

**2016  
MIGRATORY GAME BIRD  
JOB COMPLETION**



PHOTO: Nate Huck

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by

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## Introduction

The Migratory Game Bird Section (MGBS) has operated with reduced staffing since the mid-1990s. Accordingly, surveys and other job duties have been prioritized and in some cases, suspended. During the report period, 1.0 FTE was assigned to the section.

In cooperation with the U.S. Fish and Wildlife Service (USFWS), the MGBS conducted the following annual surveys to derive population indices for management: March crane survey, September crane survey, December Canada goose classifications, mid-winter waterfowl survey, and spring Canada goose population survey. The MGBS also participated in dove banding in the State, and Flyway membership dues helped support the Central Flyway pre-season duck banding project in North Dakota. The MGBS remains strongly committed to Central Flyway management efforts including development and revision of management plans for the various migratory game bird populations and annual season setting. These processes were historically accomplished through participation on the Flyway Technical Committees at the December, March, and July Flyway meetings.

Currently, the USFWS Division of Migratory Bird Management (DMBM) establishes migratory game bird regulatory frameworks during a single annual meeting held during September. Proposed regulations will be developed for the subsequent year hunting seasons based on data and analyses available at the time of the September technical committee meetings. Experience gained through the Adaptive Harvest Management (AHM) process, which began in 1995, indicates the most appropriate regulatory package can be reliably selected a year in advance based on current year harvest, breeding population, and wetland condition data. The Central Flyway Technical Committee and Council meets in September each year to formalize regulation selection, and the Technical Committee will meet again in March to address management plans and other technical issues.

The MGBS is directly or indirectly involved in the management of all migratory game birds in the Central and Pacific Flyway portions of Wyoming. The MGBS also coordinates the maintenance of goose nesting structures statewide as well as goose hunting pits located on the Springer Wildlife Habitat Management Area (WHMA).

During the past year, substantial personnel time was devoted to wetland and habitat management projects across the state. Local involvement was maintained in the Intermountain West Joint Venture (IWJV). The migratory game bird biologist participated in the Wyoming Bird Habitat Conservation Partnership, which serves both the IWJV and Northern Great Plains Joint Venture (NGPJV) in the state. The IWJV administrative boundary encompasses the majority of Wyoming and the NGPJV encompasses 7 counties in northeast Wyoming.

## Ducks and Mergansers

### **Population Surveys**

The annual duck breeding ground survey historically flown by the WGFD was suspended after 1999. Forecasts of fall duck flights are based on trends in duck breeding populations and water conditions on breeding grounds throughout the traditional survey areas flown by USFWS. The traditional survey area does not include Wyoming and survey data historically collected from within Wyoming were not used in developing fall flight predictions.

Conditions throughout much of the traditional survey areas were described as fair to. Below average precipitation and drier than normal conditions prevailed in many regions. The estimated number of ponds was 21% lower in 2016 compared to 2015, and 4% below the long term average (LTA). The population of breeding ducks was 2% lower 2016 compared to 2015, but remained 38% above the LTA (Table 1). The breeding population of mallards in the traditional survey area increased 1% from the 2015 level and was 51% above the LTA (Table 2). Short and long-term changes in breeding populations of the 5 duck species most commonly harvested in Wyoming are shown in Table 2. In 2016, American wigeon increased compared to 2015 levels. Blue-winged teal populations decreased 22%. The remaining three species populations (mallard, green-winged teal, and gadwall) remained nearly the same.

The 2016 fall flight of mid-continent population (MCP) mallards was forecast to be 13.5 million, similar to the 2015 estimate. In 2008, two revisions were made to the MCP boundary. Alaska was excluded and incorporated into a Western Population; Michigan, Minnesota, and Wisconsin were added. Population indices are based on MCP mallard population models revised in 2002 with model weights updated in 2008. Therefore, current indices are not comparable to historic indices previously published.

A midwinter waterfowl survey is conducted during early January in every state. The number of ducks present in Wyoming is highly influenced by weather conditions and varies substantially from year to year. The mid-winter count of ducks in the Central Flyway portion of Wyoming was 38% below the long-term average in 2016 (Table 3).

### **2015-16 Harvest**

In 2015, the Department estimated 49,744 ducks were harvested in Wyoming (Table 4). The 2015 harvest was more than estimated in 2014, and 40% below the Department's objective. Since the early 2000s, trends in Wyoming duck harvest have not correlated well with the increasing duck population, possibly due to severe drought that prevailed throughout much of that period. In the Central Flyway portion of Wyoming, 37,271 ducks were harvested in 2015 (Tables 4 and 5). This harvest was 4% more than recorded in 2014 and 30% below the Department's objective for the Central Flyway. Waterfowl management areas in Wyoming are depicted in Fig. 1.

In the Pacific Flyway portion of Wyoming, 12,473 ducks were harvested in 2015 (Tables 4 and 6). This was 12% above the 2015 harvest of 11,179 ducks and 62% below the Department's objective for Pacific Flyway duck harvest.

Mallards are the most prevalent species harvested in Wyoming (Table 7). American wigeon, blue-winged teal, green-winged teal, and gadwall are also well represented. Harvest estimates derived from the USFWS's Harvest Information Program (HIP) (Table 7) have consistently deviated from the Department's estimates. Presently, HIP estimates do not distinguish flyway-specific duck harvest in Wyoming. Estimating state-specific sales of duck stamps is also becoming increasingly problematic for the USFWS in part because persons can obtain electronic duck stamps online from wildlife agencies in other states. Current and historic season dates are summarized in Table 32.

### **Banding**

The Department began an operational banding station at Springer and Table Mountain WHMAs during 2016. A total of 1,011 ducks were banded between 7/30/16 and 9/14/16. Blue-winged teal were the most commonly banded duck. Of the 480 banded, 306 were hatch-year birds (63.8%). A total of 340 mallards were banded and after hatch-year and hatch-year birds comprised approximately half. Wood ducks accounted for 157 of the ducks banded, and 115 (61.5%) were adults. Surprisingly, 147 of the wood ducks banded were males (78.6%). Additional species banded included two hatch-year northern pintails (one male and one female), one after hatch-year cinnamon teal (male) and one hatch-year canvasback (male).

The Department has contributed funding through annual flyway assessments to support the Central Flyway's cooperative duck banding operation in 2016 and prior years. During 2016, a crew banded 897 ducks at Lake Ilo National Wildlife Refuge (NWR) and another crew banded 1,444 ducks at Audubon NWR, both are located in North Dakota. The 5 most common species banded at Lake Ilo, were mallard (423), blue-winged teal (259), gadwall (35), northern pintail (30), and American green-winged teal (28). The 5 most common species banded at Audubon were blue-winged teal (873), mallard (283), gadwall (127), wood duck (34), and northern pintail (31).

Because banding operations extend from mid-July to mid-September, the end dates fall outside of the date range covered by this JCR. However, to maintain continuity, results from the entire 2016 banding operations are included.

### **Recommendations**

1. Continue to support and participate in the flyway system of waterfowl management.
2. Continue to support objectives of the Adaptive Harvest Management (AHM) program and the North American Waterfowl Management Plan.
3. Work with Department personnel, joint ventures, the Wyoming Bird Habitat Conservation Partnership, Ducks Unlimited, and other interests to identify and develop wetland habitat projects designed to increase local duck production, hold more birds in the spring and fall, and provide additional harvest opportunity.

4. Increase public access within key waterfowl harvest areas statewide.
5. Provide technical consultation to recommend and implement wetland management practices that attract and hold additional waterfowl on Commission-owned WHMAs.
6. Continue to support acquisition and development of the Cokeville Meadows National Wildlife Refuge. Provide biological information when requested and make recommendations to the U.S. Fish and Wildlife Service regarding the development and eventual management of refuge lands.
7. Support duck banding efforts in both the Central and Pacific flyways.
8. Continue duck banding in Wyoming.
9. Review and critique federal policies and regulations affecting waterfowl management in Wyoming.
10. Reinstate a breeding duck survey in Wyoming to better inform wetland assessment and conservation efforts throughout the state.
11. Reevaluate Department objectives pertaining to hunter numbers, hunter days, and harvest objectives.

**WATERFOWL MANAGEMENT AREAS IN WYOMING**

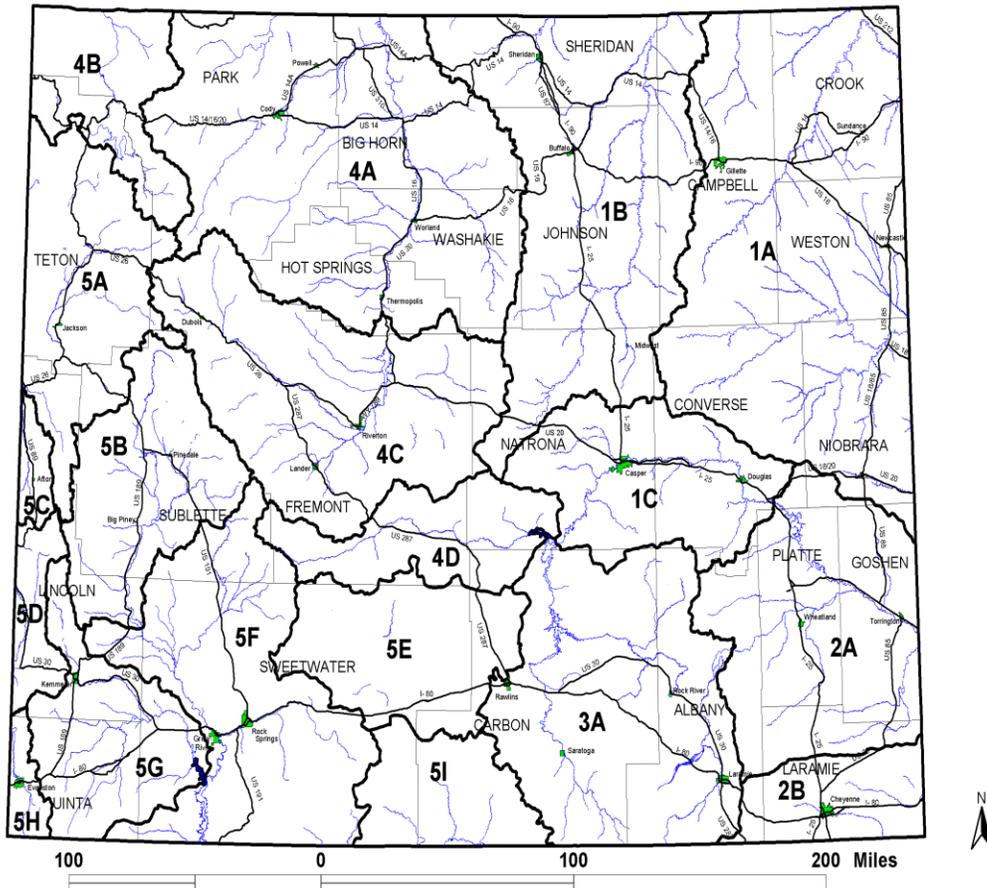


Fig. 1. Waterfowl management areas in Wyoming.

Table 1. Total duck<sup>a</sup> breeding population estimates (in thousands) from the traditional survey area

Region	2016	2015	Percent Change from 2015	LTA <sup>a</sup>	Percent Change from LTA
Alaska-Yukon Territory- Old Crow Flats	4,327	3,389	+28	3,688	+17
C. & N. Alberta-N.E. British Columbia-NWT	14,041	11,546	+22	7,285	+93
N. Saskatchewan- N. Manitoba-W. Ontario	3,246	3,527	-8	3,462	-6
S. Alberta	5,032	5,678	-11	4,302	+17
S. Saskatchewan	10,753	13,542	-21	7,876	+37
S. Manitoba	1,777	1,988	-11	1,548	+15
Montana & Western Dakotas	2,229	2,730	-18	1,721	+29
Eastern Dakotas	6,957	7,121	-2	5,064	+37
<b>Total</b>	<b>48,363</b>	<b>49,522</b>	<b>-2</b>	<b>34,703</b>	<b>+38</b>

<sup>a</sup>Includes mallard, gadwall, American wigeon, green-winged teal, blue-winged teal, northern shoveler, northern pintail, redhead, canvasback, scaup, American black duck, ring-neck duck, goldeneyes, bufflehead, and ruddy duck.

<sup>b</sup>Long-term average, 1955-2015

Source: USFWS 2016

Table 2. Changes in breeding population estimates (in thousands) in the traditional survey area for the 5 most commonly harvested ducks in Wyoming.

Species	2016	2015	Percent Change from 2015	LTA <sup>a</sup>	Percent Change from LTA
Mallard	11,793	11,643	+1	7,791	+51
American Wigeon	3,411	3,037	+12	2,604	+31
Green-winged teal	4,275	4,081	+5	2,091	+104
Gadwall	3,712	3,834	-3	1,952	+90
Blue-winged teal	6,689	8,547	-22	5,008	+34
Total	29,880	31,142	-4	19,446	+54

<sup>a</sup>Long-term average, 1955-2015

Source: USFWS 2016

Table 3. Changes in ducks and mergansers counted during the mid-winter survey in Wyoming.

Species	2016	2015	Percent Change from 2015	LTA <sup>a</sup>	Percent Change from LTA
Mallard	40,209	51,387	-22	57,495	-30
Gadwall	74	875	-92	966	-92
American wigeon	51	1,089	-95	1,088	-95
Green-winged teal	39	451	-91	483	-92
Northern shoveler	0	2	-	15	-
Northern pintail	4	206	-98	190	-98
Wood duck	0	48	-	22	-
Redhead	4	15	-73	13	-69
Canvasback	4	2	+100	0	-
Scaup	13	41	-68	28	-54
Ringneck	69	71	-3	101	-32
Goldeneye	3,630	9,358	-61	8,378	-57
Bufflehead	10	51	-80	124	-92
Ruddy duck	0	0	-	7	-
Mergansers	196	1,276	-85	2,616	-93
<b>TOTAL</b>	<b>44,303</b>	<b>64,872</b>	<b>-32</b>	<b>71,527</b>	<b>-38</b>

<sup>a</sup>Long-Term Average from 1992-2015

Source: Dubovsky 2016, Kruse 2015

Table 4. Duck harvest and hunter activity within the Central and Pacific flyway portions of Wyoming, 2010-2015.

	2015	2014	2013	2012	2011	2010	Objective
<b>Central Flyway</b>							
No. Hunters	4,575	4,712	4,867	4,512	4,712	4,347	9,016
No. Days	21,286	23,394	22,814	24,623	25,115	25,337	44,295
Harvest	37,271	37,548	39,020	38,529	37,548	34,249	53,124
<b>Pacific Flyway</b>							
No. Hunters	1,571	1,421	1,616	1,552	1,357	1,236	3,970
No. Days	7,007	7,062	7,572	6,508	6,040	6,180	19,148
Harvest	12,473	11,179	14,276	11,704	9,839	8,810	29,294
<b>Total</b>							
No. Hunters	6,146	6,133	6,483	6,064	6,069	5,583	12,986
No. Days	28,293	30,456	30,386	31,131	31,155	31,517	63,443
Harvest	49,744	48,727	53,296	50,233	47,387	43,059	82,418

Source: WGFD 2011-2016

Table 5. Duck harvest and hunter activity within waterfowl management areas in the Central Flyway portion of Wyoming.

Management Area		2015	2014	2013	2012	2011	Objective
Missouri/Cheyenne/ Little Powder Rivers	1A No. Hunters	332	215	188	179	282	398
	No. Days	1,671	914	1,739	542	1,050	1,791
	Harvest	3,265	1,497	2,017	1,134	1,864	1,393
Tongue/Little Big Horn /Powder Rivers	1B No. Hunters	337	270	306	260	315	547
	No. Days	894	992	763	944	1,556	2,461
	Harvest	1,597	1,279	1,735	1,603	2,505	3,063
Central North Platte River	1C No. Hunters	823	852	939	990	873	1,603
	No. Days	4,514	4,019	4,742	5,997	4,774	8,015
	Harvest	7,019	4,485	8,765	8,957	7,839	7,214
Lower North Platte River	2A No. Hunters	981	1,211	1,222	1,048	1,088	2,050
	No. Days	4,417	5,086	4,768	5,338	5,356	9,225
	Harvest	7,654	8,987	6,438	7,330	5,951	9,225
South Platte River	2B No. Hunters	84	106	78	101	101	193
	No. Days	281	266	180	448	712	965
	Harvest	733	373	348	815	821	869
Upper North Platte River	3A No. Hunters	347	404	401	338	296	1,075
	No. Days	1,764	1,537	1,901	1,880	1,221	4,838
	Harvest	3,087	2,920	2,536	1,875	2,079	5,160
Big Horn River	4A No. Hunters	1,048	1,220	1,174	1,104	1,145	2,200
	No. Days	5,039	7,620	6,661	6,971	6,720	12,000
	Harvest	8,797	11,726	13,202	13,819	9,785	20,000
Yellowstone River	4B No. Hunters	26	11	0	5	8	100
	No. Days	39	21	0	28	8	400
	Harvest	80	95	0	32	8	500
Wind River	4C No. Hunters	579	537	552	456	545	950
	No. Days	2,561	2,737	2,051	2,290	3,371	5,000
	Harvest	4,989	4,359	3,962	2,658	6,444	6,200
Sweetwater River	4D No. Hunters	18	28	7	31	59	100
	No. Days	106	130	9	185	347	540
	Harvest	50	89	17	306	252	770

Source: WGFD 2012-2016

Table 6. Duck harvest and hunter activity within waterfowl management areas in the Pacific Flyway portion of Wyoming.

Management Area			2015	2014	2013	2012	2011	Objective
Snake River	5A	No. Hunters	260	229	215	161	86	440
		No. Days	1,243	1,367	985	1,004	478	2,200
		Harvest	2,542	1,300	1,539	1,289	834	2,800
Upper Green River Basin	5B	No. Hunters	271	242	162	184	147	500
		No. Days	1,362	1,012	537	396	439	2,000
		Harvest	2,297	1,681	1,375	638	550	3,000
Salt River	5C	No. Hunters	243	213	221	119	146	750
		No. Days	1,582	1,495	1,378	746	929	4,000
		Harvest	2,435	3,006	2,558	1,711	1,419	7,500
Lower Bear River	5D	No. Hunters	50	80	148	98	116	450
		No. Days	140	473	718	536	533	2,048
		Harvest	320	628	1,085	927	1,031	3,294
Great Divide Basin	5E	No. Hunters	21	4	34	15	13	100
		No. Days	156	18	180	34	41	400
		Harvest	101	18	266	88	25	600
Lower Green River Basin	5F	No. Hunters	344	325	446	563	365	700
		No. Days	1,150	1,114	2,337	2,458	1,826	3,000
		Harvest	2,326	2,203	4,494	3,934	2,771	4,200
Ham's/Black's Fork	5G	No. Hunters	235	181	250	237	276	600
		No. Days	968	999	1,041	758	1,042	3,000
		Harvest	1,524	1,413	2,176	1,358	1,656	3,600
Upper Bear River	5H	No. Hunters	123	121	109	162	184	330
		No. Days	334	530	335	554	697	1,900
		Harvest	818	828	717	1,685	1,451	3,500
Little Snake River	5I	No. Hunters	24	26	31	13	24	100
		No. Days	72	54	61	22	55	600
		Harvest	110	102	66	74	102	800

Source: WGFD 2012-2016

Table 7. HIP estimates of duck harvest and hunter activity in Wyoming during the 2013-2015 hunting seasons.

Duck Species	2015	%	2014	%	2013	%
Mallard	21,477	69.2	25,886	68.5	33,306	63.0
Gadwall	1,658	5.3	1,600	4.2	3,414	6.5
American Wigeon	2,239	7.2	1,842	4.9	3,506	6.6
Green-winged teal	2,488	8.0	3,102	8.2	2,583	4.9
Blue-winged Teal/Cinnamon teal	705	2.3	2,036	5.4	2,122	4.0
Northern shoveler	373	1.2	339	0.9	92	0.2
Northern pintail	249	0.8	679	1.8	369	0.7
Wood duck	207	0.7	388	1.0	0	0.0
Redhead	124	0.4	436	1.2	646	1.2
Lesser scaup	166	0.5	436	1.2	277	0.5
Ring-necked duck	539	1.7	388	1.0	92	0.2
Goldeneyes	663	2.1	242	0.6	5,905	11.2
Bufflehead	124	0.4	145	0.4	277	0.5
Ruddy duck	0	0.0	145	0.4	0	0.0
Hooded merganser	0	0.0	0	0.0	92	0.2
Other mergansers	41	0.1	145	0.4	185	0.3
Total Duck Harvest	31,100		37,900		52,900	
Total Active Duck hunters	3,200		3,500		4,700	
Total Duck Hunter Days a Field	15,900		18,400		26,600	
Seasonal Harvest Per Hunter	9.7		10.9		11.2	
Sample Sizes	750		782		573	

Source: Raftovich et al. 2015-2016

## Geese

### **Hi-Line Population of Canada Geese**

#### **Population Surveys**

Prior to 2010, the population index used to manage the Hi-Line Population (HLP) of Canada Geese was derived from the Mid-winter Waterfowl Survey (MWS). In 2010, the Central Flyway Subcommittee for the HLP Canada Geese adopted the Spring Breeding Population Survey as the primary index replacing the MWS.

The range wide count of HLP Canada geese was 463,900 during spring of 2016, a 3% increase from the 2015 count. Wetland conditions were generally drier across the range. Most of the HLP range in Montana was rated “poor to good.” The Canadian portions of the range were rated “poor or fair.”

Numbers of HLP Canada geese that breed in Wyoming have exceeded the Department’s objective for several years. Spring counts (indices) are listed in Table 8. No visibility correction factor (VCF) was applied to calculate these indices. Consequently, they are not comparable to older counts previously calculated using a VCF of 2. In addition, the Migratory Game Bird Section has insufficient staffing to survey all management areas annually. The 2015 count of 9,314 geese was 24% lower than the 2014 count in the respective management areas. The 2015 survey was the last breeding goose count in the Hi-Line Range.

State and Federal agencies conduct the MWS throughout the US during the first full week in January. The purpose is to estimate the continental population and distribution of wintering waterfowl. Numbers of geese present in Wyoming during the winter period can fluctuate markedly from year to year and within a year dependent on seasonal weather and water conditions. Midwinter counts of HLP Canada geese in Wyoming are summarized in Table 9. The 2016 count was 38% lower than that of 2015, and 65% below the 5-year average.

#### **2015-16 Harvest**

During the 2015-16 hunting season, numbers of hunters and recreation days were below the objectives the Department has established for the HLP and Central Flyway Arctic Nesting (CFAN) populations of Canada geese (Tables 10 and 11). However, harvest continues to be higher than the objective. The disparity between effort and harvest objectives may be an artifact of a much higher goose population and daily limits in recent years by comparison to the time frame in which these harvest objectives were originally set. With a higher daily bag limit, fewer hunters are able to harvest more geese with less effort (days of hunting). These harvest objectives should be revisited in light of current population status and regulatory frameworks. Overall, harvest increased 28% from 2014 to 2015. Harvest fluctuations from year to year tend to be more related to weather influences on goose distribution rather than to actual changes in the total population. Current and historical season dates are summarized in Table 33.

During 2015-16, the standard shooting hours for dark geese were ½ hour before sunrise to sunset except within the following areas: Goshen County north of Wyoming Highway 313 and County Road 28; and those portions of Platte County west of Interstate Highway 25 or south of Wyoming Highway 160 (Gray Rocks Road) and Platte County Road 271 (Riverview Road). Within these defined areas, the shooting hours were ½ hour before sunrise until 1:00 p.m., except all-day hunting was allowed October 3-21, on all Saturdays and Wednesdays from November 21 through December 31, and on all Saturdays, Sundays, and Wednesdays from January 1 through the close of the dark goose season. The shortened (half day) shooting hours were adopted years ago in response to concerns expressed by local hunters who believed excessive hunting pressure could displace geese and/or cause them to become more decoy shy.

## **Banding**

No HLP Canada geese were trapped and banded during 2016. The most recent banding effort was in 2004. The most recent reported recovery of a Wyoming-banded HLP goose was in January 2016 near Longmont, CO. It was banded in 1993 near Casper. A goose banded near Farson (outside of the HLP range) was found dead in New Mexico in December 2015. It is likely this bird was a molt migrant when it was banded.

## **Rocky Mountain Population of Canada Geese**

### **Population Surveys**

Spring population surveys of the Rocky Mountain Population (RMP) of Canada geese are summarized in Table 8. The RMP range includes the entire Pacific Flyway portion of Wyoming as well as management areas 4A, 4B, 4C, 4D, and Western portions of 3A within the Central Flyway (Fig. 1). The 2016 survey covered the entire Central and Pacific Flyway portions of the RMP range in Wyoming. The 2016 survey will be the last breeding goose survey in Wyoming, as the data from Wyoming are no longer included in the abundance index for this population.

Surveys indicate breeding segments of the RMP have deviated significantly from the established objectives for many years in several management areas; it may be prudent to revise the Wyoming's breeding population objectives to levels considered sustainable. However, with discontinuation of the breeding goose survey in western Wyoming, our goose objectives would need to be recalibrated. In addition, Yellowstone National Park (YNP) has not been surveyed in recent years, although a large number of geese breed and summer there. Range-wide, the total population index was 262,000 geese in 2016, a 54% increase from that of 2015. Breeding habitat conditions in 2015 were generally "fair to poor" across the range.

The Pacific Flyway Study Committee (PFSC) is currently revising the RMP Canada Goose Management Plan. The RMP & Pacific Population may be combined into a single population of Western Canada Geese. Key changes will be outlined in this JCR when the plan is completed. Given the more rigorous survey methods now prescribed by the PFSC, and considering the comparatively minimal contribution Wyoming makes to the overall population index, a decision has been made to suspend the spring RMP count in Wyoming and redirect those resources elsewhere starting in 2017.

The Pacific Flyway mid-winter survey was not flown in 2015 and it will not be surveyed again in the foreseeable future. In January 2016, 9,172 geese were counted in the Central Flyway portion of the RMP range compared to 13,384 geese in 2015. The 2016 goose count was the second lowest among counts conducted the previous 5 years (Table 9). Again, these counts vary markedly from year to year dependent on weather conditions.

## **2014-15 Harvest**

### **Early Season**

Regulations governing Wyoming's early Canada goose season are summarized in Table 33. Wyoming does not offer an early Canada goose season in the Central Flyway portion of the RMP range. The justification for a September hunting season is to reduce damage problems by moving birds off private irrigated hay meadows and cropland while providing additional recreational hunting opportunity.

The early September hunt only accounted for a small portion of the overall goose harvest in the Pacific Flyway when the hunt was permit-based and restricted to defined hunt areas prior to 2004. From 1997-2003 goose harvest in the early season averaged 310 birds. In 2003, the early harvest was about 15% of the regular season harvest. Some shifts in goose distribution were noted following the early hunts, suggesting the early season may be successfully addressing damage problems. Lockman et al. (1987) conclude that hunting pressure displaced geese out of Star Valley and Bear River/Cokeville Meadows during initial years of the early goose and crane limited quota permit hunt. Presumably the displaced geese moved into adjacent areas in Wyoming, Utah or Idaho where no early goose season was held at the time. This displacement effect addressed goose depredation issues in two management areas (Lockman et al. 1987). However, some hunters were concerned that the early hunts also impacted hunting opportunity at the start of the regular season.

Beginning in 2004, the early September goose hunt was expanded to include the entire Pacific Flyway portion of Wyoming and was converted to a general season hunt with no limit on participation. Predictably, number of hunters and harvest increased greatly. From 2006 through 2014, the early season harvest comprised 35% to 50% of the total goose harvest in the Pacific Flyway. The number of hunters participating has declined since 2007, however, harvest and hunter effort have remained comparatively stable. In 2015, the early season harvest comprised 20% (858/4,376) of the total goose harvest in the Pacific Flyway (Tables 10 and 12). Average harvest was 2.3 geese per hunter. The early season hunt accounts for a large proportion of the annual harvest in just 8 days. Geese are particularly vulnerable to hunting in early September, when family groups decoy readily. Later in the season, geese are in larger flocks that have been subjected to some hunting pressure, and tend to be more difficult to decoy.

### **Regular Season**

Canada goose harvests during the regular waterfowl hunting season are summarized in Tables 10, 11, 12, and 13. RMP (Western) Canada geese comprise most of the harvest in the

management areas that constitute the Central Flyway portion of their range, and almost all geese harvested in the Pacific Flyway.

Whether the early Canada goose season is affecting regular season harvest opportunities in the Pacific Flyway is unclear. Hunter participation and harvest declined in both the early and regular seasons from 2008-2015, possibly reflecting poor or declining access in some areas. However, only a few complaints were registered by early or regular season hunters.

The estimated harvest in the Central Flyway portion of the RMP range was 6,876 in 2015, a 21% decrease from the 2014 estimate (Table 10). Harvest in the Bighorn Basin contributes over half the total annual harvest in the Central Flyway portion of the RMP range (Tables 10 and 11). The number of hunter days and hunters in the Central Flyway portion of the RMP range decreased 43% and 29%, respectively, in 2015 (Table 10).

The harvest objective for RMP Canada geese in Wyoming is 3,520 in the Central Flyway portion of the range and 4,447 in the Pacific Flyway (Table 10). Estimated harvest has exceeded the established objective in the Central Flyway over the period of record whereas Pacific Flyway harvest has fallen well below the objective.

## **Banding**

No geese were banded in Wyoming during 2009-2014. Past banding efforts are summarized in the 2005-2010 migratory game bird annual reports. Four RMP geese harvested in 2015 were banded in Wyoming in 2006. Three of those geese were harvested in Utah and one in Wyoming. One RMP goose that was banded on the National Elk Refuge in 2008 was resighted at the refuge twice in March and April of 2016.

## **Central Flyway Arctic Nesting Canada Geese**

### **Population Surveys**

In 2013, the Central Flyway Waterfowl Technical Committee (CFWTC) combined the Short Grass Prairie (SGPP) and Tall Grass Prairie (TGPP) goose populations and management plans into a single Central Flyway Arctic Nesting (CFAN) goose population and consolidated the respective management plans.

The West-tier CFAN (formerly SGPP) nests on Victoria and Jenny Lind Islands and on the Canadian mainland from Queen Maud Gulf west and south to the Mackenzie River and northern Alberta. West-tier CFAN geese migrate through Wyoming each fall and spring and a small number winter in Wyoming. The 2016 MWS index was 452,913, 17% lower than the 2015 index. During the 2016 MWS, 1,942 CFAN geese were counted in Wyoming, 26% more than in 2015 and the second lowest count in the last 5 years (Table 14). In 2016, the spring population estimate in Northwest Territories was 251,800, similar to the 2015 estimate. Conditions on the breeding grounds were good to excellent. Production was expected to be average to above-average and the 2016 fall flight similar to that of 2015.

Prior to 1999, hunter-submitted samples consisting of at least 100 tail fans were used to estimate the percent of large and small Canada geese in the harvest and waterfowl surveys. This method was appropriate for estimating harvest composition. However, tail fan data are not representative of the composition of "snapshot" waterfowl surveys in part, because selection bias by hunters may favor larger geese. Since 1999, ground surveys have been conducted as an alternative means to classify large and small Canada geese present in Carbon, Converse, Goshen, Natrona, and Platte counties in conjunction with the MWS (Table 15).

## **Western Central Flyway Population of Light Geese**

### **Population Surveys**

The Western Central Flyway Population is comprised of over two-thirds lesser snow geese and nearly one third Ross' geese. These geese breed in the central and western Canadian Arctic. Large colonies are present at Queen Maude Gulf and Banks Island. In 2016, breeding conditions were generally average to above-average.

State and Federal agencies conduct the mid-winter waterfowl survey during the first two weeks of January to estimate continental populations of wintering waterfowl. In January 2016, 236,600 light geese were counted throughout the U.S. portion of the Western Central Flyway population's winter range. This reflected a 3% decrease from the number counted in 2015. Generally, very few light geese are present in Wyoming during December and January.

### **2014-15 Harvest**

The most recent light goose hunting regulations are summarized in Table 33. The light goose season has remained closed in the Pacific Flyway portion of Wyoming because of a perception among some members of the public that trumpeter swans may be mistaken for light geese.

In 2016, the Department implemented the 16<sup>th</sup> consecutive year of the Light Goose Conservation Order (Table 33). Participants were required to purchase a Conservation Order Special Management Permit and complete a survey card provided with the permit. Use of electronic callers and hunting one-half hour after sunset were allowed. Although federal regulations allow use of unplugged shotguns capable of holding more than 3 shells, this was prohibited by Wyoming Statute as of the 2016 LGCO. However, the statute governing legal weapons has been changed and unplugged shotguns will be allowed commencing with the 2017 LGCO.

Light goose harvest during the Conservation Order is summarized in Table 16. Regular season harvest is summarized in Table 17. Very few light geese are harvested during the regular hunting season. Based on the LGCO survey response, 123 hunters harvested 692 light geese. This was the highest harvest in the most recent 5 years.

### **Recommendations**

1. Continue to maintain liberal hunting seasons and bag limits.
2. Continue harvest surveys.

3. Continue the mid-winter waterfowl survey.
4. Continue ground classifications during the mid-winter waterfowl survey to estimate proportions of HLP and CFAN (large and small) Canada geese that are present.
5. Support management based on a single population of arctic-nesting, white-cheeked geese.
6. Continue the general, early Canada goose hunt in the Pacific Flyway portion of Wyoming to address local damage problems.
7. Continue to implement the Light Goose Conservation Order in Wyoming.
8. Consider revising hunter number, hunter days, and harvest objectives to levels that are normally attainable under existing conditions.

Table 8. Spring populations of Hi-Line and RMP Canada Geese in Wyoming.

Management Area	2016	2015	Percent Change from 2015-2016	Objective	Percent above/below objective	Average 2008 - 2013
<b>Hi-line Population</b>						
Rivers						
Missouri/Cheyenne/Little Powder	2,137	2,137	NA	1,820	+17	2,795
Rivers						
Tongue/Little Bighorn/Powder	3,710	3,710	NA	718	+417	3,254
Central North Platte River	1,055	1,055	NA	666	+58	1,385
Lower North Platte River	1,101	1,101	NA	1,128	-2	1,374
South Platte River	95	95	NA	26	+265	138
Plains)*						
Upper North Platte River (Laramie	1,216	1,216	NA	513	+42	1,011
Total	9,314	9,314	NA	4,871	+104	9,957
<b>Rocky Mountain Population</b>						
Upper North Platte River	217	725	-70	384	-44	602
Big Horn River	1,758	1,758	NA	1,051	+67	1,526
Wind River	1,470	1,470	NA	1,333	+10	1,584
Sweetwater River	567	567	NA	282	+101	582
Snake River	356	632	-44	589	-40	627
Upper Green River	396	504	-21	718	-44	382
Salt River	148	340	-56	615	-76	368
Lower Bear River	987	1,285	-23	2,230	-56	691
Great Divide Basin	2	2	NA	26	-92	20
Lower Green River	753	608	+24	461	+63	621
Ham's/Black's Fork	1,311	1,078	+22	795	+65	977
Upper Bear River	224	656	-66	308	-27	318
Little Snake River	146	445	-67	256	-43	352
Total RMP	8,335	10,070	-17	9,048	-7	8,650
Total	17,649	19,384	-9	13,919	+27	18,607

\* Represents probable Hi-Line production area in Albany county and the Medicine Bow Drainage.

Not all management areas are surveyed annually. The most recent years data is applied when no data exists.

Source: WGFD Unpublished Data

Table 9. Central Flyway mid-winter surveys of white-cheeked geese in Wyoming, 2011 - 2015.

Population	2016	2015	2014	2013	2012	Average
<b>Hi-line</b>						
Goshen and Platte County	12,038	14,107	68,424	35,313	29,900	31,956
Carbon, Converse and Natrona County	2,215	8,749	10,835	12,486	8,862	8,629
<b>Total Hi-Line</b>	<b>14,253</b>	<b>22,856</b>	<b>79,259</b>	<b>47,799</b>	<b>38,762</b>	<b>40,586</b>
<b>CFAN</b>						
Goshen and Platte County	1,800	949	7,181	3,281	2,884	3,219
Carbon, Converse and Natrona County	150	588	1,137	1,159	854	778
<b>Total CFAN</b>	<b>1,950</b>	<b>1,537</b>	<b>8,318</b>	<b>4,440</b>	<b>3,738</b>	<b>3,997</b>
<b>RMP</b>						
Wind River	549	1,321	10,733	2,030	2,104	3,347
Big Horn River	8,587	12,063	27,161	21,587	7,007	15,281
Upper North Platte River	36	0	0	0	0	7
<b>Total RMP Central Flyway</b>	<b>9,172</b>	<b>13,384</b>	<b>37,894</b>	<b>23,617</b>	<b>9,111</b>	<b>18,636</b>
<b>Total White-Cheeked Geese</b>	<b>25,375</b>	<b>36,240</b>	<b>125,471</b>	<b>75,856</b>	<b>51,611</b>	<b>63,218</b>

Source: WGFD Unpublished Data

Table 11. White-cheeked goose harvest in the Central Flyway of Wyoming.

Management Area		2015	2014	Percent Change 2014-2015	Objective	Percent Above/Below Objective	Average 2007-2013	
Missouri/Cheyenne/ Little Powder Rivers	1A	No. Hunters	199	209	-5	299	-33	190
		No. Rec. Days	996	676	+47	1,495	-33	721
		Harvest	712	707	0	598	+19	1,180
Tongue/Little Big Horn /Powder Rivers	1B	No. Hunters	135	202	-33	286	-53	173
		No. Rec. Days	385	493	-22	1,430	-73	625
		Harvest	322	250	+29	715	-55	540
Central North Platte River	1C	No. Hunters	418	510	-18	1,106	-62	544
		No. Rec. Days	1,975	2,400	-18	5,530	-64	3,122
		Harvest	1,380	1,258	+10	1,465	-6	2,055
Lower North Platte River	2A	No. Hunters	1,619	1,962	-17	2,772	-42	1,786
		No. Rec. Days	7,186	8,749	-18	15,246	-53	10,430
		Harvest	11,041	15,103	-27	12,044	-8	12,692
South Platte River	2B	No. Hunters	101	68	+49	68	+49	72
		No. Rec. Days	393	327	+20	272	+44	318
		Harvest	561	284	+98	170	+230	274
Upper North Platte River	3A	No. Hunters	77	145	-47	495	-84	145
		No. Rec. Days	699	621	+13	2,227	-69	712
		Harvest	256	295	-13	330	-22	519
Big Horn River	4A	No. Hunters	717	1,033	-31	1,200	-40	823
		No. Rec. Days	3,196	6,230	-49	5,600	-43	4,918
		Harvest	4,433	6,686	-34	1,200	+269	5,353
Yellowstone River	4B	No. Hunters	16	6	+167	-	-	24
		No. Rec. Days	30	9	+233	-	-	83
		Harvest	22	24	-8	-	-	25
Wind River	4C	No. Hunters	376	422	-11	1,200	-69	370
		No. Rec. Days	1,466	1,681	-13	4,200	-65	1,622
		Harvest	2,126	1,798	+18	1,600	+33	1,769
Sweetwater River	4D	No. Hunters	9	6	+50	100	-91	14
		No. Rec. Days	95	8	+1,088	450	-79	30
		Harvest	39	11	+255	60	-35	79

Source: WGFD 2008-2016

Table 12. Hunter activity and Harvest of white-cheeked geese during the early season in the Pacific Flyway of Wyoming.

Population			Percent Change Above/Below				
			2015	2014	2014-2015	Average	Average 2007-2013
Snake River	5A	No. Hunters	83	59	+41	+4	80
		Hunter Days	163	197	-17	-6	173
		Harvest	284	170	+67	+48	192
Upper Green River	5B	No. Hunters	37	71	-48	+9	34
		Hunter Days	106	145	-27	+95	54
		Harvest	24	173	-86	-18	29
Salt River	5C	No. Hunters	45	86	-48	-34	68
		Hunter Days	105	218	-52	-35	161
		Harvest	88	174	-49	-46	163
Lower Bear River	5D	No. Hunters	15	44	-66	-73	55
		Hunter Days	39	85	-54	-69	124
		Harvest	36	98	-63	-70	122
Great Divide Basin	5E	No. Hunters	0	0	-	-	3
		Hunter Days	0	0	-	-	4
		Harvest	0	0	-	-	2
Lower Green River	5F	No. Hunters	101	97	+4	-39	165
		Hunter Days	219	178	+23	-37	350
		Harvest	231	200	+16	-20	287
Ham's Fork-Black Fork	5G	No. Hunters	82	80	+3	0	82
		Hunter Days	200	230	-13	+22	165
		Harvest	132	174	-24	-3	136
Upper Bear River	5H	No. Hunters	11	42	-74	-61	28
		Hunter Days	51	55	-7	-5	54
		Harvest	63	30	+110	+98	32
Little Snake River	5I	No. Hunters	0	4	-	-	13
		Hunter Days	0	4	-	-	23
		Harvest	0	7	-	-	25
Total		No. Hunters	374	483	-23	-29	528
		Hunter Days	883	1112	-21	-20	1108
		Harvest	858	1026	-16	-13	988
		Birds/Hunter	2.3	2.1	+8	+23	1.9

Source: WGFD 2008-2016

Table 13. White-cheeked goose harvest in the Pacific Flyway of Wyoming.

Management Area			2015	2014	Percent Change 2014-2015	Objective	Percent Above/Below Objective	Average 2007-2013
Snake River	5A	No. Hunters	126	154	-18	500	-75	153
		No. Rec. Days	665	828	-20	2,800	-76	435
		Harvest	378	350	+8	500	-24	289
Upper Green River Basin	5B	No. Hunters	111	134	-17	350	-68	115
		No. Rec. Days	491	477	+3	1,750	-72	299
		Harvest	136	427	-68	438	-69	143
Salt River	5C	No. Hunters	86	163	-47	800	-89	158
		No. Rec. Days	504	740	-32	3,304	-85	742
		Harvest	257	465	-45	600	-57	362
Lower Bear River	5D	No. Hunters	22	81	-73	1,500	-99	124
		No. Rec. Days	54	265	-80	7,500	-99	441
		Harvest	78	345	-77	1,800	-96	263
Great Divide Basin	5E	No. Hunters	13	2	+550	100	-87	-
		No. Rec. Days	139	4	+3,375	500	-72	-
		Harvest	7	0	-	50	-86	-
Lower Green River Basin	5F	No. Hunters	200	274	-27	475	-58	407
		No. Rec. Days	937	814	+15	2,375	-61	1,666
		Harvest	593	585	+1	380	+56	755
Ham's/Black's Fork	5G	No. Hunters	102	172	-41	370	-72	190
		No. Rec. Days	597	1,099	-46	1,850	-68	653
		Harvest	243	387	-37	444	-45	354
Upper Bear River	5H	No. Hunters	29	132	-78	370	-92	115
		No. Rec. Days	127	485	-74	1,665	-92	355
		Harvest	123	172	-28	185	-34	123
Little Snake River	5I	No. Hunters	2	16	-88	100	-98	27
		No. Rec. Days	4	23	-83	500	-99	51
		Harvest	0	34	-100	50	-100	64

Source: WGFD 2008-2016

Table 14. Proportions of Hi-Line and CFAN geese counted during the mid-winter waterfowl survey.

Year	Total Geese	Percent Hi-Line	Total Hi-Line	Percent CFAN	Total CFAN
1995*	27,750	84	23,310	16	4,440
1996*	44,238	83	36,718	17	7,520
1997*	72,439	95	68,817	5	3,622
1998*	37,927	82	31,100	18	6,827
1999*	29,432	87	25,606	13	3,826
2000*	39,689	90	35,720	10	3,969
2001*	50,219	98	49,214	2	1,005
2002*	23,427	93	21,764	7	1,663
2003*	21,992	90	19,812	10	2,180
2004*	40,379	89	35,877	11	4,502
2005*	40,448	94	38,022	6	2,426
2006*	63,844	88	56,184	12	7,660
2007*	16,472	94	15,418	6	1,054
2008*	10,482	94	9,876	6	606
2009*	46,324	91	42,154	9	4,170
2010*	44,248	96	42,477	4	1,771
2011*	75,083	92	69,375	8	5,708
2012*	42,500	91	38,762	9	3,738
2013*	52,239	91.5	47,797	8.5	4,442
2014*	87,577	90.5	79,259	9.5	8,318
2015*	24,393	93.7	22,856	6.3	1,537
2016*	16,195	88.0	14,253	12.0	1,942
Averages	41,241	91	38,577	9	3,856

\*Ocular estimate

Source: WGFD unpublished data.

Table 15. Ground Classifications of white-cheeked geese.

County	Year	LARGE	SMALL	TOTAL	%LARGE	%SMALL
Carbon						
	2011	147	0	147	100.0	0.0
	2012	0	0	0	0.0	0.0
	2013	0	0	0	0.0	0.0
	2014	0	0	0	0.0	0.0
	2015	480	12	492	97.6	2.4
	2016	NS				
Converse						
	2011	865	26	891	97.1	2.9
	2012	714	21	735	97.1	2.9
	2013	646	11	657	98.3	1.7
	2014	1408	17	1425	98.8	1.2
	2015	975	35	1010	96.5	3.5
	2016	525	51	576	91.1	8.9
Goshen						
	2011	2403	240	2643	90.9	9.1
	2012	1316	202	1518	86.7	13.3
	2013	1911	281	2192	87.2	12.8
	2014	4127	438	4565	90.4	9.6
	2015	826	71	897	92.1	7.9
	2016	NS				
Natrona						
	2011	242	1	243	99.6	0.4
	2012	441	57	498	88.6	11.4
	2013	701	1	702	99.9	0.1
	2014	1015	1	1016	99.9	0.1
	2015	277	14	291	95.2	4.8
	2016	457	4	461	99.1	0.9
Platte						
	2011	1446	155	1601	90.3	9.7
	2012	482	5	487	99.0	1.0
	2013	640	70	710	90.1	9.9
	2014	2480	494	2974	83.4	16.6
	2015	2492	209	2701	92.3	7.7
	2016	2043	274	2317	88.2	11.8
Total						
	2011	4956	422	5378	92.2	7.8
	2012	2953	285	3238	91.2	8.8
	2013	3898	363	4261	91.5	8.5
	2014	9030	950	9980	90.5	9.5
	2015	5050	341	5391	93.7	6.3
	2016	3025	329	3354	90.2	9.8

NS - Not surveyed.

Source: WGFD Unpublished Data

Table 16. Harvest and hunter activity during the 2016 Light Goose Conservation Order in Wyoming.

	2016	2015	2014	2013	2012	Average
Permits Sold	156	139	153	133	177	152
Total Survey Respondents	82	95	102	103	144	105
% Responded	53.0	68.4	66.7	77.4	81.4	69.4
Active Hunters	123	90	112	103	163	118
Total Days Hunted	514	352	337	346	575	425
Days/Hunter	4.2	3.9	3	3.4	3.5	4
Geese Harvested	671	534	449	436	611	540
Geese Knocked Down, but not retrieved	21	27	43	20	49	32
Total Harvest	692	561	492	456	660	572
Harvest/Hunter	5.6	6.2	4.4	4.4	4	4.9
Hunters using Electronic Callers*	-	58	56	68	118	75
Harvest by Hunters using Electronic Callers*	-	362	164	318	427	318
Average Harvest of Hunters using Callers*	-	6.2	2.9	4.7	3.6	4.4
Hunters Hunting After Sunset*	-	21	43	37	68	42
Harvest by Hunters Hunting After Sunset*	-	22	77	68	73	60
Average Harvest of After Sunset Hunters*	-	1	1.8	1.8	1.1	1.4
Hunters Using Callers and Hunting After Sunset*	-	21	27	27	55	33
% of Hunters Hunting in Goshen County*	-	96	97	99	97	97

\*No longer recorded starting in 2016

Source: WGFD Unpublished Data

Table 17. HIP estimates of goose harvest and hunter activity in Wyoming during the 2013-2015 regular hunting seasons.

Goose Species	2015	% of Bag	2014	% of Bag	2013	% of Bag
Canada Goose	18,390	100.00	20,573	100.00	28,457	100.00
Snow Goose	0	0.00	0	0.00	0	0.00
Blue Goose	0	0.00	0	0.00	0	0.00
Ross's Goose	0	0.00	0	0.00	0	0.00
White-fronted Goose	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>18,390</b>	<b>0.00</b>	<b>20,573</b>	<b>0.00</b>	<b>28,457</b>	<b>0.00</b>
Total Goose Harvest	18,400		20,600		28,500	
Total Active Goose Hunters	3,200		3,700		4,600	
Total Goose Hunter Days Afield	15,900		17,400		27,600	
Goose Harvest Per Hunter	5.7		5.5		6.1	
Sample Sizes	295		228		270	

Source: Raftovich et al. 2015-2016

## Sandhill Cranes

### **Rocky Mountain Population of Sandhill Cranes**

#### **Population Surveys**

The principal index used to monitor Rocky Mountain Population (RMP) sandhill cranes is derived from a multi-state cooperative survey of pre-migration staging areas conducted during September. September counts are summarized in Table 18. The 2015 count of 24,330 cranes was the highest count ever recorded.

Annual production is estimated by classifying the proportion of juveniles within the crane population staging in the San Luis Valley, Colorado in October. The recruitment rate during the 2015 survey was 11.3%, well above the long-term (1972-2015) average of 8.2% (Table 19).

Crane surveys conducted on established and experimental survey areas in Wyoming are summarized in Table 20. In 2015, 3,596 cranes were counted in RMP staging areas of central and western Wyoming. This was higher than the number observed in 2014 (3,008), and slightly higher than the long term (1987-2014) average of 3,191.

In the Pacific Flyway portion of Wyoming, crane counts are conducted in mid-September after the crane hunting season has ended. Informal late August counts of cranes flying off roosts suggest crane numbers may be higher just prior to `hunts in the upper Salt River and the Big Sandy/Eden Reservoirs. Therefore, the number of cranes counted during pre-migration staging surveys in the Salt River, Bear River, Uinta, and Farson hunt areas may not be representative of cranes actually present at the start of the crane hunt.

Early hunting seasons are designed to reduce crop depredation by shifting the distribution of cranes away from agricultural fields. The limited harvest has minimal impact on the breeding population of cranes in Wyoming, but crane and concurrent early goose hunts in the Pacific Flyway portion of Wyoming may account for some changes in distribution (Rod Drewien, pers. com., Lockman et al. 1987).

The distribution of staging cranes has expanded in recent years. An area near Worland was added to the Bighorn Basin survey area in 2007. There is also a substantial influx of cranes, presumably from Montana, after surveys are completed in both the Wind River Basin and Bighorn Basin.

Increasing presence of cranes in Johnson, Natrona and Sheridan counties during summer months and in September gave rise to the possibility that these might be greater sandhill cranes affiliated with the RMP. Track measurements confirmed 100% of mid-toe lengths exceeded the range known for lesser sandhill cranes (*Grus c. canadensis*). Hunting under the mid-continent population framework was suspended in these 3 counties after 2013 and experimental fall staging surveys were initiated that year (Roberts 2013). A ground survey was conducted in 2013 and aerial surveys were done in 2014-2016. This area was officially included in the September pre-migration staging survey in 2016 and a hunting season was initiated in accordance with the RMP framework.

## 2015-16 Harvest

Greater sandhill cranes (*Grus canadensis tabida*) have been hunted during September in the Salt River and Lower Bear River management areas since 1982. In 1986, a hunting season was initiated in the Farson area of the Lower Green River and in 1987, another hunt was initiated in the Riverton Project within the Wind River Basin. A hunt area was established in Big Horn and Park Counties in 1996. A hunt area was established in Uinta County in 2008. The Bear River Hunt Area in Lincoln County was also expanded to include the Hams Fork Drainage in 2008. The justification for crane hunts is to reduce crop depredations by staging cranes, to regulate population growth, and to provide recreational hunting opportunity.

Annual harvest allocations are prescribed based on a formula in the *Management Plan of the Pacific and Central Flyways for the Rocky Mountain Population of Greater Sandhill Cranes*. Due to shifts in the fall distribution of cranes, a smaller proportion of the crane population has been counted in Wyoming during recent years. Consequently, the harvest allocation available to Wyoming decreased beginning with the 2007 hunting season. During 2007-2010, the proportional reduction in the harvest allocation available to Wyoming was offset by an increase in the total allocation due to relatively good crane recruitment and increasing numbers of cranes counted in the September survey. In 2013, 2014, and 2015 the September counts increased and Wyoming's allocation along with it.

The Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes allows regulated harvest of cranes when the population index exceeds 15,000 based on an average of the 3 most recent reliable surveys conducted on the fall pre-migration staging areas. A prescriptive model is used to allocate annual harvest among states. Wyoming's 2015 harvest allocation increased to 188 cranes due to increases in recruitment and the population count in 2013, 2014, and 2015. The number of permits issued has been twice the allowable harvest allocation based on our experience that on average, 50% of permit holders will harvest a crane. The Department has received requests to extend the season length, and has advised that anticipated increase in permit success will necessitate a reduction in available permits.

In 2015, the Pacific and Central Flyways revised the management plan to base the proportions of annual harvest allocated among the summer range states on the average proportional distribution of cranes counted in summer range states over the most recent 5-year period.

During 2015, 104 cranes were harvested in the 6 Wyoming hunt areas (Table 21). Permit success ranged from 17% in Area 5 (Uinta) to 65% in Area 3 (Farson). The harvest rate for active hunters ranged from 0.33 cranes per hunter in Area 5 (Uinta) to 0.88 cranes per hunter in Area 3 (Farson). Hunter success averaged 64% across all hunt areas. The 2015 harvest rate was 0.64 cranes per active hunter compared to 0.70 cranes per hunter in 2014. Harvest rates fluctuate from year to year in all 6 hunt areas. Changes in harvest rates appear to be influenced by permit numbers and crane availability in any given year. Shifts in crane distribution are likely responsible for some fluctuations in harvest and hunter success. Land use changes including conversions from agriculture to subdivisions, changes in grain crop type and distribution, and

reduced hunter access also appear to impact hunter success in some hunt areas, particularly in the Bear River and Star Valley hunt areas. The management plan was revised, and included a new hunt area in Natrona, Johnson, and Sheridan Counties proposed for 2016. Harvest statistics from RMP crane hunting seasons are summarized in Table 31.

## **Mid-Continent Population of Sandhill Cranes**

### **Population Surveys**

The Mid-Continent Population (MCP) of Sandhill Cranes, is comprised predominantly of lesser sandhill cranes (*Grus canadensis canadensis*), and includes components of the greater subspecies (*G. c. tabida*) and a third intermediate-sized subspecies, the Canadian sandhill crane (*G. c. rowanii*). However, recent genetic investigations question the existence and differentiation of the third subspecies (Jones et al. 2005). Since 1982, the MCP remained comparatively stable for many years, but has increased in recent years. The photo-corrected, 3-year average for 2013-15 was 470,030 cranes, which is within the established population-objective range of 349,000-472,000 cranes.

Cranes affiliated with the Mid-Continent Population do not nest in Wyoming. Most of the migration bypasses Wyoming to the east. Significant spring and fall staging has been documented in Wyoming in recent years. The past few years, 7,000-15,000 cranes have stopped to rest during daylight hours at Keyhole Reservoir around the 10<sup>th</sup> to 30<sup>th</sup> of October. In 2014, the Department initiated the first coordinated spring survey of mid-continent sandhill cranes in Goshen County. On March 22, 2016, 4,200 cranes were counted flying onto or leaving two roost sites on Table Mountain WHMA (Table 22).

### **2014-15 Harvest**

Recent harvest statistics for mid-continent sandhill cranes are summarized in Table 23. During the 2015 season, 28 MCP sandhill cranes were harvested in Wyoming. As mentioned above, most MCP cranes pass east of Wyoming. Those that migrate through the State do so over the course of a few days and do not stage in predictable concentrations. The timing of migration also varies from year to year. Consequently, most hunting is opportunistic.

### **Recommendations**

1. Continue the RMP harvest survey to estimate harvest and hunter activity.
2. Continue the coordinated spring survey of mid-continent sandhill cranes staging at Table Mountain WHMA.
3. Continue to monitor changes in RMP crane distribution.
4. Continue to monitor the success rate of RMP crane hunters to assure Wyoming's harvest allocation is not exceeded.
5. Continue to survey cranes on fall pre-migration staging areas, including newly added areas in Natrona, Johnson, and Sheridan counties.

6. Continue monitoring to determine if creation of new Hunt Area 5 in Uinta County is providing substantive hunting opportunity and addressing depredation complaints as crane numbers increase and their fall distribution continues to expand.

Table 18. September counts of the Rocky Mountain Population of greater sandhill cranes by state.

Year	Colorado <sup>a</sup>	Idaho	Montana	Utah	Wyoming	Total
1987	1,443	10,686	1,447	1,578	2,327	17,481
1992	3,181	5,801	5,264	2,810	2,248	19,304
1995	2,284	6,864	3,681	1,528	1,671	16,028
1996	1,255	8,334	2,974	1,849	2,526	16,938
1997	1,604	8,132	3,595	2,450	2,255	18,036
1998	1,273	8,067	3,415	2,185	3,162	18,102
1999	1,102	8,761	3,141	2,292	4,205	19,501
2000	749	9,337	3,598	2,416	3,890	19,990
2001	666	7,160	4,585	1,522	2,626	16,559
2002	1,355	7,698	4,843	1,869	3,038	18,803
2003	745	7,822	4,964	2,546	3,446	19,523
2004	1,410	7,152	4,637	2,239	3,072	18,510
2005	1,052	7,668	5,588	2,646	3,911	20,865
2007	1,743	8,262	6,509	2,401	3,907	22,822
2008	1,080	6,123	6,419	3,708	3,826	21,156
2009	1,162	6,934	6,329	2,283	3,613	20,321
2010	985	5,776	7,335	3,242	3,726	21,064
2011	1,347	5,029	6,642	1,498	2,978	17,494
2012	413	3,432	5,876	2,109	3,587	15,417
2013	1,594	5,228	7,218	2,732	3,588	20,360
2014	1,258	6,064	6,555	2,783	3,003	19,663
2015	1,089	6,454	9,493	3,698	3,596	24,330
Mean	1,309	7,127	5,187	2,381	3,191	19,194

<sup>a</sup> Colorado counts include migrants that had arrived at the staging areas in the San Luis Valley.

Source: Thorpe et al. 2015

Table 19. Allowable harvest of RMP Cranes.

Year	September Total	3 Year Population Average	Recruitment Rate	3 Year Recruitment Average	Total Allowable Harvest	Wyoming Allowable Harvest
1999	19,501	18,546	8.4	9.8	1,128	118
2000	19,990	19,198	6.7	8.8	1,163	116
2001	16,559	18,683	5.8	7.0	829	92
2002	18,803	18,451	5.2	5.9	668	78
2003	19,523	18,295	7.1	6.0	660	82
2004	18,510	18,945	9.4	7.2	910	122
2005	20,865	19,633	10.8	9.1	1,320	190
2006	Cancelled	19,633	9.9	10.0	1,456	209
2007	22,822	20,732	8.3	9.7	1,744	165
2008	21,156	21,614	9.1	9.1	1,940	188
2009	20,321	21,433	11.5	9.6	1,985	193
2010	21,064	20,847	8.4	9.6	1,780	175
2011	17,494	19,626	6.6	8.8	1,275	123
2012	15,417	17,992	7.8	7.6	774	80
2013	20,360	17,757	6.6	7.0	677	70
2014	19,668	18,482	10.3	8.2	937	94
2015	24,330	21,453	11.3	9.4	1,946	188

Table 20. Pre-migration staging areas and associated September estimates.

Survey Area	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
(1) Baggs	0	0	5	0	0	0	2	0	2	NS	5	0	4	3
(2) Bear River Valley	692	163	379	490	539	488	153	264	510	NS	96	149	233	246
(3) Greybull River/Otto	109	99	197	166	185	454	283	481	374	NS	437	179	439	286
(4) Shosone river/Ralston	109	384	366	446	341	470	389	196	386	NS	938	680	742	414
(5) Worland	134	174	113	31	96	322	215	201	24					
(6) Big Piney-Daniel	114	19	239	117	14	76	91	138	46	NS	3	58	174	40
(7) Bridger Valley	28	18	22	103	105	75	51	42	116	NS	273	43	125	33
(8) Lonetree	0	4	0	0	0	0	NS	NS	50					
(9) Farson	2087	1295	1354	1665	988	1297	1463	1957	1431	NS	1382	1256	813	1051
(10) Hams Fork	2	0	35	15	101	18	90	51	149	NS	161	24	4	0
(11) Pinedale-Cora-Boulder	0	0	0	3	0	2	45	0	8	NS	35	2	2	2
(12) Seedskaadee NWR	NS	NS	NS	0	6	4	4	0	0	NS	0	3	2	6
(13) Saratoga	3	0	12	69	60	26	5	11	0	NS	2	85	193	0
(14) Jackson Hole (Elk Refuge)	33	150	279	23	69	132	220	118	64	NS	40	84	117	121
(15) Star Valley	192	467	223	182	198	127	257	234	314	NS	191	234	316	304
(16) Hidden Valley	0	122	56	112	88	40	19	3	0	NS	43	119	39	58
(17) Ocean Lake	0	48	228	67	73	14	200	25	391	NS	96	113	229	433
(18) Riverview Valley	93	60	80	98	115	181	126	105	42	NS	209	43	14	41
Experimental Areas*														
Natrona County	359	452	139											
Johnson County	35	518	235											
Sheridan County	83	430	150											
<b>Total</b>	<b>3596</b>	<b>3003</b>	<b>3588</b>	<b>3587</b>	<b>2978</b>	<b>3726</b>	<b>3613</b>	<b>3826</b>	<b>3907</b>	<b>0</b>	<b>3911</b>	<b>3072</b>	<b>3446</b>	<b>3038</b>

\* Experimental areas not included in the total count.

Source: WGFD Unpublished Data

Table 21. Harvest statistics from RMP sandhill crane hunts in Wyoming 2004-2015.

Hunt Area	Year											
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
<b>1 Bear River</b>												
No. Hunters	16	7	12	23	25	20	24	27	21	18	24	15
Hunter Days	36	13	30	48	46	33	46	51	44	27	47	29
Days/Hunter	2.3	2	2.5	2.1	2.1	1.7	1.9	1.9	2.1	1.5	2	1.9
Harvest	10	5	5	13	9	11	18	17	9	12	14	12
Cranes/Hunter	0.63	0.72	0.42	0.57	0.41	0.55	0.75	0.63	0.43	0.67	0.58	0.76
<b>2 Salt River</b>												
No. Hunters	16	10	7	13	25	26	22	22	11	30	23	15
Hunter Days	37	20	21	36	61	109	54	45	29	87	59	48
Days/Hunter	2.4	2	3	2.8	2.4	4.2	2.5	2.1	2.6	3	2.6	3.3
Harvest	11	7	3	10	13	6	8	10	8	12	10	7
Cranes/Hunter	0.69	0.7	0.43	0.77	0.52	0.23	0.36	0.45	0.7	0.42	0.43	0.46
<b>3 Eden/Farson</b>												
No. Hunters	33	30	38	49	86	85	83	69	54	73	43	35
Hunter Days	51	54	64	76	171	151	152	137	103	135	82	65
Days/Hunter	1.5	1.8	1.7	1.5	2	1.8	1.8	2	1.9	1.9	1.9	1.9
Harvest	29	19	20	39	48	63	46	37	42	58	31	24
Cranes/Hunter	0.88	0.63	0.53	0.8	0.56	0.74	0.55	0.54	0.77	0.79	0.72	0.68
<b>4 Riverton</b>												
No. Hunters	36	47	41	59	71	91	73	70	65	83	48	55
Hunter Days	104	106	98	149	166	196	133	121	118	155	90	91
Days/Hunter	2.9	2.2	2.4	2.5	2.3	2.2	1.8	1.7	1.8	1.9	1.9	1.6
Harvest	20	35	16	30	42	46	58	45	45	55	28	37
Cranes/Hunter	0.56	0.73	0.39	0.51	0.59	0.51	0.79	0.64	0.69	0.66	0.58	0.66
<b>5 Uinta</b>												
No. Hunters	6	6	3	10	11	10	8	10				
Hunter Days	22	11	9	47	37	13	22	20				
Days/Hunter	4	1.8	3	4.7	3.4	1.3	2.8	2				
Harvest	2	4	0	0	7	3	2	3				
Cranes/Hunter	0.33	0.67	0	0	0.64	0.3	0.25	0.3				
<b>6 Big Horn</b>												
No. Hunters	57	44	46	62	82	96	93	83	62	101	58	54
Hunter Days	125	73	119	165	228	192	217	191	124	276	152	110
Days/Hunter	2.2	1.7	2.6	2.7	2.8	2	2.3	2.3	2	2.6	2.6	2.1
Harvest	31	33	31	42	42	53	6.3	50	35	57	33	44
Cranes/Hunter	0.54	0.75	0.67	0.68	0.51	0.55	0.68	0.6	0.56	0.56	0.57	0.82
<b>Total</b>												
Harvest Allocation	94	74	87	135	165	197	192	165	131	209	144	104
Permits Issued	216	163	180	270	352	395	387	330	266	401	254	206
No. Hunters	164	144	147	216	297	328	303	281	213	305	196	174
Hunter Days	375	276	342	521	709	695	624	562	418	687	430	343
Days/Hunter	2.3	1.9	2.3	2.4	2.4	2.1	2.1	2	2	2.3	2.2	2
Harvest	104	101	74	134	161	182	195	162	138	194	116	124
Cranes/Hunter	0.63	0.7	0.41	0.62	0.54	0.55	0.64	0.58	0.65	0.64	0.59	0.71

Source: WGFD 2005-2016

Table 22. Coordinated spring survey of Mid-continent Sandhill Cranes in Wyoming.

	2016	2015	2014	Average
Table Mountain WHMA	4,200	2,918	2,952	3,357

Source: WGFD Unpublished Data

Table 23. Harvests of Mid-continent sandhill cranes in Wyoming, 2004-2015.

Year	Permits Issued	Active Hunters	Retrieved Harvest	Birds / Hunter
1975-1979				
Mean	47	20	8	0.4
1980-1989				
Mean	39	11	6	0.5
1990-1999				
Mean	38	8	5	0.6
2000	58	11	10	0.9
2001	72	13	7	0.5
2002	54	15	22	1.5
2003	50	10	7	0.7
2004	61	16	4	0.3
2005	68	24	16	0.7
2006	78	25	20	0.8
2007	58	19	20	1.1
2008	73	24	24	1.0
2009	62	67	8	0.1
2010	86	29	25	0.9
2011	86	41	20	0.5
2012	102	39	41	1.1
2013	106	35	41	1.2
2014	433	70	37	0.5
2015	454	78	28	0.4

Source: Dubovsky 2016

## **Other Webless Migratory Game Birds**

### **Mourning Doves**

#### **Population Surveys**

For monitoring and management purposes, mourning dove populations are subdivided into 3 units – the Eastern, Central, and Western management units. Fourteen states including Wyoming comprise the Central Management Unit. Call-counts were the principal index used to monitor mourning dove population status throughout the U.S. from 1953-2013. The call-count survey was suspended after 2013 except in states that continued to participate at a reduced effort. In 2014, 2015, and 2016 Wyoming participated in a modified call-count survey. Sixty-eight doves were seen or heard along 4 survey routes in 2016.

#### **2014-15 Harvest**

Weather conditions in late August and early September can greatly influence dove abundance and harvest in Wyoming. In 2016, doves were present into mid-September when many migrated out.

Dove harvest decreased in 2015 and was below the LTA (Table 24). Harvest success (birds/per hunter) and effort (days/hunter) both decreased and were below the LTA. Harvest estimates derived from HIP are presented in table 25. We continue to rely on harvest estimates derived from the Department-run harvest survey, as HIP-derived estimates continue to have excessively wide confidence intervals. Recent dove hunting seasons are listed in Table 31.

#### **Banding**

In 2008, the National Mourning Dove Task Force recommended that all states not currently banding mourning doves begin a banding program. Regional banding data from within each management unit provides specific population information to support implementation of both the Mourning Dove National Strategic Harvest Management Plan and relevant interim harvest strategies. In 2004, the USFWS Service Regulations Committee (SRC) required that a mourning dove harvest management strategy be developed for each management unit. Combined banding goals for the Wyoming portions of 4 Bird Conservation Regions (BCRs) are 191 after hatch year (AHY) and 202 hatch year (HY) (393 total) mourning doves each year beginning in 2009.

In 2016, mourning doves were trapped and banded at one location in BCR 10 (Savery), one location in BCR 17 (Casper) and two locations in BCR 18 (Cheyenne and Springer WHMA). Department personnel banded 472 mourning doves (Table 26). A total of 11 doves banded by Department personnel have been recovered. Banding recoveries are summarized in Table 27.

### **Wilson's Snipe**

#### **Population Survey**

Based on North American Breeding Bird Survey data, the snipe population decreased in western portions of Wyoming and Montana from 1966-2013. However, the population generally increased in eastern portions of Wyoming, Montana, and Alberta.

### **2014-15 Harvest**

Snipe hunting and harvest in Wyoming have varied slightly over the past 11 years (Table 28). Confidence intervals about HIP-derived estimates continue to be excessively wide. Recent snipe hunting seasons are listed in Table 31.

## **Sora and Virginia Rail**

### **Population Survey**

Based on data from the Breeding Bird Survey, populations of both sora and Virginia rails increased from 1968-2013. Both species breed in wetland habitats and the increased precipitation in 2016 should help production. Improved habitat conditions will also provide better rail hunting opportunities.

### **2014-15 Harvest**

Rail harvest and hunting in Wyoming remained low during the past 11 years (Table 29). Confidence intervals around HIP-derived estimates continue to be excessively wide. Recent rail hunting seasons are listed in Table 31.

## **American Coot**

### **Population Survey**

Based on the most recent data from the North American breeding bird survey, the coot population decreased in Wyoming from 1968-2013. American coot populations increased slightly in Montana over the same time period.

## **2014-15 Harvest**

For the most part, American coots are not actively hunted in Wyoming. Harvest has been nominal over the past 11 years (Table 30). Confidence intervals around HIP-derived estimates also continue to be excessively wide. Recent American coot hunting seasons are listed in Table 31.

## **Recommendations**

1. Maintain hunting opportunity for all species of webless migratory game birds.
2. Continue to participate in dove banding statewide, focus on meeting banding goals while not banding excessively at any specific location.
3. Continue to support wetlands projects that provide habitat for rails and common snipe.

## American Crow

### **Population Survey**

Based on the North American breeding bird survey, crows have increased from 1996-2013 throughout the United States, but decreased in Canada and Wyoming.

### **Harvest**

Recent crow seasons are summarized in Table 34. The crow harvest and hunter activity are unknown in Wyoming. Since a license is not required to hunt crows, there is no means to identify a sample frame in order to conduct a harvest survey. The very limited hunting that takes place has had essentially no impact on crow populations.

### **Recommendations**

1. Maintain hunting opportunity for recreation and to assist with depredation control.

## Trumpeter and Tundra Swans

### **Discussion:**

Swans are federally defined as migratory game birds [50 CFR 20.11(a)] and hunted in several states. Small resident and restored populations of breeding trumpeter swans inhabit portions of western Wyoming. Comparatively few tundra swans migrate through the State. Wyoming's resident population of trumpeter swans has increased and expanded its distribution in recent years, particularly in the Upper Green River Basin. Additional restoration efforts are ongoing. The Migratory Game Bird Section addresses certain aspects of swan management through the Flyway process. However, the Nongame Section oversees the trumpeter swan program in Wyoming. There is no open hunting season on swans in Wyoming. Refer to Nongame completion reports for swan monitoring data and more detailed information about the restoration program.

In response to requests from the hunting public, a light goose hunting season is proposed in the Pacific Flyway portion of Wyoming for 2017. Some citizens and interest groups are opposed due to a perception that trumpeter swans will be mistaken as snow geese and killed. Based on considerable experience elsewhere, the Department believes this concern is unfounded. Appropriate cautions and identification materials will be included in the 2017 migratory game bird hunting brochure. The Department will monitor the light goose hunting season and will make appropriate adjustments if the need should arise.

Table 24. Statewide mourning dove harvest in Wyoming.

Year	Hunters	Days	Days / Hunter	Harvest	Birds / Hunter
2004	2,471	7,645	3.09	32,142	13.01
2005	3,194	9,080	2.84	44,280	13.86
2006	2,461	7,141	2.90	32,807	13.33
2007	2,351	8,256	3.51	36,670	15.60
2008	2,315	7,482	3.23	29,994	12.96
2009	1,949	5,598	2.87	22,278	11.43
2010	2,528	8,096	3.20	28,906	11.43
2011	2,291	6,735	2.94	23,607	10.30
2012	2,263	7,260	3.21	28,402	12.55
2013	2,310	6,730	2.91	23,485	10.17
2014	2,235	6,857	3.07	27,791	12.43
2015	2,095	6,931	3.31	24,873	11.87
Average	2,372	7,318	3.09	29,603	12.41

Source: WGFD 2005-2016

Table 25. HIP estimates of mourning dove harvest and hunter activity in Wyoming.

YEAR	Hunters	Days	Days / Hunter	Harves	Birds / Hunter
2004	3,200	8,700	2.72	43,700	13.66
2005	2,500	6,600	2.64	34,100	13.64
2006	2,300	6,500	2.83	29,500	12.83
2007	4,000	8,800	2.20	42,600	10.65
2008	2,500	5,900	2.36	30,100	12.04
2009	2,300	5,800	2.52	20,600	8.96
2010	2,700	7,100	2.63	32,100	11.89
2011	2,700	5,100	1.89	25,000	9.26
2012	2,700	6,300	2.33	25,300	9.37
2013	3,100	7,200	2.32	34,200	11.03
2014	1,500	3,500	2.33	21,100	14.07
2015	1,700	3,300	1.94	14,900	8.76
Average	2,600	6,233	2.39	29,433	11.35

Source: Raftovich et al. 2016, Raftovich et al. 2015, Raftovich and Wilkins 2013, Raftovich et al. 2011, Raftovich et al. 2009, Richkus et al. 2007, Padding et al. 2005

Table 26. Mourning doves banded by WGFD personnel

Band Date	Encounter Date	Location	Age			Sex			TOTAL
			UNK	HY	AHY	UNK	Male	Female	
2007		Casper	0	1	4	1	2	2	5
2008		Casper	1	21	24	0	26	20	46
2012		Cheyenne	0	11	25	11	15	10	36
2012		Downar	1	15	17	15	14	4	33
2013		Casper	0	1	2	1	2	0	3
2013		Cheyenne	57	34	35	91	26	9	126
2013		Downar	1	0	3	1	2	1	4
2013		Speas	3	4	9	7	6	3	16
2014		Casper	0	90	89	100	50	29	179
2014		Cheyenne	1	27	87	28	52	35	115
2014		Downar	3	14	34	17	24	10	51
2015		Casper	0	27	117	29	83	32	144
2015		Cheyenne	3	29	55	32	37	18	87
2016		Savery	0	1	18	2	9	8	19
2016		Casper	0	67	127	72	92	30	194
2016		Springer WHMA	0	1	13	1	12	1	14
2016		Cheyenne	6	57	176	63	131	45	239
Total Banded			76	400	835	471	583	257	1311

Table 27. Encounters of mourning doves banded by WGFD personnel.

Band Date	Encounter Date	Location	How
8/16/2007	2/20/2008	Hermosillo, MX	Shot
8/14/2008	9/19/2009	Chalk, TX	Shot
8/5/2013	5/15/2014	Cheyenne, WY	Found Dead
7/3/2014	2/14/2015	Casimiro Castillo, MX	Shot
7/16/2014	10/15/2014	Ixtlahuacan del Rio, MX	Shot
7/28/2014	9/14/2014	Vado NM	Shot
7/30/2015	8/19/2015	Casper, WY	Found Dead
8/6/2015	1/16/2016	El Refugio, MX	Shot
8/11/2015	9/6/2015	August, KS	Shot
8/18/2015	6/4/2016	Casper, WY	Found Dead
8/19/2015	9/1/2015	Cheyenne, WY	Shot

Table 28. HIP estimates of snipe harvest and hunter activity in Wyoming.

Year	Hunters	Days	Days / Hunter	Harvest	Birds/ Hunter
2004	300	500	1.67	400	1.33
2005	100	300	3.00	400	4.00
2006	100	300	3.00	100	1.00
2007	100	100	1.00	200	2.00
2008	100	200	2.00	300	3.00
2009	50	50	1.00	100	2.00
2010	400	600	1.50	1,200	3.00
2011	100	200	2.00	400	4.00
2012	300	600	2.00	600	2.00
2013	50	100	2.00	100	2.00
2014	100	200	2.00	100	1.00
2015	50	100	2.00	100	2.00
Average	146	271	1.93	333	2.28

Table 29. HIP estimates of rail harvest and hunter activity in Wyoming.

Year	Hunters	Days	Days / Hunter	Harvest	Birds/ Hunter
2004	50	50	1.00	50	1
2005	0	0	0.00	0	0
2006	0	0	0.00	0	0
2007	0	0	0.00	0	0
2008	50	50	1.00	50	1
2009	0	0	0.00	0	0
2010	50	50	1.00	0	0
2011	0	0	0.00	0	0
2012	50	50	1.00	0	0
2013	50	50	1.00	50	1
2014	50	50	1.00	0	0
2015	100	300	3.00	500	5
Average	33.33	50.00	0.55	54.17	0.67

Table 30. HIP estimates of American coot harvest and hunter activity in Wyoming.

Year	Hunters	Days	Days/ Hunter	Harvest	Birds / Hunter
2004	100	100	1.00	200	2.00
2005	100	100	1.00	100	1.00
2006	100	500	5.00	900	9.00
2007	50	50	1.00	50	1.00
2008	200	200	1.00	200	1.00
2009	50	50	1.00	50	1.00
2010	200	200	1.00	600	3.00
2011	200	500	2.50	100	0.50
2012	400	1,800	4.50	3,200	8.00
2013	100	300	3.00	600	6.00
2014	100	400	4.00	300	3.00
2015	50	100	2.00	200	4.00
Average	138	358	2.25	542	3.29

Table 31. Wilson's snipe, sandhill crane, mourning dove, and rail hunting seasons in Wyoming, 1996-2015

Year	Common Snipe	RMP Sandhill Crane								Mourning Dove	Sora and Virginia Rail
		MCP Sandhill Crane Area 7	Area 1 Bear/Ham's Fork	Area 2 Salt River	Area 3 Farson/Eden	Area 4 Riverton Area	Area 5 Uinta	Area 6 Big Horn Basin			
1996	Sep. 14 - Dec. 15	Sept. 14 - Nov. 10	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 21 - Sep. 27	-	Sep. 21 - Sep. 23	Sep. 1 - Oct. 20	Sep. 13 - Nov. 16	
1997	Sep. 13 - Dec. 14	Sep. 13 - Nov. 9	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 20 - Sep. 28	-	Sep. 20 - Sep. 22	Sep. 1 - Oct. 19	Sep. 14 - Nov. 17	
1998	Sep. 12 - Dec. 13	Sep. 12 - Nov. 8	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 19 - Sep. 30	-	Sep. 19 - Sep. 30	Sep. 1 - Oct. 30	Sep. 15 - Nov. 15	
1999	Sep. 1 - Dec. 2	Sep. 11 - Nov. 7	Sep. 1 - Sep. 14	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 18 - Sep. 29	-	Sep. 18 - Sep. 29	Sep. 1 - Oct. 30	Sep. 1 - Nov. 4	
2000	Sep. 1 - Dec. 16	Sep. 9 - Nov. 5	Sep. 1 - Sep. 14	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 16 - Oct. 6	-	Sep. 16 - Oct. 1	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2001	Sep. 1 - Dec. 16	Sep. 15 - Nov. 11	Sep. 1 - Sep. 14	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 15 - Oct. 5	-	Sep. 15 - Sep. 30	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2002	Sep. 1 - Dec. 16	Sep. 14 - Nov. 10	Sep. 1 - Sep. 14	Sep. 1 - Sep. 7	Sep. 1 - Sep. 7	Sep. 21 - Oct. 11	-	Sep. 21 - Oct. 6	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2003	Sep. 1 - Dec. 16	Sep. 13 - Nov. 9	Sep. 1 - Sep. 14	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep 20 - Oct. 20	-	Sep. 20 - Oct. 5	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2004	Sep. 1 - Dec. 16	Sep. 18 - Nov. 14	Sep. 1 - Sep. 14	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 18 - Oct. 8	-	Sep. 18 - Oct. 8	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2005	Sep. 1 - Dec. 16	Sep. 17 - Nov. 13	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 17 - Oct. 7	-	Sep. 17 - Oct. 2	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2006	Sep. 1 - Dec. 16	Sep. 16 - Nov. 12	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 16 - Oct. 6	-	Sep. 16 - Oct. 1	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2007	Sep. 1 - Dec. 16	Sep. 15 - Nov. 11	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 15 - Oct. 5	-	Sep. 15 - Sep. 30	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2008	Sep. 1 - Dec. 16	Sep. 13 - Nov. 9	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 13 - Oct. 3	Sep. 1 - Sep. 8	Sep. 13 - Sep. 28	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2009	Sep. 1 - Dec. 16	Sep. 19 - Nov. 15	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 19 - Oct. 9	Sep. 1 - Sep. 8	Sep. 19 - Oct. 4	Sep. 1 - Oct. 30	Sep. 1 - Nov. 9	
2010	Sep. 1 - Dec. 16	Sep. 18 - Nov. 14	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep 18 - Oct 10	Sep. 1 - Sep. 8	Sep. 18 - Oct. 3	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	
2011	Sep. 1 - Dec. 16	Sep. 17 - Nov. 13	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 17 - Oct 9	Sep. 1 - Sep. 8	Sep. 17 - Oct 2	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	
2012	Sep. 1 - Dec. 16	Sep. 15 - Nov. 11	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 15 - Oct. 7	Sep. 1 - Sep. 8	Sep. 15 - Oct. 7	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	
2013	Sep. 1 - Dec. 16	Sep. 14 - Nov. 10	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 14 - Oct. 6	Sep. 1 - Sep. 8	Sep. 14 - Oct. 6	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	
2014	Sep. 1 - Dec. 16	Sep. 13 - Nov. 9	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 13 - Oct. 5	Sep. 1 - Sep. 8	Sep. 13 - Oct. 5	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	
2014	Sep. 1 - Dec. 16	Sep. 19 - Nov. 15	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 1 - Sep. 8	Sep. 19 - Oct. 11	Sep. 1 - Sep. 8	Sep. 19 - Oct. 11	Sep. 1 - Nov. 9	Sep. 1 - Nov. 9	

Table 32. Duck, merganser, American coot, and light goose seasons, 1996-2015

Year	Ducks, Mergansers, and Coots			Light Geese	
	Zone C1	Zone C2	Pacific Flyway	Central Flyway	Conservation Order
1996	Oct 5-Oct 20 Nov 2-Dec 15 Dec 21-Jan 12	Sep 28-Oct 27 Nov 2-Dec 1 Dec 14-Jan 5	Sep 28-Dec 29	Oct 5-Dec 19 Feb 14-Mar 10	
1997	Oct 4-Oct 26 Nov 1-Dec 21 Dec 22-Jan 13	Oct 4-Jan 8	Oct 4-Jan 17	Oct 4-Dec 24 Feb 14-Mar 10	
1998	Oct 3-Oct 25 Oct 31-Jan 11	Oct 3-Jan 7	Oct 3-Jan 16	Oct 3-Dec 22 Feb 13-Mar 10	
1999	Oct 2-Oct 24 Oct 30-Jan 11	Oct 2-Jan 6	Oct 2-Jan 15	Oct 2-Dec 26 Feb 13-Mar 10	
2000	Oct 7-Oct 22 Oct 28-Jan 16	Sep 30-Oct 22 Nov 4-Jan 16	Sep 30-Jan 13	Oct 7-Dec 31 Jan 19-Feb 8	Mar 1-Mar 31
2001	Oct 6-Oct 21 Oct 27-Jan 15	Sep 29-Oct 21 Oct 27-Jan 8	Sep 29-Jan 12	Oct 6-Dec 31 Jan 27-Feb 14	Mar 1-Mar 31
2002	Oct 5-Oct 20 Oct 26-Jan 14	Sep 21-Oct 20 Oct 26-Dec 8 Dec 14-Jan 5	Sep 21-Jan 4	Oct 5-Dec 31 Jan 27-Feb 13	Mar 1-Apr 6
2003	Oct 4-Oct 19 Oct 25-Jan 13	Sep 27-Oct 19 Oct 25-Dec 14	Sep 27-Jan 10	Oct 4-Dec 31 Jan 27-Feb 12	Mar 1-Apr 6
2004	Oct 2-Oct 17 Oct 23-Jan 11	Sep 25-Oct 17 Oct 23-Dec 12 Dec 18-Jan 9	Sep 25-Jan 8	Oct 2-Dec 31 Jan 27-Feb 10	Feb 21-Apr 3
2005	Oct 1-Oct 16 Oct 29-Jan 17	Oct 1-Oct 23 Nov 5-Jan 17	Sep 24-Jan 7	Oct 1-Dec 31 Jan 27-Feb 9	Feb 20-Apr 2
2006	Oct 7-Oct 24 Nov 4-Jan 21	Sep 30-Oct 22 Nov 4-Jan 16	Sep 23-Jan 6	Oct 7-Jan 7 Jan 27-Feb 8	Feb 19-Apr 8
2007	Oct 6-Oct 23 Nov 3-Jan 20	Sept 29-Oct 21 Nov 3-Jan 15	Sep 22-Jan 5	Oct 6-Jan 1 Jan 26-Feb 12	Feb 25-Apr 13
2008	Oct 4-Oct 21 Nov 1-Jan 18	Sep 27-Oct 9 Nov 1-Jan 13	Sep 27-Jan 9	Oct 4-Jan 1 Jan 26-Feb 9	Feb 23-Apr 12
2009	Oct 3-Oct 20 Oct 31-Jan 17	Sep 26-Oct 20 Oct 31-Jan 10	Sept 26-Jan 8	Oct 3-Dec 27 Jan 21-Feb 8	Feb 22-Apr 11
2010	Oct 2-Oct 19 Oct 30-Jan 16	Sep 25-Nov 28 Dec 11-Jan 11	Sep 25-Jan 7	Oct 2-Dec 26 Jan 20-Feb 7	Feb 21-Apr 10
2011	Oct 1-Oct 16 Oct 29-Jan 17	Sep 24-Nov 27 Dec 10-Jan 10	Sep 24-Jan 6	Oct 1-Dec 25 Jan 28-Feb 15	Feb 20-Apr 8
2012	Oct 6-Oct 21 Nov 3-Jan 22	Sep 22-Nov 25	Sep 22-Jan 4	Oct 6-Dec 30 Jan 30-Feb 17	Feb 25-Apr 7
2013	Oct 5-Oct 22 Nov 2-Jan 19	Sep 21-Dec 1 Dec 14-Jan 7	Sep 21-Jan 3	Oct 5-Dec 30 Jan 30-Feb 16	Feb 24-Apr 6
2014	Oct 4-Oct 22 Nov 1-Jan 17	Sep 27-Dec 7 Dec 13-Jan 6	Sep 27-Jan 9	Oct 4-Dec 31 Jan 31-Feb 15	Feb 23-Apr 12
2015	Oct 3-Oct 21 Oct 31-Jan 16	Sep 26-Dec 6 Dec 12-Jan 5	Sep 26-Jan 8	Oct 3-Dec 31 Jan 31-Feb 14	Feb 22-Apr 10

Table 33. Dark goose hunting seasons, 1996-2015.

<u>Dark Geese</u>									
Year	Zone C1	Goshen and Platte	Converse and Platte	Converse	Goshen	Zone C2	Bighorn and Fremont	Pacific Flyway Early Season	Pacific Flyway
1996	Oct 5-Jan 19	-	Oct 19-Jan 31	-	Nov 16-Jan 31	Sep 28-Jan 12	-	Sep 1-Sep 8	Sep. 28-Jan. 5
1997	Oct 4-Jan 17	-	Oct 18-Jan 31	-	Nov 14-Jan 31	Oct 4-Jan 18	-	Sep 1-Sep 7	Oct. 4-Jan. 11
1998	Oct 3-Jan 16	-	Oct 18-Jan 31	-	Nov 14-Jan 31	Oct 3-Jan 16	-	Sep 1-Sep 7	Oct. 3-Jan. 9
1999	Oct 2-Jan 5	-	Oct 18-Jan 31	-	Nov 13-Jan 31	Oct 2-Jan 15	-	Sep 1-Sep 7	Oct. 2-Jan. 8
2000	Oct 7-Jan 20	Oct 7-Oct 22 Nov 11-Feb 8	-	Oct 18-Jan 31	-	Sep 30-Oct 22 Nov 4-Jan 25	-	Sep 1-Sep 7	Sep. 30-Jan. 6
2001	Oct 6-Oct 19	Oct 6-Oct 21 Nov 17-Feb 14	-	Oct 18-Jan 31	-	Sep 29-Oct 21 Oct 27-Jan 17	-	Sep 1-Sep 7	Sep. 29-Jan. 5
2002	Oct 5-Jan 18	Oct 5-Oct 20 Nov 16-Feb 13	-	Oct 18-Jan 31	-	Sep 28-Oct 20 Oct 26-Jan 16	-	Sep 1-Sep 7	Sep. 28-Jan. 4
2003	Oct 4-Oct 19 Nov 1-Dec 14 Dec 20-Feb 3	Oct 4-Oct 19 Nov 15-Feb 12	-	-	-	Sep 27-Oct 12 Nov 1-Dec 14	-	Sep 1-Sep 8	Sep. 27-Jan. 2
2004	Oct 2-Oct 17 Oct 30-Dec 12 Dec 18-Feb 1	Oct 2-Oct 17 Nov 13-Feb 10	-	-	-	Sep 25-Jan 8	Sep 25-Oct 10 Oct 30-Dec 12 Dec 18-Feb 1	Sep 1-Sep 8	Sep. 25-Dec. 31
2005	Oct 1-Oct 16 Oct 29-Dec 11 Dec 17-Jan 31	Oct 1-Oct 16 Nov 12-Feb 9	-	-	-	Oct 1-Jan 14	Oct 1-Oct 23 Nov 5-Dec 11 Dec 17-Jan 31	Sep 1-Sep 8	Sep. 24-Dec. 30
2006	Oct 7-Oct 22 Nov 4-Dec 10 Dec 16-Feb 6	Oct 7-Oct 22 Nov 4-Dec 10 Dec 16-Feb 6	-	-	-	Oct 1-Jan 14	Sep 30-Oct 22 Nov 4-Dec 10 Dec 16-Jan 30	Sep 1-Sep 8	Sep 23-Dec. 29
2007	Oct 6-Oct 23 Nov 3-Dec 9 Dec 15-Feb 3	Oct 6-Oct 23 Nov 17-Feb 12	-	-	-	Sep 29-Dec 2 Dec 15-Jan 24	Sep 29-Oct 21 Nov 3-Dec 9 Dec 15-Jan 29	Sep 1-Sep 8	Sep. 22-Dec. 28
2008	Oct 4-Oct 21 Nov 1-Dec 7 Dec 13-Jan 31	Oct 4-Oct 21 Nov 15-Feb 9	-	-	-	Sep 27-Nov 30 Dec 13-Jan 21	Sep 27-Oct 19 Nov 1-Dec 7 Dec 13-Jan 26	Sep 1-Sep 8	Sep. 27-Jan. 1
2009	Oct 3-Oct 20 Oct 31-Dec 6 Dec 12-Jan 30	Oct 3-Oct 20 Nov 14-Feb 8	-	-	-	Sep 26-Nov 29 Dec 12-Jan 20	Sep 26-Oct 20 Oct 31-Dec 6 Dec 12-Jan 23	Sep 1-Sep 8	Sep. 26-Dec. 31
2010	Oct 2-Oct 19 Nov 6-Dec 5 Dec 11-Feb 5	Oct 2-Oct 19 Nov 13-Feb 7	-	-	-	Sep 25-Nov 28 Dec 11-Jan 19	Sep 25-Oct 19 Oct 30-Dec 5 Dec 11-Jan 22	Sep 1-Sep 8	Sep. 25-Dec. 30
2011	Oct 1-Oct 16 Nov 5-Dec 4 Dec 10-Jan 28	Oct 1-Oct 16 Nov 19-Feb 12	-	-	-	Sep 24-Nov 27 Dec 10-Jan 18	Sep 24-Oct 18 Nov 5-Dec 4 Dec 10-Jan 28	Sep 1-Sep 8	Sep. 24-Jan. 6
2012	Oct 6-Oct 21 Nov 3-Dec 2 Dec 8-Feb 4	Oct 6-Oct 21 Nov 21-Feb 17	-	-	-	Sep 22-Nov 25 Dec 8-Jan 16	-	Sep 1-Sep 8	Sep. 22-Dec. 27
2013	Oct 5-Oct 22 Nov 2-Dec 1 Dec 7-Feb 1	Oct 5-Oct 22 Nov 22-Feb 16	-	-	-	Sep 21-Dec 1 Dec 14-Jan 15	-	Sep 1-Sep 8	Sep. 21-Dec. 26
2014	Oct 4-Oct 22 Nov 1-Nov 30 Dec 6-Jan 30	Oct 4-Oct 22 Nov 22-Feb 15	-	-	-	Sep 27-Dec 7 Dec 13-Jan 14	-	Sep 1-Sep 8	Sep. 27-Jan. 1
2015	Oct 3-Oct 21 Oct 31-Nov 29 Dec 5-Jan 29	Oct 3-Oct 21 Nov 21-Feb 14	-	-	-	Sep 26-Dec 6 Dec 12-Jan 13	-	Sep 1-Sep 8	Sep. 26-Dec. 31

Table 34. Recent crow hunting seasons in Wyoming.

Year	Season Dates	Bag/Possession Limits
2004	November 1 - February 28	None/None
2005	November 1 - February 28	None/None
2006	November 1 - February 28	None/None
2007	November 1 - February 28	None/None
2008	November 1 - February 28	None/None
2009	November 1 - February 28	None/None
2010	November 1 - February 28	None/None
2011	November 1 - February 28	None/None
2012	November 1 - February 28	None/None
2013	November 1 - February 28	None/None
2014	November 1 - February 28	None/None
2015	November 1 - February 28	None/None

## Waterfowl Nesting Structures

### **Introduction**

It is our intent to complete a comprehensive inventory of waterfowl nesting structures for inclusion in a future JCR. The report will contain an inventory of structures and their condition within the two regions they are still maintained, including recent and anticipated future maintenance and management needs. The report will identify the structures that will continue to be maintained. Currently, maintenance only takes place within the Lander and Laramie regions.

### **Recommendations**

1. Update the goose nest structure database. Work with Habitat and Access Section to obtain structure locations and information about their condition.
2. Complete the nesting structure status report.
3. Retain a manageable number of effective structures (those that are being used or likely to be used most years), and provide adequate maintenance.
4. Participate annually in the nest structure bedding and maintenance event sponsored by the Goshen Two-shot on Department WHMAs in Goshen County. This event was historically held the weekend between the end of dark goose hunting season and the start of the Light Goose Conservation Order. Beginning in 2017, there will be no break between the hunting season and Conservation Order. The bedding event will take place the first weekend of the Conservation Order. It has been determined that closing the entire county for structure bedding on WHMAs is unjustified, and minimal hunter conflicts are anticipated on the WHMAs.

## **Bump-Sullivan Managed Goose Hunt**

### **Introduction**

Springer/Bump-Sullivan Reservoir and Table Mountain Wildlife Habitat Management Areas (WHMAs) are the principal public goose hunting areas in Goshen County. Bump-Sullivan Reservoir has been a popular goose hunting area for over 50 years. A managed goose hunt was initiated there during the 1993-94 hunting season to reduce competition among parties and improve hunting quality. Twelve blinds were erected around the reservoir and 4 pass shooting pits were established in a field at the northwest corner of Springer WHMA. An additional property was acquired at the south end of Springer WHMA which opened 3 field hunting pits to include in the managed goose hunt. Hunters were required to check in at the Springer Check Station and a drawing was conducted before shooting hours each morning to assign hunting blinds or pits. A goose special management permit was also instituted to help offset the cost of blind maintenance and operation of the check station.

Due to drought conditions and low reservoir levels prevalent from 2002-2010, goose hunting opportunities and interest declined within the managed hunt boundaries. For the 2011/12 dark goose hunting season and thereafter, the Department decided not to require persons participating in the hunt to purchase a special management permit and the check station was not operated. However, hunters are still required to hunt only from the established pits and blinds. Pits and blinds are occupied on a first-come, first-served basis. The hunt will continue to be managed in this manner until such time as demand may increase to the point that access needs to be controlled through a permitting system.

### **Recommendations**

1. Support efforts to improve water supplies into Bump-Sullivan Reservoir.
2. Continue annual pit maintenance.
3. Replace lower section of pits as needed.
4. Monitor public use and demand for the pits/blinds

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