Western States' Sage-grouse Conservation Expenditures 2000-2012

An evaluation by the Western States Sage and Columbian Sharp-tailed Grouse Technical Committee

Background:

The Sage and Columbian Sharp-tailed Grouse Technical Committee (Technical Committee) has been in existence since 1954 and is composed of game-bird and research biologists from each state and province within the range of the Sage and Columbian sharp-tailed grouse. They are the technical experts on sage-grouse and sage-grouse management that provide data and supporting information for range-wide management of these species. Other members of the team include representatives of the Bureau of Land Management (BLM), Forest Service (FS), and Fish and Wildlife Service (FWS). The Technical Committee has produced a number of scientific articles, guidelines, and opinions regarding sage-grouse and sage-grouse habitats dating to the 1970s.

The Technical Committee met in the summer of 1994 and established a subcommittee to evaluate the status of sage-grouse related to the applicability of the Endangered Species Act. The objective of the evaluation was to advise the Western Association of Fish and Wildlife Agency (WAFWA) directors of the status of these species, and management actions. The subcommittee reviewed the status of sage-grouse populations and range with the five ESA factors and determined that the species was vulnerable, but did not meet the standards to list the species. The Technical Committee met with their directors in January 1995 and committed to increase management emphasis. Since that time, all of the western states have ramped up monitoring of populations, invested in conservation planning and worked on conservation actions to protect sage-grouse and their habitat. The commitment of resources on the behalf of sage-grouse has been unprecedented, with some states allocating as much as 1/3 of their entire wildlife management budget to sage-grouse. This paper estimates the resource contributions to the management and conservation of the species.

Methodology

State Wildlife Agency Survey:

We asked members of the Technical Team to provide state expenditure information for their jurisdiction by categories identified in the Greater Sage-Grouse Comprehensive Conservation Strategy (Conservation Strategy) (Stiver et al. 2006). States were asked to provide data for 2000 – 2012 budget years. All eleven states provided information related to state expenditures for sage-grouse. Four of the eleven states lacked some expenditure data. Expenditure data were reported for 125 of 143 potential entries. Additionally, reporting categories differed by state according to their internal cost accounting systems so some values were recorded as unknown. The estimates of expenditure for many states do not capture conservation actions in sagebrush habitat directed towards other species but have ancillary benefit to sage-grouse. Law enforcement efforts and hunting season administration are not species specific and are also not captured in many states.

Expenditure data were estimated for missing years using a regression model for those years with preceding data values. Estimates of expenditures for early years were truncated based upon minimal costs of effectiveness (lek counts/brood surveys/wing bees) monitoring.

Data were arrayed to display values by year, state and conservation category. We compared reported values in this survey with projected values found in the Conservation Strategy.

Results

All eleven states reported expenditure data for their sage-grouse conservation effort. Seven of the 11 states provided data for all 13 years, two states (Idaho and Utah) had data from 2001 – 2011, one state (Nevada) did not have data from 2000-2003 and Oregon only had data from 2005-2007 and 2012. The missing data for all states were estimated based upon the trend in numbers that were provided. All reported expenditures were routed through wildlife agency budgets.

States reported spending a minimum of $131,985,608 from 2000-2012 (Table 2 & Figure 1 &2). Annual expenditures rose from $3.1 million in 2000 to a high of $17.7 million in 2010. Reported expenditures in 2011 and 2012 declined from the peak expenditures; however, total expenditures in 2012 are likely underestimated, since some of the states had not closed their 2012 books. The average annual increase in expenditures was 17.6% and the overall increase in spending trend was 565%. Trends in expenditures show a decline in the rate of growth with the first six years averaging 27.8% annual growth and the last seven years showing an average annual rate of growth of 10.3%.

We evaluated the rate of growth to estimate a potential maximum annual expenditure for sage-grouse conservation, assuming all other factors are held consistent. Figure 4 is a representation of the "rate of growth" from 2000 – 2015. Curve fitting the regression indicates that the rate of growth may approach 0% within several years.

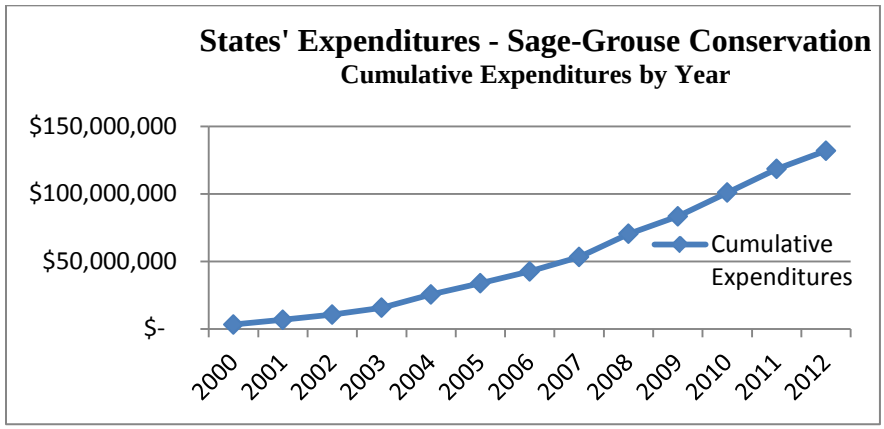

Figure 1. Cumulative Expenditures by States.

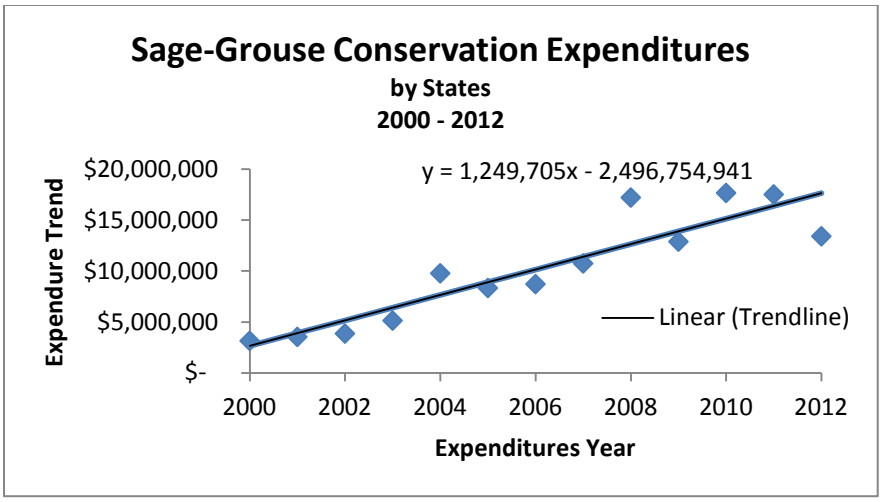

Figure 2. States' Annual Trend in Expenditures.

Expenditures by state ranged from a low of $723,000 in South Dakota to a high of $43,145,677 for Colorado (Table 3, Figure 3). Expenditures were not correlated to numbers of birds in the state. Colorado and Utah spent 56% of the total for all states and host approximately 6% of the total number of birds. That result is not surprising since states with larger populations are likely more robust and may have a relatively smaller threat matrix. Some states, particularly Nevada have considerably smaller financial resources to direct to wildlife management, while confronting a substantial threat from wildfire.

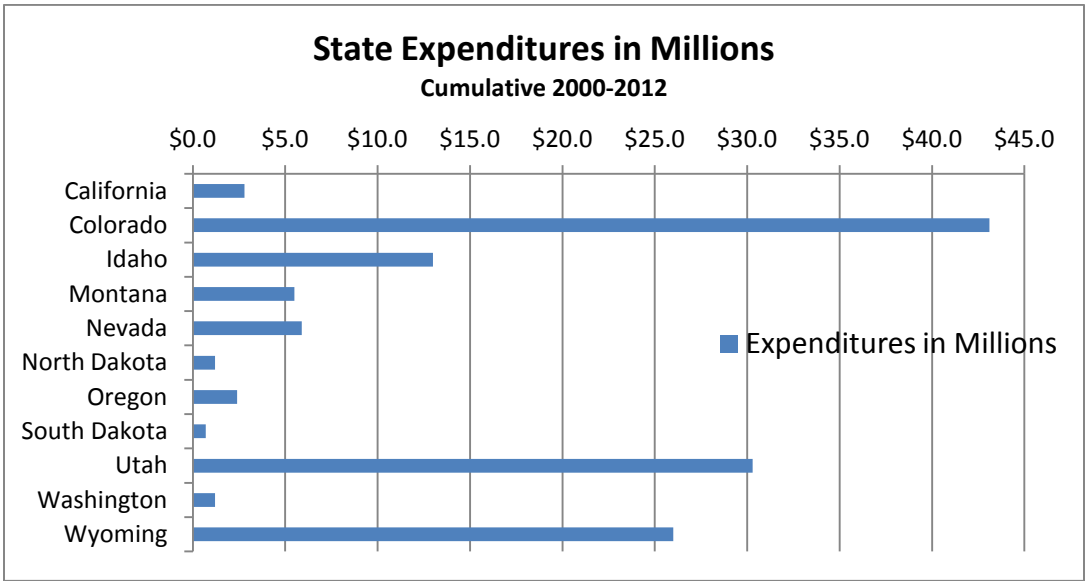

Figure 3. Expenditures by State

Distribution of expenditure by conservation category was tallied for the states that could provide data in that format. These data were evaluated primarily from 2000 to 2011. Several states did not report categorical spending in 2012 so that year was censored from analysis.

States reported that cumulative spending in each category closely matched the suggested distribution of spending in the Conservation Strategy. Table 1 demonstrates the actual vs. suggested distribution of expenditures:

Table 1. Actual vs. Projected Distribution of Expenditures.

			Conservation				
	Communications	Implementation Monitoring	Planning	Actions	Effectiveness Monitoring	Adaptive Management	Research Technology
Actual	1.0%	0.8%	9.8%	61.9%	17.3%	2.2%	7.0%
Strategy	8.8%	0.3%	0.8%	63.9%	17.5%	1.3%	7.4%

Discussion

The results of this survey demonstrate that the western states have directed significant financial resources to the conservation of sage-grouse and allocated those resources in conservation categories that are appropriate. We noted large differences in the expenditures of individual states as they related to their sage-grouse resource. No data were collected to evaluate those differences; however, the proportion of expenditures dedicated to conservation categories appear to be consistent from state to state.

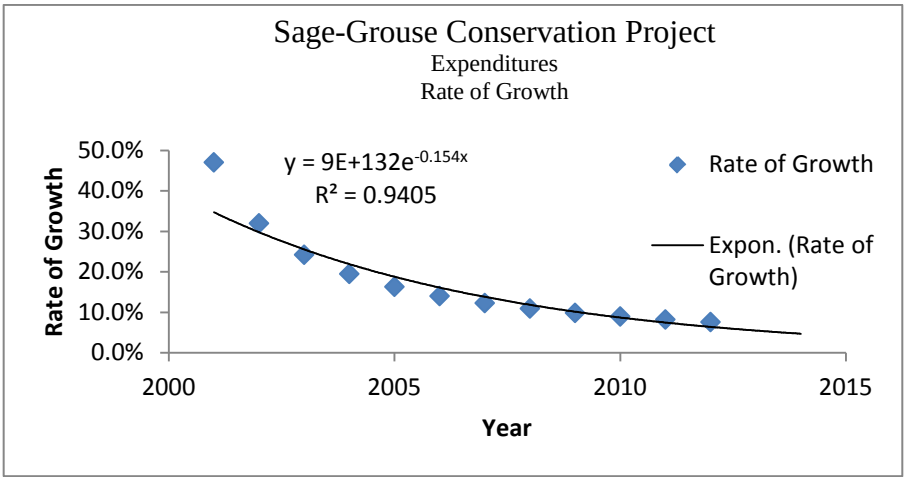

Figure 4. Expenditure Rate of Growth

Conclusion

WAFWA member states directed substantial financial resources to sage-grouse conservation efforts from the turn of the century to the present. We estimate that the states have expended at least $132,000,000 on sage-grouse conservation since 2000. The trends in spending followed the needs of the conservation program as the effort matured. Early efforts were focused on inventory to determine bird populations, trends and utilization of habitats along with initial conservation planning. As the program matured, additional planning was needed as more state and federal efforts were started. Monitoring programs matured early and have reached an expenditure plateau at an average of approximately $1.6 million per year. Conservation actions have increased as risks were identified and mitigation measures were prescribed. The peak years for state conservation actions are 2008, 2010 and 2011 with $9.8, $10.4 and $10.4 million respectively.

The **rate of growth** in the sage-grouse conservation effort funded by the states shows a decline over time. If present trends continue we anticipate funding for sage-grouse will plateau about 2015 near $18,000,000 per year. Since conservation actions make up over 60% of expenditures, we would expect that level to decline as more threats are addressed; however, at the present time the threat list is extensive and the conservation community has not effectively addressed rangeland rehabilitation, primarily from fire and/or anthropogenic influences on sage-grouse habitats

The suggested expenditure percentages in the Conservation Strategy appear to closely match the actual expenditures. The two categories that depart are the Communications and Planning categories. The Communication strategy called for a Western Shrub and Grassland Science Information and Management Consortium which has not been implemented and additional needs for conservation planning have been initiated. The Conservation Strategy projected an annual conservation budget of $85,000,000 for all aspects of sage-grouse conservation. The $18 million expenditure from the states represents about 21% of projected costs for all partners. .

Table 2 Western States Sage-Grouse Expenditures by Category and Year.

			Conservation/Planning						
Year	Communications	Implementation Monitoring	Conservation Planning	Conservation Actions	Effectiveness Monitoring	Adaptive Management	Research and Technology	Unclassified	Total
2000	$13,766	$18,832	$56,406	$358,063	$290,856	$15,065	$125,327	$2,263,150	$ 3,141,464
2001	$25,262	$38,533	$130,667	$829,472	$778,141	$58,628	$281,138	$1,392,213	$ 3,534,054
2002	$32,234	$75,392	$98,493	$625,230	$1,119,574	$120,514	$325,571	$1,461,914	$ 3,858,922
2003	$37,803	$57,738	$266,621	$1,692,511	$1,263,173	$195,790	$573,149	$1,048,835	$ 5,135,620
2004	$49,658	$78,013	$835,115	$5,301,311	$1,388,855	$344,210	$608,527	$1,173,538	$ 9,779,227
2005	$76,180	$47,127	$597,199	$3,791,019	$1,746,534	$88,302	$439,383	$1,550,251	$ 8,335,995
2006	$84,634	$44,397	$583,269	$3,702,594	$1,616,493	$107,117	$440,461	$2,140,354	$ 8,719,319
2007	$107,786	$45,154	$815,765	$5,178,474	$1,391,522	$153,723	$520,616	$2,536,600	$ 10,749,640
2008	$48,780	$52,625	$1,549,800	$9,838,130	$1,527,935	$121,700	$464,499	$3,618,724	$ 17,222,193
2009	$59,674	$67,597	$833,970	$5,294,040	$1,556,589	$291,277	$820,826	$3,966,628	$ 12,890,601
2010	$64,266	$70,057	$1,636,901	$10,391,046	$1,715,006	$322,646	$748,128	$2,726,302	$ 17,674,352
2011	$48,123	$76,870	$1,613,812	$10,244,477	$1,578,732	$253,096	$865,416	$2,845,729	$ 17,526,255
2012	$95,865	$123,080	$373,861	$2,373,269	$704,601	$62,064	$574,275	$9,110,952	$ 13,417,967
Total	$744,031	$795,415	$9,391,877	$59,619,637	$16,678,010	$2,134,132	$6,787,316	$ 35,835,190	$ 131,985,608
Average	$57,233	$61,186	$722,452	$4,586,126	$1,282,924	$164,164	$522,101	$2,756,553	
Percentage	0.8%	0.8%	9.8%	62.0%	17.3%	2.2%	7.1%		
CS Percentage	8.8%	0.3%	0.8%	63.9%	17.5%	1.3%	7.4%	0.0%	100.0%

Table 3. Sage-Grouse Expenditures by State and Category.

State Totals	Communications	Implementation Monitoring	Conservation Planning	Conservation Actions	Effectiveness Monitoring	Adaptive Management	Research and Technology	Unclassified	Total
California	$26,000	$98,000	$138,813	$881,187	$415,000	$0	$1,222,000	$0	$2,781,000
Colorado	$120,283	$601,415	$5,053,284	$32,078,245	$2,405,659	$481,132	$2,405,659	$0	$43,145,677
Idaho	$171,000	$46,000	$265,378	$1,684,622	$7,189,000	$1,503,000	$146,440	$2,000,989	$13,006,429
Montana	$39,248	$0	$548,579	$3,482,380	$1,241,864	$0	$139,914	$0	$5,451,985
Nevada	$0	$0	$264,340	$1,678,031	$1,809,822	$0	$903,303	$1,219,986	$5,875,482
North Dakota	$78,000	$0	$36,745	$233,255	$650,000	$40,000	$150,000	$0	$1,188,000
Oregon	$357,500	$0	$10,751	$68,249	$264,985	$0	$80,000	$1,558,236	$2,339,721
South Dakota	$26,000	$0	$39,603	$251,397	$130,000	$0	$276,000	$0	$723,000
Utah	$100,000	$50,000	$2,958,853	$18,782,802	$2,181,680	$110,000	$1,000,000	$5,097,712	$30,281,047
Washington	$0	$0	$61,922	$393,078	$390,000	$0	$390,000	$0	$1,235,000
Wyoming	$0	$0	$0	$0	$0	$0	$0	$25,958,267	$25,958,267
Total	$918,031	$795,415	$9,378,268	$59,533,246	$16,678,010	$2,134,132	$6,713,316	$35,835,190	$131,985,608