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SANDHILL CRANE HUNTING IN NEBRASKA – PREDICTED ECONOMIC EFFECTS

by

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SANDHILL CRANE HUNTING IN NEBRASKA – PREDICTED ECONOMIC EFFECTS

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Abstract

Following the Migratory Bird Treaty Act of 1918 a major rebound in the Mid-Continent Sandhill Crane population began. States allowing hunting have seemingly profited from this segment of wildlife management, except for Nebraska. Being the only state in the Central Flyway not to allow hunting of Sandhill Cranes, Nebraska has been ignoring possible gains from this economic sector. Although the current economic gain from recreation and tourism of Sandhill Cranes is near \$10.33 million, the predicted profits of hunting could add more inflow to the economy. Using the U.S. Fish and Wildlife Status and Harvest Report on Sandhill Cranes from 2013 data on Sandhill Crane active hunters and estimated harvest will be used. This data along with data gathered from reviewed articles will lead to an estimated total economic profit. A discussion on ‘hunting as a disturbance’ will also be included.

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Introduction

The North American continent is home to four distinct populations of Sandhill Cranes, the Mid-Continent population, Rocky Mountain population of Greater Sandhill Cranes, the Lower Colorado River Valley population, and the Eastern Population of Sandhill Cranes (Kruse 2013). Nebraska is included in the Mid-Continent Population along with portions Colorado, Kansas, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming (Kruse 2013). Nebraska is home to the species of cranes *Grus Canadensis*, known to converge near the Platte River Basin migrating to their northern feeding grounds stretching through parts of Alaska and Siberia (NWF Sandhill Crane). About 80% of all Sandhill Cranes from the Mid-Continent population (Stoll 2006), numbering near 500,000, gather along the Platte River near Kearney, NE (Miller 2013). With an estimated 756,217, not photo-corrected, in 2013 (Kruse 2013), these birds have been a success story when considering their history.

Cranes are very slow at reproducing and long living birds, up to 20 years (Paul, Sandhill Crane). Expansion to the west in the 1800s triggered large amounts of habitat loss and food availability issues that greatly reduced the population of Sandhill Cranes (Lovell 2012). In 1918, the Migratory Bird Treaty Act, which was implemented originally between the United States and Canada, was for the protection of all migratory birds. This made all interstate and international migrating birds untouchable until 1961 (FWS LAWS 1918). Due to the absence of disturbances and the addition of a booming crop industry, 90% of a crane's diet being corn (Audubon 2013), in the Central Flyway the crane population made a bounce back. From 1961-1974 hunting and trapping was allowed in most of populations of Sandhill Cranes. At that time, all states but Kansas and Nebraska, allowed a Sandhill Crane hunting season; that is, until 1993 when Kansas allowed a hunting season. Nebraska is the only Central Flyway state currently that does not have a Sandhill Crane sport hunting season (Kruse 2013).

Currently the hunting seasons in each state occur during the fall, in 2012 as early as September 8th in Montana and as late as December 22nd in Texas. During that time in 2012 an estimated 17,295 cranes were harvested in the United States Mid-Continent population (Kruse 2013).

This has opened Nebraska to be somewhat of a safe haven for Sandhill Cranes allowing open access to the Platte River. In 2009 it was estimated that the economic impact from nature center operations and Sandhill Crane visitors was \$5.15 million (Rowe 2009). The nature centers are what brings in a majority of the money to the state in a very concentrated area. The study was based on the “contribution of conservation research and education center on the economy of central Nebraska”. It went on to make a global estimate of \$10.33 million counting the percent of visitors estimated to travel to Nebraska for viewing and nature centers, which was 90%, to be from Nebraska. Considering, in 2009, the real GDP of Nebraska was \$86.869 million for all industry that would estimate 11.8% of the real GDP is from Sandhill Cranes economy; information here was gathered from the U.S. Department of Commerce, Bureau of Economic Analysis.

Predicting the amount of gain a hunting season can have to the already booming Sandhill Crane tourism industry is Nebraska’s next step to continue to grow economically through wildlife management.

Materials and Methods

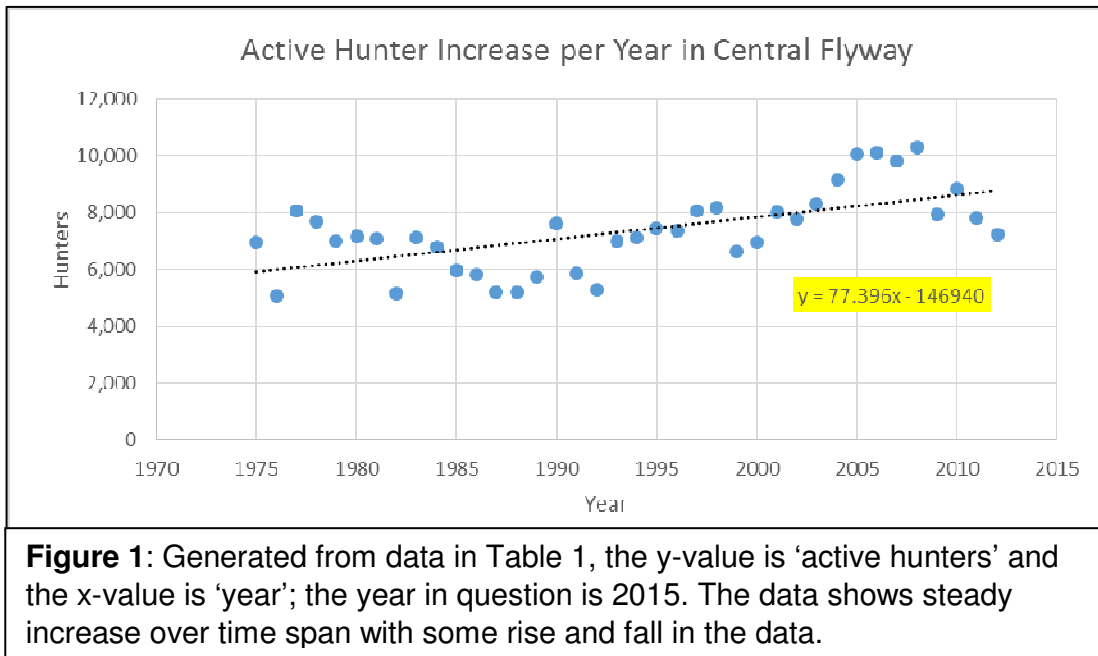
To what extent has the lack of a Sandhill Crane hunting season affected the economy of Nebraska? To answer this research question three further questions were asked,

- 1) How many active hunters are expected in the year 2015?
 - a. This answer will allow for extrapolation on the data
- 2) What is the average amount of money spent per hunter on Sandhill Crane hunting seasons?
 - a. Using this number and a predicted active hunter number we could then found an estimated total amount, which leaves question 3
- 3) What is the state's current income of Sandhill Cranes, and to what extent will hunting add?
 - a. Using the estimated total from 1 and 2 a percentage will be found to represent the amount gained from an addition of a hunting season

To answer the questions above the USFWS "Status and Harvest of Sandhill Cranes" report of 2013 will be the primary source of data for the Platte River Valley population. The report supplies data for Sandhill Crane population, number of permits allowed, active hunters, and estimated harvest. For answering the second question, "*Priority Information Needs for Sandhill Cranes: A Funding Strategy*", will be used. Cited in the paper, according to the National Survey of Fishing, Hunting, and Wildlife Associated Recreation, the estimated average per capita expenditures for migratory bird hunters was \$588 in 2006 (Case 2009). To get a more accurate dollar figure per hunter \$588 will need to be fixed for inflation using the inflation calculator from the Bureau of Labor Statistics website. To answer the third question the amount of \$10.33 million will be used. Again, this comes from the Rowe Sanctuary study done in 2009 that estimated a gain of \$10.33 million from recreation and tourism for Sandhill Cranes.

Results

To estimate the amount of active hunters possible in Nebraska for the year 2015 the linear equation from Figure 1, $y=77.396x - 146940$ was produced from the data in Table 1 (FWS 2013).



The x-value of 2015, $y=77.396(2015) - 146940$; $y=9,013$. An average was then taken by dividing 'y' by 9, for the nine states currently allowing hunting; $9,013/9 = 1,001$ active hunters per state.

Predicting average amount spent by each hunter begins with \$588. Because the amount is per capita in known from 2006, the amount was fixed for inflation for the present year, 2014. The expected amount of money spent per hunter on Sandhill Cranes is now \$694.26. Estimating the total dollar amount possible in Nebraska for Sandhill Crane hunters is found by multiplying 1,001 by 694.26; $1,001 * \$588 = \$694,258.19$.

The percent gain if hunting was allowed in Nebraska is found by using the estimated total of \$10.33 million and the predicted income from hunting, \$694,258.19. When \$10.33 million is divided by 694,258.19 a percentage of 6.72%, but because these are estimations, the number was rounded to 7%.

Discussion

Opening a Sandhill Crane hunting season has shown it can be profitable, or at least economically beneficial. However, there is more to a hunting season than the economic benefits. The public perspective, especially in Nebraska, is a large part to the future of a hunting season. Convincing the public that hunting can provide more than money but educational opportunities, wildlife habitat, and population control factors, is the next step. The best way to inform the public, or decision makers, is to present hunting as a disturbance, in both contexts, positive and negative.

Positive. "Not allowing hunting is removing a key source of disturbance" (Krapu 1984). That statement is referring to hunting's ability to help population control. In more detail, the same paper stated that hunting disturbance is only positive when wildlife is harvested during the correct time, and suitable habitat must be maintained so cranes can adjust to hunting pressures (Krapu 1990). This might seem very logical, but due to the high density of cranes in the Platte River area some believe that hunting disturbance can change migration patterns.

Negative. A study done on hunting disturbance with snow geese claimed the geese were less likely to return to a site after a scaring or hunting disturbance, increased movements toward a local refuge, and decreased foraging time (Béchet 2004). Sandhill Cranes, in any state in the

central flyway, are not hunted at the same frequency as Snow Geese but these effects are still possible if hunting opens. So, over a period of time, this yearly disturbance could cause migration changes, and potentially damage the existing economy of tourism and recreation.

Conclusion

Based on the estimated dollar amount of \$694,258.19, there is evidence to prove that due to the lack of a hunting season Nebraska has been missing a 7% gain based on the current Sandhill Crane economy. However, this extra economic benefit does not come without more questions. It is important to note that the issue of hunting Sandhill Crane in Nebraska is more so a social and public policy issue than a money issue. Using hunting as a disturbance can be positive or negative when put into the correct context. It will be many years before a hunting season would be considered for Sandhill Cranes, but due to the research done here there should be some incentive to consider hunting Sandhill Cranes as a possibility.

Tables and Figures

	CO	KS	MT	NM	ND	OK	SD	TX	WY	TOTAL
1975	226		69	806	2,896	80	117	2,733	22	6,949
1976	203		68	752	1,328	148	80	2,497	16	5,092
1977	189		40	921	4,126	339	77	2,329	27	8,048
1978	190		86	836	3,776	334	50	2,390	21	7,683
1979	275		61	745	3,225	307	29	2,356	13	7,011
1980	216		50	625	3,387	275	160	2,439	12	7,164
1981	216		23	598	3,315	269	103	2,543	14	7,081
1982	138		56	386	2,429	342	260	1,553	8	5,172
1983	211		64	253	3,551	384	225	2,435	20	7,143
1984	206		51	301	3,189	467	208	2,380	19	6,821
1985	187		37	216	2,383	372	168	2,613	12	5,988
1986	106		17	178	3,095	299	149	1,991	5	5,840
1987	113		29	133	2,529	358	120	1,942	5	5,229
1988	117		48	171	1,779	531	78	2,497	11	5,232
1989	74		52	152	2,018	492	153	2,805	6	5,752
1990	101		33	180	2,614	395	172	4,130	6	7,631
1991	153		69	220	1,674	370	139	3,231	3	5,859
1992	96		95	182	1,776	330	153	2,655	7	5,294
1993	87	294	97	218	2,223	357	140	3,602	5	7,023
1994	93	293	79	211	2,497	456	151	3,350	11	7,141
1995	154	393	118	211	2,408	331	143	3,707	6	7,471
1996	91	382	82	166	2,744	355	169	3,356	9	7,354
1997	67	452	68	124	2,386	264	178	4,515	10	8,064
1998	96	480	43	155	2,785	345	237	4,022	10	8,173
1999	133	533	60	204	2,444	375	173	2,699	8	6,629
2000	192	430	64	160	2,481	223	209	3,180	11	6,950
2001	202	555	72	173	2,934	391	145	3,554	13	8,039
2002	175	517	85	166	2,407	237	144	4,037	15	7,783
2003	236	495	60	244	2,271	64	114	4,821	10	8,315
2004	315	539	93	252	2,491	265	79	5,121	16	9,171
2005	280	274	90	233	3,370	259	165	5,383	24	10,078
2006	144	445	71	245	3,272	243	144	5,531	25	10,120
2007	158	255	82	241	3,145	166	57	5,685	19	9,808
2008	191	283	84	239	2,815	255	64	6,338	24	10,293
2009	159	213	50	286	3,546	371	63	3,179	67	7,934
2010	302	182	93	192	3,474	332	52	4,187	29	8,843
2011	138	449	95	206	3,733	418	44	2,712	41	7,836
2012	139	214	59	270	3,332	160	54	2,972	39	7,239
2013										8,858
2014										8,936
2015										9,013

Table 1: Data from the FWS status and harvest report for active hunters from 1975 – 2012. The yellow highlighted dates and numbers are the extrapolated data using the linear equation from Figure 1.

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