ANNUAL COMPLETION REPORT

MIGRATORY GAME BIRDS

2014

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2014 JOB COMPLETION REPORT

Species: Migratory Game Birds

Wyoming Portions of the Central and Pacific Flyways

Period Covered: September 1, 2013 - August 31, 2014

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INTRODUCTION

The Migratory Game Bird Section 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, the Migratory Game Bird Section conducted the following annual surveys to derive population indices for management: March crane survey, September crane survey, mid-winter waterfowl survey, and spring Canada goose population survey. The Migratory Game Bird Section remains strongly involved in the Central Flyway management efforts, including development and revision of management plans for the various migratory game bird populations and annual season setting. These processes require participation on the Flyway Technical Committees at the December/January, March, and July Flyway meetings.

The Migratory Game Bird Section is directly or indirectly involved in the management of all migratory game birds in the Central and Pacific Flyways. In addition, substantial personnel time was devoted to wetlands and habitat management over the past year.

During the report period a decision was made to lower the priority of banding efforts in Wyoming. However, mourning doves were banded at 3 locations. The Migratory Game Bird Section contributed funding through the Flyway membership dues, to help support the Central Flyway pre-season duck banding project in North Dakota.

The maintenance and evaluation of over 800 goose nesting structures remains a priority throughout Wyoming. However, reductions in personnel and funding have forced the Department to reevaluate its ability to bed and maintain the structures and to eliminate less effective structures where possible.

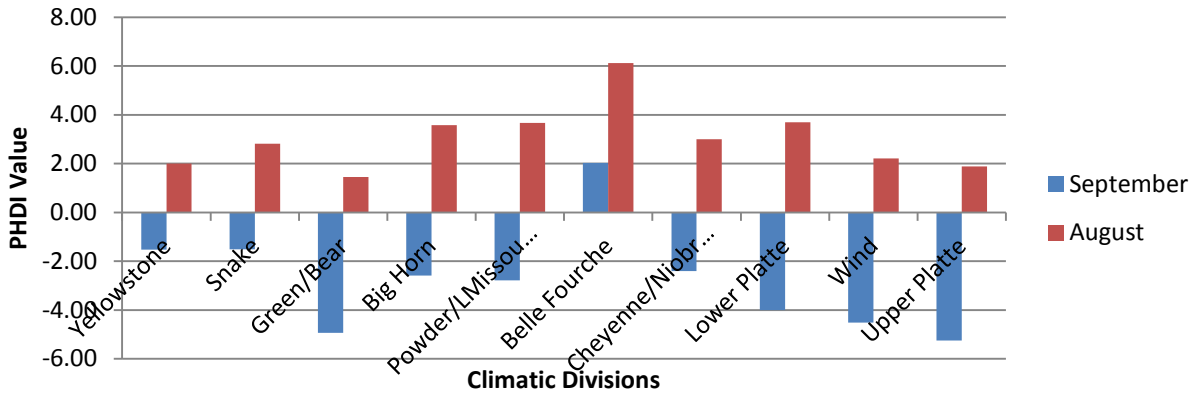
The Bump-Sullivan managed goose hunt was initiated in 1993 to alleviate competition among hunters. The hunt was not operated from the 2002/03 through the 2009/10 dark goose-hunting season because Bump-Sullivan Reservoir was predominantly dry. The hunt was reinstated during the 2010/11 season. The hunt continued in 2013/14, but blind occupancy is on a first-come, first-served basis.

The Section participated in several migratory game bird habitat 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 joint ventures in the state.

WEATHER/HABITAT CONDITIONS

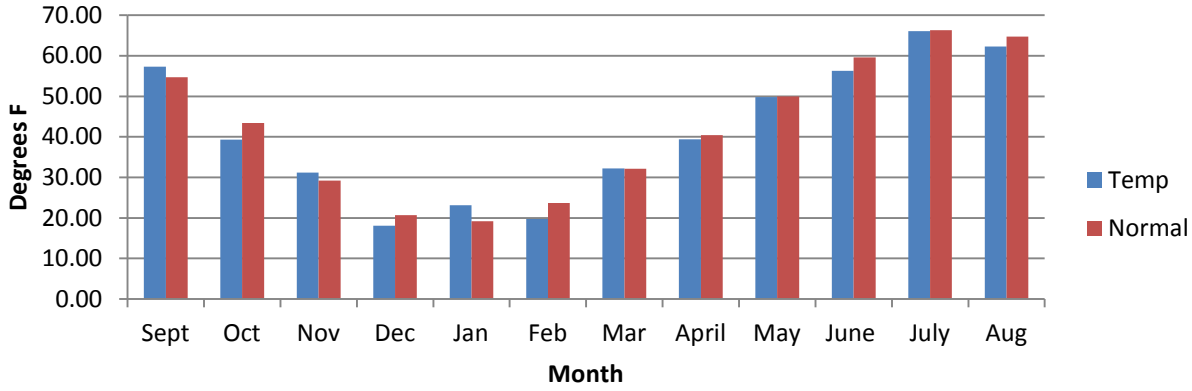
During the report period, September 2013 through August 2014, the monthly Palmer Hydrological Drought Index increased in all climatic divisions in the state (Fig. 1). In September 2013, 9 of 10 climatic divisions were classified as being in drought. Water conditions increased markedly in streams and wetlands throughout most of Wyoming.

Figure 1. September 2013 and August 2014 Palmer Hydrological Drought Indices for the 10 climatic divisions in Wyoming.

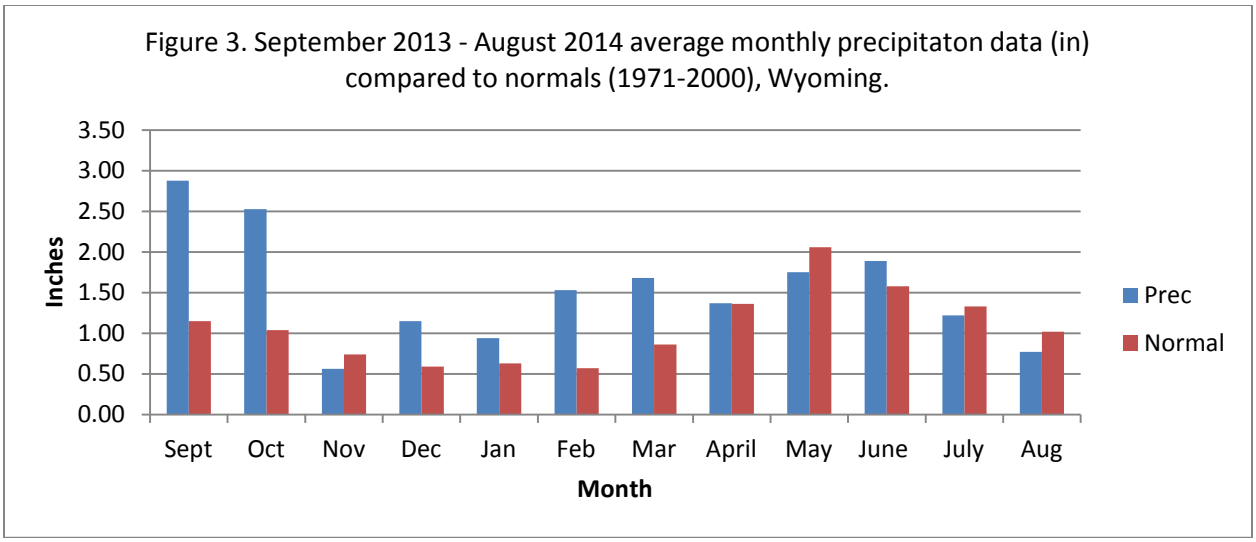


Average monthly temperatures for Wyoming were above normal (1971-2000 average) during 3 months of the report period (Figure 2). The 12-month average of 41.2° F was just below normal (42.00° F).

Figure 2. September 2013-August 2014 average monthly temperature data (F) compared to normals (1971-2000), Wyoming.



Average monthly precipitation in Wyoming was above normal (1971-2000 average) during 7 months of the report period (Figure 3). The 12-month total of 19.88 inches was significantly above normal (12.92 in.).



Eastern and central Wyoming entered the fall of 2013 with poor hydrologic conditions. This resulted in fewer local birds being present and a decreased ability to attract and hold migrants. Eastern Wyoming experienced a snowy and colder than average October, and variable milder conditions during November. December was marked by a very cold beginning, with several locations setting new temperature records. Overall, December was colder and wetter than normal. Lower elevation water bodies froze in early December and an unknown number of waterfowl departed or overflew the state. With localized exceptions, duck and Canada goose population numbers were higher than in 2012. This was true for part of November and all of December and January. In western Wyoming, fall and winter conditions were moderate for migratory game birds until mid-January when colder temperatures arrived. Duck and goose populations were above average across the state, with some localized exceptions.

During spring, 2014 brood habitat conditions improved throughout most of the state. Upland habitats also improved as a long-term hydrologic drought diminished. Although below normal temperatures and above normal precipitation during the early portion of the nesting season may have impacted reproductive success of migratory game birds, later nesters should have experienced good reproductive success. Reproductive success of mourning doves should have been normal with these weather conditions.

The computation of the June Surface Water Supply Index (SWSI) includes reservoir storage, if applicable, plus the forecast runoff. Only one river drainage didn't have adequate or surplus water supply in 2014. As of June 1, reservoir storage was 102% of average for the entire state, although storage levels varied widely at individual reservoirs.

Near normal recharge of springs and streams increased water distribution throughout Wyoming. Uncontrolled grazing in and adjacent to mesic areas during dry years continues to negatively impact the long-term health of these plant communities.

Waterfowl Breeding Habitat Conditions

In 2014, the traditional and eastern survey areas in the Canada and the U.S. prairies were characterized by a delayed spring, but habitat conditions were improved or similar to last year in many areas due to average or above-average precipitation, with the exceptions of west-central Alberta and east of James Bay Quebec. Alaska was the only region that experienced an early spring. The May pond estimate (wetland basins with standing water in Prairie and Parkland Canada and north central U.S.) was 7.2 million or 4% above the 2013 estimate and 40% above the long-term average. The delayed spring was evident across the traditional survey area. The majority of the Canadian prairies had below to well-below-average winter temperatures and average precipitation. Southern Manitoba benefitted from last year's summer and fall precipitation, whereas southern Saskatchewan and most of Alberta were aided by spring 2014 precipitation. Conditions in the Parklands remained in good condition form previous year's carry-over water and the boreal region has benefitted from above-average annual precipitation. Most of the Canadian portion of the traditional survey area was rated as good or excellent this year and the region continued to receive additional precipitation after the survey.

Habitat conditions in the surveyed portion of the U.S. prairies were improved in the western Dakotas and Montana from 2013 but remained similar in the eastern Dakotas. The May pond estimate was 2.6 million, 13% above the 2013 estimate and 53% above the long-term average. Waterfowl habitat in North Dakota remains under pressure from wetland drainage, loss of CRP grasses, and energy development.

In 2014, conditions in the Arctic and boreal areas important for geese were variable. Conditions in the north-central Arctic were very poor for nesting as spring was very late, with snow cover persisting into July. By contrast, spring was early in many of the more southern regions in the central Arctic. At Karrak Lake on the Queen Maude Gulf, ice break-up was 14 days earlier that average, so biologist expected above-average production of snow, Ross's, and Mid-continent white-fronted geese that nest there. Alaska experienced a very early, warm spring, with little or no flooding, so the outlook for many goose and swan populations nesting there was excellent. The favorable conditions on Alaska's Yukon-Kuskokwim Delta were a welcome contrast to 2013, when a late ice break-up and a storm-surge flood made for very poor production. Predicted goose production should be much improved in 2014. On the Copper River Delta, the early phenology and the highest Dusky Canada goose index in 20 years suggests an excellent year for this population. Wetland abundance indices in the Canadian and U.S. prairies continued to improve in 2014 by comparison to conditions last year, with the exception of the eastern two-thirds of South Dakota and the Red River Valley in North Dakota. Although early spring was cold and wet in many goose nesting areas of the U.S., the outlook for production was generally good. Primary abundance indices decreased for 11 goose populations and increased for 9 other goose populations by comparison to 2013 levels. Primary abundance indices decreased for

western and eastern tundra swans compared to 2013 levels. The forecast production of geese and swans in North America is variable, depending on the population and its breeding area in 2014.

Habitat conditions improved across much of Wyoming during the report period. Winter and spring precipitation was generally good, but the hydrologic continues to adversely impact migratory game bird production. Although there are regions with abundant surface water there are other regions with dry permanent wetlands. The extent of the drought impact is unknown.

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DUCKS AND MERGANSERS

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING GROUND SURVEY

The duck breeding ground survey historically flown by the WGFD was suspended after the 1999 survey.

Forecasts of fall duck flights are based on continental trends in duck breeding populations and water conditions on breeding grounds in traditional survey areas.

The continental population of breeding ducks increased 8% from 2013 to 2014, and was 41% above the long-term average (Tables 1 and 3). The breeding population of mallards in the traditional survey area increased 5% from the 2013 level, and was 42% above the long-term average (Tables 2 and 3).

Short and long-term changes in breeding populations of 10 major duck species are shown in Table 3. In 2014, the counts of two species decreased by comparison to 2013 levels. Breeding populations of the other eight species increased from 2013 to 2014.

The 2014 fall flight for the mid-continent population of mallards was forecast at13.4 million and was similar to the 2013 estimate. The mid-continent mallard population is composed of mallards from the traditional survey area, which was revised in 2008 to exclude Alaska mallards, and also includes mallards from Michigan, Minnesota, and Wisconsin. These indices were based on mid-continent mallard population models revised in 2002, and the 2008 updated model weights, and therefore differ from those previously published.

2013/14 DUCK HARVEST INFORMATION

In 2013, the Department estimated 53,296 ducks were harvested in Wyoming (Table 4). The 2013 harvest was more than recorded in 2012, but remained 36% below the Department's objective. During the last decade, trends in Wyoming’s duck harvest have not correlated well with the increasing continental duck population, likely due to severe drought that has prevailed in Wyoming throughout the same time frame. Harvest estimates derived from the USFWS’s Harvest Information Program (HIP) (Table 7) consistently deviate from Department estimates. The Service determined there may be issues with recovery of HIP registrations from some categories of license venders.

In the Central Flyway portion of Wyoming, 39,020 ducks were harvested in 2013 (Table 5). This harvest was 1.3% more than recorded in 2012, but remained 28% below the Department's objective for the Central Flyway. Wyoming waterfowl/wetland management areas are depicted in Figure 4.

In the Pacific Flyway portion of Wyoming, 14,276 ducks were harvested in 2013 (Table 6). This was 22% above the 2012 harvest of 11,704 ducks and remains 51% below the Department's objective for Pacific Flyway duck harvest.

The prevalent species harvested in Wyoming by waterfowl hunters is the mallard (Table 7). American wigeon, teal, gadwall, and goldeneyes are also numerically important species in the harvest. Presently, HIP estimates do not distinguish duck species according to Flyway in any of the Rocky Mountain States. Estimating state-specific sales of duck stamps is also becoming increasingly problematic for the USFWS. Flyway-specific estimates of the total duck harvest are provided in Table 8.

MID-WINTER SURVEYS

The number of ducks counted in the Central Flyway portion of the state during early January was 3% above the long-term average (Table 9). After the 2013 survey, the mid-winter survey was indefinitely suspended in the Pacific Flyway portion of the state.

DUCK BANDING

The Department contributed funding through the flyway dues to help support the Central Flyway's cooperative duck banding operation in 2013. One crew banded ducks in central North Dakota while another crew banded ducks in the western part of the state.

RECOMMENDATIONS

1. Continue to support objectives of the Adaptive Harvest Management program and the North American Waterfowl Management Plan.

2. Work with Department personnel, joint ventures, and other interests to identify and develop wetland habitat projects designed to increase local duck production, hold more birds in the fall, and provide additional harvest opportunity. Increase public access within key waterfowl harvest areas statewide.

3. 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.

4. Support duck banding efforts in both Flyways.

5. Review and critique federal policies and regulations affecting waterfowl management in Wyoming.

6. Continue to support and participate in the flyway system of waterfowl management.

Table 1. Duck breeding population estimates (in thousands), for regions in the traditonal survey area, 2013 and 2014.

SURVEY AREA	2013	2014	PERCENT CHANGE
TRADITIONAL AREAS			
Alaska - Yukon Territory - Old Crow Flats	3,296	3,510	6%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	8,323	9,946	20%
N. Saskatchewan - N. Manitoba - W. Ontario	3,441	2,566	-25%
S. Alberta	4,471	5,644	26%
S. Saskatchewan	12,258	12,893	5%
S. Manitoba	1,575	2,193	39%
Montana and western Dakotas	1,599	3,660	129%
Eastern Dakotas	10,643	8,740	-18%
TOTAL[a]	45,606	49,152	8%

[a] Includes the 10 species in Table 3 plus American black duck, ring-necked duck, goldeneyes, bufflehead, and ruddy duck. Excludes eiders, long-tailed duck, wood duck, scoters, and mergansers.
Source: USFWS. Trends in duck breeding populations, 1955-2014.

Table 2. Mallard breeding population estimates (in thousands) for regions in the traditional survey area, 2013 and 2014.

SURVEY AREA	2013	2014	PERCENT CHANGE
TRADITIONAL AREAS			
Alaska - Yukon Territories - Old Crow Flats	338	501	48%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	1,020	1,757	72%
N. Saskatchewan - N. Manitoba - W. Ontario	1,427	1,126	-21%
S. Alberta	1,141	1,444	27%
S. Saskatchewan	2,576	2,553	-1%
S. Manitoba	448	602	34%
Montana & western Dakotas	794	1014	28%
Eastern Dakotas	2,627	1,903	-28%
TOTAL	10,371	10,900	5%

Source: USFWS. Trends in duck breeding populations, 1955-2014.

Table 3. Changes in breeding population estimates (in thousands) for 10 species of ducks in the traditional survey area.

SPECIES	2013	2014	PERCENT CHANGE BETWEEN 2013 AND 2014	LTA	BETWEEN 2014 AND THE 1955 - 13 AVERAGE
Mallard	10,372	10,900	5%	7,673	42%
Gadwall	3,351	3,811	14%	1,889	102%
American wigeon	2,644	3,117	18%	2,588	20%
Green-winged teal	3,053	3,440	13%	2,034	69%
Blue-winged teal	7,732	8,542	10%	4,888	75%
Northern shoveler	4,751	5,279	11%	2,468	114%
Northern pintail	3,335	3,220	-3%	4,017	-20%
Redhead	1,202	1,279	6%	691	85%
Canvasback	787	685	-13%	580	18%
Scaup (Greater and lesser combined)	4,166	4,611	11%	5,033	-8%
TOTAL	41,393	44,884	8%	31,861	41%

Source: USFWS. Trends in duck breeding populations, 1955-2014.

Table 4. Wyoming duck harvest and hunter activity by flyway, 2011-2013.

	MEAN 2007-11	2011	2012	2013	OBJECTIVE
CENTRAL FLYWAY					
No. Hunters	4,746	4,712	4,512	4,867	9,216
No. Rec. Days	26,150	25,115	24,623	22,814	45,235
Harvest	40,291	37,548	38,529	39,020	54,394
PACIFIC FLYWAY					
No. Hunters	1,532	1,357	1,552	1,616	3,970
No. Rec. Days	7,007	6,040	6,508	7,572	19,148
Harvest	12,687	9,839	11,704	14,276	29,294
TOTALS					
No. Hunters	6,278	6,069	6,064	6,483	13,186
No. Rec. Days	33,157	31,155	31,131	30,386	64,383
Harvest	52,978	47,387	50,233	53,296	83,688

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2008-2014.

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

MANAGEMENT AREA			MEAN 2007-11	2011	2012	2013	OBJECTIVE
Missouri/Cheyenne/ Little Powder Rivers	1A	No. Hunters	311	282	179	188	398
		No. Rec. Days	1,402	1,050	542	1,739	1,791
		Harvest	2,396	1,864	1,134	2,017	1,393
Tongue/Little Big Horn/Powder Rivers	1B	No. Hunters	296	315	260	306	547
		No. Rec. Days	1,373	1,556	944	763	2,461
		Harvest	2,256	2,505	1,603	1,735	3,063
Central North Platte River	1C	No. Hunters	815	873	990	939	1,603
		No. Rec. Days	5,017	4,774	5,997	4,742	8,015
		Harvest	7,274	7,839	8,957	8,765	7,214
Lower North Platte River	2A	No. Hunters	999	1,088	1,048	1,222	2,050
		No. Rec. Days	5,861	5,356	5,338	4,768	9,225
		Harvest	7,732	5,951	7,330	6,438	9,225
South Platte River	2B	No. Hunters	109	101	101	78	193
		No. Rec. Days	531	712	448	180	965
		Harvest	953	821	815	348	869
Upper North Platte River	3A	No. Hunters	382	296	338	401	1,075
		No. Rec. Days	1,532	1,221	1,880	1,901	4,838
		Harvest	2,545	2,079	1,875	2,536	5,160
Big Horn River	4A	No. Hunters	1,283	1,145	1,104	1,174	2,200
		No. Rec. Days	7,466	6,720	6,971	6,661	12,000
		Harvest	12,408	9,785	13,819	13,202	20,000
Yellowstone River	4B	No. Hunters	38	8	5	0	100
		No. Rec. Days	142	8	28	0	400
		Harvest	230	8	32	0	500
Wind River	4C	No. Hunters	485	545	456	552	950
		No. Rec. Days	2,721	3,371	2,290	2,051	5,000
		Harvest	4,374	6,444	2,658	3,962	6,200
Sweetwater River	4D	No. Hunters	28	59	31	7	100
		No. Rec. Days	105	347	185	9	540
		Harvest	123	252	306	17	770
TOTALS		No. Hunters	4,746	4,712	4,512	4,867	9,216
		No. Rec. Days	26,150	25,115	24,623	22,814	45,235
		Harvest	40,291	37,548	38,529	39,020	54,394

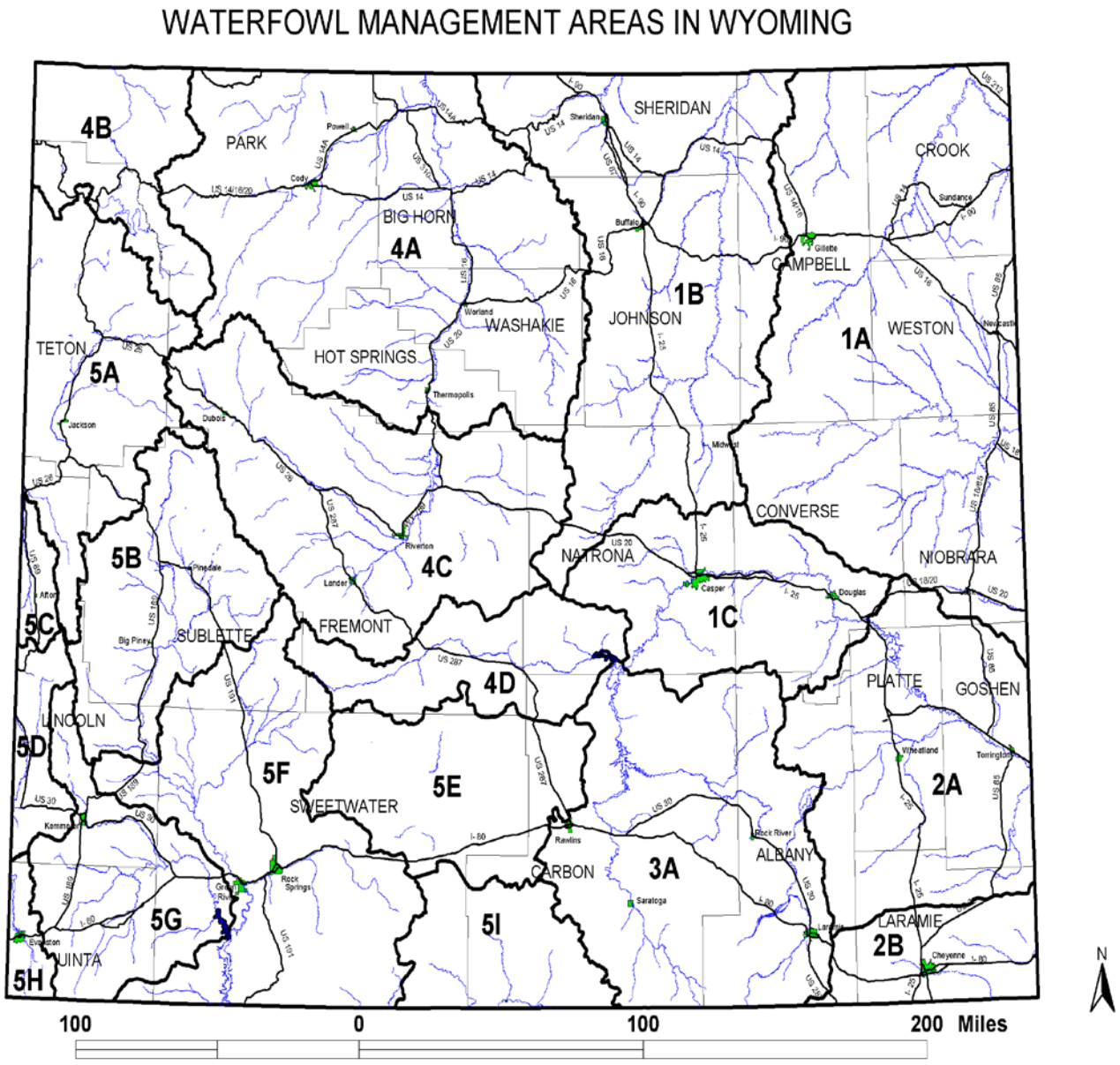

Fig. 4. Waterfowl/wetland management areas in Wyoming.

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

MANAGEMENT AREA			MEAN 2007-11	2011	2012	2013	OBJECTIVE
Snake River	5A	No. Hunters	140	86	161	215	440
		No. Rec. Days	718	478	1,004	985	2,200
		Harvest	1,033	834	1,289	1,539	2,800
Upper Green River Basin	5B	No. Hunters	208	147	184	162	500
		No. Rec. Days	770	439	396	537	2,000
		Harvest	1,296	550	638	1,375	3,000
Salt River	5C	No. Hunters	184	146	119	221	750
		No. Rec. Days	1,072	929	746	1,378	4,000
		Harvest	2,302	1,419	1,711	2,558	7,500
Lower Bear River	5D	No. Hunters	115	116	98	148	450
		No. Rec. Days	529	533	536	718	2,048
		Harvest	1,109	1,031	927	1,085	3,294
Great Divide Basin	5E	No. Hunters	20	13	15	34	100
		No. Rec. Days	46	41	34	180	400
		Harvest	75	25	88	266	600
Lower Green River Basin	5F	No. Hunters	417	365	563	446	700
		No. Rec. Days	2,078	1,826	2,458	2,337	3,000
		Harvest	3,427	2,771	3,934	4,494	4,200
Ham's/Black's Fork	5G	No. Hunters	246	276	237	250	600
		No. Rec. Days	915	1,042	758	1,041	3,000
		Harvest	1,922	1,656	1,358	2,176	3,600
Upper Bear River	5H	No. Hunters	166	184	162	109	330
		No. Rec. Days	788	697	554	335	1,900
		Harvest	1,370	1,451	1,685	717	3,500
Little Snake River	5I	No. Hunters	36	24	13	31	100
		No. Rec. Days	91	55	22	61	600
		Harvest	153	102	74	66	800
TOTALS		No. Hunters	1,532	1,357	1,552	1,616	3,970
		No. Rec. Days	7,007	6,040	6,508	7,572	19,148
		Harvest	12,687	9,839	11,704	14,276	29,294

Table 7. HIP estimates of duck harvest and hunter activity in Wyoming[a] during the 2011-2013 hunting seasons.

DUCK SPECIES COMPOSITION	2011	% OF BAG	2012	% OF BAG	2013	% OF BAG
Mallard	22,562	61.79	25,457	61.08	33,306	62.89
Domestic mallard	61	0.17	0	0.00	0	0.00
Gadwall	2,729	7.47	1,360	3.26	3,414	6.45
Wigeon	2,608	7.14	2,429	5.83	3,506	6.62
Green-winged teal	2,365	6.48	3,206	7.69	2,583	4.88
Blue-winged Teal/Cinnamon teal	1,031	2.82	777	1.86	2,122	4.01
Northern shoveler	607	1.66	777	1.86	92	0.17
Northern pintail	607	1.66	583	1.40	369	0.70
Wood duck	182	0.50	389	0.93	0	0.00
Redhead	182	0.50	874	2.10	646	1.22
Canvasback	243	0.67	0	0.00	0	0.00
Great scaup	0	0.00	0	0.00	0	0.00
Lesser scaup	61	0.17	97	0.23	277	0.52
Ring-necked duck	364	1.00	583	1.40	92	0.17
Goldeneyes	2,365	6.48	4,955	11.89	5,905	11.15
Bufflehead	243	0.67	97	0.23	277	0.52
Ruddy duck	61	0.17	97	0.23	97	0.18
Long-tailed duck	61	0.17	0	0.00	0	0.00
Scoters	0	0.00	0	0.00	0	0.00
Hooded merganser	61	0.17	0	0.00	92	0.17
Other mergansers	121	0.33	0	0.00	185	0.35
Other ducks	0	0.00	0	0.00	0	0.00
TOTAL	36,514	100.00	41,681	100.00	52,963	100.00
TOTAL DUCK HARVEST	36,500+/-31%		41,700+/-22%		52,900+/-16%	
TOTAL ACTIVE DUCK HUNTERS	4,000+/-19%		3,400+/-17%		4,700+/-13%	
TOTAL DUCK HUNTER DAYS AFIELD	19,600+/-26%		20,800+/-21%		26,600+/-17%	
SEASONAL DUCK HARVEST PER HUNTER	9.1+/-36%		12.2+/-27%		11.2+/-21%	
Sample Sizes						
Duck Wings	602		429		573	

[a] Central and Pacific Flyway estimates are combined and will continue to be for the near future.

Source: USFWS. HIP preliminary harvest estimates.

Table 8. Flyway-specific estimates of duck harvest in Wyoming during the 2003-13 hunting seasons.

Duck Harvest Year	Central Flyway	Pacific Flyway	Total
2003	35,700	3,900	39,600
2004	39,700	3,100	42,800
2005	25,900	10,000	35,900
2006	31,200	14,100	45,300
2007	37,000	12,900	49,900
2008	26,900	6,500	33,400
2009	32,700	11,800	44,500
2010	25,200	10,800	36,000
2011	21,800	4,500	26,300
2012	33,300	8,400	41,700
2013	46,200	6,600	52,800

Source: USFWS. HIP preliminary harvest estimates.

Table 9. Changes in ducks and mergansers counted during the mid-winter survey in Wyoming, 2014 to the long-term average.

	CENTRAL FLYWAY			PACIFIC FLYWAY
			Between 2014 and	
SPECIES	**2014**	**LTA**	The 1992 - 13 Average	**LTA (2002-2013)**
Mallard	62,843	57,743	9%	2,043
Gadwall	595	990	-40%	12
American wigeon	1,022	1,091	-6%	0
Green-winged teal	559	482	16%	34
Blue-winged teal/ Cinnamon teal	0	0	0%	0
Northern shoveler	0	17	-100%	0
Northern pintail	477	176	171%	1
Wood duck	8	21	-62%	0
Redhead	20	12	67%	88
Canvasback	0	0	0%	0
Scaup	40	26	54%	0
Ringneck	171	100	71%	2
Goldeneye	6,565	8,382	-22%	1,992
Bufflehead	87	132	-34%	4
Ruddy duck	16	7	129%	0
Mergansers	1,387	2,780	-50%	511
Unidentified	0	31	-100%	82
TOTAL	73,790	71,990	3%	4,769

Source: WGFD and USFWS 1992 - 2014 MWS reports and Flyway Data Books.

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HI-LINE POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Prior to 2010, the Mid-winter Waterfowl Survey (MWS) was the population index for this population. In 2010, the Central Flyway, Hi-Line Population of Canada Geese Subcommittee replaced the MWS with the Spring Population Survey as the primary population index for this population.

The number of Canada geese from the Hi-Line population that breed in Wyoming has exceeded the Department's objective for several years (Table 1). No visibility correction factor (VCF) was used to calculate these indices. Consequently, they differ from those previously calculated with a VCF of 2. The Waterfowl Section is inadequately staffed to survey all management areas annually. The 2014 population count of 12,251 geese was 9% lower than the 2013 count.

TRAPPING AND BANDING STUDIES

No HLP Canada geese were trapped and banded during 2013. The most recent banding effort was in 2004. The most recent recovery occurred in January 2011. Refer to previous JCRs for additional information.

HARVEST

The number of hunters and recreation days were below the Department's objectives for the Hi-Line and Central Flyway Arctic Nesting (CFAN) populations in 2013 (Table 2). Harvest exceeded the objective last year. Harvest increased 19% from 2012 to 2013. The statewide goose harvest estimated by the USFWS is 8% lower than the Wyoming state estimate (Tables 2 and 3 of this chapter and Tables 3, 4, and 5 of the RMP of CAGE chapter). The Canada goose season opened September 21 in zone C2 of the Central Flyway. The season opened October 5 throughout zone C1 of the Central Flyway; Goshen and Platte Counties were open October 5 through 22 and November 22 through February 16. All goose species collectively are included in the estimates of goose harvest and hunter activity.

During 2013-14, 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 Count Road 28; and those portions of Platte County west of Interstate Highway 25 or south of Wyoming Highway 160 (Gray Rocks Road) and Riverview Road (Platte County Road 271) where the

shooting hours for dark geese were ½ hour before sunrise until 1:00 p.m., except all-day hunting was allowed October 5-22, all Saturdays and Wednesdays from November 22 through December 31, and all Saturdays, Sundays, and Wednesdays from January 1 through the close of the dark goose season.

MID-WINTER SURVEY

State and Federal agencies conduct a mid-winter waterfowl survey throughout the United States during the first full week in January. The purpose of the survey is to estimate the continental population and distribution of wintering waterfowl. Midwinter counts of the Hi-Line and Central Flyway Arctic Nesting populations of Canada geese are summarized in Table 5. Near normal winter weather increased the migration of geese from northern breeding and staging grounds. In eastern Wyoming most of the traditional roost sites held inadequate water due to drought conditions in 2013.

RECOMMENDATIONS

1. Continue the staggered sunset and 1 P.M. hunting closures for geese in Goshen County to balance conflicting public perceptions about whether shooting hours affect local goose abundance and susceptibility to harvest.

2. Continue the spring population survey, mid-winter survey and banding program (as manpower and resources allows).

3. Determine the effect all-day shooting has on resident and migrating geese in Goshen County.

4. Determine what actions can be taken to maximize harvest of Canada geese from the Hi-Line Population. Continue hunting dark geese in all Central Flyway counties for the maximum season length of 107 days.

Table 1. Canada goose spring populations in the Hi-Line range of Wyoming.

MANAGEMENT AREA	MEAN 2008-2012	2012	2013	2014	CHANGE BETWEEN 13 AND 14	OBJECTIVE
Missouri and Little Powder Rivers	2,611	3,716	3,716	2,137	-42%	1,820
Tongue/Powder Rivers	3,238	3,332	3,332	3,710	11%	718
Central North Platte River	1,289	1,136	1,866	1,866	NA	666
Lower North Platte River	1,039	1,092	3,047	3,047	NA	1,128
South Platte River	124	209	209	209	NA	26
Upper North Platte River (Laramie Plains)*	957	1,282	1,282	1,282	NA	513
TOTAL	9,258	10,767	13,452	12,251	-9%	4,871

* Represents probable Hi-Line production area in Albany county and the Medicine Bow Drainage.
Not all management areas are surveyed annually. To generate population estimates areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.
Source: WGFD. Unpublished data.

Table 2. Hi-line and CFAN Canada goose harvest in Wyoming.

MANAGEMENT AREA	MEAN 2007-11	2011	2012	2013	CHANGE BETWEEN 12 and 13	OBJECTIVE
MISSOURI/LITTLE POWDER RIVER						
No. Hunters	212	179	167	166	-1%	299
No. Rec. Days	822	588	671	549	-18%	1,495
Harvest	1,468	636	980	472	-52%	598
TONGUE/POWDER RIVER						
No. Hunters	180	179	181	221	22%	286
No. Rec. Days	753	983	474	399	-16%	1,430
Harvest	585	202	443	666	50%	715
CENTRAL NORTH PLATTE RIVER						
No. Hunters	602	589	554	541	-2%	1,106
No. Rec. Days	3,518	3,678	3,416	2,706	-21%	5,530
Harvest	2,273	2,438	2,165	2,033	-6%	1,465
LOWER NORTH PLATTE RIVER						
No. Hunters	1,936	1,861	1,805	1,877	4%	2,772
No. Rec. Days	11,611	10,827	11,450	9,678	-15%	15,246
Harvest	13,530	10,718	11,762	15,700	33%	12,044
SOUTH PLATTE RIVER						
No. Hunters	73	77	142	47	-67%	68
No. Rec. Days	381	295	417	101	-76%	272
Harvest	265	261	597	168	-72%	170
UPPER NORTH PLATTE RIVER*						
No. Hunters	53	34	53	51	-4%	165
No. Rec. Days	237	295	222	312	41%	742
Harvest	222	336	107	124	16%	330
TOTAL						
No. Hunters	3,056	2,919	2,902	2,903	0%	4,696
No. Rec. Days	17,322	16,666	16,650	13,745	-17%	24,715
Harvest	18,343	14,591	16,054	19,163	19%	15,322

* Calculated as 33% of the Upper North Platte Management Area.

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2008-2014.

Table 3. HIP estimates of goose harvest and hunter activity in Wyoming[a] during the 2011-2013 regular hunting seasons.

GOOSE SPECIES COMPOSITION	2011	% OF BAG	2012	% OF BAG	2013	% OF BAG
Canada Goose	15,482	97.91	29,022	98.88	28,457	100.00
Snow Goose	248	1.57	330	1.12	0	0.00
Blue Goose	0	0.00	0	0.00	0	0.00
Ross's Goose	83	0.52	0	0.00	0	0.00
White-fronted Goose	0	0.00	0	0.00	0	0.00
Brant	0	0.00	0	0.00	0	0.00
Other Goose	0	0.00	0	0.00	0	0.00
TOTAL	15,813	100.00	29,352	100.00	28,457	100.00
TOTAL GOOSE HARVEST	15,800+/-27%		29,400+/-35%		28,500+/-18%	
TOTAL ACTIVE GOOSE HUNTERS	3,700+/-18%		3,800+/-16%		4,600+/-14%	
TOTAL GOOSE HUNTER DAYS AFIELD	17,900+/-23%		19,200+/-20%		27,600+/-26%	
SEASONAL GOOSE HARVEST PER HUNTER	4.3+/-33%		7.8+/-39%		6.1+/-23%	
ACTIVE WATERFOWL HUNTERS[b]	5,600+/-14%		5,700+/-12%		7,400+/-9%	
Sample Sizes						
Goose Tails	191		356		270	

[a] Central and Pacific Flyway estimates are combined and will continue to be for the near future.

[b] Duck and goose hunters combined.

Source: USFWS. HIP preliminary harvest estimates.

Table 4. Flyway-specific estimates of goose harvest in Wyoming during the 2003-13 hunting seasons.

Goose Harvest Year	Central Flyway	Pacific Flyway	Total
2003	23,400	1,200	24,600
2004	20,600	2,200	22,800
2005	18,900	1,200	20,100
2006	21,200	1,700	22,900
2007	11,900	1,100	13,000
2008	22,500	5,000	27,500
2009	17,100	4,100	21,200
2010	20,500	3,900	24,400
2011	14,900	900	15,800
2012	28,500	800	29,300
2013	26,700	1,800	28,500

Table 5. Mid-winter surveys of Hi-line/CFAN Canada geese in Wyoming, 2010 - 2014.

Population Hi-line	2010	2011	2012	2013	2014	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	33,926	57,919	29,900	35,313	68,424	45,096
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	8,552	11,456	8,862	12,486	10,835	10,438
TOTAL	42,478	69,375	38,762	47,799	79,259	55,535

CFAN	2010	2011	2012	2013	2014	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	1,414	4,765	2,884	3,281	7,181	3,905
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	162	943	854	1,159	1,137	851
TOTAL	1,576	5,708	3,738	4,440	8,318	4,756

Hi-line and CFAN combined	2010	2011	2012	2013	2014	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	35,340	62,684	32,784	38,594	75,605	49,001
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	8,714	12,399	9,716	13,645	11,972	11,289
TOTAL	44,054	75,083	42,500	52,239	87,577	60,291

Source: WGFD 2014 mid-winter survey report.

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Hi-Line Population of Canada Geese

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ROCKY MOUNTAIN POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Spring population surveys of the Rocky Mountain Population (RMP) of Canada geese are summarized in Table 1. The 2013 survey was conducted in the entire Central and Western Reference Areas. Beginning in 2013 bother reference areas will be surveyed together every third year, again in 2016.

In recent years Yellowstone National Park (YNP) has not been surveyed although a large number of geese breed and summer in that area. If YNP were included in this report, spring goose population estimates would be much higher.

Shifting to a 3-year cycle for spring population surveys in the Western Reference Area introduces considerable uncertainty into attempts to determine short term population trends. The lack of banding data makes it impossible to tell what the harvest rates are for locally produced birds taken in Wyoming in the early and regular goose seasons versus the harvest in adjacent states and if these harvest rates might be excessive. Geese taken during the early season are generally locally produced geese but birds taken later in the regular season may include birds that originate in Yellowstone National Park or southwest Montana or eastern Idaho. No geese are banded in those areas. However, there does not appear to be a significant migration of geese into the western reference area from adjacent states.

The Pacific Flyway Study Committee is currently revising the RMP Canada Goose Management Plan. It is possible the Pacific and Rocky Mountain populations may be combined into a single meta-population in the new management plan. Since surveys indicate breeding populations have deviated significantly from objectives for many years in several management areas in both reference areas, it may be prudent to revise the population objectives for Wyoming in the next year. When the plan revision is completed, the key changes to the plan will be reported in this annual report.

TRAPPING AND BANDING STUDIES

No banding occurred in Wyoming during 2009-2014. A summary of banding is reported in the 2005-2010 migratory game bird annual reports. A few banded birds are reported each year for banding efforts in Wyoming from 2005 to 2008 (USGS 2014).

HARVEST

Early Season
Regulations governing Wyoming's early Canada goose season regulations are summarized in Table 2. An early Canada goose season is not offered in the central reference area. In 2004 the early goose season in the Pacific Flyway became a general hunt with no special limited quota licenses required. The September hunting season is designed to address damage problems by moving birds off private irrigated hay meadows and cropland while providing some additional hunting opportunity. The transition to a general hunt was encouraged by the USFWS to reduce complex regulations and was supported by the Department's regional personnel to deal with growing damage complaints.

The early September hunt accounted for a small portion of the overall goose harvest in the western reference area when the hunt was a permit based hunt. 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. However, some hunters are concerned the early hunts compromise hunting opportunity at the start of the regular season. From 1997-2003 goose harvest in the early season averaged 310 birds.

Since the early season framework changed to a general 8 day season in 2004, the goose harvest and hunter numbers increased, then declined and increased again in 2013. Nine hundred and ninety-nine geese were reported in the 2013 harvest survey. In 2013, an average of 1.90 geese per hunter was reported in the harvest survey (Table 3).

From 2006 through 2012 the early season harvest comprised 35 to 50% of the total goose harvest in the western reference area. In 2013, the early season harvest comprised 40% (999/2475) of the total goose harvest in the Western Reference Area. The early season hunt takes a large proportion of the annual harvest in only 8 days. Geese are particularly vulnerable to hunting in early September, with family groups decoying fairly readily compared to later in the season when geese are in larger flocks and become decoy shy. Shifts in goose distribution and changes in harvest rates in both the early and late goose hunts should continue to be monitored in the Western Reference Area (Tables 3 and 4).

Regular Season
Harvests during the regular waterfowl season in the western and central reference areas are summarized in Tables 4 and 5, respectively. RMP Canada geese comprise most of the harvest in the management areas that constitute the Central Reference Area and almost all the geese in the western reference area. In the Western Reference Area, numbers of hunters and recreation days increased from 2012 to 2013, but harvest declined.

It is unclear how the early season harvest is affecting regular season opportunities in the Western Reference Area. Hunter and harvest declines were noted in both the early and regular seasons in 2008 – 2013, possibly reflecting poor reproduction and/or declining access in some areas. However, only a few complaints were registered by early season or regular season hunters. Lockman et al (1987) found that hunting pressure during the early goose and crane hunt in the

initial years of the limited quota hunt displaced geese out of Star Valley and Bear River/Cokeville Meadows. Presumably these geese moved into adjacent areas in Wyoming, Utah or Idaho where there was no early goose season. This displacement addressed goose depredation issues in two management areas (Lockman et al 1987).

The estimated harvest of 8,974 geese in the Central Reference Area in 2013 decreased by 32% compared to 2012. The harvest in the Bighorn Basin contributes over 50% of the annual harvest in the Central Reference Area. The number of hunter days and harvest in the Central Reference Area decreased significantly in 2013 (Table 5).

The harvest objective for RMP geese in Wyoming is 7,967 geese including 3,520 geese in the Central Reference Area and 4,447 in the Western Reference Area. The actual harvest in the Central Reference Area has exceeded the objective for the period of record in this report but the harvest in the Western Reference Area has fallen well below the objective over the same time period. It would appear the population harvest objective may be fairly reasonable but the objectives for both reference areas ought to be reviewed in the coming year to determine if changes should be made based on estimated harvest levels achieved in recent years.

MID-WINTER SURVEY OF RMP CANADA GEESE

In January 2014, 37,894 geese were counted in the mid-winter survey in the Central Reference Area compared to 23,817 geese in 2013 The 2014 goose count was the highest count during the 5 year period of record (Table 6).

The Western Reference Area was not surveyed in 2014 and it will not be surveyed again in the foreseeable future.

RECOMMENDATIONS

1. Continue spring population and harvest surveys.

2. Continue the general, early Canada goose hunt in the Pacific Flyway portion of Wyoming to address local damage problems. In 2014, the season ran September 1-8 with a daily bag limit of 2 and a possession of 4, except in Teton County the daily bag/possession limits were 3/6. This early hunt should be closely monitored. The decline in goose production in some portions of the Western Reference Area has been a concern. The liberalized early season framework may result in excessive harvest of local geese or could substantially change the fall distribution pattern, adversely affecting the harvest opportunities during the regular season.

3. Collaborate with the U.S. Fish and Wildlife Service regarding acquisition, planning, and development of the Cokeville Meadows National Wildlife Refuge.

4. Continue the trapping and banding program in the Western Reference Area, as resources and time allow, to determine harvest rates and seasonal movements of geese produced in

Wyoming. Conduct a detailed band recovery and distribution analysis as more geese are banded in the Wyoming segment of this population.

5. Represent Wyoming's interests in the update and revision of the RMP Goose Management Plan with other members of the Pacific Flyway Study Committee in 2014-2015.

6. Review the population and harvest objectives for the RMP of Canada geese in Wyoming in conjunction with the management plan revision being conducted by the Pacific Flyway Study Committee.

Table 1. Spring population counts within the Rocky Mountain Population of Canada geese.

WESTERN REFERENCE AREA	MEAN 2008-12	2012	2013	2014	CHANGE BETWEEN 13 AND 14	OBJECTIVE
Yellowstone Park	N/A	N/A	N/A	N/A	N/A	N/A
Snake River	626	594	632	632	N/A	589
Upper Green River	358	318	504	504	N/A	718
Salt River	374	423	340	340	N/A	615
Lower Bear	572	555	1,285	1,285	N/A	2,230
Great Divide Basin	24	24	2	2	N/A	26
Lower Green River	624	502	608	608	N/A	461
Ham's/Black's River	957	868	1,078	1,078	N/A	795
Upper Bear River	250	246	656	656	N/A	308
Little Snake River	333	302	445	445	N/A	256
TOTAL	4,118	3,832	5,550	5,550	0%	5,998
CENTRAL REFERENCE AREA						
Upper North Platte River	577	725	725	725	N/A	384
Big Horn River	1,479	1,673	1,758	1,758	N/A	1,051
Wind River	1,607	1,525	1,470	1,470	N/A	1,333
Sweetwater River	585	463	567	567	N/A	282
TOTAL	4,248	4,386	4,520	4,520	0%	3,050
OVERALL TOTAL	8,366	8,218	10,070	10,070	0%	9,048

Not all management areas are surveyed annually. To generate population estimages during all years, areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.
Source: WGFD. Unpublished data

Table 2. Season dates and bag/possession limits during the early September hunting seasons in the Pacific Flyway portion of Wyoming, 2004-2013.

	YEAR									
HUNT AREA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pacific Flyway										
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8		
Bag/Possession Limit	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4		
Pacific Flyway										
All counties except Teton County										
Season Dates (Sept.)									1-8	1-8
Bag/Possession Limit									2/4	2/4
Teton County										
Season Dates (Sept.)									1-8	1-8
Bag/Possession Limit									3/6	3/6

Source: WGFD. Early migratory game bird regulations (2004-2013).

Table 3. Harvest data for the early season in the Western Reference Area of the RMP, 2005-2013.

	YEAR								
MANAGEMENT AREA	2005	2006	2007	2008	2009	2010	2011	2012	2013
5A Snake River									
No. Hunters	52	79	125	77	63	77	67	60	90
Hunter Days	131	208	204	173	153	161	125	191	205
Harvest	84	217	219	205	172	193	144	153	257
5B Upper Green River									
No. Hunters	31	16	49	49	35	0	29	28	47
Hunter Days	56	37	71	74	52	0	66	37	81
Harvest	57	31	78	27	28	0	9	27	36
5C Salt River									
No. Hunters	23	111	136	61	90	71	67	32	19
Hunter Days	67	296	280	111	248	185	126	81	99
Harvest	82	302	301	180	171	161	164	92	69
5D Lower Bear River									
No. Hunters	8	19	48	53	24	55	67	55	80
Hunter Days	23	40	124	130	54	129	108	134	191
Harvest	10	23	181	110	40	105	92	145	180
5E Great Divide Basin									
No. Hunters	2	12	0	3	11	0	0	7	0
Hunter Days	2	14	0	3	11	0	0	14	0
Harvest	5	40	0	6	11	0	0	0	0
5F Lower Green River									
No. Hunters	106	207	121	236	141	178	160	152	169
Hunter Days	230	393	257	528	332	345	318	324	348
Harvest	270	401	217	427	267	208	241	344	306
5G Ham's Fork-Black Fork									
No. Hunters	58	76	148	79	72	35	79	68	93
Hunter Days	92	231	291	160	134	91	138	174	164
Harvest	90	276	306	117	114	54	142	102	120
5H Upper Bear River									
No. Hunters	18	27	102	23	2	24	9	27	11
Hunter Days	35	66	137	36	8	57	42	75	20
Harvest	30	36	114	29	15	12	12	19	22
5I Little Snake River									
No. Hunters	0	0	10	7	12	46	0	0	16
Hunter Days	0	0	10	7	24	91	0	0	27
Harvest	0	0	10	0	0	153	0	0	9
TOTAL									
No. Hunters	298	547	739	588	450	486	478	429	525
Hunter Days	636	1285	1374	1222	1016	1059	923	1030	1135
Days/Hunter	2.1	2.3	1.9	2.1	2.3	2.2	1.9	2.4	2.2
Harvest	628	1326	1426	1101	818	886	804	882	999
Birds/Hunter	2.11	2.42	1.93	1.87	1.82	1.82	1.68	2.06	1.90

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2006-2014.

Table 4. Canada goose harvest data for the regular season for the Western Reference Area of the RMP [a].

MANAGEMENT AREA	MEAN 2007-2011	2011	2012	2013	CHANGE BETWEEN 12 and 13	OBJECTIVE
SNAKE RIVER						
No. Hunters	84	30	93	74	-20%	500
No. Rec. Days	308	262	336	304	-10%	2,800
Harvest	98	48	212	160	-25%	500
UPPER GREEN RIVER						
No. Hunters	94	56	78	72	-8%	350
No. Rec. Days	288	125	195	181	-7%	1,750
Harvest	133	45	136	58	-57%	438
SALT RIVER						
No. Hunters	94	44	61	99	62%	800
No. Rec. Days	572	225	544	864	59%	3,304
Harvest	184	22	551	203	-63%	600
LOWER BEAR RIVER						
No. Hunters	80	62	48	72	50%	1,500
No. Rec. Days	344	292	254	338	33%	7,500
Harvest	147	69	59	243	312%	1,800
GREAT DIVIDE BASIN						
No. Hunters	5	7	0	0	NA	100
No. Rec. Days	8	15	0	0	NA	500
Harvest	3	0	0	0	NA	50
LOWER GREEN RIVER						
No. Hunters	265	235	339	281	-17%	475
No. Rec. Days	1,428	872	1,614	1,613	0%	2,375
Harvest	529	313	516	576	12%	380
HAM'S/BLACK'S FORK						
No. Hunters	126	134	96	100	4%	370
No. Rec. Days	561	478	420	460	10%	1,850
Harvest	253	222	144	117	-19%	444
UPPER BEAR RIVER						
No. Hunters	99	89	63	72	14%	370
No. Rec. Days	356	312	306	168	-45%	1,665
Harvest	104	89	35	92	163%	185
LITTLE SNAKE RIVER						
No. Hunters	13	9	0	9	NA	100
No. Rec. Days	27	9	0	9	NA	500
Harvest	36	9	0	27	AN	50
TOTALS FOR WESTERN REFERENCE AREA						
No. Hunters	860	666	778	779	0%	4,565
No. Rec. Days	3,892	2,590	3,669	3,937	7%	22,244
Harvest	1,487	817	1,653	1,476	-11%	4,447

[a] Data includes all goose species and may include early season harvest information.
Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2008-2014.

Table 5. Canada goose harvest and hunter activity during the regular season within the Central Reference Area of the RMP [a].

	MEAN 2007-2011	2011	2012	2013	CHANGE BETWEEN 12 and 13	OBJECTIVE
UPPER NORTH PLATTE RIVER						
No. Hunters	106	68	100	79	-21%	330
No. Rec. Days	502	589	432	556	29%	1,485
Harvest	412	672	214	227	6%	660
BIGHORN RIVER						
No. Hunters	894	696	859	877	2%	1,200
No. Rec. Days	5,329	3,742	6,422	4,819	-25%	5,600
Harvest	5,047	3,049	11,071	7,346	-34%	1,200
YELLOWSTONE RIVER						
No. Hunters	28	8	0	0	NA	
No. Rec. Days	97	8	0	0	NA	
Harvest	29	8	0	0	NA	
WIND RIVER						
No. Hunters	404	332	293	416	42%	1,200
No. Rec. Days	1,815	1,932	1,431	1,546	8%	4,200
Harvest	1,996	1,759	1,959	1,390	-29%	1,600
SWEETWATER RIVER						
No. Hunters	15	34	15	2	-87%	100
No. Rec. Days	94	328	30	4	-87%	450
Harvest	29	22	49	11	-78%	60
TOTALS FOR CENTRAL REFERENCE AREA						
No. Hunters	1,447	1,138	1,267	1,374	8%	2,830
No. Rec. Days	7,837	6,599	8,315	6,925	-17%	11,735
Harvest	7,513	5,510	13,293	8,974	-32%	3,520

[a] Data includes all goose species.

* Calculated as 66% of the Upper North Platte River Management Area.

Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2008-2014.

Table 6. Mid-winter surveys of the RMP of Canada geese in Wyoming.

MANAGEMENT AREA	2010	2011	2012	2013	2014
Wind River	1,697	2,876	2,104	2,030	10,733
Big Horn River	8,349	13,403	7,007	21,587	27,161
Upper North Platte River	248	139	0	0	0
CENTRAL REFERENCE AREA	10,294	16,418	9,111	23,617	37,894
Snake River	70	133	60	69	NF
Salt River	49	106	93	14	NF
Lower Green River	18	256	133	UNK	NF
combined Upper Green River	10	2	1	UNK	NF
WESTERN REFERENCE AREA	147	497	287	200	0
TOTALS	10,441	16,915	9,398	23,817	37,894

NF= Not Flown

Source: WGFD data.

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CENTRAL FLYWAY ARCTIC NESTING CANADA GEESE

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

In 2013 the Central Flyway Waterfowl Technical Committee combined the Short Grass Prairie (SGP) and Tall Grass Prairie (TGP) Canada goose populations and management plans into a single Central Flyway Arctic Nesting (CFAN) Canada goose population and management plan.

BREEDING POPULATION

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. The MWS index in 2014 was 379,214, 48% higher than the 2013 index. In 2014, the estimated spring population in the NWT was 184,800, a 5% increase from 2013. Production is expected to be average and the 2014 fall flight similar to that of 2013.

HARVEST

Harvest and hunter activity estimates for both Hi-Line and Central Flyway Arctic Nesting Canada geese combined are summarized in Tables 2 and 3 of the previous section (JCR for the Hi-Line Population of Canada Geese). Proportions of HLP and CFAN geese harvested in the Central Flyway portion of Wyoming are listed in Table 1. A harvest objective has not been established for the CFAN CAGE. Harvest of this population increased last year. During the most recent 20-year period, 14% of the Canada geese harvested within the HLP range of Wyoming were CFAN geese. Canada geese from the Rocky Mountain Population are also present in the Central Reference Area in Wyoming.

MID-WINTER SURVEY

State and Federal agencies conduct the mid-winter waterfowl survey throughout the United States during the first two weeks of January. The purpose is to estimate continental waterfowl populations present during the winter period. Proportions of HLP and CFAN geese counted during January are summarized in Table 2. During the most recent 20-year period, 9% of the Canada geese counted within the HLP range were CFAN geese.

Ground surveys were begun in 1999 to classify large and small Canada geese in Carbon, Converse, Goshen, Natrona, and Platte counties (Table 3). Prior to 1999, samples consisting of at least 100 tail fans provided by hunters were used to estimate the percent of large and small

Canada geese in the harvest and waterfowl surveys. This method was appropriate for harvest that occurred throughout the entire season. However, tail fan data are not appropriate for estimating composition of "snapshot" waterfowl surveys. Furthermore, selection bias by hunters may favor larger geese.

RECOMMENDATIONS

1. Continue ground classifications during the mid-winter waterfowl survey to estimate proportions of HLP and CFAN Canada geese that are present.

2. Support management based on a single population of arctic-nesting, white-cheeked geese.

Table 1. Derivation of Canada goose harvest within the HLP and CFAN portion of Wyoming.[a]

Year	Goose Harvest[b]	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
1994	11,638	84	9,776	16	1,862
1995	19,219	83	15,952	17	3,267
1996	6,493	83	5,389	17	1,104
1997	16,553	82	13,573	18	2,980
1998	19,961	88	17,566	12	2,395
1999	13,064	83	10,843	17	2,221
2000	22,782	89	20,276	11	2,506
2001	17,831	78	13,908	22	3,923
2002	14,992	79	11,844	21	3,148
2003	15,918	90	14,326	10	1,592
2004	18,507	85	15,731	15	2,776
2005	43,622	84	36,642	16	6,980
2006	13,041	81	10,563	19	2,478
2007	11,370	88	10,006	12	1,364
2008	22,861	83	18,975	17	3,886
2009	15,785	96	15,154	4	631
2010	27,113	92	24,944	8	2,169
2011	14,594	91	13,281	9	1,313
2012	16,054	90	14,449	10	1,605
2013	19,387	90.5	17,545	9.5	1,842
Averages	18,039	86	15,537	14	2,502

[a] Percent HLP or SGP derived from CF wing bee data or ocular estimation. Tail fan data are representative of the entire dark goose season whereas ocular estimation is a one-time snapshot.

[b] Waterfowl management areas 1, 2, and 33% of 3.

Source: USFWS DMBM Wingbee and WGFD goose classification and harvest data.

Table 2. Proportions of Hi-Line and Central Flyway Arctic Nesint Canada geese counted during the mid-winter waterfowl survey, based upon wing bee data or ocular estimation.

Year	Goose Count	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
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
AVERAGES		91		9	

*Ocular estimate

Source: WGFD unpublished data.

Table 3. Ground classification of large and small geese in Goshen, Platte, Converse, Natrona and Carbon counties.

County	Year		LARGE	SMALL	TOTAL	%LARGE	%SMALL
Carbon							
	2010	NS					
	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
Converse							
	2010		166	0	166	100.0	0.0
	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
Goshen							
	2010		3130	110	3240	96.6	3.4
	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
Natrona							
	2010		660	8	668	98.8	1.2
	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
Platte							
	2010		1656	98	1754	94.4	5.6
	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
Total							
	2010		5612	216	5828	96.3	3.7
	2011		5103	422	5525	92.4	7.6
	2012		2953	285	3238	91.2	8.8
	2013		3898	363	4261	91.5	8.5
	2014		9030	950	9980	90.5	9.5

NS - Not surveyed.

Source: WGFD unpublished data.

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WESTERN CENTRAL FLYWAY POPULATION OF LIGHT GEESE

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

The Western Central Flyway Population includes primarily lesser snow geese and nearly one third Ross' geese. These geese breed in the central and western Canadian Arctic; large nesting colonies are present at Queen Maude Gulf and Banks Island. In 2014, spring phenology was approximately 14 days earlier than average, and the earliest on record, in the Queen Maud Gulf area. Nesting phenology in the Queen Maude Gulf Sanctuary was 6 days earlier compared to the long-term average. Snow goose production is expected to be above average.

HARVEST

Light goose hunting regulations during the most recent 10-year period are summarized in Table 1. The light goose season has remained closed in the Pacific Flyway portion of Wyoming due to limited numbers of light geese present and the potential for accidental harvests of resident trumpeter swans. Light goose harvests within the Central Flyway portion of Wyoming are summarized in Table 2.

CONSERVATION ORDER

The Department implemented the light goose conservation order for the 14th consecutive year in 2014 (Tables 1, 2 and 3). Use of electronic callers and hunting one-half hour after sunset were allowed. However, Wyoming statute prohibits hunters from using unplugged shotguns capable of holding more than 3 shells. Participants were required to purchase a Conservation Order Special Management Permit and complete a survey card provided with the permit.

Based on the survey response, 112 hunters harvested 492 light geese. The survey was not refined enough to distinguish geese that were harvested with electronic callers from those shot after sunset. However, these special provisions didn't appear to increase harvest. Participation and harvest increased from last year, most likely the result of reports indicating more young birds available to hunt.

MID-WINTER SURVEY

State and Federal agencies conduct the mid-winter waterfowl survey during the first two weeks in January to estimate the continental populations of wintering waterfowl throughout the United States. Mid-winter survey counts of the West Central Flyway light goose population are summarized in Table 4. Generally, very few light geese are present in Wyoming during December and January.

WCFP geese are surveyed annually in the U.S. portion of their winter range, and the entire range, which includes Mexico, is surveyed only once every 3 years. However, surveys in Mexico have not been conducted since 2009 due to sociopolitical unrest in that country. In the U.S. portion of the survey, 264,800 geese were counted in January 2014, 17% more than last year. Population indices have increased 6% per year during 2005-2014.

RECOMMENDATIONS

1. Continue to implement the light goose conservation order in Wyoming.

2. Continue to maintain liberal seasons and bag limits.

Table 1. Hunting regulations for light geese within the Central Flyway portion of Wyoming.

	HUNTING SEASON									
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Regular Season Dates	10/2-12/31 1/27-2/10	10/1-12/31 1/27-2/9	10/7-1/7 1/27-2/8	10/6-1/1 1/26-2/12	10/4-1/1 1/26-2/9	10/3-12/27 1/21-2/8	10/2-12/26 1/20-2/7	10/1-12/25 1/28-2/15	10/6-12/30 1/30-2/17	10/5-12/30 1/30-2/16
Total Days	107	107	107	107	107	107	107	107	107	107
Bag/Possession Limits	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/30
Conservation Order	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Season Dates	2/21-4/3	2/20-4/2	2/19-4/8	2/25-4/13	2/23-4/12	2/22-4/11	2/21-4/10	2/20-4/8	2/25-4/7	2/24-4/6
Bag/Possession Limits	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none

Special Youth Waterfowl Hunting Days are included in total days, but not displayed.
Source: WGFD. Migratory game bird regulations.

Table 2. Light goose harvest within the Central Flyway portion of Wyoming.

Year	Wyoming Data[a]	FWS Data/Regular Season	Conservation Order
1994/95	N/D	133	
1995/96	N/D	0	
1996/97	N/D	299	
1997/98	529	266	
1998/99	1845	1811	
1999/00	1326	633	
2000/01	875	114	875
2001/02	3047	0	1215
2002/03	ND	0	1775
2003/04	ND	325	1364
2004/05	ND	0	1070
2005/06	ND	0	2622
2006/07	ND	0	928
2007/08	ND	43	1019
2008/09	ND	0	845
2009/10	ND	66	230
2010/11	ND	90	965
2011/12	ND	331	660
2012/13	ND	330	455
2013/14	ND	0	492

[a]Wyoming harvest data is for February and March only.

N/D - No data.

Source: USFWS Light geese in the Central Flyway April 2014 and Preliminary harvest estimates 2013 and 2014, and WGFD data.

Table 3. Harvest and hunter activity for the Wyoming 2014 light goose conservation order.				
	Season			
	February 24 - April 6			
Permits Sold (excludes known collector purchases)	153			
Total Survey Respondents	102			
% Responded	68%			
Active Hunters	112			
Total Days Hunted	337			
Days/Hunter	3.0			
Geese Harvested	449			
Geese Knocked Down, but not retrieved	43			
Total Harvest	492			
Harvest/Hunter	4.4			
Hunters using Electronic Callers	56			
Harvest by Hunters using Electronic Callers	164			
Average Harvest of Hunters using Callers	2.9			
Hunters Hunting After Sunset	43			
Harvest by Hunters Hunting After Sunset	77			
Average Harvest of After Sunset Hunters	1.8			
Hunters Using Callers and Hunting After Sunset	27			
% of Hunters Hunting in Goshen County	97.0			
Incomplete survey responses were treated as non-responses. Projected totals are the initial responses plus the nonresponse				
bias estimators. Non-bias estimation as applied here is the projection of second responses on to nonrespondents.				
For example, Active Hunters = (second respondents that hunted/second respondents)(permits analyzed - initial responses)				
Source: WGFD unpublished data.				

Table 4. Light geese counted during the mid-winter waterfowl survey in Wyoming.

Year	Geese
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	1
1992	0
1993	0
1994	0
1995	0
1996	0
1997	188
1998	3
1999	1
2000	0
2001	1
2002	1
2003	1
2004	2
2005	3
2006	0
2007	1
2008	2
2009	4
2010	3
2011	6
2012	17
2013	0
2014	254

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ROCKY MOUNTAIN POPULATION OF GREATER SANDHILL CRANES

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Since 1982, greater sandhill cranes (Grus canadensis tabida) have been hunted during September in the Salt River and Lower Bear River management areas. In 1986, a hunting season was initiated in the Farson area of the Lower Green River and another hunt was initiated in the Riverton Project within the Wind River Basin in 1987. A hunt area was established in Big Horn and Park Counties in 1996. In 2008 another hunt area was established in Uinta County and the Bear River Hunt Area in Lincoln County was expanded to include the Hams Fork Drainage. The crane hunts were started to reduce crop depredations by staging cranes and regulate population growth. Annual harvest levels for Wyoming are prescribed based on a harvest allocation formula in the *Management plan of the Pacific and Central Flyways for the Rocky Mountain Population of Greater Sandhill Cranes* (last revised in March, 2007). Based on shifts in the fall distribution of cranes, a smaller proportion of the crane population has been counted in Wyoming during fall surveys in recent years. Consequently, the harvest allocation available to Wyoming was reduced starting 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 increasing crane numbers in the September survey and relatively good crane recruitment. Since then, the September count has declined and Wyoming's allocation along with it.

POPULATION STATUS

The Fall Survey data from the Rocky Mountain population are summarized in Table 1. The 2006 survey was canceled because the U. S. Fish and Wildlife Service's survey aircraft had mechanical problems. However some surveys were completed by state personnel prior to the decision to cancel the survey by the U. S. Fish and Wildlife Service and those data are reported for the appropriate tables in this report. The 2013 count increased to 20,360 cranes, the highest population count since 2010. The 2011 and 2012 counts declined more than can be explained by harvest and normal mortality rates. It is likely some cranes were distributed outside the count areas.

Spring weather conditions were abnormally dry and this weather pattern continued into the summer and fall. Conditions across the region were characterized as being in a moderate to extreme drought, with pockets of extreme drought in southwest Montana and southern Wyoming (Thorpe et al. 2013).

Annual production is surveyed by classifying the proportion of juveniles within the crane population staging in the San Luis Valley, Colorado in October. The recruitment rate during the 2013 survey was 6.6%, 20% below the long-term (1972-2013) average of 8.3. In 2013, the habitat conditions were fair in the spring but drought conditions during the summer months might have led to reduced colt survival (Kruse et al. 2014).

SEPTEMBER PRE-MIGRATION STAGING SURVEYS

Results of September pre-migration surveys are summarized in Table 2 (Thorpe et al. 2013). Crane surveys on the primary and experimental fall staging areas in Wyoming are summarized in Table 3. The 2006 survey was cancelled due to mechanical problems with the survey aircraft used by the Service to count portions of western Wyoming and southeast Idaho. WGFD personnel completed some sections of the surveys in 2006 but flyway-wide data are incomplete. In 2013, 3,588 cranes were counted in RMP staging areas of central and western Wyoming. This was very similar to the number observed in 2012 (3,587) and higher than the long term average for 1987-2012 of 3,159 cranes counted in the RMP areas of Wyoming.

Crane counts are conducted in the Pacific flyway (western reference area) in mid-September after the crane hunting season has ended. However, informal late August counts of cranes flying off roosts in the upper Salt River and the Big Sandy/Eden Reservoirs suggest crane numbers in these two areas may be higher just prior to the hunts. Therefore, the decline in 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 fall distribution of cranes over time. The limited harvest has minimal impact on numbers of cranes that nest in Wyoming but crane hunts and the concurrent general early goose hunt in the Pacific Flyway portion of Wyoming may account for some changes in fall distribution (Rod Drewien, pers. com., Lockman et al. 1987).

The distribution of staging cranes has expanded. An area near Worland was added to the Bighorn Basin survey area in 2007. Crane numbers in the Bighorn Basin count blocks increased in 2013 and as did the Wind River Basin count blocks in the last 2 years. A substantial influx of cranes, presumably from Montana, occurs after the surveys are completed in both the Wind River Basin and Bighorn Basin areas (Table 3). Based on track measurements being 100% outside the range of lesser sandhill cranes (*Grus c. canadensis*), experimental fall staging surveys were begun in Johnson, Natrona, and Sheridan counties in 2013 (Roberts 2013).

CRANE HARVEST

The Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes allows for the 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. All the states hunting this population have benefited by improved population status, which

resulted in an increase in crane permits in 2004-2006. Wyoming's 2013 harvest allocation declined to 87 cranes due to a decline in population status in 2011 and 2012. Recent regulations for hunting RMP cranes in Wyoming are summarized in Table 4. Permit numbers are calculated by multiplying the harvest allocation by 2, assuming 50% success, on average, for permit holders. The calculations for the 2013 harvest allocation for all states are shown in Appendix 1.

In 2011, the Pacific and Central Flyways revised the management plan to base the proportions of annual harvest allocated among the summer range states on the most recent 5-year average proportions of the fall flight counted in each summer range or producing state.

During the 2013 season, 147 hunters harvested 74 cranes in the 6 hunt areas in Wyoming (Table 5). Permit success ranged from 0% in Area 5 (Uinta) to 56% in Area 6 (Big Horn). The harvest rate for active hunters ranged from 0.0 cranes per hunter in Area 5 (Uinta) to 0.7 cranes per hunter in Area 6 (Big Horn). Hunter success averaged 50% for all hunt areas.

Table 6 summarizes crane harvest statistics from hunt areas in Wyoming. The 2013 harvest rate was 0.41 cranes per active hunter compared to 0.62 cranes per hunter in 2012. Harvest rates continue to fluctuate in the 6 hunt areas in Wyoming.

Changes in hunt area harvest rates appear to be a function of permit numbers and crane availability in any given year. Shifts in crane distribution are likely responsible for some reductions in harvest and hunter success. Land use changes including conversions from agriculture to subdivisions, changes in grain crop distribution, and reduced hunter access appear to be factors affecting crane availability and hunter success in some hunt areas, particularly in the Bear River and Star Valley hunt areas.

RECOMMENDATIONS

1. Continue to survey cranes on fall pre-migration staging areas, including Natrona, Johnson, and Sheridan counties.
2. Continue the mail survey to estimate harvest and hunter activity.
3. Work with the Central and Pacific Flyways to assure Wyoming receives a fair allocation of permits as a result of changes in the RMP Greater Sandhill Crane Management Plan. The allocation protocol in the management plan is intended to be revisited every 5 years and the average of the proportion of cranes counted in each state should be recalculated for the 5 year period from 2007-2011 to set the proportions used in the crane allocation formula for the next 5 years (2012-2016).
4. Continue monitoring to determine if the expansion of hunt area boundaries in the Bighorn Basin (Area 6) and Bear River (Area 1) produce more hunting opportunity and address depredation complaints as crane numbers increase and their fall distribution expands.
5. Continue monitoring to determine if creation of new Hunt Area 5 in Uinta County is creating additional hunting opportunity and addressing depredation complaints as crane numbers increase and their fall distribution expands in Wyoming. Continue reviewing population and

harvest data to determine if this hunt area expansion is appropriate and should continue in the future.

Table 1. Population data for the Rocky Mountain Population of Greater Sandhill Cranes, 1997-2013.

	September Total Pre-migration	% Juvenile Fall, San Luis Valley	Recruitment rate 5-Year Mean	Total Allowable Harvest
1997	18,036	9.7	8.5	632
1998	18,202	11.2	10.1	693
1999	19,501	8.4	9.9	974
2000	19,990	6.7	8.8	1,141
2001	16,559	5.8	7.0	1,175
2002	18,803	5.2	5.9	833
2003	19,523	7.1	6.0	668
2004	18,510	9.4	7.2	656
2005	20,865	10.8	9.1	906
2006	Cancelled	9.9	9.1	1,320
2007	22,822	8.3	9.5	1,320
2008	21,156	9.1	9.1	1,714
2009	20,321	11.5	9.6	1,940
2010	21,064	8.3	9.6	1,985
2011	17,494	6.6	8.8	1,777
2012	15,417	7.8	7.5	1,270
2013	20,360	6.6	6.9	771

Table 2 September premigration staging area counts by state of the Rocky Mountain Population greater sandhill cranes during 1987, 1992, 1995-2005, 2007-2012.

Year	Colorado[a]	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
Mean	1,322	7,213	4,903	2,295	3,180	18,473

[a] Colorado counts include migrants that had arrived at the staging areas in the San Luis Valley.

Table 3. Surveys of primary and experimental fall staging areas used by the RMP of greater sandhill cranes in Wyoming, 2009-2013.

Primary Staging Area	Responsible Agency	Year and (Survey Date)	Total Count (Aerial or Ground)
Lower Bear River Valley	USFWS		
		2009 (9/15)	153 (Aerial)
		2010 (9/13)	488 (Aerial)
		2011 (9/13)	539 (Aerial)
		2012 (9/13)	490 (Aerial)
		2013 (9/10)	379 (Aerial)
Star Valley (Salt River)	WGFD/USFWS		
		2009 (9/17)	257 (Aerial
		2010 (9/17)	127 (Aerial)
		2011 (9/13)	198 (Ground/Aerial)
		2012 (9/13)	182 (Ground/Aerial)
		2013 (9/10)	223 (Ground/Aerial)
Farson-Eden	USFWS		
		2009 (9/14)	1,463 (Aerial)
		2010 (9/14)	1,297 (Aerial)
		2011 (9/12)	988 (Aerial)
		2012 (9/13)	1,665 (Aerial)
		2013 (9/13)	1,354 (Aerial)
Boysen-Riverton (Wind River)	WGFD		
		2009 (9/17)	345(Aerial)
		2010 (9/14)	235 (Aerial)
		2011 (9/13)	276 (Aerial)
		2012 (9/11)	277 (Aerial)
		2013 (9/10)	364 (Aerial)
Greybull River Valley	WGFD		
		2009 (9/16)	283 (Aerial)
		2010 (9/14)	454 (Aerial)
		2011 (9/13)	185 (Aerial)
		2012 (9/11)	166(Aerial)
		2013 (9/10)	197(Aerial)
Shoshone River Valley	WGFD		
		2009 (9/16)	389 (Aerial)
		2010 (9/14)	470 (Aerial)
		2011 (9/13)	341 (Aerial)
		2012 (9/11)	446 (Aerial)
		2013 (9/10)	366 (Aerial)

Table 3. Continued			
	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Worland	WGFD		
		2009 (9/16)	215(Aerial)
		2010 (9/14)	322 (Aerial)
		2011 (9/13)	96 (Aerial)
		2012 (9/11)	31 (Aerial)
		2013 (9/10)	113 (Aerial)
Big Piney	USFWS		
		2009 (9/14)	91 (Aerial)
		2010 (9/14)	76 (Aerial)
		2011 (9/13)	14 (Aerial)
		2012 (9/13)	117 (Aerial)
		2013 (9/13)	239 (Aerial)
Bridger Valley	WGFD		
		2009 (9/15)	51 (Ground)
		2010 (9/15)	75 (Ground)
		2011 (9/16,9/19)	105 (Ground)
		2012 (9/11-9/12)	103 (Ground)
		2013 (9/10-12)	22 (Ground)
Lonetree	WGFD		
		2009	NS
		2010 (9/15)	0 (Ground)
		2011 (9/17)	0 (Ground)
		2012 (9/17)	0 (Ground)
		2013 (9/10-12)	0 (Ground)
Hams Fork	USFWS		
		2009 (9/14)	90 (Aerial)
		2010 (9/13)	18 (Aerial)
		2011 (9/13)	10 (Aerial)
		2012 (9/13)	15 (Aerial)
		2013 (9/10)	35 (Aerial)
Little Snake River Valley	WGFD		
		2009 (9/17)	2 (Ground)
		2010 (9/15)	0 (Ground)
		2011(9/13)	0 (Ground)
		2012(9/11)	0 (Ground)
		2013(9/10)	5 (Ground)
Pinedale-Cora	USFWS		
		2009 (9/14)	45 (Aerial)
		2010 (9/14)	2 (Aerial)
		2011 (9/13)	0 (Aerial)
		2012 (9/13)	3 (Aerial)
		2013 (9/11)	0 (Aerial)

Table 3. Continued	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Seedskadee NWR	USFWS		
		2009 (9/15-9/16)	4 (Ground)
		2010 (9/15)	4 (Ground)
		2011 (9/14)	6 (Ground)
		2012 (9/11)	0 (Ground)
		2013 (NS)	
Upper North Platte River	WGFD		
		2009 (9/17)	5 (Ground)
		2010 (9/15)	26 (Ground)
		2011 (9/13)	60 (Ground)
		2012 (9/11)	69 (Ground)
		2013 (9/13)	12 (Ground)
Jackson Hole	USF&WS		
		2009 (916)	220 (Ground)
		2010 (9/15)	132 (Ground)
		2011 (9/14)	69 (Ground)
		2012 (9/12)	23 (Ground)
		2013 (9/12)	279 (Ground)
Experimental Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Natrona County	WGFD	2013 (9/9-11)	139 (Ground)
Johnson County	WGFD	2013 (9/9-11)	235 (Ground)
Sheridan County	WGFD	2013 (9/9-11)	150 (Ground)

Table 4. Recent Hunting Regulations for the RMP Sandhill Crane Hunt Areas in Wyoming.

	YEAR									
HUNT AREA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1 Bear River										
No. Permits	20	26	42	25	30	30	30	25	25	15
Season Dates (Sept.)	1-14	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
2 Salt River										
No. Permits	20	26	42	26	25	31	30	25	15	10
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
3 Eden/Farson										
No. Permits	45	56	94	60	85	106	105	95	60	40
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
4 Riverton										
No. Permits	60	70	116	75	85	100	105	90	80	55
Season Dates (Sept.)	18-30	17-30	16-30	15-30	13-30	19-30	18-30	17-30	15-30	14-30
Season Dates (Oct.)	1-8	1-7	1-6	1-5	1-3	1-7	1-10	1-9	1-7	1-6
Season Limit	1	1	1	1	1	1	1	1	1	1
5 Uinta										
No. Permits					10	10	10	10	10	5
Season Dates (Sept.)					1-8	1-8	1-8	1-8	1-8	1-8
Season Limit					1	1	1	1	1	1
6 Big Horn/Park										
No. Permits	60	74	124	80	95	110	115	105	80	55
Season Dates (Sept.)	18-30	17-30	16-30	15-30	13-28	19-30	18-30	17-30	15-30	14-30
Season Dates (Oct.)	1-8	1-2	1	-	-	1-4	1-3	1-2	1-7	1-6
Season Limit	1	1	1	1	1	1	1	1	1	1

Table 5. Harvest and hunter activity for the 2013 hunting season for RMP of greater sandhill cranes.

	HUNT AREA						
	1	2	3	4	5	6	TOTALS/
	BEAR RIVER	SALT RIVER	FARSON	RIVERTON	UINTA	BIG HORN	AVERAGES
Harvest Allocation							87
Permits Issued	15	10	40	55	5	55	180
Active Hunters	12	7	38	41	3	46	147
Total Days Hunted	30	21	64	98	9	119	342
Days/Active Hunter	2.5	3.0	1.7	2.4	3.0	2.6	2.3
Adult Harvest	3	3	18	12	0	17	53
Juvenile Harvest	2	0	2	4	0	8	15
Unknown Age Harvest	0	0	0	0	0	0	0
Cranes Knocked Down but not Retrieved	0	0	0	0	0	6	6
Total Crane Harvest	5	3	20	16	0	31	74
Cranes per Active Hunter	0.42	0.43	0.53	0.39	0.00	0.67	0.41
Permit Success	30%	29%	50%	29%	0%	56%	41%
Note: Due to rounding and computer decimal loads, area estimates may not equal totals.							
Source: WGFD unpublished data.							

Table 6. Harvest statistics from RMP Greater Sandhill Crane hunts in Wyoming 2004-2013.

	YEAR									
HUNT AREA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1 Bear River										
No. Hunters	15	24	18	21	27	24	20	25	23	12
Hunter Days	29	47	27	44	51	46	33	46	48	30
Days/Hunter	1.9	2	1.5	2.1	1.9	1.9	1.7	2.1	2.1	2.5
Harvest	12	14	12	9	17	18	11	9	13	5
Cranes/Hunter	0.76	0.58	0.67	0.43	0.63	0.75	0.55	0.41	0.57	0.42
2 Salt River										
No. Hunters	15	23	30	11	22	22	26	25	13	7
Hunter Days	48	59	87	29	45	54	109	61	36	21
Days/Hunter	3.3	2.6	3	2.6	2.1	2.5	4.2	2.4	2.8	3.0
Harvest	7	10	12	8	10	8	6	13	10	3
Cranes/Hunter	0.46	0.43	0.42	0.7	0.45	0.36	0.23	0.52	0.77	0.43
3 Eden/Farson										
No. Hunters	35	43	73	54	69	83	85	86	49	38
Hunter Days	65	82	135	103	137	152	151	171	76	64
Days/Hunter	1.9	1.9	1.9	1.9	2	1.8	1.8	2.0	1.5	1.7
Harvest	24	31	58	42	37	46	63	48	39	20
Cranes/Hunter	0.68	0.72	0.79	0.77	0.54	0.55	0.74	0.56	0.80	0.53
4 Riverton										
No. Hunters	55	48	83	65	70	73	91	71	59	41
Hunter Days	91	90	155	118	121	133	196	166	149	98
Days/Hunter	1.6	1.9	1.9	1.8	1.7	1.8	2.2	2.3	2.5	2.4
Harvest	37	28	55	45	45	58	46	42	30	16
Cranes/Hunter	0.66	0.58	0.66	0.69	0.64	0.79	0.,51	0.59	0.51	0.39
5 Uinta										
No. Hunters					10	8	10	11	10	3
Hunter Days					20	22	13	37	47	9
Days/Hunter					2	2.8	1.3	3.4	4.7	3.0
Harvest					3	2	3	7	0	0
Cranes/Hunter					0.30	0.25	0.30	0.64	0.00	0.00
6 Big Horn										
No. Hunters	54	58	101	62	83	93	96	82	62	46
Hunter Days	110	152	276	124	191	217	192	228	165	119
Days/Hunter	2.1	2.6	2.6	2	2.3	2.3	2.0	2.8	2.7	2.6
Harvest	44	33	57	35	50	6.3	53	42	42	31
Cranes/Hunter	0.82	0.57	0.56	0.56	0.60	0.68	0.55	0.51	0.68	0.67
TOTAL										
Harvest Allocation	104	144	209	131	165	192	197	165	135	87
Permits Issued	206	254	401	266	330	387	395	352	270	180
No. Hunters	174	196	305	213	281	303	328	297	216	147
Hunter Days	343	430	687	418	562	624	695	709	521	342
Days/Hunter	2.0	2.2	2.3	2.0	2	2.1	2.1	2.4	2.4	2.3
Harvest	124	116	194	138	162	195	182	161	134	74
Cranes/Hunter	0.71	0.59	0.64	0.65	0.58	0.64	0.55	0.54	0.62	0.41

Appendix **1. 2013 Harvest Allocation based on the RMP Sandhill Crane Plan**

2013 Crane Harvest Allocation

Allowable Harvest = C x P x R x L x f where: C = Avg of **3** most recent, reliable **fall** population indices.
P = Avg proportion fledged chicks in **3** most recent years
R = 0.5 (estimated recruitment fledged chicks to breeding)
L = 0.8 (retrieval rate)
f = $(C/16{,}000)^3$ (harvest rate adjustment)

$C = \frac{21{,}064 + 17{,}494 + 15{,}417}{3} = 17{,}992$

$P = \frac{0.083 + 0.065 + 0.078}{3} = 0.0753$

$f = (C/16{,}000)^3 = (17{,}992/16{,}000)^3 = 1.422$

2013 Harvest Allocation = 17,992 x 0.0753 x 0.5 x 0.8 x 1.422 = **771**
2012 Harvest Allocation = 19,626 x 0.088 x 0.5 x 0.8 x 1.846 = **1,270**
2011 Harvest Allocation = 20,847 x 0.096 x 0.5 x 0.8 x 2.212 = **1,777**
2010 Harvest Allocation = 21,433 x 0.096 x 0.5 x 0.8 x 2.404 = **1,985**
2009 Harvest Allocation = 21,614 x 0.091 x 0.5 x 0.8 x 2.465 = **1,940**
2008 Harvest Allocation = 20,732 x 0.095 x 0.5 x 0.8 x 2.176 = **1,714**
2007 Harvest Allocation = 19,633 x 0.091 x 0.5 x 0.8 x 1.848 = **1,320**
2006 Harvest Allocation = 19,633 x 0.091 x 0.5 x 0.8 x 1.848 = **1,320**
2005 Harvest Allocation = 18,945 x 0.072 x 0.5 x 0.8 x 1.660 = **906**
2004 Harvest Allocation = 18,295 x 0.060 x 0.5 x 0.8 x 1.495 = **656**

2007 Allocation based on 2003, 2004, and 2005 fall counts
2008 Allocation based on 2004, 2005, and 2007 fall counts
2009 Allocation based on 2005, 2007, and 2008 fall counts
2010 Allocation based on 2007, 2008, and 2009 fall counts
2011 Allocation based on 2008, 2009, and 2010 fall counts
2012 Allocation based on 2009, 2010, and 2011 fall counts
2013 Allocation based on 2010, 2011, and 2012 fall counts

	Percent Summer Allotment	Percent Winter Allotment	Percent Unused CO Winter Allotment	Total Percent Allotment	Total Allocation
Colorado	0	0	---	0	**0**
Idaho	17.75%	---	---	17.75%	**(137)**
Montana	18.72%	---	---	18.72%	**(144)**
Wyoming	11.31%	---	---	11.31%	**(87)**
Utah	6.79%	2.70%	(0.40%)	10.32%	**(80)**
Arizona	---	5.80%	(0.86%)	6.66%	**(51)**
New Mexico	---	28.00%	(4.14%)	32.14%	**(248)**
Mexico	---	2.70%	(0.40%)	3.10%	**(24)**
TOTALS	55.00 %	45.00%	(5.80%)	100.00 %	**771**

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DETERMINATION OF SUBSPECIES AND POPULATION AFFILIATION OF SANDHILL CRANES IN JOHNSON, NATRONA, AND SHERIDAN COUNTIES OF WYOMING DURING SUMMER AND FALL, 2013

By Larry Roberts
December 1, 2013

INTRODUCTION

Reports from landowners and Wyoming Game and Fish Department (WGFD) personnel suggest sandhill cranes (*Grus canadensis*) have increased in Johnson, Natrona, and Sheridan Counties of Wyoming over the past decade. Heretofore, no effort had been undertaken to determine the subspecies and/or population affiliation of those cranes. Those cranes are potentially from the Mid-continent Population (MCP), the Rocky Mountain Population (RMP), or a mixing of the two. The MCP is composed of 3 subspecies: the greater (*G. c. tabida*), Canadian (*G. c. rowani*), and lesser (*G. c. canadensis*) whereas the RMP is composed of only greater (*G. c. tabida*) sandhill cranes.

Historically, MCP cranes were hunted in Campbell, Converse, Crook, Goshen, Laramie, Niobrara, Platte and Weston Counties (Area 7) in eastern Wyoming. RMP cranes were hunted in several hunt areas encompassing all or parts of Lincoln, Sweetwater, Fremont, Uinta, Big Horn, Hot Springs, Park and Washakie Counties in central and western Wyoming. Between these two crane hunting regions, 5 counties extending from Montana to Colorado (Sheridan, Johnson, Natrona, Albany, and Carbon) had no crane hunting.

In 2008, landowners in Johnson County east of Interstate Highway 25 (I-25) expressed concern about the increasing sandhill crane population and potential depredation. That year, hunters in Sheridan County also expressed interest in hunting sandhill cranes. This spurred WGFD personnel to request expansion of the MCP crane hunt area into Johnson and Sheridan Counties. In 2013, a Johnson County landowner, west of I-25, requested relief from spring depredation by cranes.

With little knowledge of the subspecies or population affiliation of cranes using the two counties the WGFD requested expansion of the MCP sandhill crane hunt boundary into Johnson and Sheridan Counties of Wyoming. An unknown number of cranes were present during fall in the two counties. In 2009, the Central and Pacific Flyway Councils and Service Regulations Committee approved the expansion (see Central Flyway Council Recommendation 9, March, 2009 attached).

The Pacific Flyway and U.S. Fish and Wildlife Service (Service) expressed concern about the potential presence of RMP cranes in the expanded hunt area during the hunting season. The hunt area expansion was approved contingent on the harvest not exceeding 3-4 cranes/year in the two counties combined.

There is no crane hunting season in Natrona County. That county was included in the study due to concerns about crane depredation and interest in cranes hunting.

In late 2012, the Department's Migratory Game Bird Section became aware of sandhill crane presence in the expanded hunt area during summer months. The presence of resident (potentially breeding) cranes added credence to the potential those cranes may be greater sandhill cranes affiliated with the RMP, and was the impetus for this 1-year study initiated in 2013. The objective was to determine subspecies of sandhill cranes in Johnson, Natrona, and Sheridan Counties during the summer and fall.

STUDY AREA

The 2009 expansion of the MCP hunt area allowed crane hunting in that portion of Johnson County east of I-25 from the Natrona County line north to I-90 and east of I-90 from the intersection with I-25 to the Sheridan County line; and that portion of Sheridan County east of I-90. The study focused on agricultural and mesic sites known to contain cranes at some time during the year in the expansion area. Areas west of the Interstate Highways in the two counties, and two agricultural areas in Natrona County, were also included in the study area. The locations outside of the hunt area expansion were included because of crane depredation concerns west of I-25 in Johnson and Natrona Counties, the possibility all the cranes might be RMP cranes, and to serve as a baseline for the 3-year monitoring criterion required to establish a new RMP crane hunt area.

The study area included 2 survey areas in Natrona, 6 in Johnson, and 3 in Sheridan Counties. The survey areas contained a mix of reservoirs, agricultural fields, rivers and creeks, and adjacent floodplains.

METHODS

Survey routes were laid on Google Earth and BLM topographic maps in areas where sandhill cranes occurrence and/or depredation had been documented in the three counties. The survey areas appeared sufficient to detect the majority of cranes present. However, visual barriers and traffic safety concerns affected detection capability from public roads in some locations. Permission to access private land was obtained in the 33-Mile, Buffalo, and Dayton areas to address these concerns.

Ground surveys were conducted during 3 periods to cover the summer, timing of the RMP fall population survey, and October MCP migration periods. The number, activity, and distribution of sandhill cranes were recorded within each survey area. The assumption was made that all resident breeding cranes counted in summer were affiliated with the RMP. The September 9-13 survey would document crane abundance and affiliation during the RMP fall population survey and prior to the crane hunting season in the two counties. The objective of the mid-October survey was to determine if any shift in subspecies/population affiliation occurred after the MCP typically began migrating through the state (around October 1). A test survey was run during May to familiarize the observer with the survey areas, routes, landowners, etc. As a result of this survey some survey area boundaries and/or routes were modified.

Subspecies determination was based on mid-toe track measurements (Benning et al 1997, and R. Drewien pers. comm.). Tracks were measured from the heel of tarsometatarsus to the distal end

of the middle toe and did not include the toe nail. Tracks were measured in wet ground at roost sites and saturated soil areas at foraging sites. Mid-toe track measurements were attempted in each survey area during early July, September 9 – 13, and October 12-13. No mid-toe track measurements were taken during the July survey due to dry conditions that were not conducive to track imprints in the soil. Track measurements after the July survey were focused on roost/loafing or supersaturated sites.

RESULTS

Annual MCP crane harvest from Johnson and Sheridan Counties during the 2009-2012 hunting seasons is presented in Table 1.

The number of sandill cranes in the three counties increased each survey period (Table 2). During the July survey 9 sandhill cranes comprised of 3 family groups were counted east of I-25. Family groups included one pair with 2 colts, one pair with one colt, and one pair. Sixty-six cranes were counted west of I-25, but included only 2 colts. During the September survey in Sheridan County only 6 cranes were observed in the hunt area, east of I-25. The 3-county total during the September Fall Population survey was 524 cranes. By the October survey most of the cranes had left Johnson and Sheridan Counties, but the number of cranes in Natrona County increased over 600%.

Mid-toe measurements were taken at 3 locations in September (Table 3). Eighty-six tracks were measured, the track range in millimeters was 94-112, and the average track length was 101.8 mm. Measurements were taken at 2 locations in October. Fifty-eight tracks were measured, the track range in millimeters was 94-113, and the average track length was 100.2 mm. A total of 144 tracks were measured with a range of 94-113 mm and an average of 101.2 mm.

DISCUSSION

Retrieved harvest from Johnson and Sheridan Counties exceeded the agreed upon maximum for Johnson and Sheridan Counties in 2011 and 2012. Accuracy of the 2012 harvest estimate for Sheridan County is subject to some question. The distance between the crane concentration in the Dayton area and the nearest crane observation in the open hunt area east of I-25 exceeds the normal flight distance for daily activity patterns of cranes.

The author counted 416 sandhill cranes in the 33-Mile area just north of Casper on September 28, 2010. During this count the observer wasn't that familiar with the area and did not have landowner permission to check the roost site. On October 12, 2012, the author counted 480 sandhill cranes that roosted on Airport and Elkhorn Bays of Glendo Reservoir (Platte County, WY). It was assumed the cranes were MCP affiliated.

Crane surveyors (Benning et al. 1997) have used the measurement categories in the bottom of Table 3 to determine subspecies composition of sandhill cranes in the San Luis Valley of Colorado and elsewhere. All the September track measurements were equal to or greater than the minimum value for greater sandhill cranes. However, the range was shorter than that reported for greater sandhill cranes. This resulted in a much shorter mean length than that reported by

Benning (et al. 1997) and Drewien (pers. comm.). This same relationship held true for October and all combined track measurements. Measurements of 94 to 103 mm overlap Canadian track lengths documented in Benning (et al. 1997). Measurements from 104 to 113 mm exceeded the reported range for Canadian sandhill cranes.

The boundary between the MC and RM populations is probably not clear cut. The north boundary appears to be somewhere between Gillette (Campbell County) and Buffalo (Johnson County), may be near the Campbell and Johnson County line or the east side of the Powder River divide. The distance between Buffalo and Keyhole Reservoir is 88 miles. The distance to Keyhole Reservoir is important because the reservoir is a major resting stop for MCP (assumed) cranes. On October 10, 2012 bird watchers counted 15,000 cranes on the shore of Keyhole Reservoir. On October 13, 2013 bird watchers counted 3,000 cranes flying over the reservoir, 5,000-6,000 on shore, and more cranes flying into the shore group. All the cranes were gone later in the day (WY Bird List Serve).

In a study of MCP cranes Krapu (et al. 2011) reported that the RMP breeds in Montana, Wyoming, Idaho, Utah, and Colorado, but no evidence of breeding was found for Platform Transmitting Terminals (PTT)-tagged MCP sandhill cranes. However, the winter range of MCP lesser sandhill cranes overlaps with the RMP in west-central New Mexico, southeastern Arizona, and parts of northern Mexico. Most MCP lesser sandhill cranes that winter in the same areas as the RMP are in the western Alaska-Siberia (WA-S) breeding affiliation based on winter distribution of tagged birds. Some MCP Canadian sandhill cranes, presumably West-central Canada-Alaska cranes, also winter in west-central New Mexico and migrate through the San Luis Valley of south-central Colorado during spring migration as do some WA-S lesser sandhill cranes. No records of paring have been reported between MCP lesser sandhill cranes and RMP greater sandhill cranes in regions where their spring-fall migration and winter distributions overlap. During the Krapu study only WA-S, PTT-tagged, MCP sandhill cranes were recorded during the fall migration through central and eastern Wyoming. Fifty-six sandhill cranes in this population affiliation were tagged, 92% were lesser sandhill cranes, 4% were greater sandhill crane, and 4% were unclassified based on results from mtDNA analyses. Based on morphometry, 88% were lesser sandhill crane and 12% were Canadian sandhill crane.

MANAGEMENT IMPLICATIONS

The Wyoming Game and Fish Department, Pacific and Central Flyway RMP greater sandhill crane subcommittees, Central Flyway MCP sandhill crane subcommittee, and the Service need to decide what to do about the excess harvest of cranes in the Johnson and Sheridan County portion of MCP hunt Area 7. Should all the sandhill cranes counted and measured in Johnson, Sheridan, and Natrona Counties be classified as RMP greater sandhill cranes? If so, are these cranes going to be officially counted during the RMP Fall Population Survey?

The WGFD encourages the Service to do some genetic testing.

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R. Raftovich, Fish and Wildlife Service, personal communication.

R. C. Drewien, Hornocker Wildlife Research Institute, retired, personal communication.

WY Bird List Serve

Table 1. Harvest statistics for MCP sandhill crane hunt Area 7 in Johnson and Sheridan counties, 2009-12.					
	NUMBER OF PERMITS	ACTIVE CRANE	NUMBER OF DAYS	RETRIEVED	SEASON
County	ISSUED	HUNTERS	AFIELD	HARVEST	DATES
Johnson					
2009	Unk	Unk	0	0	9/19-11/15
2010	Unk	0	0	0	9/18-11/14
2011	Unk	0	0	0	9/17-11/13
2012	Unk	6	13	0	9/15-11/11
Sheridan					
2009	Unk	Unk	13	0	9/19-11/15
2010	Unk	4	11	0	9/18-11/14
2011	Unk	5	14	5	9/17-11/13
2012	Unk	4	16	30	9/15-11/11
Source: USFWS. Division of Migratory Bird Management, Branch of Harvest Surveys, 2010-13.					

Table 2. Crane counts in Johnson, Natrona and Sheridan Counties during 2013.

	July	Sept	Oct
Dates	5-6, 8, 10	9, 11	12
Natrona County			
33-Mile Area	17	139	889
Bessemer Bend Area	0	0	0
Total	17	139	889
East of I-25	0	0	0
West of I-25	17	139	889
Johnson County			
Barnum Area	24	0	0
Buffalo	4	74	0
Clear Creek Area	0	0	0
Crazy Women Area	4	0	0
Mayoworth Area	8	9	0
Sussex Area	5	152	0
Total	45	235	0
East of I-25	9	226	0
West of I-25	36	9	0
Sheridan County			
Clear Creek Area	0	0	0
Dayton Area	13	144	67
Piney/Prairie Dog/Goose Creek Area	0	6	0
Total	13	150	67
East of I-25	0	6	0
West of I-25	13	144	67
3-County Total	**75**	**524**	**956**
East of I-25	9	232	0
West of I-25	66	292	956

Table 3. Sandhill crane mid-toe track measurements in Johnson, Natrona and Sheridan Counties during 2013.						
		July	Sept	Oct		
Natrona County						
33-Mile Area		NA	A	B		
Bessemer Bend Area		NA	NA	NA		
A	9/16/2013	N=28	Range 94-110mm		Ave 101.0mm	
B	10/12/2013	N=48	Range 94-113mm		Ave 100.7mm	
Johnson County						
Barnum Area		NA	NA	NA		
Buffalo		NA	A1	NA		
Clear Creek Area		NA	NA	NA		
Crazy Women Area		NA	NA	NA		
Mayoworth Area		NA	NA	NA		
Sussex Area		NA	A2	NA		
A1	9/9/2013	N=13	Range 96-112mm		Ave 102.8mm	
A2	9/12/2013	N=45	Range 94-112mm		Ave 102.0mm	
Sheridan County						
Clear Creek Area		NA	NA	NA		
Dayton Area		NA	NA	B		
Piney/Prairie Dog/Goose Creek Area		NA	NA	NA		
B	10/12/2013	N=10	Range 94-104mm		Ave 98.0mm	
3-County Total (by month)						
A	9/9-16/2013	N=86	Range 94-112mm		Ave 101.8mm	
B	10/12/2013	N=58	Range 94-113mm		Ave 100.2mm	
Total		N=144	Range 94-113mm		Ave 101.2mm	
Benning et al. 1997						
Lesser			Range 78-92mm		Ave 86.6mm	
Canadian			Range 89-103mm		Ave 96.1mm	
Greater			Range 94-123mm		Ave 107.2mm	

Central Flyway Council

Northwest Territories Alberta Saskatchewan Montana North Dakota Wyoming
South Dakota Nebraska Colorado Kansas Oklahoma New Mexico Texas

www.flyways.us/central

Recommendation No. 9

Pertaining to:

Extension of area open to hunting of Mid-Continent Population (MCP) Sandhill Cranes in Wyoming.

Recommendation:

The Central Flyway Council recommends that the open area for hunting of (MCP) sandhill cranes be extended westward into Johnson and Sheridan Counties of Wyoming. The Wyoming crane hunt area 7 framework, the area open to hunting of MCP sandhill cranes, be changed to the following.

All of Campbell, Converse, Crook, Goshen, Laramie, Niobrara, Platte and Weston Counties; that portion of Johnson County east of Interstate Highways 25 and 90; and that portion of Sheridan County east of Interstate Highway 90.

Season length in the proposed open area will be no more than 58 days with a daily bag limit of no more than 3 birds.

Justification:

Interested hunters have requested extension of MCP sandhill crane hunt boundary into Johnson and Sheridan Counties of Wyoming. This population is currently hunted in eight eastern Wyoming Counties. An unknown number of cranes are occurring during fall in the non-hunt area west of Campbell County.

MCP sandhill cranes have traditionally stopped at very few specific locations in Wyoming during the fall migration; there are no known locations in Johnson or Sheridan Counties. The vast majority of MCP sandhill cranes migrating through Wyoming do so at high elevation without stopping making most hunting for this population opportunistic. All cranes harvested will be assumed to be MCP sandhill cranes.

During the 1975-2005 period, the average number of federal MCP sandhill crane permits issued in Wyoming was 44. The estimated number of active MCP sandhill crane hunters was 12. The estimated retrieved harvest of MCP sandhill cranes was 7.

Although the proposed change will provide additional hunting opportunity for sandhill cranes by expanding the areas open to hunting, the extension is expected to produce few new crane hunters. The average annual increase in harvest would be approximately 5 cranes.

Montana's southern and western boundary for MCP sandhill crane hunting is Interstate Highway 90. Although low, there is some potential for Rocky Mountain Population (RMP) greater sandhill cranes to occur east of the Big Horn Mountains in Wyoming. Limiting the extension to east of Interstate Highways 25 and 90 should reduce the potential harvest of RMP greater sandhill cranes to near zero. The nearest RMP greater sandhill crane hunt area in Wyoming is on the west side of the Big Horn Mountains.

The Wyoming Game and Fish Department will manage the hunt area extension in accordance with the Use Guidelines in the 2006 Management Guidelines for the Mid-Continent Population of sandhill cranes. This recommendation addresses the requirement that proposed changes in federal hunting regulation frameworks be endorsed by the appropriate Council(s) prior to consideration by the U.S. Fish and Wildlife Service.

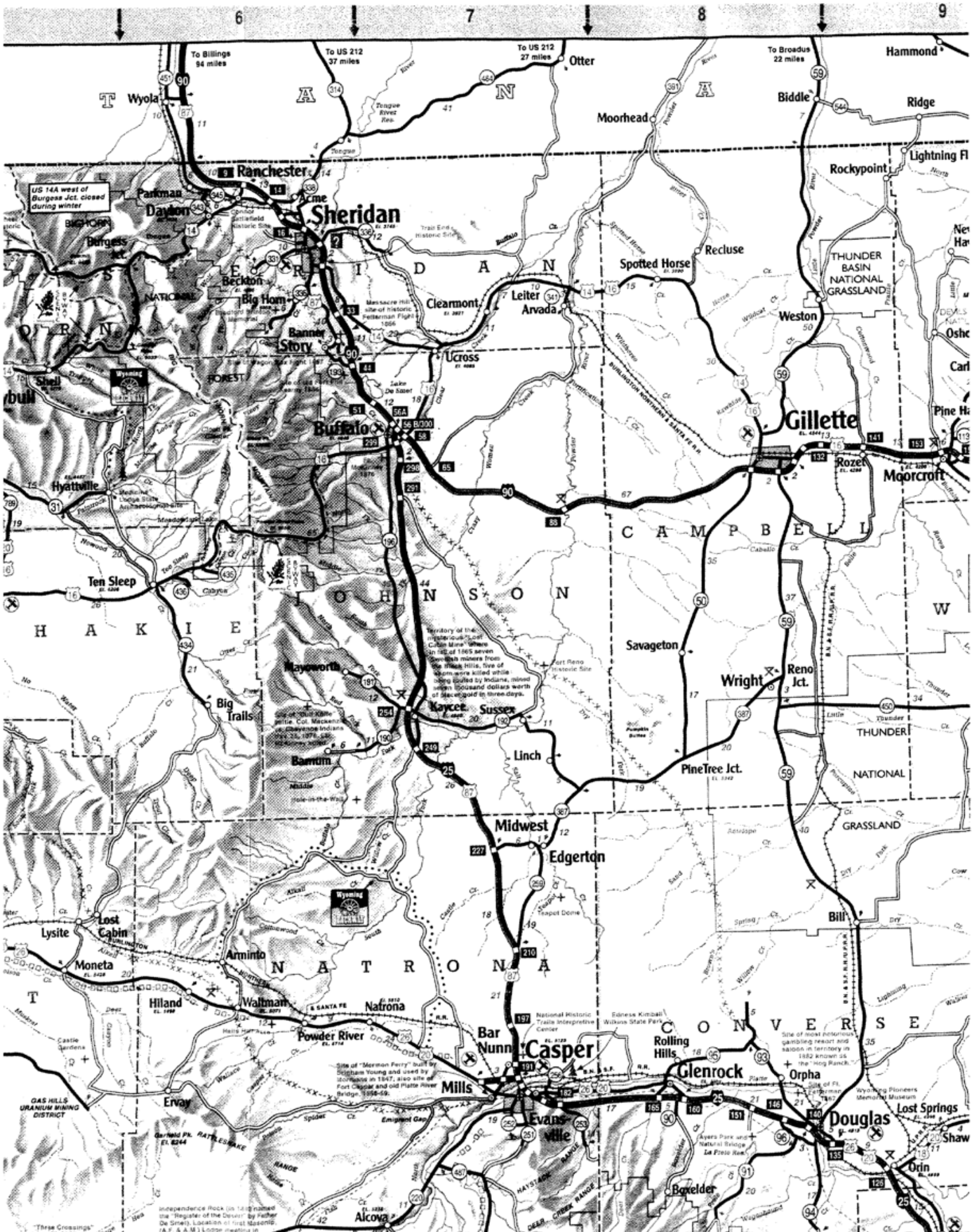
Adopted by:

Central Flyway Webless Migratory Game Bird Technical Committee
Corpus Christi, Texas
March 2, 2009

_____

Central Flyway Council
Arlington, Virginia
March 17, 2009

TC contact: Larry Roberts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7
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To Billings 94 miles
To US 212 37 miles
To US 212 27 miles
Otter
To Broadus 22 miles
Hammond
Wyola
Moorhead
Biddle
Ridge
Lightning Fl
Ranchester
Rockypoint
US 14A west of Burgess Jct. closed during winter
Parkman
Dayton
Acme
Sheridan
Burgess Jct.
Recluse
Spotted Horse
THUNDER BASIN NATIONAL GRASSLAND
Beckton
Big Horn
Clearmont
Leiter
Arvada
Weston
Banner
Story
Ucross
Shell
Buffalo
Gillette
Rozet
Moorcroft
Hyattville
C A M P B E L L
Ten Sleep
H A K I E
J O H N S O N
Savageton
Mayoworth
Wright
Reno Jct.
Big Trails
Kaycee
Sussex
THUNDER
Barnum
Linch
PineTree Jct.
NATIONAL
Hole-in-the-Wall
Midwest
GRASSLAND
Edgerton
Teapot Dome
Bill
Lysite
Lost Cabin
Moneta
Arminto
N A T R O N A
Hiland
Waltman
Natrona
Powder River
Bar Nunn
Casper
Rolling Hills
C O N V E R S E
Glenrock
Orpha
Mills
Ervay
Evansville
Douglas
Lost Springs
Shaw
GAS HILLS URANIUM MINING DISTRICT
Garfield Pk.
RATTLESNAKE RANGE
Boxelder
Orin
Alcova
MEDICINE
Glen

MID-CONTINENT POPULATION OF SANDHILL CRANES

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

SURVEYS

No cranes affiliated with this population are thought to nest in Wyoming. Significant spring and fall staging has been documented the last few years. Seven to 15 thousand cranes have stopped to rest during daylight hours at Keyhole Reservoir the last few years around the 10th to 15th of October. Most of the migration bypasses to the east of Wyoming. Accordingly, the Department does not conduct fall surveys of mid-continent sandhill cranes. Some flocks migrate through eastern WY and provide largely opportunistic hunting opportunities.

In 2014, the Department initiated the first coordinated spring mid-continent sandhill crane survey in Goshen County. On March 24 and 25, cranes were counted coming to or leaving two roost sites on Table Mountain WHMA (Table 1). The MCP crane population has remained stable and within established management objectives.

A survey to determine subspecies and population affiliation of sandhill cranes in Natrona, Johnson, and Sheridan counties was initiated in 2013. The results of this population status and track measurement survey are attached to the RMP greater sandhill crane JCR in Roberts 2013.

CRANE HARVEST

Recent harvest statistics for mid-continent sandhill cranes are summarized in Table 2. During the 2013 season, 41 sandhill cranes were harvested. These cranes typically migrate through Wyoming in a few days and do not stage in predictable concentrations. The timing of migration varies from year to year. Consequently, most hunting is opportunistic.

During the 2009 hunting season, Wyoming was allowed to expand the mid-continent sandhill crane hunt area to include that portion of Johnson County east of Interstate Highway 25 from the Natrona County line north to Interstate Highway 90 and east of Interstate Highway 90 from the intersection with Interstate Highway 25 to the Sheridan County line; and that portion of Sheridan County east of Interstate Highway 90.

There was concern that the crane harvest in the expanded hunt area would include an unknown proportion of RMP greater sandhill cranes. Wyoming was not required to verify subspecies composition in the field, but the Department was asked to track hunter activity and harvest. The USFWS indicated there would be no additional requirements provided harvest remained nominal

and did not exceed 4-5 cranes per year. No hunter activity was reported in Johnson County during the first 3 years. Six hunters and no harvest were reported in 2012. A limited amount of hunter activity has occurred in Sheridan County. The five cranes estimated to be taken there in 2011 were the first crane harvests reported in the expanded portion of the general hunt area (Table 3). However, 30 sandhill cranes were taken in Sheridan County in 2012 and that exceeded the nominal harvest acceptable to the Pacific Flyway and the Service, resulting in a requirement to document subspecies composition based on track measurements in summer, 2013. The estimated harvest in Johnson County in 2013 exceeded the nominal harvest acceptable to the Pacific Flyway and the Service.

All track measurements during the 2013 survey exceeded the minimum track length for greater sandhill cranes. Consequently, the crane present in the expanded hunt area during September and October of 2013 were determined to be affiliated with the RMP of greater sandhill cranes and the mid-continent crane hunt in the expanded area was eliminated after the 2013 crane season.

RECOMMENDATIONS

1). Continue the season structure as it presently exists.
2). Continue coordinated spring mid-continent sandhill crane survey at Table Mountain WHMA.
3). Continue monitoring RMP crane distribution and do crane track measurements in Platte and Goshen counties.

Table 1. Coordinated spring Mid-continent sandhill crane survey counts, WY.

	MEAN 2014	2015	2016	2017	2018	5 - YEAR MEAN	OBJECTIVE
TABLE MOUNTAIN WHMA	2952	N/A	N/A	N/A	N/A	N/A	N/A

Source: WGFD. Unpublished data

Table 2. Harvest statistics for recent hunting seasons for Mid-continent sandhill cranes.

YEAR	NUMBER OF PERMITS ISSUED	NUMBER OF ACTIVE HUNTERS	RETRIEVED HARVEST	SEASON DATES	TOTAL DAYS
2004[a]	61	16	4	09/18 - 11/14	58
2005[a]	68	24	16	09/17 - 11/13	58
2006[a]	78	25	20	09/16 - 11/12	58
2007[a]	58	19	20	09/15 - 11/11	58
2008[a]	73	24	24	09/13 - 11/9	58
2009[a]	62	67	8	09/19 - 11/15	58
2010[a]	86	29	25	09/18 - 11/14	58
2011[a]	86	41	20	09/17 - 11/13	58
2012[a]	102	39	41	09/15 - 11/11	58
2013[a]	106	35	41	09/14 - 11/10	58
TEN-YEAR AVERAGE	78	32	22		

[a] Preliminary

Source: USFWS. Status and harvest of sandhill cranes; mid-continent and Rocky Mountain populations, 2014.

Table 3. Harvest statistics for Area 7 hunting of Mid-continent sandhill cranes, 2013.

County	NUMBER OF PERMITS ISSUED	ACTIVE CRANE HUNTERS[a]	NUMBER OF DAYS AFIELD	RETRIEVED HARVEST
Cambell		0	0	0
Converse		0	0	0
Crook		0	0	0
Goshen		9	51	2
Johnson		3	11	16
Laramie		0	0	0
Niobrara		2	3	0
Platte		6	19	9
Sheridan		2	3	5
Weston		0	0	0
Unknown		13	0	9
TOTAL	106	35	87	41

Source: USFWS. Division of Migratory Bird Management, Branch of Harvest Surveys, 2014.

[a] Totaling the individual courty numbers results in more hunters than indicated in the total number of hunters, some hunters hunted in more than one county.

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CENTRAL MANAGEMENT UNIT OF MOURNING DOVES

PERIOD COVERED: September 1, 2013- August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

CALL COUNT SURVEY

Call-counts have been the chief index used to monitor mourning dove population status throughout the U.S. since 1953. The entire state of Wyoming is within the Central Management Unit (CMU). Fourteen states comprise the CMU. Except for states participating in a reduced effort, the call-count survey ended after the 2013 survey.

TRAPPING AND BANDING STUDIES

The National Mourning Dove Task Force recommended all states not currently banding mourning doves begin a banding program in 2008. Regional banding data provides specific population information for each management unit to support implementation of both the Mourning Dove National Strategic Harvest Management Plan and relevant interim harvest strategies. In 2004, the USFWS SRC required a mourning dove harvest management strategy for each management unit. In 2009, Wyoming's banding goals for the 4 BCRs in the state combined was 191 after hatching year (AHY) and 202 hatching year (HY) (393 total) mourning doves each year.

In 2014, mourning doves were trapped and banded at one location in BCR 17 (Casper) and two locations in BCR 18 (Cheyenne and Downar Bird Farm). Department personnel banded 345 mourning doves (Table 1). See the attached Chapter 33 Permit 2014 Annual Report for mourning dove banding details. No recoveries of doves banded in Wyoming in 2013 have been reported to date.

HARVEST

Weather conditions in late August and early September greatly influence dove harvest in Wyoming. Weather conditions were moderate in 2013 and flocks of doves remained in the state throughout September and much of October.

The dove harvest and days per hunter decreased in 2013 compared to data from the year prior (Table 2). The number doves harvested per hunter was below the most recent 10-year average. We continue to rely on State harvest estimates, as confidence intervals of HIP-derived estimates for hunter activity and harvest continue to be wide (Table 3).

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

2. If resources allow, participate in the national dove banding program.

Table 1. Mourning doves banded by WGFD personnel and encounters to date, 8/31/2014.

BAND	ENCOUNTER		AGE			SEX			
DATE	DATE	LOCATION	UNK	HY	AHY	UNK	MALE	FEMALE	TOTAL
0/0/2007		Casper	0	1	4	1	2	2	5
8/16/2007	2/20/2008	Hermosillo, MX			1		1		1
0/0/2008		Casper	1	21	24	0	26	20	46
0/0/2012		Cheyenne	0	11	25	11	15	10	36
0/0/2012		Downar	1	15	17	15	14	4	33
0/0/2013		Casper	0	1	2	1	2	0	3
0/0/2013		Cheyenne	57	34	35	91	26	9	126
0/0/2013		Downar	1	0	3	1	2	1	4
0/0/2013		Speas	3	4	9	7	6	3	16
0/0/2014		Casper	0	90	89	100	50	29	179
0/0/2014		Cheyenne	1	27	87	28	52	35	115
0/0/2014		Downar	3	14	34	17	24	10	51
Total Banded			67	218	329	272	219	123	614
Total Encountered					1		1		1

Table 2. Statewide mourning dove harvest in Wyoming.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	DOVE HARVEST	DOVES/ HUNTER	BAG/ POSSESSION	SEASON LENGTH (DAYS)
2004	2,471	7,645	3.09	32,142	13.01	15/30	60
2005	3,194	9,080	2.84	44,280	13.86	15/30	60
2006	2,461	7,141	2.90	32,807	13.33	15/30	60
2007	2,351	8,256	3.51	36,670	15.60	15/30	60
2008	2,315	7,482	3.23	29,994	12.96	15/30	60
2009	1,949	5,598	2.87	22,278	11.43	15/30	60
2010	2,528	8,096	3.20	28,906	11.43	15/30	70
2011	2,291	6,735	2.94	23,607	10.30	15/30	70
2012	2,263	7,260	3.21	28,402	12.55	15/30	70
2013	2,310	6,730	2.91	23,485	10.17	15/30	70
TEN-YEAR AVERAGE	2,413	7,402	3.07	30,257	12.46		

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2005-2014.

Table 3. HIP estimates of mourning dove harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	DOVE HARVEST	HARVEST/ HUNTER
2004[a]	3,200+/-27%	8,700+/-34%	2.72	43,700+/-46%	13.7+/-53%
2005[a]	2,500+/-27%	6,600+/-27%	2.64	34,100+/-31%	13.6+/-41%
2006[a]	2,300+/-29%	6,500+/-36%	2.83	29,500+/-37%	12.9+/-47%
2007[a]	4,000+/-20%	8,800+/-24%	2.20	42,600+/-27%	10.6+/-33%
2008[a]	2,500+/-25%	5,900+/-33%	2.36	30,100+/-36%	11.9+/-44%
2009[a]	2,300+/-27%	5,800+/-31%	2.52	20,600+/-31%	8.8+/-41%
2010[a]	2,700+/-26%	7,100+/-32%	2.63	32,100+/-36%	12.0+/-45%
2011[a]	2,700+/-30%	5,100+/-38%	1.89	25,000+/-52%	9.3+/-60%
2012[a]	2,700+/-32%	6,300+/-38%	2.33	25,300+/-40%	9.3+/-51%
2013[a]	3,100+/-17%	7,200+/-20%	2.32	34,200+/-19%	10.9+/-26%
TEN-YEAR AVERAGE	2,800	6,800	2.44	31,720	11.30

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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WYOMING GAME AND FISH DEPARTMENT
CHAPTER 33 PERMIT
FOR SCIENTIFIC RESEARCH, EDUCATIONAL/DISPLAY, OR SPECIAL PURPOSES

ID: 869 Larry Roberts
WGFD
3030 Energy Lane
Casper, WY 82604

2014 ANNUAL REPORT

Mourning Dove Banding Activities
Done by Wyoming Game and Fish Department Personnel

In the 2009, Mourning dove banding needs assessment prepared by Dave Otis, Wyoming was assigned mourning dove banding goals (Table 1).

Optimal Sample Sizes WY

Bird Conservation Region	BCR	AHY	HY	Total
Northern Rockies	10	64	67	**131**
Southern Rockies/CO Plateau	16	3	4	**7**
Badlands & Prairies	17	85	90	**175**
Shortgrass Prairie	18	39	41	**80**
State Totals		**191**	**202**	**393**

Table 1. Mourning dove banding goals for Wyoming and by BCR strata.
AHY - After hatch year, HY - Hatch year

In 2014, mourning doves were trapped and banded at one location in BCR 17 and two locations in BCR 18 (Table 2). Department personnel banded 345 mourning doves. In addition, 4 doves

banded in 2012 were recaptured at Downar. Recaptures at Cheyenne included two doves banded in 2012 and 10 doves banded in 2013. There was no prior year or other location recaptures at the Casper location.

Table 2. Mourning dove banding accomplishments for 2014 by WGFD personnel.

BCR	LOCATION	AHY	HY	U	AHY+HY
17	Casper RO	89	90	0	179
18	Cheyenne HQ	87	27	1	114
18	Downar	34	14	3	48
18	Total	121	41	4	162
	Grand Total	210	131	4	341

In 2014, mourning doves were also trapped and banded at Seedskadee National Wildlife Refuge by Fish and Wildlife Service personnel (Table 3). Service banding occurred under Chapter 33 Permit 874. In total 443 mourning doves were banded in Wyoming this year.

Table 3. Mourning dove banding accomplishments for 2014 by Service and WGFD personnel.

BCR	LOCATION	AHY	HY	U	AHY+HY
10	Seedskadee	90	4	4	94
17	Casper RO	89	90	0	179
18	Cheyenne HQ	87	27	1	114
18	Downar	34	14	3	48
18	Total	121	41	4	162
	Grand Total	300	135	8	435

Reports

Banding field records and schedules are kept in the SWAHM office in Cheyenne and with the Migratory Game Bird Biologist in Casper.

Banding Rational

The primary justification for an operational national mourning dove banding program is to provide data necessary for a long -term informed ha requires development of demographic population models which in turn depend on estimates of population survival and recruitment rates as well as harvest rates. These estimates are derived wholly or in part from banding data. Population estimates derived from the model have replaced population trend estimates derived from national call count surveys.

Banding Station Reports

Casper Region Office
June-August, 2014

Location: 44 49 10 N, 106 22 58 W, NACA0, elevation 5168 feet, Wyoming Game and Fish Department Casper Regional Office, Casper, Natrona County, Wyoming. The trap site was located at the back of the Casper office compound next to a new storage building. The site was

relatively secluded with a lot of vertical structure in close proximity. The substrate was sandy soil with a few rocks. Forbs and grasses were whacked off near ground level with a manual cutter several times during the baiting and banding period. The trap site and adjacent area was roped off to exclude any other use.

Baiting with white proso millet began June 3. The bait was replenished most mornings and throughout trap days if needed. Sixteen modified Kniffin traps were set July 3. Two trap configurations were used, two traps back to back or 4 traps in a quad set. Trap success was about equal for the two configurations. It appeared that doves in the trap attracted additional doves to the trap. In an attempt to simulate this apparent success during one trap day one decoy was placed in one trap and two decoys in another. No doves were attracted to these traps and this strategy was abandoned that day. Although there were several non-target species using the bait site and traps; including several sparrow and "black bird" species, rock doves, and cottontail rabbits, the non-targets did not overwhelm the doves as in the past at local or at other trap sites. That is, after a rock dove nest about 10 feet from the trap site was removed. No rock doves were trapped but they sure ate bait when the traps weren't set.

The traps were set for varying hours and days between July 3 and August 16. The traps were set on any week day or weekend between 0600 and 1900. The set traps were checked every 55 to 60 minutes. Trap success was highest during overcast days with intermittent showers and between 1300 and 1600. After each session the traps were moved off the bait and leaned against the storage shed, about 10-15 feet away.

At this location banded 179 mourning doves: 90 HY, 89 AHY, 50 males, 29 females, and 100 of unknown sex. Although there were 17 local within-year recaptures, there was no prior year or other location recaptures.

The following 3 A band sequences were placed on the 179 mourning doves banded and reported to the USGS Bird Banding Laboratory: 1693-21005 through 1693-21100 and 1823-24301 through 1823-24384.

Three Eurasian collared-doves were trapped and euthanized. The trapping and banding project at this trap site resulted in no mourning dove mortalities.

There were no predation problems at this trap site. However, after a feral cat was observed near the bait site a live trap was placed nearby. The trap was tripped a few times without trapped anything but the cat was not seen again.

General comments: One mourning dove was released after data collection but not banded, two large males escaped the pillow case and 2 or 3 doves escaped the trap by going out a funnel. There are probably a number of reasons why the Casper site was more successful this year, but one of the major reasons has to be disturbance reduction.

No changes are proposed for 2015, other than hope for the same site with the same exclusions.

Cheyenne, WY Game and Fish Headquarters Office
June-August, 2014

Location: 41 10 07 N, 104 50 32 W, Wyoming Game and Fish Headquarters Office, Cheyenne, Laramie County, Wyoming. Trapping took place in a "backyard habitat" area with a mixture of grass, shrubs and trees. Grass was mowed down several times prior to and during trapping periods to make area more favorable for doves. The area was also blown free of hulls and other debris every week or two using a leaf blower. Traps were visible from offices of banders, so no doves spent excessive amounts of time in the traps.

Eight kniffin traps were used in various configurations, baited with white millet. There was also a water source placed nearby, and a spinning-wing dove decoy was placed on the ground nearby. Baiting began on June 2, 2014. Trapping and banding began on July 1, and ran through August 20. There was one weekend day when doves were banded, but most banding was done during regular business hours on weekdays, and traps were turned over about 5 p.m. each weekday, or when there would be periods of time when no banding could be done.

At this location we banded 115 doves: 27 juveniles, 52 males, 35 females, and one of unknown age or sex. Thirteen of these were recaptured at this site, with two being trapped once more. Ten that were banded here in 2013 were recaptured. Two birds from 2012 were recaptured this year.

The following 3 A band sequence was placed on 100 mourning doves and was reported to the USGS Bird Banding Laboratory: 1823-24101 through 1823-24200. The following 3 B band sequence was placed on 15 mourning doves and was reported to the USGS Bird Banding Laboratory: 1623-51763 through 1623-51777. Recaptures of the birds that were caught originally in 2012 or 2013 at this site were reported, but recaptures of birds banded in 2014 were not.

Large numbers of house sparrows and Red-winged and Yellow-headed blackbirds were attracted to the bait. Traps were monitored and birds that couldn't escape were released periodically. There was one mortality of a Red-winged Blackbird for unknown reasons. One unbanded Mourning Dove died nearby, probably from a window strike. Some doves were reluctant to approach the traps when blackbirds were present, especially when they were jumping around in the traps. Other creatures that were seen feeding on the bait during the trapping included: rabbits, ground squirrels, grackles, cowbirds, pigeons, Eurasian collared doves, and crows. There were no predation problems at this trap site.

The greatest obstacle to doves entering the traps were the blackbirds that would enter the traps and then became extremely active to the point that doves wouldn't like to approach those traps with blackbirds in them. Trapping efficiency would be increased by being able to remotely lift one side of the trap so the blackbirds could escape while not having to scare off doves with human presence. At times the sheer number and activity of house sparrows would also make the doves nervous and they wouldn't stay around long.

Downar Bird Farm Dove Banding Summary for 2014

Baiting with millet started on June 1. Bait station was used immediately by doves, cowbirds red-winged and yellow-headed blackbirds, English, Lark and Vesper sparrows and a few ECDs. The bait station was on a gravel parking area within the Downar Bird farm complex.

Trapping began on July 1 and ended on August 16. 51 doves were banded and there were 4 doves recaptured from banding done in 2012. HY doves consisted of only 27% of the total banded. AHY doves were heavily weighted on the male side as 27 of the 37 AHY birds were

male. Banding success diminished after 7/24 with only 6 birds banded between 7/25 and 8/16. There was 1 ECD trap mortality.

I surmise that activity around the trap site contributed to lower numbers than expected. Observations of baiting caused anticipation of larger success during the banding season. Other factors that may have had an effect were; clouds of blackbirds and sparrows at the traps everyday and the trap station may have been in an area frequented by bachelor groups.

Literature Cited

Otis, D. 2009. Mourning dove banding needs assessment. USGS, Iowa Cooperative Fish and Wildlife Research Unit. 22pp.

CENTRAL MANAGEMENT UNIT OF WILSON'S SNIPE

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, snipe populations slightly increased in Canada from 1966-2012, although snipe decreased in the United States and Wyoming during the same period.

HARVEST

Snipe hunting and harvest in Wyoming have varied markedly during the past 10 years (Table 1). Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

2. Continue to support wetlands projects that provide habitat for common snipe.

Table 1. HIP estimates of snipe harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	SNIPE HARVEST	SEASONAL SNIPE HARVEST/ HUNTER
2004[a]	300+/-74%	500+/-66%	1.67	400+/-68%	1.4+/-101%
2005[a]	100+/-102%	300+/-90%	3.00	400+/-152%	2.8+/-183%
2006[a]	100+/-142%	300+/-174%	3.00	100+/-170%	1.7+/-222%
2007[a]	100+/-172%	100+/-136%	1.00	200+/-182%	2.8+/-250%
2008[a]	100+/-130%	200+/-109%	2.00	300+/-133%	1.8+/-186%
2009[a]	<50+/-71%	<50+/-92%	1.00	100+/-94%	6.8+/-118%
2010[a]	400+/-89%	600+/-92%	1.50	1,200+/-129%	3.2+/-157%
2011[a]	100+/-184%	200+/-174%	2.00	400+/-179%	4.1+/-256%
2012[a]	300+/-70%	600+/-78%	2.00	600+/-87%	1.9+/-112%
2013[a]	<50+/-53%	100+/-62%	2.00	100+/-84%	2.9+/-99%
AVERAGES	160	295	1.92	380	2.90

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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Snipe – Central Management Unit

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Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2014. The North American Breeding Bird Survey, results and analysis 1966-2012. Version 02.19.2014. USGS, Patuxent Wildlife Research Center, Laurel, MD.

CENTRAL MANAGEMENT UNIT - VIRGINIA AND SORA RA ILS

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Populations of Virginia rail have declined in some locations, particularly the Midwest and Northeast where wetland losses and degradation have been severe. Based on the most recent data from the North American breeding bird survey, Virginia rail populations have generally increased in the United States and Canada from 1966-2012, but decreased in Wyoming over the same period. During the same period, sora rails increased in Wyoming and Canada, but decreased in the United States. Soras are the most abundant and widely distributed of the North American rails.

HARVEST

Rail harvest and hunting in Wyoming remained low during the past 10 years (Table 1). Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

2. Continue to support wetlands projects that provide habitat for rails.

Table 1. HIP estimates of rail harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	RAIL HARVEST	SEASONAL RAIL HARVEST/ HUNTER
2004[a]	<50+/-153%	<50+/-153%	1.00	<50+/-153%	1.0+/-216%
2005[a]	0	0	0.00	0	0
2006[a]	0	0	0.00	0	0
2007[a]	0	0	0.00	0	0
2008[a]	<50+/-160%	<50+/-160%	1.00	<50+/-160%	1.0+/-227%
2009[a]	0	0	0.00	0	0
2010[a]	<50+/-155%	<50+/-155%	1.00	0	0
2011[a]	0	0	0.00	0	0
2012[a]	<50+/-150%	<50+/-150%	1.00	0	0
2013[a]	<50+/-117%	<50+/-128%	1.00	<50+/-167%	1.5+/-204%
AVERAGE	25	25	0.50	15	0.4

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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Rails – Central Management Unit

Raftovich, R.V., S. Chandler, and K.A. Wilkins. 2014. Migratory bird hunting activity and harvest during the 2012-13 and 2013-14 hunting seasons. USFWS. Laurel, MD. 63 pp.

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AMERICAN COOT POPULATION

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, the coot population increased in Canada from 1966-2012, but decreased in Wyoming and the United States over the same period.

HARVEST

The number of coot hunters, harvest decreased, and hunter days increased last year (Table 1). For the most part, coots are not actively hunted in Wyoming and most harvest is incidental to other types of waterfowl hunting. Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

Table 1. HIP estimates of coot harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	COOT HARVEST	SEASONAL COOT HARVEST/ HUNTER
2004[a]	100+/-161%	100+/-153%	1.00	200+/-119%	2.9+/-200%
2005[a]	100+/-194%	100+/-194%	1.00	100+/-194%	1.0+/-275%
2006[a]	100+/-125%	500+/-171%	5.00	900+/-179%	9.4+/-219%
2007[a]	<50+/-166%	<50+/-166%	1.00	<50+/-166%	1.0+/-234%
2008[a]	200+/-111%	200+/-111%	1.00	200+/-195%	1.0+/-224%
2009[a]	<50+/-106%	<50+/-112%	1.00	<50+/-195%	4.5+/-154%
2010[a]	200+/-127%	200+/-108%	1.00	600+/-115%	3.3+/-171%
2011[a]	200+/-129%	500+/-148%	2.50	100+/-124%	0.5+/-179%
2012[a]	400+/-65%	1800+/-87%	4.50	3200+/-134%	9.2+/-149%
2013[a]	100+/-108%	300+/-98%	3.00	600+/-120%	4.0+/-161%
AVERAGE	150	380	2.10	600	3.7

Source: USFWS. HIP final and preliminary[a] harvest estimates.

Bibliography

American Coot

Raftovich, R.V., S. Chandler, and K.A. Wilkins. 2014. Migratory bird hunting activity and harvest during the 2012-13 and 2013-14 hunting seasons. USFWS. Laurel, MD. 63 pp.

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AMERICAN CROW

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the North American breeding bird survey trend results, crows have increased from 1996-2012 throughout the United States, but decreased in Canada and Wyoming.

HARVEST

Recent crow seasons are summarized in Table 1. 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 for a harvest survey. The limited hunting that takes place has had essentially no impact on crow populations overall.

RECOMMENDATIONS

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

Table 1. 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

Source: WGFD, Migratory Game Bird Regulations.

Bibliography

American Crow

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Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2014. The North American Breeding Bird Survey, results and analysis 1966-2012. Version 02.19.2014. USGS, Patuxent Wildlife Research Center, Laurel, MD.

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TRUMPETER AND TUNDRA SWAN POPULATIONS

PERIOD COVERED: September 1, 2013- August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

The Migratory Game Bird section expends time addressing swan issues, especially through the Flyway process. However, the Nongame section oversees the trumpeter swan program. Swans are not hunted in Wyoming. Refer to Nongame completion reports for swan information.

WATERFOWL NESTING STRUCTURES

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

It is our intent to complete a comprehensive inventory for inclusion in a future JCR. The report will contain an inventory of structures and their condition in each region, including use by waterfowl and recent and anticipated structure maintenance and management. The report will identify the structures that will continue to be maintained.

RECOMMENDATION:

1. Update goose structure database.

2. Complete the nesting structure status report.

3. Retain a manageable number of effective structures and provide adequate maintenance.

BUMP-SULLIVAN MANAGED GOOSE HUNT

PERIOD COVERED: September 1, 2013 - August 31, 2014

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Springer/Bump-Sullivan Reservoir and Table Mountain Wildlife Habitat Management Areas (WHMA) are the principal public goose hunting areas in Goshen County. The Bump-Sullivan area has been a popular goose hunting area for over 50 years. A Managed Goose Hunt was begun there during the 1993-94 season to reduce competition among hunting parties and improve the quality of their hunt.

Due to recent drought conditions and lack of water in Springer and Bump-Sullivan reservoirs, goose hunting opportunities and interest have declined within the managed hunt boundaries. For the 2011/12 dark goose hunting season in Goshen County the WGFD decided not to require a permit in order to participate in the Bump-Sullivan Managed Goose Hunt. This decision was based on a low participation rate the previous few years. Hunters were not required to register in any way prior to goose hunting in the managed goose hunt area. However, hunters were (and are) still required to hunt only from the established pits and blinds. Pit/blind selection was first-come-first-serve. The hunt will continue to be operated on a first-come, first-served basis until such time as demand may rise again to the point that access needs to be managed through a permitting system.

RECOMMENDATIONS

1. Support efforts to supply water to Bump-Sullivan Reservoir.

2. Annually mow a path to each pit and the parking areas. This reduces the effort required to haul decoys and equipment and creates a path to each pit that is easy to follow in the dark prior to shooting hours.

3. Continue annual pit maintenance.

4. Replace lower section of pits as needed.