

**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 2004 to 14 April 2005**

Edited by: Andrea Orabona Cerovski

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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 2004 to 14 April 2005 on various nongame bird and mammal surveys and projects conducted by Department personnel, other government agencies, 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 presents objectives and strategies for the management and study of nongame birds and mammals in Wyoming. This completion report presents information in four major sections similar to the Nongame Bird and Mammal Plan: threatened and endangered species, species of special concern, 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 Merlin 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
Bald Eagle

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Susan Patla, Nongame Biologist
Bob Oakleaf, Nongame Coordinator
Andrea Cerovski, Nongame Bird Biologist
Terry McEaney, Staff Ornithologist Yellowstone National Park

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 2004 attained adequate production data for 105 nesting territories, with 95 pairs producing 89 young. However, we have now recorded over 140 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. 2005. Yellowstone Bird Report, 2004. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming. YCR-NR-2005-01.

Table 1. Production of Bald Eagles in Wyoming, 2004.

Population Index	Wyoming Portion of GYE ^a	North Platte ^b (S of I-80)	Other Areas ^c	Statewide Total
Territories Checked	72	17	33	105
Number Occupied	70	11	25	95
Percent Occupied	97	65	76	90
Number of Young Fledged	53	--	36	89
Young Fledged/Occupied Territory	0.8	--	1.4	0.9

^a Includes 32 pairs that fledged 24 young in Yellowstone National Park (McEneaney 2005).

^b Although occupancy surveys were conducted on the North Platte, production surveys were not completed. Occupancy results are not included in statewide totals.

^c Includes Green River, Wind River, Popo Agie River, Big Horn Basin, Casper, Sheridan, Cody, and Lusk areas.

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 2004 – 14 April 2005

PREPARED BY: Martin Grenier, Nongame Mammal Biologist
Laurie Van Fleet, Nongame Biologist
Bob Oakleaf, Nongame Coordinator
Rob Stephens, Grassland Ecologist
Todd Filipi, Nongame Seasonal Biologist
Daniel Webber, Nongame Seasonal 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 2003-2004. 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 and 2004 surveys.

METHODS

Spotlight survey blocks were established prior to the start of surveying based on available time and personnel, and the interspersions of two-track and other roads within Shirley Basin. Spotighting routes [1.9 to 3.1 mi (3 to 5 km) in length] were established and highlighted on photocopies of 7.5-minute quadrangle maps.

Spotighting surveys were run for three consecutive nights (Clarke et al. 1984, Campbell et al. 1985, USFWS 1989). Vehicle 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 towns, along county roads, and State Highways 77 and 487 where they traversed prairie dog towns (Figure 1). Sections of prairie dog towns 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 10 days during August and September of 2004. Rain on three survey nights resulted in the loss of two complete survey nights. On 17 and 18 August, only half the night was surveyed. On 25 August, surveys were halted shortly after initiation and were not resumed. During the eight nights of surveys, personnel spent a total 644.75 hours spotlighting. Survey efforts are summarized in Table 1. Approximately 364.5 hours were spent spotlighting from vehicles and an additional 280.25 hours were on foot. Survey hours were 2030 to 0100 and 0200 to 0630 (MST) each night. In 2004, 12 prairie dog towns were surveyed in their entirety, encompassing approximately 17,352 ac (7,022 ha). An additional seven prairie dog colonies were only partially surveyed; for example, these colonies were either surveyed for less than or equal to three nights or less than or equal to the entire colony (Figure 1). We estimate that only approximately 15% of the potential prairie dog acreage in Shirley Basin was surveyed during the 2004 spotlight surveys. A minimum of 88 discreet black-footed ferrets and 21 litters were observed (Table 2). Of the 88 ferrets observed, a minimum of 30 were adults and 58 were kits. A minimum of 86 non-discreet black-footed ferret were observed (Table 2). Approximate ferret litter and adult male locations are presented in Figure 2.

Concurrent with spotlight surveys, 34 ferrets were captured and marked with AVID Passive Integrated Transponders (PIT) tags (Table 3). Blood samples and morphometric measurements were only taken from 14 of 34 ferrets. These 14 samples were utilized to assist with the biomedical survey objectives. Morphometric measurements were taken by R. Santymire of the Smithsonian National Zoo. The ferrets that were sampled by the biomedical survey team have been assigned both a Shirley Basin and Smithsonian identification number. All ferrets captured were in good physical condition with no apparent genetic abnormalities detected and few ectoparasites.

Five males were captured during the April 2004 surveys (Table 4). Sperm samples were collected via electro-ejaculation conducted by the biomedical survey team. Sample collected from SB0317 was contaminated with urine and could not be analyzed. Ferret SB0307 was initially captured in August 2003 and weighed 34 ounces (967 g); by April 2004 its weight had increased to 41 ounces (1150 g).

Sightings of species other than black-footed ferrets during summer surveys totaled 228. Observation times are presented in Table 5. Swift fox (*Vulpes velox*), badger (*Taxidea taxus*), and coyote (*Canis latrans*) were the most commonly observed species (Figure 3). The swift fox required only 6.9 survey hours per observation, while the Ferruginous Hawk required 161 survey hours per observation (Figure 4). No attempt was made to eliminate repeat sightings of non-target species. One ferret was observed approximately every 3.7 hours and a discreet black-footed ferret was observed only once per 7.3 survey hours (Figure 4).

DISCUSSION

Spotlighting has been an effective technique for locating black-footed ferrets during previous studies (Campbell et al. 1985, Hnilicka and Luce 1992). However, this technique was not developed to monitor population trends. As such, the current minimum number known alive reported by Krebs (1966, MNKA) lack a variance estimate necessary to monitor changes in population size. Despite this drawback, the reported minimum number known alive in recent years appears to indicate an increasing black-footed ferret population in Shirley Basin.

Concern has been expressed in past completion reports about ferrets exhibiting avoidance behavior with respect to spotlights and possibly human or vehicle presence (Hnilicka and Luce 1992). This is especially apparent with adult male ferrets and likely results in an underestimation of black-footed ferrets in the Management Area using MNKA estimates. Only four adult males were captured in August 2004. It is assumed that an unknown proportion of the black-footed ferret population remains uncounted during the surveys, but no estimator has been developed. Data reported on discreet black-footed ferret observations are considered MNKA.

Surveys results since 2000 indicate that the black-footed ferret population in the Shirley Basin/Medicine Bow Management Area appears to be rebounding from the stochastic events (e.g. sylvatic plague, canine distemper, flooding) encountered in 1991-1995. It is unclear at this time how widespread the population is; however, given the relatively small survey effort, we suspect that ferrets maybe more abundant and widespread than these results indicate. This was the first year that black-footed ferrets had been observed west of the highway 487/77 junction since 1996.

Cooperation between the Wyoming Game and Fish Department (Department) and the biomedical survey team effort in 2003 and 2004 has enabled the Department to collect additional information about this ferret population. Blood samples have now been collected from 32 ferrets. Other genetic material (e.g. bucal swabs and hair samples) have been collected from all captured ferrets and await analysis. Results of genetic analysis, using six micro satellite loci, indicate that the ferrets in Shirley Basin have less genetic variability than other ferret populations. Reasons for the reduced variability are confounded by many factors, for example natural and artificial selection. As such, several hypotheses exist for the reduced variability and much debate exists concerning the significance of these findings and how best to proceed with future management of the species.

Surveys in April 2004 were a cooperative initiative between the Department, the biomedical survey team, and private landowners to gather additional data on this population. Results from the sperm samples collected from the four ferrets exceeded expectations of the biomedical survey team. It is imperative that these results be viewed cautiously, as results may be confounded by timing and small sample sizes. As such, the results indicate that the Shirley Basin ferret population has a high percentage of normal sperm.

The combined results indicate that Shirley Basin ferrets are in very good physical and reproductive condition. Moreover, recent preliminary ferret demographic analysis indicates that due to short generation times, reduced genetic variability may not be as significant as with other longer lives species (D. Mc Donald, University of Wyoming, personal communication). As such, future management of this population must be well planned and warrant a conservative approach. In cooperation with the University of Wyoming and private landowners, the Department will be increasing survey effort in 2005 and 2006 to gather additional demographic data needed to guide future management of the species.

The increase in detections of black-footed ferrets in the last two survey years is believed to be a direct result of a change in timing of the surveys and increased survey effort. Summer spotlight surveys prior to 2003 were usually initiated in late July or during the first week of August and completed by the second week of August. Detections often peaked during the last week of the survey effort (e.g. second week of August). In 2003, other priorities precluded initiation of spotlight surveys during the normal survey period; therefore, surveys were not initiated until the second week of August. We suspect that, as a result of the serendipitous change in timing of the surveys, the juvenile ferrets were more detectable then in early August. Moreover, survey intensity (e.g. person-hours per hectare) has increased during the last two years and is nearly double the intensity of previous years.

Although some litters appeared to have already dispersed, capturing and marking individuals in 2003 and 2004 enabled better identification of litter production. Likewise, PIT-tagging of captured ferrets improved counts of individual ferrets. We suspect that litter production may have been underestimated prior to 2003 because inexperienced surveyors may have easily confused these single ferrets as non-reproductive adults in previous years.

ACKNOWLEDGEMENTS

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2004 Ferret Survey

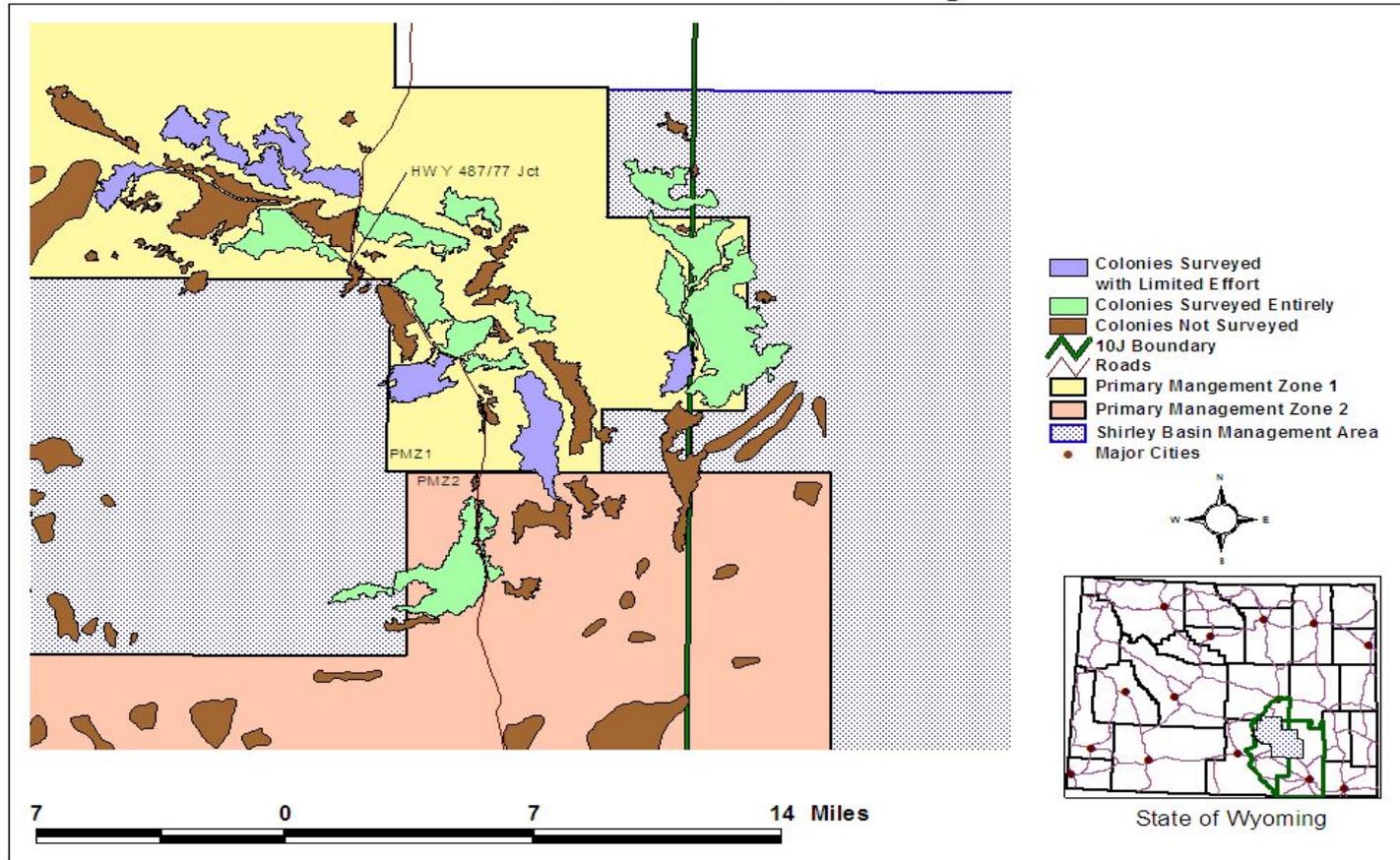


Figure 1. White-tailed prairie dog colonies surveyed in Shirley Basin, Wyoming, 2004.

2004 Ferret Survey

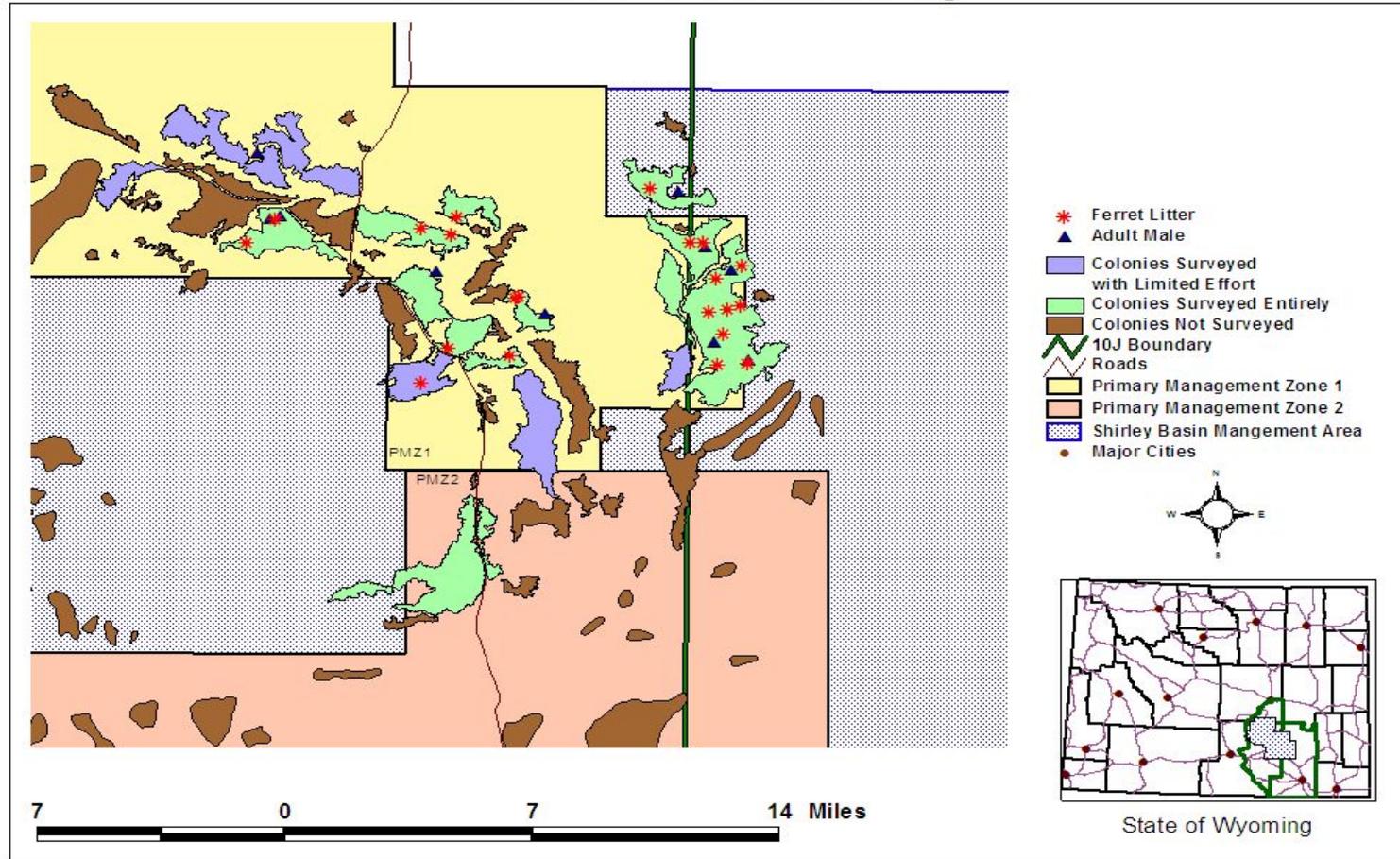


Figure 2. Locations of black-footed ferret litters and adult males in Shirley Basin, Wyoming, 2004.

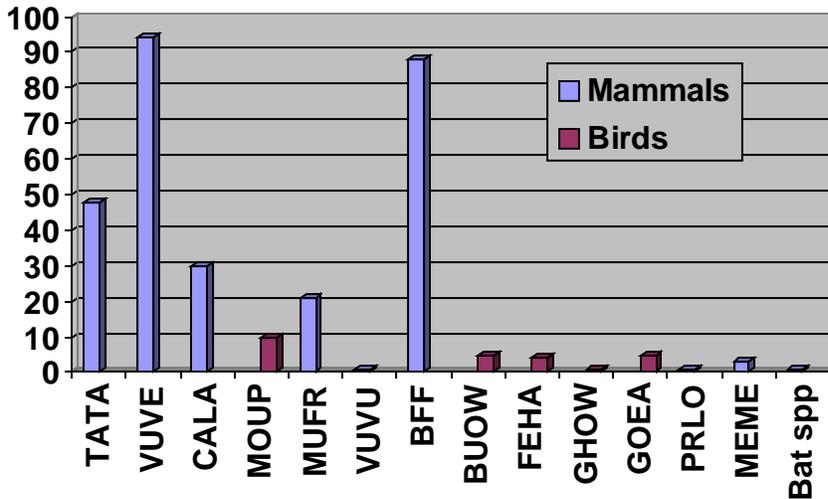


Figure 3. Number of sightings of all species observed during spotlight surveys in Shirley Basin, Wyoming, August 2004.

(Legend: TATA = Badger, VUVE = Swift Fox, CALA = Coyote, MOUP = Mountain Plover, MUFR = Long-tailed Weasel, VUVU = Red Fox, BFF = Black-footed Ferret, BUOW = Burrowing Owl, FEHA = Ferruginous Hawk, GHOW = Great Horned Owl, GOEA = Golden Eagle, PRLO = Raccoon, MEME = Striped Skunk, Bat spp = unknown bat species.)

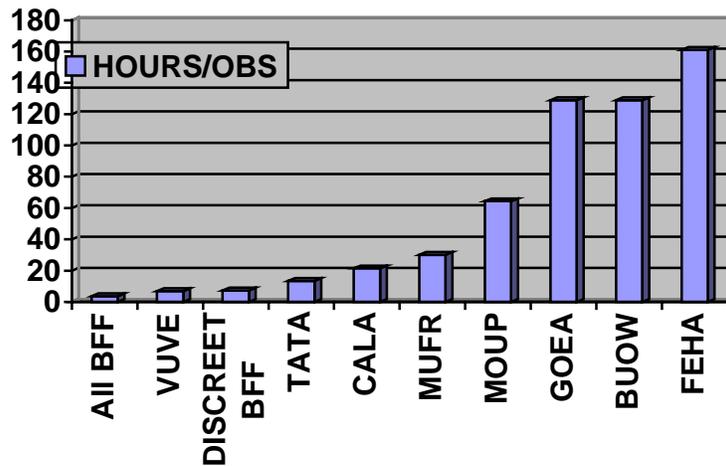


Figure 4. Number of hours surveyed per observation for each of the 10 most commonly observed species during 644 hours of spotlight surveys in Shirley Basin, Wyoming, August 2004.

(Legend: BFF = Black-footed Ferret, VUVE = Swift Fox, TATA = Badger, CALA = Coyote, MUFR = Long-tailed Weasel, MOUP = Mountain Plover, GOEA = Golden Eagle, BUOW = Burrowing Owl, FEHA = Ferruginous Hawk.)

Table 1. Summary of spotlight survey effort conducted in Shirley Basin, Wyoming during August and September 2004.

	Aug 17-19	Aug 23-25	Aug 30-Sept 2	Totals
Hours Surveyed	156.25	226.75	261.75	644
Vehicle Hours	98.25	147.5	118.75	364.5
Backpack Hours	58	79.25	143	261.75
Towns Surveyed	5 + 1	5 + 1	2 + 5	12 + 7 (Partial)

Table 2. Black-footed ferret observations during spotlight surveys conducted in Shirley Basin, Wyoming, August and September 2004.

Discrete Sightings

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
1	8/17	0410	M. Grenier	U	Juv	2 of 4a	
2	8/19	2045	M. Grenier	F	Adult	1 of 4a	Lactating
3	8/19	2105	M. Grenier	F	Juv	3 of 4a	
4	8/19	0233	M. Grenier	U	Juv	4 of 4a	
5	8/17	0300	D. Webber	F	Adult	1 of 5b	Lactating
6	8/17	0300	D. Webber	F	Juv	2 of 5b	
7	8/17	0312	D. Webber	M	Juv	3 of 5b	
8	8/17	0334	D. Webber	F	Juv	4 of 5b	
9	8/18	0100	R. Bredehoft	U	U	1 of 1	
10	8/19	2115	L. Van Fleet	F	Adult	1 of 3c	Lactating
11	8/19	2115	L. Van Fleet	U	Juv	2 of 3c	Partial Count
12	8/17	0245	R. Stephens	F	Juv	1 of 4d	
13	8/17	0340	R. Stephens	F	Adult	2 of 4d	
14	8/18	2051	C. Schmidt	F	Juv	3 of 4d	
15	8/18	2115	C. Schmidt	F	Juv	4 of 4d	
16	8/19	0405	C. Schmidt	F	Adult	1 of 3e	Lactating
17	8/19	0415	S. Nicholoff	U	Juv	2 of 3e	
18	8/19	0405	C. Schmidt	U	Juv	3 of 3e	
19	8/16	0200	B. Oakleaf	M	Adult	1 of 1	
20	8/18	2030	B. Oakleaf	F	Adult	1 of 4f	Assumed to be Lactating Female
21	8/18	2030	B. Oakleaf	U	Juv	2 of 4f	
22	8/18	2030	B. Oakleaf	U	Juv	3 of 4f	
23	8/18	2030	B. Oakleaf	U	Juv	4 of 4f	3rd Litter Mate Confirmed on 8/25
24	8/18	2040	B. Oakleaf	F	Adult	1 of 4g	Assumed to be Lactating Female
25	8/18	2040	B. Oakleaf	U	Juv	2 of 4g	
26	8/18	2040	B. Oakleaf	U	Juv	3 of 4g	
27	8/18	2040	B. Oakleaf	U	Juv	4 of 4g	3rd litter mate confirmed on 8/25
28	8/23	2102	L. Oles	F	Adult	1 of 3h	Lactating
29	8/23	2102	L. Oles	U	Juv	2 of 3h	
30	8/23	0542	L. Oles	U	Juv	3 of 3h	
31	8/23	0515	T. Tietmeyer	U	Juv	2 of 2i	Partial Count
32	8/23	2300	L. Van Fleet	F	Adult	1 of 4j	Lactating
33	8/24	2105	L. Van Fleet	F	Adult	1 of 2i	Lactating
34	8/24	0315	L. Van Fleet	U	Juv	2 of 4j	
35	8/30	-	L. Van Fleet	U	Juv	4 of 4j	Located While Pulling Reflectors

Table 2. Continued.

Discrete Sightings

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
36	8/23	0329	S. Patla	U	Juv	3 of 4j	
37	8/23	0440	S. Patla	M	Adult	1 of 1	
38	8/23	0333	M. Grenier	F	Adult	1 of 3k	
39	8/24	0520	M. Grenier	U	Juv	2 of 3k	
40	8/24	0520	M. Grenier	U	Juv	3 of 3k	
41	8/23	2105	D. Webber	U	U	1 of 1	
42	8/23	2344	D. Meyers	U	Juv	1 of 5l	
43	8/23	2450	D. Meyers	F	Adult	2 of 5l	
44	8/23	0425	D. Meyers	M	Juv	3 of 5l	
45	8/23	0426	D. Meyers	F	Juv	4 of 5l	
46	8/23	0456	D. Meyers	M	Adult	1 of 1	
47	8/23	0502	D. Meyers	M	Juv	5 of 1	
48	8/24	0510	D. Meyers	U	U	1 of 3m	Partial Count
49	8/25	0908	D. Meyers	U	Juv	2 of 3m	
50	8/25	0917	D. Meyers	U	Juv	3 of 3m	Released w/o Marking
51	8/23	2039	P. Ragland	U	U	1 of 3n	Partial Count
52	8/23	2039	P. Ragland	U	Juv	2 of 3n	
53	8/23	2039	P. Ragland	U	Juv	3 of 3n	
54	8/23	2131	P. Ragland	U	Adult	1 of 1	
55	8/24	0035	R. Stephens	U	Adult	1 of 4o	Assumed to be Lactating Female
56	8/24	0300	R. Stephens	M	Juv	2 of 4o	
57	8/24	0300	R. Stephens	U	Juv	3 of 4o	
58	8/24	0300	R. Stephens	U	Juv	4 of 4o	
59	8/25	2115	T. Filipi	F	Adult	1 of 2p	Lactating
60	9/2	2100	M. Grenier	F	Juv	2 of 2p	Partial Count
61	8/23	0242	T. Filipi	M	Adult	1 of 1	
62	8/23	2045	J. Oliver	F	Adult	1 of 3q	Lactating (SB0309)
63	8/23	2140	J. Oliver	U	Juv	2 of 3q	Partial Count
64	8/24	2045	J. Oliver	F	Adult	1 of 5r	Lactating
65	8/24	2045	J. Oliver	U	Juv	2 of 5r	
66	8/25	2020	D. Webber	U	Juv	3 of 5r	
67	8/25	2020	D. Webber	M	Juv	4 of 5r	
68	8/25	2055	D. Webber	U	Juv	5 of 5r	
69	8/23	0310	B. Fish	U	Juv	3 of 3q	Partial Count
70	8/30	0020	R. Stephens	F	Juv	1 of 4s	

Table 2. Continued.

Discrete Sightings

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
71	8/30	0020	R. Stephens	U	Juv	2 of 4s	
72	8/30	0020	R. Stephens	F	Juv	3 of 4s	
73	8/30	0020	R. Stephens	F	Adult	4 of 4s	Assumed to be Lactating Female
74	8/30	0300	R. Stephens	M	Adult	1 of 1	
75	8/31	0015	R. Stephens	M	Adult	1 of 1	
76	8/30	0244	T. Filipi	M	Juv	1 of 5t	
77	8/30	0244	T. Filipi	U	Juv	2 of 5t	
78	8/30	0303	T. Filipi	U	Juv	3 of 5t	
79	8/30	0303	T. Filipi	F	Adult	4 of 5t	Assumed to be Lactating Female
80	8/31	0430	C. Schmidt	U	Juv	5 of 5t	
81	8/30	0030	B. Oakleaf	M	Adult	1 of 1	
82	9/1	0330	R. Stephens	U	U	1 of 1	
83	9/1	0410	R. Stephens	F	Adult	1 of 4u	Assumed to be Lactating Female
84	9/1	0430	R. Stephens	U	Juv	2 of 4u	
85	9/2	0325	D. Webber	U	Juv	3 of 4u	
86	9/2	0325	D. Webber	U	Juv	4 of 4u	
87	9/2	0430	C. Schmidt	F	Juv	3 of 3c	
88	9/2	2033	T. Filipi	M	Juv	5 of 5b	

Table 2. Continued.

Non-Discrete Sightings

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
1	8/17	0522	M.Grenier	U	Juv	2 of 4a	
2	8/19	2035	M.Grenier	U	Juv	2 of 4a	
3	8/19	0217	M.Grenier	F	Adult	1 of 4a	
4	8/19	0324	M.Grenier	F	Adult	1 of 4a	
5	8/18	2115	D. Webber	F	Juv	2 of 5b	
6	8/18	2115	D. Webber	M	Juv	3 of 5b	
7	8/18	2115	D. Webber	U	U	4 of 5b	
8	8/19	0230	D. Webber	F	Adult	1 of 5b	Lactating
9	8/19	0425	D. Webber	F	Juv	2 of 5b	
10	8/19	0425	D. Webber	M	Juv	3 of 5b	
11	8/19	0425	D. Webber	U	Juv	4 of 4b	
12	8/18	2030	S. Nicholoff	F	Juv	1 of 4d	
13	8/19	2020	S. Nicholoff	U	Juv	3 of 4d	
14	8/19	0445	S. Nicholoff	U	Juv	3 of 4d	
15	8/23	0333	L. Oles	F	Adult	1 of 3h	
16	8/23	0333	L. Oles	U	Juv	2 of 3h	
17	8/24	2038	L. Oles	F	Adult	1 of 3h	
18	8/24	0334	L. Oles	F	Adult	3 of 3h	
19	8/25	2042	L. Oles	U	Juv	2 of 3h	
20	8/24	2045	L. Van Fleet	F	Adult	1 of 4j	
21	8/23	0329	S. Patla	U	Juv	2 of 4j	
22	8/23	0410	S. Patla	F	Adult	1 of 4j	
23	8/24	2045	S. Patla	U	Juv	1 of 2i	
24	8/24	2045	S. Patla	U	Juv	2 of 2i	
25	8/24	2345	S. Patla	U	Juv	2 of 4j	
26	8/25	1915	T. Tietmeyer	F	A	1 of 2i	
27	8/24	2345	L. Van Fleet	U	Juv	2 of 2i	
28	8/25	2045	L. Van Fleet	M	Adult	1 of 1	
29	8/24	0020	M. Grenier	F	Adult	1 of 3k	
30	8/24	0520	M. Grenier	F	Adult	1 of 3k	
31	8/24	2040	D. Meyers	M	Juv	3 of 5l	
32	8/24	2040	D. Meyers	M	Adult	1 of 1	
33	8/24	2115	D. Meyers	F	Adult	2 of 5l	
34	8/24	2115	D. Meyers	U	Juv	1 of 5l	
35	8/24	2115	D. Meyers	F	Juv	4 of 5l	

Table 2. Continued.

Non-Discrete Sightings

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
36	8/25	0855	D. Meyers	U	U	1 of 3m	
37	8/25	0932	D. Meyers	M	Adult	1 of 1	
38	8/24	0420	R. Stephens	M	Juv	2 of 4o	
39	8/24	0420	R. Stephens	U	U	3 of 4o	
40	8/24	0420	R. Stephens	U	U	4 of 4o	
41	8/23	0410	R. Stephens	U	U	1 of 3n	
42	8/23	2108	T. Filipi	M	Adult	1 of 1	
43	8/25	2025	D. Webber	U	Juv	2 of 5r	
44	8/25	2030	D. Webber	F	Adult	1 of 5r	Lactating
45	8/24	2315	B. Fish	F	Adult	1 of 5r	(SB0325)
46	8/25	2120	R. Stephens	U	U	2 of 3q	SB0325
47	8/25	2120	R. Stephens	U	U	3 of 3q	
48	8/31	2330	R. Stephens	F	Juv	3 of 4s	
49	8/31	2330	R. Stephens	U	Juv	2 of 4s	
50	8/31	0030	R. Stephens	F	Juv	1 of 4s	
51	8/31	0240	R. Stephens	U	U	4 of 4s	
52	8/31	2330	R. Stephens	M	Adult	1 of 1	
53	8/31	0530	C. Havlik	U	Juv	2 of 4s	
54	8/31	2015	C. Schmidt	U	Juv	2 of 4s	
55	8/31	0130	C. Schmidt	U	U	4 of 4s	
56	8/31	0310	C. Schmidt	F	Adult	4 of 5t	
57	8/31	0315	C. Schmidt	U	Juv	2 of 5t	
58	8/31	0330	C. Schmidt	U	Juv	3 of 5t	
59	8/31	0430	C. Schmidt	M	Juv	1 of 5t	
60	8/31	2100	B. Oakleaf	M	Adult	1 of 1	
61	9/1	0330	J. Pauli	U	U	1 of 1	
62	9/1	0410	J. Pauli	U	U	1 of 4u	
63	9/1	0430	J. Pauli	U	U	2 of 4u	
64	9/2	0325	R. Stephens	U	U	1 of 1	
65	9/2	0325	R. Stephens	U	U	1 of 4u	
66	9/2	0325	R. Stephens	U	U	2 of 4u	
67	9/2	0325	R. Stephens	U	U	3 of 4u	
68	9/2	0325	R. Stephens	U	U	4 of 4u	
69	9/2	0325	D. Webber	U	U	1 of 4u	
70	9/2	0325	D. Webber	U	U	2 of 4u	

Table 2. Continued.*Non-Discrete Sightings*

Obs. #	Date	Time	Observer	Sex	Age	Litter #	Comments
71	9/2	0325	D. Webber	U	U	1 of 1	
72	9/1	0215	M. Grenier	F	Adult	1 of 2c	
73	9/2	2210	C. Schmidt	U	Juv	2 of 3c	
74	9/1	2033	T. Filipi	F	Adult	1 of 5b	
75	9/1	2033	T. Filipi	F	Juv	2 of 5b	
76	9/1	2033	T. Filipi	M	Juv	3 of 5b	
77	9/1	2033	T. Filipi	F	Juv	4 of 5b	
78	9/2	0300	T. Filipi	M	Juv	5 of 5b	
79	9/2	0300	T. Filipi	F	Juv	2 of 5b	
80	9/2	0300	T. Filipi	M	Juv	3 of 5b	
81	9/2	0300	T. Filipi	F	Juv	4 of 5b	
82	9/1	2215	S. Nicholoff	U	Juv	2 of 3e	
83	9/1	0055	S. Nicholoff	U	Juv	3 of 3e	
84	9/2	0000	S. Nicholoff	U	Juv	3 of 3e	
85	9/2	0230	S. Nicholoff	F	Juv	3 of 4d	
86	9/2	0400	S. Nicholoff	F	Adult	1 of 3e	Lactating

Table 3. Black-footed ferret captures in Shirley Basin, Wyoming, August 2004.

Capture #	Date	Collector	Sex	Age	Shirley Basin #	Transponder Anterior	Transponder Posterior	Smithsonian ID #
1	8/18/2004	D. Webber	M	J	SB0401	071-579-284	072-060-865	WY-29
2	8/18/2004	S. Nicholoff	F	J	SB0402	072-282-586	071-895-319	
3	8/18/2004	S. Nicholoff	F	J	SB0403	071-782-587	072-042-054	WY-28
4	8/18/2004	S. Nicholoff	F	J	SB0404	071-834-635	072-278-539	
5	8/19/2004	M. Grenier	A	F	SB0301	071-797-362	071-864-106	
6	8/19/2004	D. Webber	A	F	SB0302	071-781-032	071-808-513	
7	8/19/2004	M. Grenier	F	J	SB0405	071-553-085	072-049-285	
8	8/19/2004	D. Webber	F	J	SB0406	072-279-302	072-275-293	
9	8/23/2004	L. Vanfleet	F	A	SB0318	072-283-028	072-268-279	
10	8/23/2004	D. Webber	F	A	SB0319	071-811-610	071-544-802	
11	8/23/2004	L. Oles	F	A	SB0320	072-007-332	071-831-026	
12	8/23/2004	T. Filipi	M	A	SB0321	072-102-332	072-113-042	
13	8/23/2004	D. Webber	M	J	SB0407	072-280-328	071-768-050	
14	8/24/2004	D. Webber	M	A	SB0322	072-037-516	072-113-606	
15	8/24/2004	D. Webber	M	J	SB0408	072-085-887	072-053-311	
16	8/24/2004	L. Vanfleet	F	A	SB0323	071-804-593	071-809-036	
17	8/24/2004	D. Webber	F	A	SB0324	071-800-792	071-555-838	
18	8/24/2004	D. Webber	F	J	SB0409	071-573-592	072-049-590	
19	8/24/2004	J. Oliver	F	A	SB0325	071-820-782	072-085-094	
20	8/24/2004	R. Stephens	M	J	SB0410	071-601-097	071-552-076	
21	8/24/2004	T. Filipi	F	A	SB0326	071-544-816	071-819-289	
22	8/24/2004	B. Meyer	F	A	SB0327	071-633-804	072-102-282	
23	8/30/2004	R. Stephens	F	J	SB0411	071-841-062	071-769-827	WY-19
24	8/30/2004	T. Filipi	M	J	SB0412	072-062-266	071-806-345	WY-20

Table 3. Continued.

Capture #	Date	Collector	Sex	Age	Shirley Basin #	Transponder Anterior	Transponder Posterior	Smithsonian ID #
25	8/31/2004	R. Stephens	M	A	SB0328	072-563-351	072-101-784	WY-21
26	8/31/2004	R. Stephens	M	A	SB0329	071-798-843	071-776-834	WY-22
27	8/31/2004	R. Stephens	F	J	SB0413	071-553-383	072-104-064	WY-23
28	9/1/2004	T. Filipi	M	J	SB0333	071-588-630	071-837-624	WY-24
29	9/1/2004	M. Grenier	F	A	SB0330	072-052-102	072-063-833	WY-25
30	9/1/2004	T. Filipi	F	J	SB0414	071-838-786	072-079-888	WY-26
31	9/2/2004	M. Grenier	F	J	SB0415	071-888-804	071-857-534	WY-27
32	9/2/2004	S. Nicholoff	F	A	SB0331	072-084-325	072-035-065	WY-28
33	9/2/2004	R. Stephens	F	A	SB0332	072-033-595	071-540-841	WY-31
34	9/2/2004	C. Schmidt	F	J	SB0416	071-566-005	072-272-118	WY-32

Table 4. Black-footed ferret laboratory results from captures in April 2004, Shirley Basin, Wyoming.

Date	Collector	Sex	Age	Shirley Basin #	Smithsonian ID #	Weight (grams)	% Normal Sperm
6 April	D. Follett	Male	Adult	SB0311	WY-12	1210	66
6 April	M. Grenier	Male	Adult	SB0313	WY-14	1113	50
6 April	S. Nicholoff	Male	Adult	SB0307	WY-8	1150	57
7 April	L. McDonald	Male	Adult	SB0315	WY-16	1167	43
7 April	L. Van Fleet	Male	Adult	SB0317	WY-18	1283	N/A

Table 5. Nontarget observations during spotlight surveys in Shirley Basin, Wyoming, 2004.^a

BAT											
TATA	SPP	BUOW	CALA	FEHA	GHOW	GOEA	MUFR	MOUP	PRLO	VUVU	VUVE
0:40	23:26	23:35	23:32	21:25	21:05	0:00	23:30	23:50	2:30	4:50	0:45
0:40		22:34	22:44	23:25		22:59	23:23	22:05			0:40
23:55		22:30	22:40	0:15		22:38	22:45	21:50			0:31
23:47		20:42	22:36	4:00		20:42	21:34	21:03			0:15
23:14		5:33	22:34			3:23	21:25	21:00			23:46
23:10			22:30				20:45	20:47			23:45
22:48			22:30				20:33	5:38			23:36
22:42			22:04				20:31	5:30			23:30
22:40			22:00				20:30	5:30			23:29
22:30			21:40				5:45	2:30			23:24
22:25			21:40				5:33				23:17
22:05			21:30				5:10				23:10
22:00			21:15				4:20				23:00
22:00			21:10				4:12				22:58
21:55			20:55				4:00				22:45
21:40			20:50				3:35				22:40
21:40			20:50				3:34				22:30
21:15			20:49				3:24				22:30
21:15			20:40				2:45				22:30
21:12			20:14				0:00				22:28
21:10			5:50				0:00				22:24
21:10			5:44								22:20
21:09			5:15								22:20
21:04			4:48								22:10
21:00			3:45								22:10
20:56			3:00								22:00
20:54			2:34								22:00
20:53			2:10								22:00
20:37			0:59								21:53
20:28			0:45								21:50
20:22			0:15								21:50
20:10											21:42
20:09											21:40
19:30											21:36
5:24											21:30
											21:30
											21:21
											21:18
											21:04
											21:04
											21:00
											20:38
											20:24
											20:12
											20:00
											19:00
											6:00
											5:54

Table 5. Continued.

BAT		TATA	SPP	BUOW	CALA	FEHA	GHOW	GOEA	MUFR	MOUP	PRLO	VUVU	VUVE
													5:52
													5:50
													5:39
													5:35
													5:30
													5:30
													5:00
													4:50
													4:37
													4:25
													4:22
													4:20
													4:15
													4:15
													4:00
													3:40
													3:30
													3:30
													3:30
													3:28
													3:26
													3:18
													3:16
													3:00
													2:56
													2:50
													2:43
													2:35
													2:35
													2:30
													2:30
													2:30
													2:28
													2:20
													2:17
													2:16
													2:15
													2:15
													2:15
													2:13
													2:13
													1:50
													1:07
													0:35
													0:30
													0:29
													0:27
													0:15
													0:04

- a TATA = Badger
- BAT SPP = unknown bat species
- BUOW = Burrowing Owl
- CALA = Coyote
- FEHA = Ferruginous Hawk
- GHOW = Great Horned Owl
- GOEA = Golden Eagle
- MUFR = Long-tailed Weasel
- MOUP = Mountain Plover
- PRLO = Raccoon
- VUVU = Red Fox
- VUVE = Swift Fox

**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 Special Concern
White-tailed Prairie Dog

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Martin Grenier, Nongame Mammal Biologist
Todd Filipi, Nongame Seasonal Biologist
Daniel Webber, Nongame Seasonal Biologist

INTRODUCTION

The Shirley Basin/Medicine Bow white-tailed prairie dog complex was originally mapped in 1990 (SBMBWG 1990) in preparation for the reintroduction of black-footed ferrets (Figure 1). Between 1991 and 1994, 228 black-footed ferrets were released in the area. Reintroduction efforts were suspended after 1994 due to the presence of sylvatic plague and canine distemper. Prairie dog surveys continued following the reintroductions and focused on transecting prairie dog colonies to estimate a black-footed ferret family rating for the area (Biggins et al. 1993). Transecting continued annually until 2001 (Grenier et al. 2002). Subsequent prairie dog survey priorities were changed to accommodate additional data needs.

The Shirley Basin/Medicine Bow white-tailed prairie dog complex has not been remapped in its entirety since the original mapping efforts in 1990. However, Grenier et al. (2002) reported data on nine prairie dog colonies that were not transected between 1992 and 2001. Although Grenier et al. (2002) mapping efforts were not all inclusive, their findings were the first indication that the prairie dog colonies were not static and that prairie dog populations contained within the entire complex may not be declining as reported by Van Fleet et al. (2001).

Grenier et al. (2003) reported similar prairie dog dynamics for other white-tailed prairie dog complexes in Wyoming that had not been mapped since the original mapping efforts in the 1980s. These findings, combined with the lack of data needed to adequately address the listing of the white-tailed prairie dog as threatened under the Endangered Species Act and the desire to identify additional potential reintroduction sites within the existing experimental and non-essential black-footed ferret boundary, led us to

reprioritize survey objectives in 2004. Objectives in 2004 were to map Primary Management Zone 1 (PMZ 1) in its entirety and map other portions of the Shirley Basin/Medicine Bow white-tailed prairie dog complex as resources and opportunity allowed.

METHODS

White-tailed prairie dog 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 (SBMBWG 1991) mapping effort. These historical maps provided the baseline data for locating prairie dog colonies. Any colony and had not been previously mapped that was located while traveling was recorded as a new colony. PMZ 1 was systematically searched for new and previously unknown prairie dog colonies.

Mapping was conducted between 1 June and 30 July 2004. All colony mapping was conducted by foot while walking the perimeter of an identified colony and recording waypoints on a handheld GPS unit (Garmin GPS 12XL). Colonies were mapped as unique if separated by 656 feet (200 m) or more. Waypoints were downloaded and imported into GIS software (ArcView 3.2), where individual waypoints were converted to polygons.

RESULTS AND DISCUSSION

The 2004 survey boundary is presented in Figures 2 and 3. A significant portion of PMZ 1 was mapped in 2004, along with the northwest corner of Primary Management Zone 2. A total of 60 prairie dog colonies were mapped in 2004. Only 8 colonies (13%) were located entirely within PMZ 2 (Figure 3). An additional 7 colonies (11%) were located outside of PMZs 1 and 2. The remaining 45 colonies (75%) were contained primarily within PMZ 1. Although only 37% of area was mapped, 69% (27 of 39) of the historic prairie dog colonies were mapped in PMZ 1 in 2004. Additionally, 13 new colonies were mapped in PMZ 1 totaling 2,594 acres (1,050 ha). The increased number of prairie dog colonies located in PMZ 1 precluded mapping of the entire area.

Approximately 37,215 acres (15,060 ha) of occupied prairie dog colonies were mapped in 2004. PMZ 1 contained 28,960 acres (11,720 ha), PMZ 2 contained 5,114 acres (2,070 ha), and the remaining 2,138 acres (1,270 ha) were located outside of both PMZs. The largest colony mapped was 4,705 acres (1,904 ha) and the smallest was 8.3 acres (3.4 ha). Prairie dog densities varied greatly within colonies and between colonies throughout the survey area. Ocular estimation of prairie dog densities, although subjective, revealed that most colonies were in the good to moderately high density range.

Impacts of sylvatic plague on individual white-tailed prairie dog colonies in the Shirley Basin/Medicine Bow Black-footed Ferret 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, complex-wide trends have been more difficult to ascertain.

Results from mapping efforts conducted in 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, at least some 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. PMZ 1 contained 39 colonies and 33,464 acres (13,543 ha) in 1990 (SBMBWG 1991). Twenty-seven of these 39 colonies (69%) and 21,168 acres (8,566 ha) were remapped in 2004 (Figure 2). By 2004, these 27 colonies had become 33 colonies (Figure 3) and resulted in 26,577 acres (10,756 ha), a net increase of 5,411 acres (2,190 ha) in PMZ 1. Combined with the 13 new colonies mapped in 2004 in PMZ 1, occupied acreage has increased by 8,006 acres (3,240 ha).

PMZ 2 contained 91 colonies in 1990 but only 5 of these colonies (5 %) were remapped in 2004. Results from 1990 encompassed 4,277 acres (1,731 ha) of occupied prairie dog acreage, while in 2004 these same 5 colonies had increased to 4,625 acres (1,872 ha). In addition, three new colonies within PMZ 2 were also documented, encompassing 490 acres (198 ha). Overall for the survey area that is contained within PMZ 2, there has been a net increase of 838 acres (339 ha).

In 1990, the entire survey area contained 30 colonies and 25,211 acres (10,203 ha). Mapping conducted in 1989 was inclusive and located all prairie dog colonies within the area (B. Luce, personal communication). By 2004, the number of colonies in the survey area has doubled to 60 and occupied acreage has increased to 37,215 acres (15,060 ha), a net increase in the survey area of 12,001 acres (4,857 ha). This represents a 48% increase in occupied hectares and a 100% increase in number of colonies.

Furthermore, some areas within the survey area have prairie dogs that remain too scattered to map. Both areas near the Little Medicine Bow River and the Little Medicine Bow Road had aggregations of burrows that were too small and loose 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, loose aggregations is unknown at this time and these areas will be monitored closely 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, PMZ 1 has not been fully remapped. Therefore, additional

data are needed before these observed trends can be projected to the entire PMZ 1 and the remaining complex.

ACKNOWLEDGEMENTS

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SHIRLEY BASIN/MEDICINE BOW WHITE-TAILED PRAIRIE DOG COMPLEX

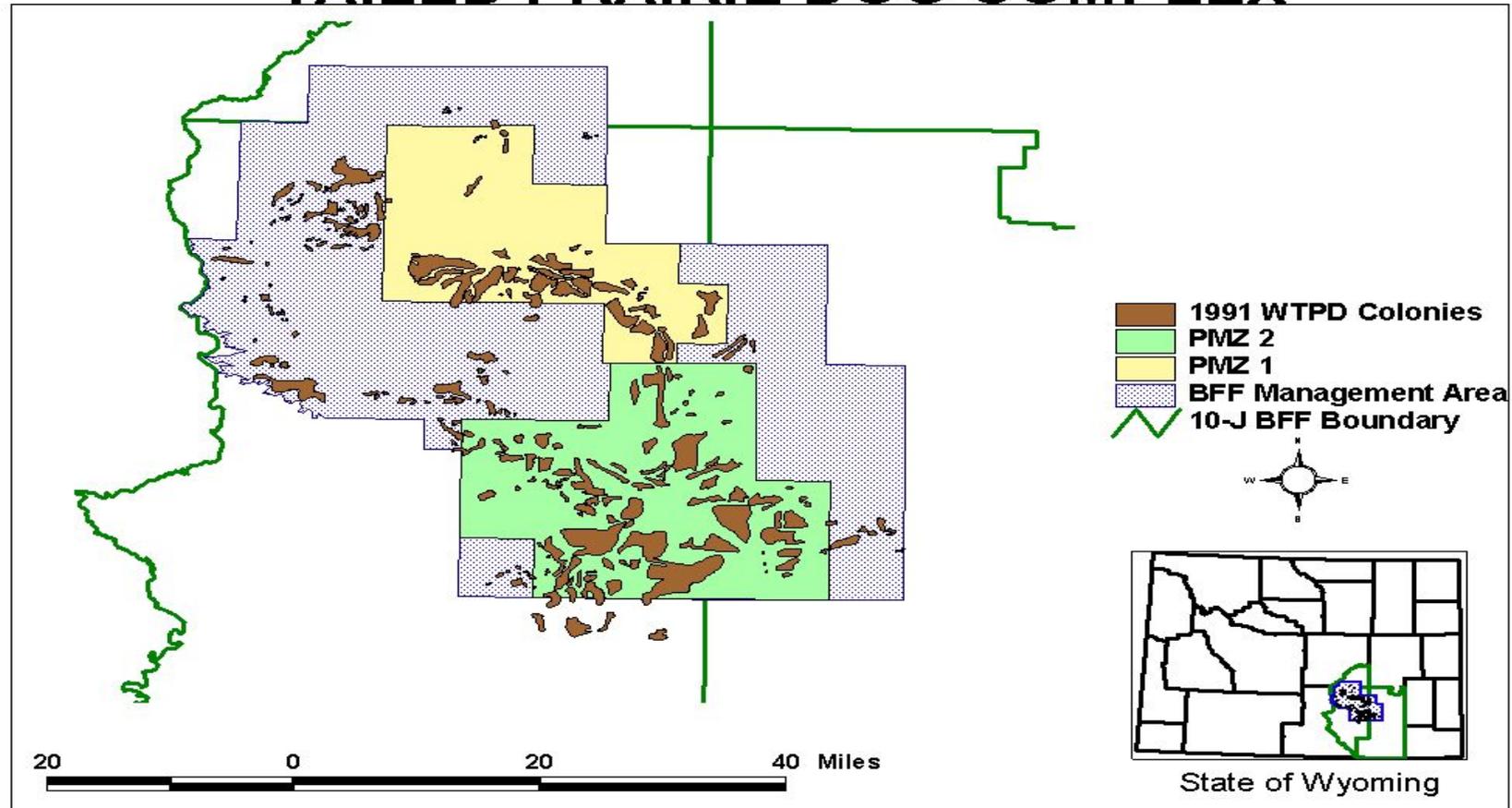


Figure 1. Overview of the Shirley Basin/Medicine Bow white-tailed prairie dog complex as mapped in 1991.

1991 WHITE-TAILED PRAIRIE DOG COLONIES AND AREA SURVEYED IN 2004

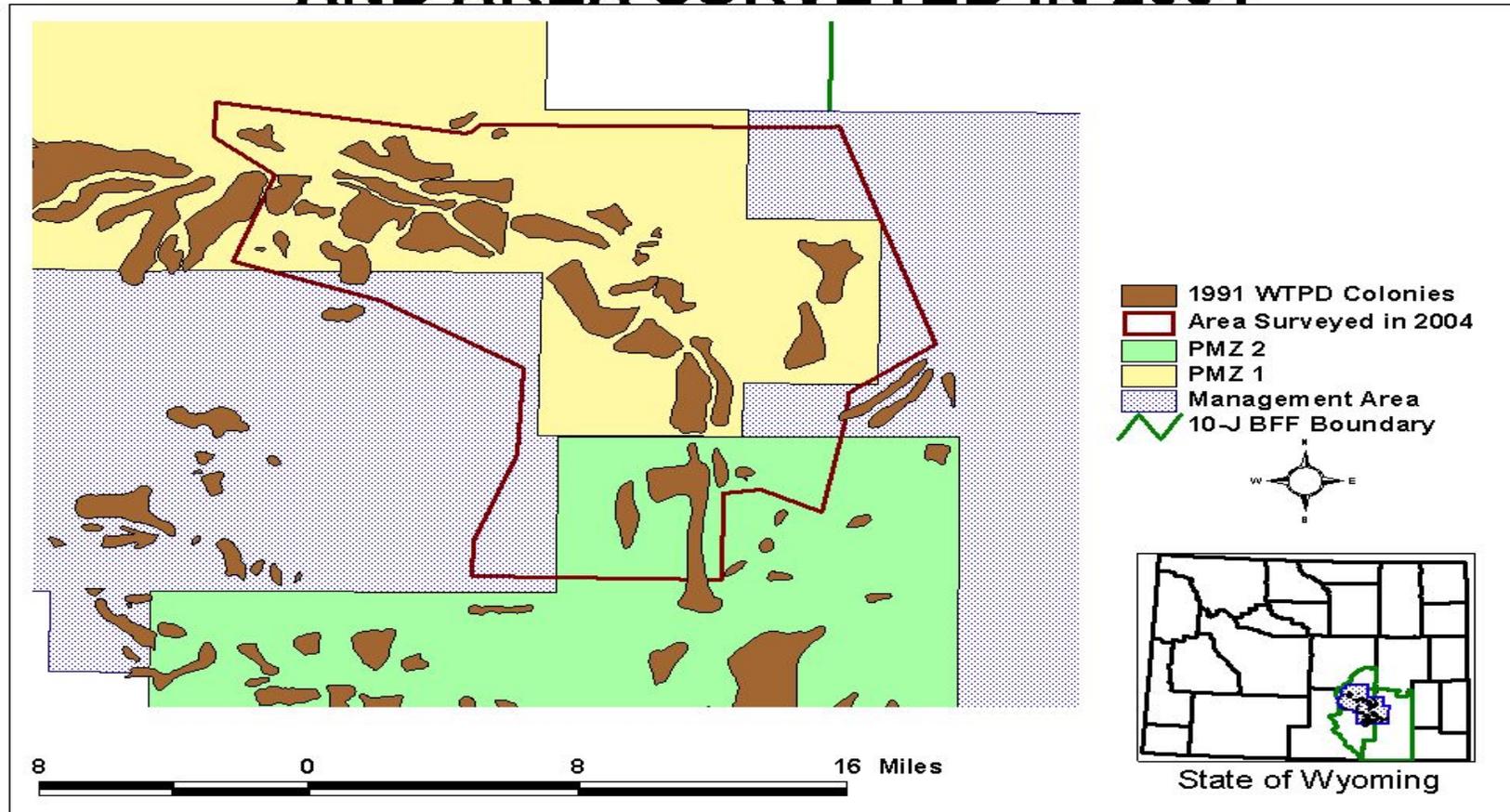


Figure 2. Reported white-tailed prairie dog colonies mapped in 1991 within the 2004 survey area.

2004 MAPPING RESULTS

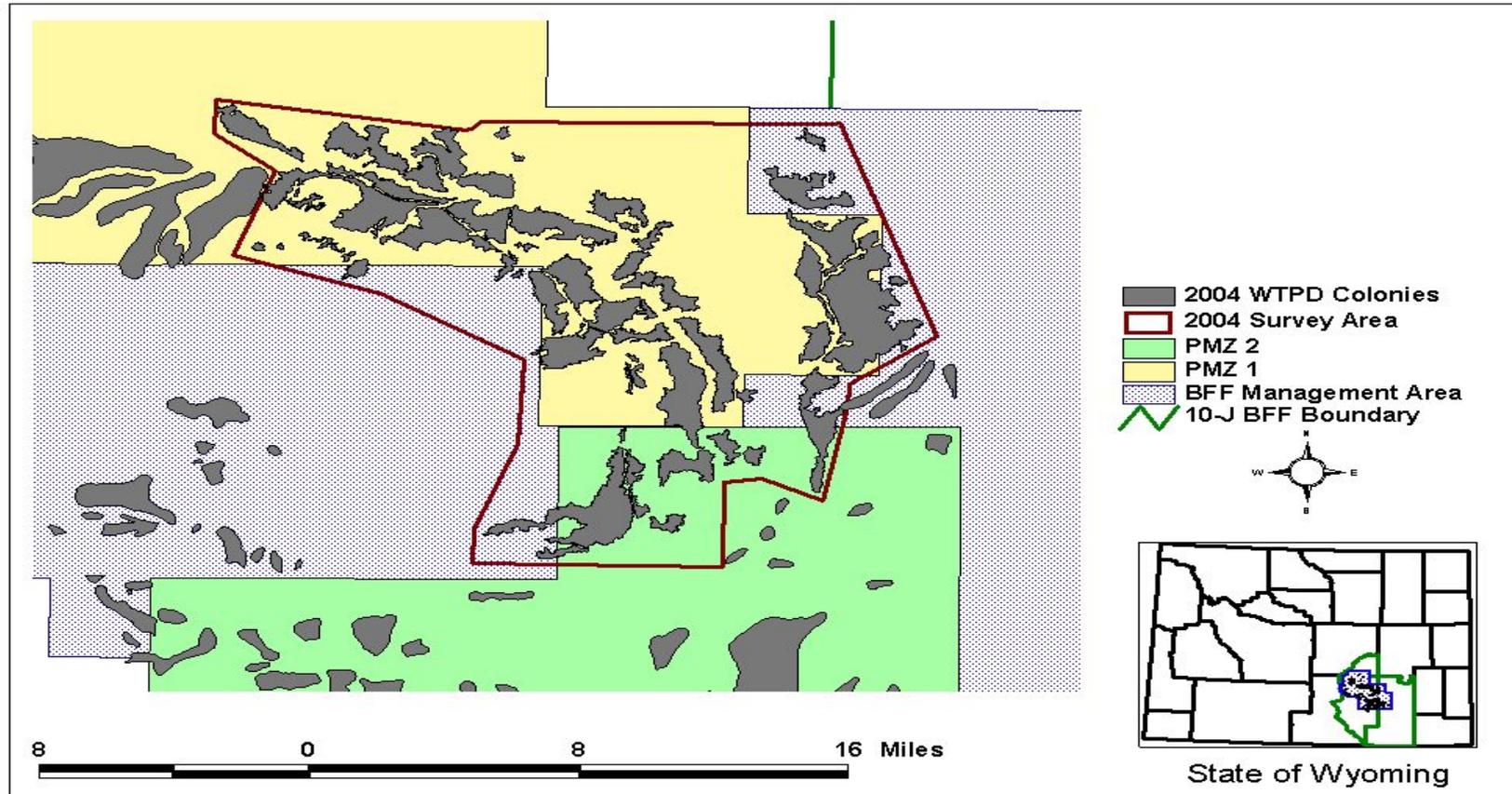


Figure 3. White-tailed prairie dog colonies mapped in 2004 within the survey area.

SPECIES OF SPECIAL CONCERN

PEREGRINE FALCON NEST SURVEY COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Peregrine Falcon

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Bob Oakleaf, Nongame Coordinator
Terry McEneaney, Yellowstone National Park
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 2004, 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 (one 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 2004, 599 nesting attempts were observed at 72 sites in Wyoming. Over 1,026 young were produced with a minimum of 1.7 young fledged per nesting attempt. Survey results during 2004 recorded 66 pairs fledging at least 130 young (2.0 young/pair). This statewide total includes results from 25 pairs in Yellowstone National Park that fledged 47 young in 2003 (McEneaney 2005). A summary of monitoring results during recent years is presented in Table 1.

LITERATURE CITED

McEneaney, T. 2005. Yellowstone Bird Report, 2004. National Park Service.
Yellowstone Center for Resources, Yellowstone National Park, Wyoming, YCR-
NR-2003-01.

Table 1. Peregrine Falcon productivity in Wyoming, 1998 – 2004.

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

SURVEYS OF THE COMMON LOON IN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Common Loon

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

INTRODUCTION

The Common Loon is classified as a Wyoming Game and Fish Department (Department) Native Species Status 1 because of its public appeal, vulnerability to human disturbance and environmental degradation, and its limited abundance and restricted distribution in Wyoming. 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 2004, known nesting areas were surveyed to document loon nesting, production, and recruitment.

Since 1996, Common Loon surveys have been more intensive than in previous years to better determine the success of nesting loons in producing young. The timeline for Common Loon surveys is as follows: nest initiation and status surveys are conducted in early to mid-June, production surveys are conducted in mid- to late July, and follow up recruitment surveys are conducted in mid- to late August, although some of the previous recruitment surveys were conducted in early September. These surveys are scheduled to coincide with similar surveys conducted in Yellowstone National Park so data can be directly compared (McEneaney 2005).

SURVEYS OF KNOWN NESTING AREAS

Seven lakes outside of Yellowstone National Park with a past history of Common Loon nesting were surveyed for nesting, production, and recruitment in 2004 (Table 1). During the June nesting survey, adult loon pairs were observed on three lakes, two pairs were observed on one lake, a single adult loon was observed on one lake, and two loonlets were observed on one lake (this is early for production). During the July production survey, adult loon pairs were observed on two lakes, a single adult loon was observed on one lake, three adult loons were observed on two lakes, and a total of two loonlets were observed on one lake. During the August recruitment survey, and adult

loon pair was observed on one lake, a single adult loon was observed on one lake, and no loonlets were observed on any of the six lakes surveyed. Anecdotal information and a cursory review of loon data over the past 18 years suggest that nesting is now occurring several days to two weeks earlier than when loon surveys were initiated in 1987.

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

In Yellowstone National Park, 44 Common Loon adults were observed in 2004; nine pairs attempted to nest, fledging three young on 2 lakes (McEneaney 2005) (Table 2).

Common Loon nesting, productivity, and recruitment data for Wyoming are presented in Table 2.

ACKNOWLEDGEMENTS

The Department would like to acknowledge the following individuals for their valuable contributions to the 2004 Common Loon monitoring effort: Susan Patla (Department) and Eva Crane.

LITERATURE CITED

McEneaney, T. 2005. Yellowstone Bird Report, 2004. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming. YCR-NR-2005-01.

Table 1. Summary of Common Loon nesting (June), productivity (July), and recruitment (August) surveys from 1987 through 2003. 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	- ^a	2	-	NS ^b	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 ^c	-	2	-	2	1? ^d	2	-	2	? ^e	2	?	12	?
1993	2	-	2 ^c	?	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 ^c	-	0	0	2	-	0	0	1	2	0	0	5	3
1996	2	-	1 ^c	-	2 ^f	-	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 ^c	0	2 ^f	-	2	2	2	1	2	1	2	-	10	5
2001	0	0	0	0	2 ^f	-	2	1	2	-	2	1	2	1	8	3
2002	1	0	1 ^c	0	1 ^f	0	2	1	2	-	2	1	1	-	8	2
2003	2	1	1 ^c	0	1	0	2	1	1	-	2	0 ^g	2	2	10	4
2004	2	0	2 ^c	0	3 ^f	0	4	0	1	0	2	2	2	0	11	2

^a 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.

^b NS = not surveyed.

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

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

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

^f 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.

^g 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, 1987-2004.

Year	Non-Yellowstone N.P.			Yellowstone Nat. Park			Wyoming Total		
	# Pairs	# Young	# Lakes	# Pairs	# Young	# Lakes	# Pairs	# Young	# Lakes
1987	6	9	6	NA ^a	NA	NA	IN ^b	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 ^c	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 ^d	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

^a NA = data are not available.

^b IN = state totals are incomplete.

^c NS = not surveyed.

^d Two pairs nested on the same lake.

COLONIAL WATERBIRD SURVEYS COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Colonial Waterbirds

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

SUMMARY

Ritter and Cerovski (1990) summarized all known information on colonial nesting waterbirds in Wyoming. In 2004, an intensive survey was conducted at previously occupied breeding sites considered to be the most important for colonial nesting waterbirds in the State. Data collected during the 2004 surveys are presented in Figures 1 and 2 and Table 1. Data from Yellowstone National Park (YNP) (McEneaney 2005) 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 2004. 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 2004 colonial waterbird monitoring effort: Greg Anderson (Department), Quinn Cerovski (volunteer), Doug Damberg [Seedskadee National Wildlife Refuge (NWR)], Dru Haderlie (Seedskadee NWR), Evette Meyer (Department), Rachel Moseley (Seedskadee NWR), Larry Roberts (Department), Joseph Smith (Seedskadee NWR), Laurie Van Fleet (Department).

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Figure 1. Aerial photograph of the Bamforth Lake American White Pelican nesting colony.

Figure 1. Aerial photographs of the Pathfinder Reservoir Bird Island American White Pelican nesting colony.

Table 1. Summary of colonial nesting waterbird surveys in Wyoming, 2004.

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> ^a				
6 July 2004	Black-crowned Night-Heron	8	4	3
A. Cerovski / Q. Cerovski	Forster's Tern	4	2	
Canoe	White-faced Ibis	18	9	
Water level normal (dammed spring)				
<u>Bamforth Lake</u>				
1 June 2004	American White Pelican	231	116	
A. Cerovski	Double-crested Cormorant ^b	active		
Aerial (photographs taken)				
Water level very low due to drought; nesting island is a peninsula				
<u>Bucklin Reservoir</u>				
11 July 2004	No colonial waterbirds nesting or present			
A. Cerovski / Q. Cerovski				
Canoe				
Water level low due to drought; many patches of flowering plants				
<u>Caldwell Lake</u>				
2 July 2004	American Bittern	1	1	
A. Cerovski / Q. Cerovski	American White Pelican	4	0	
Canoe	Black-crowned Night-Heron	2	1	
Water level is ideal for nesting				
	Black Tern	6	3	
	Forster's Tern	18	9	
	White-faced Ibis	8	4	
<u>Cokeville Meadows NWR</u> ^c				
29 June 2004	American Bittern	1	0	
A. Cerovski / D. Damberg / J. Smith /	Black Tern	28	14	
D. Haderlie / R. Moseley	Forster's Tern	2	0	
Foot	White-faced Ibis	8	0	
Water level has rebounded slightly				
<u>Hutton NWR – Rush Lake</u>				
2 July 2004	Black-crowned Night-Heron	18	9	
A. Cerovski / Q. Cerovski	Forster's Tern	22	11	
Canoe	White-faced Ibis	40	20	
Water level is ideal for nesting				

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>Kay Ranch Lake</u>				
No survey conducted in 2004				
<u>Ocean Lake</u>				
29 June 2004	American White Pelican	80	0	
L. Van Fleet / G. Anderson /	Caspian Tern	13	0	
E. Meyer	Cattle Egret	1	0	
Motorboat	Clark's Grebe	25	0	
Water level lower due to drought	Double-crested Cormorant	100	active	40
	Forster's Tern	60	9	
	Western Grebe	100	0	
<u>Old Eden Reservoir</u>				
15 June 2004	No colonial waterbirds nesting			
L. Van Fleet	or present			
Foot				
Water level is very low and emergents are virtually nonexistent				
<u>Pathfinder Reservoir, Bird Island</u>				
1 June 2004	American White Pelican	1297		
A. Cerovski	Double-crested Cormorant ^b	active		
Aerial (photographs taken)				
Island is a peninsula due to drought-induced low water level				
<u>Pilger Lake</u>				
1 July 2004	Black-crowned Night-Heron	1	0	
A. Cerovski / Q. Cerovski	Forster's Tern	10	5	
Canoe				
Water level is higher than normal; emergents are 2/3 under water				
<u>Sand Mesa Ponds</u>				
24 June 2004	No colonial waterbirds nesting			
L. Van Fleet	or present			
Foot				
Lakes are very low due to drought and/or change from open irrigation ditch to buried pipe				

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)</u>				
June 2004	No colonial waterbirds nesting			
L. Roberts	or present			
Foot				
Water level is draw-down due to				
remediation work				
<u>Webb Lake</u>				
1 July 2004	No colonial waterbirds nesting			
A. Cerovski	or present			
Foot				
Lake level is very low and emergents				
are completely dry due to drought				
<u>Yellowstone Nat'l Park, Molly Islands</u>				
May, June, Aug., Sept. 2004	American White Pelican	388	194	237
T. McEaney	Caspian Tern	6	3	3
Motorboat and aerial				
Water level is normal; no flooding				
and snowmelt was gradual				

^a Formerly called Aurora Lake.

^b Formerly Bear River Marshes.

^c The Double-crested Cormorant is not a Species of Special Concern; however, it nests colonially with the American White Pelican so nests were counted from digital aerial photographs and are presented here.

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

^a 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 Special Concern
Trumpeter Swan

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Susan Patla, Nongame Biologist

INTRODUCTION

This report summarizes management activities and monitoring data for Trumpeter Swans (*Cygnus buccinator*) in Wyoming for the 2004 nesting season and the 2004/2005 winter season. Trumpeter Swans that reside in Wyoming are considered part of the Tri-state Area flocks in the U. S. segment of the Rocky Mountain Population (RMP) of Trumpeter Swans [United States Fish and Wildlife Service (USFWS) 1998]. The Wyoming Game and Fish Department (Department) classifies the Trumpeter Swan as a Species of Special Concern with a Native Species Status 2. Monitoring swans in western Wyoming requires the coordination and effort of many area biologists; individuals involved in this effort are recognized in the Acknowledgements section.

ROCKY MOUNTAIN POPULATION WINTER SURVEY RESULTS 2004/2005

To determine the total number of RMP swans, the USFWS coordinates a mid-winter, multi-agency aerial survey every February in the western United States (Dubovsky 2005). The portion of the population that winters in the Tri-state Area in western Wyoming, southwestern Montana, and eastern Idaho consists of two breeding segments: the non-migratory RMP/Tri-state Area Flocks that summer in Wyoming, Idaho, and Montana, and the migratory interior RMP/Canadian Flocks. The Canadian swans nest in Alberta, British Columbia, Saskatchewan, Yukon, and the Northwest Territories, but share wintering habitat with U.S. swans in the Tri-state Area. Terminology used to describe the RMP is defined in the RMP Trumpeter Swan Implementation Plan (Pacific Flyway Study Committee 2002). To determine the proportion of Canadian swans, the number of adult and cygnets counted in the fall survey are subtracted from the winter survey totals.

The 2005 mid-winter survey was completed between 25 January and 7 February (Dubovsky 2005). Wyoming, outside of YNP, was flown on 1-2 February. In the Tri-state Area, a record high of 5,290 Trumpeter Swans was counted: 4,147 white birds (yearlings and older age classes) and 1143 cygnets (21.6%) (Table 1). This represents a 9.6% increase

in white birds and a 53.2 % increase in cygnets compared to the 2004 mid-winter survey. Distribution of wintering swans within the three-state area was: 3,782 swans in Idaho (71.5%), 881 in Wyoming including Yellowstone National Park (YNP) (16.7%), and 627 in Montana (11.8%).

Total number of swans in Wyoming was the highest count on record, and 25.5% higher than 2004 (Table 1). Of the total swans counted in Wyoming, 54% (n=476) were observed along the Snake River and in the vicinity of Jackson, Wyoming; 18% (n=154) in YNP; 16% in the Salt River drainage; 9% (n=81) on the Green River and Seedskaadee National Wildlife Refuge (NWR); and 4% (n=33) in the vicinity of Bull Lake east of Dubois in the Wind River drainage. Cygnets comprised 22.2% of the total number of swans counted in Wyoming, which is considerably higher than the 13.0% in the previous year (Table 1).

Additional ground surveys were conducted during winter 2004/2005 to monitor swans in western Wyoming, and observations reported by other Department personnel and the public were also recorded. A database of all sightings is maintained at the Department's Jackson Regional Office, including number, age, and any markings.

Temperatures were slightly warmer than average in the Tri-state Area in winter 2004/2005 outside of YNP but intermittent cool periods occurred in December (Dubovsky 2005). During February, temperatures in western Wyoming were colder than average. Drought continued to persist in the area, with water levels at area reservoirs at only 40% of storage capacity on 1 February, among the lowest levels recorded over the past 34 years. Precipitation was below average in much of the Tri-state Area and snowpack was about 50-89% of normal (Dubovsky 2005).

TRI-STATE FALL SURVEY RESULTS AND PRODUCTIVITY TRENDS – 2004

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. A summary report is prepared by the USFWS (Dubovsky 2004). Aerial surveys in 2004 were conducted during 12-24 September; the Wyoming portion outside of YNP was flown on 15 September. Additional observations were obtained from the USFWS Sandhill Crane aerial survey flown 14-15 September within the same area (Rod Drewien, personal communication). The Tri-state Area continued to experience severe drought conditions, with Palmer Drought Index values during early fall of 2004 among the lowest recorded since swan surveys were initiated in the 1930s. Summarized here are the results from the Tri-state Area Flocks in Wyoming, Montana, and Idaho.

The total number of resident adult swans counted in the Tri-state Area Flocks in 2004 was identical to the previous year (Table 2). The number of white birds increased slightly in Idaho, decreased slightly in Wyoming, and was unchanged in Montana compared to counts in 2003. The 385 total swans counted within the Tri-state Area in 2004 were distributed as follows among the three states: 33.5% in Wyoming (n=129), 35.1% in Idaho (n=135), and 31.4% in Montana (n=121). Wyoming, similar to the previous two years, had a higher proportion of cygnets (30.2%) compared to Montana (26.4%) and Idaho (17.0%) (Table 2).

WYOMING FLOCK PRODUCTION OUTSIDE YELLOWSTONE NATIONAL PARK

A total of 74 adults/subadults and 37 cygnets were counted in Wyoming outside of Yellowstone National Park in September 2004 (Table 2). This represents a 14% decrease in the number of white birds and a 6% increase in cygnets compared to the previous year. Production in 2004 was the highest recorded to date in Wyoming (54 cygnets hatched) and reflects growing cygnet production in the Green River basin expansion area. In 2004, pairs occupied 22 sites, 17 pairs initiated incubation, 14 pairs hatched young, and 11 fledged at least one young (Table 3). Although the number of occupied sites was below average, all other productivity parameters exceeded means measured in 1990-2003 (Table 3). Productivity per successful nest (those that hatched at least one egg) was 3.86 young hatched/pair and 2.64 young fledged/pair.

Table 4 lists occupancy and productivity data for individual nesting territories in Wyoming, 1994-2004. Following are site-specific notes for some of the 2004 nesting territories:

Indian Lake, Caribou-Targhee National Forest – a pair nested on a sedge island used the previous year and produced five young. In low water years, swans nest in Indian Lake rather than the nearby Bergman marsh. Lily pads (*Nuphur* spp.) cover over 80% of the lake surface by mid-summer and swans tend to stay on the north end of the lake away from the road during the summer months. Growth of cygnets tends to be slower here compared to most other nest sites, likely due to the low diversity of aquatic vegetation. Attempts to check this site on 1 November failed due to deep snow levels on Reclamation Road.

Steamboat Mountain, Grand Teton National Park (GTNP) – this site on Dollar and Cents Creeks was not occupied in 2004, but a pair was observed on the adjacent river corridor later in the season.

Glade Creek South, GTNP – the pair produced one cygnet that was lost before fledging.

Swan Lake, GTNP – a pair nested in the slough south of the lake and produced three young (two leucistic). An adult swan died and was scavenged in August (cause undetermined) but the other adult remained with the young and all fledged.

Christian Pond, GTNP – no swans were observed on this site throughout the season for the second year in a row. Water level was low but many other waterfowl used the pond; submerged aquatic vegetation growth appeared good. The lack of swan use here is troublesome, as this site had been occupied consistently for many years and often produced young.

Two Ocean Lake, GTNP – the nest site was located in a slightly different location than used in previous years along the edge of the outlet channel, east of the lake. Late run off appeared to flood this nest; and the pair abandoned the nesting effort in June. Remnants of an egg were found near the nest, and the nest bowl was thoroughly soaked below the very surface layer.

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

Hedrick Pond, GTNP – little swan activity was observed here; the water level later in the season was quite low. This is another traditional site where swan use has been declining.

Highway Pond, National Elk Refuge (NER) –this site was not used this year. See next note.

Main Marsh Flat Creek, NER –three nest sites were occupied in the main marsh area. Refuge personnel monitor these sites weekly from Miller Butte.

Pierre Pond, NER –pair did not appear to initiate nesting this year.

Romney Ponds, NER – a pair of subadults occupied this site most of the season.

Puzzleface Pond (formerly Skyline) – a pair and a single swan were seen occasionally at this site but it was not occupied on a regular basis.

Kibby Pond, Alpine – this is the only known nest site in the Salt River drainage; it is located in a dense willow/cattail marsh in a hay meadow on the east side of the Salt River. Work on a sub-division development began in 2004; a pair occupied the site but did not appear to nest.

Lily Lake, Bridger-Teton National Forest (BTNF) –a pair did not occupy this site in 2004.

Enos Lake, BTNF – no swans were observed on this lake throughout the season. A pair produced four young here the previous year.

Atlantic Creek, BTNF – this was the third year in a row that a pair of swans did not occupy sloughs near Hawks Rest or Bridger Lake in the Teton Wilderness.

Upper Slide Lake, BTNF – one young hatched the first week of July on the island nest site.

Mosquito Lake, BTNF – a pair did not occupy this site until June.

Mud Lake, BTNF – a pair produced five young this year. The family group was observed on the Green River during the July 4th weekend. Later the pair returned to the lake without young and molted. It is unknown what happened to the young.

Kitchen Reservoir, CL Bar Ranch – a pair produced four young. Two subadult swans also molted on the middle reservoir.

Kendall Wetland – a pair of unmarked swans occupied the site and initiated nesting for the second year in a row. They produced eight eggs on a sedge island on the southern-most island, but none hatched. Three of the eight eggs contained well developed embryos. The female adult was often seen off the nest for extended periods in June and July. Low diversity and abundance of submerged aquatic vegetation may be affecting nest success. Water management may help to stimulate vegetation.

Barden (Oliver) Slough – a pair occupied the site but did not initiate nesting this year.

La Barge, Voorhees Pond – the pond remained very turbid due to a carp infestation; no swans used the site.

Seedskaadee NWR – three nest sites were occupied and hatched young in the Hawley Unit. One brood disappeared and a total of nine cygnets fledged. Pool 1 hatched six cygnets (first seen 31 May), two leucistic. One of the white morphs died in the nest post-hatch. The rest of this brood disappeared the first week of June. Pool 2 hatched five cygnets (24 May); one disappeared after June 15, the other four fledged. Pool 6 hatched six cygnets (first week of June); one disappeared by mid-June and the remaining five fledged.

MORTALITIES

Mortalities appeared to be low this reporting period, with only nine total documented compared to 38 the previous year (Table 5). Since 1998, a total of 127 swan mortalities have been recorded; cause of death could not be determined for 59% of the cases. Where cause of death could be determined (n=52), 42% were attributed to predation; 40% to collisions with powerlines, fences, or bridges; 12% to disease or infection; and 6% to shooting. While the direct cause of mortality in winter may be predation or collision, it is likely that increases in these types of mortalities reflect swans in weak or poor body condition. In periods of extended sub-zero weather, foraging opportunities can be reduced drastically for shallow-water feeding swans, resulting in loss of body mass. The large proportion of adult

mortalities recorded (58% of total) is of concern given the demographics of swans. It is not known what proportion of winter mortalities are Canadian migrants or Tri-state Area swans.

SIGHTINGS OF MARKED SWANS

Table 6 lists observations of marked Trumpeter Swans in Wyoming and eastern Idaho by Department personnel. Current marking programs for swans include the Idaho winter cygnet translocation study; marking of nesting swans in Alberta, Canada; and Trumpeter Swan Society satellite-tagging program in the Yukon and Northwest Territory of Canada. Some collars remain out from the USFWS winter translocation project in eastern Idaho 1986-1997. One leg-banded swan (F05 yellow) from the Department's radio-tagging study 2002-2003 was confirmed alive in Daniel. This swan had lost its neck collar (a light weight goose type collar with a radio attached) the previous winter. The plastic leg band appeared in good condition and was easy to read from 246 feet (75 m).

HABITAT IMPROVEMENT PROJECTS

Work was completed on a State Wildlife Grants project to conduct habitat assessments in the Green River basin and to complete management plans for creating new swan nesting and transitional wetland habitat. The final report for this project can be obtained from the Department's Nongame Program (Lockman 2005). The Department also developed a prescription for development of summer habitat for swans (Patla and Lockman 2005). Ducks Unlimited funded habitat improvements on ponds used by wintering swans on the National Elk Refuge.

RANGE EXPANSION EFFORTS IN WYOMING – SALT RIVER

A summary of range expansion efforts over the past decade in the Salt River drainage can be found in previous annual reports. In 2004, a sub-division development was initiated on the property south of Alpine containing the only known nesting in the area. A pair occupied the site but did not produce young. On the 2005 Mid-winter Swan Survey, 132 swans were counted along the Salt River: 102 adults and 35 cygnets. This total was 13% higher compared to the previous year (n=117). The largest concentrations of wintering swans occur along the river from the Narrows south to Grover, and in the vicinity of Thayne and Etna.

RANGE EXPANSION EFFORTS IN WYOMING – GREEN RIVER

The Department, in cooperation with the Wyoming Wetland Society, released captive-reared swans in the Green River basin from 1994-2003 to expand Trumpeter Swan breeding and wintering distribution in Wyoming. Given the growing production of wild swan pairs in the basin, the Department decided to stop releases of captive birds after 2003 and concentrate on habitat restoration. The goal of the restoration program was to establish a minimum of 10 nesting pairs. In 2004, the Green River area accounted for 50% (11 out of 22) of the occupied sites in Wyoming outside of YNP, 43% (6 out of 14) of successful sites, produced 57% of cygnets hatched (31 out of 54) and 49% of cygnets fledged (18 out of 37). Three of the six successful pairs in 2004 nested in the main marsh (Hamp Unit) at Seedskadee NWR. One nest at Seedskadee hatched six, including two leucistic young, but subsequently failed; two other nests fledged a total of nine young. Other successful sites in the Green River north of Pinedale included Mud Lake (BTNF), Kitchen Reservoir (CL Bar Ranch), and a new nest site on the Carney Ranch (Table 3). Nine young fledged from the Kitchen and the Carney sites.

During the fall USFWS aerial survey (15 September), 16 white swans were counted along the upper portions of the Green and New Fork Rivers from Mosquito Lake south to the Boulder area. An additional 16 white swans were tallied at Seedskadee. During the winter 2005 survey flight, 5 white swans were observed at the Daniel Fish Hatchery along Forty Rod Creek, and 76 swans (56 white and 20 cygnets) below the Fontenelle Dam along the Green River at Seedskadee NWR. This is the highest number of swans recorded at the Refuge in the annual winter survey.

ACKNOWLEDGEMENTS

The Department would like to thank the following individuals for their valuable contributions to the Trumpeter Swan monitoring effort: Sue Wolff and Leslie Frattaroli (GTNP), Eric Cole and Joanne Behrens (NER), Lamont Glass and Carol Damberg (Seedskadee NWR), Lance Koch (BTNF), Bill Long (Wyoming Wetlands Society) and Gary Lust (Mountain Air Research). Many other Department personnel and interested citizens contributed observations of swans throughout the state; we appreciate their efforts.

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Table 1. Mid-winter Trumpeter Swan survey for the Rocky Mountain Population in Wyoming and the Tri-state Area, 1996-2005.

Year	Age Group	Yellowstone Natl. Park	Snake River	Other Wyoming	Wyoming Total	Tri-state Total
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
1998	Adult	NS ^a	142	124	266	1756
	Cygnet	NS	26	13	39	307
	Total	NS	168	139	305	2063
1999	Adult	291	187	131	609	2698
	Cygnet	54	44	21	119	772
	Total	345	231	152	728	3470
2000	Adult	87	161	46	294	2694
	Cygnet	13	60	5	78	746
	Total	100	221	51	372	3440
2001	Adult	53	251	117	421	3198
	Cygnet	11	38	25	74	719
	Total	64	289	142	495	3917
2002	Adult	131	337	110	578	3814
	Cygnet	13	61	11	85	546
	Total	144	398	121	663	4360
2003	Adult	146	254	100	500	3365
	Cygnet	34	45	13	92	532
	Total	180	299	113	592	3897
2004	Adult	149	307	155	611	3785
	Cygnet	33	18	40	91	746
	Total	182	325	195	702	4531
2005	Adult	124	367	194	685	4147
	Cygnet	30	109	57	196	1143
	Total	154	476	251	881	5290

^a NS = not surveyed.

Table 2. Fall Trumpeter Swan survey results for the Tri-state Area, 1996-2004. ^a

Year	Age Group	Montana	Idaho	Wyoming YNP	Wyoming Outside YNP	Tri-state Total
1996	Adult	95	127	20	74	316
	Cygnets	36	20	1	6	63
	Total	131	147	21	73	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
1999	Adult	120	103	20	69	312
	Cygnets	21	23	0	12	56
	Total	141	126	20	81	368
2000 ^b	Adult	127	102	20	69	318
	Cygnets	24	40	7	26	97
	Total	151	142	27	95	413
2001 ^c	Adult	140	124	17	81	362
	Cygnets	9	23	0	22	54
	Total	149	147	17	103	416
2002 ^d	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

^a Data from Dubovsky 2004 and Department Annual Completion Reports.

^b 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).

^c 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.

^d Wyoming Outside YNP results do not include five yearlings released in 2002 (Wyoming Wetland Society captive flock).

Table 3. Trumpeter Swan occupancy and production summary for Wyoming outside of Yellowstone National Park, 1990-2004. Mean and standard deviation are shown for the 10-year period 1990-2003.

Year	Sites Occupied	Nesting Pairs	Pairs with Hatchlings	Pairs with Fledglings	Number Hatched	Number Fledged
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 ^a	9 ^a	35	26 ^a
2001	28	17	10 ^a	8 ^a	29	21 ^a
2002	24	10	9	8	23	17
2003	26	18	13	11	42	35
<hr style="border-top: 1px dashed black;"/>						
<i>1990-2003</i>						
<i>Mean</i>	<i>24.0</i>	<i>13.6</i>	<i>7.1</i>	<i>5.7</i>	<i>22.0</i>	<i>14.8</i>
<i>SD</i>	<i>2.9</i>	<i>3.2</i>	<i>3.1</i>	<i>2.6</i>	<i>10.2</i>	<i>8.8</i>
<hr style="border-top: 1px dashed black;"/>						
2004	22	17	14	11	54	37

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

Table 4. Trumpeter Swan territorial site occupancy and production status for Wyoming outside Yellowstone National Park, 1994-2004. ^a

Site	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Targhee National Forest											
Ernest Lake	---	---	---	---	---	---	---	---	NB	NB	---
Bergman Marsh						N51	N43	N00C	---	NB	---
Indian Lake	N00	N00	N20	N10	N00	---	---	---	N33	N33	N55
Widget Lake	---	---	---	---	---	---	---	---	---	F	---
Loon Lake							OL	---	---	F	---
Rock Lake	---	---	1A	1A	---	---	---	---	---	---	OL
Junco Lake	0	---	---	OM	---	---	---	---	---	---	---
Fish Lake	---	---	---	---	---	---	---	---	---	---	---
Squirrel Meadows							OL	OL	NB	---	---
Moose Lake									NB	---	---
Alpine Wetland	OM	OM	---	N10	---	---	---	OL	1A	NB	NB
Grand Teton National Park											
Steamboat <i>(new 2002)</i>									N43	OM	---
Glade South	N43	OM	OM	OM	OM	N11	O	N22	OM	N00	N10
Glade North	OM	---	---	---	---	---	---	---	---	---	---
Christian Pond	OM	N43	N00	N44	N22	N42	N42	OM	1A	---	---
Arizona Lake	---	OM	1A	---	---	---	---	---	---	---	---
Emma Matilda	---	---	---	---	---	---	---	OM	1A	NB	---
Two Ocean Lake	---	---	---	---	---	---	N42	N53	N32	N30	N00
Swan Lake	N00	N00	N00	N00	N00	N00	O	N00	O	N00	N33
Hedrick Pond	N00	N30	N00	N00	N00	N00	N20	N20C	O	O	---
Elk Ranch	N75	N00	N00	N55	N21	OM	OM	OM	OM	OM	OM
Cow Lake	0	OM	OM	OM	O	---	---	---	---	---	---
Spread Cr. Ponds	OM	1A	1A	---	---	---	---	---	NB	---	---
Cygnets Lake	---	---	---	---	---	---	---	---	---	---	---
Polecat Slough	0	---	---	---	---	---	---	---	---	---	---
National Elk Refuge											
Hwy Pond	OM	N00	N50	OM	N00	O	N44	N32	N11	N10	---
NW Marsh	N44	N55	N43	N00	N11	N00	N31	N00	N42	N33	N44
NE Marsh						N00	N32	OM	N00	N11	N43
SE Marsh								N33	N00	---	N22
W. Pierre	N50	OM	N11	N00	N40	---	N00	OM	N11	N33	OM
Romney Ponds											OM

Table 4. Continued.

Site	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Jackson area											
Private Land											
Skyline (Puzzleface)	0	OM	OM	OM	OM	OM	OM	N30	OM	OM	O
Jackson Water Plant	OM	OM	1A	1A	---	---	---	---	---	---	---
Pinto/Halfmoon	OM	OM	N50	OM	OM	N00	N66	N44	N11	O	N31
Fir Creek	0	---	---	---	---	---	---	---	---	---	---
KOA	0	---	---	---	---	---	---	---	---	---	---
Ford's	OM	OM	---	---	---	---	---	---	---	---	---
Tracy Lake	---	---	---	---	---	---	---	---	---	---	---
Ferrin Pond	0	---	---	---	---	---	---	---	---	---	---
Salt River											
Private Land											
Kibby Pond					N22	OM	N00	N00	N00	N00	N00
Bridger- Teton National Forest North Zone											
Bridger Lake	---	1A	---	OM	---	OL	OL	OL	---	---	---
Atlantic Creek	---	OM	OM	N33	N22	N22	O	O	---	---	---
Enos North	N00	N22	N00	N00	N00	---	N22	OM	OM	N44	---
Enos South	N10	N43	N20	OM	---	N32	---	---	---	---	---
Lily Lake	N20	OM	---	---	---	OL	OL	OM	N00	N20	---
Lower Slide Lake	---	---	---	---	---	---	---	---	---	---	---
Upper Slide Lake	N11	N00	N10	N00	N66	N00 C	N00 C	N22	NB	OM	N11
Grizzly Lake pothole	N55	N40	N00	OM	---	OL	---	---	---	---	---
Burnt Fork				N11	---	---	---	---	---	---	---
Soda Lake	0	---	---	---	---	---	---	---	---	---	---

Table 4. Continued.

Site	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Bridger- Teton National Forest											
South Zone											
Wagon Cr. Lake	---	---	---	---	---	---	O	O	NB	O	O
Rock Crib	---	OUI D	OM	OM	---	---	---	---	---	O	---
Mosquito Lake	0	---	---	OM	---	OL	O	N00	OM	1A	OL
Roaring Fork P.	OM	OUI D	OM	OM	---	---	OL	O	---	---	---
Mud Lake	OM	N32	N20	N00	N20	N00	N00	---	N20	---	N50
Green/New Fork Rivers											
Private Land											
Carney oxbow											N55
Kitchen Res. S.						N00	C N54 grafted	C N55 grafted	N44	N54	N44
Kitchen Res. N.								NB	NB	NB	NB
Kendall Wetland								OL	OM	N00	N00
Oliver (Barden) Slough							N00	N00	---	N00	OM
Big Sandy R.	---	OM	OM	---	---	---	---		---	---	---
Swift Reservoir									OM	NB	NB
Shafer Slough								OM	---	NB	---
LaBarge Pond									---	---	---
Seedskadee NWR											
Hawley Pool 6	---	---	---	N55	N42	N44	N44	N44	dry	N44	N65
Hawley Pool 1	---	---	---	1A	OM	OM	---	N11	NB	N44	N60
Hawley Pool 2										N44	N54
Hawley Pool 3										N43	---
Other Wyoming											
Swamp Lake	N00	OM	1A	1A	---	---	1A	1A	1A	1A	---
Colony Site	N55	N20	N00	N00	OM	?	?	OUI D	1A	NB	NB

Table 4. Continued.

^a 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).

OUID = Pair occupied the site, status of pair unidentified or status of site as a territory unidentified.

N42 = Pair nested, laid eggs, hatched 4 eggs, and fledged 2 cygnets.

--- = No occupancy of site by a pair.

C = eggs collected for captive rearing project (new code added 2000).

1A = Only 1 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 slight only (category added 2003).

Table 5. Summary of Trumpeter Swan annual mortalities in Wyoming showing age class and probable cause of death, 1991-2005.

Year ^a	Total # Died	# of Adults ^b	# 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
<i>Total^c</i>	<i>127</i>	<i>71</i>	<i>18</i>	<i>38</i>	<i>21</i>	<i>22</i>	<i>3</i>	<i>6</i>	<i>75</i>
<i>Percent</i>		<i>58%</i>	<i>13%</i>	<i>29%</i>	<i>17%</i>	<i>17%</i>	<i>2%</i>	<i>5%</i>	<i>59%</i>

^a 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.

^b Swans with all white plumage over 1 year of age; likely some yearlings are included in this group.

^c Summary statistics are based only on current period from 1998-2005.

Table 6. Summary of Trumpeter Swan neck collars and leg bands observed in Wyoming or eastern Idaho, 15 April 2004 through 14 April 2005. 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
44E green		10/28/04	Swan Lake, YNP	2001 cyg released Bear River; trapped Harriman SP.	M	ASY
42H green		11/2/04	Boyles Hill Winter Pen, Jackson	Collared RRL Dec 93 as adult; released Summer Lake; with mate and 5 cygnets	M	ASY
K13 green		11/6/04	Henry's Fork, Last Chance ID	Collared July 2003 British Columbia, Milligan Hills With mate plus one cygnet	F	ASY
X04 green		11/6/04	Henry's Fork, Last Chance ID	Unmated; collared 1991 HSP; released Summer Lake	M	ASY
31E green		11/7/04	Yellowstone River, YNP	Collared 2001 HSP as cygnet	F	ASY
2A2 red		11/7/04	Yellowstone River, YNP	Collared July 2003, Fort Nelson BC; with 2A3 and 4 cygnets		ASY
2A3 red		11/7/04	Yellowstone River, YNP	Collared July 2003, Fort Nelson BC; see above		ASY
K14 green		11/7/04	Yellowstone River, YNP	Collared July 2003, Summit Lake, Yukon; with mate, 1 cygnet	F	ASY
42H green		11/10 to 12/18/04	Three Creeks subdivision pond	See above		
3E5 green		11/12/04	Flat Creek Pond, Thayne	Translocated Dec. 14, 2001 from HSP to Bear River; With mate		ASY
	F05 yellow right	12/7/04	Boroff Reservoir, Daniel	Released as yrl 2004 Cora, recollared 2003 Kitchen Res. Collar found broken off 2/24/04 Boroff Res. With mate 2005.		4 yr old
23R green		12/23/04	Seedskadee NWR	With group of 13 swans		
Y93 yellow		01/03/05	Bull Lake Creek	With group wintering east of Dubois		
6H3 green		2/07/05	Jackson Fish Hatchery	Collared HSP Nov. 93 adult, released Summer Lake. With mate 2005.		ASY
N72 green		2/21-28/05	Teton River, Idaho	Collared HSP Dec. 1990, released Fort Hall, ASY. With mate and 1 cygnet this year.	F	ASY
Y80 yellow		3/4/05	Flat Creek, South Park Unit	With 10 adults and 4 cygnets		
0E9 green		3/4/05	Crescent H Subdivision Pond	With mate and 2 cygnets		

Table 6. Continued.

Neck Collar	Leg Band or Patagial Tag	Date	Location	Origin/Notes	Sex	Age
6H3 green		3/9/05	Flat Creek, South Park	With mate, see above		
55E green		4/1/05	South Park Unit, Pond 3	Collared cygnet HSP Nov 2001, released Bear River In 2005, with mate plus 55 adults and 11 cygnets	M	AHY
Y80 yellow		4/1/05	South Park Unit, Pond 3	Unmated		
	F24 red left	4/1/05	South Park Unit, Pond 3	Right leg silver band		

LONG-BILLED CURLEW SURVEYS IN WESTERN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Long-billed Curlew

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Andrea Orabona Cerovski, Nongame Bird Biologist

INTRODUCTION

The purpose of the Long-billed Curlew surveys in 2004 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 will 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 2004 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 2004, each survey was conducted twice: Horse Creek 3 and 5 June, New Fork on 9 and 11 June, Chapman Bench on 1 and 7 June, and GTNP Hayfields on 2 and 3 June. Surveys are scheduled to coincide with the peak in curlew concentrations noted by Cochrane (1983); however, surveys in 2004 were conducted about one week later than in previous years due to inclement weather. Surveys at the four sites were conducted in a manner similar to that of 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. In addition, the Horse Creek and New Fork routes were each surveyed on 12 May using a new protocol being implemented rangewide by the U.S. Fish and Wildlife Service (Fellows 2004). We conducted both survey methodologies on these two routes for comparison purposes.

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: 23 and 38 on Horse Creek, 14 and 4 on New Fork, 7 and 5 on Chapman Bench, and 10 and 5 on GTNP. Total curlews detected on the Horse Creek and New Fork routes using the USFWS protocol was 81 and 2, respectively. 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; 11 of these routes were conducted in 2004 with a total of 13 curlews observed on 5 of the 11 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.

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 experience 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.

During the pilot year of implementing the USFWS protocol (Fellows 2004) on the Horse Creek and New Fork survey routes, the number of curlews detected was considerably higher on the Horse Creek route and somewhat lower on the New Fork route. Additional years of data are required to adequately interpret these differences.

ACKNOWLEDGEMENTS

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Table 1. Long-billed Curlew survey route results, 1987 and 1991-2004.^a

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 ^b	1.4 (0.9)	13 ^b	3.3 (2.0)	----	----	----	----
1991	75 ^b	9.4 (5.8)	25 ^b	6.3 (3.9)	----	----	----	----
1992	53	6.6 (4.1)	7	1.8 (1.1)	26 ^b	3.7 (2.3)	----	----
1993	65	8.1 (5.1)	5	1.3 (0.8)	14 ^b	2.0 (1.2)	10 ^b	0.9 (0.6)
1994	45	5.6 (3.5)	11	2.8 (1.7)	7 ^b	1.0 (0.6)	----	----
1995	53 ^b	6.6 (4.1)	12 ^b	3.0 (1.9)	0 ^b	0.0 (0.0)	19 ^b	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 ^b	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 ^c	81	10.1 (6.3)	2	0.5 (0.3)	----	----	----	----

^a If more than one survey was conducted, the average number of curlews recorded was used.

^b Only one survey was conducted.

^c Results from the 12 May survey using USFWS protocol.

Table 2. Breeding Bird Survey data for Long-billed Curlews, 1980-2004. 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					1
15	Fontenelle			0	0	0			0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	3
28	Yoder	0	0	0				0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
*33	Clark											0	2	3								4	1	10
*36	Moose	0	0	0	0	1	0	2	0	1	2	2	2	0	0	0	2	4	4	0	4	0		24
45	Recluse	0		0	0			0	0	0		2	1	3	0	0	0	0	0	0	0	0	2	8
48	Seely ^a											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	0	1	0	0	10
71	Soda Lake	0	0	0	0	0	0			0		0	3	1	0	0	0		0				0	4
*74	Boulder			0	2	2							0			0	0		0	0	3			7
*75	Big Sandy		0		0				0	2	7	5		3		6		8	0	0	3	1	5	40
76	Farson				1												0						0	1
*82	Lamont								1	0	0	1	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	0	1
*89	Meadowvale				0	13	0				0	2	0	0		0	0							15
*90	Lusk			7	9	0			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	3
206	Caballa Creek													4	0	0	0	0	0	1	0	0	0	5
<i>Total Observed / Year</i>		12	12	17	17	17	0	2	1	7	14	15	9	19	1	8	2	13	7	1	19	9	11	213

Table 2. Continued.

Route #	Route Name	Year			Route Total
		2002	2003	2004	
9	Dubois				1
15	Fontenelle	0	0	0	3
28	Yoder	0	0	0	1
*33	Clark	1	0	4	15
*36	Moose		1	0	25
45	Recluse	2	1	2	13
148	Seely 2 ^a	0		2	4
67	Highlight				1
*69	Newcastle				10
71	Soda Lake	0	0		4
*74	Boulder	0	0		7
*75	Big Sandy				40
76	Farson	5			6
*82	Lamont	0		0	9
83	Pathfinder	1	0	0	2
*89	Meadowvale	0	0		15
*90	Lusk			4	27
*93	Mtn. View	0	1		36
150	Gov't. Valley	0	0	0	6
173	Ryegrass	0	3	1	8
195	Seedskadee	2	0		5
206	Caballa Creek	0	0		5
<i>Total Observed / Year</i>		11	6	13	243

^a Route #48 (Seely) was modified in 2002 and is now #148 (Seely 2).

MOUNTAIN PLOVER POPULATION MONITORING AT FIVE CONCENTRATION AREAS IN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Mountain Plover

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Robert Stephens, Grassland Ecologist

INTRODUCTION

In a study of Mountain Plovers in Wyoming, Plumb (2004) identified five concentration areas, monitored population density, and estimated the population size in the State. The purpose of the Mountain Plover survey conducted in 2004 was to build upon the information reported by Plumb (2004) by obtaining density estimates at the five concentration areas in order to estimate population trends. Funding for this survey was provided by States Wildlife Grants.

METHODS

In 2004, the same five concentration areas and the same sampling methodology were used as described in Plumb (2004). The five concentration areas include two grassland landscapes and three desert-shrub landscapes. The two grassland landscapes are located in the Laramie and Shirley Basins, and the desert-shrub areas are in the Big Horn, Great Divide, and Washakie (between Baggs and Interstate 80) Basins. The Laramie and Shirley Basin concentration areas were surveyed twice in 2004. The initial survey occurred in late May when most breeding birds were on nests. The second sampling phase occurred in late June to target the chick-rearing phase. The Bighorn, Great Divide, and Washakie Basins were sampled one time in late June.

The following methodology is from Plumb (2004). Transect grids with at least 1,312-foot (400 m) spacing were conducted from an ATV driven at <9.3 miles/hour (15 km/hour) in each concentration area. Each transect began on a road or two-track that ran alongside or through the concentration area. Starting points were selected using a random numbers table. Stops were made at 0.25-mile (0.4-km) intervals where observers stepped off vehicles. In 2004, there was only one observer, which differs from Plumb (2004), when two independent observers per transect were used. A laser range finder [Leica LRF 900 Scan Rangefinder, rated to 900 yards (823 m)] was used to measure the distance to each bird detected. A standard compass was used to establish the radial

detection angle from the transect line. All sampling was conducted between local sunrise and 1000 hours, and between 1630 hours and local sunset to make use of horizontal lighting and peak activity levels for the birds. Sampling was not conducted when inclement weather or poor lighting threatened to bias probability of detection.

Program DISTANCE 4.1 (Buckland et al. 2001) was used to conduct the analysis. DISTANCE uses measured distances between detected objects and a central point or transect to estimate animal density using a set of robust models. Mountain Plover densities were estimated globally using three estimators: 1) half-normal with cosines, 2) uniform with cosines, and 3) hazard rate with cosines. Model averaging was used to generate global density estimates. Model averaging was based on weighted Akaike's Information Criterion (AIC) contributions from all three models. The largest 10% of sampled distances were truncated to reduce error incurred by outliers as recommended by Buckland et al. (2001). Histograms of the probability of detection were inspected for violation of statistical assumptions. AIC was used to evaluate the relative fit of each of the models.

RESULTS

The number of Mountain Plovers observed at each concentration area during the May or June observation periods ranged between 23 and 32, with a total of 185 (Table 1). Transect distance ranged from 9.8 to 26.4 miles (15.8 to 42.5 km), with a total of 116.4 miles (187.8 km) covered.

Plumb (2004) determined that bird densities were similar in grassland and shrubland habitats, and pooled the two habitat types together for a global estimate. Using Program DISTANCE, a global density estimate of 11.78 birds/mile (4.55 birds/km) was generated for birds in grassland and shrubland habitats. The effective strip width (ESW) was 351 feet (107 m) and the probability of observing a bird within the ESW was 51.44% (Table 2). It does not appear that statistical assumptions were violated after inspecting a histogram of the probability of detection (Figure 1).

DISCUSSION

The 2004 estimate of Mountain Plover density (4.55 birds/km) in Wyoming is nearly identical to the 2003 estimate (4.47 ± 0.55 birds/km) obtained by Plumb (2004). Surveys will need to be conducted in succeeding years before reliable estimates of population trend can be made.

An abnormality was detected in the dataset from the Washakie Basin concentration area. The density at this area was 22.45 birds/mile (8.67 birds/km), which is approximately twice as high as the density at the other sites. The high density at the Washakie Basin area is likely the result of that site having the shortest transect distance.

I suggest that a minimum of 15 miles (24 km) be surveyed and 25 detections be made before observations at an area are terminated in the future.

The location of a transect line within a concentration area was determined randomly in 2003 (Plumb 2004) and 2004. The starting point for each transect was selected using a random numbers table, and the starting point originated from a road or two-track that ran alongside or through the concentration area. As the observer moves along that transect, the observer determines when a transect leaves suitable habitat. At that point, the observer makes a 90 degree turn so that the new orientation of the transect continues on through suitable habitat. If suitable habitat is no longer present, then the transect ends. The decision of what constitutes suitable habitat will vary between observers and, thus, is likely to affect density estimates as observers change in future years. Therefore, fixed transects should be established and used in future years to eliminate this potential source of variance between observers.

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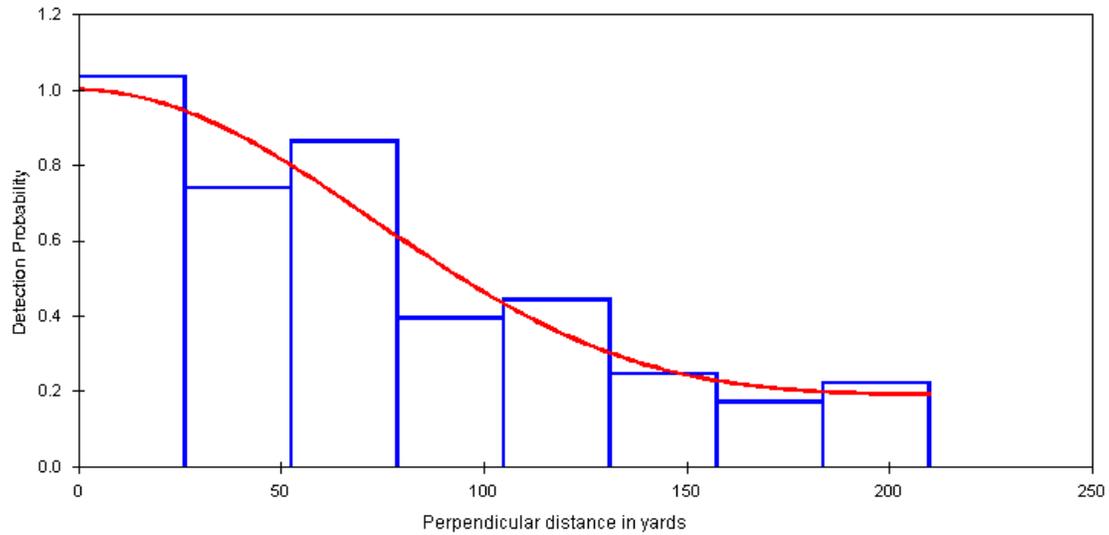


Figure 1. Detection function.

Table 1. Mountain Plover observations and transect distances at concentration areas.

Concentration Area (Period)	Mountain Plover Observations	Distance of Transects miles (km)
Laramie Basin (May)	25	16.1 (25.9)
Laramie Basin (June)	29	21.2 (34.1)
Shirley Basin (May)	26	26.4 (42.5)
Shirley Basin (June)	25	12.1 (19.5)
Bighorn Basin (June)	23	15.2 (24.5)
Great Divide Basin (June)	25	15.6 (25.1)
Washakie Basin (June)	32	9.8 (15.8)

Table 2. Global estimation summary from Program DISTANCE 4.1

	Estimate	%CV	df	95% Confidence Interval	
Stratum: 1. ShBa Uniform/Cosine					
D	11.099	26.35	11.12	6.2802	19.617
Stratum: 2. Lar Uniform/Cosine					
D	11.347	18.39	14.24	7.6784	16.770
Stratum: 3. Baggs Uniform/Cosine					
D	22.455	37.73	5.53	9.0258	55.867
Stratum: 4. GrtDivBas Uniform/Cosine					
D	9.3744	30.12	8.21	4.7663	18.437
Stratum: 5. BighnBas Uniform/Cosine					
D	10.122	14.22	6.97	7.2421	14.146
Pooled Estimates:					
	Estimate	%CV	df	95% Confidence Interval	
D	11.780	14.18	54.09	8.8780	15.629
p	0.51436	8.36	165.00	0.43623	0.60649
ESW	107.97	8.36	165.00	91.569	127.31

Strip width = Effective strip width = 107m

Glossary of terms

Data items:

- W - width of line transect or radius of point transect
- p - probability of observing an object in defined area
- ESW - for line transects, effective strip width = W*p

Effort : 115.5500
 # samples : 38
 Width : 209.9087
 # observations: 167

RAPTOR NESTING SURVEY COST-SHARE AGREEMENT COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Species of Special Concern
Raptors

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Rob Stephens, Grassland Ecologist

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 monitor nesting activity at known nest sites and to opportunistically locate new nests in the U.S. Forest Service (USFS) Thunder Basin National Grassland (TBNG). Data obtained from the survey will be used for future mitigation efforts, to assist in the capture of adult Ferruginous Hawks on the TBNG for research on migration patterns and habitat use, and to update the Wyoming Game and Fish Department's (Department) database of raptor nesting activity. The USFS Medicine Bow-Routt National Forest, the BLM, and States Wildlife Grants provided funding for this survey and the Department conducted aerial surveys and compiled survey data.

METHODS

The 2004 survey followed similar study parameters detailed in previous reports. Transects were established at 0.5 mile (0.8 km) intervals. A Geographic Positioning System [Garmin GPS 12 XL (Olathe, KS), NAD83] was used to record all nest locations and maintain accurate flight patterns on transects. Locations of historic nest sites were obtained from previous surveys conducted cooperatively between the TBNG, BLM, and the Department. Surveys were conducted on 26-28 April 2004 from an American Champion 7GCBC airplane. This time frame was chosen because nesting Golden Eagles and Ferruginous Hawks are either incubating or brooding at this time, and leaf-out of cottonwoods occurs shortly thereafter, which reduces the ability to detect nests.

Each located nest was observed for evidence of nesting activity and the presence of adult birds, young, or eggs. The physical condition of each observed nest was also noted. All raptor nests encountered, regardless of activity or condition, were recorded. All observations were documented using the field names and codes presented below.

Numer. Activity Code	Alpha Activity Code	Definition
02-1	ACTI	Active nest – With eggs in nest (or see 02-2).
02-2	ACTI	Active nest – With young in nest (or see 02-3).
02-3	ACTI	Active nest – With fledged young near nest (or see 02-4).
02-4	ACTI	Active nest – With an incubating/brooding adult.
	ACFA	Active failed – An active nest that did not fledge young.
11-1	OCCU	Occupied – Nest with fresh lining (and/or 11-2; 11-3).
11-2	OCCU	Occupied – Adult presence at or near the nest (and/or 11-1; 11-3).
11-3	OCCU	Occupied – Nest w/recent and well-used perch site near the nest (and/or 11-1; 11-2).
	OCAL	Occupied alternate - A tended nest w/in the boundaries of a territory housing an active nest.
	INAC	Inactive – A nest with no apparent recent use or adult presence at the time of observation, but in good condition.
	INAL	Inactive alternate – Inactive nest w/in a territory that contains an active nest.
	INDI	Inactive dilapidated – An inactive nest in a state of ruin due to weather, natural aging, and/or neglect.
	INDE	Inactive destroyed – A 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, purposes, have disappeared.
	GONE	Nest was gone – A nest located during a previous study but has been completely destroyed with no sign of nest material during the current study.
	?	Unknown = A nest whose status was undetermined during subsequent surveys in the same nesting season.

Substrate Code	Code Definition
CLF	Cliff
CKB	Creekbank
CTL	Cottonwood (live)
CTD	Cottonwood (dead)
ELL	Elm (live)
GHS	Ground-Hillside
MMS	Manmade Structure
POL	Ponderosa Pine (live)
POD	Ponderosa Pine (dead)
ROC	Rock Outcrop
WIL	Willow (live)
RUS	Russian Olive

Species Alpha Code	Species Common Name
BAEA	Bald Eagle
FEHA	Ferruginous Hawk
GHOW	Great Horned Owl
GOEA	Golden Eagle
PRPA	Prairie Falcon
RTHA	Red-tailed Hawk
SWHA	Swainson's Hawk

RESULTS AND DISCUSSION

A total of 22.1 hours was spent conducting aerial transects during in 2004. Surveys results documented 155 historic nest sites, 29 new nest sites, and 62 occupied or active nests. Ferruginous Hawks were at 17 nests, Golden Eagles were at 31 nests, Red-tailed Hawks were at 11 nests, a Swainson's Hawk was at 1 nest, a Great Horned Owl was at 1 nest, and a raptor at 1 nest was unidentified. Data for each nest site was provided to all cooperating agencies.

SWIFT FOX IN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME MAMMALS – Species of Special Concern
Swift Fox

PERIOD COVERED: 15 April 2004 – 14 April 2005

PREPARED BY: Martin Grenier, Nongame Mammal Biologist
Laurie Van Fleet, Nongame Biologist
Rob Stephens, Grassland Ecologist
Todd Filipi, Nongame Contract Biologist
Daniel Webber, Nongame Contract Biologist

INTRODUCTION

Recent Wyoming survey efforts for swift fox (*Vulpes velox*) have focused on conducting trend surveys using known swift fox locations across the state (Grenier and Van Fleet 2005). The surveys followed a protocol developed by Olson et al. (1999). Although baseline trends have been established in many portions of the state, swift fox distribution was not addressed during this time. The Conservation Assessment and Conservation Strategy for the Swift Fox in the United States (Kahn et al. 1997) states that swift fox distribution be monitored/revisited every five years; the next revision of the range-wide distribution map by the Swift Fox Conservation Team (SFCT) is scheduled for 2006. The SFCT plans to use recent detections of swift fox, if they occur, within counties historically occupied by swift fox to generate the range-wide distribution map and monitor occupancy across the range of the species. The Wyoming Game and Fish Department (Department) and the SFCT have determined that recent records of several historic swift fox detections in some counties are lacking, including in Wyoming. The Department and the SFCT believe that swift fox are still present in these areas; however, data are lacking. In Wyoming, Sheridan, Johnson, Weston, and Crook counties are lacking recent records.

Moreover, distribution records of swift fox in many Wyoming counties need to be revised and additional records are needed. According to Woolley et al. (1995), the current population occurs primarily in three geographic regions: Region 1) Laramie Valley and Shirley Basin in Albany and Carbon counties; Region 2) Southeastern Plains – parts of Laramie, Platte, and Goshen counties; and Region 3) Powder River Basin – parts of Converse, Natrona, Weston, and Niobrara counties. Many townships of these counties have not been surveyed to document swift fox presence or absence. Therefore, future survey efforts for swift fox will be aimed at revising and improving distribution data for the swift fox in Wyoming.

METHODS

Track plates were made of 16-gauge sheet steel, measured 2 x 2 feet (61 x 61 cm), and were painted with two coats each of gray primer and gray paint. A 1-gallon weed sprayer was used to coat the plates with talc/carpenter's chalk and ethyl alcohol mixture; the ratio used was 1 cup of talc powder to 1.5 cups of carpenter's chalk per 1-gallon 95% ethyl alcohol. This mixture will prepare 40-50 track plates. Approximately 0.5 ounces (15 g) of stirred jack mackerel were placed in the center of the plate as an attractant. Plates were spaced 0.5 miles (0.8 km) apart within public road easements where tracks could be observed without requiring private land access. Track plates were placed along an existing fence if one was present. When a fence was not present, plates were placed 33 to 82 feet (10 to 25 m) from the centerline of the road.

Flagging marked locations of plates and a GPS location in UTM coordinates were recorded for all track plates in each transect. Transects were observed for a maximum of six days, but monitoring ceased the day after swift fox presence was confirmed. During periods of heavy rain and snow, plates were left in place for up to two additional nights. If rain or snow persisted for more than two nights, the survey effort was abandoned and postponed until favorable weather conditions returned.

Tracks of swift fox were identified utilizing Grenier et al. (2003), recorded, and lifted for future reference and measurements with 2-inch clear packing tape. In some cases, clear contact paper was used to preserve an entire track plate for future use in identifying tracks. Plates were cleaned with a stiff brush or steel wool before reuse.

All townships with swift fox detections prior to 2004 were identified within Albany and Carbon counties using data from the Department's Wildlife Observation System. Every other township without confirmed swift fox detection prior to 2004 within suitable habitat was selected for survey (Fig. 1).

RESULTS

Twenty-eight townships in Albany (20) and Carbon (8) Counties had swift fox detections prior to 2004 (Fig. 2). Track plate survey effort for Albany and Carbon Counties are presented in Table 1. A completed survey resulted after either a swift fox was detected or when a transect was run for six consecutive nights without a swift fox detection. Incomplete surveys resulted from an inability to run a transect for the entire six nights. A total of 41 transects were attempted of which 26 (70%) were completed. The remaining 11 (30 %) were not completed due to inclement weather conditions, for example multiple nights with rain. A total of 720 track plate nights were utilized during the surveys, of which 445 (62%) were associated with completed surveys. Fifty-two miles (70%) of public roads in Albany and Carbon Counties were associated with completed surveys.

Swift fox detection results are presented in Table 2. Twenty-six townships had completed surveys (Fig. 3). Seventeen of the 26 (65%) townships with completed surveys had swift fox detections (Fig. 4). An average of 5.5 survey nights was needed to detect a swift fox in Albany County, whereas an average of 4.6 survey nights was needed in Carbon County. Track plate nights per swift fox detection was 27.5 in Albany and 23 in Carbon County. All swift fox detections for Albany and Carbon Counties are presented in Figure 5. Approximately four townships were not surveyed due to lack of public access; as such, adjoining townships were selected as replacements.

Non-target detections in Albany County totaled 19 (Table 3). Coyote (*Canis latrans*), domestic cat (*Felis catus*), striped skunk (*Mephitis mephitis*), and red fox (*Vulpes vulpes*) were the most commonly detected non-target species. Non-target detections in Carbon County totaled 6 (Table 3). Only coyote and domestic dog (*Canis familiaris*) were detected.

An additional five townships were attempted in Laramie County in 2004; however, poor weather conditions precluded the completion of these surveys; thus, these will not be reported. Surveys attempted in Laramie County will be rescheduled in the future.

DISCUSSION

The distribution surveys in 2004 increased known swift fox locations in Albany County significantly and in Carbon County only slightly. This is correlated to both survey effort and weather conditions. Albany County was surveyed intensively in 2004 during favorable weather conditions while the surveys in Carbon County occurred near the Albany County line and were surveyed during fair to poor weather conditions.

Swift fox were the most commonly detected species in 2004 in Carbon and Albany Counties. This is similar to previous surveys conducted in Region 1 (Grenier and Van Fleet 2005). Swift fox in Albany and Carbon Counties may be easier to detect than in other regions of the State because these counties are primarily made up of public lands, which makes them easier to survey, and the habitat remains contiguous throughout the region. Large patches of swift fox habitat occur primarily on private lands in eastern Wyoming and are more difficult to survey. However, trap success from the Turner Endangered Species Fund translocation effort indicate that although swift fox may be more difficult to detect in eastern Wyoming, they are likely as abundant as in Albany and Carbon Counties.

Survey efforts in 2005 will target Sheridan, Johnson, Weston, and Crook Counties in order to assist the SFCT with the range map revision. The last record of swift fox in Crook County was reported in 1970, while the last Weston County record of swift fox was reported in 1996. The lack of recent to less than five years of swift fox in these counties does not indicate that the species has been extirpated from the area. Recent records from Montana, just north of the Crook County border, exist within the last five

years. Lack of records in these areas in Wyoming simply indicates a lack of survey effort at this time.

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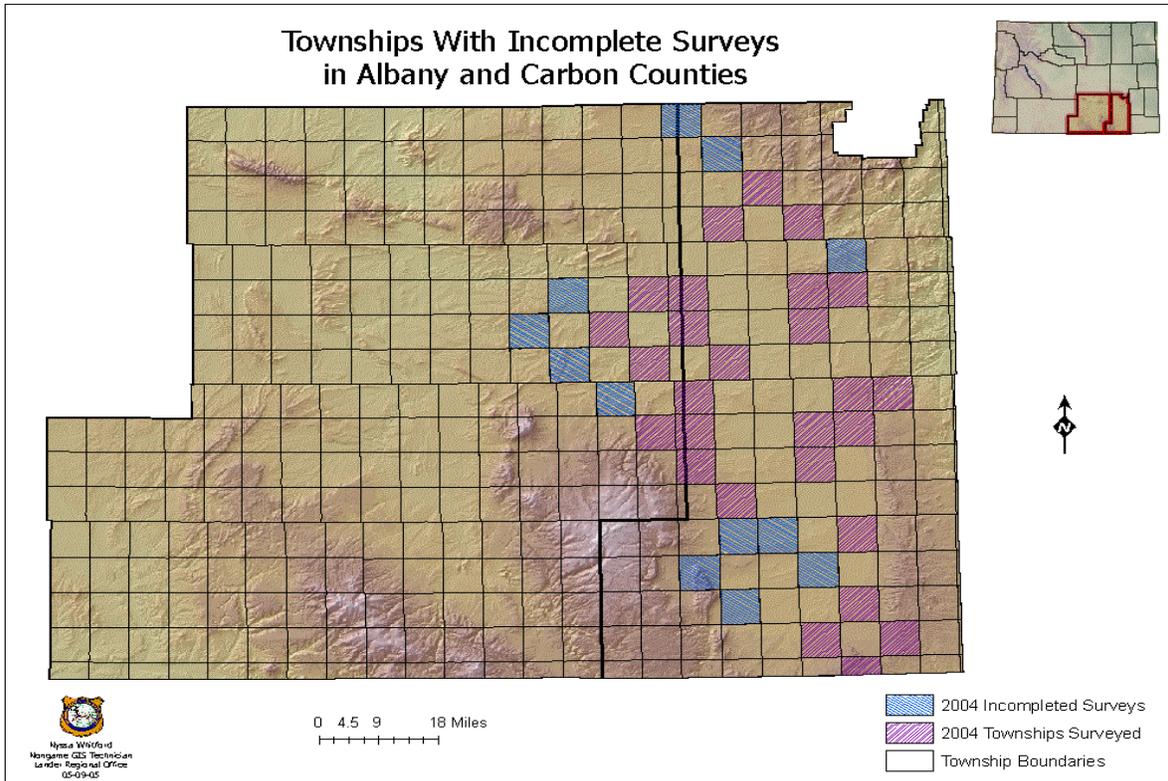


Figure 1. Townships planned for survey in Albany and Carbon County, Wyoming in 2004.

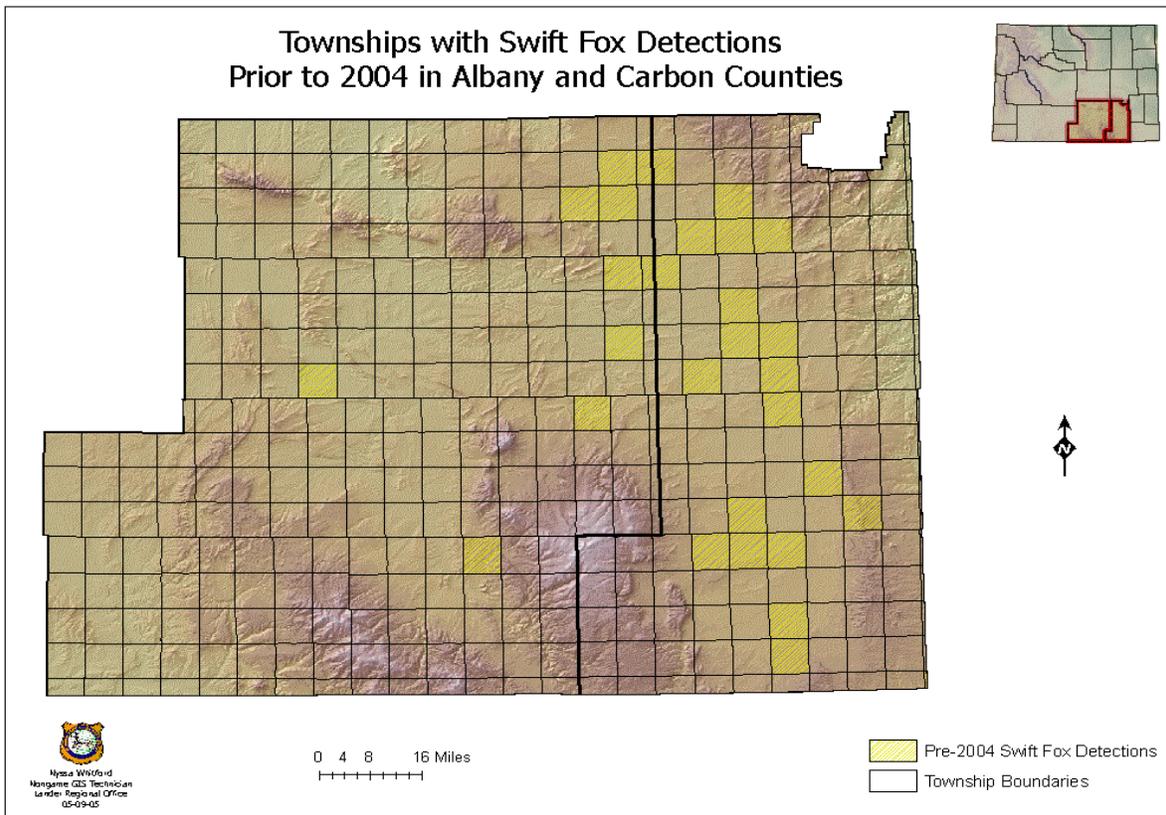


Figure 2. Townships with swift fox detections prior to 2004 in Albany and Carbon Counties, Wyoming.

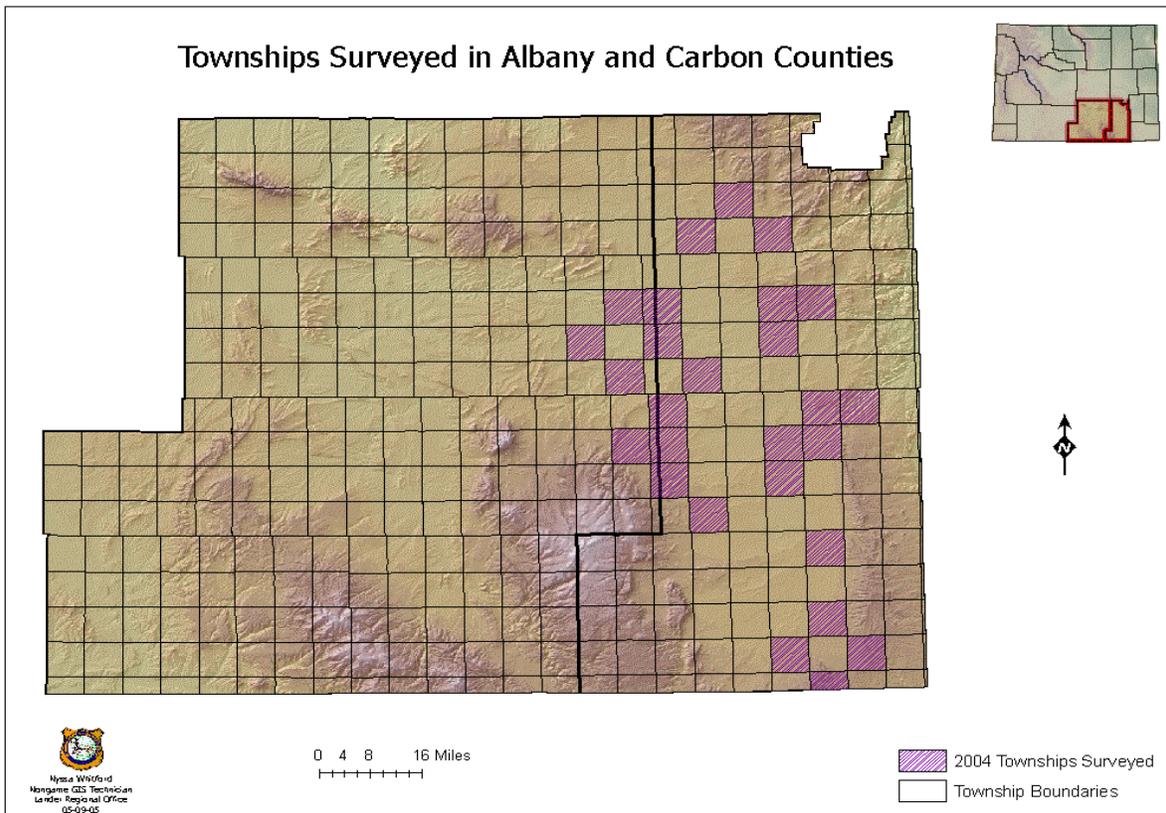


Figure 3. Townships with completed surveys in Albany and Carbon Counties, Wyoming 2004.

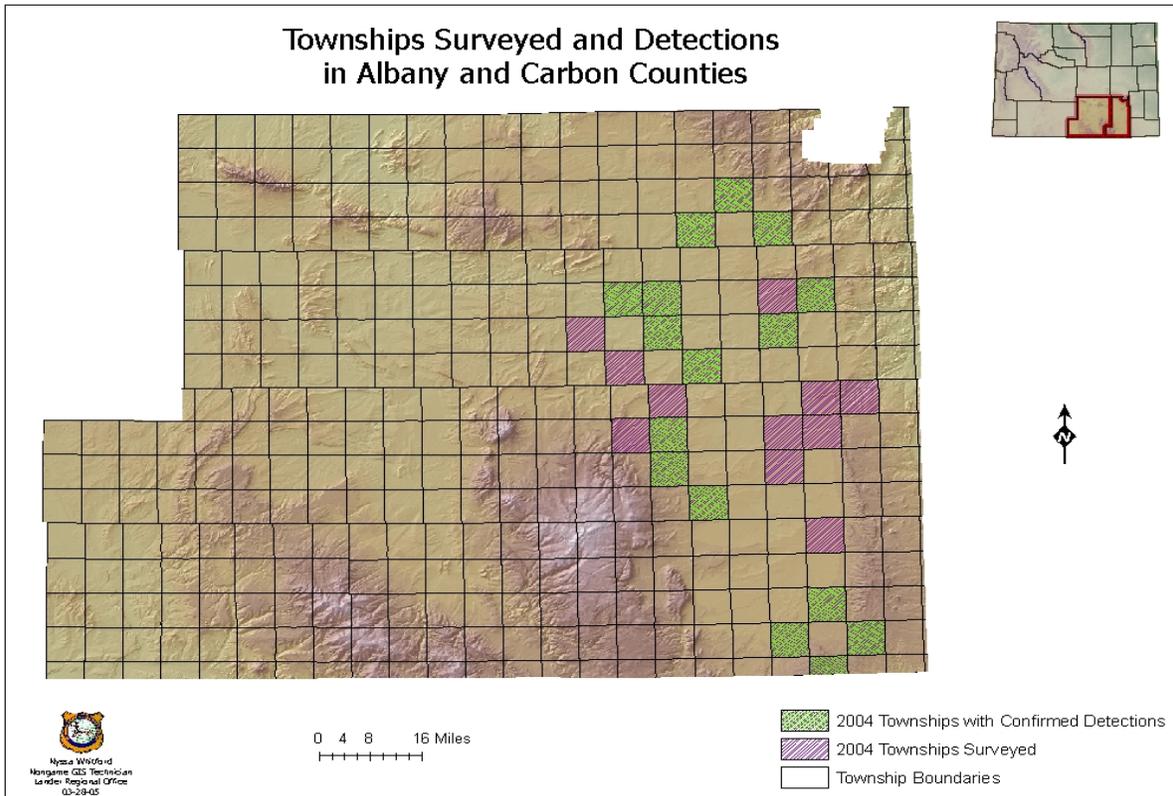


Figure 4. Townships with confirmed swift fox detections in Albany and Carbon Counties, Wyoming in 2004.

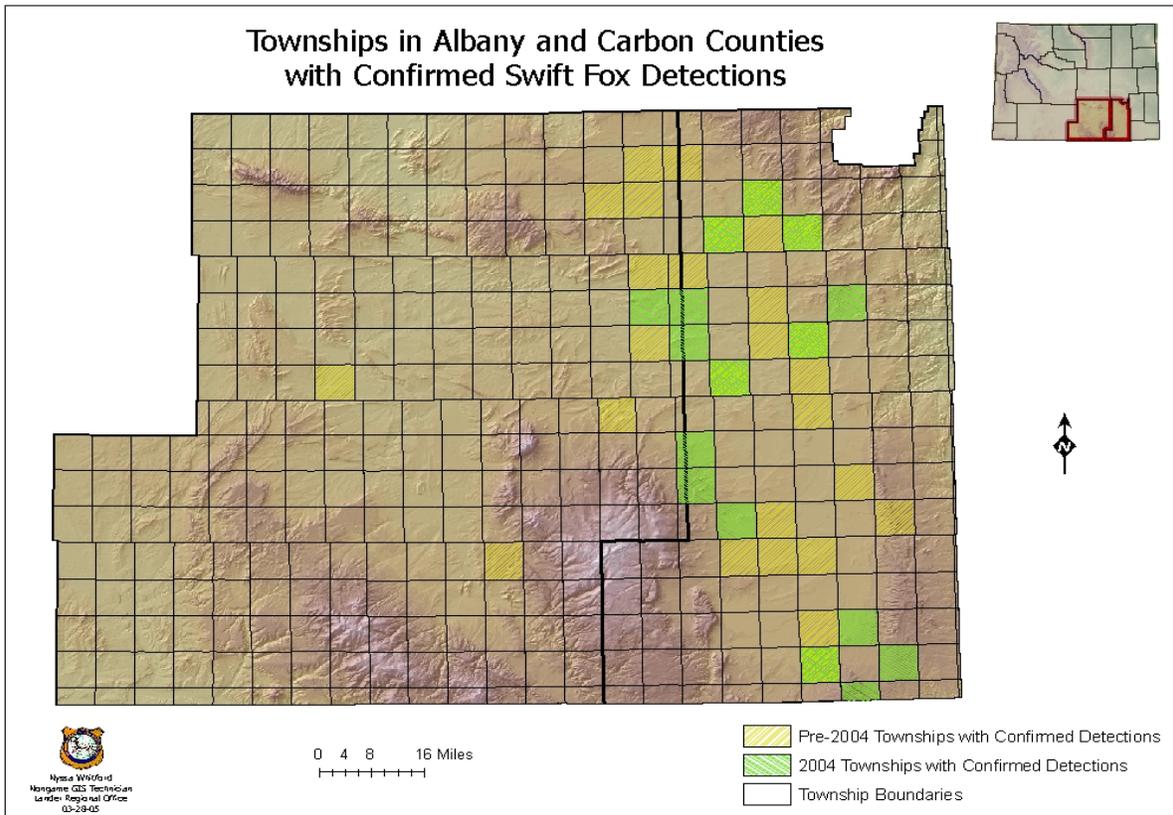


Figure 5. All townships with confirmed swift fox detections in Albany and Carbon Counties, Wyoming.

Table 1. Track plate survey effort for Albany and Carbon Counties, Wyoming, 2004.

County	Total # of Transects Run	Total # Track Plates	Avg. # of Plates / Transect	Total # Nights Run	Total # of Track Plate Nights	Total Miles of Transects
Albany	21	105	5	66	330	42
Carbon	5	25	5	23	115	10
Total	26	130	5	89	445	52
Albany ^a	6	30	5	40	200	12
Carbon ^a	5	25	5	15	75	10
Total	11	55	5	55	275	22

^a Incomplete surveys due to inclement weather.

Table 2. Swift fox detections for Albany and Carbon Counties, Wyoming, 2004.

County	Total # of Transects Run	Swift Fox Detections	Total # Nights Run	Total # of Track Plate Nights	Track Plate Nights / Swift Fox Detections
Albany	21	12	66	330	27.5
Carbon	5	5	23	115	23
Total	25	17	89	445	25.25
Albany ^a	6	0	40	200	0
Carbon ^a	5	0	15	75	0
Total	11	0	55	275	N/A

^a Incomplete surveys due to inclement weather.

Table 3. Non-target detections on completed surveys for Albany and Carbon Counties, Wyoming, 2004.

County	Non-target Species Detected ^a						
	CALA	FECA	CAFA	PRLO	MEME	VUVU	TATA
Albany	4	4		1	4	4	2
Carbon	5		1				

^a CALA = coyote
 FECA = domestic cat
 CAFA = domestic dog
 PRLO = raccoon
 MEME = striped skunk
 VUVU = red fox
 TATA = badger

BAT SURVEYS IN WYOMING COMPLETION REPORT

STATE OF WYOMING

NONGAME MAMMALS – Species of Special Concern
Bats

PERIOD COVERED: 19 January 2004 – 14 April 2005

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

INTRODUCTION

The Wyoming Game and Fish Department (Department), in cooperation with the Bureau of Land Management (BLM), the U.S. Forest Service-Shoshone National Forest (USFS), and the U.S. Fish and Wildlife Service (USFWS), conducted a three-year project from 1994-1997 to inventory caves and abandoned mines in Wyoming to document their potential as bat habitat (Priday and Luce 1998).

The objectives of the project were to determine: 1) the use of individual caves, abandoned mines, and buildings by one or more bats; 2) the species and number of bats using the roost; 3) the potential for each site to serve as bat habitat; 4) the roost type and season of year the roost is being used; and 5) the amount of human traffic and disturbance. Data has been used to recommend management strategies to protect bats and bat habitat in conjunction with other management needs.

The second phase in the program, development of an active management program to preserve bat populations and habitat and potentially improve the habitat at each important site, was initiated in 1998. The third phase, prioritization of the existing bat site database and the development of a monitoring schedule for the winter hibernacula season and summer/maternity season, was completed during the winter of 2001. New sites that have not been previously surveyed will be incorporated into the monitoring schedule as needed.

A large proportion of the known underground bat roosting sites in the state have been identified; however, the Department of Environmental Quality (DEQ) currently believes that there are 300 to 1,000+ abandoned mines that have not been identified in past inventories. The DEQ is currently inventorying the state in an effort to identify additional abandoned mines (A. Napp, Wyoming Department of Environmental Quality, personal communication).

- November-April: Traversed cave or mine to record species present, numbers, and location.
Standard data collected during each entry included:
- 1) Number of bats observed, group sizes, and proximity of groups to each other.
 - 2) Location of bats (measured from entrance) on walls or ceiling.
 - 3) Temperature and humidity at selected locations and most areas occupied by bats.
 - 4) Size and condition of portal and adit, substrate, degree of breakdown, and subsidence and safety considerations.

RESULTS

Bat species that have been documented in Wyoming to date are presented in Table 1.

2004-2005 Field Season

Twenty-five sites were surveyed at least once during the field season from 1 January 2004 through 14 April 2005, with nine species of bats captured and/or observed (Tables 2 and 3). All nine species are listed as Species of Special Concern (SSC) in the Department's Nongame Bird and Mammal Plan (Oakleaf et al. 1996).

Summer Surveys

Surveys were conducted at six sites: three abandoned mines (#451, #460, and #488), two caves (#122 and #143), and one artificial roost (#554) between 14 June and 5 August 2004 (Table 2). Townsend's big-eared bat (COTO), long-legged myotis (MYVO), little brown myotis (MYLU), and big brown bat (EPFU) were present at five of these six sites.

An exterior site visit was conducted at one abandoned mine (#488) in Albany County (Table 2). This site was originally reclaimed using a cable/net ladder gate combination in 1993 and may have habitat potential; however, gating precluded an interior survey.

Interior surveys were conducted at one cave (#122) and one abandoned mine (#460). Both continue to maintain a COTO maternity of 220 and 200 bats, respectively. An interior survey at an artificial site (#554), built in 2003, was occupied by a single COTO.

Mist net surveys were completed at one cave (#143) and one abandoned mine (#451); bats were caught at both locations. Three COTO, three MYVO, and two MYLU

were caught at site #143 in Sheridan County and three EPFU were captured at site #451 in Platte County.

Winter Surveys

Hibernacula surveys were conducted at eight sites: four abandoned mines and four caves between 15 January 2004 and 14 April 2005. Western small-footed myotis (MYCI), COTO, EPFU, MYVO, and long-eared myotis (MYEV) were detected during the surveys. COTO and MYCI were present at two of the four abandoned mines (Table 3). The Eastern pipistrelle (PISU) was detected at a cave previously known to be used by PISU as a hibernacula. COTO was also present at three of the four caves (#60, #61, #121, and #448) that were surveyed (Table 3). Cave #60 in Bighorn County had the largest hibernating bat population of the surveys conducted in 2004, with six COTO and six MYCI observed throughout the cave.

Survey history for seven hibernacula sites (four abandoned mines and three caves) surveyed in 2004-2005 is presented in Table 4. COTO were previously detected at six of the seven sites prior to 2004. COTO were detected only at two caves (#61 and #121) and two abandoned mines (#443 and #445) in 2004. Numbers of COTO detected in 2004 at these sites appear to be within the expected range. One abandoned mine site, #445, was not previously known to have COTO. COTO were not detected at two mines (#442 and #444), which had previous COTO detections.

General Surveys

Eight mist netting surveys were completed at ponds or along streams resulting in the capture of EPFU, silver-haired bat (LACI), hoary bat (LANO), MYCI, MYLU, and MYVO (Table 2).

Several nights were spent mist netting on the Thunder Basin National Grassland (TBNG) in Weston County to get baseline data on bats in the area. Two LACI, one MYLU, and three *Myotis* species were observed at one pond, and seventeen MYLU were caught at two separate reservoirs in Weston County. In Albany County, one creek and one beaver pond were mist netted in the Medicine Bow National Forest, producing one LACI and one MYLU at each site, along with an additional EPFU and MYVO captured at the beaver pond.

A Washakie County stream was also mist netted as part of an ongoing educational program, with five species of bats being captured: five MYLU, three MYCI, two MYVO, two LANO, and one EPFU.

Other mist netting surveys included a single MYLU at a Washakie County Reservoir, a river in Sheridan County with 26 male MYCI, and a spring in Platte County with bats observed but no captures.

DISCUSSION

The 1994-1997 statewide project to locate and inventory bat roosting sites in caves and abandoned mines added significantly to our knowledge of the distribution and population sizes of bat species which utilize underground roosting sites. It was the first phase of collection of bat distribution and habitat information under the 1996 Nongame Bird and Mammal Plan (Oakleaf et al. 1996). There are many questions about bat distribution and habitat use that the cave and abandoned mine surveys did not address. Some species of bats may be imperiled due to threats to their crucial habitat, caves and abandoned mines. Caves and abandoned mines are crucial habitat for at least some species of bats and, in many cases, are critically imperiled due to threats to the habitat.

Caves and abandoned mines continue to be important roost sites for COTO and other bat species currently listed as an SSC2 in the Department's Nongame Bird and Mammal Plan (Oakleaf et al. 1996). The implications of the changes in winter hibernacula detections in 2004 are unknown at this time. Bat occupancy of sites between years should be viewed with caution as they may not be indicative of actual bat population fluctuations for the following reasons: 1) several bat species are known to utilize more than one roost during a particular season, 2) several bat species are known to utilize multiple roosts between years, and 3) exact survey dates between years and weather conditions were not replicated.

Roost characteristics seemed to result in close association of COTO, MYCI, and EPFU, especially during hibernation; however, maternity roost requirements appear to be different for these species. COTO prefers maternity roosts associated with caves or abandoned mines, whereas the only maternity roosts with documented use by EPFU and MYLU were located in buildings. No maternity roosts of MYCI have been located during this project. Both EPFU and MYCI have been documented as using rock outcrops in other studies.

Many of the ponds on TBNG appear to be utilized heavily by MYLU. The lack of species diversity at the ponds that were surveyed was surprising. TBNG operated an AnaBat detector concurrently while mist net surveys were being conducted and also failed to detect additional species. Additional surveys are needed on TBNG to fully assess the species diversity in the area.

Management of caves to protect the bat resource is aided by keeping sites confidential. All land management agency personnel, including office personnel, will be encouraged not to give cave locations to the general public before coordinating with the agency wildlife biologist responsible for bat management.

ACKNOWLEDGMENTS

Special thanks are extended to the USFS for conducting surveys on the Bighorn National Forest and Thunder Basin National Grassland and to the following individuals

for assisting with bat surveys in Wyoming: Kari Allanson (USFS), Todd Filipi (Department), Martin Hicks, (Department), Christi Lockman (USFS), Rob Stephens (Department), Jon Warder (USFS), and Dan Webber (Department).

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Table 1. Bat species documented in Wyoming.

Species Code	Scientific Name	Common Name
ANPA	<i>Antrozous pallidus</i>	Pallid Bat ^a
EPFU	<i>Eptesicus fuscus</i>	Big Brown Bat ^b
EUMA	<i>Euderma maculatum</i>	Spotted Bat ^a
LABO	<i>Lasiurus borealis</i>	Eastern Red Bat ^c
LACI	<i>Lasiurus cinereus</i>	Hoary Bat ^c
LANO	<i>Lasionycteris noctivagans</i>	Silver-haired Bat ^c
MYCA	<i>Myotis californicus</i>	California Myotis
MYCI	<i>Myotis ciliolabrum</i>	Western Small-footed Myotis ^b
MYEV	<i>Myotis evotis</i>	Long-eared Myotis ^a
MYLU	<i>Myotis lucifugus</i>	Little Brown Myotis ^b
MYSE	<i>Myotis septentrionalis</i>	Northern Myotis ^a
MYTH	<i>Myotis thysanodes</i>	Fringed Myotis ^a
MYVO	<i>Myotis volans</i>	Long-legged Myotis ^a
MYYU	<i>Myotis yumanensis</i>	Yuma Myotis
COTO	<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat ^a
PISU	<i>Pipistrellus subflavus</i>	Eastern Pipistrelle ^c
TABR	<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat
NYMA	<i>Nyctinomops macrotis</i>	Big Free-tailed Bat

^a Wyoming Game and Fish Department Species of Special Concern with Native Species Status 2.

^b Wyoming Game and Fish Department Species of Special Concern with Native Species Status 3.

^c Only four individuals have been observed in Wyoming.

Table 2. Summer cave, abandoned mine, and mist nest surveys conducted from 8 June 2004 through 18 September 2004.

Site #	County	Type	Type of Survey	Survey Date	Species 1	Species 2	Species 3	Species 4	Species 5	Total
122	Platte	Cave	Interior	02-Aug-2004	COTO-200+					200+
143	Sheridan	Cave	Mist Net	05-Aug-2004	COTO-3	MYVO-3	MYLU-2			8
451	Platte	Mine	Mist Net	02-Aug-2004	EPFU-3					3
460	Platte	Mine	Interior	02-Aug-2004	COTO-220+					220+
488	Albany	Mine	Site Visit	08-Jun-2004						-
554	Platte	Artificial	Interior	02-Aug-2004	COTO-1					1
	Albany	Pond	Mist Net	14-Jun-2004	EPFU-1	MYLU-1	MYVO-1	LACI-1		4
	Albany	Creek	Mist Net	22-Jun-2004	LACI-1	MYLU-1				2
	Washakie	Reservoir	Mist Net	28-Jul-2004	MYLU-1					1
	Platte	Spring	Mist Net	02-Aug-2004						0
	Weston	Pond	Mist Net	03-Aug-2004	LACI-2	MYLU-1	MYSPP-3			6
	Weston	Reservoir	Mist Net	03-Aug-2004	MYLU-1					1
	Weston	Reservoir	Mist Net	04-Aug-2004	MYLU-16					16
	Sheridan	River	Mist Net	05-Aug-2004	MYCI-26					26
	Washakie	Stream	Mist Net	18-Sep-2004	MYLU-5	MYCI-3	MYVO-2	LANO-2	EPFU-1	13

Table 3. Hibernacula cave and abandoned mine surveys conducted from 17 February 2004 through 25 March 2004.

Site #	County	Type	Type of Survey	Survey Date	Species 1	Species 2	Species 3	Species 4	Total
60	Bighorn	Cave	Hibernacula	04-Feb-17	COTO - 6	MYCI - 6			12
61	Bighorn	Cave	Hibernacula	04-Mar-19	COTO - 3	MYCI - 1	EPFU - 1		5
121	Park	Cave	Hibernacula	04-Mar-18	COTO - 8				8
442	Goshen	Mine	Hibernacula	04-Mar-25					0
443	Goshen	Mine	Hibernacula	04-Mar-25	COTO - 1	MYCI - 2	MYVO - 1		4
444	Goshen	Mine	Hibernacula	04-Mar-25					0
445	Goshen	Mine	Hibernacula	04-Mar-25	COTO - 1	MYCI - 1	MYEV - 1		3
448	Goshen	Cave	Hibernacula	04-Mar-25	MYCI - 4	MYLU - 1	PISU - 1	MYVO - 1	7

Table 4. Hibernacula history of caves and mines surveyed between 18 March 2004 and 25 March 2004.

Site #	Type	Date	Species 1	Species 2	Species 3	Species 4	Total
		Surveyed					
61	Cave	95-Feb-01	COTO - 5	<i>Myotis</i> species - 2			7
		96-Mar-20	COTO - 3	MYCI - 1	MYSPP - 2		6
		98-Mar-18	COTO - 2	MYCI - 5	MYSPP - 1		8
		02-Feb-02	COTO - 7	MYCI - 1	MYVO - 1	MYLU - 1	10
		04-Mar-19	COTO - 3	MYCI - 1	EPFU - 1		5
121	Cave	95-Dec-05	COTO - 4				4
		99-Jan-26	COTO - 12				12
		04-Mar-18	COTO - 8				8
442	Mine	96-Feb-13	COTO - 2				2
		98-Feb-18	COTO - 1	EPFU - 2			3
		04-Mar-25					0
443	Mine	96-Feb-13	COTO - 1				1
		98-Feb-18	COTO - 3				3
		04-Mar-25	COTO - 1	MYEV - 1	MYVO - 1		3
444	Mine	96-Feb-13	COTO - 1	MYCI - 3			4
		98-Feb-18	COTO - 4	EPFU - 1			5
		04-Mar-25					0
445	Mine	96-Feb-13					0
		96-Mar-04	MYCI - 1				1
		98-Feb-18					0
		04-Mar-25	COTO - 1	MYCI - 2	MYEV - 1		4
448	Cave	96-Feb-14	MYLU - 15	MYTH - 3	PISU - 1		17
		96-Mar-04	MYLU - 28	PISU - 2			30
		99-Feb-10	MYLU - 1				1
		04-Mar-25	MYCI - 4	PISU - 1	MYLU - 1	MYVO - 1	7

RAPTORS TAKEN FOR FALCONRY

FALCONRY COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Raptors

PERIOD COVERED: 1 January 2004 – 31 December 2004

PREPARED BY: Laurie Van Fleet, Nongame Biologist
Jason Sherwood, Wildlife Technician

In 2004, a total of 33 falconry licenses were issued. Of these 33 licenses, 16 raptors were captured in Wyoming for use in falconry (Table 1). The average number of birds captured between 1981-2004 is 47.5%, with the capture success rate in 2004 at 48% (Table 2). Compared with 1981-2003, the number of birds captured and the success rate in 2004 has remained somewhat stable for the past four years, with the exception of 2002 which had a slightly higher average (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 when they apply for a falcon capture license.

Based on the number of falcons captured, the Northern Goshawk was in greatest demand, followed by the Golden Eagle and Prairie Falcon, respectively (Table 1).

Nonresidents had a higher capture success rate than residents. Seventeen resident licenses were issued and five birds were captured, for a capture success rate of 29%. Sixteen nonresident licenses were issued and 11 birds were captured, for a capture success rate of 69%.

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, 2004.

Species	Resident Captures	Non-Resident Captures	Total Captures
Ferruginous Hawk	0	1	1
Golden Eagle	0	4	4
Northern Goshawk	2	4	6
Gyr Falcon	0	1	1
Merlin	0	1	1
Prairie Falcon	2	0	2
Red-tailed Hawk	1	0	1
Total Captured	5	11	16

Table 2. Between-year comparisons of the number of raptors captured and the capture rate (%) in Wyoming, 1981-2004.

Year	Number of Raptors Captured	Capture Rate (%)
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

OTHER NONGAME

BREEDING BIRD SURVEY COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Other Nongame

PERIOD COVERED: 15 April 2004 – 14 April 2005

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 3 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 2004, 2,778 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 (n=62) of Wyoming BBS routes completed in 2004 increased by six from 2003 (n=56), increased by three from 2002 (n=59), and decreased slightly from 1991-2001, which varied from 63 to 77 routes completed. Observers agreed to conduct 72 of the 108 available routes in 2004 but only 62 (86%) were completed (Table 1).

The average number of species per route (n=27) is slightly lower than past years, but the range in numbers of species per route (n=12-68) are similar to previous years. In 2004, 191 species were observed, which is the fourth highest total from 1993 through 2004 (Table 2).

Tables 3, 4, 5, and 6 summarize the history of BBS routes in Wyoming from 1968 through 2004. 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 a succession of observers. Seven routes completed in 2003 were not conducted in 2004, four routes were completed in 2004 that were not conducted in 2003, and two routes changed observers between 2003 and 2004 (Table 6). 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.

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 biologists from this and other natural resources management agencies for their valuable contributions to the 2004 Breeding Bird Survey (see names in Table 1). Their continued dedication to this survey makes it possible to collect long-term population trend data on numerous avian species in Wyoming.

Table 1. 2004 Breeding Bird Survey (BBS) observers and route information.

Observer	Latilong	BBS Route Number and Name	Number of Species
T. McEneaney	1	1 – NE Entrance, YNP	56
G. Nutting	2	2 – Cody	47
T. Stephens	3	3 – Otto	43
T. Easterly	4	4 – Basin	35
J. Berry	5	5 – Wyarno	38
J. Adams	7	7 – Sundance	57
--	9	9 – Dubois	--
--	10	10 – Midvale	--
D. Walgren	11	11 – Nowood	48
S. Buckman	13	13 – Bill	Route not conducted
C. Deno	15	15 – Fontenelle	52
B. Meyer	16	16 – Elk Horn	Route not conducted
A. Cerovski	17	17 – Bear Creek	19
--	18	18 – Ervay	--
B. Walgren	19	19 – Brookhurst	68
--	21	21 – Dwyer	--
C. Deno	22	22 – Cumberland	22
L. Van Fleet	24	24 – Patrick Draw	12
T. Woolley	25	25 – Savery	Route not conducted
S. Loose	26	26 – Riverside	49
G. Johnson	27	27 – Buford	39
J. Lawrence	28	28 – Yoder	47
T. McEneaney	1	30 – Mammoth, YNP	64
K. Hicks	2	32 – Hunter Peak	59
K. Hicks	2	33 – Clark	47
B. Anderson	3	35 – Frannie	29
B. South	8	36 – Moose	Route not conducted
J. Peters	3	37 – Lovell	30
N. Miller	3	38 – Meeteetse	55
A. Humphrey	4	39 – Ten Sleep	Route not conducted
H. Corbett	4	40 – Dayton	Route not conducted
G. Olsen	4	41 – Bald Mountain	27
G. Nutting	5	42 – Crazy Woman	50
--	5	43 – Schoonover	--
--	5	44 – Arvada	--
O. Oedekoven	6	45 – Recluse	29
--	6	46 – Soda Well	--
--	7	49 – Upton	--

Table 1. Continued.

Observer	Latilong	BBS Route Number and Name	Number of Species
S. Patla	8	51 – Alpine	53
--	8	52 – Wilson	--
E. Crane	9	53 – Horse Creek	Route not conducted
P. Hnilicka	9	55 – Crowheart	48
K. Firchow	10	56 – Ethete	Route not conducted
P. Hnilicka	10	57 – Anchor	40
--	10	58 – Gebo	--
S. Harter	11	59 – Arminto	33
G. Anderson	11	60 – Lysite	23
--	11	61 – Worland	--
--	12	62 – Teapot Dome	--
D. Bjerke	12	63 – Mayoworth	42
--	12	64 – Sussex	--
--	13	65 – Harland Flats	--
--	13	66 – Pine Tree	--
--	13	67 – Highlight	--
--	14	68 – Riverview	--
--	14	69 – Newcastle	--
--	14	70 – Raven	--
G. Fralick	15	71 – Soda Lake	Route not conducted
G. Fralick	15	72 – Buckskin Mountain	Route not conducted
--	16	74 – Boulder	--
D. Stroud	16	75 – Big Sandy	Route not conducted
W. Cornell	16	76 – Farson	Route not conducted
E. Crane	17	77 – Fiddler Lake	43
--	17	78 – Sand Draw	--
--	17	79 – Sweetwater	--
--	18	80 – Gas Hills	--
G. Hiatt	18	81 – Bairoil	22
G. Hiatt	18	82 – Lamont	37
L. Schwieger	19	83 – Pathfinder	33
D. Walgren	19	84 – Leo	43
A. Hines	19	85 – Shirley	14
J. Lawrence	20	86 – Warbonnet	53
G. Lawrence	20	87 – Fletcher Peak	62
J. Binfet	20	88 – Shawnee	37
--	21	89 – Meadowdale	--
G. Lawrence	21	90 – Lusk	33

Table 1. Continued.

Observer	Latilong	BBS Route Number and Name	Number of Species
--	21	91 – Lingle	--
K. Paulin	22	93 – Mountain View	Route not conducted
--	23	96 – Reliance	--
--	23	97 – Rock Springs	--
W. Cornell	24	98 – Black Rock	Route not conducted
B. Falvey	25	101 – Wamsutter	15
B. Falvey	25	102 – Rawlins	19
T. Woolley	25	103 – Baggs	24
F. Blomquist	26	104 – Walcott	43
--	26	105 – Fox Park	--
--	26	106 – Ryan Park	--
--	27	107 – Sybille Canyon	--
--	27	108 – Rock River	--
--	27	109 – Harmony	--
P. Deibert	28	110 – Cheyenne	Route not conducted
R. Rothwell	28	111 – Chugwater	Route not conducted
--	28	112 – Pine Bluff	--
C. Michelson	20	120 – Welch	39
K. Paulin	23	123 – Flaming Gorge	19
--	6	147 – Rozet	--
M. Yemington	7	148 – Seely 2	52
J. Adams	7	150 – Government Valley	50
S. Smith	15	173 – Rye Grass	30
--	23	192 – Carter	--
C. Damberg	23	195 – Seedskaelee	Route not conducted
S. Plato	6	206 – Caballa Creek	Route not conducted
S. Wolff	8	208 – Moran	48
--	12	212 – Bucknum	--
L. Snell	14	214 – Hampshire	--
J. Adams	7	250 – Moskee 2	53
T. McEneaney	1	901 – Yellowstone, YNP	Route not conducted
B. Falvey	1	902 – Pryor Flats	40

Table 2. Total number of species recorded on BBS routes in Wyoming, 1993 – 2004.

Year	Number of Species Observed
1993	186
1994	185
1995	187
1996	189
1997	186
1998	184
1999	205
2000	199
2001	186
2002	194
2003	181
2004	191

Table 3. 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													
3 Otto													
4 Basin			Kessinger-----				Domi ^a -----					McGough-----	
5 Wyarno			Kessinger-----				Domi ^a ---					Raper-----	
6 Clarkelen	Hall----		Kessinger-----	Spring			Hall-----	Downing-----					
7 Sundance							Downing-----					CHANGED TO #206 IN 1979	
8 Colter Bay	Scott-----						Downing-----						
9 Dubois	Back-----			Back-----									
10 Midvale							Back-----						
11 Nowood													
12 Natrona	Scott-----												
13 Bill							Tate---						
14 Redbird	Scott-----												
15 Fontenelle													
16 Elk Horn													
17 Bear Creek	Layton-----				Layton-----							Layton-----	
18 Ervay						Layton-----							
19 Brookhurst	Scott-----												
20 Glenrock	Layton-----				Layton-----								CHANGED TO #120 IN 1978
21 Dwyer													
22 Cumberland										June-----			
23 McKinnon		Layton-----			Layton-----					June-----			
24 Patrick Draw						Layton-----				June-----			
25 Savery													
26 Riverside	Gree ^a -----												
27 Buford							Spring-		Spring-----	Dorn-----			
28 Yoder	Gree ^a -----											Luce-----	
29 Canyon (YNP)													
30 Mammoth (YNP)													
31 West Thumb (YNP)	ROUTE NO LONGER RUN												
32 Hunter Peak													
33 Clark													
35 Frannie													
36 Moose									Scott-----				
37 Lovell													
38 Meeteetse													
39 Ten Sleep													
40 Dayton													Hanebury-----

Table 3. Continued.

Route Number and Name	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
41 Bald Mountain													
42 Crazy Woman												Daly-----	
43 Schoonover													
44 Arvada													
45 Recluse													Pallister----
46 Soda Well												Daly-----	
47 Piney													Pallister----
48 Seely													
49 Upton													
50 Moskee													Faanes-----
51 Alpine												Oakleaf-----	
52 Wilson												Raynes-----	
53 Horse Creek													Mikol-----
55 Crowheart													
56 Ethete													
57 Anchor													
58 Gebo													Baggs-----
59 Arminto													
60 Lysite													
61 Worland													
62 Teapot Dome													
63 Mayoworth													
64 Sussex													
65 Harland Flats													
66 Pine Tree													Gasson-----
67 Highlight													Gasson-----
68 Riverview													
69 Newcastle													
70 Raven													
71 Soda Lake													Johnson-----
72 Buckskin Mtn.													Johnson-----
73 Daniel													Johnson-----
74 Boulder													
75 Big Sandy													
76 Farson													
77 Fiddler Lake												Oakleaf-----	
78 Sand Draw													
79 Sweetwater													Emmerich-----
80 Gas Hills													

Table 3. 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												
85	Shirley											Bohne-----	
86	Warbonnet												
87	Fletcher Park											Rothwell-	
88	Shawnee												
89	Meadowdale												
90	Lusk												
91	Lingle												Rothwell-----
92	Diamondville	ROUTE NO LONGER RUN								June-----			
93	Mountain View												June-----
95	Green River									June-----			
96	Reliance									June-----			
97	Rock Springs									June-----			
98	Black Rock												
101	Wamsutter												
102	Rawlins												
103	Baggs												
104	Walcott												
105	Fox Park												
106	Ryan Park												
107	Sybille Canyon												McAd ^a -----
108	Rock River												
109	Harmony												Bohne-----
110	Cheyenne												Floyd-----
111	Chugwater											Rothwell-----	
112	Pine Bluff												Strickland----
120	Welch											Layton-----	
123	Flaming Gorge												
147	Rozet												
173	Ryegrass												
195	Seedskadee												
206	Caballa Creek												
900	Hayden Val. (YNP)	ROUTE NO LONGER RUN											
901	Yellowstone (YNP)												
902	Pryor Flats												

^a These names were reported as a 4 letter code; full names are unknown.

Table 4. 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 and 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----	Eads-----	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	Herold-----									
13 Bill										
14 Redbird	--Scott-----									
15 Fontenelle		Row-----					Luce-----	Baker-----		
16 Elk Horn								Kinter-----		Kinter-----
17 Bear Creek	--Layton-----					Layton-----				
18 Ervay	--Layton-----		Layton-----						Layton-----	
19 Brookhurst	--Scott-----								South-----	
20 Glenrock	CHANGED TO #120 IN 1978									
21 Dwyer										
22 Cumberland	--June-----							Luce-----		
23 McKinnon	--June-----					Kesselheim-	CHANGED TO #123 IN 1988			
24 Patrick Draw	--June-----	Hays-----	June-----					Jahnke-----	Raper-----	
25 Savery								Jahnke-----	Fitton-----	
26 Riverside									Straw-----	
27 Buford										
28 Yoder	--Luce-----					J.Lawrence-----				
29 Canyon (YNP)		Bystrak--ROUTE NO LONGER RUN								
30 Mammoth (YNP)		Gniadek-----			Zarki-----					
31 West Thumb (YNP)		Bystrak--ROUTE NO LONGER RUN								
32 Hunter Peak		Bystrak---Holmes----				Hicks-----		Hicks-----		
33 Clark										Hicks-----
35 Frannie									Bryant-----	
36 Moose	--Scott-----			Herold-----	South-----					
37 Lovell									Peters-----	
38 Meeteetse										
39 Ten Sleep										

Table 4. Continued.

Route Number and Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
40 Dayton	--Hanebury-----			Downing-----				Johnson-----		Daly-----
41 Bald Mountain										Roney-----
42 Crazy Woman	--Daly-----									Posner-----
43 Schoonover		Pallister--				Pallister-----				
44 Arvada		Segerstrom-----				Segerstrom-Daly-----				Daly-----
45 Recluse		Segerstrom-----				Segerstrom-Burton-----				Oedekoven-
46 Soda Well	--Daly-----						Ernst-----			
47 Piney	--Pallister--Gasson-----		Segerstrom-				Winland---		Winland-----	
48 Seely										Droege----
49 Upton							Ryder-----		Lanka-----	
50 Moskee		Bystrak----					Adams-----			
51 Alpine									Luce-----	
52 Wilson	--Raynes-----	Glen-----	Raynes-----			Duffy-----				
53 Horse Creek		Mikol-----				Ritter-(formerly Mikol)-----				
55 Crowheart							Reid-----			
56 Ethete										
57 Anchor										
58 Gebo	--Baggs-----		Lawson-----					Fuchs-----		
59 Arminto		Pate-----			Pate-----		Guenzel-----			
60 Lysite									Ryder-----	
61 Worland										
62 Teapot Dome	Pate-----						Guenzel-----			
63 Mayoworth		Talbott---	Luce-----				Bjerke-----		Johnson---	Bjerke----
64 Sussex										
65 Harland Flats										Cerovski--
66 Pine Tree	--Gasson-----		Segerstrom-				Hurley----Johnson---			Leggett---
67 Highlight	--Gasson-----		Segerstrom-				Hurley----		Oelklaus-----	
68 Riverview		Fuchs-----					Helms-----			
69 Newcastle								Ryder-----	Lanka-----	Adams----
70 Raven										
71 Soda Lake	--Johnson-----							Wollrab---		Smith----
72 Buckskin Mtn.	--Johnson-----									
73 Daniel	--Johnson-----							Wollrab---	CHANGED TO #173 IN 1988	
74 Boulder		Row-----								
75 Big Sandy			Straley----				Straley-----		Fralick-----	
76 Farson			June-----							
77 Fiddler Lake		Oakleaf----					Belitsky-----			Nelson----
78 Sand Draw										
79 Sweetwater	--Emmerich-----									
80 Gas Hills										

Table 4. 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										Droege---
87 Fletcher Park	Rothwell-----								G.Lawrence-----	
88 Shawnee								Helms-----		
89 Meadowdale			Hymas-----						Fitton-----	Ritter---
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-----	Hays-----	Luke-----							
97 Rock Springs	--June-----						Raper-----			Luke-----
98 Black Rock										Christiansen
101 Wamsutter										Jahnke----
102 Rawlins								Rinkes-----		
103 Baggs						Moody-----		Jahnke-----	Longobardi-----	
104 Walcott		Long-----			Long-----				Parks-----	Long-----
105 Fox Park										
106 Ryan Park										
107 Sybille Canyon									Ritter-----	Mobley----
108 Rock River										Oneale----
109 Harmony	Hays-----	Bystrak---					Bohne-----			
110 Cheyenne	--Floyd-----		Hill-----							
111 Chugwater	--Rothwell-----					Bohne-----			Rothwell----	
112 Pine Bluff		Strickland-----		Wollrab---					Samuelson-----	
120 Welch	--Layton-----		Layton-----							
123 Flaming Gorge								Christiansen		Christiansen
147 Rozet										
173 Ryegrass										Wollrab---
195 Seedskafee						Adams-----				
206 Caballa Creek										
900 Hayden Valley (YNP)					Zarki-----			ROUTE NO LONGER RUN		
901 Yellowstone (YNP)							Zarki-----			
902 Pryor Flats										

Table 5. Breeding Bird Survey time line, 1991-2000. Names under the years are the observers who conducted the routes. Continuous years with the same observer are distinguished with a line. Year 1991 routes conducted by the same observer as in 1990 have two dashes before the observer's name. Years that the route was not conducted are left blank.

Route Number and Name	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1 NE Entrance (YNP)	--Nutting-----				Nutting---		McEneaney-----			
2 Cody	--Greenquist-		Nutting-----							
3 Otto	--Stelter----	Stephens-----								Stephens--
4 Basin	--Stelter----		Easterly-----							
5 Wyarno	--Berry-----									
6 Clarkelen	CHANGED TO #206 IN 1979									
7 Sundance	Yemington--	Adams-----								
8 Colter Bay	--Wallen-----					Duffy-----			S.Patla	CHANGED TO #208 IN 2000
9 Dubois	--Abbott-----					Vernon-----				
10 Midvale	--Ryder-----		Ryder-----			Hnilicka-----				
11 Nowood			Walgren-----							
12 Natrona	--Herold-----		CHANGED TO #212 IN 1993							
13 Bill		Picken-----				Bartosiak-----			Buckman-----	
14 Redbird			CHANGED TO #214 IN 1994							
15 Fontenelle	Leebt-----	Deno-----								
16 Elk Horn					Gunyan-----		Meyer-----			
17 Bear Creek	--Layton-----					Cerovski-----				
18 Ervay										
19 Brookhurst	Scott-----			Patterson--	Walgren-----					
20 Glenrock	CHANGED TO #120 IN 1978									
21 Dwyer		Lutz-----		Roberts-----		Felley-----				
22 Cumberland		Deno-----								
23 McKinnon	CHANGED TO #123 IN 1988									
24 Patrick Draw	--Raper-----			Cerovski-----						Van Fleet--
25 Savery		Michelson-----			Michelson--					
26 Riverside	--Straw-----		Straw-----				Loose-----			
27 Buford			Johnson-----				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	Roop-----			Roop-----						Hicks-----
35 Frannie	Bryant-----				Wehrfritz--				B.Anderson--	
36 Moose	--South-----									

Table 5. Continued.

Route Number and Name	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
37 Lovell	--Peters-----									
38 Meeteetse	Miller-----				Miller-----					
39 Ten Sleep					Ward-----					
40 Dayton	--Daly-----		Corbett-----				Corbett-----			
41 Bald Mountain	--Roney-----								Peters-----	
42 Crazy Woman	--Posner-----							Nutting-----		
43 Schoonover	--Pallister-----							Ward-----		
44 Arvada	--Daly-----		Daly-----		Ward-----					
45 Recluse	--Oedekoven-----									
46 Soda Well	--Ernst-----									
47 Piney	CHANGED TO #147 IN 1991									
48 Seely	Cerovski---Yemington-----									
49 Upton	Lanka-----Talbot-----	Brimeyer---	Dykstra---	Brimeyer-----			G.Anderson-----			
50 Moskee	Yemington--Adams-----									
51 Alpine		Luce-----	Wile-----					Wile-----		
52 Wilson	--Duffy-----									
53 Horse Creek	--Ritter-----		Crane-----							
55 Crowheart										
56 Ethete	Firchow-----				Firchow---		Firchow-----			
57 Anchor			Firchow---							
58 Gebo			Stephens-----				Atkins-----			
59 Arminto		Thiele----		Patterson-----						
60 Lysite	--Ryder-----					Hnilicka---		Hnilicka-----		
61 Worland		Serrano-----								
62 Teapot Dome										
63 Mayoworth	--Bjerke-----									
64 Sussex	Fralick-----			Thiele-----						
65 Harland Flats	--Cerovksi-----		Hunter----		Hunter----					
66 Pine Tree			James-----							
67 Highlight	--Oelklaus-----			Oelklaus---						
68 Riverview	--Helms-----		Robertson-----			Anderson-----				
69 Newcastle		Talbott---	Brimeyer-----			Anderson-----				
70 Raven		Bartosiak--Picken---	Bartosiak--	Domsalla--	Bartosiak-----					Snell-----
71 Soda Lake	Bohne-----		Fralick-----				Fralick----			
72 Buckskin Mtn.		Stone-----		Fralick----						Fralick---
73 Daniel	CHANGED TO #173 IN 1988									
74 Boulder	Rawlins----			Rawlins-----			Rawlins-----			
75 Big Sandy		Ritter-----		Smith-----		Smith-----				
76 Farson					Hunter-----					

Table 5. Continued.

Route Number and Name	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
77 Fiddler Lake	--Nelson-----					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-----									
88 Shawnee	--Helms-----		--Robertson--	Helms-----				Kroger-----		
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-----		Cerovski---		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-----			Zornes-----	Deibert-----				
111 Chugwater	Rothwell---			Rothwell-----						
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-----									
173 Ryegrass				Smith-----		Smith-----				
192 Carter										

Table 5. Continued.

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

Table 6. Breeding Bird Survey time line, 2001-2004. 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)	--McEaney-----									
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									
21 Dwyer										
22 Cumberland	--Deno-----									
23 McKinnon	CHANGED TO #123 IN 1988									
24 Patrick Draw	--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)	--McEaney-----									
31 West Thumb (YNP)	ROUTE NO LONGER RUN									
32 Hunter Peak	--Hicks-----									
33 Clark	--Hicks-----									
35 Frannie	--B.Anderson-----									
36 Moose		South-----								

Table 6. 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										
41 Bald Mountain	--Peters-----	Olsen-----								
42 Crazy Woman	--Nutting-----									
43 Schoonover	--Ward-----									
44 Arvada	--Ward-----									
45 Recluse	--Oedekoven-----									
46 Soda Well	Ernst-----									
47 Piney	CHANGED TO #147 IN 1991									
48 Seely	--Yemington--	CHANGED TO #148 IN 2002								
49 Upton	--G.Anderson-									
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-----									
64 Sussex										
65 Harland Flats										
66 Pine Tree										
67 Highlight										
68 Riverview										
69 Newcastle	--G.Anderson--									
70 Raven										
71 Soda Lake	Fralick-----									
72 Buckskin Mtn.	--Fralick-----									
73 Daniel	CHANGED TO #173 IN 1988									
74 Boulder										
75 Big Sandy	--Smith-----	Stroud----								
76 Farson	Cornell-----									

Table 6. Continued.

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
77 Fiddler Lake	--Crane-----									
78 Sand Draw										
79 Sweetwater	--Ryder-----									
80 Gas Hills										
81 Bairoil		Hiatt-----								
82 Lamont	--Hiatt-----									
83 Pathfinder	--Schwieger-----									
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-----									
91 Lingle										
92 Diamondville	CHANGED TO #192 IN 1983									
93 Mountain View	Paulin-----									
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										
109 Harmony										
110 Cheyenne	Deibert-----									
111 Chugwater										
112 Pine Bluff										
120 Welch	--Michelson-----									
123 Flaming Gorge	--Paulin-----									
147 Rozet										
148 Seely 2		Yemington-----								
150 Gov't. Valley	--Adams-----									
173 Ryegrass	--Smith-----		Smith-----							

Table 6. Continued.

Route Number and Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
192 Carter										
195 Seedskafee		Halvorson--Glass-----		Damberg----						
206 Caballa Creek	--Plato-----									
208 Moran		Wolff-----		Wolff-----						
212 Bucknum	--Herold-----									
214 Hampshire	--Snell-----									
250 Moskee 2		Adams-----								
901 Yellowstone (YNP)	--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 2004 – 14 April 2005

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 Society, and the U.S. Fish and Wildlife Service 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 their 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.

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. 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 Institute for Bird Populations (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 2004 field season are presented in Table 1. In 2004, the project's tenth year, a total of 41 different bird species and 261 individual birds were captured, including 173 new individuals, 78 recaptures, and 10 birds that were unbanded. Out of the 41 species captured, 15 were known to breed on-site, 3 were suspected to breed on-site, 22 species were considered transients, and 1 species was a post-breeding migrant. Ten of the 12 target species were captured and banded in 2004. Over the 10-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). No new species were captured in 2004.

Monitoring Avian Productivity and Survivorship capture data for all years of the project are presented in Tables 2 and 3. Out of the 86 species captured during the 10-year project, 16 species were captured all 10 years, 6 species were captured in 9 of the 10 years, and 7 species were captured in 8 of the 10 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 2005 field season. By following this protocol, the value of the data collected at this MAPS station is increased because they 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

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LITERATURE CITED

Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. Handbook of field methods for monitoring landbirds. General Technical Report PSW-GTR-144. Albany, CA, Pacific Southwest Research Station, USDA Forest Service. 41pp.

Table 1. Monitoring Avian Productivity and Survivorship (MAPS) station bird banding summary, Red Canyon Ranch, Deep Creek Station, 2004.

Species Name ^a	6/7	6/16,21	6/25	7/7	7/16	7/27	8/4	Total ^b	Status ^c
American Goldfinch	4	5	4	8	2	2	2	27	B
American Robin *					2			2	L
Belted Kingfisher	1			1				2	T
Black-billed Magpie	1							1	T
Black-capped Chickadee	1	2		1	1		1	6	B
Black-headed Grosbeak	1							1	T
Brewer's Sparrow	1			2	3		1	7	B
Brown-headed Cowbird				1		1		2	L
Bullock's Oriole	3	2		1				6	B
Chipping Sparrow	1						1	2	T
Cliff Swallow						2	2	4	T
Common Yellowthroat	1	4	7	3	3	1	9	28	B
Cordilleran Flycatcher *		1	1	1				3	T
Eastern Kingbird	1					2	1	4	L
Gray Catbird			2	6				8	L
Green-tailed Towhee							1	1	T
House Wren	3						1	4	T
Lazuli Bunting	4		3	1		2	6	16	B
Lincoln's Sparrow *	1						1	2	T
MacGillivray's Warbler *	1						1	2	T
Northern Flicker							2	2	T
Orange-crowned Warbler *		1						1	T
Pine Siskin						5		5	T
Red-naped Sapsucker					1	2		3	T
Red-winged Blackbird				2	3	4		9	B
Rufous Hummingbird						1		1	M
Savannah Sparrow	2					1		3	T
Song Sparrow *	4		3	3	2	1		13	B
Spotted Sandpiper		1						1	T
Spotted Towhee				2	1	1	1	5	B
Swainson's Thrush *					1			1	T
Tree Swallow	2							2	T
Vesper Sparrow			1	1	1		1	4	B
Violet-green Swallow	6							6	T
Warbling Vireo *	2	3	6		1			12	B
Western Tanager							1	1	T
Western Wood-Pewee	4	3	2	1		1		11	B
Willow Flycatcher	6	1		1		1	1	10	B
Wilson's Warbler *	2							2	T
Yellow-breasted Chat	4	2	3	4	3		1	17	B
Yellow Warbler *	9	5	2	1		5	1	23	B
Unknown Flycatcher		1						1	?
<i>Total Number</i>	<i>65</i>	<i>31</i>	<i>34</i>	<i>40</i>	<i>24</i>	<i>32</i>	<i>35</i>	<i>261</i>	<i>~</i>
<i>Total Species</i>	<i>24</i>	<i>12</i>	<i>11</i>	<i>18</i>	<i>13</i>	<i>16</i>	<i>19</i>	<i>41</i>	<i>~</i>

Table 1. Continued.

^a *** = MAPS Regional Target Species for the Northwest Region

^b New Captures = 173, Recaptures = 78, Unbanded = 10

^c B = Breeder (confirmed breeding on site) = 15 species (Total captures = 194)

L = Lilely Breeder (suspected breeding on site) = 3 species (Total captures = 14)

T = Transient (within breeding range but does not breed on site) = 22 species (Total captures = 51)

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

? = Unknown (unidentified Empidonax flycatcher that escaped prior to banding; not included in species total) (Total captures = 1)

Table 2. Monitoring Avian Productivity and Survivorship (MAPS) station bird banding species and status list, Red Canyon Ranch, Deep Creek Station, 1995-2004. ^a

Species Name	First Captured	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Blue Grouse	8/6/1998	~	~	~	T	B	~	T	~	~	~
Virginia Rail	7/8/2003	~	~	~	~	~	~	~	~	L	~
Sora	6/1/2001	~	~	~	~	~	~	T	~	~	~
Spotted Sandpiper	8/25/1995	T	T	T	~	~	~	~	~	~	T
Wilson's Snipe	5/30/1995	T	T	-	T	~	~	T	B	T	~
Black-billed Cuckoo	6/6/2000	~	~	~	~	~	T	~	~	~	~
Common Nighthawk	7/24/2001	~	~	~	~	~	~	T	T	~	~
Calliope Hummingbird	7/27/1999	~	~	~	~	T	T	~	T	~	~
Broad-tailed Hummingbird	8/6/1996	~	T	~	~	~	~	T	T	~	~
Rufous Hummingbird	7/28/1995	M	M	~	M	~	M	M	M	~	M
Belted Kingfisher	7/6/2000	~	~	~	~	~	T	T	T	T	T
Red-naped Sapsucker	7/28/1995	T	~	~	T	T	T	T	~	T	T
Downy Woodpecker	8/28/1996	~	T	~	~	~	T	~	T	~	~
Northern Flicker (Red-shaft.)	6/27/1997	~	~	T	~	~	T	~	T	~	T
Western Wood-Pewee	8/25/1995	T	T	T	B	B	B	B	B	B	B
Willow Flycatcher	6/5/1995	B	B	B	~	B	B	B	B	B	B
Least Flycatcher	5/30/1995	T	T	~	~	~	~	T	T	~	~
Gray Flycatcher	8/25/1995	T	~	~	~	~	~	~	~	~	~
Dusky Flycatcher	8/25/1995	T	T	T	~	T	T	T	T	T	~
Cordilleran Flycatcher	6/5/1995	T	T	T	~	T	~	~	T	~	T
Eastern Kingbird	6/5/1995	T	T	T	B	T	T	T	T	L	L
Plumbeous Vireo	8/6/2002	~	~	~	~	~	~	~	T	~	~
Warbling Vireo	5/30/1995	B	B	B	B	B	B	B	B	B	B
Red-eyed Vireo	5/30/1996	~	T	~	~	~	~	~	~	A	~
Black-billed Magpie	7/14/1997	~	~	T	~	~	~	B	B	~	T
Tree Swallow	8/6/1996	~	T	T	T	~	~	T	T	~	T
Violet-green Swallow	6/23/1995	T	B	B	T	T	T	T	T	~	T
N. Rough-winged Swallow	8/3/1995	T	T	T	T	~	~	T	T	~	~
Cliff Swallow	7/18/1995	T	T	T	~	T	T	T	T	~	T
Barn Swallow	7/28/1998	~	~	~	T	T	~	T	T	~	~
Black-capped Chickadee	8/15/1996	~	T	B	B	~	B	B	B	B	B
Mountain Chickadee	8/3/2000	~	~	~	~	~	T	~	~	~	~
House Wren	8/15/1995	T	T	T	T	T	T	T	B	B	T
American Dipper	7/12/1996	~	T	~	T	T	~	~	~	~	~
Townsend's Solitaire	6/25/2002	~	~	~	~	~	~	~	T	~	~
Veery	6/14/1996	~	T	~	~	~	~	~	~	~	~
Swainson's Thrush	5/30/1996	~	T	~	T	T	T	~	T	~	T
Hermit Thrush	7/18/1995	T	T	~	~	T	T	~	~	~	~
American Robin	7/18/1995	B	B	B	B	B	B	B	B	B	L
Gray Catbird	5/30/1996	~	B	B	B	B	B	B	B	L	L
Sage Thrasher	8/6/2003	~	~	~	~	~	~	~	~	T	~
Brown Thrasher	6/2/1998	~	~	~	T	~	~	~	~	~	~
European Starling	6/7/1996	~	T	T	T	T	T	T	T	T	~
Cedar Waxwing	7/26/1996	~	T	T	T	T	B	T	T	T	~
Tennessee Warbler	5/30/1996	~	M	~	~	~	~	~	~	~	~

Table 2. Continued.

Species Name	First Captured	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Orange-crowned Warbler	5/30/1995	B	B	B	~	~	T	~	T	T	T
Virginia's Warbler	8/28/1996	~	M	~	~	M	~	~	~	A	~
Northern Parula	6/25/2002	~	~	~	~	~	~	~	M	~	~
Yellow Warbler	5/30/1995	B	B	B	B	B	B	B	B	B	B
Chestnut-sided Warbler	7/3/1996	~	M	~	~	~	~	M	~	~	~
Yellow-rumped Warbler	5/30/1996	~	T	~	~	~	~	~	~	~	~
Black-throated Gray Warbler	8/6/2003	~	~	~	~	~	~	~	~	T	~
Black-and-white Warbler	6/17/1999	~	~	~	~	M	~	~	~	~	~
American Redstart	6/13/1995	T	~	~	~	~	~	~	T	T	~
Ovenbird	7/18/2000	~	~	~	~	~	T	~	~	~	~
Northern Waterthrush	8/15/1995	M	~	M	~	~	~	~	~	~	~
MacGillivray's Warbler *	5/30/1995	B	B	B	B	T	T	T	T	T	T
Common Yellowthroat	5/30/1995	B	B	B	B	B	B	B	B	B	B
Hooded Warbler	7/7/1999	~	~	~	~	M	~	~	~	~	~
Wilson's Warbler	8/15/1995	T	T	T	T	~	~	T	~	~	T
Yellow-breasted Chat	5/30/1995	B	B	B	B	B	B	B	B	B	B
Western Tanager	6/5/1995	T	T	T	T	T	T	T	~	~	T
Green-tailed Towhee	5/30/1995	T	T	T	T	~	B	B	B	B	T
Spotted Towhee	5/30/1995	B	B	B	B	B	B	B	B	B	B
Chipping Sparrow	8/6/1996	~	T	~	~	~	T	~	T	T	T
Brewer's Sparrow	8/15/1996	~	T	T	~	T	B	B	B	B	B
Vesper Sparrow	7/7/1995	B	B	B	~	T	B	B	B	B	B
Lark Sparrow	8/7/2001	~	~	~	~	~	~	T	~	~	~
Savannah Sparrow	7/16/1998	~	~	~	T	~	T	~	T	~	T
Song Sparrow	5/30/1995	B	B	B	B	B	B	B	B	B	B
Lincoln's Sparrow	5/30/1995	T	T	~	~	~	T	T	T	T	T
White-crowned Sparrow	5/30/1995	T	T	T	~	~	T	~	~	~	~
Black-headed Grosbeak	5/30/1995	T	B	B	B	~	T	T	T	T	T
Blue Grosbeak	6/14/1996	~	T	~	~	T	T	T	T	~	~
Lazuli Bunting	7/7/1995	B	B	B	B	B	B	B	B	B	B
Indigo Bunting	6/4/2002	~	~	~	~	~	~	~	T	~	~
Red-winged Blackbird	5/30/1995	B	B	B	B	B	B	B	B	B	B
Western Meadowlark	7/14/1997	~	~	T	~	B	~	T	B	~	~
Yellow-headed Blackbird	7/16/2002	~	~	~	~	~	~	~	T	~	~
Brewer's Blackbird	6/7/1996	~	T	T	~	~	T	T	~	~	~
Common Grackle	6/23/1995	T	T	T	T	T	T	~	~	~	~
Brown-headed Cowbird	6/5/1995	T	T	B	B	B	B	B	T	L	L
Bullock's Oriole	5/30/1995	T	T	T	T	T	B	B	B	B	B
Pine Siskin	6/5/1995	T	T	T	T	~	T	T	T	~	T
Evening Grosbeak	6/26/2003	~	~	~	~	~	~	~	~	T	~
American Goldfinch	5/30/1995	B	B	B	B	B	B	B	B	B	B

^a ~ = 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, 1995-2004.

Year	Number of Individuals Captured	Number of Species Captured	Total Breeding Species ^a	Total Transient Species ^b	Total Migrant Species	Total Accidental Species
1995	371	41	14	25	2	0
1996	441	56	16	37	3	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

^a Includes both confirmed and likely breeders.

^b 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 2004 – 14 April 2005

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

INTRODUCTION

The distribution, relative abundance, and population trends of nongame birds are being 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. 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

Point-transects are conducted by volunteers along six riparian areas in Wyoming. In the Sheridan area, Roger Hybner conducts the Ash Creek transect with assistance from Bo Deveraux. The Tongue River transect was previously conducted by Hal Corbett, but a new observer is now needed. 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, 2003 and 2004 during which the Ash Creek transect was not conducted, and 1997-1999 and 2000-2004 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 2000-2004. 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 2004, 17 of 58 avian Native Species of Special Concern were detected by the Birds of Jackson Hole checklist participants, compared to 10 in 2003, 7 in 2002, and 17 in 2001. 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. Nevertheless, 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 2004, 37 of the 58 avian Native Species of Special Concern were detected by the Wyoming Bird Checklist participants, compared to 24 in 2003, 20 in 2002, and 23 in 2001.

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 2004, the WBRC has reviewed 912 documentations. Of these, 711 observations have been accepted, 194 have not been accepted, and 7 are awaiting additional review and discussion.

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 will be available on-line (read-only) in early 2005. It will be linked with the Department's website, available now at <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”, by Donna L. Dittman and Greg W. Lasley (pages 145-159 in the 1992 issue of Birding, Vol. 24, No. 3). 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 repositied 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.

LITERATURE CITED

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- Luce, B., B. Oakleaf, A. Cerovski, L. Hunter, and J. Priday. 1997. Atlas of Birds, Mammals, Reptiles, and Amphibians in Wyoming. Wyoming Game and Fish Department Nongame Program, Lander. 192pp.
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- Oakleaf, B., H. Downing, B. Raynes, M. Raynes, and O. K. Scott. 1982. Wyoming Avian Atlas. Wyoming Game and Fish Department and Bighorn Audubon Society. 87pp.
- Oakleaf, B. Luce, S. Ritter, and A. Cerovski. 1992. Wyoming Bird and Mammal Atlas. Wyoming Game and Fish Department, Cheyenne. 170pp.

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 N	UTM E	NAD	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 (please circle one):		Date report prepared:		Prior weather (how many days since last change):	
During sighting From memory					
GENDER	AGE	PLUMAGE		PHOTO/TAPE/DRAWING	
Male:	Adult:	Breeding:	Juvenal:	Available:	
Female:	Juv./Imm.:	Winter:	Dark Morph:	Enclosed:	
Unknown:	2-3 yr bird:	Eclipse:	Light Morph:	Please submit a copy of your field drawings.	
Total:	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 _____

UPPER-PARTS _____

UNDER-PARTS _____

WINGS _____

TAIL _____

LEGS & FEET _____

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

Form updated November 2004

Record Number	Category	Latilong	Date Received
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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 November 2004

Record Number	Latilong	Atlas Update	Sighting Entered in WGFD WOS Database
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Table 1. The number of years species were recorded on spring riparian transects, through 2004. Years equals the number of years transects were actually surveyed.

Species	Ash Creek Years = 22	Belle Fourche Years = 10	Garden Creek Years = 22	Platte River Years = 23	Sand Creek Years = 22	Tongue River Years = 24
Western Grebe				1		
American White Pelican				1		
Double-crested Cormorant	1		2	21		
Great Blue Heron	14	7	1	4	20	4
Great Egret				1		
Green-backed Heron		1				
Black-crowned Night Heron				3		
Canada Goose	1	3	1	5		
Wood Duck		3		2	5	
Mallard	16	4	10	18	18	11
Blue-winged Teal		1		3	4	
Gadwall				2		
Common Merganser		1		2	8	23
Turkey Vulture	2	5		1	4	6
Osprey	1			2		
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	18	2	
American Avocet				5		
Spotted Sandpiper		1		12	1	2
Common Snipe	2					1
Ring-billed Gull			1	2		
California Gull			17	20		
Caspian Tern				8		
Rock Pigeon		4	6	8	12	13
Mourning Dove	21	10	19	21	19	9
Western Screech-Owl	2					
Great Horned Owl	1					1
White-throated Swift		1			5	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	

Table 1. Continued.

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

Table 1. Continued.

Species	Ash Creek Years= 22	Belle Fourche Years= 10	Garden Creek Years= 22	Platte River Years= 23	Sand Creek Years = 22	Tongue River Years = 24
Yellow Warbler	20	10	20	18	21	22
Chestnut-sided Warbler						2
Magnolia Warbler				1		
Yellow-rumped Warbler	7	2	3	15	4	5
American Redstart					2	
Ovenbird	1				1	2
N. Waterthrush			3	1		
MacGillivray's Warbler	3		1	3		15
Common Yellowthroat	8	2	3	15	18	19
Wilson's Warbler	1		1	3	1	1
Yellow-breasted Chat	18	1	1	1	16	1
Western Tanager		3	6	1	5	7
Rose-breasted Grosbeak			1			
Black-headed Grosbeak	1	4	20	5	18	
Lazuli Bunting	15		4	1	18	22
Indigo Bunting					10	
Lazuli-Indigo cross					11	
Green-tailed Towhee	1		2	2		1
Spotted Towhee	21	8	4	6	22	23
American Tree Sparrow		1				
Chipping Sparrow	19	9	2	6	16	4
Brewer's Sparrow	1					
Vesper Sparrow	2			2		
Lark Sparrow	17	9			18	
Lark Bunting	1			2		
Fox Sparrow					1	
Song Sparrow	4	1	16	4	13	11
Lincoln's Sparrow	2			5		1
White-crowned Sparrow	1		2	7		
Harris' Sparrow				1		
Dark-eyed Junco					3	1
Bobolink				1	1	
Red-winged Blackbird	17	10	1	20	13	2
Western Meadowlark	19	10	2	19	22	7
Yellow-headed Blackbird	1					
Brewer's Blackbird	11		6	7	13	7
Common Grackle	15	10	20	19	11	8
Brown-headed Cowbird	19	6	7	14	21	9
Orchard Oriole					5	
Bullock's Oriole	11	10	19	17	22	2
Cassin's Finch			7			2
House Finch	4		20	11		
Red Crossbill	9	3			6	
Pine Siskin	2	2	11		2	11
American Goldfinch	12	8	12	6	20	6
Evening Grosbeak			12		1	1
House Sparrow			20	15		
<i>Total No. Species</i>	<i>95</i>	<i>65</i>	<i>71</i>	<i>92</i>	<i>80</i>	<i>83</i>
<i>Avg. No. Species/Year</i>	<i>31</i>	<i>31</i>	<i>24</i>	<i>31</i>	<i>33</i>	<i>25</i>
<i>Avg. No. Individuals/Year</i>	<i>253</i>	<i>384</i>	<i>252</i>	<i>179</i>	<i>185</i>	<i>225</i>

WYOMING PARTNERS IN FLIGHT COMPLETION REPORT

STATE OF WYOMING

NONGAME BIRDS – Partners In Flight

PERIOD COVERED: 15 April 2004 – 14 April 2005

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) was completed in May of 2003, and is available via a link on the Partners In Flight web site at 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 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.

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 fifth 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 to implement the Monitoring Wyoming's Birds program in six habitats in Wyoming (aspen, grassland, juniper woodland, mid-elevation conifer, montane riparian, and shrubsteppe), Audubon Wyoming to assist with inventory and monitoring efforts for those species that require techniques other than point-counts and for educational materials, and the Wyoming Natural Diversity Database to create and maintain a database that will act as a central repository of Monitoring Wyoming's Birds data. 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; to train Audubon Wyoming personnel to conduct colonial nesting waterbird surveys; and to 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 Best Management Practices. In addition to the web-based Plan, a compact disc copy is also available upon request.

The sixth Annual Lander Bird Festival was held during the month of May 2004 at the Wyoming Game and Fish Department Lander Regional Office (see flier below). Sponsors for this year's event comprised a diverse partnership: the Department, Red Desert Audubon Society, Popo Agie Conservation District, Wild Bird Marketplace, and Royal Blue Organics. Over 150 people enjoyed the free activities and information about birds and their habitats, and/or participated in the North American Migration Count.

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.

6th ANNUAL LANDER BIRD FESTIVAL

"Celebrating birds during the month of May"

North American Migration Count:
Saturday, May 8th (call for details)

Bird Festival: WY Game & Fish, 260 Buena Vista

- Week 1 theme (May 3-7): "Migration mysteries"
 - Week 2 theme (May 10-14): "Colonial birds are cool"
 - Week 3 theme (May 17-21): "Landscaping is for the birds"
 - Week 4 theme (May 24-28): "Birds and coffee -- what's the connection?"
 - Free bird posters, information packets, stickers, and rub-on tattoos while they last! (Office hours: 8am - 5pm)
 - "Owls of WY" program - Friday, May 7th, 7pm (live owl!)
 - Enter the weekly raffle to win lots of great prizes!
-

Sponsors: Wyoming Game and Fish Department, Red Desert Audubon Society, Popo Agie Conservation District, Wild Bird Marketplace, Royal Blue Organics.

~ For more information contact: Andrea Cerovski 332-7723 ext. 232 ~

APPENDICES

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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a, b}
<i>BIRDS</i> ^{c, d}				
<u>Waterfowl</u>				
Order: Anseriformes				
Family: Anatidae				
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
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
Gallinaceous Birds				
Order: Galliformes				
Family: Phasianidae				
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 leucurus</i>	(AS)	R, No season
297.0	Blue 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
Family: Odontophoridae				
289.0	Northern Bobwhite *	<i>Colinus virginianus</i>	(AS)	R
Loons				
Order: Gaviiformes				
Family: Gaviidae				
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
Grebes				
Order: Podicipediformes				
Family: Podicipedidae				
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
Pelicans and Cormorants				
Order: Pelecaniformes				
Family: Pelecanidae				
125.0	American White Pelican	<i>Pelecanus erythrorhynchos</i>		S, NSS3
126.0	Brown Pelican	<i>Pelecanus occidentalis</i>	(AS)	A, Endangered
Family: Phalacrocoracidae				
120.0	Double-crested Cormorant	<i>Phalacrocorax auritus</i>		S

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
Wading Birds				
Order: Ciconiiformes				
Family: Ardeidae				
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
Family: Threskiornithidae				
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
Family: Ciconiidae				
188.0	Wood Stork	<i>Mycteria americana</i>	(AS)	A, Endangered
Diurnal Birds of Prey				
Order: Ciconiiformes				
Family: Cathartidae				
325.0	Turkey Vulture	<i>Cathartes aura</i>		S
Order: Falconiformes				
Family: Accipitridae				
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
Family: Falconidae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
354.0	Gyrfalcon	<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
Marshbirds				
Order: Gruiformes				
Family: Rallidae				
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
Family: Gruidae				
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
Shorebirds				
Order: Charadriiformes				
Family: Charadriidae				
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
Family: Recurvirostridae				
226.0	Black-necked Stilt	<i>Himantopus mexicanus</i>		S
225.0	American Avocet	<i>Recurvirostra americana</i>		S
Family: Scolopacidae				
254.0	Greater Yellowlegs	<i>Tringa melanoleuca</i>		M
255.0	Lesser Yellowlegs	<i>Tringa flavipes</i>		M
256.0	Solitary Sandpiper	<i>Tringa solitaria</i>		M
258.0	Willet	<i>Catoptrophorus semipalmatus</i>		S
263.0	Spotted Sandpiper	<i>Actitis macularius</i>		S
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

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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
<u>Gulls and Terns</u>				
Order: Charadriiformes				
Family: Laridae				
036.0	Pomarine Jaeger	<i>Stercorarius pomarinus</i>	(AS)	A
037.0	Parasitic Jaeger	<i>Stercorarius parasiticus</i>	(AS)	A
058.0	Laughing Gull	<i>Larus atricilla</i>	(AS)	A
059.0	Franklin's Gull	<i>Larus pipixcan</i>		S, NSS3
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
064.0	Caspian Tern	<i>Sterna caspia</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
074.0	Least Tern	<i>Sterna antillarum</i>	(AS)	A, Endangered
077.0	Black Tern	<i>Chlidonias niger</i>		S, NSS3
<u>Seabirds</u>				
Order: Charadriiformes				
Family: Alcidae				
023.0	Long-billed Murrelet	<i>Brachyramphus marmoratus</i>	(AS)	A

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
021.0	Ancient Murrelet	<i>Synthliboramphus antiquus</i>	(AS)	A
<u>Doves and Pigeons</u>				
Order: Columbiformes				
Family: Columbidae				
313.1	Rock Pigeon	<i>Columba livia</i>		R
312.0	Band-tailed Pigeon	<i>Patagioenas fasciata</i>	(AS)	M
315.2	Ringed Turtle-Dove	<i>Streptopelia risoria</i>	(AS)	A
315.4	Eurasian Collard-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
<u>Cuckoos</u>				
Order: Cuculiformes				
Family: Cuculidae				
388.0	Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	(FL)	S
387.0	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	(FL)	S, NSS2
<u>Owls</u>				
Order: Strigiformes				
Family: Tytonidae				
365.0	Barn Owl	<i>Tyto alba</i>	(AS)	S, (AS) except L21
Family: Strigidae				
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
<u>Goatsuckers</u>				
Order: Caprimulgiformes				
Family: Caprimulgidae				
420.0	Common Nighthawk	<i>Chordeiles minor</i>		S
418.0	Common Poorwill	<i>Phalaenoptilus nuttallii</i>		S
<u>Swifts</u>				
Order: Apodiformes				
Family: Apodidae				
423.0	Chimney Swift	<i>Chaetura pelagica</i>	(FL)	S
425.0	White-throated Swift	<i>Aeronautes saxatalis</i>		S

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
<u>Hummingbirds</u>				
Order: Caprimulgiformes				
Family: Trochilidae				
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
<u>Kingfishers</u>				
Order: Coraciiformes				
Family: Alcedinidae				
390.0	Belted Kingfisher	<i>Ceryle alcyon</i>		R
<u>Woodpeckers</u>				
Order: Piciformes				
Family: Picidae				
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
405.0	Pileated Woodpecker	<i>Dryocopus pileatus</i>	(AS)	A
<u>Passerines</u>				
Order: Passeriformes				
Family: Tyrannidae				
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

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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
Family: Laniidae				
622.0	Loggerhead Shrike	<i>Lanius ludovicianus</i>		S
621.0	Northern Shrike	<i>Lanius excubitor</i>		W
Family: Vireonidae				
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
629.3	Blue-headed Vireo	<i>Vireo solitarius</i>	(AS)	A
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
Family: Corvidae				
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
Family: Alaudidae				
474.0	Horned Lark	<i>Eremophila alpestris</i>		R
Family: Hirundinidae				
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
Family: Paridae				
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
Family: Aegithalidae				

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743.0	Bushtit (FL)	<i>Psaltriparus minimus</i>	(FL)	S, NSS3
Family: Sittidae				
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
Family: Certhiidae				
726.0	Brown Creeper	<i>Certhia americana</i>		R
Family: Troglodytidae				
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
Family: Cinclidae				
701.0	American Dipper	<i>Cinclus mexicanus</i>		R
Family: Regulidae				
748.0	Golden-crowned Kinglet	<i>Regulus satrapa</i>		R
749.0	Ruby-crowned Kinglet	<i>Regulus calendula</i>		S
Family: Sylviidae				
751.0	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>		S
Family: Turdidae				
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

Family: Mimidae				
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
Family: Sturnidae				

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
493.0	European Starling	<i>Sturnus vulgaris</i>		R
Family: Motacillidae				
697.0	American Pipit	<i>Anthus rubescens</i>		S
700.0	Sprague's Pipit	<i>Anthus spragueii</i>	(AS)	M
Family: Bombycillidae				
618.0	Bohemian Waxwing	<i>Bombycilla garrulus</i>		W
619.0	Cedar Waxwing	<i>Bombycilla cedrorum</i>		R
Family: Parulidae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
Family: Thraupidae				
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
Family: Emberizidae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
Family: Cardinalidae				
593.0	Northern Cardinal	<i>Cardinalis cardinalis</i>	(AS)	M
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
Family: Icteridae				
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
Family: Fringillidae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
514.0	Evening Grosbeak	<i>Coccothraustes vespertinus</i>		R
Family: Passeridae				
688.2	House Sparrow	<i>Passer domesticus</i>		R

MAMMALS ^{d,e}

<u>Marsupials</u>				
Order: Marsupialia				
Family: Didelphidae				
800.0	Virginia Opossum	<i>Didelphis virginiana</i>		A
<u>Insectivores</u>				
Order: Insectivora				
Family: Soricidae				

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,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
Family: Talpidae				
810.0	Eastern Mole	<i>Scalopus aquaticus</i>		R
Bats				
Order: Chiroptera				
Family: Vespertilionidae				
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
Family: Molossidae				
828.0	Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>		A
829.0	Big Free-tailed Bat	<i>Nyctinomops macrotis</i>		A

Lagomorphs				
Order: Lagomorpha				
Family: Ochotonidae				
830.0	Pika	<i>Ochotona princeps</i>		R
Family: Leporidae				
837.0	Pygmy Rabbit	<i>Brachylagus idahoensis</i>		R, NSS3
833.0	Desert Cottontail *	<i>Sylvilagus audubonii</i>		R
834.0	Eastern Cottontail *	<i>Sylvilagus floridanus</i>		R
835.0	Mountain (Nuttall's) Cottontail *	<i>Sylvilagus nuttallii</i>		R

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
Rodents				
Order: Rodentia				
Family: Sciuridae				
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
Family: Geomyidae				
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
Family: Heteromyidae				
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 Kanagroo Rat	<i>Dipodomys ordii</i>		R
Family: Castoridae				
875.0	Beaver *	<i>Castor canadensis</i>		R
Family: Muridae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
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
Family: Zapodidae				
895.0	Meadow Jumping Mouse	<i>Zapus hudsonius</i>		R
896.0	Western Jumping Mouse	<i>Zapus princeps</i>		R
Family: Erethizontidae				
900.0	Porcupine *	<i>Erethizon dorsatum</i>		R, Predatory animal
Carnivores				
Order: Carnivora				
Family: Canidae				
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
Family: Ursidae				
940.0	Black Bear *	<i>Ursus americanus</i>		R
941.0	Grizzly Bear *	<i>Ursus arctos</i>		R, Threatened, NSS3
Family: Procyonidae				
906.0	Ringtail	<i>Bassariscus astutus</i>		R
907.0	Raccoon *	<i>Procyon lotor</i>		R, Predatory animal
Family: Mustelidae				
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

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,b}
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
Family: Felidae				
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
Ungulates				
Order: Artiodactyla				
Family: Cervidae				
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
Family: Antilocapridae				
935.0	Pronghorn *	<i>Antilocapra americana</i>		R
Family: Bovidae				
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

AMPHIBIANS^f

Salamanders				
Order: Caudata				
Family: Ambystomatidae				
950.0	Tiger Salamander	<i>Ambystoma tigrinum</i>		R
Toads and Frogs				
Order: Anura				
Family: Pelobatidae				
951.0	Plains Spadefoot Toad	<i>Spea bombifrons</i>		R
951.1	Great Basin Spadefoot Toad	<i>Spea intermontana</i>		R
Family: Bufonidae				

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a,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
Family: Ranidae				
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
Family: Hylidae				
952.0	Boreal Chorus Frog	<i>Pseudacris maculata</i>		R

REPTILES ^f

<u>Turtles</u>				
Order: Testudines				
Family: Trionychidae				
953.0	Western Spiny Softshell	<i>Apalone spinifera hartwegi</i>		R
Family: Testudinidae				
953.2	Ornate Box Turtle	<i>Terrapene ornata ornata</i>		R
953.3	Western Painted Turtle	<i>Chrysemys picta bellii</i>		R
Family: Chelydridae				
953.1	Snapping Turtle	<i>Chelydra serpentina</i>		R
<u>Lizards</u>				
Order: Squamata				

Spp. Code	Common Name	Scientific Name	Doc. Type	Seasonal Status and Additional Information ^{a, b}
Family: Teiidae				
954.0	Prairie Racerunner	<i>Cnemidophorus sexlineatus viridis</i>		R
Family: Scincidae				
954.1	Many-lined Skink	<i>Eumeces multivirgatus</i>		R
Family: Iguanidae				
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
Snakes				
Order: Squamata				
Family: Boidae				
955.2	Rubber Boa	<i>Charina bottae</i>		R
Family: Colubridae				
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
Family: Crotalidae				
955.0	Prairie Rattlesnake	<i>Crotalus viridis viridis</i>		R
955.1	Midget Faded Rattlesnake	<i>Crotalus viridis concolor</i>		R

^a 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.

^b Wyoming Game and Fish Department Species of Special Concern with a Native Species Status of 1, 2, 3, or 4.

^c Common and scientific names and species order are from the American Ornithologists' Union (1983, 2004). 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.

^d 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.

^e Common and scientific names (except *C. townsendii*) and species order are from Jones et al. (1997).

^f Common and scientific names and species order are from Baxter and Stone (1992) and Crother (2000).

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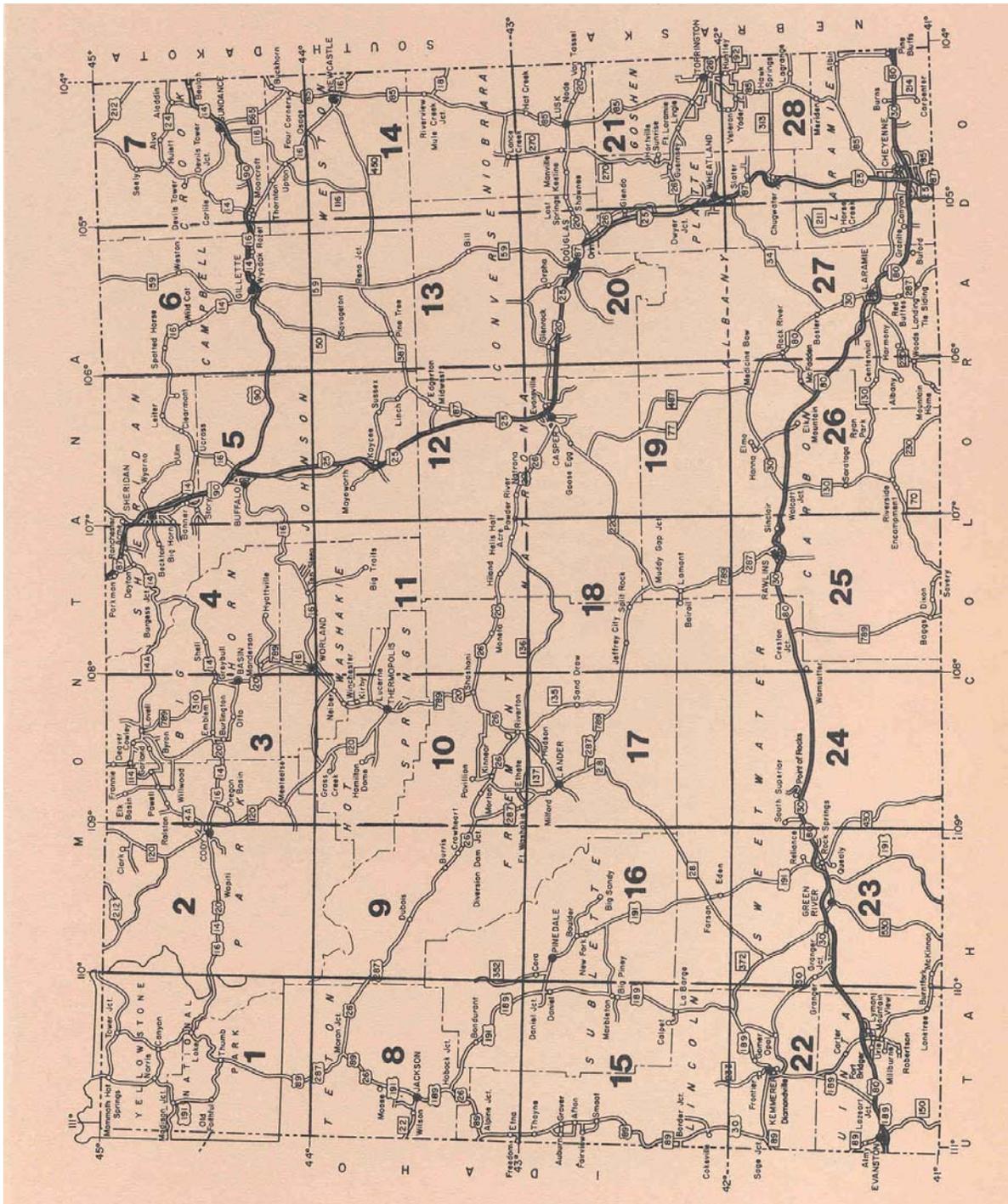
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APPENDIX II

LATILONGS (DEGREE BLOCKS) IN WYOMING

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



APPENDIX III

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
P O P U L A T I O N V A R I A B L E S	1 Populations are greatly restricted or declining - extirpation appears possible	NSS1 1A	NSS2 1B	NSS3 1C	NSS4 1D
	2 Populations are declining or restricted in numbers and/or distribution - extirpation is not imminent	NSS2 2A	NSS3 2B	NSS4 2C	NSS5 2D
	3 Species is widely distributed; population status and trends are unknown but are suspected to be stable	NSS3 3A	NSS4 3B	NSS5 3C	NSS6 3D
	4 Populations are stable or increasing and not restricted in numbers and/or distribution	NSS4 4A	NSS5 4B	NSS6 4C	NSS7 4D

AVIAN SPECIES OF SPECIAL CONCERN IN WYOMING

NSS1 (Native Species Status 1)

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)

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)

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)

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)

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)

- 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 SPECIAL CONCERN IN WYOMING

NSS1 (Native Species Status 1)

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)

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)

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)

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
