WGF South Park	1A	1A	---	---	---	---	---	---	---	1A	OL
Pinto/Halfmoon	N50	OM	OM	N00	N66	N44	N11	O	N31	N55	N33
<b>Salt River Private</b>											
Kibby/Salt R. Cove			N22	OM	N00	N00	N00	N00	N00	NB	---
Etna/Jackknife area											NB

**Table 4. Continued.**

Site	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>BTNF North Zone</b>											
Bridger Lake	---	OM	---	OL	OL	OL	---	---	---	---	---
Atlantic Creek	OM	N33	N22	N22	O	O	---	---	---	---	---
Enos North	N00	N00	N00	---	N22	OM	OM	N44	---	---	NB
Enos South	N20	OM	---	N32	---	---	---	---	---	---	---
Lily Lake	---	---	---	OL	OL	OM	N00	N20	---	---	---
Lower Slide Lake	---	---	---	---	---	---	---	---	---	---	---
Upper Slide Lake	N10	N00	N66	N00C	N00C	N22	NB	OM	N11	N22	N00
Grizzly Lake pothole	N00	OM	---	OL	---	---	---	---	---	---	Dry
Burnt Fork		N11	---	---	---	---	---	---	---	---	---
Soda Lake	---	---	---	---	---	---	---	---	---	---	---
<b>BTNF South Zone</b>											
Wagon Cr. Lake	---	---	---	---	O	O	NB	O	O	---	---
Rock Crib	OM	OM	---	---	---	---	---	O	---	---	---
Mosquito Lake	---	OM	---	OL	O	N00	OM	1A	OL	---	NB
Roaring Fork P.	OM	OM	---	---	OL	O	---	---	---	---	---
Mud Lake	N20	N00	N20	N00	N00	---	N20	---	N50	N20	N20
<b>Green/New Fork Rivers Private</b>											
Carney oxbow									N55	N22	N00
Kitchen Res. South				N00	C N54 grafted	C N55 grafted	N44	N54	N44	N22	N33
Kitchen Res. North						NB	NB	NB	NB	OM	OM
Kendall Wetland						OL	OM	N00	N00	NB	NB
New Fork/airport											NB
Oliver (Barden) Slough					N00	N00	---	N00	OM	OM	OM
Big Sandy Reservoir	OM	---	---	---	---	---	---	---	---	---	NS
Swift Reservoir							OM	NB	NB	---	OL
Shafer Slough						OM	---	NB	---	---	NB
LaBarge Pond							---	---	---	---	---
<b>Seedskadee NWR</b>											
Hawley Pool 6	---	N55	N42	N44	N44	N44	Dry	N44	N65	N77	N00
Hawley Pool 1	---	1A	OM	OM	---	N11	NB	N44	N60	N65	N54
Hawley Pool 2								N44	N54	N00	N66
Hawley Pool 3								N43	---	N33	---
Hamp Unit										N33	N44
<b>Other Wyoming</b>											
Swamp Lake, Cody	1A	1A	---	---	1A	1A	1A	1A	---	---	---
Colony eastern WY	N00	N00	OM	?	?	OUID	1A	NB	NB	NS	NS
Trail Lake, Dubois										OM	OM

**Table 4. Continued.**

<sup>a</sup> Key to Table 4 Codes:

O	Pair occupied territory through nest period, did not attempt to nest, and did not molt on site.
OM	Pair occupied territory through nest period, did not attempt to nest, but molted on site.
OL	Pair appeared late in season (new code added 2000 not counted as an occupied site for season).
OID	Pair occupied the site, status of pair unidentified or status of site as a territory unidentified.
N42	Pair nested, laid eggs, hatched four eggs, and fledged two cygnets.
---	No occupancy of site by a pair.
C	Eggs collected for captive rearing project (new code added 2000).
1A	Only one adult occupied the site throughout the nesting season.
?	Number or status of occupancy unknown.
NB	Non-breeding birds present during some portion of nesting season (new category added 2002).
F	Swans present fall survey flight only (category added 2003).
NS	Not surveyed.

**Table 5. Summary of Trumpeter Swan annual mortalities in Wyoming showing age class and probable cause of death, 1991 through spring 2006.**

Year <sup>a</sup>	Total # Died	# of Adults <sup>b</sup>	# of Yearlings	# of Cygnets	Collision	Predation	Shot	Infection	Unknown
1991-1995	38	21		17	12	4	10	1	11
1995/1996	11	9		2	5		2		4
1996/1997	8	3		5	4				4
1997/1998	5	No data							
1998/1999	10	8		2	2	1		1	6
1999/2000	10	7		3	6	2	1		1
2000/2001	34	18	4	12	6	5			23
2001/2002	14	8	3	3	3	2			9
2002/2003	12	6	2	4	1	1	2		8
2003/2004	38	21	7	10	3	5		5	25
2004/2005	9	3	2	4	0	6			3
2005/2006 <sup>c</sup>	49	27	?	11	1		1		47
2006/2007	10	8		2					10
<i>Total</i> <sup>d</sup>	<i>186</i>	<i>106</i>	<i>18</i>	<i>51</i>	<i>22</i>	<i>22</i>	<i>4</i>	<i>6</i>	<i>136</i>
<i>Percent</i>		<i>61%</i>	<i>10%</i>	<i>29%</i>	<i>12.5%</i>	<i>12.5%</i>	<i>2%</i>	<i>3%</i>	<i>73%</i>

<sup>a</sup> Mortality total for years 1991-1995 is not broken out by individual years; the following years' data are recorded for 15 April through 14 April for each period but also includes carcasses/remains found after snow melt in May.

<sup>b</sup> Swans with all white plumage over one year of age; likely some yearlings are included in this group.

<sup>c</sup> Age not determined for 11 reported mortalities. Necropsy reports not completed on 14 specimens submitted to lab.

<sup>d</sup> Summary statistics are calculated only for the years 1998-2006.

**Table 6. Summary of Trumpeter Swan neck collars and leg bands observed in Wyoming or eastern Idaho, 15 April 2006 through 14 April 2007. Codes for age: HY = hatch year (cygnet), AHY = after hatch year (yearling or older), SY = second year (yearling), ASY = after second year (adult older than yearling). HSP=Harriman State Park.**

Neck Collar	Leg Band or Patagial Tag	Date	Location	Origin/Notes	Sex	Age
1Y8 yellow		11/5/06	Last Chance, ID	Idaho release		
6Y4 yellow		11/5/06	Last Chance, ID	Idaho release		
42H green		11/10/06	Boyle's Hill Pond, Jackson	Adult Dec. 1993 RRL capture; released Summer Lake	M	ASY
Y80 yellow		11/023/06	WGFD South Park, Pond #3	Collared HSP 2003 cygnet; released on site		
J38 green		Nov/Dec	Boroff Reservoir, Daniel FH	Captured ASY RRL 92; released Fort Hall	F	ASY
30R		12/1/06	Woodruff Narrows Reservoir	Idaho release		
3E5 green		12/04/06	Auburn Hwy, Salt River	Captured HY 2001, released Bear River		
Y80 yellow		2/14/06	Evan's Pond, south of Jackson	Collared HSP 2003 cygnet; released on site		
		2/07/06	Etna, Salt River slough CR 109	Cygnet capture release HSP Nov 2001, mate & 0 cygnets	F	ASY

# **LONG-BILLED CURLEW SURVEYS IN WESTERN WYOMING COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Long-billed Curlew

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## **INTRODUCTION**

The purpose of the Long-billed Curlew surveys in 2006 was to provide an indication of curlew population trends in portions of their breeding range in Wyoming. Surveys were conducted along the same routes as in previous years so long-term monitoring of Long-billed Curlew populations can be accomplished in the Pinedale/Merna, Cody, and Jackson areas. Additional routes may be added in eastern Wyoming.

## **METHODS**

Cochrane (1983) conducted roadside curlew surveys from 8 May to 19 July 1982, modifying the Breeding Bird Survey (BBS) technique (Robbins and VanVelzen 1967) to sample the greatest number of birds over the greatest distance (Cochrane and Oakleaf 1982). Surveys began 20 minutes before sunrise, with visual counts made every 0.5-mile (0.8 km) along the survey route using nine power binoculars. Curlews that were heard calling but that could not be located during the five-minute stop were excluded from the count, whereas those observed while driving between stops were included. Flocks were defined as groups of five or more individuals observed together.

In 1987, Cochrane's survey routes and methods were replicated. Since 1991, however, Long-billed Curlew survey methodology was modified to include both the number of curlews seen and heard to better represent the total number of curlews present along each route.

The number of stops on each route conducted in 2006 depended on the amount of suitable curlew habitat available to survey. As in past years, the Horse Creek survey route contained 17 stops, the New Fork route contained 9 stops, and the Chapman Bench route contained 10 stops. The Grand Teton National Park (GTNP) Hayfields route contained 23 stops; however, in past years, this route contained 20 stops but was modified in 1997 due to a washout of the Mormon Row Road and the likelihood that the

Ditch Creek crossing may never be repaired. The three additional stops were added to ensure that the route ended in the same place. Curlew surveys on the National Elk Refuge were discontinued due to lack of curlews on the survey route. Locations of each survey route have been reported in previous Nongame Completion Reports and are maintained in the Nongame files at the Department's Lander Regional Office.

Typically, two Long-billed Curlew surveys are conducted along the same routes that Cochrane surveyed in 1981 and 1982. In 2006, each survey was conducted twice: Horse Creek on 26 May and 2 June, New Fork on 22 and 31 May, Chapman Bench on 21 and 27 May, and GTNP Hayfields on 24 and 30 May. Surveys at the four sites were conducted in a manner similar to that of Cochrane (1983) and are scheduled to coincide with the peak in curlew concentrations noted by Cochrane (1983). Total number of curlews seen at each stop, those that were heard but could not be seen, and those that were both seen and heard was all recorded. For each survey, results were converted to number of curlews seen per mile (per km) of road surveyed so data could be compared between-years for each route.

## **RESULTS**

All Long-billed Curlew survey data (number of curlews seen and heard, and comments made during each survey) are located in the Nongame files at the Department's Lander Regional Office. Total number of individual Long-billed Curlews detected on each survey route is as follows: 22 and 30 on Horse Creek, 7 and 16 on New Fork, 6 and 7 on Chapman Bench, and 10 and 18 on the GTNP Hayfields route. The average number of curlews recorded per mile (per km) on each route is presented in Table 1. This includes curlews that were observed, those that were heard but not seen, and those that were both observed and heard, but does not include duplicate detections that may have occurred.

Twenty-two Breeding Bird Survey (BBS) routes have recorded curlews since 1968 when BBS routes were initiated in Wyoming; 10 of these routes were conducted in 2005 with a total of 4 curlews observed on 1 of the 10 routes (Table 2). Counts in previous years have fluctuated from a low of 1 curlew recorded on 1 of 15 routes completed in 1998, to a high of 19 curlews recorded on 8 of the 16 routes conducted in 1999. 2006 Breeding Bird Survey data were not available for this table.

## **DISCUSSION**

Several factors must be considered when comparing survey results between years. Curlew counts vary from one survey to the next due to weather conditions affecting visibility, fluctuations in noise levels, and actual fluctuations in curlew numbers. Therefore, it is beneficial to conduct a minimum of two surveys along each route per year for a better indication of the presence of curlews. Also, starting in 1991, the number of curlews that were seen only, heard only, and those that were both seen and heard have

been recorded on each route. When taking audio identification data into consideration, the number of curlews per mile (per km) is higher than if visual identification alone is used. Therefore, recording both audio and visual curlew observations better represents the actual number of curlews present along each route than either observation alone.

The number of curlews detected on BBS routes in Wyoming has also fluctuated, making it difficult to determine trends using this methodology. In past years, significant declines in Long-billed Curlew populations have been reported. Some speculation may offer possibilities for this apparent decline. On some routes, changes in observers may have led to fewer or no curlews being heard, depending on the expertise of each observer. To help minimize observer bias, one of the goals of the BBS program is to retain the same observer on each BBS route. Uncontrollable factors that occur while running BBS routes, such as reduced visibility and birds not calling or calling outside of hearing range, may also affect the number of curlews recorded.

Finally, based on a range-wide monitoring survey conducted by the U.S. Fish and Wildlife Service in 2004 and 2005, the timing of surveys in Wyoming in future years will shift to an earlier period (21 April – 15 May) to better detect curlews during the pre-incubation and courtship stages when they are easier to detect (Jones et al. 2003). Surveys conducted later in the breeding season may not be indicative of the breeding population because they may detect groups of non-breeders and failed nesters loafing in the area (Stephanie Jones, U.S. Fish and Wildlife Service, personnel communication).

## **ACKNOWLEDGEMENTS**

The Nongame Program would like to acknowledge the following Department biologists for their valuable contributions to the 2006 Long-billed Curlew monitoring effort: Doug Brimeyer, Dean Clause, Doug McWhirter, and Scott Smith.

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**Table 1. Long-billed Curlew survey route results, 1987 and 1991-2006.<sup>a</sup>**

Year	Horse Creek Route		New Fork Route		Chapman Bench Route		Grand Teton NP Hayfields Route	
	Number of Curlews Recorded	Curlews / mile (km)	Number of Curlews Recorded	Curlews / mile (km)	Number of Curlews Recorded	Curlews / mile (km)	Number of Curlews Recorded	Curlews / mile (km)
1987	11 <sup>b</sup>	1.4 (0.9)	13 <sup>b</sup>	3.3 (2.0)	----	----	----	----
1991	75 <sup>b</sup>	9.4 (5.8)	25 <sup>b</sup>	6.3 (3.9)	----	----	----	----
1992	53	6.6 (4.1)	7	1.8 (1.1)	26 <sup>b</sup>	3.7 (2.3)	----	----
1993	65	8.1 (5.1)	5	1.3 (0.8)	14 <sup>b</sup>	2.0 (1.2)	10 <sup>b</sup>	0.9 (0.6)
1994	45	5.6 (3.5)	11	2.8 (1.7)	7 <sup>b</sup>	1.0 (0.6)	----	----
1995	53 <sup>b</sup>	6.6 (4.1)	12 <sup>b</sup>	3.0 (1.9)	0 <sup>b</sup>	0.0 (0.0)	19 <sup>b</sup>	2.0 (1.2)
1996	113	14.1 (8.8)	17	4.3 (2.6)	7	1.0 (0.6)	3	0.3 (0.2)
1997	40	5.0 (3.1)	42	10.5 (6.5)	0 <sup>b</sup>	0.0 (0.0)	7	0.6 (0.4)
1998	43	5.4 (3.3)	10	2.5 (1.6)	5	0.7 (0.4)	14	1.3 (0.8)
1999	39	4.9 (3.0)	10	2.5 (1.6)	3	0.4 (0.3)	13	1.2 (0.7)
2000	42	5.3 (3.3)	5	1.3 (0.8)	8	1.1 (0.7)	----	----
2001	32	4.0 (2.5)	8	2.0 (1.2)	0	0.0 (0.0)	12	1.1 (0.7)
2002	31	3.9 (2.4)	6	1.5 (0.9)	6	0.9 (0.5)	10	0.9 (0.6)
2003	33	4.1 (2.6)	9	2.3 (1.4)	7	1.0 (0.6)	5	0.5 (0.3)
2004	31	3.9 (2.4)	9	2.3 (1.4)	6	0.9 (0.5)	8	0.7 (0.5)
2004 <sup>c</sup>	81	10.1 (6.3)	2	0.5 (0.3)	----	----	----	----
2005	32	4.0 (2.5)	9	2.3 (1.4)	5	0.7 (0.4)	----	----
2006	26	2.0 (3.3)	12	1.9 (3.0)	7	0.6 (1.0)	14	0.8 (1.3)

<sup>a</sup> If more than one survey was conducted, the average number of curlews recorded was used.

<sup>b</sup> Only one survey was conducted.

<sup>c</sup> Results from the 12 May survey using USFWS protocol.

**Table 2. Breeding Bird Survey data for Long-billed Curlews, 1980-2005. A blank indicates a year when a survey was not conducted. An asterisk identifies the routes most useful for monitoring this species.**

Route #	Route Name	Year																			Route Total			
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998		1999	2000	2001
9	Dubois	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
15	Fontenelle			0	0	0		0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
28	Yoder	0	0	0			0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
*33	Clark										0	2	3								4	1	10	
*36	Moose	0	0	0	0	1	0	2	0	1	2	2	2	0	0	2	4	4	0	4	0	0	24	
45	Recluse	0		0	0		0	0	0		2	1	3	0	0	0	0	0	0	0	0	0	8	
48	Seely <sup>a</sup>										2	0	0	0	0	0	0	0	0	0	0	0	2	
67	Highlight	0	0	0	0				0		0	0	0	1	0								1	
*69	Newcastle								1	4	0		2	0	2	0	0	0	1	0	0	0	10	
71	Soda Lake	0	0	0	0	0			0		0	3	1	0	0	0	0	0				0	4	
*74	Boulder			0	2	2						0			0	0		0	0	3			7	
*75	Big Sandy	0		0	0			0	2	7	5		3		6		8	0	0	3	1	5	40	
76	Farson				1											0							1	
*82	Lamont								1	0	0	1	1	0	0	0	1	0	0	1	2	1	9	
83	Pathfinder			1	0	0			0	0	0	0		0	0	0	0	0	0	0	0	0	1	
*89	Meadowvale						0	13	0		0	2	0	0	0	0							15	
*90	Lusk			7	9	0			0	0	0	0	1	0	0	0			0	5	1	0	23	
*93	Mtn. View	11	10	9	5				0		0	0			0				0		0	0	35	
150	Gov't. Valley												0	0	0	0	0	3	0	1	0	2	6	
173	Ryegrass	1	0	0	0	1	0			1					0		0	0	0	0	1	0	4	
195	Seedskadee	0	2	0	0	0	0						0	1	0	0	0	0	0	0	0	0	3	
206	Caballa												4	0	0	0	0	0	1	0	0	0	5	
<b>Total Observed/Year</b>		<b>12</b>	<b>12</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>14</b>	<b>15</b>	<b>9</b>	<b>19</b>	<b>1</b>	<b>8</b>	<b>2</b>	<b>13</b>	<b>7</b>	<b>1</b>	<b>19</b>	<b>9</b>	<b>11</b>	<b>213</b>

**Table 2. Continued.**

Route #	Route Name	Year						Route Total
		2002	2003	2004	2005	2006 <sup>b</sup>		
9	Dubois					n/a	1	
15	Fontenelle	0	0	0	0	n/a	3	
28	Yoder	0	0	0	0	n/a	1	
*33	Clark	1	0	4	0	n/a	15	
*36	Moose		1	0		n/a	25	
45	Recluse	2	1	2		n/a	13	
148	Seely 2 <sup>a</sup>	0		2	0	n/a	4	
67	Highlight					n/a	1	
*69	Newcastle					n/a	10	
71	Soda Lake	0	0		0	n/a	4	
*74	Boulder	0	0			n/a	7	
*75	Big Sandy				0	n/a	40	
76	Farson	5				n/a	6	
*82	Lamont	0		0		n/a	9	
83	Pathfinder	1	0	0	0	n/a	2	
*89	Meadowvale	0	0			n/a	15	
*90	Lusk			4	4	n/a	31	
*93	Mtn. View	0	1			n/a	36	
150	Gov't. Valley	0	0	0	0	n/a	6	
173	Ryegrass	0	3	1		n/a	8	
195	Seedskadee	2	0			n/a	5	
206	Caballa	0	0		0	n/a	5	
<b>Total Observed/Year</b>		<b>11</b>	<b>6</b>	<b>13</b>	<b>4</b>	<b>n/a</b>	<b>243</b>	

<sup>a</sup> Route #48 (Seely) was modified in 2002 and is now #148 (Seely 2).

<sup>b</sup> 2006 Breeding Bird Survey data were not available at the time of printing.

**UPLAND SANDPIPER POPULATION MONITORING IN WYOMING,  
A PLANNING SURVEY  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Upland Sandpiper

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Bryce Krueger, Prairie Ecologist

## **INTRODUCTION**

The Upland Sandpiper is designated a Species of Greatest Conservation Need with a Native Species Status of 4 by the Wyoming Game and Fish Department (Department) because its population status and trends are unknown, its habitat is vulnerable to loss, and it is sensitive to human disturbance. For the North American population, the Breeding Bird Survey (BBS) detected a negative trend between 1980 and 2004 (Trend -1.2,  $P = 0.02$ ,  $n = 552$ ; Sauer et al. 2004). However, this BBS data is unreliable due to the survey's limited power to effectively monitor species that occur at low densities, such as the Upland Sandpiper (Sauer et al. 2004). Beginning in 2005, the Department initiated the Landowner Incentive Program (LIP) to implement habitat improvements on private lands for sensitive species. Grasslands and Upland Sandpipers were among the systems and species selected for LIP attention. Although Upland Sandpipers are currently monitored through the joint effort described in Monitoring Wyoming's Birds: The Plan for Count-based Monitoring (Leukering et al. 2003), more detailed information is required to conserve Upland Sandpipers in Wyoming and to successfully identify and implement LIP habitat improvement projects to benefit Upland Sandpipers.

## **METHODS**

Historical records of Upland Sandpiper observations were evaluated to determine sandpiper concentration areas. Due to limited available survey time, these concentration areas were surveyed to maximize power for detecting population trends (Rhodes et al. 2006), particularly population declines. Road-based surveys were conducted through tracts of Upland Sandpiper habitat and concentration areas using BBS survey protocol (USGS 2001). Prior to running each route, one day (morning and evening) was spent inspecting possible routes and looking for Upland Sandpipers in the area. The most logical survey route was then established [approximately 25 miles (40 km) long] and a Global Positioning System (GPS, Garmin 12 XL, Garmin International Incorporated,

Olathe, Kansas, USA) was used to record survey stops in Universal Transverse Mercator (UTM) coordinates (Grubb and Eakle 1988).

## **RESULTS**

Four survey routes were conducted; one on the east side of Glendo Reservoir, one north of the town of Douglas, one west of the town of Sheridan (Sheridan 1), and one east of the town of Sheridan (Sheridan 2) (Table 1). Three additional areas were evaluated (Thunder Basin National Grassland [TBNG], Coffey Road north of Manville, and the La Grange area), and Upland Sandpipers were detected by either sight or sound on four of the five routes.

Additional incidental sightings were also recorded. A Department employee reported a detection of two flying and two more vocalizing Upland Sandpipers in the Spring Creek Unit of TBNG. Three Upland Sandpipers were observed between La Grange and Albin, Wyoming; one was off of Coffey Road north of Manville; and one was near Dull Center in TBNG (Table 2).

## **DISCUSSION**

The Upland Sandpiper surveys conducted during this period provided helpful baseline data and insight into where and how to survey for Upland Sandpipers in Wyoming. Only one of the historical concentration points did not yield an Upland Sandpiper observation. It is important to continue surveying these routes and establish at least one more route to effectively monitor Upland Sandpiper population trends and identify potential LIP habitat improvement project areas for Upland Sandpipers. Potential survey routes should be explored during 2007 through the Spring Creek Unit and Dull Center area of TBNG, near La Grange, and north of Manville, Wyoming.

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**Table 1. Unique Upland Sandpiper individuals identified through vocalizations and sightings for each survey route during June-July, 2006.**

<b>Survey Route</b>	<b>Date</b>	<b>Vocalizations</b>	<b>Sightings</b>	<b>Total</b>
Glendo	6-28-06	16	13	29
Sheridan 1	6-29-06	0	0	0
Sheridan 2	6-30-07	5	5	10
Douglas	7-6-07	0	1	1
<i>Total</i>		<i>21</i>	<i>19</i>	<i>40</i>

**Table 2. Upland Sandpiper observations during June-July of 2006, recorded using the Universe Transverse Mercator grid system (Zone 13T, North American Datum 1983).**

Area	Date	Observer	UTM-E	UTM-N	Vocalizations	Sightings	Comments
Manville	6-12-06	1	527749	4749632	0	2	
Glendo	6-28-06	2	507215	4707277	2	0	
Glendo	6-28-06	3	506133	4707780	4	0	Close to observer 1 but not the same UPSAs
Glendo	6-28-06	4	512133	4705435	3	0	
Glendo	6-28-06	5	514867	4703612	5	0	
Glendo	6-28-06	6	517014	4701521	1	1	
Glendo	6-28-06	7	522947	4699809	0	1	
Glendo	6-28-06	8	524789	4711167	1	5	
Glendo	6-28-06	9	505620	4711560	0	6	
Sheridan	6-30-06	10	353163	4972265	2	1	
Sheridan	6-30-06	11	352951	4974078	2	3	
Sheridan	6-30-06	12	350033	4963624	1	1	
Spring Creek Unit – TBNG <sup>a</sup>		13	483650	4962919	2	2	
La Grange	7-5-07	14	573218	4599022	0	3	
Dull Center – TBNG	7-5-07	15	499434	4807469	0	1	
Glendo	7-5-07	16	505630	4711273	0	1	Same area as observer 8
Glendo	7-5-07	17	510374	4710987	0	1	New area
Douglas	7-6-07	18	487194	4742567	0	1	

<sup>a</sup> TBNG = Thunder Basin National Grassland.

# **RAPTOR NESTING SURVEY COST-SHARE AGREEMENT COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Raptors / State Wildlife  
Grants Funding – Ferruginous Hawk

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## **INTRODUCTION**

The purpose of this study is to provide baseline data on raptor nesting activity associated with lands administered by the Bureau of Land Management (BLM) Casper Field Office, and to inventory known and document new nest locations on the U.S. Forest Service Thunder Basin National Grasslands (TBNG) in northeastern Wyoming.

A cost-share agreement to survey for nesting raptors was initiated in 1996 between the BLM, TBNG, and Wyoming Game and Fish Department (Department) and has continued each year since, excluding 2003. In 1997-2002 and 2004-2005, priority survey areas included specific portions of the TBNG and regions of the BLM Platte River, Buffalo, Newcastle, and Casper Resource Areas that had not been previously surveyed, including lands proposed for coal bed methane production. Surveys in 2006 focused on one priority area within the Casper Resource Area and two priority areas within the TBNG.

Funding for this cooperative effort was provided by the BLM and TBNG. The Department conducted all aerial surveys.

## **METHODS**

The 2006 survey followed similar study parameters detailed in previous years' raptor nest survey reports. Survey transects were established at 0.5-mile (0.8 km) intervals. Transects were flown in a Piper fixed-wing aircraft from 26 April through 19 May. The Department's Grassland Ecologist, Bryce Krueger, and Nongame Bird Biologist, Andrea Cerovski, conducted all aerial surveys. No ground surveys or follow-up aerial surveys were conducted in 2006.

A Geographic Positioning System (GPS) unit was used to record nest locations and maintain accurate flight patterns on survey transects. Each located nest was observed for evidence of nesting activity and the presence of adult birds, young birds, or eggs. The physical condition of each observed nest was also noted. All raptor nests encountered, regardless of activity or condition, were recorded. Observations were recorded at each nest using the field names and codes presented in Appendix I.

## RESULTS AND DISCUSSION

Approximately 77 hours of flight time was expended to search for, locate, and observe nests during the survey (ferry time is not included in this total). Inventories were not completed in all priority areas due to the limited amount of survey time available, and inclement weather conditions during the survey period, which reduced flight time. Surveys were conducted in part of the BLM's priority area, and in two of the TBNG's eight priority areas.

Results of nesting surveys are summarized in Tables 1 and 2 for the BLM and TBNG, respectively. Nest and substrate codes used during the survey and in the data tables are presented in Tables 3 and 4, respectively. Specific nest locations are not given in this report.

A total of 168 raptor nests were located within the BLM-administered priority areas (Table 1). Surveys located 86 occupied diurnal raptor nests, including Ferruginous Hawk (n = 10), Bald Eagle (n = 3), Golden Eagle (n = 21), Red-tailed Hawk (n = 50), and Swainson's Hawk (n = 2). Additional occupied nests included Great Horned Owl (n = 12) and Great Blue Heron (n = 1). Numerous unoccupied nests and unoccupied nests in varying degrees of disrepair were also recorded (n = 70).

A total of 335 raptor nests were located within the Thunder Basin National Grassland priority areas (Table 2). Surveys located 149 occupied diurnal raptor nests, including Bald Eagle (n = 1), Ferruginous Hawk (n = 42), Golden Eagle (n = 19), Red-tailed Hawk (n = 80), and Swainson's Hawk (n = 7). Additional occupied nests included Great Horned Owl (n = 13) and Great Blue Heron (n = 2). A total of 173 unoccupied nests or unoccupied nests in varying degrees of disrepair were also recorded.

The 1996, 1997, and 1998 surveys were conducted to coincide with the timing of the incubation, hatching, and pre-fledging stages for Ferruginous Hawks and the nestling stage (post-hatching and pre-fledging) for Golden Eagles. The surveys in 1999-2005 (excluding 2003 when surveys were not conducted) were initiated two to three weeks earlier than previous years due to slightly different project objectives in 1999 and to avoid the observation problems with early leaf-out that occurred in 1998. Therefore, the 1999-2005 surveys coincided with the timing of the incubation and hatching stages for Ferruginous Hawks and the incubation, hatching, and nestling stages for Golden Eagles. The 2006 surveys were planned for the same time frame as 1999-2005. However, delays

in obtaining the necessary pre-survey paperwork precluded initiating the inventory until late April.

A few biases have been noted during past surveys that should receive consideration during future efforts or evaluations of results. Swainson's Hawk nests often deteriorate during the winter, and their late arrival in the spring means that this species may be missed during surveys in late April or early May. Falcons cannot be adequately detected with fixed wing aircraft surveys, and the absence of records for raptor species known to occupy habitats in northeastern Wyoming should not be considered documentation that they do not occur in the survey areas. Adequate ground or helicopter surveys would be required to document nesting falcons, neither of which was conducted in 2006.

**Table 1. A summary of the 2006 raptor nest survey for the Bureau of Land Management Casper Field Office Priority Area.**

<b>Species</b>	<b>OCAC</b>	<b>OCCU</b>	<b>UNOC</b>	<b>UNDI</b>	<b>UNDE</b>	<b>Total Nests</b>
Bald Eagle	3	0	2	1	0	6
Ferruginous Hawk	10	0	12	11	6	39
Great Horned Owl	12	0	0	0	0	12
Golden Eagle	21	0	5	3	1	30
Great Blue Heron	1	0	0	0	0	1
Red-tailed Hawk	48	2	10	8	7	75
Swainson's Hawk	2	0	0	0	0	2
Unknown raptor	0	0	3	1	0	4
<b>Total Nests</b>	<b>97</b>	<b>2</b>	<b>32</b>	<b>24</b>	<b>14</b>	<b>169</b>

<b>Key</b>	
OCAC	An occupied, active nest in which a breeding attempt was made, indicated by the presence of an incubating or brooding adult, eggs or young in the nest, or fledged young near the nest.
OCCU	An occupied nest with two adults present at or near the nest and/or fresh lining material in the nest.
UNOC	An unoccupied nest that is in good condition but with no apparent recent use or adult presence at the time of the observation.
UNDI	An unoccupied, dilapidated nest in a state of ruin due to weather, natural aging, and/or neglect.
UNDE	An unoccupied nest showing no sign of raptor activity that is destroyed to the point that it is no longer useable without major reconstruction. These nests, for all practical purposes, have disappeared.

**Table 2. A summary of the 2006 raptor nest survey for the Thunder Basin National Grassland Priority Areas.**

<b>Species</b>	<b>OCAC</b>	<b>OCCU</b>	<b>UNOC</b>	<b>UNDI</b>	<b>UNDE</b>	<b>Total Nests</b>
Bald Eagle	1	0	0	0	0	1
Ferruginous Hawk	35	7	48	24	25	139
Great Horned Owl	12	1	0	0	0	13
Golden Eagle	18	1	6	1	1	27
Great Blue Heron	2	0	0	0	0	2
Red-tailed Hawk	77	3	38	17	8	143
Swainson's Hawk	7	0	1	0	0	8
Unknown Buteo	0	0	2	0	1	3
Unknown raptor	0	0	0	0	1	1
<b>Total Nests</b>	<b>152</b>	<b>12</b>	<b>95</b>	<b>42</b>	<b>36</b>	<b>337</b>

<b>Key</b>	
OCAC	An occupied, active nest in which a breeding attempt was made, indicated by the presence of an incubating or brooding adult, eggs or young in the nest, or fledged young near the nest.
OCCU	An occupied nest with two adults present at or near the nest and/or fresh lining material in the nest.
UNOC	An unoccupied nest that is in good condition but with no apparent recent use or adult presence at the time of the observation.
UNDI	An unoccupied, dilapidated nest in a state of ruin due to weather, natural aging, and/or neglect.
UNDE	An unoccupied nest showing no sign of raptor activity that is destroyed to the point that it is no longer useable without major reconstruction. These nests, for all practical purposes, have disappeared.

**Table 3. Nest code abbreviations used during the 2006 raptor nest survey.**

<b>Nest Code</b>	<b>Definition</b>
OCAC	An occupied, active nest in which a breeding attempt was made, indicated by the presence of an incubating or brooding adult, eggs or young in the nest, or fledged young near the nest.
OCCU	An occupied nest with two adults present at or near the nest and/or fresh lining material in the nest.
UNOC	An unoccupied nest that is in good condition but with no apparent recent use or adult presence at the time of the observation.
UNDI	An unoccupied, dilapidated nest in a state of ruin due to weather, natural aging, and/or neglect.
UNDE	An unoccupied nest showing no sign of raptor activity and that is destroyed to the point that it is no longer useable without major reconstruction. These nests, for all practical purposes, have disappeared.
OCFA	An occupied nest that failed to fledge any young.
GONE	A nest that was located during a previous study but has been completely destroyed with no sign of nest material during the current study.
?	A nest whose status was undetermined during subsequent surveys in the same nesting season.

**Table 4. Substrate code abbreviations used during the 2006 raptor nest survey.**

<b>Substrate Code</b>	<b>Definition</b>
ANS	Artificial Nest Structure
CKB	Creek Bank
CLF	Cliff
CTD	Cottonwood (dead)
CTL	Cottonwood (live)
ELL	Elm (live)
GHS	Ground or Hillside
MMS	Manmade Structure
POD	Ponderosa Pine (dead)
POL	Ponderosa Pine (live)
ROC	Rock Outcrop
RUS	Russian Olive
WIL	Willow (live)

# **UTAH JUNIPER OBLIGATES COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need – Utah Juniper Obligates

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Matt Wells, Nongame Biologist

## **INTRODUCTION**

Ten species of birds are considered to be juniper obligates in Wyoming (Table 1). Four of these obligates have been classified by the Wyoming Game and Fish Department (Department) as Species of Greatest Conservation Need (SGCN) with a Native Species Status (NSS) of 3 due to populations and habitat that are restricted in distribution (Fitton 1983, 1989, Oakleaf et al. 1996, Department 2005). Juniper woodlands make up only about 2% of Wyoming's land area; therefore, this bird community has significant conservation value. Additionally, Wyoming marks the northernmost range for several of these juniper obligate species, and Utah juniper habitat is so limited in the State that some of these species have restricted distributions in Wyoming (Fitton 1989).

The purpose of these surveys was to document presence/absence and, in future years, abundance of the five Utah juniper obligate SGCN. In order to do so, transects will be established that can be easily replicated from year-to-year.

## **METHODS**

Juniper patches should be surveyed using 164-foot (50 m) radius point counts spaced 656 feet (200 m) apart along established line transects from one-half hour after sunrise to four hours after sunrise (Hutto et al. 1986). Transects should be about 0.6 miles (1 km) long, but will vary with the juniper patch size. Once all transects are established, they should be visited once early in the breeding season (11 May – 11 June) and once later in the breeding season (12 June – 8 July) in order to capture chronology of species breeding at different times (Fitton 1983).

## **RESULTS**

Preliminary surveys were conducted from 28 June to 30 June 2006. Three separate transects were surveyed, two in the morning and one in the evening. Twenty-two species of birds were observed (Table 2), and six of the ten bird species described as juniper obligates in Wyoming were observed. Two of these six species observed, the Juniper Titmouse and the Bushtit, are classified as SGCN with an NSS3 by the Department.

## **DISCUSSION**

Although only preliminary surveys were conducted this year, these should pave the way for more intensive surveys to be implemented in future years. Transects will be established so that surveys can be replicated, regardless of the observer. For example, a GPS unit will be used to mark point count locations along transects. In 2006, time constraints and unfamiliarity with the area restricted the amount of transects that were established. A vegetation type map should be created to aid in placing transects in the proper habitat type in order to discover and sample all different sizes of juniper woodland patches and provide various access options.

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**Table 1. Juniper obligate bird species in southwestern Wyoming.**

<b>Common Name</b>	<b>Scientific Name</b>
Ash-throated Flycatcher <sup>a</sup>	<i>Myiarchus cinerascens</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Bushtit <sup>a</sup>	<i>Psaltiriparus minimus</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Gray Vireo	<i>Vireo vicinior</i>
Juniper Titmouse <sup>a</sup>	<i>Baeolophs ridgwayi</i>
Scott's Oriole <sup>a</sup>	<i>Icterus parisorum</i>
Western Scrub-Jay <sup>a</sup>	<i>Aphelocoma californica</i>

<sup>a</sup> Wyoming Game and Fish Department SGCN NSS3 designation.

**Table 2. Species list for all birds seen in juniper woodland habitat in southwestern Wyoming from 28 June to 30 June 2006.**

<b>Common Name</b>	<b>Scientific Name</b>
American Kestrel	<i>Falco sparverius</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Bushtit	<i>Psaltriparus minimus</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clark's Nutcracker	<i>Nucifraga columbiana</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Raven	<i>Corvus corax</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Great Horned Owl	<i>Bubo virginianus</i>
Horned Lark	<i>Eremophila alpestris</i>
Juniper Titmouse	<i>Baeolophus ridgwayi</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Flicker	<i>Colaptes auratus</i>
Northern Harrier	<i>Circus cyaneus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Sage Sparrow	<i>Amphispiza belli</i>

# **BLACK-BACKED AND AMERICAN THREE-TOED WOODPECKER SURVEYS IN POST-BURN HABITAT IN WYOMING COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS: Species of Greatest Conservation Need / State Wildlife Grants  
Funding – Black-backed and American Three-toed Woodpeckers

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Matt Wells, Nongame Biologist  
Andrea Cerovski, Nongame Bird Biologist

## **INTRODUCTION**

Black-backed and American Three-toed Woodpeckers are known to be dependent on fire and other disturbances that provide their preferred foraging and nesting habitats (Goggans et al. 1988, Hoffman 1997). Burned timber provides an abundant food source for woodpeckers in the form of bark and wood-boring beetles that invade burned timber stands in great numbers shortly after a fire. Post-burn habitat can also provide nest trees for woodpeckers, as they often nest in snags and dead trees with heart rot. As such, dead and dying trees are a vital component of Black-backed and American Three-toed Woodpecker management.

These two species are an important part of the forest community. As primary cavity excavators, they create nests for themselves as well as for secondary cavity nesters in subsequent years. *Picoides* woodpeckers are also important predators of bark and wood-boring beetles, and can serve to control outbreaks. Knowledge of these two species in Wyoming is limited. Hutto (1995) revealed in a Montana/Wyoming study that Black-backed Woodpeckers were essentially restricted to early post-fire habitats. Both species have been documented nesting in Wyoming (Cerovski et al. 2004). The goals of this project were first to document presence and use of post-fire habitat by Black-backed and American Three-toed Woodpeckers. Second, to become more informed about when and how these woodpeckers are using post-burn habitat to aid in conservation and forest management strategies. Third, to collaborate with the U.S. Forest Service (USFS) in order to develop a management strategy for post-burned habitat in areas inhabited by Black-backed and American Three-toed Woodpeckers.

## **METHODS**

Burned areas were located by contacting USFS personnel on five National Forests in Wyoming, including the Bighorn, Black Hills, Bridger-Teton, Routt-Medicine Bow, and Shoshone National Forests (Table 1). Burns considered for surveys were less than five years old, greater than 100 acres (40 ha), and contained some mature or old growth conifer.

Surveys were conducted by traversing the burned area on foot or horseback and looking for scrapes, feed trees, and woodpeckers, and listening for woodpecker calls and drumming. Woodpeckers and any indicative sign, such as large scrapes or feedholes made by the target species, were documented and UTM coordinates were recorded.

## **RESULTS**

The Riley Point fire in the Bighorn National Forest was surveyed on 7 and 8 June 2006. Four Hairy Woodpeckers were documented using the burn, including one adult tending a nest with young. The Hairy Woodpecker nest was in a fire-killed tree on the periphery of the burn. No Black-backed or American Three-toed Woodpeckers were observed in this burn; however, individuals may be difficult to detect without specialized survey techniques (e.g. call playback or nest searches). Several feed trees and scrape trees were observed and documented during the survey that could indicate the presence of the two target species of woodpeckers (Figure 1). Approximately 50% of the total burned area has been salvage logged. A total of 12 hours was spent surveying the Riley Point burn area, which was greater than 1,000 acres (405 ha). A list of species observed during the survey is presented in Table 2.

The Sheep Mountain burn in the Bridger-Teton National Forest was surveyed on 26 June 2006. Many feed and scrape trees were located that may indicate the presence of Black-backed or American Three-toed Woodpeckers (Figure 2).

The Pass Creek burn in the Shoshone National Forest was surveyed on 24 May 2006. A Hairy Woodpecker cavity nest with young food begging from within was documented, but no Black-backed or American Three-toed Woodpeckers or their sign were observed (Figure 3).

A juvenile American Three-toed Woodpecker and several scrapes were observed in the Young Mountain fire in the Shoshone National Forest in 2006. However, these were casual observations, not the result of survey effort.

In 2001 and 2002, the Fontenelle burn in the Bridger-Teton National Forest was surveyed for the presence of post-fire dependent woodpeckers. Several feed trees were located, indicating the presence of American Three-toed or Black-backed Woodpeckers (Figure 4).

## DISCUSSION

Black-backed and American Three-toed Woodpeckers have a strong association with dead or dying trees infested with beetles; therefore, fire and other large-scale disturbances create important foraging resources for *Picoides* woodpeckers. However, management efforts cannot solely be focused on burned areas in hopes of maintaining the long-term viability of these populations. Old growth forests with patches of beetle infested trees play an important role in maintaining baseline populations of these species in the absence of burned areas (Goggans et al. 1988). However, with the loss of much of our old growth forests and the advent of salvage logging techniques that make dead trees commercially valuable, these large-scale disturbances may have even more importance than in historical times. Therefore, it is advisable to maintain all intact old growth forests and protect burned habitats for at least three years after disturbance for *Picoides* woodpeckers. Hoffman (1997) supports the idea of conserving burned habitats, and states that only gradual economic loss occurs in the two to three years after a fire.

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**Figure 1. Photographs of likely Black-backed Woodpecker or American Three-toed Woodpecker feed and scrape trees in the Riley Point burn, Bighorn National Forest, 7 and 8 June 2006.**



**Figure 2. Photographs of likely Black-backed Woodpecker or American Three-toed Woodpecker feed and scrape trees in the Sheep Mountain burn, Bridger-Teton National Forest, 26 June 2006.**



**Figure 3. Photographs of Hairy Woodpecker feed trees (for species comparison) in the Pass Creek burn, Shoshone National Forest, 24 May 2006.**



**Figure 4. Photographs of likely Black-backed Woodpecker or American Three-toed Woodpecker feed trees in the Fontenelle burn, Bridger-Teton National Forest, 2001 (top) and June 2002 (bottom).**

**Table 1. Information on recent forest fires in five National Forests in Wyoming to aid in determining woodpecker survey sites.**

National Forest Name of Fire	Year Burned	Acres Burned	Datum	Zone	UTM Easting	UTM Northing	Township, Range, Section	Survey Year	Topo Map Quad Name	Comments
<b>Bighorn National Forest</b>										
Littlehorn	?	?						?	Bull Elk Park	Need more info
Riley Point	?	1000+						2006	West Pass	Need more info
<b>Black Hills National Forest</b>										
Cement	?	1000+					T50N R61W	2007?		Need more info
<b>Bridger-Teton National Forest</b>										
Big	2005	65	NAD 83	12T	537755	4762831		n/a		Too small to survey
Bobcat	2003	252	NAD 83	12T	543363	4871706		2008		
Clear Creek	2003	340	NAD 83	12T	595476	4793877		2008		
Cow Camp	2002	340	NAD 83	12T	630921	4731795		2007		
Divide	2002	2620	NAD 83	12T	624263	4742749		2007		
East Table	2003	3599	NAD 83	12T	515773	4783660		2007		
Hams Ridge	2005	40	NAD 83	12T	519223	4670035		n/a		Too small to survey
Hidden Ranch Assistant	2005	10	NAD 83	12T	517033	4812198		n/a		Too small to survey
Lloyd	2003	262	NAD 83	12T	564169	4813254		2008		
Moss Ridge	2003	3055	NAD 83	12T	550792	4867193		2007		
Middle	2003	14	NAD 83	12T	522682	4734756		n/a		Too small to survey
Mule Fire	2002	3400	NAD 83	12T	537541	4756506		2007		
Sheep Mountain	?	?	NAD83	12T	536750	4549600		2006		Large burn
Tourist	2005	12	NAD 83	12T	603586	4785326		n/a		Too small to survey
Triple	2005	520	NAD 83	12T	536151	4736448		2008		
Willow Creek	2003	19	NAD 83	12T	525365	4777242		n/a		Too small to survey
<b>Roott-Medicine Bow National Forest</b>										
Bear Mountain South	?	500					T13 R82 Sec.29	2008?		Need more info
Six Mile	?	300					T13 R80 Sec.35	2008?		Need more info
<b>Shoshone National Forest</b>										
Black Water	2003	<1000					T51 R107 Sec.8	2007		
East	2003	?						2008?	W of Sylvan Pass	Need more info
Pass Creek	2002	<1000					T31 R100 Sec.33	2006		
Young Mountain	?	1000+						2006		Need more info

**Table 2. Species list of all birds seen during post-burn surveys at the Riley Point fire near Burgess Junction, Wyoming, 7-8 June 2006.**

<b>Common Name</b>	<b>Scientific Name</b>
American Kestrel	<i>Falco sparverius</i>
American Robin	<i>Turdus migratorius</i>
Brown Creeper	<i>Certhia americana</i>
Chipping Sparrow	<i>Spizella passerina</i>
Common Raven	<i>Corvus corax</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Hairy Woodpecker <sup>a</sup>	<i>Picoides villosus</i>
Least Flycatcher	<i>Empidonax minimus</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Northern Flicker <sup>b</sup>	<i>Colaptes auratus</i>
Rock Wren	<i>Salpinctes obsoletus</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>

<sup>a</sup> Observed adult tending a nest with young.

<sup>b</sup> Observed excavating a nest cavity

**BLACK-TAILED PRAIRIE DOG BASELINE ACTIVITY STATUS UPDATE,  
WYOMING  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME MAMMALS: Species of Greatest Conservation Need / State Wildlife  
Grants Funding – Black-tailed Prairie Dog

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Martin Grenier, Nongame Mammal Biologist  
Rene Schell, Nongame Biologist  
Nyssa Whitford, Nongame GIS Analyst  
Matt Wells, Nongame Biologist  
Bob Oakleaf, Nongame Coordinator  
Michelle Hymas, Nongame GIS Technician

## **INTRODUCTION**

The Western Association of Fish and Wildlife Agencies (WAFWA), through the Interstate Prairie Dog Conservation Team, instructed state wildlife agencies to develop survey techniques that would enable states to monitor black-tailed prairie dog (BTPD) population trends every three years. Before a sampling scheme could be implemented, all remaining polygons that were identified after the 2003 status surveys had to be aerially truthed to ensure that only verified BTPD colonies were included in future sampling efforts. This completion report outlines the survey effort and summarizes survey data, as well as the current cumulative totals for the BTPD inventory for Wyoming.

## **METHODS**

The remaining Digital Ortho Quads (DOQs) were analyzed for the presence of potential BTPD colonies. Once identified, the potential colony boundaries were digitized using techniques developed in Grenier et al. (2004b). DOQs were analyzed as they became available, and the entire process was completed by the spring of 2005.

A total of 916 polygons were identified after the activity status surveys were conducted in 2003. The centroid of each polygon was determined using ArcMap 9.0 and uploaded to a GPS unit (Gamin 12XL) as a waypoint. Waypoints were then flown to and classified using methods outlined in Grenier et al. (2004a). To minimize observer biases,

new observers were trained by one observer from the 2003 flight survey, with no less than four hours of training.

A fixed-wing airplane (Cessna 210, 180, Piper Supercub, or Artic Tern) with a pilot and one observer was utilized to field check waypoints. Flights were conducted approximately 500 feet (152 m) above ground level at a speed of approximately 100 mph (160 kph) while above waypoints. The observer recorded whether the waypoint was a BTPD colony or some other feature (ant colony, dirt mound, etc.). For waypoints where a BTPD colony was observed, the observer assessed activity status of that colony according to methods outlined in Grenier et.al. (2004a). All surveys were completed between 20 March – 20 June 2006.

## **RESULTS**

Of the 1,330 waypoints surveyed, 608 (46%) were associated with a BTPD colony; the remaining waypoints (722) were some other feature, such as an ant colony, rocks, bare ground, or unknown. There were only two points that were classified as unknown. These points were not field checked because they were within a military no-fly zone in Fort Guernsey, Wyoming. Individual waypoints did not always represent a unique BTPD colony. Many BTPD colonies (50) were made up of multiple waypoints. Of the 608 waypoints that were associated with BTPD colonies, 458 (75%) were classified as healthy colonies, and 150 (25%) waypoints were classified as impacted colonies (Figures 1 and 2).

These 1,330 waypoints concluded the baseline activity status surveys for BTPD colonies in Wyoming. This data was combined with the previous data that had been collected (Grenier et al. 2004b) to provide a baseline of data for BTPD colonies in Wyoming. Occupied BTPD acreage in Wyoming totaled a minimum of 233,104 acres (96,442 ha). Out of the 3,153 waypoints field checked over all years (2003 and 2006), 2,429 (77.04%) waypoints were associated with BTPD colonies (individual waypoints did not always represent a unique BTPD colony) and 724 (22.9%) were some other feature (i.e. ant colony, bare ground, rocks, or unknown). Of the 2,429 associated with colonies, 1,534 (63.15%) were classified as healthy, and 895 (36.85%) were impacted for all years (Figures 3 and 4). Distribution of all waypoints associated with a BTPD colony is presented in Figure 5.

## **DISCUSSION**

Grenier et al. (2004a, 2004b) reported that the totals for the BTPD inventory and activity status surveys completed in 2003 were preliminary because an estimated 700 (30%) color infrared photos were not available for analysis prior to 2003. Since that time, the remaining National Aerial Photography Program (NAPP) photos needed to complete the process have become available in the form of Digital Ortho Quads (DOQs). All prairie dog colonies surveyed in 2006 were identified from the same sets of photos

initially analyzed in Grenier et al (2004b). As such, the results of occupied acreage from this survey were merged with the initial results of Grenier et al. (2004b) in order to develop a final acreage estimate for Wyoming. The activity status results, however, are not directly comparable because status surveys occurred in two different sampling occasions, 2003 and 2006. From the 2006 surveys it is impossible for us to speculate on the activity status of these 1,330 colonies in 2003 when the balance of the state was surveyed.

The cumulative activity status results (Figures 3 and 4) are presented in this report only to present a baseline for future comparison. Sampling efforts were initiated during the spring of 2006, and these results were needed to complete the statewide dataset in order to ensure that only prairie dog colonies would be sampled. Activity status surveys were conducted in conjunction with aerial truthing to preclude the need to resurvey these colonies should they be selected as part of the sample for monitoring trend.

Digitizing was completed by the same personnel that were involved in the original digitizing effort (Grenier et al 2004b). This likely reduced observer bias. The commission rate for in this effort was lower (46%) than those reported by Grenier et al. (2004b). This may have resulted from a more “liberal” interpretation of the DOQs in an attempt to capture all possible remaining colonies. No effort was made to evaluate omission errors at this time.

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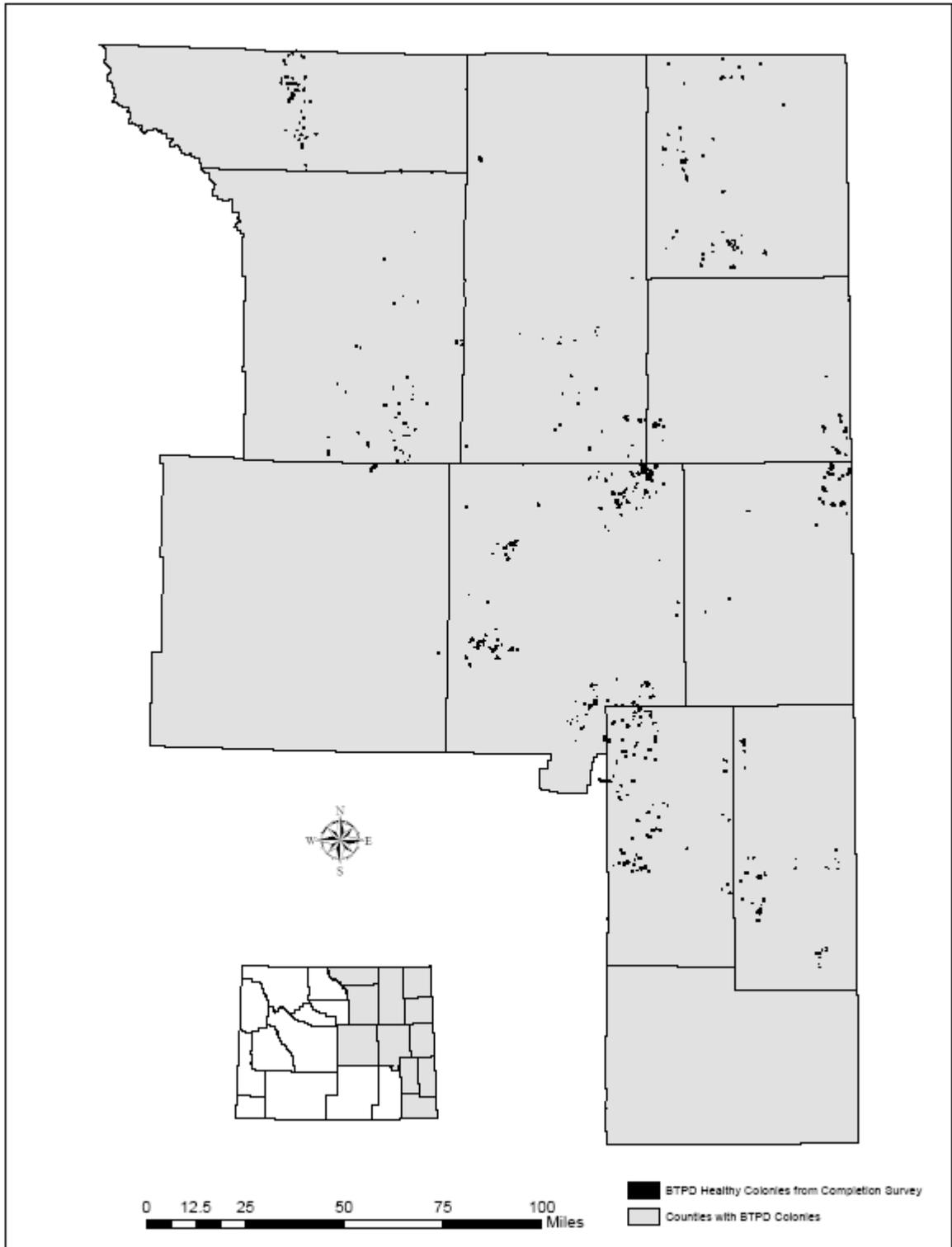


Figure 1. Black-tailed prairie dog colonies classified as healthy during the 2006 surveys, Wyoming.

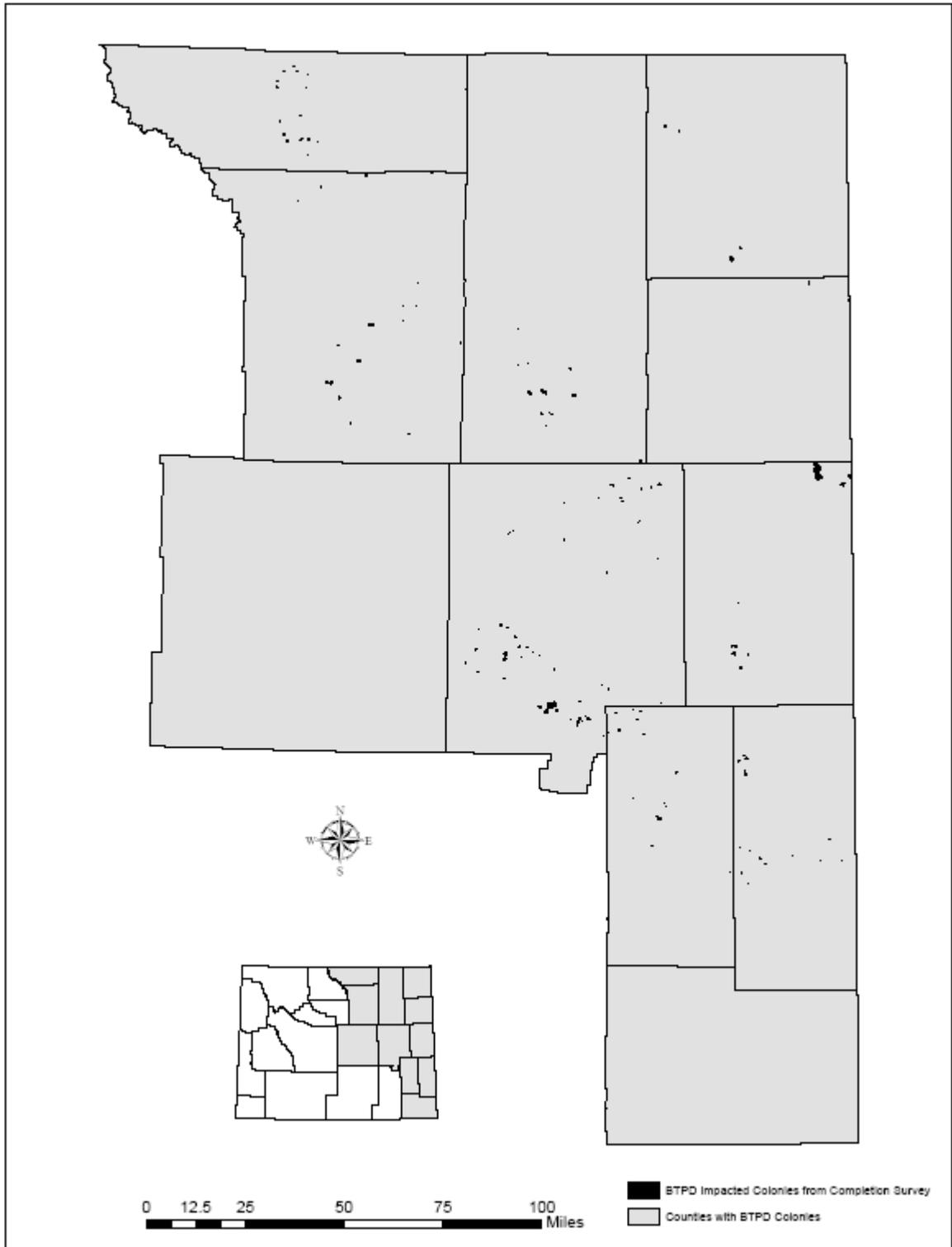


Figure 2. Black-tailed prairie dog colonies classified as impacted during the 2006 surveys, Wyoming.

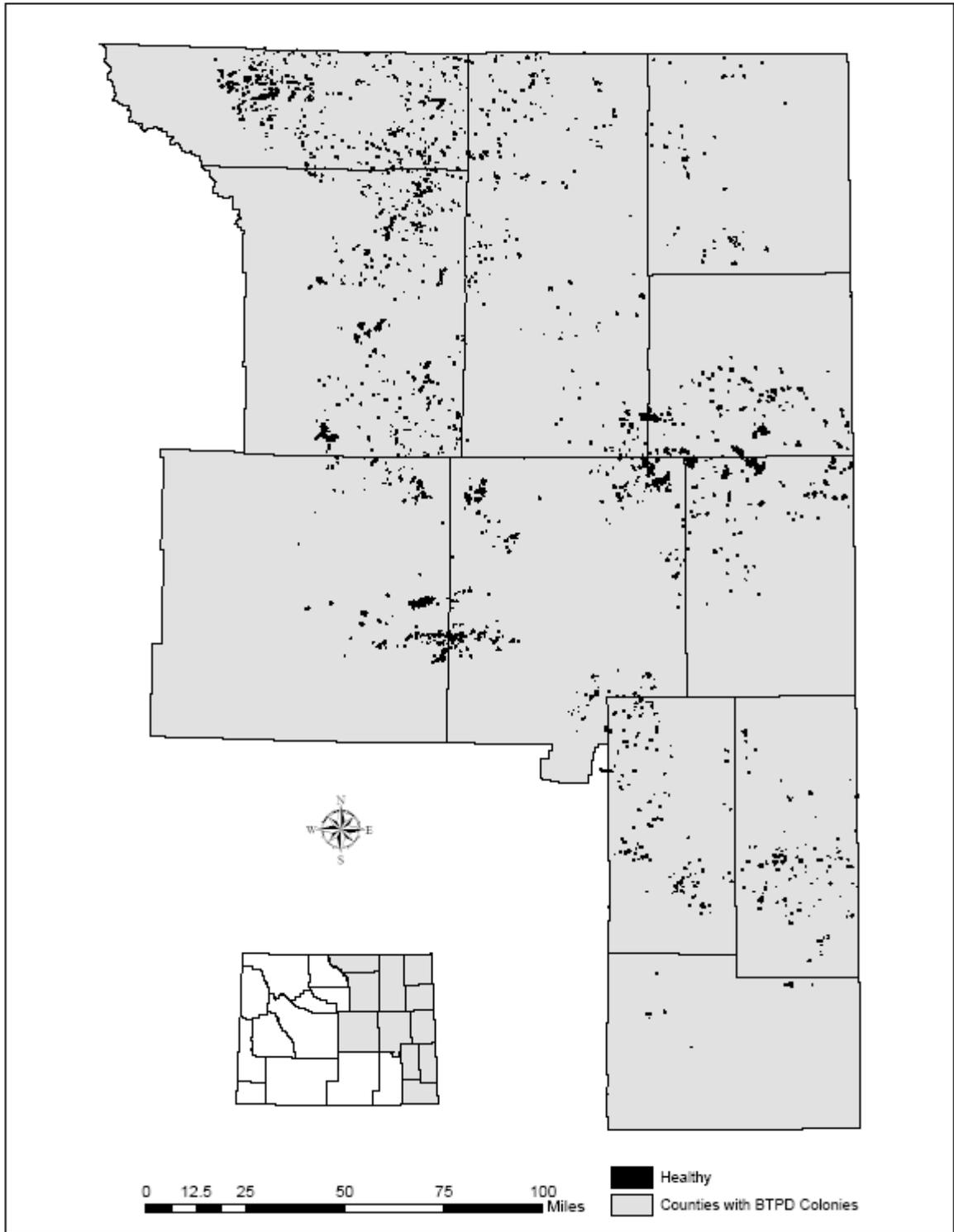


Figure 3. Black-tailed prairie dog colonies classified as healthy for 2003 and 2006, Wyoming.

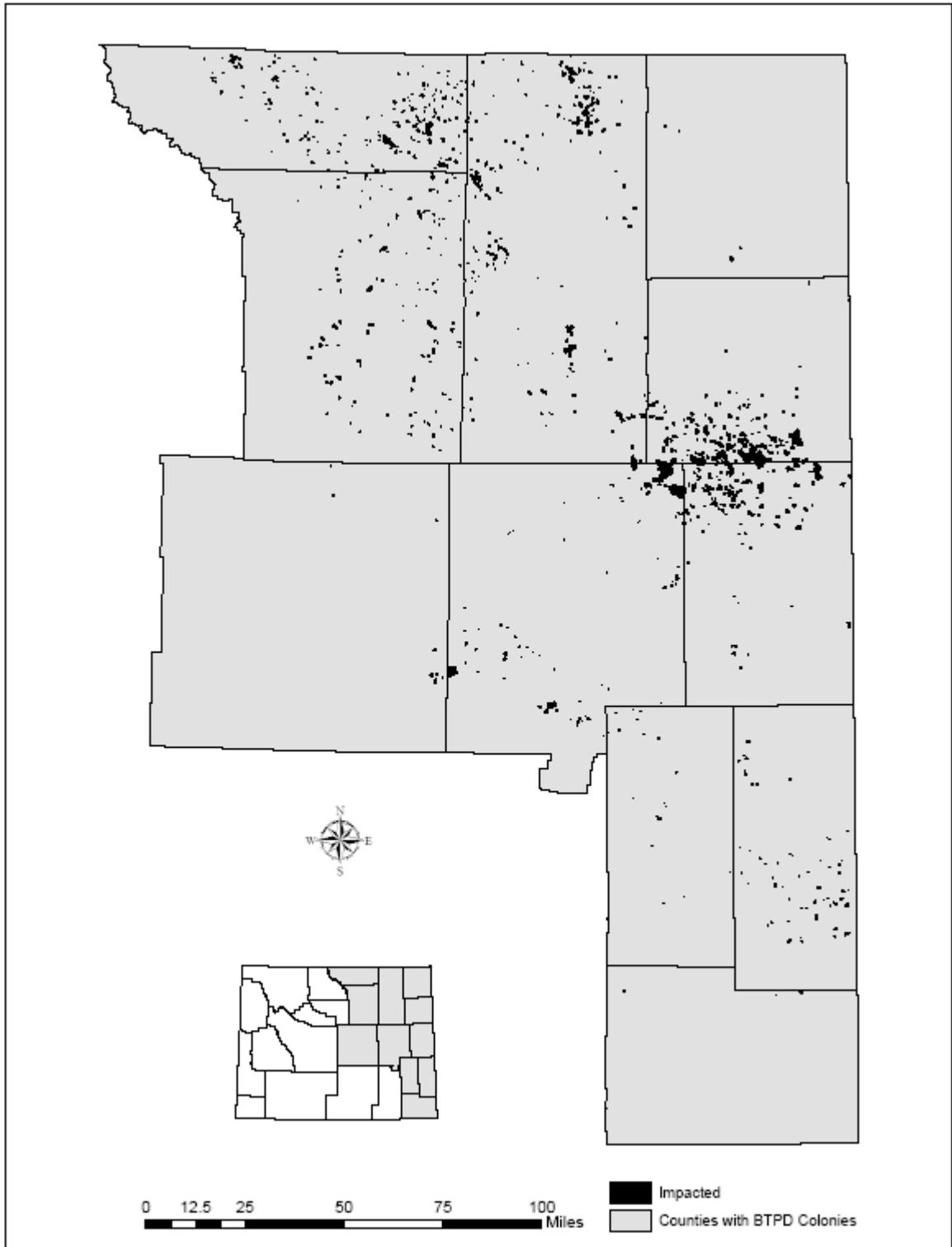


Figure 4. Black-tailed prairie dog colonies classified as impacted for 2003 and 2006, Wyoming.

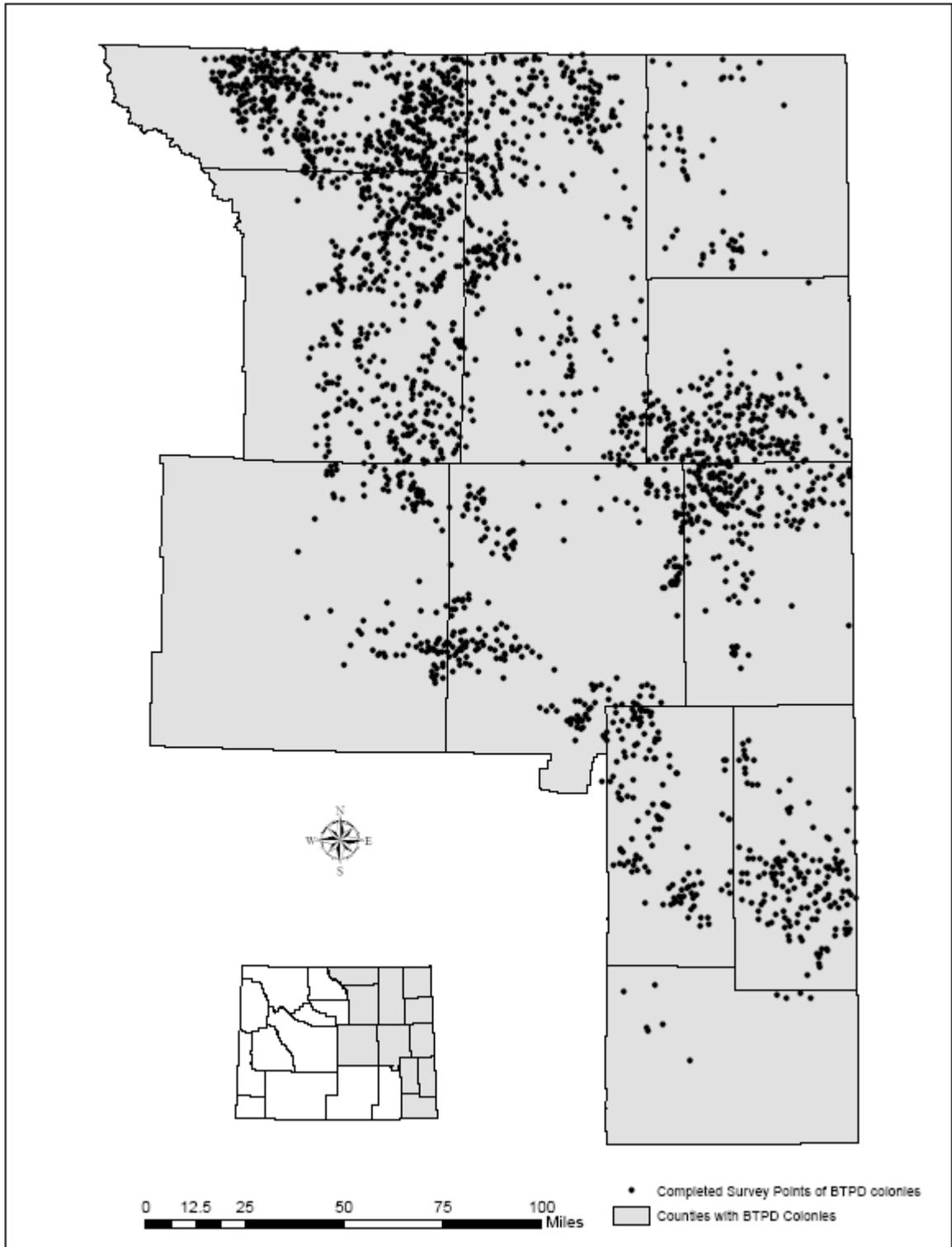


Figure 5. All surveyed waypoints that were associated with prairie dog colonies for 2003 and 2006, Wyoming.

# BLACK-TAILED PRAIRIE DOG MONITORING IN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME MAMMALS: Species of Greatest Conservation Need / State Wildlife  
Grants Funding – Black-tailed Prairie Dog

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Martin Grenier, Nongame Mammal Biologist  
Rene Schell, Nongame Biologist  
Nyssa Whitford, Nongame GIS Analyst  
Bob Oakleaf, Nongame Coordinator

## INTRODUCTION

The Western Association of Fish and Wildlife Agencies (WAFWA), through the Interstate Prairie Dog Conservation Team, instructed state wildlife agencies to develop survey techniques that would enable states to monitor black-tailed prairie dog (BTPD) population trends. Grenier et al. (2004a) developed an aerial classification technique that was applied to remote mapping techniques for black-tailed prairie dogs (Grenier et al. 2004b) to determine trend in healthy and impacted colonies. This aerial classification technique was useful in establishing baseline trend information Wyoming.

The purpose of this project is to: 1) determine a minimum of black-tailed prairie dog colonies that must be surveyed every three years (sample size) in order to detect a 10% change in the status of the prairie dog colonies in Wyoming with an alpha of 0.05; 2) to determine an appropriate sampling approach that will ensure adequate representation of BTPD colonies across the state and potential strata through simulations; and 3) generate a random sample of colonies to be utilized for the survey.

## METHODS

Black-tailed prairie dog colonies were identified and activity status was determined by methods outlined in Grenier et al. (2004a). All of the 2,429 BTPD colonies identified (Figure 1) were given an activity status of either “healthy” or “impacted”. The goal was to sample this population every three years and be able to detect a 10% change in the activity status of the population across Wyoming. The following formula was utilized to determine the probability of detecting a 10% change in the population activity status with an alpha of 0.05:  $n = Z_{\alpha(2)}^2 pq / \delta^2$  (Zar 1999).

From this formula it was determined that a sample size of 400 BTPD colonies would be sufficient to detect the proposed change. In order to determine whether or not the sample needed to be stratified, it was important to examine how colonies were distributed across the landscape; specifically, whether or not colonies were clustered according to activity status. First, colonies were given a numerically unique identification number according to activity status using ESRI Arcmap 9.0. All colonies with an activity status of “healthy” were selected and a new shape file was created. In the attributes table of this shape file a numeric code of “1” was assigned. A similar shape file was created for the “impacted” colonies and numeric code of “2” was assigned. The two resulting shape files were then merged back into one shapefile.

Utilizing ESRI Arcmap 9.0 tests for spatial auto-correlation were initiated. The ESRI Spatial Analyst Extension was used to run a spatial auto-correlation with respect to activity status on the numeric colony file. Spatial-autocorrelation was run selecting activity status for inverse Euclidean distance (no spatial weights, standardization, threshold distance, or cutoff was applied). Results of the test enabled us to determine whether colonies were clustered, dispersed, or random with respect to activity status. Other simulations were also conducted to analyze the sample generated. Samples were compared to the statewide dataset to ensure that the distribution of BTPD in the samples adequately represented those in the statewide dataset. Colonies in the sample were compared to statewide percentages by counties, colony size, and prairie dog complex.

All random samples were generated using ESRI Arcmap 9.0. A flight plan was created for these random 400 points (Figure 2). Each BTPD colony was assigned a centroid using ESRI Arcmap 9.0 and listed as waypoints. Waypoints that were already field checked in 2006 (Grenier et al. 2007) were not field checked again in the random sample. However the results from those waypoints were included in the results from the random sample. The remaining 310 waypoints were flown to determine activity status from the air utilizing a fixed-wing airplane (Cessna 210, 180, Piper Supercub, or Artic Tern) with a pilot and one observer as outlined by Grenier et al. (2004a). Flights were conducted approximately 500 feet (152 m) above ground level at a speed of approximately 100 mph (160 kph) while above waypoints. The observer recorded if the waypoint was a BTPD colony or some other feature (ant colony, dirt mound, etc.). For waypoints where a BTPD colony was observed, the observer assessed activity status of that colony according to methods outlined in Grenier et al. (2004a). Surveys were conducted between 20 March and 20 June 2006.

## **RESULTS**

It was determined that a minimum random sample size of 372 colonies would be necessary to detect a 10% change in population health status. To be slightly conservative, we rounded this random sample to 400 colonies, as this increase only resulted in approximately 1 to 1.5 additional hours of survey time. Spatial auto-correlation analysis revealed that the BTPD colonies were not significantly clustered according to activity status and, therefore, only required a Simple Random Sample. The

spatial autocorrelation produced a Global Moran's I of 0.06 and a corresponding z-score of 40.9. The z-score indicates there is significant clustering; however, the low Global Moran's I score indicates that the clustering is not correlated to the activity status.

Given the prairie dog colonies and the associated status attribute, Global Moran's I evaluated the pattern across the landscape and evaluated whether the pattern is clustered, dispersed, or random. A Moran's I value near +1 indicates clustering, while a value near -1 indicates dispersion. An associated z-score is also calculated by the Global Moran's I function. Based on the results, it appears that the colony status attribute is not correlated to the spatial clustering of the colonies. Although the pattern is highly significant ( $p > 0.0001$ ), it is not significantly clustered. Therefore, the sampling approach need not take into consideration the attributes of each colony, but should address the spatial clustering on the landscape.

Other analysis aimed at determining landscape distribution patterns of BTPD revealed that a sample size of 400 was large enough to ensure that all possible strata were well represented. As such, a Simple Random Sample of 400 colonies was generated prior to initiating aerial surveys.

From the random sample, 302 (75.5%) of the 400 colonies were healthy (Figure 3), 75 (18.75%) were impacted (Figure 4), and the remaining 23 (5.75%) were some other feature (ant colony, rocks, bare ground) no longer discernable as a BTPD colony. As a result of the 400 random colonies selected, a total of 40,658 acres (16,822 ha) were flown checked for activity status in 2006. Approximately 87% (35,372 acres [14,635 ha]) of the surveyed acreage was classified as healthy, while only 11.5% (4,676 acres [1,934 ha]) were classified as impacted, and 1.5% (661 acres [267 ha]) of the BTPD colonies had disappeared.

## **DISCUSSION**

Statewide objectives for Wyoming are to maintain at least 219,000 acres (91,021 ha) of occupied BTPD acreage over the long-term with at least 100,000 acres (40,469 ha) of the occupied acreage in healthy status. According to Grenier et al. (2007), a total of 233,104 total occupied acres (9,350 ha) exist in Wyoming after the completion of the photo analysis and aerial truthing. The results of this survey indicate that Wyoming has likely lost 1.5% of its total BTPD acreage between 2003 and 2006. We estimate this decline to result in the loss of approximately 3,497 acres (1,447 ha) of BTPD from the landscape in Wyoming. This yields a total of 229,607 acres (94,997 ha) of occupied acres in Wyoming, well above the minimum target set by the Department for BTPD.

Similarly, these survey results indicate that the health status of colonies remains above the target 50% threshold. Grenier et al. (2004a) reported results of an incomplete survey for Wyoming in 2003. At that time, 60% of the colonies were classified as healthy, accounting for 53% (102,297 acres [42,324 ha]) of the acreage. However, it is worth noting that only 193,013 acres (79,856 ha) were classified in 2003. The large

proportion of colonies and subsequent acreage that were impacted was primarily due to two factors: 1) sylvatic epizootic, and 2) control efforts through the application of toxicants. These anthropogenic and exotic factors likely impacted prairie dog colonies between 2001 and 2003.

These survey results indicate that colonies are in the process of recovering from these declines. Following our surveys, approximately 76% of the colonies sampled were healthy, accounting for 87% of the sampling acreage. Extrapolation of these sampling results to the balance of the state indicates that 202,800 acres (83,906 ha) are healthy, 26,807 acres (11,091 ha) are impacted, and 3,497 acres (1,447 ha) are no longer present in 2006 that were present in 2003.

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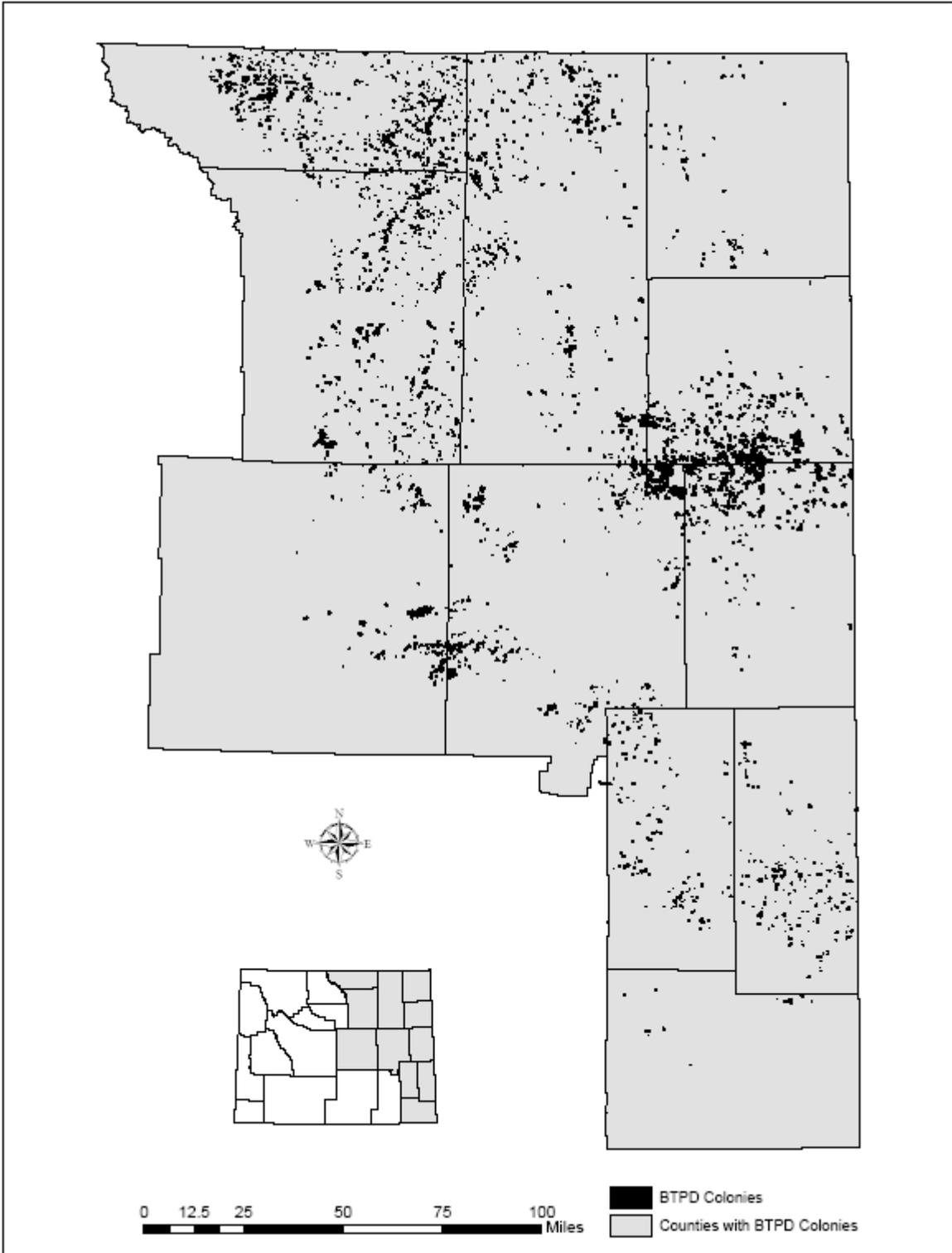
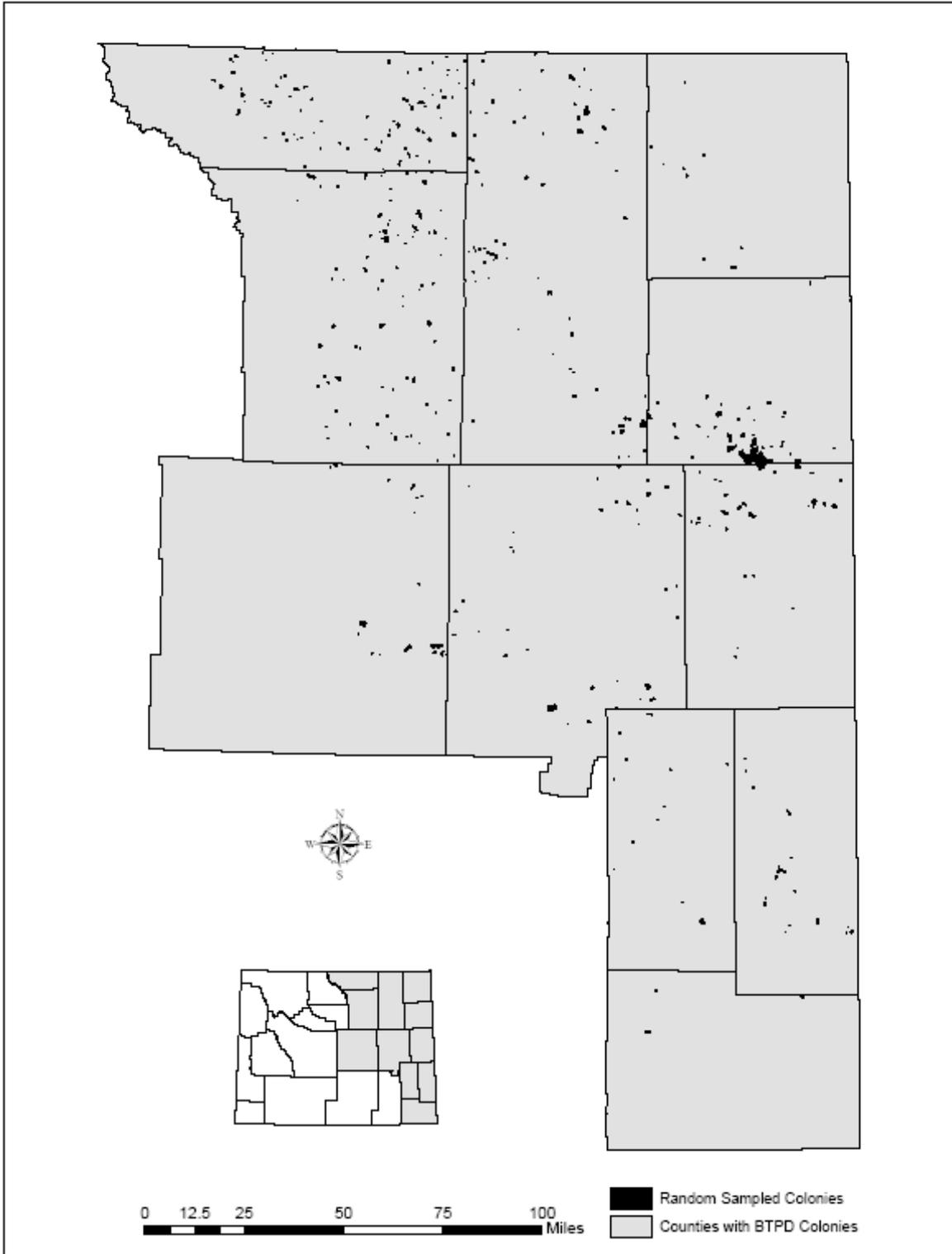
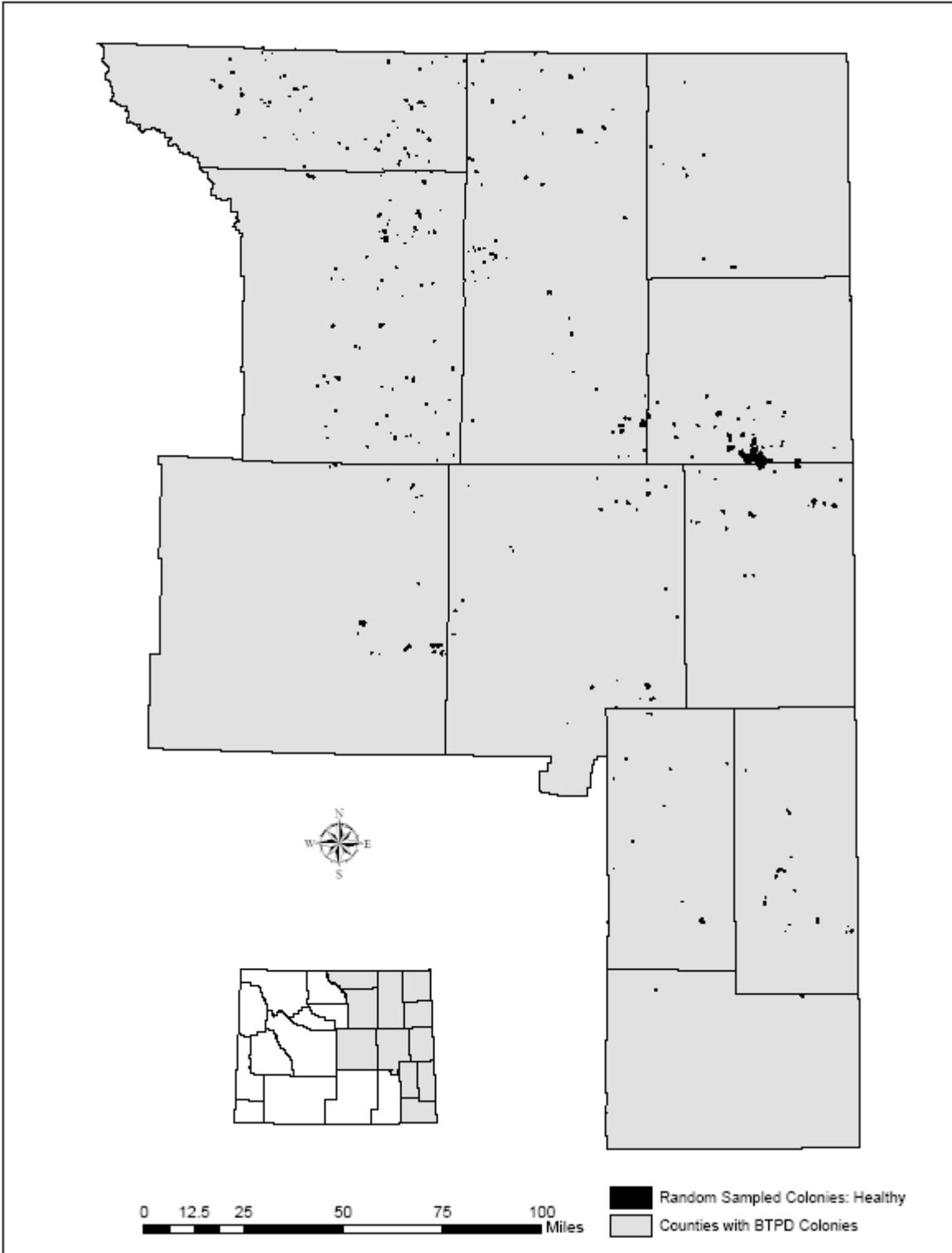


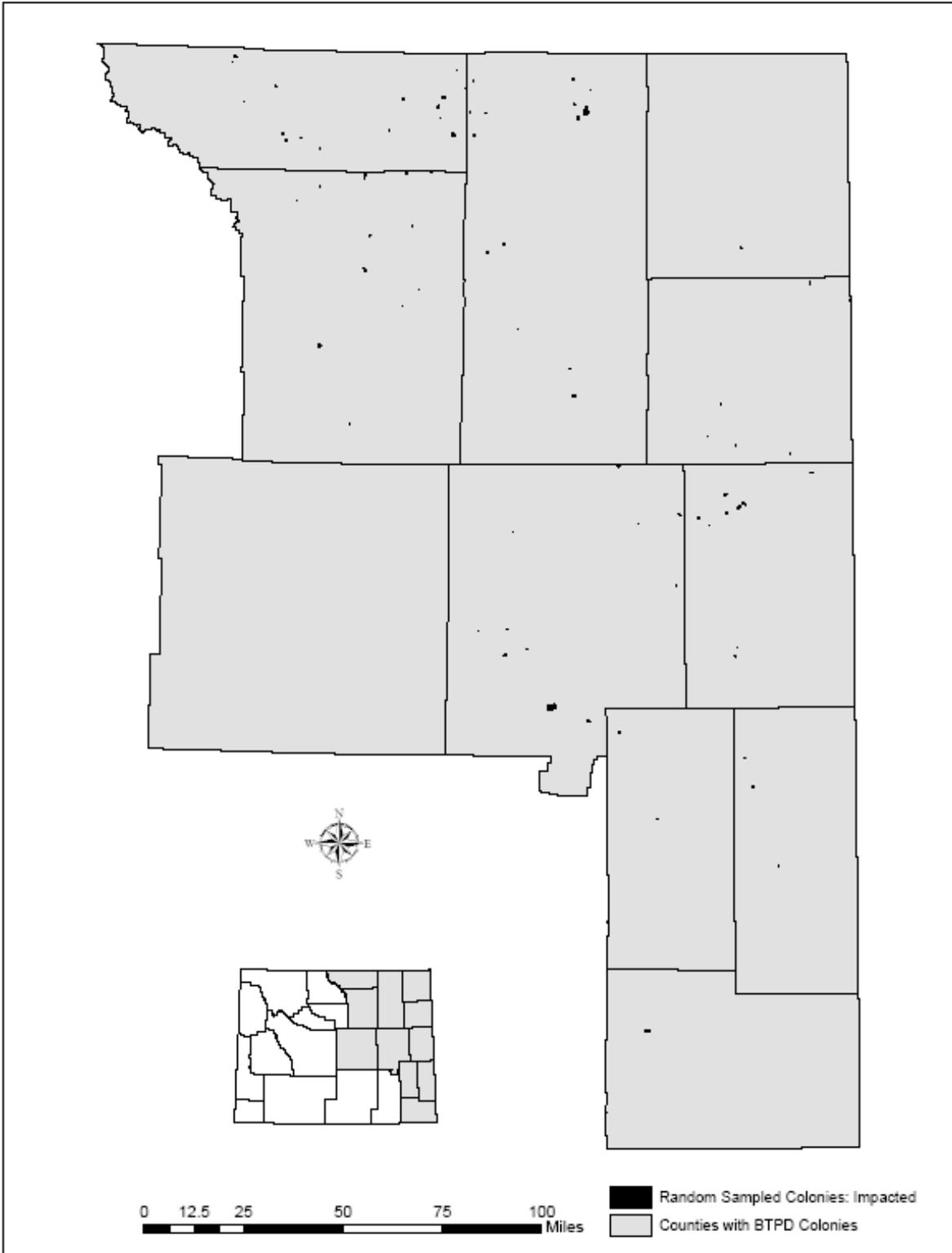
Figure 1. All black-tailed prairie dog colonies.



**Figure 2. Randomly sampled black-tailed prairie dog colonies.**



**Figure 3. Healthy randomly sampled black-tailed prairie dog colonies.**



**Figure 4. Impacted randomly sampled black-tailed prairie dog colonies.**

**WHITE-TAILED PRAIRIE DOG MAPPING AND BLACK-FOOTED FERRET  
HABITAT EVALUATION IN THE SHIRLEY BASIN/MEDICINE BOW  
BLACK-FOOTED FERRET MANAGEMENT AREA, WYOMING  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME MAMMALS: Endangered Species – Black-footed Ferret, Species of  
Greatest Conservation Need – White-tailed Prairie Dog

PERIOD COVERED: 15 April 2005 – 14 April 2007

PREPARED BY: Martin Grenier, Nongame Mammal Biologist  
Jeremy Artery, Seasonal Nongame Biologist  
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Lee Knox, Seasonal Nongame Biologist  
Todd Filipi, Seasonal Nongame Biologist

## **INTRODUCTION**

The Shirley Basin/Medicine Bow white-tailed prairie dog (WTPD) complex was originally mapped in 1990 (SBMBWG 1991) in preparation for the reintroduction of the black-footed ferret (Figure 1). Between 1991 and 1994, 228 black-footed ferrets (BFF) were released into the Shirley Basin/Medicine Bow Black-footed Ferret Management Area (Management Area). BFF were released in the Management Area during 1991 – 1994; however, reintroduction efforts were suspended after 1994 due to the presence of sylvatic plague and canine distemper. After the initial releases, prairie dog abundance surveys continued annually through 2000 and focused on transecting prairie dog colonies to estimate a black-footed ferret family rating for the Management Area (Grenier et al. 2002). Following 2001, Nongame Program priorities were changed to accommodate additional WTPD data needs for the Wyoming Game and Fish Department.

The Shirley Basin/Medicine Bow WTPD complex has not been remapped in its entirety since the original mapping efforts in 1990. However, in 2004, a small portion of the WTPD complex was remapped in order to quantify changes in WTPD occupied area within the Management Area. Grenier et al. (2005) reported that, although mapping efforts were incomplete for the Primary Management Zone 1, the occupied area mapped in 2004 had increased by approximately 8,006 acres (3,240 ha). Grenier et al. (2005) also concluded that these increases were consistent with other mapping efforts completed in other parts of Wyoming in previous years.

This completion report summarizes techniques, survey areas, and data collected in 2005 and 2006 on WTPD colonies within the Management Area. The purpose of these surveys was to quantify changes in WTPD occupied area, while evaluating the existing potential for additional black-footed ferret releases in other portions of the Management Area.

## **METHODS**

Exploratory aerial surveys were conducted during May of 2005 using a Cessna 180 fixed-wing aircraft. Transects were flown approximately 0.5 mile (0.2 km) apart in two different portions of the Management Area. The purpose of these flights was to identify locations of prairie dog colonies in areas where no previous mapping efforts existed and to qualitatively assess changes to BFF habitat (i.e., WTPD occupied area) in areas where historic data existed. Surveys were conducted in the Shirley Rim area north to the Carbon-Natrona county line and in the Arlington area west of Foote Creek Rim and south towards the east face of Elk Mountain (Figure 1). The locations of prairie dog colonies were recorded as waypoints on a GPS unit (Garmin 12XL) and uploaded to Arcview 3.2 to facilitate location of colonies during ground mapping efforts.

WTPD mapping was conducted according to guidelines established by Biggins et al. (1993). Colonies were located by using 7.5-minute USGS topographic maps that contained results from the 1990 mapping effort (SBMBWG 1991) or waypoints identified during the exploratory flights in 2005. These maps provided the baseline data for locating prairie dog colonies. Colonies that were encountered from the ground, but had not been previously mapped, were recorded as a new colony. Primary Management Zone 1 was systematically searched for new and previously unknown prairie dog colonies.

Mapping was conducted between 1 June and 30 July in all years. All colony mapping was conducted on foot while walking the perimeter of an identified colony and recording waypoints on a handheld GPS unit (Garmin GPS 12XL). Colonies with boundaries separated by  $\geq 656$  feet (200 m) or more were considered to be unique. Waypoints were downloaded and imported into GIS software (ArcView 3.2), where individual waypoints were then digitized into polygons. Hectares were calculated in ArcView from the digitized polygons.

## **RESULTS AND DISCUSSION**

Results from mapping efforts during 2004 indicate that although individual colonies may have been impacted by sylvatic plague for many years and resulted in localized declines in prairie dog abundance, new areas were colonized and have resulted in a net increase of occupied acreage and abundance in the Shirley Basin/Medicine Bow white-tailed prairie dog complex (Grenier et al. 2005) (Table 1). This observed trend is consistent with our finding in 2005 and 2006. The areas within the Shirley Basin

complex that were targeted for mapping are presented in Figure 1. The occupied acreage within the Shirley Rim area (Figures 2 and 3, Table 1) has increased dramatically by over 2.5 times that which was present in 1991. Conversely, the occupied acreage in the Arlington area has decreased by about 50% since 1991 (Figures 4 and 5, Table 1).

In recent years (2004-2006), we have mapped over 84,000 acres (33,993 ha) of occupied prairie dog colonies in Shirley Basin. This represents about a 25% increase in area over the 1991 estimates (Table 1). White-tailed prairie dog colonies appear to be much more dynamic than those of the black-tailed prairie dogs. The reasons for this are unclear, but we speculated that these dynamic landscape patterns we observed in the white-tailed prairie dogs resulted from the lack of anthropogenic effects on these colonies. White-tailed colonies in Wyoming occur primarily on public lands where toxicant application is prohibited. Even on private lands, toxicants are seldom used on white-tailed prairie dogs. Observed patterns of increases and decreases of colony abundance and area likely imitate historic patterns of variation in these systems.

Interestingly, despite the decrease in the Arlington area, we observed an increase in the number of colonies within all areas in 2005 and 2006. Colony size appears to have decreased substantially in recent years when compared to the historic 1991 mapping results. The declines observed in the Arlington area may be a result of sylvatic plague epizootics that occurred between 1991 and 2005; however, no data exist, therefore, results must be viewed with caution as mapping techniques differed between years.

Impacts of sylvatic plague on individual WTPD colonies in the Management Area are highly variable and well documented (Luce 2000). Similar patterns of variability have also been documented for colonies near Meeteetse and other regions of Wyoming (Biggins 2003a, 2003b). However, it is unclear how these patterns of variation affect the dynamics of prairie dog colonies because population attributes of prairie dogs, in the absence of diseases and anthropogenic declines (e.g. shooting), are highly dynamic, and demographic attributes of these populations have been reported to vary considerably (Hoogland 1995, Orabona-Cerovski 1991).

We also noted during our surveys that some areas within the survey areas have prairie dogs burrows that remain too scattered to map. Both areas near the Shirley Rim and Arlington had aggregations of burrows that were too small [ $<10$  acres (4 ha)] and too dispersed to map. Biggins (2003a) reported similar findings at the Meeteetse complex in Wyoming, despite documenting a decrease in abundance on mapped colonies. The importance of these small, dispersed aggregations is unknown at this time and these areas will be monitored in the future.

Historic, pre-1989 data for colonies in this area of Wyoming are lacking (SBMBWG 1991) and the reasons for the observed increases in prairie dog occupied acreage in recent years are unclear and not well understood. More data are needed to determine both social and biological benefits and consequences of these reported increases. Moreover, because of the substantial increase in occupied area and quantity of

colonies requiring mapping, the western-most boundary of Primary Management Zone 1 has not been fully remapped.

## **ACKNOWLEDGEMENTS**

We would like to thank the Bates Creek Cattle Company, George Ranch, Medicine Bow River Ranch, Meer Ranch, Menke Ranch, and Q Creek Land and Cattle Company for generously allowing access to their property for these surveys.

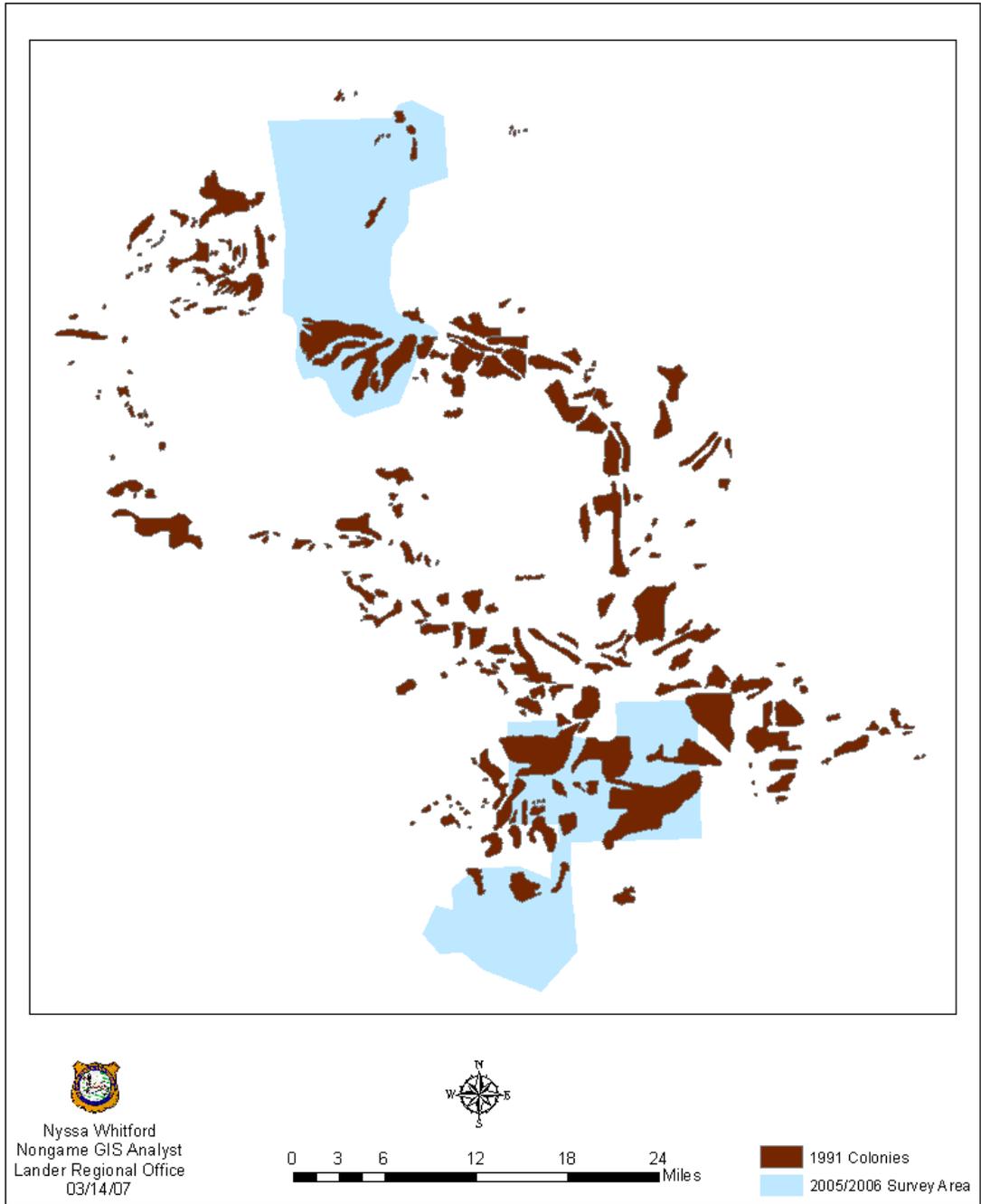
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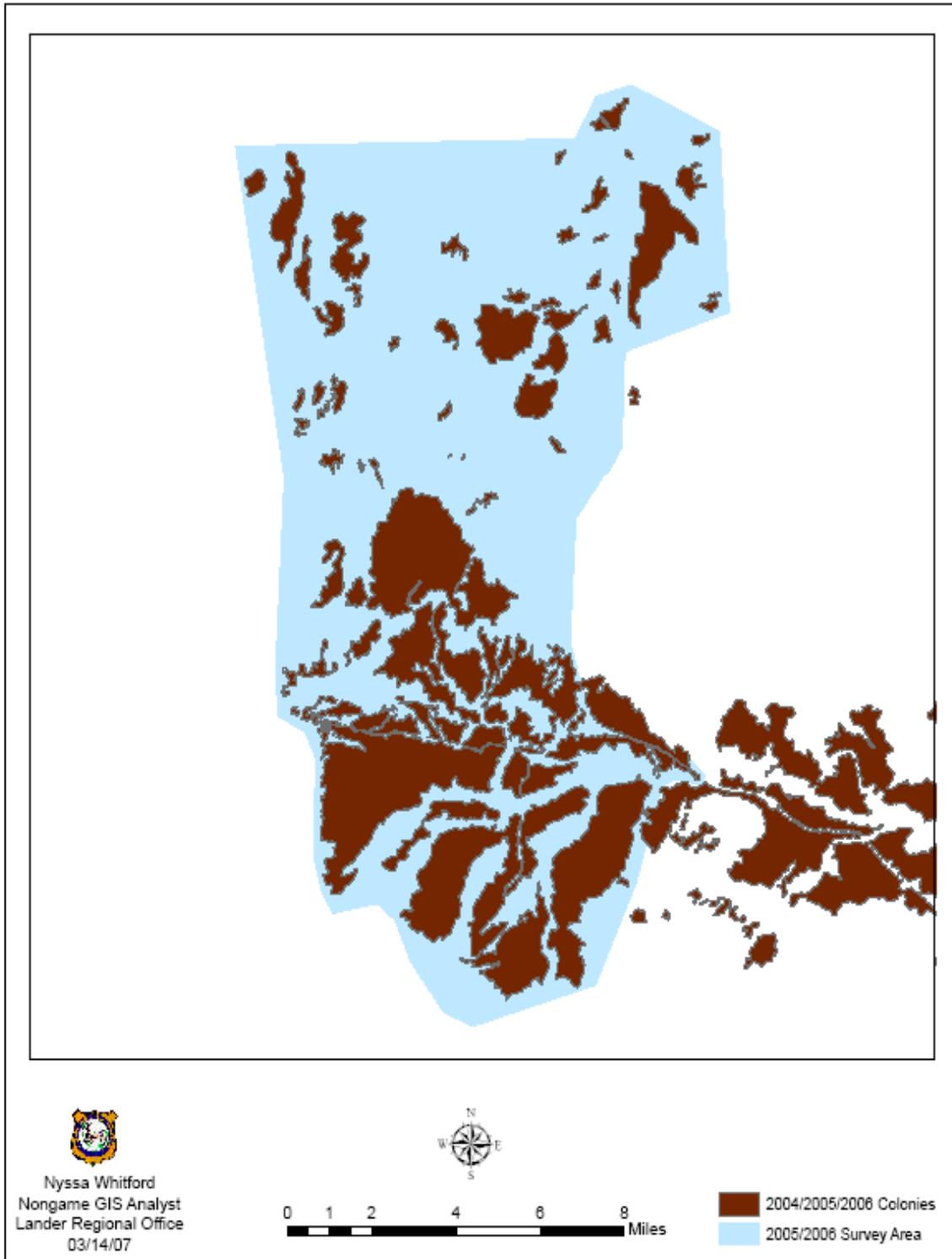
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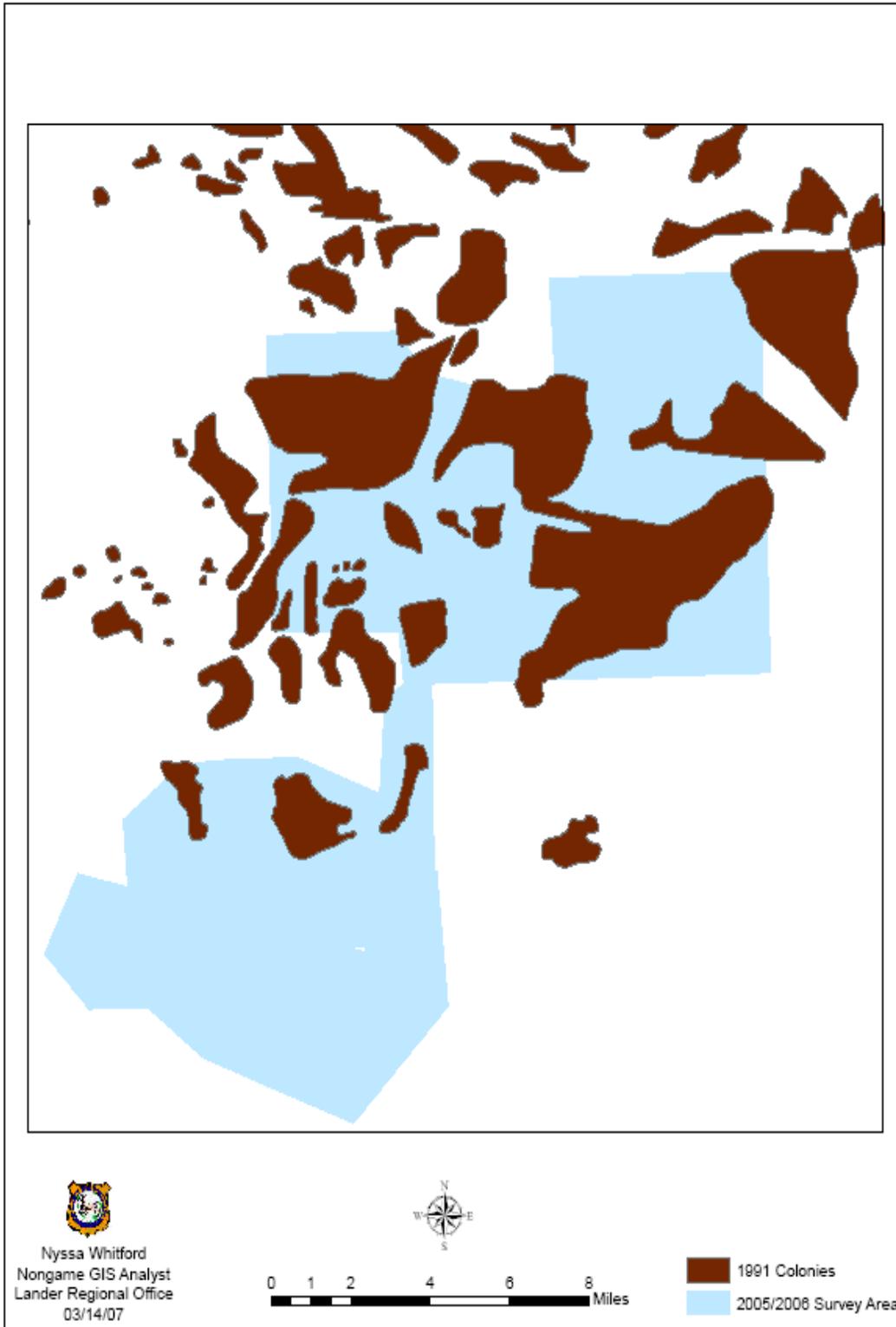
**Figure 1. Overview of the Shirley Basin / Medicine Bow white-tailed prairie dog complex and areas that were mapped (blue polygons) in 2005 and 2006, Wyoming. The colonies represented on this figure were originally mapped in 1991 and do not represent new data.**



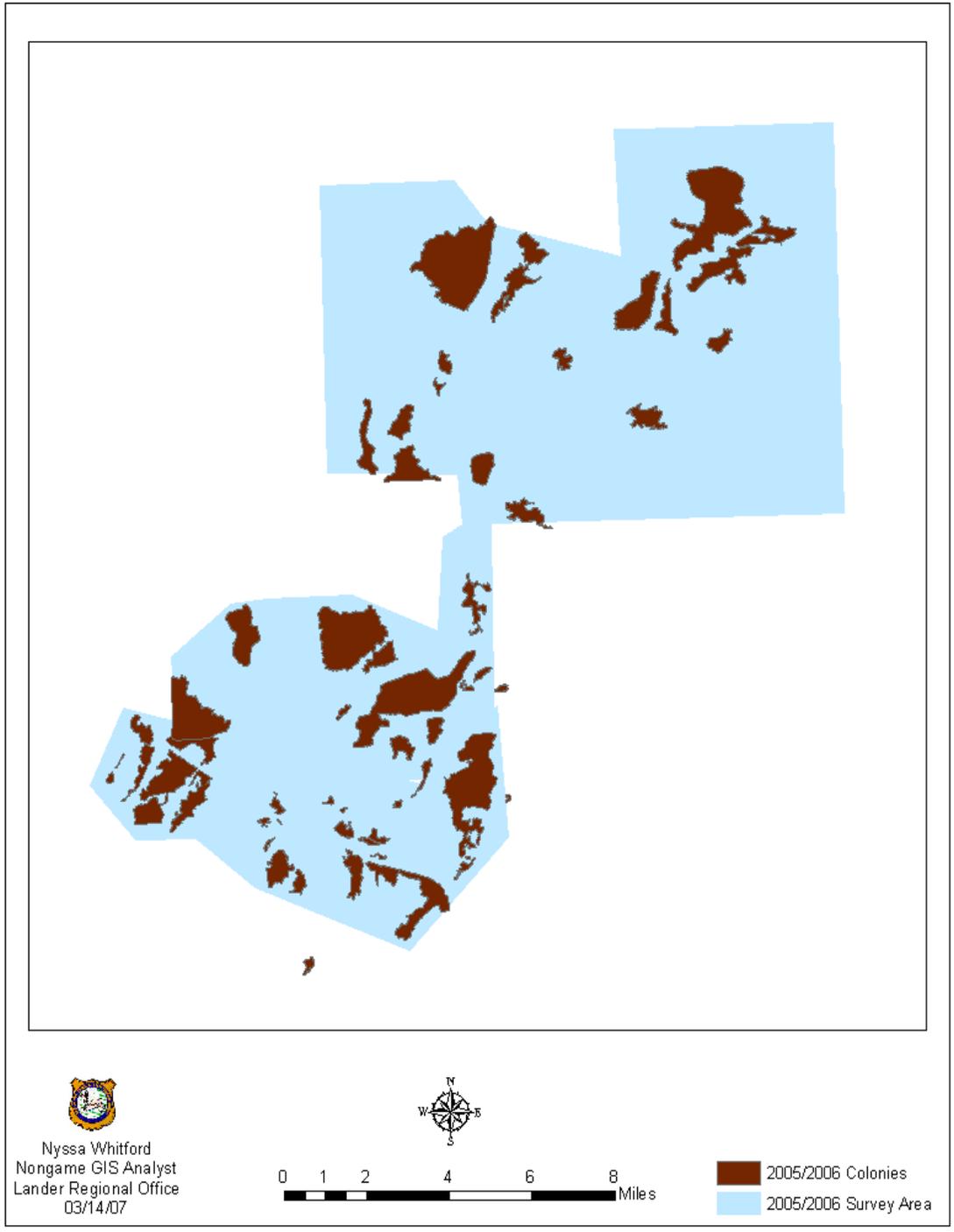
**Figure 2. Close up of the colonies originally mapped in 1991 in the Shirley Rim area of the Shirley Basin / Medicine Bow white-tailed prairie dog complex, Wyoming. A total of 12 colonies were present (within the blue survey area) totaling 12,233 acres.**



**Figure 3. Close up of the colonies remapped in 2005 and 2006 in the Shirley Rim area of the Shirley Basin / Medicine Bow white-tailed prairie dog complex, Wyoming. Colonies outside the polygon were not remapped in 2005 or 2006 and their absence does not represent their disappearance. A total of 102 colonies were present (within the blue survey area) totaling 33,041 acres.**



**Figure 4. Close up of the colonies originally mapped in 1991 in the Arlington area of the Shirley Basin / Medicine Bow white-tailed prairie dog complex, Wyoming. A total of 16 colonies were present (within the blue survey area) totaling 29,247 acres.**



**Figure 5. Close up of the colonies remapped in 2005 and 2006 in the Arlington area of the Shirley Basin / Medicine Bow white-tailed prairie dog complex, Wyoming. Colonies outside of the survey area are not represented on this figure. A total of 55 colonies were present (within the blue survey area) totaling 14,561 acres.**

**Table 1. Acres of white-tailed prairie dogs mapped in Shirley Basin, Wyoming 2004-2006. Historic acres summarize the acres for colonies that were mapped in 1991. Current acres summarize the acres mapped 2004-2006.**

<b>Acres</b>	<b>2004</b>	<b>Arlington</b>	<b>Shirley Rim</b>	<b>Total</b>
Current Acres	37,215	14,561	33,041	84,817
Historic Acres (1991)	25,211	29,247	12,233	66,691
<i>Net Totals</i>	<i>+ 12,004</i>	<i>(- 14, 686)</i>	<i>+ 20,808</i>	<i>+ 18,126</i>

**A PLAN FOR BIRD AND MAMMAL SPECIES OF GREATEST  
CONSERVATION NEED IN EASTERN WYOMING GRASSLANDS  
COMPLETION REPORT**

STATE OF WYOMING

NONGAME: Species of Greatest Conservation Need – Grassland Species

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Bryce Krueger, Prairie Ecologist

**SUMMARY**

The grasslands of the Great Plains are one of the most imperiled ecosystems in North America. Conversion of grasslands, urbanization, fragmentation, invasion by noxious and invasive plants, and the removal of natural forms of disturbance all affect the viability of this ecosystem. As the condition of grassland habitat has steadily declined during the past two centuries, the distribution of many grassland-obligate species has also diminished. Examples include the black-footed ferret, Burrowing Owl, swift fox, black-tailed prairie dog, Upland Sandpiper, and Mountain Plover. As these trends become apparent, the long-term viability of some species becomes uncertain. Thus, the black-footed ferret was listed under the Endangered Species Act (ESA), and several others have been petitioned for listing. It is realistic to expect that more species will be petitioned for listing under the ESA as impacts on grasslands continue to mount.

In comparison to those in many of the highly impacted regions of the Great Plains, grasslands in Wyoming are relatively healthy throughout much of their historical range (Figure 1). Of the grassland-obligate species declining in other parts of the Great Plains, populations of most of these species within Wyoming appear to be secure. However, large amounts of Wyoming's grasslands have already been altered or converted for other uses. With time, impacts on grasslands will continue to mount. Wyoming is fortunate to have the opportunity to conserve its grasslands while they still exist across relatively large, intact landscapes. It is much more effective and less costly to conserve these areas now than to attempt to recreate them in the future.

In 2004, the Wyoming Game and Fish Department (Department) organized a working group of public and private entities united by a shared desire to prevent ESA listings of grassland species. Agricultural stakeholders; landowners; conservation groups; and representatives from the mineral and energy industries, Bureau of Land Management (BLM), U.S. Forest Service (USFS), Natural Resources Conservation Service (NRCS), and the Department worked together to develop a shared vision for

grassland conservation. The plan identified strategies to help the Department work cooperatively with landowners, other agencies, and the public to conserve healthy grassland ecosystems in Wyoming.

Conserving healthy grasslands will benefit many Species of Greatest Conservation Need (Tables 1 and 2). While there are numerous reasons to conserve grassland ecosystems, one important benefit is ensuring that wildlife populations remain viable, eliminating the need for future listings under the Endangered Species Act. We anticipate that this plan will enable the Department to address prairie wildlife issues now, rather than waiting for species to be petitioned for listing before enacting management efforts.

### **Primary Objectives**

1. Enhance and conserve grassland habitat quality and, where opportunities exist, increase grassland habitat quantity, thereby improving the long-term viability of terrestrial wildlife species endemic to grasslands.
2. Maintain effective inventory and monitoring programs for both habitat and wildlife populations so data are available to: a) prevent unwarranted listings under the ESA, and b) identify issues and/or species that need special management attention.
3. Implement this plan's proposed conservation actions, recommended support actions, and species-specific actions and monitoring strategies to: a) increase the population numbers of at-risk grassland species, b) collect the data necessary to assess their conservation status, and c) work towards removing these species from the list of SGCN in accordance with the goals and strategy of the Comprehensive Wildlife Conservation Strategy (Department 2005).
4. Develop an understanding of the needs and values of private landowners and resource managers to identify areas where the Department's conservation interests complement or enhance landowner needs. In these areas, form partnerships with landowners to promote conservation and facilitate inventory and monitoring programs. It is equally important to identify areas where interests could conflict and explore opportunities to mitigate impacts on private landowners.
5. Develop an information source (listing technical efforts and funding options) for landowners that want to improve or restore grassland habitat.

### **Proposed Conservation Actions**

Proposed conservation actions include the use of various incentive programs for private landowners, and cooperative programs with the BLM, NRCS, U.S. Fish and Wildlife Service, and USFS to accomplish the following conservation actions. The indirect and direct effects of the proposed actions on other grassland wildlife, including

threatened and endangered plant and animal species, will also be evaluated, with necessary precautions and adjustments incorporated into site-specific management plans.

1. Increase grassland heterogeneity by:
  - a. introducing fire back into grassland systems via patch burning plans;
  - b. encouraging grazing strategies that also favor habitats for native vegetation and sensitive wildlife species; and
  - c. introducing disturbance via mechanical treatments.
2. Develop cooperative agreements with willing landowners to manage, maintain, and prevent habitat fragmentation and conversion in those grassland habitats that are integral for maintaining grassland habitat diversity and grassland obligate wildlife species. This action is especially important for the Western Great Plains Shortgrass Prairie Ecological System.
3. Continue to work cooperatively with the U.S. Department of Agriculture, NRCS, and the Farm Service Agency, along with other funding sources, to maximize grassland conservation benefits of Farm Bill programs and to develop new grassland conservation opportunities.
4. Continue cooperative efforts to control noxious and invasive plants, especially cheatgrass, in the Thunder Basin National Grassland region and the remainder of eastern Wyoming.
5. Reseed native grasses and forbs.
6. Develop forage reserve management agreements and make their existence known and available to provide relief to sensitive grassland communities. This may include, but is not limited to, assisting livestock operators with moving grazing to other areas during times when private land habitat improvement projects are being implemented and/or from areas affected by wildfires, drought, or other natural events to enhance or speed grassland habitat recovery.
7. Where appropriate, encourage the implementation of mitigation measures and/or best management practices detailed within the Wyoming Game and Fish Commission document Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats (Department 2004).
8. Review management actions proposed by state and federal agencies involving grassland systems, and work closely with the Wyoming Governor's office, industry, private land owners, and agency staff during early stages of project planning. Encourage land managers to undertake landscape-level planning to maintain or enhance grassland communities.
9. Where appropriate, encourage the implementation of conservation actions detailed in this document's species accounts, and in the documents Growing

Grassland Birds: Best Management Practices for Grasslands to Benefit Birds in Wyoming (Wyoming Partners In Flight 2002), and Grassland Wildlife Species Suggested Conservation Practices (Luce 2003).

## **Public Meetings**

The Department opened a 45-day public comment period on the plan (3 April – 17 May 2006) and made it available to the public for review on its website, at county libraries, and at regional offices. In addition, one public meeting was held in each of the following locations: Sheridan, Douglas, and Cheyenne.

The Department received comments from one private individual, Environmental Defense, the U. S. Fish and Wildlife Service, the Wyoming Department of Agriculture, the Wyoming Farm Bureau, and Biodiversity Conservation Alliance. The draft plan was modified based on the comments received. Many additional comments from various individuals and organizations were received and incorporated into the plan as it was drafted over the past two years.

## **Final Plan**

The plan was presented to the Wyoming Game and Fish Commission, which approved it for publication on 7 September 2006. The plan is available online at: <http://gf.state.wy.us/downloads/pdf/FinalGrasslandPlanseptember2006.pdf>

## **ACKNOWLEDGEMENTS**

The Wyoming Game and Fish Department acknowledges the efforts of the Grassland Plan Working Group, whose mission was to develop a plan for the conservation of terrestrial native wildlife species in the grasslands of eastern Wyoming.

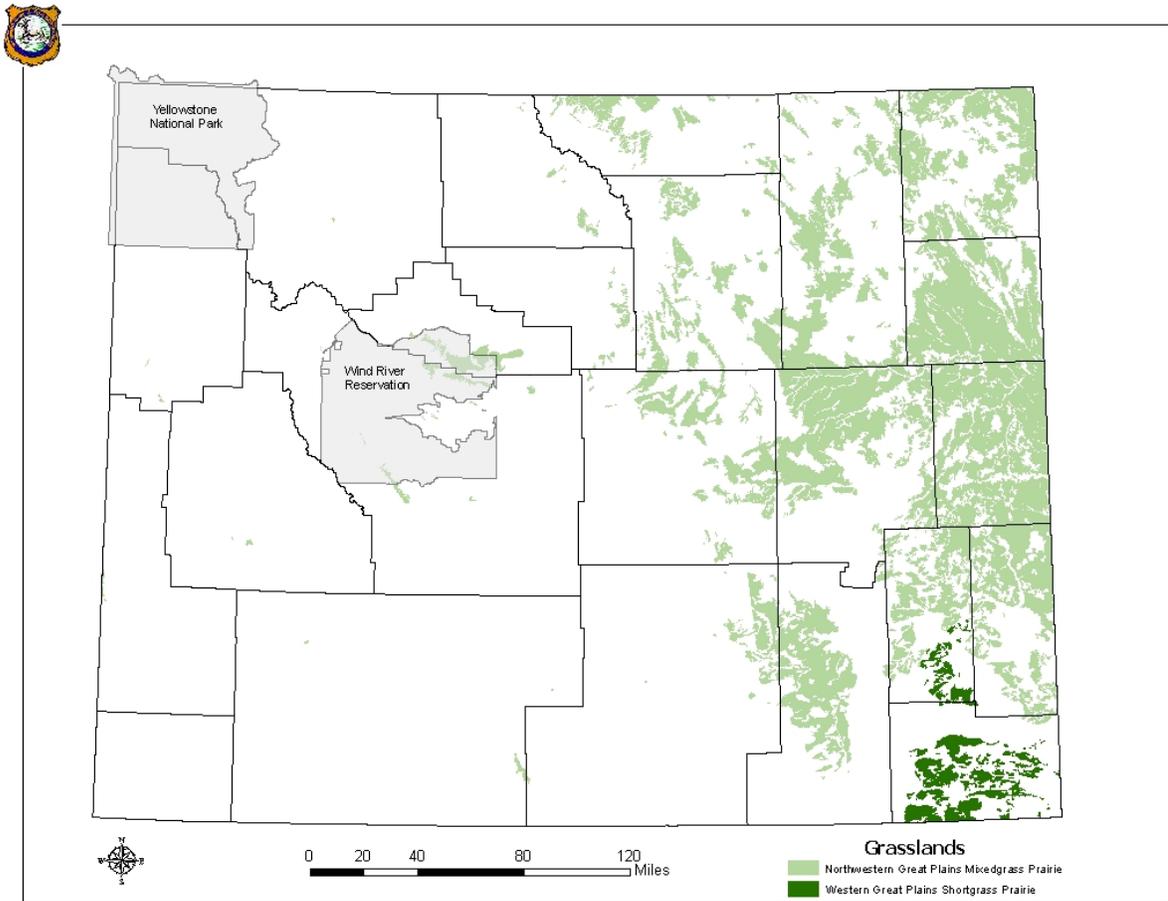
Sam Crowe	U.S. Department of Agriculture, Wildlife Services
Frank Eathorne	Private landowner
Mark Eisele	Wyoming Stockgrowers Association
Bill Gerhart	Wyoming Game and Fish Department
Martin Grenier	Wyoming Game and Fish Department
Ken Hamilton	Wyoming Farm Bureau
Paul Kruse	County Commissions and Wheatland Irrigation District
Kevin Lind	Powder River Basin Resource Council
Cristi Lockman	U.S. Forest Service
Allen Mooney	Wyoming Weed and Pest
Bob Oakleaf	Wyoming Game and Fish Department
Paul Obert	Natural Resources Conservation Service
Earl Reed	Wyoming Wool Growers Association
Jewell Reed	Thunder Basin Grasslands Prairie Ecosystem Association
Archie Reeve	PIC Technologies

Roy Reichenbach Wyoming Department of Agriculture  
Dave Roberts Bureau of Land Management  
Reg Rothwell Wyoming Game and Fish Department  
Rob Stephens Wyoming Game and Fish Department  
Renee Taylor Petroleum Association of Wyoming

Many other individuals contributed to this plan by providing constructive comments and information relative to their areas of expertise. Rob Stephens and Bryce Krueger prepared and polished some of the most recent drafts of the plan. Other helpful individuals include Ryan Amundson, Christina Barrineau, Larry Bourret, Gary Butler, Tim Byer, Andrea Cerovski, Don Christianson, Ken Driese, John Emmerich, Doug Faulkner, Willie Fitzgerald, Bert Jellison, Dennis Knight, Sarah Lantz, Jay Lesser, Richard Moore, Dave Neary, Regan Plumb, Dick Rintamaki, Keith Schoup, Steve Slater, Rick Straw, Ted Toombs, the Thunder Basin Prairie Grassland Ecosystem Association, Laurie Van Fleet, Nyssa Whitford and Steve Wolff. State Wildlife Grants funding was used to assist in preparing the plan.

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**Figure 1. Distribution of mixed-grass and shortgrass prairies in Wyoming [modified from Comer et al. (2003)].**

**Table 1. Grassland Species of Greatest Conservation Need in Wyoming with their corresponding Native Species Status rank.**

<b>Species</b>	<b>Native Species Status (NSS)</b>
Black-footed Ferret	NSS1
Black-tailed Prairie Dog	NSS3
Bobolink	NSS4
Burrowing Owl	NSS4
Chestnut-collared Longspur	NSS4
Dickcissel	NSS4
Ferruginous Hawk	NSS3
Grasshopper Sparrow	NSS4
Hispid pocket mouse	NSS3
Lark Bunting	NSS4
Long-billed Curlew	NSS3
McCown's Longspur	NSS4
Mountain Plover	NSS4
Olive-backed pocket mouse	NSS3
Plains harvest mouse	NSS3
Plains pocket gopher	NSS4
Plains pocket mouse	NSS3
Prairie vole	NSS3
Short-eared Owl	NSS4
Swift fox	NSS4
Upland Sandpiper	NSS4
White-tailed Prairie Dog	NSS4

**Table 2. The Wyoming Game and Fish Department's Native Species Status matrix.**

**HABITAT VARIABLES**

		A Ongoing significant loss of habitat	B Habitat is restricted or vulnerable but no recent or ongoing significant loss; species may be sensitive to human disturbance	C Habitat is not restricted, vulnerable but no loss; species is not sensitive to human disturbance	D Habitat is stable and not restricted
<b>P O P U L A T I O N  V A R I A B L E S</b>	1 Populations are greatly restricted or declining - extirpation appears possible	<b>NSS1</b>  1A	<b>NSS2</b>  1B	<b>NSS3</b>  1C	<b>NSS4</b>  1D
	2 Populations are declining or restricted in numbers and/or distribution - extirpation is not imminent	<b>NSS2</b>  2A	<b>NSS3</b>  2B	<b>NSS4</b>  2C	<b>NSS5</b>  2D
	3 Species is widely distributed; population status and trends are unknown but are suspected to be stable	<b>NSS3</b>  3A	<b>NSS4</b>  3B	<b>NSS5</b>  3C	<b>NSS6</b>  3D
	4 Populations are stable or increasing and not restricted in numbers and/or distribution	<b>NSS4</b>  4A	<b>NSS5</b>  4B	<b>NSS6</b>  4C	<b>NSS7</b>  4D

*Revised - July 2004*

**RAPTORS TAKEN FOR FALCONRY**

## **FALCONRY COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS – Raptors

PERIOD COVERED: 1 January 2006 – 31 December 2006

PREPARED BY: Laurie Van Fleet, Nongame Biologist  
Jonathan Stephens, Permitting Officer

### **SUMMARY**

In 2006, a total of 35 falconry licenses were issued. Of these 35 licenses, 14 raptors were captured in Wyoming for use in falconry (Table 1). The average number of birds captured between 1981 – 2006 is 24.6, with the capture success rate in 2006 at 40% (Table 2). Compared with 2000 – 2006, the number of birds captured and the success rate in 2006 has remained comparatively stable (Table 2).

Unlike previous years, the Wyoming Game and Fish Department no longer requires falconers to list the species they desire to capture or the area in which they desire to capture them when they apply for a falcon capture license. However, five falconry licenses were available in 2006 for Peregrine Falcons on a first-come first-served basis.

Based on the number of falcons captured, the Northern Goshawk and Golden Eagle were in greatest demand, followed by the Peregrine Falcon and Ferruginous Hawk (Table 2).

Nonresidents had a higher capture success rate than residents. Sixteen nonresident licenses were issued and ten birds were captured, for a capture success rate of 62%. Nineteen resident licenses were issued and four birds were captured, for a capture success rate of 21%.

Data are no longer being collected on the number of falconers, species of raptors used for falconry, number of days spent training raptors, number of days spent hunting with raptors, or species of animals taken by raptors in Wyoming.

**Table 1. Wyoming falcons captured by species, 2006.**

<b>Species Captured</b>	<b>Number of Resident Captures</b>	<b>Number of Non-resident Captures</b>	<b>Total Captures</b>
Ferruginous Hawk	0	1	1
Golden Eagle	1	4	5
Northern Goshawk	1	4	5
Peregrine Falcon	2	1	3
<i>Total Captures</i>	<i>4</i>	<i>10</i>	<i>14</i>

**Table 2. The number of raptors captured and the capture rate (%) in Wyoming, 1981-2006.**

<b>Year</b>	<b>Number of Raptors Captured</b>	<b>Capture Rate (%)</b>
1981	27	37
1982	40	52
1983	18	18
1984	25	33
1985	39	53
1986	33	35
1987	19	36
1988	28	51
1989	26	55
1990	32	68
1991	29	66
1992	22	53
1993	13	37
1994	21	33
1995	12	30
1996	25	47
1997	19	61
1998	31	63
1999	27	55
2000	24	57
2001	21	45
2002	29	58
2003	21	49
2004	33	48
2005	13	31
2006	14	40

**OTHER NONGAME**

# **BREEDING BIRD SURVEY COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS – Other Nongame

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist  
U.S. Geological Survey - Biological Resources Division

## **INTRODUCTION AND METHODS**

The Breeding Bird Survey (BBS) is sponsored jointly by the U.S. Geological Survey – Biological Resources Division (USGS-BRD) (formerly the U.S. Fish and Wildlife Service) and the Canadian Wildlife Service. Surveys are used to monitor population trends of bird species that nest in North America. Survey routes are 24.5 miles (39.4 km) long and consist of 50 stops spaced 0.5 miles (2.1 km) apart. Beginning at sunrise, observers record every bird seen and heard at each stop during a three-minute time period. Population trend information obtained from route analysis is especially useful if a species is adequately monitored using this survey method and if routes are conducted annually over the long term.

## **RESULTS AND DISCUSSION**

In 2006, 2,933 BBS routes were conducted in Canada and the United States. The Wyoming Game and Fish Department (Department) Nongame Bird Biologist serves as the state BBS coordinator. The Department uses BBS data to monitor populations of many bird species, especially terrestrial species and those for which no other means of monitoring is presently feasible.

The number of Wyoming BBS routes completed in 2006 (n=60) decreased by 2 from 2005 and 2004 (n=62 both years), increased by 4 from 2003 (n=56), increased by 1 from 2002 (n=59), and decreased from 1991-2001, which varied from 63 to 77 routes completed. Observers agreed to conduct 86 of the 108 available routes in 2006 but only 60 (70%) routes were completed (Table 1).

The average number of species per route in 2006 (n=39) is the same as 2005 (n=39), slightly higher than in 2004, and similar to previous years. The range of species detected on each route in 2006 was a low of 8 and a high of 67. The high is similar to previous years, but the low is several species lower than previous years. In 2006, 32,590 individuals comprising

175 species were detected (Table 2). Compared with previous years, the lowest number of species were detected on Breeding Bird Survey routes in 2006 (Table 3).

Tables 4, 5, 6, and 7 summarize the history of BBS routes in Wyoming from 1968 through 2006. Fewer than 20 routes have been run continuously, or with only a few scattered years missing, for 10 or more years. The majority of routes contain gaps of two or more years or have had more than one observer or a succession of observers. A total of 13 routes completed in 2005 were not conducted in 2006; 5 routes were completed in 2006 that were not conducted in 2005; and observers were added, removed, or changed on 14 routes between 2005 and 2006 (Table 7). The primary purpose of the BBS is to monitor population trends of avian species. Therefore, it is important that each route is conducted annually, and preferably by the same observer, which is a primary goal of BBS coordinators.

The USGS-BRD conducts a detailed statistical analysis of BBS data from the survey's inception in 1966 in the East and 1968 in the West to the current year. From this analysis, population trends for individual species can be examined on a continental, western region, statewide, and physiographic region scale. For this and additional route information, contact the BBS home page at [www.pwrc.usgs.gov/bbs](http://www.pwrc.usgs.gov/bbs).

Population trend analysis data is only significant for species occurring on 14 or more separate BBS routes. Therefore, other survey methods are necessary to determine population trends for those species that are not adequately monitored by the Breeding Bird Survey.

## **ACKNOWLEDGEMENTS**

The Department would like to thank the volunteers and the biologists from this and other natural resources management agencies for their valuable contributions to the 2006 Breeding Bird Survey (see names in Table 1). The continued dedication of these individuals to this survey makes it possible to collect long-term population trend data on numerous avian species in Wyoming.

**Table 1. 2006 Breeding Bird Survey (BBS) observers and route information.**

<b>Observer</b>	<b>Latilong</b>	<b>BBS Route Number and Name</b>	<b>Number of Species</b>
Terry McEneaney	1	1 – NE Entrance, YNP	46
Grace Nutting	2	2 – Cody	53
Tim Stephens	3	3 – Otto	43
Tom Easterly	4	4 – Basin	31
John Berry	5	5 – Wyarno	36
<i>n/a</i>	6	6 – <i>Clarkelen</i>	<i>Discontinued</i>
Jennifer Adams	7	7 – Sundance	Route not conducted
<i>n/a</i>	8	8 – <i>Colter Bay</i>	<i>Discontinued</i>
--	9	9 – Dubois	Need new observer
--	10	10 – Midvale	Need new observer
Donna Walgren	11	11 – Nowood	37
<i>n/a</i>	12	12 – <i>Natrona</i>	<i>Discontinued</i>
Steve Buckman	13	13 – Bill	Route not conducted
<i>n/a</i>	14	14 – <i>Redbird</i>	<i>Discontinued</i>
Carol Deno	15	15 – Fontenelle	55
Brad Meyer	16	16 – Elk Horn	Route not conducted
Andrea Cerovski	17	17 – Bear Creek	14
--	18	18 – Ervay	--
Bruce Walgren	19	19 – Brookhurst	67
<i>n/a</i>	20	20 – <i>Glenrock</i>	<i>Discontinued</i>
Martin Hicks	21	21 – Dwyer	27
Carol Deno	22	22 – Cumberland	19
<i>n/a</i>	23	23 – <i>McKinnon</i>	<i>Discontinued</i>
Laurie Van Fleet	24	24 – Patrick Draw	8
Tim Woolley	25	25 – Savery	Route not conducted
Steve Loose	26	26 – Riverside	51
Greg Johnson	27	27 – Buford	Route not conducted
Jim Lawrence	28	28 – Yoder	45
<i>n/a</i>	--	29 – <i>Canyon</i>	<i>Discontinued</i>
Terry McEneaney	1	30 – Mammoth, YNP	63
<i>n/a</i>	--	31 – <i>West Thumb</i>	<i>Discontinued</i>
Kathryn Hicks	2	32 – Hunter Peak	53
Kathryn Hicks	2	33 – Clark	37
<i>n/a</i>	--	34 – <i>no route</i>	--
Bill Anderson	3	35 – Frannie	31
Bob South	8	36 – Moose	Route not conducted
James Peters	3	37 – Lovell	45
Neil Miller	3	38 – Meeteetse	49
--	4	39 – Ten Sleep	Need new observer
Bill Ostheimer	4	40 – Dayton	60
Glen Olsen	4	41 – Bald Mountain	22
Grace Nutting	5	42 – Crazy Woman	50
--	5	43 – Schoonover	--

**Table 1. Continued.**

<b>Observer</b>	<b>Latilong</b>	<b>BBS Route Number and Name</b>	<b>Number of Species</b>
--	5	44 – Arvada	--
Rene Schell	6	45 – Recluse	32
Rene Schell	6	46 – Soda Well	26
<i>n/a</i>	--	47 – Piney	<i>Discontinued</i>
<i>n/a</i>	--	48 – Seely	<i>Discontinued</i>
Laurie Van Fleet	7	49 – Upton	14
<i>n/a</i>	--	50 – Moskee	<i>Discontinued</i>
Susan Patla	8	51 – Alpine	55
--	8	52 – Wilson	--
Eva Crane	9	53 – Horse Creek	51
<i>n/a</i>	--	54 – no route	--
Pat Hnilicka	9	55 – Crowheart	Route not conducted
--	10	56 – Ethete	Need new observer
Pat Hnilicka	10	57 – Anchor	Route not conducted
--	10	58 – Gebo	--
--	11	59 – Arminto	Need new observer
Greg Anderson	11	60 – Lysite	19
--	11	61 – Worland	--
--	12	62 – Teapot Dome	--
Deane Bjerke	12	63 – Mayoworth	40
Tracey Ostheimer	12	64 – Sussex	41
--	13	65 – Harland Flats	--
--	13	66 – Pine Tree	--
--	13	67 – Highlight	--
--	14	68 – Riverview	--
--	14	69 – Newcastle	29
Bill Munro	14	70 – Raven	Route not conducted
Gary Fralick	15	71 – Soda Lake	Route not conducted
Gary Fralick	15	72 – Buckskin Mountain	Route not conducted
<i>n/a</i>	--	73 – Daniel	<i>Discontinued</i>
Susan Patla	16	74 – Boulder	60
Susan Patla	16	75 – Big Sandy	43
Grant Frost	16	76 – Farson	15
Eva Crane	17	77 – Fiddler Lake	51
Kelli Jones	17	78 – Sand Draw	Route not conducted
Stan Harter	17	79 – Sweetwater	Route not conducted
--	18	80 – Gas Hills	--
Greg Hiatt	18	81 – Bairoil	Route not conducted
Greg Hiatt	18	82 – Lamont	Route not conducted
Laurie Schwieger	19	83 – Pathfinder	30
Donna Walgren	19	84 – Leo	38
Ann Hines	19	85 – Shirley	19
Jim Lawrence	20	86 – Warbonnet	45

**Table 1. Continued.**

<b>Observer</b>	<b>Latilong</b>	<b>BBS Route Number and Name</b>	<b>Number of Species</b>
Gloria Lawrence	20	87 – Fletcher Peak	60
Justin Binfet	20	88 – Shawnee	Route not conducted
Martin Hicks	21	89 – Meadowdale	Route not conducted
Gloria Lawrence	21	90 – Lusk	32
Bryce Kreuger	21	91 – Lingle	35
<i>n/a</i>	--	<i>92 – Diamondville</i>	<i>Discontinued</i>
Kent Fothergill	22	93 – Mountain View	54
<i>n/a</i>	--	<i>94 – no route</i>	--
<i>n/a</i>	--	<i>95 – Green River</i>	<i>Discontinued</i>
--	23	96 – Reliance	--
Mary Lynn Corbett	23	97 – Rock Springs	Route not conducted
Andrea Cerovski	24	98 – Black Rock	Route not conducted
<i>n/a</i>	--	<i>99 – no route</i>	--
<i>n/a</i>	--	<i>100 – no route</i>	--
Bill Falvey	25	101 – Wamsutter	23
Bill Falvey	25	102 – Rawlins	21
Tim Woolley	25	103 – Baggs	Route not conducted
Frank Blomquist	26	104 – Walcott	53
--	26	105 – Fox Park	--
Frank Bergquist	26	106 – Ryan Park	Route not conducted
Bill Falvey	27	107 – Sybille Canyon	37
Bill Falvey	27	108 – Rock River	44
Bryce Krueger	27	109 – Harmony	52
Pat Deibert	28	110 – Cheyenne	Route not conducted
Reg Rothwell	28	111 – Chugwater	Route not conducted
Bryce Krueger	28	112 – Pine Bluff	33
Chris Michelson	20	120 – Welch	39
Kathleen Paulin	23	123 – Flaming Gorge	16
--	6	147 – Rozet	--
Mary Yemington	7	148 – Seely 2	53
Jennifer Adams	7	150 – Government Valley	Route not conducted
Scott Smith	15	173 – Rye Grass	35
Kent Fothergill	23	192 – Carter	24
--	23	195 – Seedskaadee	Need new observer
Sandra Johnson	6	206 – Caballa Creek	24
Susan Wolff	8	208 – Moran	50
Larry Keffer	12	212 – Bucknum	Route not conducted
Bill Munro	14	214 – Hampshire	Route not conducted
Jennifer Adams	7	250 – Moskee 2	Route not conducted
<i>n/a</i>	--	<i>900 – Hayden Valley</i>	<i>Discontinued</i>
Terry McEneaney	1	901 – Yellowstone, YNP	57
Bill Falvey	1	902 – Pryor Flats	43

**Table 2. Summary of species and numbers detected on Breeding Bird Survey routes conducted in Wyoming in 2005 and 2006.**

<b>Species Detected on Breeding Bird Survey Routes in Wyoming</b>	<b>Total Detected 2005</b>	<b>Total Detected 2006</b>
Canada Goose	702	1584
Trumpeter Swan	2	0
Wood Duck	7	4
Gadwall	21	0
American Wigeon	37	62
Mallard	184	443
Blue-winged Teal	38	10
Cinnamon Teal	15	5
Northern Shoveler	15	4
Northern Pintail	26	27
Green-winged Teal	8	7
Canvasback	0	5
Redhead	0	12
Ring-necked Duck	14	3
Lesser Scaup	65	136
Harlequin Duck	0	6
Bufflehead	8	14
Barrow's Goldeneye	24	20
Common Merganser	7	37
Ruddy Duck	2	15
Chukar	2	0
Ring-necked Pheasant	269	295
Ruffed Grouse	7	3
Greater Sage-grouse	21	65
Blue Grouse	1	1
Wild Turkey	33	10
Pied-billed Grebe	5	6
Eared Grebe	15	11
Western Grebe	9	6
Clark's Grebe	2	0
American White Pelican	128	194
Double-crested Cormorant	11	15
Great Blue Heron	20	56
Turkey Vulture	54	44
Osprey	4	10
Bald Eagle	1	8
Northern Harrier	14	37
Sharp-shinned Hawk	2	1

Table 2. Continued.

Species Detected on Breeding Bird Survey Routes in Wyoming	Total Detected 2005	Total Detected 2006
Cooper's Hawk	2	2
Northern Goshawk	3	2
Unidentified Accipiter	1	0
Swainson's Hawk	30	31
Red-tailed Hawk	67	92
Ferruginous Hawk	32	23
Golden Eagle	22	23
American Kestrel	72	70
Peregrine Falcon	2	0
Prairie Falcon	15	5
Sora	10	9
American Coot	12	26
Sandhill Crane	88	100
Killdeer	343	319
Mountain Plover	1	15
American Avocet	35	27
Willet	6	95
Spotted Sandpiper	63	68
Upland Sandpiper	34	47
Long-billed Curlew	4	12
Wilson's Snipe	200	242
Wilson's Phalarope	66	48
Ring-billed Gull	2	0
California Gull	60	159
Forster's Tern	0	1
Rock Pigeon	83	106
Eurasian Collared-Dove	0	10
Mourning Dove	676	1202
Black-billed Cuckoo	1	0
Yellow-billed Cuckoo	10	0
Great Horned Owl	2	9
Burrowing Owl	2	13
Short-eared Owl	0	8
Common Nighthawk	114	132
Common Poorwill	4	4
White-throated Swift	49	0
Calliope Hummingbird	2	6
Broad-tailed Hummingbird	21	18
Belted Kingfisher	8	11

Table 2. Continued.

Species Detected on Breeding Bird Survey Routes in Wyoming	Total Detected 2005	Total Detected 2006
Lewis's Woodpecker	3	0
Red-headed Woodpecker	2	0
Red-naped Sapsucker	17	17
Williamson's Sapsucker	1	2
Downy Woodpecker	6	2
Hairy Woodpecker	18	2
American Three-toed Woodpecker	4	2
Northern Flicker – Red-shafted race	156	208
Northern Flicker – Yellow-shafted race	2	0
Olive-sided Flycatcher	3	12
Western Wood-Pee-wee	101	118
Willow Flycatcher	21	34
Least Flycatcher	11	9
Hammond's Flycatcher	21	12
Dusky Flycatcher	73	50
Cordilleran Flycatcher	10	6
Unidentified <i>Empidonax</i> flycatcher	0	1
Say's Phoebe	49	59
Western Kingbird	67	218
Eastern Kingbird	62	102
Loggerhead Shrike	40	48
Plumbeous Vireo	10	7
Warbling Vireo	283	233
Red-eyed Vireo	11	0
Gray Jay	18	9
Steller's Jay	10	0
Blue Jay	3	9
Pinyon Jay	26	30
Clark's Nutcracker	116	143
Black-billed Magpie	252	406
American Crow	209	237
Common Raven	251	309
Horned Lark	2374	2855
Tree Swallow	124	113
Violet-green Swallow	179	142
Northern Rough-winged Swallow	53	87
Bank Swallow	48	0
Cliff Swallow	879	1177
Barn Swallow	134	233

Table 2. Continued.

Species Detected on Breeding Bird Survey Routes in Wyoming	Total Detected 2005	Total Detected 2006
Black-capped Chickadee	54	11
Mountain Chickadee	137	115
Red-breasted Nuthatch	81	34
White-breasted Nuthatch	3	4
Brown Creeper	7	0
Rock Wren	299	312
Bewick's Wren	1	0
House Wren	185	154
Marsh Wren	2	3
American Dipper	3	2
Ruby-crowned Kinglet	308	332
Blue-gray Gnatcatcher	2	2
Western Bluebird	2	1
Mountain Bluebird	213	259
Townsend's Solitaire	32	10
Veery	20	1
Swainson's Thrush	21	28
Hermit Thrush	107	101
American Robin	1245	1206
Gray Catbird	46	43
Northern Mockingbird	0	5
Sage Thrasher	579	655
Brown Thrasher	1	2
European Starling	443	828
American Pipit	1	5
Cedar Waxwing	3	8
Orange-crowned Warbler	9	3
Yellow Warbler	302	356
Yellow-rumped Warbler – Audubon's race	276	272
American Redstart	33	3
Ovenbird	67	2
MacGillivray's Warbler	32	30
Common Yellowthroat	39	30
Wilson's Warbler	22	9
Yellow-breasted Chat	20	31
Western Tanager	59	65
Green-tailed Towhee	199	185
Spotted Towhee	93	76
Eastern Towhee	2	0

Table 2. Continued.

Species Detected on Breeding Bird Survey Routes in Wyoming	Total Detected 2005	Total Detected 2006
Cassin's Sparrow	0	1
Chipping Sparrow	296	222
Clay-colored Sparrow	15	23
Brewer's Sparrow	704	842
Field Sparrow	4	5
Vesper Sparrow	973	1145
Lark Sparrow	270	206
Sage Sparrow	163	252
Lark Bunting	1141	1458
Savannah Sparrow	173	272
Grasshopper Sparrow	41	114
Baird's Sparrow	0	6
Fox Sparrow	8	11
Song Sparrow	159	134
Lincoln's Sparrow	107	73
White-crowned Sparrow	116	62
Dark-eyed Junco – Oregon race	102	53
Dark-eyed Junco – Pink-sided race	49	86
Dark-eyed Junco – White-winged race	28	0
Dark-eyed Junco – Gray-headed race	16	3
Dark-eyed Junco	89	107
McCown's Longspur	76	99
Chestnut-collared Longspur	51	7
Black-headed Grosbeak	28	34
Blue Grosbeak	4	9
Lazuli Bunting	8	14
Dickcissel	0	41
Bobolink	1	26
Red-winged Blackbird	1165	1778
Western Meadowlark	3746	3763
Yellow-headed Blackbird	37	161
Brewer's Blackbird	780	1134
Common Grackle	283	555
Brown-headed Cowbird	293	581
Orchard Oriole	2	1
Bullock's Oriole	82	87
Black Rosy-Finch	0	5
Pine Grosbeak	0	5
Cassin's Finch	53	40

Table 2. Continued.

<b>Species Detected on Breeding Bird Survey Routes in Wyoming</b>	<b>Total Detected 2005</b>	<b>Total Detected 2006</b>
House Finch	21	23
Red Crossbill	159	63
White-winged Crossbill	0	2
Pine Siskin	335	155
American Goldfinch	87	86
House Sparrow	167	365
<i>Total Species Detected</i>	<i>181</i>	<i>175</i>
<i>Total Individuals Detected</i>	<i>26,342</i>	<i>32,590</i>

**Table 3. Total number of species recorded on BBS routes in Wyoming, 1993 – 2006.**

<b>Year</b>	<b>Number of Species Detected</b>
1993	186
1994	185
1995	187
1996	189
1997	186
1998	184
1999	205
2000	199
2001	186
2002	194
2003	181
2004	191
2005	181
2006	175

**Table 4. Breeding Bird Survey time line, 1968-1980. Names under the years are the observers who conducted the routes. Continuous years with the same observer are distinguished with a line. Years that routes were not conducted are left blank.**

Route Number and Name	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
1 NE Entrance (YNP)													
2 Cody			Kessinger										McGough
3 Otto			Kessinger				Domina						Raper
4 Basin			Kessinger				Domina						
5 Wyarno							Hall		Downing				
6 Clarkelen							Downing						
7 Sundance			Kessinger		Spring		Downing						
8 Colter Bay													
9 Dubois													
10 Midvale							Back						
11 Nowood													
12 Natrona													
13 Bill							Tate						
14 Redbird													
15 Fontenelle													
16 Elk Horn													
17 Bear Creek													
18 Ervay													
19 Brookhurst													
20 Glenrock													
21 Dwyer													
22 Cumberland													
23 McKinnon													
24 Patrick Draw													
25 Savery													
26 Riverside													
27 Buford													
28 Yoder													
29 Canyon (YNP)													
30 Mammoth (YNP)													
31 West Thumb (YNP)													
32 Hunter Peak													
33 Clark													
35 Frannie													
36 Moose													
37 Lovell													
38 Meeteetse													
39 Ten Sleep													
40 Dayton													



**Table 4. Continued.**

Route Number and Name	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
81 Bairoil													
82 Lamont													
83 Pathfinder													
84 Leo												Bohne-----	
85 Shirley													
86 Warbonnet													
87 Fletcher Park												Rothwell-	
88 Shawnee													
89 Meadowdale													
90 Lusk													
91 Lingle													Rothwell-----
92 Diamondville										June-----			
93 Mountain View										June-----			June-----
95 Green River										June-----			
96 Reliance										June-----			
97 Rock Springs													
98 Black Rock													
101 Wamsutter													
102 Rawlins													
103 Baggs													
104 Walcott													
105 Fox Park													
106 Ryan Park													
107 Sybille Canyon													
108 Rock River													
109 Harmony													McAd-----
110 Cheyenne													Bohne-----
111 Chugwater													Floyd-----
112 Pine Bluff													Rothwell-----
120 Welch													Strickland-----
123 Flaming Gorge													Layton-----
147 Rozet													
173 Ryegrass													
195 Seedskaadee													
206 Caballa Creek													
900 Hayden Val. (YNP)													
901 Yellowstone (YNP)													
902 Pryor Flats													

<sup>a</sup> These names were reported as a 4 letter code; full names are unknown.

**Table 5. Breeding Bird Survey time line, 1981-1990. Names under the years are the observers who conducted the routes. Continuous years with the same observer are distinguished with a line. Year 1981 routes conducted by the same observer as in 1980 have two dashes before the observer's name. Years that routes were not conducted are left blank.**

Route Number	Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1	NE Entrance (YNP)		Bystrak---						Nutting-		
2	Cody			Belitsky--					Greenquist		
3	Otto	--McGough---		Stelter--				Stelter--			
4	Basin	--Raper---		Stelter--				Stelter--			
5	Wyarno	--Downing---		--Jackson---			Downing		Berry		
6	Clarkelen	CHANGED TO #206 IN 1979									
7	Sundance		Adams								
8	Colter Bay									Wallen-	
9	Dubois	Merrifield-			Abbott-			Abbott		Wimpfheimer	Abbott
10	Midvale							Ritter		Ryder	
11	Nowood								Means-		Means-
12	Natrona										
13	Bill										
14	Redbird										
15	Fontenelle										
16	Elk Horn		Row-					Luce		Baker-	
17	Bear Creek								Kinter		Kinter
18	Ervay	--Layton---					Layton				
19	Brookhurst	--Layton---		Layton						Layton	
20	Glenrock	CHANGED TO #120 IN 1978		Scott						South	
21	Dwyer										
22	Cumberland								Luce		
23	McKinnon	--June---									
24	Patrick Draw	--June---						Kesselheim-	CHANGED TO #123 IN 1988		
25	Savery	--June---	Hays-	June-					Jahnke		Raper-
26	Riverside								Jahnke	Fitton-	
27	Buford									Straw	
28	Yoder	--Luce---									
29	Canyon (YNP)		Bystrak--ROUTE NO LONGER RUN						J.Lawrence-		
30	Manmoth (YNP)		Gniadek-								
31	West Thumb (YNP)						Zarki-				
32	Hunter Peak		Bystrak--ROUTE NO LONGER RUN								
33	Clark								Hicks		Hicks-
35	Frannie										Bryant-
36	Moose										
37	Lovell										
38	Meeteetse										Peters-
39	Ten Sleep										

**Table 5. Continued.**

Route Number and Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
40 Dayton	--Hanebury--			--Downing--				--Johnson--		Daly--
41 Bald Mountain	--Daly--									Roney--
42 Crazy Woman		Pallister--				Pallister--				Posner--
43 Schoonover		Segerstrom--				Segerstrom-Daly--				Daly--
44 Arvada		Segerstrom--				Segerstrom-Burton--				Oedekoven--
45 Recluse	--Daly--					Ernst--				
46 Soda Well	--Pallister--	Gasson--	--Segerstrom--			Winland--		Winland--		
47 Piney										Droege--
48 Seely										
49 Upton		Bystrak----							Lanka--	
50 Moskee										
51 Alpine									Luce--	
52 Wilson	--Raynes--	Glen--	--Raynes--							
53 Horse Creek		Mikol--								
55 Crowheart										
56 Ethete										
57 Anchor										
58 Gebo	--Baggs--		Lawson----							
59 Arminto		Pate--			Pate--					
60 Lysite										
61 Worland										
62 Teapot Dome	Pate--									
63 Mayoworth		Talbott--	Luce--							
64 Sussex										
65 Harland Flats										
66 Pine Tree	--Gasson--		Segerstrom--							
67 Highlight	--Gasson--		--Segerstrom--							
68 Riverview		Fuchs--								
69 Newcastle										
70 Raven										
71 Soda Lake	--Johnson--									
72 Buckskin Mtn.	--Johnson--									
73 Daniel	--Johnson--									
74 Boulder		Row--								
75 Big Sandy			Straley----							
76 Farson			June-----							
77 Fiddler Lake		Oakleaf----								
78 Sand Draw										
79 Sweetwater	--Emmerich--									
80 Gas Hills										

**Table 5. Continued.**

Route Number and Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
81 Bairoil								Bredehoft--		Hiatt----
82 Lamont							Hiatt--			
83 Pathfinder		Pate--					Guenzel--			
84 Leo		Gilbert---								
85 Shirley		Hays-----							Luce-----	Rudd----
86 Warbonnet									G.Lawrence--	Droege----
87 Fletcher Park		Rothwell--						Helms-----		
88 Shawnee										
89 Meadowdale			Hymas-----							
90 Lusk		Fuchs-----					Helms-----			
91 Lingle		--Rothwell				Stroud-----	--Straw	--Lockwood--		Howe----
92 Diamondville		--June--	Hays--ROUTE NO LONGER RUN							
93 Mountain View		--June--					Luce-----		Deen-----	
95 Green River		--June--	--Luke--			CHANGED TO #195 IN 1986				
96 Reliance		--June--	--Luke--							
97 Rock Springs		--June--					Raper-----			Luke-----
98 Black Rock										Christiansen
101 Wamsutter										Jahnke----
102 Rawlins								Rinkes-----		
103 Baggs								Jahnke-----	Longobardi--	
104 Walcott									Parks-----	Long-----
105 Fox Park		Long-----								
106 Ryan Park										
107 Sybille Canyon										
108 Rock River									Ritter-----	Mobley----
109 Harmony		Hays-----	Bystrak----				Bohne-----			Oneale----
110 Cheyenne		--Floyd--								
111 Chugwater		--Rothwell--	Hill-----							
112 Pine Bluff		Strickland--							Rothwell----	
120 Welch		--Layton--	Layton-----						Samuelson--	
123 Flaming Gorge									Christiansen	Christiansen
147 Rozet										
173 Ryegrass										Wollrab----
195 Seedskaadee						Adams-----				
206 Caballa Creek										
900 Hayden Valley (YNP)					Zarki-----					
901 Yellowstone (YNP)									ROUTE NO LONGER RUN	
902 Pryor Flats								Zarki-----		





Table 6. Continued.

Route Number and Name	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
77 Fiddler Lake	--Nelson		Jones		Crane					
78 Sand Draw			Jones			Jones				
79 Sweetwater	--Emmerich		--Ryder							
80 Gas Hills	Laurion									
81 Bairoil	--Hiatt									
82 Lamont	--Hiatt									
83 Pathfinder	Hines	--Schwieger								
84 Leo				Walgren						
85 Shirley		Easterly	--Hines			Hines				
86 Warbonnet		Schwieger		Schwieger				--J.Lawrence		
87 Fletcher Park	--G.Lawrence							Kroger		
88 Shawnee	--Helms		--Robertson	--Helms						
89 Meadowdale	--Ritter	--Lutz		Hnilicka	--Zornes					
90 Lusk	--Helms		--Robertson	--Helms				G.Lawrence		
91 Lingle	Ritter	--Lutz			Lutz		Felley			
92 Diamondville				CHANGED TO #192 IN 1983						
93 Mountain View	--Deen			Adams					Paulin	
95 Green River	CHANGED TO #195 IN 1986									
96 Reliance										
97 Rock Springs	--Luke			Gunyan						
98 Black Rock			Gunyan							
101 Wamsutter	--Jahnke		Jahnke				Woolley			
102 Rawlins	--Rinkes					Apple				
103 Baggs	Iversen				Hnilicka		Woolley			
104 Walcott	Blomquist									
105 Fox Park		Bohle								
106 Ryan Park										
107 Sybille Canyon	--Mobley		Pauley				Felley			
108 Rock River	--Oneale		Young			Young		Young		
109 Harmony				Guenzel						
110 Cheyenne		Brockmann								
111 Chugwater	Rothwell			Rothwell		--Zornes	--Deibert			
112 Pine Bluff		Samuelson	--Young					Young		
120 Welch	Michelson									
123 Flaming Gorge		Reinmuth		--Norvell	--Lewis		Paulin			
147 Rozet	Winland		Hayes							
150 Gov't. Valley (NEW IN 1992)	Adams	Adams								
173 Ryegrass				Smith					Smith	
192 Carter										

**Table 6. Continued.**

Route Number and Name	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
195 Seedskadee		Luke								
206 Caballa Creek		Plato								
212 Bucknum			Herold							
214 Hampshire				Bartosiak						
901 Yellowstone (YNP)	McEneaney									
902 Prior Flats	Scott									

**Table 7. Breeding Bird Survey time line, 2001-2005. Names under the years are the observers who conducted the routes. Continuous years with the same observer are distinguished with a line. Year 2001 routes conducted by the same observer as in 2000 have two dashes before the observer's name. Years that the route was not conducted are left blank.**

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1 NE Entrance (YNP)	--McEneaney									
2 Cody	--Nutting									
3 Otto	--Stephens									
4 Basin			Easterly							
5 Wyarno	--Berry									
6 Clarkelen	CHANGED TO #206	IN 1979								
7 Sundance	--J.Adams									
8 Colter Bay	CHANGED TO #208	IN 2000								
9 Dubois										
10 Midvale										
11 Nowood	--Walgren									
12 Natrona	CHANGED TO #212	IN 1993								
13 Bill	--Buckman									
14 Redbird	CHANGED TO #214	IN 1994								
15 Fontenelle	--Deno									
16 Elk Horn	--Meyer									
17 Bear Creek	--Cerovski				Cerovski					
18 Ervay										
19 Brookhurst	--Walgren									
20 Glenrock	CHANGED TO #120	IN 1978				Hicks				
21 Dwyer										
22 Cumberland	--Deno									
23 McKinnon	CHANGED TO #123	IN 1988								
24 Patrick Draw	--Van Fleet			Van Fleet		Van Fleet				
25 Savery										
26 Riverside	--Loose									
27 Buford	--Johnson		Johnson							
28 Yoder	--J.Lawrence									
29 Canyon (YNP)	ROUTE NO LONGER	RUN								
30 Mammoth (YNP)	--McEneaney									
31 West Thumb (YNP)	ROUTE NO LONGER	RUN								
32 Hunter Peak	--Hicks					Hicks				
33 Clark	--Hicks					Hicks				
35 Frannie	--B.Anderson									
36 Moose	South									

Table 7. Continued.

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
37 Lovell	--Peters-----									
38 Meeteetse	--Miller-----		Miller-----							
39 Ten Sleep										
40 Dayton						Ostheimer--				
41 Bald Mountain	--Peters-----	Olsen-----								
42 Crazy Woman	--Nutting-----									
43 Schoonover	--Ward-----									
44 Arvada	--Ward-----									
45 Recluse	--Oedekoven-----					Schell-----				
46 Soda Well	Ernst-----					Schell-----				
47 Piney	CHANGED TO #147 IN 1991									
48 Seely	--Yemington--	CHANGED TO #148 IN 2002								
49 Upton	--G.Anderson--					Van Fleet--				
50 Moskee	--Adams-----	CHANGED TO #250 IN 2002								
51 Alpine	--Wile-----	Patla-----								
52 Wilson										
53 Horse Creek	--Crane-----									
55 Crowheart		Hnilicka-----								
56 Ethete		Firchow-----								
57 Anchor		Hnilicka---		Hnilicka-----						
58 Gebo										
59 Arminto	Harter-----									
60 Lysite		G.Anderson-----								
61 Worland										
62 Teapot Dome										
63 Mayoworth	--Bjerke-----					Ostheimer--				
64 Sussex										
65 Harland Flats										
66 Pine Tree										
67 Highlight										
68 Riverview										
69 Newcastle	--G.Anderson--					Van Fleet--				
70 Raven										
71 Soda Lake	Fralick-----				Fralick-----					
72 Buckskin Mtn.	--Fralick-----				Fralick-----					
73 Daniel	CHANGED TO #173 IN 1988									
74 Boulder						Patla-----				
75 Big Sandy	--Smith-----	Stroud-----				Patla-----				
76 Farson	Cornell-----				Cornell-----	Frost-----				

Table 7. Continued.

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
77 Fiddler Lake	--Crane-----									
78 Sand Draw					Jones-----					
79 Sweetwater	--Ryder-----				Harter-----					
80 Gas Hills										
81 Bairoil		Hiatt-----								
82 Lamont	--Hiatt-----									
83 Pathfinder	--Schwiger-----									
84 Leo	--Walgren-----									
85 Shirley	--Hines-----									
86 Warbonnet	--J.Lawrence-----									
87 Fletcher Park	--G.Lawrence-----									
88 Shawnee	--Kroger-----				--Binfet-----					
89 Meadowdale										
90 Lusk	--G.Lawrence-----									Krueger-----
91 Lingle										
92 Diamondville	CHANGED TO #192 IN 1983									
93 Mountain View	Paulin-----									Fothergill-
95 Green River	CHANGED TO #195 IN 1986									
96 Reliance	Luce-----									
97 Rock Springs										
98 Black Rock	Cornell-----									
101 Wamsutter	--Woolley-----				--Falvey-----					
102 Rawlins					Falvey-----					
103 Baggs	--Woolley-----									
104 Walcott	--Blomquist-----									
105 Fox Park	--Bohle-----									
106 Ryan Park										
107 Sybille Canyon										
108 Rock River					Falvey-----					
109 Harmony					Falvey-----					Krueger-----
110 Cheyenne	Deibert-----									Deibert-----
111 Chugwater										
112 Pine Bluff										Krueger-----
120 Welch	--Michelson-----									
123 Flaming Gorge	--Paulin-----									
147 Rozet										
148 Seely 2		Yemington-----								
150 Gov't. Valley	--Adams-----									
173 Ryegrass	--Smith-----		Smith-----							Kondratieff

**Table 7. Continued.**

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
192 Carter						Fothergill-				
195 Seedskafee		Halvorson--Glass-----								
206 Caballa Creek	--Plato-----		--Damberg----		Johnson-----					
208 Moran		Wolff-----		Wolff-----						
212 Bucknum	--Herold-----				Keffer-----					
214 Hampshire	--Snell-----									
250 Moskee 2		Adams-----								
901 Yellowstone (YNP)	--McEneaney-----				McEneaney-----					
902 Prior Flats				Falvey-----						

# **MONITORING AVIAN PRODUCTIVITY AND SURVIVORSHIP BIRD BANDING COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS – Other Nongame

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## **INTRODUCTION AND METHODS**

In 1995, the Wyoming Game and Fish Department (Department), The Nature Conservancy (TNC), Audubon Wyoming, Red Desert Audubon, the U.S. Fish and Wildlife Service (USFWS), and the Institute for Bird Populations (IBP) began a long-term partnership for the benefit of resident birds and Neotropical migratory birds (those species that breed in the United States and Canada and winter in Mexico, Central America, South America, and the Caribbean). These partners pooled resources to initiate a Monitoring Avian Productivity and Survivorship (MAPS) bird banding station on TNC's Red Canyon Ranch just south of Lander, Wyoming.

The objectives of this project are to: 1) obtain long-term information on avian use and relative abundance of this properly functioning riparian ecosystem, 2) determine survivorship trends of adult birds, 3) determine the success of species productivity and recruitment of young into the population, 4) determine long-term population trends for both Neotropical migrant and resident species, and 5) determine the cause(s) of population change, if any, of avian species on site.

## **METHODS**

The study area consists of 10 mist nets set up within riparian vegetation along Deep Creek in approximately a 10-acre (4 ha) area. Each net site is carefully selected in an attempt to capture as many birds as possible, and net sites remain constant throughout the life of the project.

Nets are opened once every 10 days from early June through early August to ensure that primarily breeders, and not migrants, are captured. On each banding day, nets are opened at sunrise, left open for 6 hours, and are checked every 45 minutes. Birds are removed from the mist nets and are placed in cotton bags until they can be processed. Captured birds are identified to species and leg banded with the appropriate sized USFWS

numbered band. Sex is determined by plumage and the presence of either a cloacal protuberance (male) or brood patch (female). Wing chord (length of the unflattened wing), tail length, and culmen length (distance between the anterior end of the nostril and the end of the bill) are measured and the amount of body fat is determined. Flight feathers are checked for wear and molt, and body molt is determined. The amount of skull pneumatization is examined to accurately determine the bird's age. Weight is taken, and then the bird is released. A more detailed description of MAPS station protocol and methodology is presented in the Handbook of Field Methods for Monitoring Landbirds (Ralph et al. 1993).

Bird banding data is submitted to the IBP, located in Point Reyes Station, California, where a national database is maintained with all MAPS station data from across the United States and Canada. By following a standard protocol for setting up and conducting MAPS stations, data can be compared between stations across North America.

## **RESULTS AND DISCUSSION**

Data for the 2006 field season are presented in Table 1. In 2006, a total of 32 different bird species and 207 individual birds were captured, including 127 new individuals, 73 recaptures, and 7 birds that were unbanded. Out of the 32 species captured, 15 were known to breed on-site, 4 were suspected to breed on-site, 12 species were considered transients, and 1 species was a post-breeding migrant. Six of the 12 target species were captured and banded in 2006. Over the 12-year period, 11 of the 12 IBP MAPS regional target species for the northwest region have been banded (Dark-eyed Junco has not been banded as yet). Two new species were captured in 2006 (Blue-gray Gnatcatcher and Olive-sided Flycatcher).

Monitoring Avian Productivity and Survivorship capture data for all years of the project are presented in Tables 2 and 3. Out of the 88 species captured during the 12-year project, 15 species were captured all 12 years, 5 species were captured in 11 of the 12 years, and 4 species were captured in 10 of the 12 years.

Longevity of some passerine species at the banding site has been surprising. Recapture data have shown that, not only do individual birds return to this same area to nest every year, but that some songbirds are living for six years or more.

Although the Deep Creek MAPS station has reached the goal to provide data for 10 years, volunteers have agreed to continue with the same protocol and banding methodology during the 2007 field season. By following this protocol, the value of the data collected at this MAPS station is increased because these data can be directly compared with data from other MAPS stations across North America. By increasing the life span of this MAPS station, valuable long-term data can continue to be collected.

## **ACKNOWLEDGEMENTS**

The Department would like to acknowledge and thank the following volunteers for their valuable contributions to the 2006 MAPS effort, without which this project would not be possible: Kate Billings, Kerry Brophy, Anne Cannon, Waylon Coleman, Eva Crane, Jim Downham, Barb Duplisea, Jonathan Gray, J. R. Horton, Sara Johnson, Donnabelle Leonhardt, Regan Lyons, Wanda Major, Jazmyn McDonald, Del Nelson, Jan Satake, Pam Schweigert, Jacque Shaw, Ron Shaw, Sally Watt, and Shawn Woodward.

Thanks are also extended to the following Department personnel for their invaluable assistance in 2006: Joe Satake (retired) and Nyssa Whitford.

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**Table 1. Monitoring Avian Productivity and Survivorship (MAPS) station bird banding summary, Red Canyon Ranch, Deep Creek Station, 2006.**

Species Name	6/6/06	6/16/06	6/27/06	7/7/06	7/18/06	7/27/06	8/8/06	Total	Status
American Goldfinch	6	4	6	2	4	12	8	42	B
American Robin ***		1	1			1		3	B
Black-capped Chickadee						2		2	L
Black-headed Grosbeak						1	1	2	T
Blue-gray Gnatcatcher							1	1	T
Blue Grosbeak		2	1					3	T
Brewer's Sparrow		1			2		2	5	B
Bullock's Oriole	5	3	3	2		1		14	B
Common Yellowthroat	3	12	5	7	3	2	4	36	B
Downy Woodpecker						1		1	T
Eastern Kingbird				1		1	1	3	B
Gray Catbird		1	1		2			4	B
Green-tailed Towhee						1	2	3	T
House Wren						1		1	L
Lazuli Bunting				1	2		1	4	B
MacGillivray's Warbler							1	1	T
Northern Flicker							1	1	T
Olive-sided Flycatcher							1	1	T
Orange-crowned Warbler ***					1			1	T
Red-naped Sapsucker					1	1		2	T
Red-winged Blackbird	1	4	2					7	B
Rufous Hummingbird					1			1	M
Sage Thrasher						3		3	T
Song Sparrow ***	2	2	3	4	2	2	4	19	B
Spotted Towhee			1	1	1	1	2	6	B
Swainson's Thrush ***	1							1	T
Vesper Sparrow						1		1	L
Warbling Vireo ***					3			3	B
Western Meadowlark			1	1				2	L
Western Wood-Pewee	1						1	2	B
Yellow-breasted Chat	3		2	7	1	1	3	17	B
Yellow Warbler ***	5	5	2			1	2	15	B
<b>TOTAL NUMBER</b>	<b>27</b>	<b>35</b>	<b>28</b>	<b>26</b>	<b>23</b>	<b>33</b>	<b>35</b>	<b>207</b>	<b>~</b>
<b>TOTAL SPECIES</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>9</b>	<b>12</b>	<b>17</b>	<b>16</b>	<b>32</b>	<b>~</b>

\*\*\* = MAPS Regional Target Species for the Northwest Region.

Total Captures = 207 (New = 127, Recaptures = 73, Unbanded = 7).

B = Breeder (confirmed breeding on site) = 15 species (Total captures = 180).

L = Likely Breeder (suspected breeding on site) = 4 species (Total captures = 6).

T = Transient (within breeding range but does not breed on site) = 12 species (Total captures = 20).

M = Migrant (site is not within breeding range) = 1 species (Total captures = 1).

**Table 2. Monitoring Avian Productivity and Survivorship (MAPS) station bird banding species and status list, Red Canyon Ranch, Deep Creek Station, 1995-2006. <sup>a</sup>**

SPECIES NAME	FIRST CAPTURED	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
American Dipper	7/12/1996		T		T	T						T	
American Goldfinch	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
American Redstart	6/13/1995	T							T	T			
American Robin	7/18/1995	B	B	B	B	B	B	B	B	B	L	B	B
Barn Swallow	7/28/1998				T	T		T	T			T	
Belted Kingfisher	7/6/2000						T	T	T	T	T	T	
Black-and-white Warbler	6/17/1999					M							
Black-billed Cuckoo	6/6/2000						T						
Black-billed Magpie	7/14/1997			T				B	B		T		
Black-capped Chickadee	8/15/1996		T	B	B		B	B	B	B	B	T	T
Black-headed Grosbeak	5/30/1995	T	B	B	B		T	T	T	T	T	L	L
Black-throated Gray Warbler	8/6/2003									T			
Blue-gray Gnatcatcher	8/8/2006												T
Blue Grosbeak	6/14/1996		T			T	T	T	T				T
Blue Grouse	8/6/1998				T	B		T					
Brewer's Blackbird	6/7/1996		T	T			T	T					
Brewer's Sparrow	8/15/1996		T	T		T	B	B	B	B	B	T	B
Broad-tailed Hummingbird	8/6/1996		T					T	T				
Brown-headed Cowbird	6/5/1995	T	T	B	B	B	B	B	T	L	L	L	
Brown Thrasher	6/2/1998				T								
Bullock's Oriole	5/30/1995	T	T	T	T	T	B	B	B	B	B	B	B
Calliope Hummingbird	7/27/1999					T	T		T				
Cedar Waxwing	7/26/1996		T	T	T	T	B	T	T	T			
Chestnut-sided Warbler	7/3/1996		M					M					
Chipping Sparrow	8/6/1996		T				T		T	T	T	T	
Cliff Swallow	7/18/1995	T	T	T		T	T	T	T		T	T	
Common Grackle	6/23/1995	T	T	T	T	T	T						
Common Nighthawk	7/24/2001							T	T				
Common Yellowthroat	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Cordilleran Flycatcher	6/5/1995	T	T	T		T			T		T	T	
Downy Woodpecker	8/28/1996		T				T		T				B
Dusky Flycatcher	8/25/1995	T	T	T		T	T	T	T	T		T	
Eastern Kingbird	6/5/1995	T	T	T	B	T	T	T	T	L	L	B	B
European Starling	6/7/1996		T	T	T	T	T	T	T	T			
Evening Grosbeak	6/26/2003									T			
Gray Catbird	5/30/1996		B	B	B	B	B	B	B	L	L	B	B
Gray Flycatcher	8/25/1995	T											
Green-tailed Towhee	5/30/1995	T	T	T	T		B	B	B	B	T	T	T
Hermit Thrush	7/18/1995	T	T			T	T						
Hooded Warbler	7/7/1999					M							
House Wren	8/15/1995	T	T	T	T	T	T	T	B	B	T	B	B
Indigo Bunting	6/4/2002								T				
Lark Sparrow	8/7/2001							T					
Lazuli Bunting	7/7/1995	B	B	B	B	B	B	B	B	B	B	B	B

**Table 2. Continued.**

SPECIES NAME	FIRST CAPTURED	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Least Flycatcher	5/30/1995	T	T					T	T			T	
Lincoln's Sparrow	5/30/1995	T	T				T	T	T	T	T	T	
MacGillivray's Warbler	5/30/1995	B	B	B	B	T	T	T	T	T	T	T	T
Mountain Chickadee	8/3/2000						T						
Northern Flicker (Red-shafted)	6/27/1997			T			T				T	T	T
Northern Parula	6/25/2002								M				
Northern Waterthrush	8/15/1995	M		M									
N. Rough-winged Swallow	8/3/1995	T	T	T	T			T	T				
Olive-sided Flycatcher	8/8/2006												T
Orange-crowned Warbler	5/30/1995	B	B	B			T		T	T	T	T	T
Ovenbird	7/18/2000						T					T	
Pine Siskin	6/5/1995	T	T	T	T		T	T	T		T	T	
Plumbeous Vireo	8/6/2002								T				
Red-eyed Vireo	5/30/1996		T							A			
Red-naped Sapsucker	7/28/1995	T			T	T	T	T		T	T	T	T
Red-winged Blackbird	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Rufous Hummingbird	7/28/1995	M	M		M		M	M	M		M	M	M
Sage Thrasher	8/6/2003									T			T
Savannah Sparrow	7/16/1998				T		T		T		T	T	
Song Sparrow	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Sora	6/1/2001							T					
Spotted Sandpiper	8/25/1995	T	T	T							T	T	
Spotted Towhee	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Swainson's Thrush	5/30/1996		T		T	T	T		T		T	T	T
Tennessee Warbler	5/30/1996		M										
Townsend's Solitaire	6/25/2002								T				
Tree Swallow	8/6/1996		T	T	T			T	T		T	T	
Veery	6/14/1996		T										
Vesper Sparrow	7/7/1995	B	B	B		T	B	B	B	B	B	T	T
Violet-green Swallow	6/23/1995	T	B	B	T	T	T	T	T		T	L	
Virginia Rail	7/8/2003									L			
Virginia's Warbler	8/28/1996		M			M				A			
Warbling Vireo	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Western Meadowlark	7/14/1997			T		B		T	B				B
Western Tanager	6/5/1995	T	T	T	T	T	T	T			T	T	
Western Wood-Pewee	8/25/1995	T	T	T	B	B	B	B	B	B	B	B	B
White-crowned Sparrow	5/30/1995	T	T	T			T						
Willow Flycatcher	6/5/1995	B	B	B		B	B	B	B	B	B	L	
Wilson's Snipe	5/30/1995	T	T		T			T	B	T			
Wilson's Warbler	8/15/1995	T	T	T	T			T			T	T	
Yellow-breasted Chat	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B
Yellow-headed Blackbird	7/16/2002								T				
Yellow-rumped Warbler	5/30/1996		T										
Yellow Warbler	5/30/1995	B	B	B	B	B	B	B	B	B	B	B	B

**Table 2. Continued.**

- <sup>a</sup> Blank = not captured
- T = Transient (within breeding range but does not breed on site)
- B = Breeder (confirmed breeding on site)
- L = Likely Breeder (suspected breeding on site)
- M = Migrant (not within breeding range)
- A = Altitudinal Disperser (moved from breeding area prior to migration)

**Table 3. Summary of Red Canyon Ranch MAPS data, 1995-2006.**

<b>Year</b>	<b>Number of Individuals Captured</b>	<b>Number of Species Captured</b>	<b>Total Breeding Species<sup>a</sup></b>	<b>Total Transient Species<sup>b</sup></b>	<b>Total Migrant Species</b>	<b>Total Accidental Species</b>
1995	371	41	14	25	2	0
1996	441	56	17	35	4	0
1997	298	43	16	26	1	0
1998	291	38	15	23	0	0
1999	297	40	18	20	1	1
2000	398	49	20	28	1	0
2001	394	44	20	22	2	0
2002	358	48	19	27	2	0
2003	293	39	22	17	0	0
2004	261	41	15	22	1	0
2005	266	35	21	13	1	0
2006	207	32	19	12	1	0
<i>Total</i>	<i>3875</i>	<i>506</i>	<i>216</i>	<i>270</i>	<i>16</i>	<i>1</i>
<i>Avg.</i>	<i>333</i>	<i>42</i>	<i>18</i>	<i>23</i>	<i>1.3</i>	<i>0.01</i>

<sup>a</sup> Includes both confirmed and likely breeders.

<sup>b</sup> Includes both transients and altitudinal dispersers.

# **NONGAME BIRD DISTRIBUTION AND ABUNDANCE SURVEYS COMPLETION REPORT**

STATE OF WYOMING

NONGAME BIRDS – General Inventories

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Laurie Van Fleet, Nongame Biologist  
Andrea Cerovski, Nongame Bird Biologist

## **INTRODUCTION**

The distribution, relative abundance, and population trends of nongame birds are being inventoried, tracked, or monitored through several different approaches. This report discusses the Avian Atlas, riparian transects, the Birds of Jackson Hole Checklist, and the Wyoming Bird Checklist. The Breeding Bird Survey is discussed elsewhere in this publication. A summary of the accomplishments of the Wyoming Bird Records Committee is also provided here.

## **WYOMING AVIAN ATLAS**

The Wyoming Avian Atlas (Oakleaf et al. 1982) was designed to summarize available information on distribution, relative abundance, seasonal status, and habitat associations of birds in Wyoming. Data were summarized by latilong (degree block). Periodic updates and changes to the Atlas are typical as new and additional information become available. In 1991, the format was revised, and the mammal and bird atlases were combined into a new publication, Draft Distribution and Status of Birds and Mammals in Wyoming. This publication was reviewed by wildlife observers throughout the state and was published as the Wyoming Bird and Mammal Atlas in 1992 (Oakleaf et al. 1992). In 1997, the Atlas was updated and reptile and amphibian sections were included; this was published as the Atlas of Birds, Mammals, Reptiles, and Amphibians in Wyoming (Luce et al. 1997), and was reprinted with additional updates in 1999 (Luce et al. 1999). Updates and corrections were once again made in 2004; this is the current version of the Atlas, published as the Atlas of Birds, Mammals, Amphibians, and Reptiles in Wyoming (Cerovski et al. 2004) and available on the Wyoming Game and Fish Department's (Department) web site at <http://gf.state.wy.us>. If you would like a compact disk version of the 2004 Atlas, please send your name and mailing address to: Nongame Coordinator, 260 Buena Vista, Lander, WY 82520.

## **RIPARIAN TRANSECTS**

Volunteers conduct point count transects along six riparian areas in Wyoming. In the Sheridan area, Roger Hybner previously conducted the Ash Creek transect with assistance from Bo Deveraux, but a new observer is now needed. Also, the Tongue River transect was previously conducted by Hal Corbett and is also in need of a new observer. In Casper, Bruce and Donna Walgren conduct the Garden Creek and North Platte River Parkway transects. In northeastern Wyoming, the Sand Creek transect near Beulah is conducted by Mary Yemington with assistance from Jean Adams. The Belle Fourche River transect by Devils Tower was conducted by various National Monument personnel, but a permanent observer is needed.

The Sheridan area transects were first conducted in 1976 and have been run one day in each of three or four seasons every year since, with the exception of 1994-1997, 1999, and 2003-2006 during which the Ash Creek transect was not conducted, and 1997-2006 when the Tongue River transect was not conducted. The Casper area transects were started in 1982 and have been run one day in each of three or four seasons every year, with the exception of 1999, 2001, and 2002 when the Garden Creek survey was not conducted, and 2000 when the North Platte River survey was not conducted. The Sand Creek transect was started in 1983, and has been run one day in each of two or three seasons every year, with the exception of 1988 and 1997 during which the survey was not conducted. The Belle Fourche transect was first conducted in 1989 and has been run several days every spring, with the exception of 2000-2006. Results from the Belle Fourche transect were not included in riparian survey analysis until 1993 because not enough data were available to evaluate trends.

The long-term data from these transects are valuable for evaluating changes in bird populations, not only along each riparian area but also combined. Detailed data from these transects are available from the Nongame Bird Biologist, Wyoming Game and Fish Department, 260 Buena Vista, Lander, WY 82520.

The frequency that species were recorded on spring transects for all years that transects were conducted is presented in Table 1. Spring data were chosen because survey dates were more consistent than during summer surveys.

## **SPECIES CHECKLISTS**

In 2006, 23 of 60 avian Species of Greatest Conservation Need with a Native Species Status of 1 – 4 were detected by the Birds of Jackson Hole checklist participants, compared to 10 in 2005, 17 in 2004, 10 in 2003, and 7 in 2002. Interpreting trends from these checklists is difficult. Trends are influenced by the quality of the observations and the locations observers visit, both of which vary annually. Also, since 1993, checklists have been on display at the Moose Visitor Center in Grand Teton National Park but were only available to visitors upon request. As a result, it is likely that fewer casual birders submitted checklists in the most recent years. Weather also affects species lists by influencing the

amount of time visitors spend in the field. Still, the checklist remains valuable because it provides a way of tracking populations through incidental observations, in addition to the Breeding Bird Survey and riparian transects.

In 1991, the Wyoming Bird Checklist was published and made available to the public; in 1995 it was updated and improved. This checklist divides the state into six regions based on latilongs, and can be stapled closed, stamped, and mailed to the Nongame Bird Biologist. This checklist may help obtain sightings from people who have not been contributing in the past. In 2006, Wyoming Bird Checklist participants detected 31 of the 60 avian Species of Greatest Conservation Need compared to 37 in 2005, 37 in 2004, 24 in 2003, and 20 in 2002.

## **WYOMING BIRD RECORDS COMMITTEE**

The Wyoming Bird Records Committee (WBRC) was established in 1989 to accomplish the following goals.

- 1) To solicit, organize, and maintain records, documentation, photographs, tape recordings, and any other material relative to the birds of Wyoming.
- 2) To review records of new or rare species or species difficult to identify and offer an intelligent, unbiased opinion of the validity or thoroughness of these reports. From these reviews, the WBRC will develop and maintain an Official State List of Wyoming's Birds.
- 3) To disseminate useful and pertinent material concerning the field identification of Wyoming birds in order to assist Wyoming birders in increasing their knowledge and skill.

The WBRC is interested in promoting and maintaining quality and integrity in the reporting of Wyoming bird observations, and it treats all bird records as significant historical documents. The Wyoming Bird Records Committee operates under a set of bylaws approved in 1991 and updated in 1992 and 1998.

As of 2006, the WBRC has reviewed 972 documentations. Of these, 767 observations have been accepted, 205 have not been accepted, and the remainder of the sightings are awaiting review.

The Wyoming Bird Records Committee Database is a dynamic document, updated on a yearly basis following the WBRC annual meeting. Rather than provide the extensive WBRC Database in paper form, with a new printing each year, the database is available on-line (read-only) on the Department's web site <http://gf.state.wy.us>.

A record of the WBRC Official Wyoming State Bird List and the avian species for which documentation is requested is presented in Appendix I. How to document rare and unusual birds and a WBRC Rare Bird Form appear below.

To improve the accuracy and breadth of Wyoming's ornithological record, the following suggestions are given to assist with documentation of sightings.

- 1) Read "How to Document Rare Birds" (Dittman and Lasley 1992). This article is the best we have seen on the subject.
- 2) Acceptable documentation *must* eliminate all similar species. Bear in mind that immatures or juveniles of one species can be very similar to adults of another species. Examples that might cause confusion are gulls, jaegers, sparrows, and longspurs. Species that exhibit multiple color morphs can also be problematic.
- 3) Study and learn bird topography. Most field guides provide a schematic of avian body parts and feather groups. Specialized identification guides also provide specific structural and anatomical detail. A thorough grasp of this subject will heighten your general birding skill and facilitate accurate, detailed documentation.
- 4) Take meticulous and thorough field notes *during* or immediately after the observation. Alternatively, you can also use a tape recorder to capture identification details. If the bird is cooperative, write your notes during the observation period. Try not to consult your field guide during the observation to avoid predisposing your identification. *Do not rely on memory* to document a rare/unusual bird.
- 5) The subject bird's physical description is most crucial. Include everything you observe in this description. Utilizing bird topography, include all details concerning plumage, shape, relative size, eyes, legs, and bill. Note the colors, including color distribution, color density, and color contrast between different feather groups. When making field notes, consider proportional details; i.e. bill length compared to head width and/or tail length as a proportion of body length. Record plumage characteristics, such as degree of wear or signs of molt. When describing size, try to compare nearby known species or some other object of known dimensions. Avoid trying to estimate size in actual inches, feet, etc., since this is a very subjective endeavor.
- 6) Observe and record the subject bird's behavior. While behavior is seldom diagnostic by itself, in combination with other details it is often conclusive. Wyoming's only documented Connecticut Warbler was accepted by the WBRC, in part, because it was walking, not hopping.
- 7) If possible, take photographs. Lacking an actual specimen, good to fair photographs are the best back up to a thoroughly detailed written description. Do not assume that only one photograph will display diagnostic features, or that the developing lab will not ruin a single negative. Take a number of shots to ensure a complete portrait. The value of photography is immediately apparent when one is trying to differentiate the wing tip patterns of the various gulls.
- 8) If you do not have a camera and the bird is cooperative, you can still get a good picture. Make a sketch. You do not need the talent of Rembrandt to draw a convincing and

diagnostic sketch. Utilize your knowledge of bird topography, and you will be surprised how well you do. Draw your sketch in the field, during the observation. *Do not rely on memory.*

- 9) Hopefully the bird will be vocalizing in some manner. In addition to a well-written description of the vocalizations, a tape recording is extremely beneficial. The recorded song and/or calls need not be of professional quality. A hand-held cassette recorder with a built-in microphone will often provide reliable results. It is unlikely that an Alder or Yellow-bellied Flycatcher will ever be added to the Wyoming State list without recorded vocalizations to support written and/or photographic evidence.
- 10) Specimens that are identified and repositated at the University of Wyoming Zoological Museum are still the most convincing evidence of an occurrence. If you encounter a dead rare/unusual bird while in the field, please deliver the body to the appropriate authority; i.e. Wyoming Game and Fish Department, National Park Service, or U.S. Fish and Wildlife Service personnel. Note the exact location and date of the discovery. Freeze the specimen if delivery is to be delayed.

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**Rare and Unusual Bird Sighting Form**  
**WYOMING BIRD RECORDS COMMITTEE**  
**260 BUENA VISTA, LANDER, WY 82520**

Common Name:		Specific location of observation:			
Scientific Name:					
Observation Date:					
Observation Time:		UTM E	UTM N	Datum	Zone
Length of Observation:		T	N / R	W / Sec.	/ ¼ Sec. / ¼ ¼ Sec.
Distance from Bird:		Latitude		Longitude	
Light Conditions:		Weather at time of observation:			
Optical Equipment:					
Notes made (circle one): During sighting      From memory		Prior weather and number of days since last change:			
Date report prepared:					

GENDER	AGE	PLUMAGE		PHOTO/TAPE/DRAWING
Male:	Adult:	Breeding:	Juvenal:	Enclosed:
Female:	Juvenile/Immature:	Winter:	Dark Morph:	Available:
Unknown:	2-3 year bird:	Eclipse:	Light Morph:	Please submit a copy of your field drawings.
Total Number:	Unknown:	Other:		

A general description of size, shape, and other points to help place the bird in its family group.

A detailed description of the size, shape, color, and pattern of the bill, head, neck, upperparts, underparts, wings, tail, legs, and feet. *Description should especially include details on key characteristics of the species observed. Acceptance of a sighting depends on the thoroughness of the observer's description of what was seen and what was not seen on the species observed.*

BILL:

HEAD:

NECK:

UPPERPARTS:

UNDERPARTS:

WINGS:

TAIL:

LEGS & FEET:

Detailed description of the bird (continued from the previous page).	
List similar species and describe how or why you eliminated them.	
Describe the behavior of this bird and the interaction with others.	
What is the habitat at this location?	
Describe the bird's song or vocalizations.	Reporter's name, address, phone #, and e-mail address
What is your experience with this and similar species?	Corroborating observers who are not reporting separately

*Please do not write below here! For WBRC use only!*

*Form updated April 2007*

<b>Record Number</b>
----------------------

<b>Latilong</b>
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<b>Atlas Update</b>
---------------------

<b>Sighting Entered in WGFD WOS Database</b>
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**Table 1. The number of years species were recorded on spring riparian transects, through 2005. Years equals the number of years transects were actually surveyed.**

Species	Ash Creek Years = 22	Bell Fourche Years = 10	Garden Creek Years = 24	N. Platte River Years = 25	Sand Creek Years = 25	Tongue River Years = 24
Western Grebe				1		
American White Pelican				1		
Double-crested Cormorant	1		2	21		
Great Blue Heron	14	7	1	4	22	4
Great Egret				1		
Green-backed Heron		1				
Black-crowned Night Heron				3		
Canada Goose	1	3	1	6		
Wood Duck		3		2	6	
Mallard	16	4	12	18	19	11
Blue-winged Teal		1		3	4	
Gadwall				2		
Common Merganser		1		2	10	23
Turkey Vulture	2	5		1	5	6
Osprey	1			2	1	
Northern Harrier	3					
Sharp-shinned Hawk	1		1			3
Cooper's Hawk	1			1		
Northern Goshawk	1					
Broad-winged Hawk	2			1		
Swainson's Hawk			1	1		
Red-tailed Hawk	3	2	2	6	9	3
Ferruginous Hawk			1			
Golden Eagle	5				4	6
American Kestrel	16	6	1	8	7	8
Merlin	1			1		
Prairie Falcon	1	2				2
Chukar			1			
Ring-necked Pheasant	4	1				2
Wild Turkey	14	2				
Killdeer	5	3	1	19	3	
American Avocet				5		
Spotted Sandpiper		1		12	1	2
Wilson's Snipe	2					1
Ring-billed Gull			1	2		
California Gull			19	21		
Caspian Tern				8		
Rock Pigeon		4	6	8	13	13
Mourning Dove	21	10	21	22	21	9
Western Screech-Owl	2					
Great Horned Owl	1			1		1
White-throated Swift		1			6	23
Calliope Hummingbird						2
Broad-tailed Hummingbird						2
Belted Kingfisher	9	1	2	2	20	3
Lewis' Woodpecker		3			1	
Red-headed Woodpecker	1	9		1	1	
Yellow-bellied Sapsucker					1	
Red-naped Sapsucker	1				1	
Downy Woodpecker	7	2	7	12	9	1

**Table 1. Continued.**

<b>Species</b>	<b>Ash Creek Years = 22</b>	<b>Bell Fourche Years = 10</b>	<b>Garden Creek Years = 24</b>	<b>N. Platte River Years = 25</b>	<b>Sand Creek Years = 25</b>	<b>Tongue River Years = 24</b>
Hairy Woodpecker	3	7			7	2
Northern Flicker	20	10	12	20	17	9
Olive-sided Flycatcher			1	1		
Western Wood-Pewee	7	8	9	2	18	13
Willow Flycatcher	2				1	8
Least Flycatcher	6		2	1		17
Dusky Flycatcher	1				1	2
Cordilleran Flycatcher	2		1	4	10	2
Western Kingbird			1	6		
Eastern Kingbird	13	10		11	24	
Tree Swallow	5		2	2	5	6
Violet-green Swallow	1	5			21	15
N. Rough-winged Swallow	7		12	4	16	
Cliff Swallow		8		10	5	
Barn Swallow	2	4	5	8	1	2
Gray Jay		1				
Blue Jay		5	7	4	15	
Pinyon Jay	7	3				
Clark's Nutcracker	6					5
Black-billed Magpie	15	1		22	13	4
American Crow	1	6	1	4	18	1
Common Raven						4
Black-capped Chickadee	21	10	14	16	24	19
Mountain Chickadee			1			2
Red-breasted Nuthatch	5	2		2	7	1
White-breasted Nuthatch	6	4			5	1
Rock Wren	14				2	4
Canyon Wren					1	1
House Wren	20	10	13	19	17	18
American Dipper						10
Ruby-crowned Kinglet	1		3	4	1	4
Blue-gray Gnatcatcher				2		
Mountain Bluebird	13	5			4	
Townsend's Solitaire	4				7	2
Veery	1		2	2		3
Swainson's Thrush	4		6	15	3	8
Hermit Thrush			1			
American Robin	21	10	22	21	24	23
Gray Catbird	9	1	21	9	9	7
Brown Thrasher	2		6	11	1	
Cedar Waxwing	2	4	13	2	7	1
European Starling	14	10	20	20	6	7
Plumbeous Vireo	2	2		1	3	5
Warbling Vireo		1	5	3	2	22
Red-eyed Vireo	3	1		1	16	3
Tennessee Warbler	1			2		4
Orange-crowned Warbler	2		5	8		2
Nashville Warbler						1
Northern Parula			1			
Yellow Warbler	20	10	22	19	23	22
Chestnut-sided Warbler						2
Magnolia Warbler				1		

**Table 1. Continued.**

<b>Species</b>	<b>Ash Creek Years = 22</b>	<b>Bell Fourche Years = 10</b>	<b>Garden Creek Years = 24</b>	<b>N. Platte River Years = 25</b>	<b>Sand Creek Years = 25</b>	<b>Tongue River Years = 24</b>
Yellow-rumped Warbler	7	2	3	15	6	5
Blackpoll Warbler					1	
American Redstart					2	
Ovenbird	1				1	2
Northern Waterthrush			3	1		
MacGillivray's Warbler	3		2	3		15
Common Yellowthroat	8	2	3	15	20	19
Wilson's Warbler	1		1	3	1	1
Yellow-breasted Chat	18	1	1	1	16	1
Western Tanager		3	7	1	7	7
Rose-breasted Grosbeak			1			
Black-headed Grosbeak	1	4	22	5	20	
Lazuli Bunting	15		4	1	20	22
Indigo Bunting					10	
Lazuli-Indigo cross					12	
Green-tailed Towhee	1		2	2		1
Spotted Towhee	21	8	5	6	24	23
American Tree Sparrow		1				
Chipping Sparrow	19	9	2	6	17	4
Clay-collared Sparrow					1	
Brewer's Sparrow	1					
Vesper Sparrow	2			2		
Lark Sparrow	17	9			20	
Lark Bunting	1			2		
Fox Sparrow					1	
Song Sparrow	4	1	17	4	15	11
Lincoln's Sparrow	2			5		1
White-crowned Sparrow	1		2	7	1	
Harris's Sparrow				1		
Dark-eyed Junco					3	1
Bobolink				1	1	
Red-winged Blackbird	17	10	1	21	14	2
Western Meadowlark	19	10	2	19	23	7
Yellow-headed Blackbird	1					
Brewer's Blackbird	11		6	7	13	7
Common Grackle	15	10	23	19	13	8
Brown-headed Cowbird	19	6	7	14	23	9
Orchard Oriole					5	
Bullock's Oriole	11	10	20	18	23	2
Cassin's Finch			7			2
House Finch	4		22	12		
Red Crossbill	9	3			6	
Pine Siskin	2	2	11		2	11
American Goldfinch	12	8	14	7	22	6
Evening Grosbeak			12		1	1
House Sparrow			22	16		
<i>Total No. Species</i>	92	65	71	93	87	82
<i>Avg. No. Species/Year</i>	31	31	24	33	35	25
<i>Avg. No. Individuals/Year</i>	253	384	258	190	197	225

# WYOMING PARTNERS IN FLIGHT COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Partners In Flight

PERIOD COVERED: 15 April 2006 – 14 April 2007

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

## INTRODUCTION

Analysis of long-term data indicates that population trends of many landbirds are declining due to changes in land use; habitat loss, fragmentation, and deterioration; pesticide use; and human disturbance. The international Partners In Flight program, of which Wyoming is an active participant, was initiated in 1990 to address and reverse these declines. State, regional, national, and international Bird Conservation Plans comprehensively address the issues of avian and habitat conservation on a landscape scale.

Wyoming Partners In Flight (WY-PIF) is comprised of participants from the Wyoming Game and Fish Department (Department), Bureau of Land Management (BLM), U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Reclamation, National Park Service, Rocky Mountain Bird Observatory, Audubon Wyoming and affiliate chapters, Wyoming Natural Diversity Database, University of Wyoming, and The Nature Conservancy. The Department's Nongame Bird Biologist has served as the State's WY-PIF chairperson since its inception in 1991.

## BIRD CONSERVATION PLANNING

The Wyoming Bird Conservation Plan, Version 2.0 (Nicholoff 2003) is available on the Partners In Flight web site at [www.blm.gov/wildlife/plan/WY/menu.htm](http://www.blm.gov/wildlife/plan/WY/menu.htm). The Plan presents population objectives for birds, habitat objectives for the major habitat groups in the state, Best Management Practices (BMPs) to benefit birds, and recommendations to ensure that landbirds and the habitats they require remain intact and viable into the future through proactive and restorative management techniques.

In addition, various funding sources have been used to design and print BMPs as separate publications for distribution to the public. Currently, BMPs are available for

sagebrush-steppe, riparian, grassland, and forest habitats, and will soon be available for wetlands.

## **MONITORING WYOMING'S BIRDS**

One of the highest priority population objectives throughout the Plan is to implement *Monitoring Wyoming's Birds: The Plan for Count-based Monitoring* (Leukering et al. 2001). For the sixth consecutive year, the BLM developed a cooperative assistance agreement with the Department that provides for collaborative efforts between the two agencies to establish a statewide monitoring protocol for birds, determine the distribution and abundance of selected avian species, and develop educational materials on birds in Wyoming. Through this agreement, the Department continued contract agreements with the Rocky Mountain Bird Observatory (RMBO), Audubon Wyoming (Audubon), and the Wyoming Natural Diversity Database (WYNDD). The RMBO implements the Monitoring Wyoming's Birds program in six habitats in Wyoming (aspen, grassland, juniper woodland, mid-elevation conifer, montane riparian, and shrub-steppe). Annual reports from this program are available on the Department's website (<http://gf.state.wy.us/wildlife/nongame/index.asp>). Audubon assists with inventory and monitoring efforts for those species that require techniques other than point-counts, produces and distributes educational materials on birds and their habitats, and implements the Citizen Science program in cooperation with the Department's Nongame Bird Biologist. The WYNDD maintains a database that acts as a central repository for the Monitoring Wyoming's Birds data, and provides datasets to partners upon request. The Department also received some of the funds and contributed in-kind services to conduct surveys and provide data for Common Loons, colonial nesting waterbirds, songbirds, and raptors and to compile, print, and distribute Partners In Flight educational materials.

## **PUBLIC CONTACTS**

The WY-PIF Chair, Andrea Cerovski, continues to receive inquiries from and provide information to agency biologists, private consultants, and members of the public regarding the Wyoming Bird Conservation Plan and the Best Management Practices to benefit birds in various habitat types. In addition to the web-based Plan, a compact disc copy is also available upon request.

## **NORTH AMERICAN MIGRATION COUNT**

International Migratory Bird Day is an annual event that celebrates migratory birds and supports efforts to conserve them. The North American Migration Count (NAMC) is part of this celebration, and takes place on the second Saturday each May. The goals of the NAMC are to: 1) obtain a snapshot in time of the progress of spring migration, 2), obtain information on species abundance and distribution, 3) initiate more participation

among birders within and between states, 4) aid in organization and centralization of data collected. Participants are asked to record and submit all birds detected during the count day on the official count form (below) for inclusion in the annual summary table (Table 1).

### **LITERATURE CITED**

Leukering, T., M. F. Carter, A. Panjabi, D. Faulkner, and R. Levad. 2001. Monitoring Wyoming's Birds: The Plan for Count-based Monitoring. Rocky Mountain Bird Observatory, Brighton, CO.

Nicholoff, S. H., compiler. 2003. Wyoming Bird Conservation Plan, Version 2.0. Wyoming Partners In Flight. Wyoming Game and Fish Department, Lander, WY.

**NORTH AMERICAN MIGRATION COUNT**  
**13 May 2006**

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

Location(s) counted \_\_\_\_\_

Start time \_\_\_\_\_ Stop time \_\_\_\_\_ # of Observers \_\_\_\_\_

# Hours - car \_\_\_\_\_ # Miles - car \_\_\_\_\_

# Hours - foot \_\_\_\_\_ # Miles - foot \_\_\_\_\_

# Hours - other \_\_\_\_\_ # Miles - other \_\_\_\_\_

**Bird Species Seen and Number of Individuals (List feeder species separately)**

**OWLING**

If you spent any time owling, please indicate the following: # Hours \_\_\_\_\_  
# Miles \_\_\_\_\_  
# Observers \_\_\_\_\_

**Owl Species Seen and Number of Individuals**

**FEEDER COUNTS ONLY**

# Hours watching \_\_\_\_\_ # Feeding stations \_\_\_\_\_

**Bird Species and Number of Individuals at Your Feeder**

*Please send the completed form by June 15<sup>th</sup> to:  
Andrea Cerovski, Wyoming Game and Fish Department,  
260 Buena Vista, Lander, Wyoming 82520*

**Table 1. Summary of the North American Migration Count conducted annually on the second Saturday in May.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Canada Goose</b>								
Fremont	273	154	119	149	238	161	255	227
Lincoln	40							
Platte						20		
Sheridan	93	115	129	50	160	74	220	218
Sublette							20	
Sweetwater							31	
Teton	75	86	149	42		130	165	40
Yellowstone NP	31		52			30		
<b>Trumpeter Swan</b>								
Fremont							2	
Teton	8	3	11			1	6	1
Yellowstone NP	3							
<b>Wood Duck</b>								
Fremont				11	4	14	2	13
Platte						11		
Sheridan	4			4	2			6
<b>Gadwall</b>								
Fremont	55	104	50	101	95	68	90	76
Lincoln	5							
Sheridan	31	7	10	5	12	8	54	19
Teton	19	21	7	38		77	47	4
Yellowstone NP	4		14			58		
<b>Eurasian Wigeon</b>								
Sheridan				1				
<b>American Wigeon</b>								
Fremont	15	9	9	32	38	19	17	8
Platte						30		
Sheridan	12		28	14	19	6	12	11
Teton	84	40	9	20		37	11	4
Yellowstone NP	41		33			92		
<b>Mallard</b>								
Fremont	85	34	69	91	179	51	72	96
Lincoln	7							
Platte						50		
Sheridan	126	126	98	67	129	63	107	97
Sweetwater							3	
Teton	89	47	43	23		80	51	11
Yellowstone NP	55		49			93		
<b>Blue-winged Teal</b>								
Fremont	12	6	4	35	31	16	33	11
Lincoln	1							
Platte						63		
Sheridan	17	6	4	5	21	17	21	9
Sweetwater							4	
Teton	2			4		5	4	1

Yellowstone NP	2		1					
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**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Cinnamon Teal</b>								
Fremont	33	6	24	70	11	30	17	24
Lincoln	3							
Platte						2		
Sheridan	2	2	4		6	2	6	
Sweetwater							4	
Teton	2	9	20	12		12	15	11
Yellowstone NP	20		8			9		
<b>Northern Shoveler</b>								
Fremont	48	45	44	139	92	44	25	45
Lincoln	20							
Platte						2		
Sheridan	46	6	2	2	10	10	1	6
Sweetwater							4	
Teton	2	3	4			14	4	
Yellowstone NP	6					36		
<b>Northern Pintail</b>								
Fremont	8	6	7	22	7	2	9	1
Lincoln	1							
Platte						25		
Sheridan	3							
Sweetwater							6	
Teton	3	4	1	40				
Yellowstone NP	6		9			1		
<b>Green-winged Teal</b>								
Fremont	37	2	11	59	135	10	23	17
Lincoln	1							
Platte						35		
Sheridan	11	6	2	2	2		1	6
Sweetwater							1	
Teton	13	8		27		25	4	1
Yellowstone NP	44		79			13		
<b>Canvasback</b>								
Fremont	2	17			4			4
Sheridan		1						
<b>Redhead</b>								
Fremont	55	13	13	47	23	41	46	26
Sheridan							2	
Sweetwater	2						5	
Teton	7	4	9	10		8	6	4
Yellowstone NP	11		3			1		
<b>Ring-necked Duck</b>								
Fremont	32		10	166	35	18	46	12
Sheridan				1	9			4
Sweetwater	7							
Teton	36	7	7	12		17	7	
Yellowstone NP	36							

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Greater Scaup</b>								
Fremont		4			10			
Teton				12				
<b>Lesser Scaup</b>								
Fremont	54		10	101	32	3	53	99
Platte						5		
Sheridan	8	1		6	2			1
Sweetwater	18							
Teton	1	4	4	12		8	11	
Yellowstone NP	61		82			51		
<b>Harlequin Duck</b>								
Fremont	1							
Sheridan	2							
Yellowstone NP			7			12		
<b>Bufflehead</b>								
Fremont				34	5	3	4	12
Sheridan					2			
Sweetwater	2							
Teton	11	4	6	8		9	2	6
Yellowstone NP	45		31			32		
<b>Common Goldeneye</b>								
Fremont	4			2		1	3	13
Sheridan				2	4		1	
Sweetwater							6	
Teton	11	25	4	4		2		
Yellowstone NP	21		28			10		
<b>Barrow's Goldeneye</b>								
Fremont	18		3	1	23		17	
Sheridan				2				
Sweetwater	6							
Teton	7	23	4	12		26	15	43
Yellowstone NP	34		81			22		
<b>Common Merganser</b>								
Fremont	15		10	17	12	7	14	12
Platte						6		
Sheridan	1	9	4	4	4	5	8	5
Sweetwater	2						3	
Teton	34	89	10	6		16	18	38
Yellowstone NP	5		10			27		
<b>Red-breasted Merganser</b>								
Yellowstone NP	1							
<b>Ruddy Duck</b>								
Fremont	8	6	8	17	6	15	45	25
Platte						1		
Sheridan	1				1			
Sweetwater							5	
Teton		6	5	12		10	12	6

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Chukar								
Sheridan					4	1		
Gray Partridge								
Sheridan	6	32	11	6				
Ring-necked Pheasant								
Fremont	5	4	3	12	10	27	12	18
Sheridan	46	68	60	30	51	48	122	69
Ruffed Grouse								
Teton		1						
Yellowstone NP			1					
Greater Sage-Grouse								
Fremont	45		2		30			
Blue Grouse								
Teton			6				2	
Sharp-tailed Grouse								
Sheridan		3	2	5		2	3	
Wild Turkey								
Platte						2		
Sheridan	75	48	22	8	40	12	35	13
Common Loon								
Fremont	2	3	3	4	6		7	4
Sheridan	1	1						
Sweetwater	2							
Teton	8	4	15	2			3	2
Yellowstone NP	2		11			6		
Pied-billed Grebe								
Fremont	1		3	5	4	2	9	5
Platte						10		
Sheridan	3	3	2		2	2	2	2
Sweetwater	1							
Teton			1	4		1		3
Eared Grebe								
Fremont	180		127	53	458		904	270
Platte						4		
Sheridan				2				
Sweetwater	7							
Teton	2	1						
Yellowstone NP	85		1					
Western Grebe								
Fremont	78	59	18	36	68	32	227	43
Platte						85		
Sheridan	3	5						
Sweetwater	4						1	
Teton				2		1	5	1
Clark's Grebe								
Fremont	1			5	22	27	24	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>American White Pelican</b>								
Fremont	31				12	18	27	59
Platte						140		
Sheridan						2	63	
Sweetwater	6						9	
Teton	39	4		26		94	106	24
Yellowstone NP	13		6			9		
<b>Double-crested Cormorant</b>								
Fremont	7	6	3	3	8	12	79	31
Platte						55		
Sheridan	1				4	4	11	
Teton	2	4		2		8	10	12
Yellowstone NP	1							
<b>American Bittern</b>								
Fremont					1			
<b>Great Blue Heron</b>								
Fremont	23	14	9	9	11	7	10	5
Platte						10		
Sheridan	5	29	11	11	15	10	23	25
Sweetwater	28						13	
Teton	9	1	2	2		7	8	
Yellowstone NP	4		8			3		
<b>Snowy Egret</b>								
Fremont				1				
<b>Cattle Egret</b>								
Fremont							2	
<b>Black-crowned Night-Heron</b>								
Sheridan				1				
<b>White-faced Ibis</b>								
Fremont	35	18	2	128	166	1	75	144
Sweetwater	20						26	
Teton						7		1
<b>Turkey Vulture</b>								
Fremont	9	13	3	10	2	5	5	4
Platte						8		
Sheridan	8	10	11	10	16	8	3	20
Sweetwater	1							
Teton	3	1	3			2		3
<b>Osprey</b>								
Fremont	6	2	2	3	4	3	9	3
Sheridan	1	4	3	3	4		1	4
Sweetwater	1						3	
Teton	9	11	17	4		18	15	4
Yellowstone NP	2		4			5		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Bald Eagle</b>								
Fremont	2	1			2		3	
Sheridan			1			1		
Sweetwater							6	
Teton	5	5	8	2		9	5	1
Yellowstone NP	4		3			1		
<b>Northern Harrier</b>								
Fremont	6	11	6	9	12	10	5	6
Sheridan	4	18	4	3	17	7	5	8
Sweetwater	4						8	
Teton	9	2	3	1		3	2	5
Yellowstone NP	1					1		
<b>Sharp-shinned Hawk</b>								
Fremont	1					2		
Sheridan				2	1	1		
Teton	2	2	1				1	
<b>Cooper's Hawk</b>								
Fremont	1						1	
Sheridan					1			
Teton		2					2	
<b>Northern Goshawk</b>								
Sheridan		3		2	1			
Teton		1						
Yellowstone NP			1					
<b>Broad-winged Hawk</b>								
Sheridan				2				
<b>Swainson's Hawk</b>								
Fremont	1	2	5	2	1	2	3	11
Sheridan		1		2		2	1	1
Sweetwater	3							
Teton	3	4	2	2		3	4	4
Yellowstone NP	3		4			1		
<b>Red-tailed Hawk</b>								
Fremont	12	12	1	11	22	5	14	15
Sheridan	12	20	7	9	16	5	16	16
Sweetwater	8						1	
Teton	16	21	12	2		11	8	4
Yellowstone NP	3		3			2		
<b>Ferruginous Hawk</b>								
Fremont		2		3	2		2	1
Sheridan		1			1			1
Teton	1							
<b>Rough-legged Hawk</b>								
Teton							1	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Golden Eagle</b>								
Fremont	12	1	4		7	2	5	1
Sheridan	6	9	6	4	4	5	5	7
Sweetwater	2							
Teton		2			4			
<b>American Kestrel</b>								
Fremont	32	15	9	16	46	8	27	12
Sheridan	20	29	15	17	22	5	20	29
Sweetwater	5						1	
Teton	19	34	6	8		7	9	6
Yellowstone NP	2					1		
<b>Merlin</b>								
Fremont				1				
Sheridan				1				
<b>Peregrine Falcon</b>								
Fremont				1	1			
Teton	1							
<b>Prairie Falcon</b>								
Fremont	1		1		2		1	
Sheridan		1	1		1			1
Teton			1				1	
<b>Virginia Rail</b>								
Fremont					3			1
Sheridan		1		1				
<b>Sora</b>								
Fremont		1		3		3	1	2
Sheridan		2		1				
Teton		1	1				4	
<b>American Coot</b>								
Fremont	430	59	46	165	116	73	128	259
Platte						16		
Sheridan	3	16	1	16	7	2	5	3
Sweetwater	20						3	
Teton	17	50	71	20		107	71	122
Yellowstone NP	6					6		
<b>Sandhill Crane</b>								
Fremont	44	11	9	19	36	23	30	9
Platte						5		
Sheridan	2	7	6	2	3	6	12	12
Sweetwater	41						2	
Teton	9	14	13	2		11	12	10
Yellowstone NP	15		11			3		
<b>Black-bellied Plover</b>								
Fremont		6		5	28			14
<b>Semipalmated Plover</b>								
Fremont				10	12			
Sheridan	1							

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Killdeer</b>								
Fremont	23	9	35	17	34	23	18	19
Platte						10		
Sheridan	29	32	18	13	31	19	47	27
Sweetwater	5						1	
Teton	6	1		2		6	4	1
Yellowstone NP	4		16			2		
<b>Mountain Plover</b>								
Fremont			1					
<b>Black-necked Stilt</b>								
Fremont				4				
Sweetwater	2							
<b>American Avocet</b>								
Fremont	98	13	32	49	31	7	9	35
Sweetwater	2							
Teton						1		
<b>Greater Yellowlegs</b>								
Fremont					1			
Teton		2						
Yellowstone NP	2							
<b>Lesser Yellowlegs</b>								
Fremont				3	3			2
Sheridan	3				2			2
Teton				10				
<b>Solitary Sandpiper</b>								
Sheridan	3			2			2	1
Teton	1			1				
<b>Willet</b>								
Fremont	15	6	12	6	23	2	1	6
Sheridan					17			
Sweetwater	2							
Teton	1					4		
Yellowstone NP	11							
<b>Spotted Sandpiper</b>								
Fremont	1	5	29	33	28	6	33	7
Platte						5		
Sheridan	8	2	1	1	3	1	2	2
Sweetwater	2						1	
Teton		2	1	1		1	3	
Yellowstone NP			3					
<b>Upland Sandpiper</b>								
Sheridan	2	1						
<b>Whimbrel</b>								
Fremont					4			
<b>Long-billed Curlew</b>								
Fremont		2			3			
Sheridan				2				

Teton	6	1				1		
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**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Marbled Godwit								
Fremont		2		15	17			
Semipalmated Sandpiper								
Fremont		1		2	16			
Western Sandpiper								
Fremont								1
Yellowstone NP	1							
Least Sandpiper								
Fremont				10				1
Sheridan	5	1	1				1	
Baird's Sandpiper								
Sheridan	3						1	
Pectoral Sandpiper								
Fremont				2				
Dunlin								
Fremont					1			
Long-billed Dowitcher								
Fremont			26	141	24	6	18	20
Platte						1		
Sheridan					22			
Sweetwater	1							
Wilson's Snipe								
Fremont	19	2	2	9	24	34	7	8
Sheridan	14	8	9	15	8	10	16	10
Sweetwater	2							
Teton	15	5	2			3	3	2
Yellowstone NP	1		10			1		
Wilson's Phalarope								
Fremont	73	68	337	755	108	119	130	340
Platte						5		
Sheridan	14	15	16	3		10	7	34
Sweetwater	11							
Teton			18			15	4	
Red-necked Phalarope								
Fremont				160	7		182	
Teton							9	
Franklin's Gull								
Fremont	6	15	25	35	1		104	26
Sweetwater	14						6	
Teton	8							
Ring-billed Gull								
Fremont			2	3	18		10	18
Sheridan	11	1			20		1	
Teton		1	1					

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
California Gull								
Fremont	12	165	162	32	478	768	1107	368
Platte						10		
Teton				12		3	22	
Yellowstone NP	1		1			19		
Caspian Tern								
Fremont			2	2	2			1
Platte						5		
Black Tern								
Fremont	1						3	
Teton							3	
Common Tern								
Fremont	2	121	5		10	1		
Forster's Tern								
Fremont		12		3	2	40	17	47
Sheridan	3			1				
Teton						1		
Rock Pigeon								
Fremont	19	95	108	26	137	43	37	24
Sheridan	140	174	90	90	24	38	92	169
Eurasian Collared-Dove								
Fremont				1	2	19	37	36
Sheridan								4
White-winged Dove								
Fremont							1	
Mourning Dove								
Fremont	53	74	68	154	136	144	108	184
Platte						20		
Sheridan	174	183	105	158	42	96	113	171
Sweetwater	5							
Teton	5	2	8	6		9	3	2
Great Horned Owl								
Fremont	7	7	1	1	7	10	8	11
Sheridan	2	1	1	2	2	4	7	
Sweetwater	2						1	
Teton							3	
Long-eared Owl								
Fremont								1
Burrowing Owl								
Sweetwater							2	
Short-eared Owl								
Sheridan						1		
Common Nighthawk								
Fremont						6		
Sheridan		3						
Common Poorwill								
Fremont						2		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
White-throated Swift								
Fremont				17				7
Sheridan				2				1
Sweetwater	8							
Calliope Hummingbird								
Sheridan		5	2			2	2	3
Teton			1			7	1	
Yellowstone NP			1					
Broad-tailed Hummingbird								
Fremont								1
Sheridan			2			3		2
Teton		2	1			6	1	
Rufous Hummingbird								
Yellowstone NP			1					
Belted Kingfisher								
Fremont	6	1	2	6	5	5	10	3
Sheridan	2	4	1	1	2	4	2	4
Teton	2	2		1		1	4	
Yellowstone NP			1					
Lewis's Woodpecker								
Fremont				1				
Williamson's Sapsucker								
Teton							1	1
Yellowstone NP			1					
Yellow-bellied Sapsucker								
Fremont	1							
Teton			1					
Red-naped Sapsucker								
Fremont	2	2		1	2		15	
Sheridan	1			2	3	1		3
Teton	1	9	8	2		2	11	1
Yellowstone NP	4					3		
Downy Woodpecker								
Fremont	2	1		4	3	4	2	3
Sheridan	11	7	6	7	2	8	3	9
Sweetwater	2							
Teton	2	1	1			5	2	1
Hairy Woodpecker								
Fremont	2			2	1	1	2	
Sheridan	10	3		1		3	1	2
Teton	1	4	3			3	1	
American Three-toed Woodpecker								
Yellowstone NP	1					2		
Black-backed Woodpecker								
Teton						1		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Northern Flicker								
Fremont	23	1	9	14	24	16	36	20
Platte						8		
Sheridan	35	41	22	18	7	18	25	22
Sweetwater	10							
Teton	22	14	4	8		14	26	5
Yellowstone NP	10		4			13		
Western Wood-Pewee								
Fremont		2					1	1
Sheridan			1	1			1	
Sweetwater							1	
Willow Flycatcher								
Teton				1				
Least Flycatcher								
Fremont							1	
Sheridan		1	4	1		2	3	2
Gray Flycatcher								
Fremont					1		2	
Cordilleran Flycatcher								
Fremont			1					
Sheridan				1				
Say's Phoebe								
Fremont	10	7	10	7	14	11	11	11
Sheridan	4	16	17	9	3	9	3	10
Sweetwater							1	
Western Kingbird								
Fremont		9	12	10	6	18	57	52
Platte						2		
Sheridan		18	16	25	4	19	15	51
Sweetwater							8	
Eastern Kingbird								
Fremont		2	13	6	8	3	8	2
Platte						5		
Sheridan	2	4	27	7	3	3	7	9
Sweetwater							1	
Loggerhead Shrike								
Fremont	7	21	6	8	15	8	9	14
Sheridan	8	11	5	3	1	7	12	5
Sweetwater	3							
Plumbeous Vireo								
Sheridan								1
Warbling Vireo								
Fremont			2					
Sheridan			1					
Red-eyed Vireo								
Sheridan							1	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Gray Jay								
Fremont	4							
Teton				3		4	2	2
Yellowstone NP			3					
Steller's Jay								
Fremont					2		1	
Blue Jay								
Fremont							1	
Sheridan	3		2	9	2		1	1
Pinyon Jay								
Fremont			1				7	
Clark's Nutcracker								
Fremont	5		4		1	5	3	
Sheridan		3			4			
Teton	5	4	6			2		2
Yellowstone NP	1		2			2		
Black-billed Magpie								
Fremont	66	28	24	45	108	15	92	38
Sheridan	106	74	48	42	37	32	25	89
Sweetwater	4						4	
Teton	39	19	32	12		67	30	10
Yellowstone NP	6		6			2		
American Crow								
Fremont	8	6		2	13	8	9	
Sheridan	38	45	22	11	19	8	16	25
Sweetwater	3						2	
Teton	12	4	4			8	12	2
Yellowstone NP			12			2		
Common Raven								
Fremont	37	6	15	16	47	22	53	25
Sheridan	15	3		3	3	1	7	3
Sweetwater	3							
Teton	42	85	70	12		56	22	29
Yellowstone NP	20		37			13		
Horned Lark								
Fremont	64	43	44	670	63	75	29	81
Sheridan			6			1		2
Sweetwater	20						2	
Yellowstone NP	1							
Tree Swallow								
Fremont	34	3	6	24	7	19	31	12
Platte						1		
Sheridan	45	94	19	41	105	34	128	79
Sweetwater	10						9	
Teton	58	81	36	10		150	119	38
Yellowstone NP	31		14			13		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Violet-green Swallow</b>								
Fremont	3	81		5	3		2	1
Sheridan	7	2	2	15			1	1
Sweetwater	101							
Teton	16	7	16	4		18	10	25
Yellowstone NP			17					
<b>Northern Rough-winged Swallow</b>								
Fremont	24		10	40	142	15	32	33
Sheridan	6	14	2	1	28	8		55
Teton		2	2	3		10	22	1
<b>Bank Swallow</b>								
Fremont	4	101		10	15	8	84	
Sheridan		3	2		1			2
Yellowstone NP						12		
<b>Cliff Swallow</b>								
Fremont	4		6	255	63	6	4	120
Sheridan	2	18	242	10	328	111	4	62
Teton		1				12	17	10
Yellowstone NP						70		
<b>Barn Swallow</b>								
Fremont	22	38	20	81	55	87	123	106
Platte						1		
Sheridan	38	54	17	18	27	30	40	55
Sweetwater	1							
Teton	1	11	6	1		28	7	21
Yellowstone NP	1							
<b>Black-capped Chickadee</b>								
Fremont	6	4	5	17	10	9	6	7
Sheridan	75	38	37	25	22	21	22	79
Teton	16	16	19	4		35	28	2
<b>Mountain Chickadee</b>								
Fremont	35		4		3		11	
Sheridan	5	3					1	
Sweetwater	1							
Teton	12	2	12	2		32	17	5
Yellowstone NP	9		16			8		
<b>Red-breasted Nuthatch</b>								
Fremont	6				4	2	9	2
Sheridan	5	4	1	5		2	2	2
Teton	1	2	3			3	1	
Yellowstone NP	1		6					
<b>White-breasted Nuthatch</b>								
Fremont					1	1	3	1
Sheridan	3	2			1	2		3
Teton						1		
Yellowstone NP						1		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Rock Wren								
Fremont	1	1	1	1	2	8	8	
Sheridan		2	2	1		2		
Sweetwater	2							
Yellowstone NP						1		
Canyon Wren								
Fremont			1					1
House Wren								
Fremont	2	3	5			9	4	6
Sheridan	5	43	27	10	1	23	13	30
Teton		3	4	1				
Sweetwater	4						4	
Marsh Wren								
Fremont		11	3	52	43	97	46	122
Sweetwater							4	
Teton					39	5	31	
Yellowstone NP						1		
American Dipper								
Fremont	1				2		2	
Sheridan	5	3	1		2	2	1	
Teton		2				2	1	1
Yellowstone NP	1							
Golden-crowned Kinglet								
Teton							2	
Ruby-crowned Kinglet								
Fremont	2			4	5	29	43	5
Sheridan				4	3	2	1	5
Sweetwater	2							
Teton	6	11	10	4		39	37	8
Yellowstone NP	3		34			18		
Eastern Bluebird								
Fremont		1						
Mountain Bluebird								
Fremont	20	1	3	23	8	9	38	
Sheridan	3	1	4	18	12	7	4	7
Sweetwater	2						17	
Teton	78	11	3			7	10	10
Yellowstone NP	3		3			7		
Townsend's Solitaire								
Fremont	3	1			1		10	
Sheridan		3					1	
Sweetwater	1							
Teton	4	2						2
Yellowstone NP	2		7					
Veery								
Sheridan		3			1		1	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Swainson's Thrush								
Fremont					1	1		
Sheridan	1		1	2	3			5
Hermit Thrush								
Fremont					5	2		
Sheridan								4
Sweetwater	1							
American Robin								
Fremont	1076	64	56	118	257	87	198	89
Platte						25		
Sheridan	349	500	213	262	201	231	353	317
Sweetwater	12						1	
Teton	113	103	7	22		111	79	16
Yellowstone NP	92		64			29		
Gray Catbird								
Fremont					1			
Sheridan	1	1	8	1	1	2	8	1
Sage Thrasher								
Fremont	3	2	5	6	6	15	18	23
Sweetwater							3	
Brown Thrasher								
Sheridan	1	5	9	4		7	4	15
European Starling								
Fremont	76	31	24	79	334	245	115	162
Platte						33		
Sheridan	228	88	84	103	150	45	137	163
Sweetwater	10						1	
Teton	10	41	17	12		13	13	7
Yellowstone NP	4		4					
American Pipit								
Fremont					12			1
Cedar Waxwing								
Fremont				20			7	3
Sheridan				4			4	15
Orange-crowned Warbler								
Fremont					1	1	2	2
Sheridan	2			7	5		2	1
Yellow Warbler								
Fremont	1	1	1	7		9	11	9
Platte						15		
Sheridan	1	37	58	48	3	49	23	41
Teton		5	5			28	18	4
Sweetwater	6						1	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Yellow-rumped Warbler								
Fremont	25	4	16	139	47	49	75	34
Sheridan	51	8	1	113	40		16	19
Sweetwater							2	
Teton		24	8	4		13	36	5
Yellowstone NP			30			31		
Blackpoll Warbler								
Sheridan					2			
Ovenbird								
Sheridan								1
Northern Waterthrush								
Sheridan				1	1		1	1
Common Yellowthroat								
Fremont		3	13	7	1	15	6	15
Sheridan		3	1	12		2	1	4
Teton							3	
Wilson's Warbler								
Fremont				1		2		6
Sheridan			1					
Teton			3					
Western Tanager								
Sheridan				2				
Yellow-breasted Chat								
Fremont							2	
Sheridan							1	2
Green-tailed Towhee								
Fremont				1			1	
Teton							1	
Spotted Towhee								
Fremont	2		7	3	8	4	7	3
Platte						2		
Sheridan	5	51	26	10	2	36	13	16
American Tree Sparrow								
Fremont				1				1
Chipping Sparrow								
Fremont			1	52	1	9	34	2
Sheridan	13	34	12	110	4	11	68	63
Teton	2	4	1	2		3	19	4
Yellowstone NP			4			2		
Clay-colored Sparrow								
Sheridan	2	2		9			1	4
Brewer's Sparrow								
Fremont			8	1	11	12	10	7
Sheridan	1		2				1	19
Sweetwater	2							
Teton		3				1	6	4

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Vesper Sparrow</b>								
Fremont	8		9	2780	123	7	15	4
Sheridan	147	8	26	23	61	12	47	37
Sweetwater	1						1	
Teton	6	7	2	26		7	14	1
Yellowstone NP						4		
<b>Lark Sparrow</b>								
Fremont		11	22	14	37	10	7	11
Platte						4		
Sheridan	2	42	35	35	3	3	46	85
Teton								1
<b>Sage Sparrow</b>								
Sweetwater							3	
<b>Lark Bunting</b>								
Fremont		16	8	2	1	27	1	12
Sheridan		4	4	16		2		33
<b>Savannah Sparrow</b>								
Fremont	1	3	32	6	13	14	5	7
Sheridan	18	4	12	10	12	2	8	8
Teton		1	2			4	23	7
Yellowstone NP	1		64			3		
<b>Baird's Sparrow</b>								
Fremont	1							
Sheridan	5							
<b>Fox Sparrow</b>								
Sheridan		1						
Teton	10	4		2				
<b>Song Sparrow</b>								
Fremont	14	8	8	19	23	16	10	14
Platte						6		
Sheridan	15	6	2	8	3	6	5	15
Sweetwater							2	
Teton	19	12	5	2		30	16	8
<b>Lincoln's Sparrow</b>								
Fremont				2	2		1	
Sheridan		4		2	7		2	1
Sweetwater							1	
Teton							2	
<b>White-throated Sparrow</b>								
Fremont						1		
<b>Harris's Sparrow</b>								
Fremont					1	1		
Sheridan							1	

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>White-crowned Sparrow</b>								
Fremont	6	4	3	31	21	6	16	4
Sheridan	46	5	3	20	12	1	13	5
Sweetwater	8							
Teton	6	6	4	3		5	3	2
Yellowstone NP			9			12		
<b>Golden-crowned Sparrow</b>								
Sheridan					1			
<b>Dark-eyed Junco</b>								
Fremont	402	2	1	38	9	7	27	2
Sheridan	26	71		2	206		12	7
Sublette					4			
Sweetwater	1							
Teton	21	5	7	10		28	25	8
Yellowstone NP	16		14			13		
<b>Black-headed Grosbeak</b>								
Fremont	1		1	1		3	5	
Sheridan		7	1	3			7	3
Teton			1			2	1	
<b>Rose-breasted Grosbeak</b>								
Teton								1
<b>Lazuli Bunting</b>								
Fremont	2		2	1		10	3	
Sheridan	3	4		4		2	16	6
Teton			1			2		
<b>Indigo Bunting</b>								
Fremont						1		
Teton							1	
<b>Bobolink</b>								
Fremont					1		1	
Sheridan		1	8	1			3	1
<b>Red-winged Blackbird</b>								
Fremont	322	200	135	350	438	370	164	422
Platte						330		
Sheridan	996	902	797	647	565	361	765	590
Sweetwater	2						1	
Teton	17	12	51	2		31	47	
Yellowstone NP	2		5			7		
<b>Western Meadowlark</b>								
Fremont	85	72	74	110	139	148	108	134
Platte						15		
Sheridan	375	565	373	297	98	200	313	439
Sweetwater	1						2	
Teton	8	4	4	9		9	9	6
Yellowstone NP	5		1			7		

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
<b>Yellow-headed Blackbird</b>								
Fremont	360	128	80	295	316	201	153	463
Platte						20		
Sheridan	119	42	63	15	17	4	52	18
Sweetwater	1						1	
Teton	13	8	15	8		31	22	9
<b>Brewer's Blackbird</b>								
Fremont	276	86	275	427	417	67	172	10
Sheridan	775	139	84	287	35	15	80	39
Sweetwater	24						1	
Teton	94	54	37	28		42	59	19
Yellowstone NP	6		4			7		
<b>Common Grackle</b>								
Fremont	134	34	118	154	304	229	118	224
Platte						100		
Sheridan	298	356	213	199	178	138	187	252
Teton	5		1	2				
Yellowstone NP						1		
<b>Brown-headed Cowbird</b>								
Fremont	33	2	34	221	236	132	151	167
Sheridan	258	139	168	151	65	84	81	438
Sweetwater	1						1	
Teton	6	17	28	7		14	102	2
Yellowstone NP	6		10			1		
<b>Bullock's Oriole</b>								
Fremont		2	12	1		18	25	9
Platte						2		
Sheridan		11	28		1	15	17	12
Sweetwater	1						3	
Teton						2	2	
<b>Gray-crowned Rosy-Finch</b>								
Fremont	11				50			
Sheridan	4							
Sublette					3			
<b>Black Rosy-Finch</b>								
Fremont	16				500			
<b>Pine Grosbeak</b>								
Teton							1	
<b>Cassin's Finch</b>								
Fremont	76	2		1	92	30	80	2
Sheridan	10	7	7		12		1	2
Teton	17	8	46	2		22	32	4
Yellowstone NP	1		18			6		
<b>House Finch</b>								
Fremont	5		6	55	38	32	78	60
Sheridan	33	29	11	46	37	30	35	21
Teton			8			1		1

**Table 1. Continued.**

Species <sup>a</sup> County or Area	Year							
	1999	2000	2001	2002	2003	2004	2005	2006
Red Crossbill								
Sheridan			7		48			
Teton		2						
Yellowstone NP	4		4					
Hoary Redpoll								
Sublette					3			
Pine Siskin								
Fremont			17	88	59	8	75	17
Sheridan	10	18	14	114	134		17	34
Teton	2	100	59	3		23	8	2
Yellowstone NP			2			1		
American Goldfinch								
Fremont	3	3	39	30	99	37	3	4
Platte						3		
Sheridan	15	19	2	27	1	3	3	12
Teton	6	6	2			22		
Evening Grosbeak								
Fremont	8						8	
Sheridan	5	5		5			12	2
Teton	6	2	7			9	50	
House Sparrow								
Fremont	109	25	74	97	53	206	61	51
Sheridan	33	49	16	25	10	62	57	59
Teton	1					51	1	

<sup>a</sup> May include sightings of species that are not accepted by the Wyoming Bird Records Committee at a later date.

## **APPENDICES**

**APPENDIX 1**

**THE OFFICIAL STATE LIST OF THE COMMON AND SCIENTIFIC NAMES OF THE  
BIRDS, MAMMALS, AMPHIBIANS, AND REPTILES IN WYOMING**

<b>Spp. Code</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Doc. Type</b>	<b>Seasonal Status and Additional Information<sup>a, b</sup></b>
<b>BIRDS<sup>c, d</sup></b>				
<b><u>Waterfowl</u></b>				
<b>Order: Anseriformes</b>				
<b>Family: Anatidae</b>				
171.0	Greater White-fronted Goose *	<i>Anser albifrons</i>	(FL)	M
169.0	Snow Goose *	<i>Chen caerulescens</i>		M
170.0	Ross's Goose *	<i>Chen rossii</i>	(FL)	M
173.0	Brant	<i>Branta bernicla</i>	(AS)	A, Includes Black Brant (174.0)
172.0	Canada Goose *	<i>Branta canadensis</i>		R
178.2	Mute Swan	<i>Cygnus olor</i>	(AS)	A, Controlled
181.0	Trumpeter Swan *	<i>Cygnus buccinator</i>	(FL)	R, No season, NSS2
180.0	Tundra Swan *	<i>Cygnus columbianus</i>		W, No season
179.0	Whooper Swan	<i>Cygnus Cygnus</i>	(AS)	A
144.0	Wood Duck *	<i>Aix sponsa</i>		S
135.0	Gadwall *	<i>Anas strepera</i>		R
136.0	Eurasian Wigeon	<i>Anas penelope</i>	(FL)	A
137.0	American Wigeon *	<i>Anas americana</i>		R
133.0	American Black Duck	<i>Anas rubripes</i>	(AS)	A
132.0	Mallard *	<i>Anas platyrhynchos</i>		R
140.0	Blue-winged Teal *	<i>Anas discors</i>		S
141.0	Cinnamon Teal *	<i>Anas cyanoptera</i>		S
142.0	Northern Shoveler *	<i>Anas clypeata</i>		S
143.0	Northern Pintail *	<i>Anas acuta</i>		R, NSS3
139.2	Garganey	<i>Anas querquedula</i>	(AS)	A
139.0	Green-winged Teal *	<i>Anas crecca</i>		R
147.0	Canvasback *	<i>Aythya valisineria</i>		S, NSS3
146.0	Redhead *	<i>Aythya americana</i>		S, NSS3
150.0	Ring-necked Duck *	<i>Aythya collaris</i>		S
149.1	Tufted Duck	<i>Aythya fuligula</i>	(AS)	A
148.0	Greater Scaup *	<i>Aythya marila</i>	(FL)	M
149.0	Lesser Scaup *	<i>Aythya affinis</i>		S, NSS3
155.0	Harlequin Duck *	<i>Histrionicus histrionicus</i>		S, NSS3
166.0	Surf Scoter *	<i>Melanitta perspicillata</i>	(FL)	M
165.0	White-winged Scoter *	<i>Melanitta fusca</i>	(FL)	M
163.0	Black Scoter	<i>Melanitta nigra</i>	(AS)	A
154.0	Long-tailed Duck *	<i>Clangula hyemalis</i>	(FL)	M
153.0	Bufflehead *	<i>Bucephala albeola</i>		R
151.0	Common Goldeneye *	<i>Bucephala clangula</i>		R
152.0	Barrow's Goldeneye *	<i>Bucephala islandica</i>		R, NSS3
131.0	Hooded Merganser *	<i>Lophodytes cucullatus</i>		R
129.0	Common Merganser *	<i>Mergus merganser</i>		R
130.0	Red-breasted Merganser *	<i>Mergus serrator</i>		S
167.0	Ruddy Duck *	<i>Oxyura jamaicensis</i>		S
141.2	Ruddy Shelduck	<i>Tadorna ferruginea</i>	(AS)	A, Controlled
141.1	Common Shelduck	<i>Tadorna tadorna</i>	(AS)	A, Controlled

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
<b>Gallinaceous Birds</b>				
<b>Order: Galliformes</b>				
<b>Family: Phasianidae</b>				
288.2	Chukar *	<i>Alectoris chukar</i>		R
288.1	Gray Partridge *	<i>Perdix perdix</i>		R
309.1	Ring-necked Pheasant *	<i>Phasianus colchicus</i>		R
300.0	Ruffed Grouse *	<i>Bonasa umbellus</i>		R
309.0	Greater Sage-Grouse *	<i>Centrocercus urophasianus</i>		R, NSS2
304.0	White-tailed Ptarmigan *	<i>Lagopus leucura</i>	(AS)	R, No season
297.0	Dusky Grouse *	<i>Dendragapus obscurus</i>		R
308.0	Sharp-tailed Grouse *	<i>Tympanuchus phasianellus</i>		R, NSS3, Includes Columbian subspecies
305.0	Greater Prairie-Chicken	<i>Tympanuchus cupido</i>	(AS)	A
310.0	Wild Turkey *	<i>Meleagris gallopavo</i>		R
<b>Family: Odontophoridae</b>				
289.0	Northern Bobwhite *	<i>Colinus virginianus</i>	(AS)	R
<b>Loons</b>				
<b>Order: Gaviiformes</b>				
<b>Family: Gaviidae</b>				
011.0	Red-throated Loon	<i>Gavia stellata</i>	(AS)	M
010.0	Pacific Loon	<i>Gavia pacifica</i>	(FL)	M
007.0	Common Loon	<i>Gavia immer</i>		S, NSS1
008.0	Yellow-billed Loon	<i>Gavia adamsii</i>	(AS)	A
<b>Grebes</b>				
<b>Order: Podicipediformes</b>				
<b>Family: Podicipedidae</b>				
006.0	Pied-billed Grebe	<i>Podilymbus podiceps</i>		S
003.0	Horned Grebe	<i>Podiceps auritus</i>		S
002.0	Red-necked Grebe	<i>Podiceps grisegena</i>	(AS)	S
004.0	Eared Grebe	<i>Podiceps nigricollis</i>		S
001.0	Western Grebe	<i>Aechmophorus occidentalis</i>		S, NSS4
001.1	Clark's Grebe	<i>Aechmophorus clarkii</i>		S, NSS4
<b>Pelicans and Cormorants</b>				
<b>Order: Pelecaniformes</b>				
<b>Family: Pelecanidae</b>				
125.0	American White Pelican	<i>Pelecanus erythrorhynchos</i>		S, NSS3
126.0	Brown Pelican	<i>Pelecanus occidentalis</i>	(AS)	A, Endangered
<b>Family: Phalacrocoracidae</b>				
120.0	Double-crested Cormorant	<i>Phalacrocorax auritus</i>		S
<b>Family: Fregatidae</b>				
<b>Wading Birds</b>				
<b>Order: Ciconiiformes</b>				
<b>Family: Ardeidae</b>				
190.0	American Bittern	<i>Botaurus lentiginosus</i>	(FL)	S, NSS3
191.0	Least Bittern	<i>Ixobrychus exilis</i>	(AS)	A
194.0	Great Blue Heron	<i>Ardea herodias</i>		S, NSS4
196.0	Great Egret	<i>Ardea alba</i>	(FL)	A
197.0	Snowy Egret	<i>Egretta thula</i>		S, NSS3

200.0	Little Blue Heron	<i>Egretta caerulea</i>	(AS)	A
199.0	Tricolored Heron	<i>Egretta tricolor</i>	(AS)	A
200.1	Cattle Egret	<i>Bubulcus ibis</i>	(FL)	S
201.0	Green Heron	<i>Butorides virescens</i>	(FL)	M
202.0	Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>		S, NSS3
203.0	Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	(AS)	A
<b>Family: Threskiornithidae</b>				
184.0	White Ibis	<i>Eudocimus albus</i>	(AS)	A
186.0	Glossy Ibis	<i>Plegadis falcinellus</i>	(AS)	A
187.0	White-faced Ibis	<i>Plegadis chihi</i>		S
<b>Family: Ciconiidae</b>				
188.0	Wood Stork	<i>Mycteria americana</i>	(AS)	A, Endangered
<b>Diurnal Birds of Prey</b>				
<b>Order: Ciconiiformes</b>				
<b>Family: Cathartidae</b>				
325.0	Turkey Vulture	<i>Cathartes aura</i>		S
<b>Order: Falconiformes</b>				
<b>Family: Accipitridae</b>				
364.0	Osprey	<i>Pandion haliaetus</i>		S
328.0	White-tailed Kite	<i>Elanus leucurus</i>	(AS)	A
329.0	Mississippi Kite	<i>Ictinia mississippiensis</i>	(AS)	A
352.0	Bald Eagle	<i>Haliaeetus leucocephalus</i>		R, Threatened, NSS2
331.0	Northern Harrier	<i>Circus cyaneus</i>		S
332.0	Sharp-shinned Hawk	<i>Accipiter striatus</i>		S
333.0	Cooper's Hawk	<i>Accipiter cooperii</i>		S
334.0	Northern Goshawk	<i>Accipiter gentilis</i>		R, NSS4
343.0	Broad-winged Hawk	<i>Buteo platypterus</i>	(FL)	M
342.0	Swainson's Hawk	<i>Buteo swainsoni</i>		S, NSS4
337.0	Red-tailed Hawk	<i>Buteo jamaicensis</i>		R, Includes Harlan's Hawk (338.0)
348.0	Ferruginous Hawk	<i>Buteo regalis</i>		R, NSS3
347.0	Rough-legged Hawk	<i>Buteo lagopus</i>		W
349.0	Golden Eagle	<i>Aquila chrysaetos</i>		R
<b>Family: Falconidae</b>				
362.0	Crested Caracara	<i>Caracara cheriway</i>	(AS)	A
360.0	American Kestrel	<i>Falco sparverius</i>		S
357.0	Merlin	<i>Falco columbarius</i>		R, NSS3
354.0	Gyr Falcon	<i>Falco rusticolus</i>	(FL)	W
356.0	Peregrine Falcon	<i>Falco peregrinus</i>	(FL)	R, NSS3
355.0	Prairie Falcon	<i>Falco mexicanus</i>		R
<b>Marshbirds</b>				
<b>Order: Gruiformes</b>				
<b>Family: Rallidae</b>				
215.0	Yellow Rail	<i>Coturnicops noveboracensis</i>	(AS)	A
212.0	Virginia Rail *	<i>Rallus limicola</i>		S, NSS3
214.0	Sora *	<i>Porzana carolina</i>		S
218.0	Purple Gallinule	<i>Porphyrio martinica</i>	(AS)	A
219.0	Common Moorhen	<i>Gallinula chloropus</i>	(AS)	A
221.0	American Coot *	<i>Fulica americana</i>		S

<b>Family: Gruidae</b>				
206.0	Sandhill Crane *	<i>Grus canadensis</i>		S, NSS3, Includes Greater Sandhill Crane subspecies
204.0	Whooping Crane	<i>Grus americana</i>	(AS)	S, Endangered
<b>Shorebirds</b>				
<b>Order: Charadriiformes</b>				
<b>Family: Charadriidae</b>				
270.0	Black-bellied Plover	<i>Pluvialis squatarola</i>		M
272.0	American Golden-Plover	<i>Pluvialis dominica</i>	(FL)	M
278.0	Snowy Plover	<i>Charadrius alexandrinus</i>	(FL)	S
274.0	Semipalmated Plover	<i>Charadrius semipalmatus</i>		M
277.0	Piping Plover	<i>Charadrius melodus</i>	(AS)	M, Endangered
273.0	Killdeer	<i>Charadrius vociferus</i>		S
281.0	Mountain Plover	<i>Charadrius montanus</i>		S, NSS4
<b>Family: Recurvirostridae</b>				
226.0	Black-necked Stilt	<i>Himantopus mexicanus</i>		S
225.0	American Avocet	<i>Recurvirostra americana</i>		S
<b>Family: Scolopacidae</b>				
263.0	Spotted Sandpiper	<i>Actitis macularius</i>		S
256.0	Solitary Sandpiper	<i>Tringa solitaria</i>		M
254.0	Greater Yellowlegs	<i>Tringa melanoleuca</i>		M
258.0	Willet	<i>Tringa semipalmata</i>		S
255.0	Lesser Yellowlegs	<i>Tringa flavipes</i>		M
261.0	Upland Sandpiper	<i>Bartramia longicauda</i>	(FL)	S, NSS4
265.0	Whimbrel	<i>Numenius phaeopus</i>	(FL)	M
264.0	Long-billed Curlew	<i>Numenius americanus</i>		S, NSS3
251.0	Hudsonian Godwit	<i>Limosa haemastica</i>	(AS)	M
249.0	Marbled Godwit	<i>Limosa fedoa</i>		M
283.0	Ruddy Turnstone	<i>Arenaria interpres</i>	(FL)	M
234.0	Red Knot	<i>Calidris canutus</i>	(AS)	M
248.0	Sanderling	<i>Calidris alba</i>		M
246.0	Semipalmated Sandpiper	<i>Calidris pusilla</i>		M
247.0	Western Sandpiper	<i>Calidris mauri</i>		M
242.0	Least Sandpiper	<i>Calidris minutilla</i>		M
240.0	White-rumped Sandpiper	<i>Calidris fuscicollis</i>	(FL)	M
241.0	Baird's Sandpiper	<i>Calidris bairdii</i>		M
239.0	Pectoral Sandpiper	<i>Calidris melanotos</i>		M
243.0	Dunlin	<i>Calidris alpina</i>	(FL)	M
233.0	Stilt Sandpiper	<i>Calidris himantopus</i>		M
262.0	Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>	(AS)	M
231.0	Short-billed Dowitcher	<i>Limnodromus griseus</i>	(FL)	A
232.0	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>		M
230.0	Wilson's Snipe	<i>Gallinago delicata</i>		S
228.0	American Woodcock	<i>Scolopax minor</i>	(AS)	A
224.0	Wilson's Phalarope	<i>Phalaropus tricolor</i>		S
223.0	Red-necked Phalarope	<i>Phalaropus lobatus</i>		M
222.0	Red Phalarope	<i>Phalaropus fulicarius</i>	(AS)	A

<b>Gulls and Terns</b>				
<b>Order: Charadriiformes</b>				
<b>Family: Laridae</b>				
058.0	Laughing Gull	<i>Larus atricilla</i>	(AS)	A
059.0	Franklin's Gull	<i>Larus pipixcan</i>		S, NSS3
060.1	Little Gull	<i>Larus minutus</i>	(AS)	A
055.1	Black-headed Gull	<i>Larus ridibundus</i>	(AS)	A
060.0	Bonaparte's Gull	<i>Larus philadelphia</i>		M
057.0	Heermann's Gull	<i>Larus heermanni</i>	(AS)	A
055.0	Mew Gull	<i>Larus canus</i>	(AS)	A
054.0	Ring-billed Gull	<i>Larus delawarensis</i>		S
053.0	California Gull	<i>Larus californicus</i>		S
051.0	Herring Gull	<i>Larus argentatus</i>		M
044.0	Glaucous-winged Gull	<i>Larus glaucescens</i>	(AS)	A
042.0	Glaucous Gull	<i>Larus hyperboreus</i>	(AS)	A
047.0	Great Black-backed Gull	<i>Larus marinus</i>	(AS)	A
062.0	Sabine's Gull	<i>Xema sabini</i>	(FL)	M
040.0	Black-legged Kittiwake	<i>Rissa tridactyla</i>	(AS)	A
061.0	Ross's Gull	<i>Rhodostethia rosea</i>	(AS)	A
074.0	Least Tern	<i>Sternula antillarum</i>	(AS)	A, Endangered
064.0	Caspian Tern	<i>Hydroprogne caspia</i>		S, NSS3
077.0	Black Tern	<i>Chlidonias niger</i>		S, NSS3
070.0	Common Tern	<i>Sterna hirundo</i>	(FL)	M
071.0	Arctic Tern	<i>Sterna paradisaea</i>	(AS)	A
069.0	Forster's Tern	<i>Sterna forsteri</i>		S, NSS3
036.0	Pomarine Jaeger	<i>Stercorarius pomarinus</i>	(AS)	A
037.0	Parasitic Jaeger	<i>Stercorarius parasiticus</i>	(AS)	A
<b>Seabirds</b>				
<b>Order: Charadriiformes</b>				
<b>Family: Alcidae</b>				
023.0	Long-billed Murrelet	<i>Brachyramphus marmoratus</i>	(AS)	A
021.0	Ancient Murrelet	<i>Synthliboramphus antiquus</i>	(AS)	A
<b>Doves and Pigeons</b>				
<b>Order: Columbiformes</b>				
<b>Family: Columbidae</b>				
313.1	Rock Pigeon	<i>Columba livia</i>		R
312.0	Band-tailed Pigeon	<i>Patagioenas fasciata</i>	(AS)	M
315.2	African Collared-Dove	<i>Streptopelia roseogrisea</i>	(AS)	A
315.4	Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	(FL)	A
319.0	White-winged Dove	<i>Zenaida asiatica</i>	(AS)	A
316.0	Mourning Dove *	<i>Zenaida macroura</i>		S
315.0	Passenger Pigeon	<i>Ectopistes migratorius</i>		Extinct
<b>Cuckoos</b>				
<b>Order: Cuculiformes</b>				
<b>Family: Cuculidae</b>				
387.0	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	(FL)	S, NSS2
388.0	Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	(FL)	S

<b>Owls</b>				
<b>Order: Strigiformes</b>				
<b>Family: Tytonidae</b>				
365.0	Barn Owl	<i>Tyto alba</i>	(AS)	S, (AS) except L21
<b>Family: Strigidae</b>				
374.0	Flammulated Owl	<i>Otus flammeolus</i>	(AS)	A
373.2	Western Screech-Owl	<i>Megascops kennicottii</i>	(AS)	R, (AS) except L8
373.0	Eastern Screech-Owl	<i>Megascops asio</i>	(FL)	R
375.0	Great Horned Owl	<i>Bubo virginianus</i>		R
376.0	Snowy Owl	<i>Bubo scandiacus</i>	(AS)	W
377.0	Northern Hawk Owl	<i>Surnia ulula</i>	(AS)	A
379.0	Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	(FL)	R, NSS4
378.0	Burrowing Owl	<i>Athene cunicularia</i>		S, NSS4
368.0	Barred Owl	<i>Strix varia</i>	(AS)	A
370.0	Great Gray Owl	<i>Strix nebulosa</i>		R, NSS4
366.0	Long-eared Owl	<i>Asio otus</i>		R
367.0	Short-eared Owl	<i>Asio flammeus</i>		R, NSS4
371.0	Boreal Owl	<i>Aegolius funereus</i>	(FL)	R, NSS4
372.0	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	(FL)	R
<b>Goatsuckers</b>				
<b>Order: Caprimulgiformes</b>				
<b>Family: Caprimulgidae</b>				
420.0	Common Nighthawk	<i>Chordeiles minor</i>		S
418.0	Common Poorwill	<i>Phalaenoptilus nuttallii</i>		S
<b>Swifts</b>				
<b>Order: Apodiformes</b>				
<b>Family: Apodidae</b>				
423.0	Chimney Swift	<i>Chaetura pelagica</i>	(FL)	S
425.0	White-throated Swift	<i>Aeronautes saxatalis</i>		S
<b>Hummingbirds</b>				
<b>Order: Caprimulgiformes</b>				
<b>Family: Trochilidae</b>				
426.0	Magnificent Hummingbird	<i>Eugenes fulgens</i>	(AS)	A
428.0	Ruby-throated Hummingbird	<i>Archilochus colubris</i>	(AS)	A
429.0	Black-chinned Hummingbird	<i>Archilochus alexandri</i>	(FL)	S
431.0	Anna's Hummingbird	<i>Calypte anna</i>	(AS)	A
436.0	Calliope Hummingbird	<i>Stellula calliope</i>		S
432.0	Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>		S
433.0	Rufous Hummingbird	<i>Selasphorus rufus</i>		S
<b>Kingfishers</b>				
<b>Order: Coraciiformes</b>				
<b>Family: Alcedinidae</b>				
390.0	Belted Kingfisher	<i>Ceryle alcyon</i>		R
<b>Woodpeckers</b>				
<b>Order: Piciformes</b>				
<b>Family: Picidae</b>				
408.0	Lewis's Woodpecker	<i>Melanerpes lewis</i>		S, NSS3
406.0	Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	(FL)	S
407.0	Acorn Woodpecker	<i>Melanerpes formicivorus</i>	(AS)	A

409.0	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	(AS)	A
404.0	Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>		S
402.0	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	(AS)	A
402.1	Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>		S
394.0	Downy Woodpecker	<i>Picoides pubescens</i>		R
393.0	Hairy Woodpecker	<i>Picoides villosus</i>		R
399.0	White-headed Woodpecker	<i>Picoides albolarvatus</i>	(AS)	A
401.0	American Three-toed Woodpecker	<i>Picoides dorsalis</i>		R, NSS4
400.0	Black-backed Woodpecker	<i>Picoides arcticus</i>	(FL)	R, NSS4
412.0	Northern Flicker	<i>Colaptes auratus</i>		R, Includes Red-shafted and Yellow-shafted
405.0	Pileated Woodpecker	<i>Dryocopus pileatus</i>	(AS)	A
<b>Passerines</b>				
<b>Order: Passeriformes</b>				
<b>Family: Tyrannidae</b>				
459.0	Olive-sided Flycatcher	<i>Contopus cooperi</i>		S
462.0	Western Wood-Pewee	<i>Contopus sordidulus</i>		S
461.0	Eastern Wood-Pewee	<i>Contopus virens</i>	(AS)	A
466.0	Willow Flycatcher	<i>Empidonax traillii</i>		S, NSS3
467.0	Least Flycatcher	<i>Empidonax minimus</i>	(FL)	S
468.0	Hammond's Flycatcher	<i>Empidonax hammondii</i>	(FL)	S
469.1	Gray Flycatcher	<i>Empidonax wrightii</i>	(FL)	S
469.0	Dusky Flycatcher	<i>Empidonax oberholseri</i>		S
464.0	Cordilleran Flycatcher	<i>Empidonax occidentalis</i>		S
456.0	Eastern Phoebe	<i>Sayornis phoebe</i>	(FL)	S
457.0	Say's Phoebe	<i>Sayornis saya</i>		S
471.0	Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	(AS)	A
454.0	Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	(FL)	S, NSS3
452.0	Great Crested Flycatcher	<i>Myiarchus crinitus</i>	(AS)	A
448.0	Cassin's Kingbird	<i>Tyrannus vociferans</i>	(FL)	S
447.0	Western Kingbird	<i>Tyrannus verticalis</i>		S
444.0	Eastern Kingbird	<i>Tyrannus tyrannus</i>		S
443.0	Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	(FL)	A
<b>Family: Laniidae</b>				
622.0	Loggerhead Shrike	<i>Lanius ludovicianus</i>		S
621.0	Northern Shrike	<i>Lanius excubitor</i>		W
<b>Family: Vireonidae</b>				
631.0	White-eyed Vireo	<i>Vireo griseus</i>	(AS)	A
628.0	Yellow-throated Vireo	<i>Vireo flavifrons</i>	(AS)	A
629.1	Plumbeous Vireo	<i>Vireo plumbeus</i>		S
629.2	Cassin's Vireo	<i>Vireo cassinii</i>	(AS)	M
627.0	Warbling Vireo	<i>Vireo gilvus</i>		S
626.0	Philadelphia Vireo	<i>Vireo philadelphicus</i>	(AS)	M
624.0	Red-eyed Vireo	<i>Vireo olivaceus</i>		S
<b>Family: Corvidae</b>				
484.0	Gray Jay	<i>Perisoreus canadensis</i>		R
478.0	Steller's Jay	<i>Cyanocitta stelleri</i>		R

477.0	Blue Jay	<i>Cyanocitta cristata</i>		R
481.0	Western Scrub-Jay	<i>Aphelocoma californica</i>	(FL)	R, NSS3
492.0	Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>		R
491.0	Clark's Nutcracker	<i>Nucifraga columbiana</i>		R
475.0	Black-billed Magpie	<i>Pica hudsonia</i>		R
488.0	American Crow	<i>Corvus brachyrhynchos</i>		R
486.0	Common Raven	<i>Corvus corax</i>		R
<b>Family: Alaudidae</b>				
474.0	Horned Lark	<i>Eremophila alpestris</i>		R
<b>Family: Hirundinidae</b>				
611.0	Purple Martin	<i>Progne subis</i>	(AS)	S
614.0	Tree Swallow	<i>Tachycineta bicolor</i>		S
615.0	Violet-green Swallow	<i>Tachycineta thalassina</i>		S
617.0	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		S
616.0	Bank Swallow	<i>Riparia riparia</i>		S
612.0	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>		S
613.0	Barn Swallow	<i>Hirundo rustica</i>		S
<b>Family: Paridae</b>				
735.0	Black-capped Chickadee	<i>Poecile atricapillus</i>		R
738.0	Mountain Chickadee	<i>Poecile gambeli</i>		R
733.0	Juniper Titmouse	<i>Baeolophus ridgwayi</i>	(FL)	R, NSS3
<b>Family: Aegithalidae</b>				
743.0	Bushtit (FL)	<i>Psaltriparus minimus</i>	(FL)	S, NSS3
<b>Family: Sittidae</b>				
728.0	Red-breasted Nuthatch	<i>Sitta canadensis</i>		R
727.0	White-breasted Nuthatch	<i>Sitta carolinensis</i>		R
730.0	Pygmy Nuthatch	<i>Sitta pygmaea</i>		R, NSS4
<b>Family: Certhiidae</b>				
726.0	Brown Creeper	<i>Certhia americana</i>		R
<b>Family: Troglodytidae</b>				
715.0	Rock Wren	<i>Salpinctes obsoletus</i>		S
717.0	Canyon Wren	<i>Catherpes mexicanus</i>		S
718.0	Carolina Wren	<i>Thryothorus ludovicianus</i>	(AS)	A
719.0	Bewick's Wren	<i>Thryomanes bewickii</i>	(FL)	S
721.0	House Wren	<i>Troglodytes aedon</i>		S
722.0	Winter Wren	<i>Troglodytes troglodytes</i>	(FL)	M
724.0	Sedge Wren	<i>Cistothorus platensis</i>	(AS)	A
725.0	Marsh Wren	<i>Cistothorus palustris</i>		S
<b>Family: Cinclidae</b>				
701.0	American Dipper	<i>Cinclus mexicanus</i>		R
<b>Family: Regulidae</b>				
748.0	Golden-crowned Kinglet	<i>Regulus satrapa</i>		R
749.0	Ruby-crowned Kinglet	<i>Regulus calendula</i>		S
<b>Family: Sylviidae</b>				
751.0	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>		S
<b>Family: Turdidae</b>				
766.0	Eastern Bluebird	<i>Sialia sialis</i>	(FL)	S
767.0	Western Bluebird	<i>Sialia mexicana</i>	(AS)	S
768.0	Mountain Bluebird	<i>Sialia currucoides</i>		S

754.0	Townsend's Solitaire	<i>Myadestes townsendi</i>		R
756.0	Veery	<i>Catharus fuscescens</i>		S
757.0	Gray-cheeked Thrush	<i>Catharus minimus</i>	(AS)	M
758.0	Swainson's Thrush	<i>Catharus ustulatus</i>		S
759.0	Hermit Thrush	<i>Catharus guttatus</i>		S
755.0	Wood Thrush	<i>Hylocichla mustelina</i>	(AS)	M
761.0	American Robin	<i>Turdus migratorius</i>		R
763.0	Varied Thrush	<i>Ixoreus naevius</i>	(FL)	M
<b>Family: Mimidae</b>				
704.0	Gray Catbird	<i>Dumetella carolinensis</i>		S
703.0	Northern Mockingbird	<i>Mimus polyglottos</i>		S
702.0	Sage Thrasher	<i>Oreoscoptes montanus</i>		S, NSS4
705.0	Brown Thrasher	<i>Toxostoma rufum</i>		S
<b>Family: Sturnidae</b>				
493.0	European Starling	<i>Sturnus vulgaris</i>		R
<b>Family: Motacillidae</b>				
697.0	American Pipit	<i>Anthus rubescens</i>		S
700.0	Sprague's Pipit	<i>Anthus spragueii</i>	(AS)	M
<b>Family: Bombycillidae</b>				
618.0	Bohemian Waxwing	<i>Bombycilla garrulus</i>		W
619.0	Cedar Waxwing	<i>Bombycilla cedrorum</i>		R
<b>Family: Parulidae</b>				
641.0	Blue-winged Warbler	<i>Vermivora pinus</i>	(AS)	A
642.0	Golden-winged Warbler	<i>Vermivora chrysoptera</i>	(FL)	A
647.0	Tennessee Warbler	<i>Vermivora peregrina</i>	(FL)	M
646.0	Orange-crowned Warbler	<i>Vermivora celata</i>		S
645.0	Nashville Warbler	<i>Vermivora ruficapilla</i>	(FL)	M
644.0	Virginia's Warbler	<i>Vermivora virginiae</i>	(FL)	S
648.0	Northern Parula	<i>Parula americana</i>	(FL)	M
652.0	Yellow Warbler	<i>Dendroica petechia</i>		S
659.0	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	(FL)	M
657.0	Magnolia Warbler	<i>Dendroica magnolia</i>	(FL)	M
650.0	Cape May Warbler	<i>Dendroica tigrina</i>	(AS)	A
654.0	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	(FL)	M
655.0	Yellow-rumped Warbler	<i>Dendroica coronata</i>		S
665.0	Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	(FL)	S
667.0	Black-throated Green Warbler	<i>Dendroica virens</i>	(AS)	A
668.0	Townsend's Warbler	<i>Dendroica townsendi</i>		S
669.0	Hermit Warbler	<i>Dendroica occidentalis</i>	(AS)	A
662.0	Blackburnian Warbler	<i>Dendroica fusca</i>	(FL)	M
663.0	Yellow-throated Warbler	<i>Dendroica dominica</i>	(AS)	A
671.0	Pine Warbler	<i>Dendroica pinus</i>	(AS)	A
673.0	Prairie Warbler	<i>Dendroica discolor</i>	(AS)	A
672.0	Palm Warbler	<i>Dendroica palmarum</i>	(AS)	M
660.0	Bay-breasted Warbler	<i>Dendroica castanea</i>	(AS)	M
661.0	Blackpoll Warbler	<i>Dendroica striata</i>	(FL)	M
636.0	Black-and-white Warbler	<i>Mniotilta varia</i>	(FL)	M
687.0	American Redstart	<i>Setophaga ruticilla</i>		S
637.0	Prothonotary Warbler	<i>Protonotaria citrea</i>	(AS)	A

639.0	Worm-eating Warbler	<i>Helmitheros vermivorum</i>	(AS)	A
674.0	Ovenbird	<i>Seiurus aurocapilla</i>		S
675.0	Northern Waterthrush	<i>Seiurus noveboracensis</i>		M
677.0	Kentucky Warbler	<i>Oporornis formosus</i>	(AS)	A
678.0	Connecticut Warbler	<i>Oporornis agilis</i>	(AS)	A
679.0	Mourning Warbler	<i>Oporornis philadelphia</i>	(AS)	A
680.0	MacGillivray's Warbler	<i>Oporornis tolmiei</i>		S
681.0	Common Yellowthroat	<i>Geothlypis trichas</i>		A
684.0	Hooded Warbler	<i>Wilsonia citrina</i>	(AS)	A
685.0	Wilson's Warbler	<i>Wilsonia pusilla</i>		S
686.0	Canada Warbler	<i>Wilsonia canadensis</i>	(AS)	S
690.0	Red-faced Warbler	<i>Cardellina rubrifrons</i>	(AS)	A
683.0	Yellow-breasted Chat	<i>Icteria virens</i>		S
<b>Family: Thraupidae</b>				
609.0	Hepatic Tanager	<i>Piranga flava</i>	(AS)	A
610.0	Summer Tanager	<i>Piranga rubra</i>	(AS)	M
608.0	Scarlet Tanager	<i>Piranga olivacea</i>	(AS)	A
607.0	Western Tanager	<i>Piranga ludoviciana</i>		S
<b>Family: Emberizidae</b>				
590.0	Green-tailed Towhee	<i>Pipilo chlorurus</i>		S
587.0	Spotted Towhee	<i>Pipilo maculatus</i>		S
591.0	Canyon Towhee	<i>Pipilo fuscus</i>	(AS)	A
578.0	Cassin's Sparrow	<i>Aimophila cassinii</i>	(AS)	A, (AS) except Torrington area
559.0	American Tree Sparrow	<i>Spizella arborea</i>		W
560.0	Chipping Sparrow	<i>Spizella passerina</i>		S
561.0	Clay-colored Sparrow	<i>Spizella pallida</i>		S
562.0	Brewer's Sparrow	<i>Spizella breweri</i>		S, NSS4
563.0	Field Sparrow	<i>Spizella pusilla</i>	(AS)	S
540.0	Vesper Sparrow	<i>Poocetes gramineus</i>		S
552.0	Lark Sparrow	<i>Chondestes grammacus</i>		S
573.0	Black-throated Sparrow	<i>Amphispiza bilineata</i>	(AS)	S
574.0	Sage Sparrow	<i>Amphispiza belli</i>		S, NSS4
605.0	Lark Bunting	<i>Calamospiza melanocorys</i>		S, NSS4
542.0	Savannah Sparrow	<i>Passerculus sandwichensis</i>		S
546.0	Grasshopper Sparrow	<i>Ammodramus savannarum</i>		S, NSS4
545.0	Baird's Sparrow	<i>Ammodramus bairdii</i>	(AS)	S
548.0	Le Conte's Sparrow	<i>Ammodramus leconteii</i>	(AS)	M
549.1	Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	(AS)	A
585.0	Fox Sparrow	<i>Passerella iliaca</i>		R
581.0	Song Sparrow	<i>Melospiza melodia</i>		R
583.0	Lincoln's Sparrow	<i>Melospiza lincolnii</i>		S
584.0	Swamp Sparrow	<i>Melospiza georgiana</i>	(FL)	M
558.0	White-throated Sparrow	<i>Zonotrichia albicollis</i>		M
553.0	Harris's Sparrow	<i>Zonotrichia querula</i>		W
554.0	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>		S
557.0	Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	(AS)	A

567.0	Dark-eyed Junco	<i>Junco hyemalis</i>		R, Includes White-winged (566.0), Slate-colored (567.0), Oregon (567.1), Pink-sided (568.0), and Gray-headed (569.0)
539.0	McCown's Longspur	<i>Calcarius mccownii</i>		S, NSS4
536.0	Lapland Longspur	<i>Calcarius lapponicus</i>		W
537.0	Smith's Longspur	<i>Calcarius pictus</i>	(AS)	A
538.0	Chestnut-collared Longspur	<i>Calcarius ornatus</i>	(FL)	S, NSS4
534.0	Snow Bunting	<i>Plectrophenax nivalis</i>		W
<b>Family: Cardinalidae</b>				
593.0	Northern Cardinal	<i>Cardinalis cardinalis</i>	(AS)	M
594.1	Yellow Grosbeak	<i>Pheucticus chrysopheplus</i>	(AS)	A
595.0	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	(FL)	S
596.0	Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>		S
597.0	Blue Grosbeak	<i>Passerina caerulea</i>		S
599.0	Lazuli Bunting	<i>Passerina amoena</i>		S
598.0	Indigo Bunting	<i>Passerina cyanea</i>	(FL)	S
601.0	Painted Bunting	<i>Passerina ciris</i>	(AS)	A
604.0	Dickcissel	<i>Spiza americana</i>	(FL)	S, NSS4
<b>Family: Icteridae</b>				
494.0	Bobolink	<i>Dolichonyx oryzivorus</i>		S, NSS4
498.0	Red-winged Blackbird	<i>Agelaius phoeniceus</i>		S
501.1	Western Meadowlark	<i>Sturnella neglecta</i>		S
497.0	Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>		S
509.0	Rusty Blackbird	<i>Euphagus carolinus</i>	(FL)	M
510.0	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>		S
511.0	Common Grackle	<i>Quiscalus quiscula</i>		S
512.0	Great-tailed Grackle	<i>Quiscalus mexicanus</i>	(AS)	A
495.0	Brown-headed Cowbird	<i>Molothrus ater</i>		S
506.0	Orchard Oriole	<i>Icterus spurius</i>	(FL)	S
508.0	Bullock's Oriole	<i>Icterus bullockii</i>		S
507.0	Baltimore Oriole	<i>Icterus galbula</i>	(FL)	A
504.0	Scott's Oriole	<i>Icterus parisorum</i>	(FL)	S, NSS3
<b>Family: Fringillidae</b>				
514.1	Brambling	<i>Fringilla montifringilla</i>	(AS)	A
524.0	Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>		R
525.0	Black Rosy-Finch	<i>Leucosticte atrata</i>		R
526.0	Brown-capped Rosy-Finch	<i>Leucosticte australis</i>	(FL)	R
515.0	Pine Grosbeak	<i>Pinicola enucleator</i>		R
517.0	Purple Finch	<i>Carpodacus purpureus</i>	(FL)	W
518.0	Cassin's Finch	<i>Carpodacus cassinii</i>		R
519.0	House Finch	<i>Carpodacus mexicanus</i>		R
521.0	Red Crossbill	<i>Loxia curvirostra</i>		R
522.0	White-winged Crossbill	<i>Loxia leucoptera</i>	(FL)	R
528.0	Common Redpoll	<i>Carduelis flammea</i>		W
527.0	Hoary Redpoll	<i>Carduelis hornemanni</i>	(AS)	W
533.0	Pine Siskin	<i>Carduelis pinus</i>		R
530.0	Lesser Goldfinch	<i>Carduelis psaltria</i>	(FL)	M

531.0	Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	(AS)	A
529.0	American Goldfinch	<i>Carduelis tristis</i>		R
514.0	Evening Grosbeak	<i>Coccothraustes vespertinus</i>		R
<b>Family: Passeridae</b>				
688.2	House Sparrow	<i>Passer domesticus</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
<b>MAMMALS<sup>d, e</sup></b>				
<b><u>Marsupials</u></b>				
<b>Order: Marsupialia</b>				
<b>Family: Didelphidae</b>				
800.0	Virginia Opossum	<i>Didelphis virginiana</i>		A
<b><u>Insectivores</u></b>				
<b>Order: Insectivora</b>				
<b>Family: Soricidae</b>				
801.0	Masked Shrew	<i>Sorex cinereus</i>		R
801.1	Hayden's Shrew	<i>Sorex haydeni</i>		R, NSS4
806.0	Pygmy Shrew	<i>Sorex hoyi</i>		R, NSS2
805.0	Merriam's Shrew	<i>Sorex merriami</i>		R
807.0	Dusky Shrew	<i>Sorex monticolus</i>		R
803.0	Dwarf Shrew	<i>Sorex nanus</i>		R, NSS3
804.0	Water Shrew	<i>Sorex palustris</i>		R, NSS4
804.1	Preble's Shrew	<i>Sorex preblei</i>		R, NSS3
802.0	Vagrant Shrew	<i>Sorex vagrans</i>		R, NSS3
<b>Family: Talpidae</b>				
810.0	Eastern Mole	<i>Scalopus aquaticus</i>		R
<b><u>Bats</u></b>				
<b>Order: Chiroptera</b>				
<b>Family: Vespertilionidae</b>				
815.1	California Myotis	<i>Myotis californicus</i>		U
816.0	Western Small-footed Myotis	<i>Myotis ciliolabrum</i>		U, NSS3
818.0	Long-eared Myotis	<i>Myotis evotis</i>		U, NSS2
819.0	Northern Myotis	<i>Myotis septentrionalis</i>		U, NSS2
815.0	Little Brown Myotis	<i>Myotis lucifugus</i>		U, NSS3
826.0	Fringed Myotis	<i>Myotis thysanodes</i>		U, NSS2
817.0	Long-legged Myotis	<i>Myotis volans</i>		U, NSS2
817.1	Yuma Myotis	<i>Myotis yumanensis</i>		U
821.0	Eastern Red Bat	<i>Lasiurus borealis</i>		S, NSS4
822.0	Hoary Bat	<i>Lasiurus cinereus</i>		S, NSS4
820.0	Silver-haired Bat	<i>Lasionycteris noctivagans</i>		U, NSS4
820.1	Eastern Pipistrelle	<i>Pipistrellus subflavus</i>		U
825.0	Big Brown Bat	<i>Eptesicus fuscus</i>		U, NSS3
824.0	Spotted Bat	<i>Euderma maculatum</i>		S, NSS2
823.0	Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>		U, NSS2
827.0	Pallid Bat	<i>Antrozous pallidus</i>		S, NSS2
<b>Family: Molossidae</b>				
828.0	Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>		A
829.0	Big Free-tailed Bat	<i>Nyctinomops macrotis</i>		A
<b><u>Lagomorphs</u></b>				
<b>Order: Lagomorpha</b>				
<b>Family: Ochotonidae</b>				
830.0	Pika	<i>Ochotona princeps</i>		R
<b>Family: Leporidae</b>				
837.0	Pygmy Rabbit	<i>Brachylagus idahoensis</i>		R, NSS3
833.0	Desert Cottontail *	<i>Sylvilagus audubonii</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
834.0	Eastern Cottontail *	<i>Sylvilagus floridanus</i>		R
835.0	Mountain (Nuttall's) Cottontail *	<i>Sylvilagus nuttallii</i>		R
836.0	Snowshoe Hare *	<i>Lepus americanus</i>		R
832.0	Black-tailed Jackrabbit *	<i>Lepus californicus</i>		R, Predatory animal
831.0	White-tailed Jackrabbit *	<i>Lepus townsendii</i>		R, Predatory animal
<b>Rodents</b>				
<b>Order: Rodentia</b>				
<b>Family: Sciuridae</b>				
841.0	Yellow-pine Chipmunk	<i>Tamias amoenus</i>		R
842.0	Cliff Chipmunk	<i>Tamias dorsalis</i>		R, NSS3
840.0	Least Chipmunk	<i>Tamias minimus</i>		R
843.0	Uinta Chipmunk	<i>Tamias umbrinus</i>		R
844.0	Yellow-bellied Marmot	<i>Marmota flaviventris</i>		R
846.0	Uinta Ground Squirrel	<i>Spermophilus armatus</i>		R
845.0	Wyoming Ground Squirrel	<i>Spermophilus elegans</i>		R
849.0	Golden-mantled Ground Squirrel	<i>Spermophilus lateralis</i>		R
847.0	Spotted Ground Squirrel	<i>Spermophilus spilosoma</i>		R, NSS3
848.0	Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>		R
851.0	White-tailed Prairie Dog	<i>Cynomys leucurus</i>		R, NSS4
850.0	Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>		R, NSS3
855.0	Abert's Squirrel	<i>Sciurus aberti</i>		R, NSS3
856.0	Eastern Gray Squirrel *	<i>Sciurus carolinensis</i>		R
852.0	Eastern Fox Squirrel *	<i>Sciurus niger</i>		R
854.0	Red Squirrel *	<i>Tamiasciurus hudsonicus</i>		R
853.0	Northern Flying Squirrel	<i>Glaucomys sabrinus</i>		R, NSS4
<b>Family: Geomyidae</b>				
862.0	Wyoming Pocket Gopher	<i>Thomomys clusius</i>		R
863.0	Idaho Pocket Gopher	<i>Thomomys idahoensis</i>		R, NSS3
860.0	Northern Pocket Gopher	<i>Thomomys talpoides</i>		R
861.0	Plains Pocket Gopher	<i>Geomys bursarius</i>		R, NSS4
<b>Family: Heteromyidae</b>				
865.0	Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>		R, NSS3
893.0	Plains Pocket Mouse	<i>Perognathus flavescens</i>		R, NSS3
866.0	Silky Pocket Mouse	<i>Perognathus flavus</i>		R, NSS3
867.0	Great Basin Pocket Mouse	<i>Perognathus parvus</i>		R, NSS3
868.0	Hispid Pocket Mouse	<i>Chaetodipus hispidus</i>		R, NSS3
869.0	Ord's Kanagaroo Rat	<i>Dipodomys ordii</i>		R
<b>Family: Castoridae</b>				
875.0	Beaver *	<i>Castor canadensis</i>		R
<b>Family: Muridae</b>				
877.0	Western Harvest Mouse	<i>Reithrodontomys megalotis</i>		R
876.0	Plains Harvest Mouse	<i>Reithrodontomys montanus</i>		R, NSS3
878.0	Canyon Mouse	<i>Peromyscus crinitus</i>		R, NSS3
881.0	White-footed Mouse	<i>Peromyscus leucopus</i>		R
880.0	Deer Mouse	<i>Peromyscus maniculatus</i>		R
879.0	Pinyon Mouse	<i>Peromyscus truei</i>		R, NSS3
882.0	Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>		R
883.0	Bushy-tailed Woodrat	<i>Neotoma cinerea</i>		R
884.0	Southern Red-backed Vole	<i>Clethrionomys gapperi</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
885.0	Western Heather Vole	<i>Phenacomys intermedius</i>		R, NSS3
888.0	Long-tailed Vole	<i>Microtus longicaudus</i>		R
887.0	Montane Vole	<i>Microtus montanus</i>		R
890.0	Prairie Vole	<i>Microtus ochrogaster</i>		R, NSS3
886.0	Meadow Vole	<i>Microtus pennsylvanicus</i>		R
889.0	Water Vole	<i>Microtus richardsoni</i>		R, NSS3
891.0	Sagebrush Vole	<i>Lemmiscus curtatus</i>		R, NSS4
892.0	Muskrat *	<i>Ondatra zibethicus</i>		R
894.2	Norway Rat	<i>Rattus norvegicus</i>		R
894.1	House Mouse	<i>Mus musculus</i>		R
<b>Family: Zapodidae</b>				
895.0	Meadow Jumping Mouse	<i>Zapus hudsonius</i>		R
896.0	Western Jumping Mouse	<i>Zapus princeps</i>		R
<b>Family: Erethizontidae</b>				
900.0	Porcupine *	<i>Erethizon dorsatum</i>		R, Predatory animal
<b>Carnivores</b>				
<b>Order: Carnivora</b>				
<b>Family: Canidae</b>				
901.0	Coyote *	<i>Canis latrans</i>		R, Predatory animal
902.0	Gray Wolf *	<i>Canis lupus</i>		R, Predatory animal, Threatened
904.0	Swift Fox	<i>Vulpes velox</i>		R, NSS4
903.0	Red Fox *	<i>Vulpes vulpes</i>		R, Predatory animal
905.0	Gray Fox *	<i>Urocyon cinereoargenteus</i>		R
<b>Family: Ursidae</b>				
940.0	Black Bear *	<i>Ursus americanus</i>		R
941.0	Grizzly Bear *	<i>Ursus arctos</i>		R, Threatened, NSS3
<b>Family: Procyonidae</b>				
906.0	Ringtail	<i>Bassariscus astutus</i>		R
907.0	Raccoon *	<i>Procyon lotor</i>		R, Predatory animal
<b>Family: Mustelidae</b>				
908.0	Marten *	<i>Martes americana</i>		R, NSS4
909.0	Fisher	<i>Martes pennanti</i>		R
910.0	Short-tailed Weasel (Ermine) *	<i>Mustela erminea</i>		R
911.0	Long-tailed Weasel *	<i>Mustela frenata</i>		R
913.0	Black-footed Ferret	<i>Mustela nigripes</i>		R, Endangered, NSS1
919.0	Least Weasel	<i>Mustela nivalis</i>		R, NSS3
912.0	Mink *	<i>Mustela vison</i>		R
914.0	Wolverine	<i>Gulo gulo</i>		R, NSS3
915.0	Badger *	<i>Taxidea taxus</i>		R
916.1	Western Spotted Skunk *	<i>Spilogale gracilis</i>		R, Predatory animal
916.0	Eastern Spotted Skunk *	<i>Spilogale putorius</i>		R, Predatory animal
917.0	Striped Skunk *	<i>Mephitis mephitis</i>		R, Predatory animal
918.0	River Otter	<i>Lutra canadensis</i>		R, NSS4
<b>Family: Felidae</b>				
922.0	Mountain Lion *	<i>Puma concolor</i>		R
920.0	Canada Lynx	<i>Lynx canadensis</i>		R, Threatened, NSS1
921.0	Bobcat *	<i>Lynx rufus</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
<b>Ungulates</b>				
<b>Order: Artiodactyla</b>				
<b>Family: Cervidae</b>				
930.0	Elk *	<i>Cervus elaphus</i>		R
932.0	Mule Deer *	<i>Odocoileus hemionus</i>		R
933.0	White-tailed Deer *	<i>Odocoileus virginianus</i>		R
931.0	Moose *	<i>Alces alces</i>		R, NSS3
<b>Family: Antilocapridae</b>				
935.0	Pronghorn *	<i>Antilocapra americana</i>		R
<b>Family: Bovidae</b>				
925.0	Bison *	<i>Bos bison</i>		R
926.0	Mountain Goat *	<i>Oreamnos americanus</i>		R
927.0	Bighorn Sheep *	<i>Ovis canadensis</i>		R, NSS3

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
<b>AMPHIBIANS<sup>†</sup></b>				
<b>Salamanders</b>				
<b>Order: Caudata</b>				
<b>Family: Ambystomatidae</b>				
950.0	Tiger Salamander	<i>Ambystoma tigrinum</i>		R
<b>Toads and Frogs</b>				
<b>Order: Anura</b>				
<b>Family: Pelobatidae</b>				
951.0	Plains Spadefoot Toad	<i>Spea bombifrons</i>		R
951.1	Great Basin Spadefoot Toad	<i>Spea intermontana</i>		R
<b>Family: Bufonidae</b>				
951.2	Boreal Toad	<i>Bufo boreas boreas</i>		R
951.3	Great Plains Toad	<i>Bufo cognatus</i>		R
951.5	Wyoming Toad	<i>Bufo baxteri</i>		R
951.4	Woodhouse's Toad	<i>Bufo woodhousii</i>		R
<b>Family: Ranidae</b>				
952.1	American Bullfrog	<i>Rana catesbeiana</i>		R
952.2	Northern Leopard Frog	<i>Rana pipiens</i>		R
952.3	Columbia Spotted Frog	<i>Rana luteiventris</i>		R
952.4	Wood Frog	<i>Rana sylvatica</i>		R
<b>Family: Hylidae</b>				
952.0	Boreal Chorus Frog	<i>Pseudacris maculata</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information <sup>a, b</sup>
<b>REPTILES<sup>†</sup></b>				
<b>Turtles</b>				
<b>Order: Testudines</b>				
<b>Family: Trionychidae</b>				
953.0	Western Spiny Softshell	<i>Apalone spinifera hartwegi</i>		R
<b>Family: Testudinidae</b>				
953.2	Ornate Box Turtle	<i>Terrapene ornata ornata</i>		R
953.3	Western Painted Turtle	<i>Chrysemys picta bellii</i>		R
<b>Family: Chelydridae</b>				
953.1	Snapping Turtle	<i>Chelydra serpentina</i>		R
<b>Lizards</b>				
<b>Order: Squamata</b>				
<b>Family: Teiidae</b>				
954.0	Prairie Racerunner	<i>Cnemidophorus sexlineatus viridis</i>		R
<b>Family: Scincidae</b>				
954.1	Many-lined Skink	<i>Eumeces multivirgatus</i>		R
<b>Family: Iguanidae</b>				
954.3	Northern Sagebrush Lizard	<i>Sceloporus graciosus graciosus</i>		R
954.4	Northern Plateau Lizard	<i>Sceloporus undulatus elongatus</i>		R
954.5	Red-lipped Plateau Lizard	<i>Sceloporus undulatus erythrocheilus</i>		R
954.6	Northern Prairie Lizard	<i>Sceloporus undulatus garmani</i>		R
954.8	Cliff Tree Lizard	<i>Urosaurus ornatus wrighti</i>		R
954.2	Greater Short-horned Lizard	<i>Phrynosoma hernandesi</i>		R
954.7	Great Plains Earless Lizard	<i>Holbrookia maculata maculata</i>		R
<b>Snakes</b>				
<b>Order: Squamata</b>				
<b>Family: Boidae</b>				
955.2	Rubber Boa	<i>Charina bottae</i>		R
<b>Family: Colubridae</b>				
955.3	Plains Hog-nosed Snake	<i>Heterodon nasicus nasicus</i>		R
956.2	Eastern Yellow-bellied Racer	<i>Coluber constrictor flaviventris</i>		R
956.3	Smooth Green Snake	<i>Opheodrys vernalis</i>		R
955.4	Black Hills Red-bellied Snake	<i>Storeria occipitomaculata pahasapae</i>		R
956.1	Pale Milksnake	<i>Lampropeltis triangulum multistriata</i>		R
955.6	Great Basin Gophersnake	<i>Pituophis catenifer deserticola</i>		R
955.5	Bullsnake	<i>Pituophis catenifer sayi</i>		R
955.8	Intermountain Wandering Gartersnake	<i>Thamnophis elegans vagrans</i>		R
955.9	Red-sided Gartersnake	<i>Thamnophis sirtalis parietalis</i>		R
956.0	Valley Gartersnake	<i>Thamnophis sirtalis fitchi</i>		R
955.7	Plains Gartersnake	<i>Thamnophis radix</i>		R
<b>Family: Crotalidae</b>				
955.0	Prairie Rattlesnake	<i>Crotalus viridis viridis</i>		R
955.1	Midget Faded Rattlesnake	<i>Crotalus viridis concolor</i>		R

- <sup>a</sup> Species seasonal status: R = year-round resident, S = summer resident, W = winter resident, M = migrant, A = accidental occurrence in Wyoming, U = residency status in Wyoming is unknown.
- <sup>b</sup> Wyoming Game and Fish Department Species of Greatest Conservation Need with a Native Species Status of 1, 2, 3, or 4.
- <sup>c</sup> Common and scientific names and species order are from the American Ornithologists' Union (1983, 2006). An "(AS)" indicates species for which full written documentation of all sightings is requested by the Wyoming Bird Records Committee; an "(FL)" indicates species for which documentation is only requested for the first sighting in each latilong and all nesting observations. In addition, full documentation is required for any species not listed here and for observations of breeding attempts.
- <sup>d</sup> An asterisk following a species common name indicates those species classified as game, predacious bird, predatory animal, or furbearer by state statute or Wyoming Game and Fish Commission Regulation.
- <sup>e</sup> Common and scientific names (except *C. townsendii*) and species order are from Jones et al. (1997).
- <sup>f</sup> Common and scientific names and species order are from Baxter and Stone (1992) and Crother (2000).

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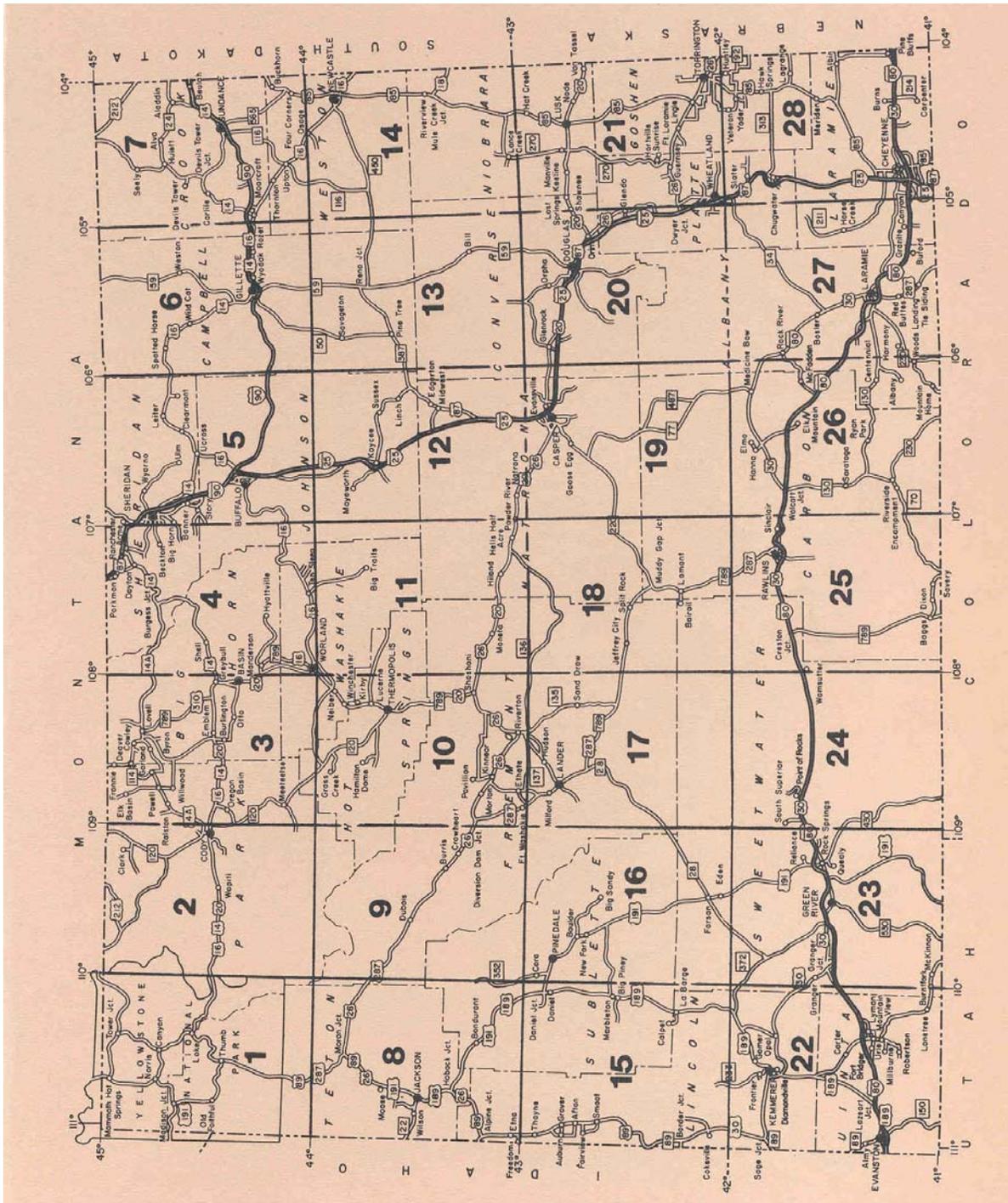
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*Updated 5 January 2007*

## APPENDIX II

### LATILONGS (DEGREE BLOCKS) IN WYOMING

From: Dorn, J. L., and R. D. Dorn. 1990. Wyoming birds. Mountain West Publishing, Cheyenne, Wyoming. 138pp.



### APPENDIX III

### SPECIES OF GREATEST CONSERVATION NEED

### NATIVE SPECIES STATUS MATRIX

#### HABITAT VARIABLES

		A On-going significant loss of habitat	B Habitat is restricted or vulnerable but no recent or on-going significant loss; species may be sensitive to human disturbance	C Habitat is not restricted, vulnerable but no loss; species is not sensitive to human disturbance	D Habitat is stable and not restricted
<b>P O P U L A T I O N  V A R I A B L E S</b>	1 Populations are greatly restricted or declining - extirpation appears possible	NSS1  <b>1A</b>	NSS2  <b>1B</b>	NSS3  <b>1C</b>	NSS4  <b>1D</b>
	2 Populations are declining or restricted in numbers and/or distribution - extirpation is not imminent	NSS2  <b>2A</b>	NSS3  <b>2B</b>	NSS4  <b>2C</b>	NSS5  <b>2D</b>
	3 Species is widely distributed; population status and trends are unknown but are suspected to be stable	NSS3  <b>3A</b>	NSS4  <b>3B</b>	NSS5  <b>3C</b>	NSS6  <b>3D</b>
	4 Populations are stable or increasing and not restricted in numbers and/or distribution	NSS4  <b>4A</b>	NSS5  <b>4B</b>	NSS6  <b>4C</b>	NSS7  <b>4D</b>

## AVIAN SPECIES OF GREATEST CONSERVATION NEED IN WYOMING

### NSS1 (Native Species Status 1)

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**Common Loon (1A)** – Populations are greatly restricted in numbers and distribution; extirpation appears possible / On-going significant loss of habitat; species is sensitive to human disturbance

### NSS2 (Native Species Status 2)

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**Bald Eagle (2A)** – Populations are restricted in numbers and distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Greater Sage-Grouse (2A)** – Populations are declining / On-going significant loss of habitat

**Trumpeter Swan (2A)** – Populations are restricted in numbers and distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Yellow-billed Cuckoo (2A)** – Populations are restricted in numbers and distribution / On-going significant loss of habitat

### NSS3 (Native Species Status 3)

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**American Bittern (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance

**American White Pelican (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Ash-throated Flycatcher (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss

**Barrow's Goldeneye (2B)** – Populations are restricted in distribution / Habitat is restricted and vulnerable but no on-going significant loss

**Black-crowned Night-Heron (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Black Tern (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Bushtit (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss

**Canvasback (2B)** – Populations are restricted in distribution / Habitat is restricted and vulnerable but no on-going significant loss

- Caspian Tern (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Columbian Sharp-tailed Grouse (2B)** – Populations are restricted in numbers and distribution / Habitat is vulnerable but no on-going significant loss
- Forster's Tern (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Franklin's Gull (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Greater Sandhill Crane (2B)** – Rocky Mountain population is restricted in number and distribution / Habitat is restricted and vulnerable but no recent or on-going significant loss; species is sensitive to human disturbance
- Harlequin Duck (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Juniper Titmouse (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss
- Lesser Scaup (2B)** – Populations are declining / Habitat is restricted and vulnerable but no on-going significant loss
- Lewis's Woodpecker (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss
- Long-billed Curlew (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Merlin (2B)** – Populations are restricted in numbers / Habitat is restricted but no on-going significant loss; species is sensitive to human disturbance
- Northern Pintail (2B)** – Populations are declining / Habitat is restricted and vulnerable but no on-going significant loss
- Peregrine Falcon (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss; species is sensitive to human disturbance
- Redhead (2B)** – Populations are restricted in numbers / Habitat is restricted and vulnerable but no on-going significant loss
- Scott's Oriole (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss
- Snowy Egret (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Virginia Rail (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss

### NSS3 (Continued)

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**White-faced Ibis (2B)** – Populations are restricted in numbers and distribution / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Willow Flycatcher (2B)** – Populations are declining / Habitat is restricted and vulnerable but no on-going significant loss

**Ferruginous Hawk (3A)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / On-going significant loss of habitat; species is sensitive to human disturbance

### NSS4 (Native Species Status 4)

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**Bobolink (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Brewer's Sparrow (2C)** – Populations are declining / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Chestnut-collared Longspur (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Dickcissel (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Grasshopper Sparrow (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Lark Bunting (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**McCown's Longspur (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Sage Sparrow (2C)** – Populations are declining / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Sage Thrasher (2C)** – Populations are declining / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Short-eared Owl (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**American Three-toed Woodpecker (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss

**Black-backed Woodpecker (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss

**Boreal Owl (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss

**Burrowing Owl (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance

## NSS4 (Continued)

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- Clark's Grebe (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Great Blue Heron (3B)** – Species is widely distributed / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Great Gray Owl (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss
- Mountain Plover (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Northern Goshawk (3B)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Northern Pygmy-Owl (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss
- Pygmy Nuthatch (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss
- Swainson's Hawk (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss
- Upland Sandpiper (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance
- Western Grebe (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is restricted and vulnerable but no on-going significant loss; species is sensitive to human disturbance
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# MAMMALIAN SPECIES OF GREATEST CONSERVATION NEED IN WYOMING

## NSS1 (Native Species Status 1)

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**Black-footed Ferret (1A)** – Populations are greatly restricted in numbers and distribution; extirpation appears possible / On-going significant loss of habitat

**Canada Lynx (1A)** – Populations are greatly restricted in numbers and distribution; extirpation appears possible / On-going significant loss of habitat

## NSS2 (Native Species Status 2)

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**Pygmy Shrew (1B)** – Populations are greatly restricted; extirpation appears possible / Habitat is restricted but no on-going significant loss

**Fringed Myotis (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Long-eared Myotis (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Long-legged Myotis (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Northern Myotis (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Pallid Bat (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Spotted Bat (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

**Townsend's Big-eared Bat (2A)** – Populations are restricted in distribution / On-going significant loss of habitat; species is sensitive to human disturbance

## NSS3 (Native Species Status 3)

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**Preble's Shrew (1C)** – Populations are greatly restricted / Habitat is vulnerable but no loss; species is not sensitive to human disturbance

**Abert's Squirrel (2B)** – Populations are restricted in distribution / Habitat is restricted but no recent or on-going significant loss

**Bighorn Sheep (2B)** – Populations are declining and restricted in distribution / Habitat is restricted, but no recent or on-going significant loss

**Black-tailed Prairie Dog (2B)** – Populations are declining / Habitat is vulnerable but no on-going significant loss

**Canyon Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss

**Cliff Chipmunk (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss

- Dwarf Shrew (2B)** – Populations are restricted in numbers / Habitat is vulnerable but no on-going significant loss
- Great Basin Pocket Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Grizzly Bear (2B)** – Populations are restricted in distribution / Habitat is restricted but no on-going significant loss
- Hispid Pocket Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Idaho Pocket Gopher (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Least Weasel (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Moose (2B)** – Populations are declining / Habitat is vulnerable but no on-going significant loss
- Olive-backed Pocket Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Pinyon Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Plains Harvest Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Plains Pocket Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Prairie Vole (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Pygmy Rabbit (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Silky Pocket Mouse (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Spotted Ground Squirrel (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Western Heather Vole (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Water Vole (2B)** – Populations are restricted in distribution / Habitat is vulnerable but no on-going significant loss
- Vagrant Shrew (2B)** – Populations are restricted in numbers / Habitat is vulnerable but no on-going significant loss
- Wolverine (2B)** – Populations are restricted in numbers / Habitat is vulnerable but no on-going significant loss, species is sensitive to human disturbance
- Big Brown Bat (3A)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / On-going significant loss of habitat
- Little Brown Myotis (3A)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / On-going significant loss of habitat
- Western Small-footed Myotis (3A)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / On-going significant loss of habitat

#### **NSS4 (Native Species Status 4)**

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**Hayden's Shrew (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss

**Northern Flying Squirrel (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss

**Plains Pocket Gopher (2C)** – Populations are restricted in distribution / Habitat is vulnerable but no loss

**Eastern Red Bat (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Hoary Bat (3B)** – Species is widely distributed; population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species is sensitive to human disturbance

**Marten (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no recent or on-going significant loss

**River Otter (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss

**Sagebrush Vole (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss

**Silver-haired Bat (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss; species may be sensitive to human disturbance

**Swift Fox (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss

**Water Shrew (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss

**White-tailed Prairie Dog (3B)** – Population status and trends are unknown but are suspected to be stable / Habitat is vulnerable but no on-going significant loss

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