

BIG GAME HUNTING PRACTICES, MEANINGS, MOTIVATIONS, AND CONSTRAINTS: A SURVEY OF OREGON BIG GAME HUNTERS

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Abstract.—We conducted a self-administered mail survey in September 2009 with randomly selected Oregon hunters who had purchased big game hunting licenses/tags for the 2008 hunting season. Survey questions explored hunting practices, the meanings of and motivations for big game hunting, the constraints to big game hunting participation, and the effects of age, years of hunting experience, hunting motivations, hunting meanings, and hunting success on overall quality of experience. The study found that although hunters gave high scores to the emotional and traditional meanings of hunting, their quality of experience depended largely on hunting success. In addition, seeing/finding big game animals was the biggest constraint for hunters in Oregon.

1.0 BACKGROUND

Hunting has played a multifaceted role in the American way of life as both a subsistence activity and a pastime activity (Brown et al. 1995, Brown et al. 2000). Studies indicate that in recent times sport hunting has helped people achieve a variety of health, psychological, emotional, social, political, economic, and environmental benefits (NSSF/Southwick Associates 2008; Responsive Management 2006a, 2006b; RM/NSSF 2008; Southwick Associates 2007; USDI and USDC 2006). From a management perspective, regulated hunting is a primary mechanism for managing deer and other wildlife populations

(Brown 2009, Brown et al. 2000) and many wildlife conservation programs are funded through the sales of hunting licenses (Anderson et al. 1985, Floyd and Lee 2002).

The trend data, however, indicate that the participation of Americans in hunting has been declining over the past decade (USDI and USDC 2006). Similar downward trends have been noted in the number of days spent in general hunting and big game hunting, and in hunters' expenditures. Considering the dependence of wildlife managers on regulated hunting to manage populations of game species as well as pest wildlife species, a decline in the number of hunters will have tremendous direct and indirect managerial, social, economic, and environmental implications (Anderson et al. 1985, Floyd and Lee 2002, Lauber and Brown 2000, Sun et al. 2005).

The situation in the Pacific Northwest, including the state of Oregon, is even worse with respect to hunting trends (USDI and USDC 2006). According to a recent study (Responsive Management 2008), the number of hunting license holders in Oregon declined by 33 percent between the years 1981 and 2005. Fishing and hunting activities contribute \$2.8 billion to the Oregon economy (Dean Runyan Associates 2009); hence any decline in the number of hunters could negatively affect the state's wildlife conservation programs. To counter these trends, wildlife managers need to develop a comprehensive management plan aimed at both retaining existing hunters and recruiting new hunters, especially among younger people (Lauber and Brown 2000). In order to develop an effective management scheme, wildlife managers need to understand hunters, as well as the meanings, motivations, and constraints related to hunting. This paper presents the findings of a study carried out in Oregon to generate this much needed information.

2.0 STUDY OBJECTIVES

This study's objectives are:

- To describe demographics and hunting practices of big game hunters;
- To identify the meanings of and motivations for big game hunting;
- To understand the constraints to big game hunting participation; and
- To identify the effects of age, number of years of hunting, number of days spent hunting per year, hunting motivations, hunting meanings, and hunting success on overall quality of experience.

3.0 METHODS

A self administered mail survey was conducted in September 2009 with 2000 randomly selected Oregon hunters who had purchased big game hunting license/tags (for deer, elk and bear) for the 2008 hunting season. Altogether, 360 completed surveys were returned for a response rate of 18 percent. The survey questions focused on the characteristics of the respondents, the meanings of and motivations for participating in big game hunting, satisfaction from hunting participation, and constraints to big game hunting participation.

The meanings of big game hunting were explored with 13 different statements reflecting various emotional, traditional, associational, and consumptive meanings of hunting. The respondents expressed their level of agreement with these statements on a 7-point Likert scale where "1" meant lowest level of agreement and "7" meant highest level of agreement. To identify the most important motivations of big game hunting, 10 motivation items from the 2004 South Dakota Black Hills Deer Hunter Survey were used (Gigliotti 2005). The respondents were asked to check three motivations that were most important to them. The quality of the hunting experience was ascertained using a 6-point scale on which "1" meant worst and "6" meant excellent. Big game hunting constraints were measured with 25 items adapted from Shinew et al. (2004) and Burns and Graefe (2007) that were reworded to focus on big game hunting.

Data were analyzed using SPSS. Descriptive statistics were used for analyzing hunters' demographics, meanings, motivations, satisfaction, and constraints to hunting. Inferential analysis was conducted using suitable statistical tests, which included correlations, T-tests, and analysis of variance.

4.0 RESULTS AND DISCUSSION

4.1 Profile of the Respondents

Respondents were overwhelmingly male (82 percent) and Caucasian (96 percent). Figure 1 shows that more than half of the respondents (55 percent) belonged to age group "51 years or older" and very few respondents (15 percent) were age 30 or younger.

4.2 Hunting Practices

The respondents were generally very experienced hunters, with an average of 26.9 years of experience (range of 0 to 65 years for all respondents). Only seven respondents had participated in big game hunting for the first time during the year of the survey. These experience figures suggest an alarming situation for the future growth of hunting in the state. A large percentage of respondents (88 percent) had participated in deer hunting, followed by elk hunting (76 percent), and bear hunting (42 percent). About one-third (35 percent) had participated in hunting for all three big game animals. Gun/rifle was the most common hunting equipment for the respondents (86 percent), while 10 percent reported that they used bow/

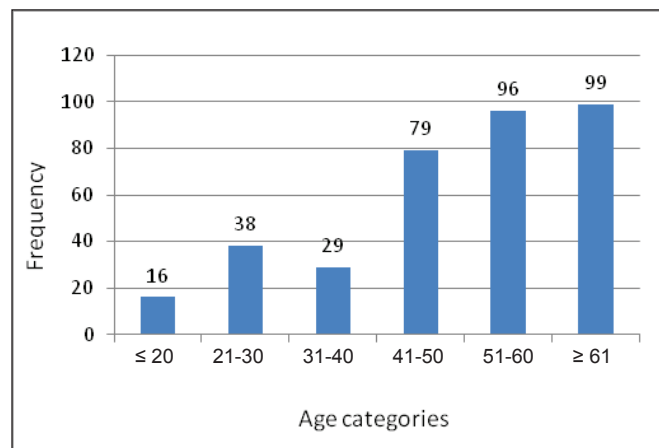


Figure 1.—Number of study respondents by age.

archery, and just 4 percent used both. The harvesting success rate of deer hunting was very low (35 percent) for the year 2008.

4.3 Number of Days Spent Hunting

The most recent 5-year trend data shows that the mean number of days spent in big game hunting per hunter declined by at least one day between 2004 to 2008 (i.e., from 11.24 days/year to 10.11 days/year) (Figure 2).

4.4 Meanings of Hunting

Among the 13 different meanings of hunting, respondents expressed higher levels of agreement with statements that represented emotional, traditional, and longtime association values of hunting than with statements that reflected consumptive, material, or economic values (Table 1). More than 60 percent of the respondents agreed with statements about

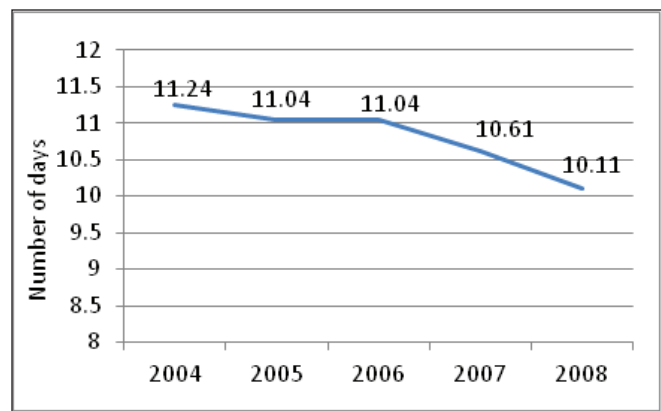


Figure 2.—Trend in hunters' average number of days spent hunting between 2004 and 2008.

emotional values such as hunting being a big part of life, hunting being an annual tradition, hunting providing a sense of achievement, and hunting having long-term association values (e.g., “given the amount of effort I have put in, it would be difficult

Table 1.—Percentage of respondents agreeing with different meanings of big game hunting

Factor	Factor Loading	Meaning of hunting	% agreed	Mean Score (out of 7)
1: Emotional, Traditional and Association Factor	.872	Given the skills and knowledge developed over the years, it is important that I continue to hunt deer	75%	5.5
	.867	If I stopped deer hunting, an important part of my life would be missing	78%	5.6
	.857	Participation in hunting is a large part of my life	67%	5.27
	.820	Deer hunting is an annual tradition that has become important to me over the years	84%	5.9
	.806	Given the amount of effort I have put, it would be difficult for me to find another activity to replace deer hunting	42%	4.8
	.639	If I quit hunting, the effort I have put into accumulating the right deer hunting equipments would be wasted	45%	4.3
	.558	I would describe my skill level in deer hunting as advanced or expert	55%	4.7
2: Consumptive, Investments and Skill Testing Factor	.669	I mainly hunt deer only to bring trophy	12%	2.4
	.620	Over the years, I have invested a lot of money in deer hunting equipments	60%	4.8
	.602	Over the years, I have accumulated a lot of deer hunting equipments	60%	4.9
	.546	I mainly hunt deer only to bring the meat home to eat	52%	4.5
	.506	Testing/improving my hunting skills more important to me than harvesting deer	45%	4.2
3: Sense of Achievement Factor	.771	A hunting trip can be successful to me even if no deer harvested	66%	5.7

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization.

for me to find another activity and application of accumulated skill, knowledge and equipment”). The mean level of agreement for each of these values was above 5 (where the highest possible score was 7). Only about 50 percent of the respondents agreed with statements about consumptive values such as hunting for meat, and just 12 percent agreed that they hunted for trophies. A factor analysis showed that the meanings of hunting can be grouped into three factors: 1) emotional, traditional, and association factor; 2) consumptive, investments, and skill testing factor; and 3) sense of achievement factor.

4.5 Motivations for Hunting

Among the 10 motivation items, the respondents reported harvesting deer for meat and trophy as most important for their participation in hunting, followed by spending time with family and friends, enjoying

nature/open space, and the challenge of hunting (Table 2).

4.6 Quality of Experience

The respondents indicated that the quality of their 2008 hunting experiences in Oregon was not very good; mean rating of experience quality was 2.9 out of 6 (Table 3). In addition, more than one-third (36 percent) indicated that the quality of their 2008 experience was lower than previous years, while only 10 percent felt it was better than previous years (Table 4). These results suggest that the quality of big game hunting in Oregon is declining. According to the respondents, low success (harvest) rate, low deer population, reduced access to the hunting areas that were previously open for hunting, and too many hunters were the main reasons for lower quality experiences.

Table 2.—Percentage of respondents by most important motivations of hunting

Motivation items	Primary motivation	Secondary motivation	Tertiary motivation
Harvest deer (meat/trophy)	45%	13%	22%
Time with friends and family	19%	27%	15%
Enjoy nature/open space	18%	26%	19%
Challenge of hunt	12%	14%	19%

Table 3.—Quality of respondents’ 2008 hunting experiences

Quality of Experience	1 Poor	2 Fair	3 Good	4 Very good	5 Excellent	6 Perfect	Mean
Number and percentage of respondents (n= 316)	54 (17%)	90 (28%)	79 (25%)	47 (15%)	29 (9%)	17 (5%)	2.871

Table 4.—Quality of 2008 hunting experience relative to past years

Quality of Experience	1 (Worse)	2 (Same)	3 (Better)	4 (No idea)	Mean
Number and percentage of respondents (n= 319)	114 (35.7%)	173 (54.2%)	31 (9.7%)	1 (0.3%)	1.75

4.7 Constraints to Hunting

Based on the survey data, the 25 constraints to hunting can be categorized into three groups: higher level constraints (mean above 2.00); medium level constraints (mean 1.5-1.99); and lower level constraints (mean below 1.50) (Table 5). The higher-level constraints mostly included site- and health-related items. The site-related items included “difficulty finding deer/elk/bear,” “sites too crowded,” “complex rules and regulation,” “sites are closed when wanted,” and “sites too far away.” The items “my physical health” and “physical health of someone you want to go with” are examples of health-related constraints. “Lack of time” was another important constraint. About 10-20 percent of respondents felt that

they faced each of these constraints a lot and another 40-50 percent said they felt these constraints a little or sometimes.

Medium-level constraints frequently faced by the hunters included specific management and interpersonal issues such as “inadequate facilities in Oregon,” “no opportunity to hunt,” “lack of information,” “feeling unwelcomed by ranger/staff,” “conflict with other uses/users,” and “don’t have anyone to go with.” Many respondents also reported that they “can’t afford” hunting. Among the lowest perceived constraints were “fear of outdoors,” “racial conflicts,” “lack of skills,” and “fear of crime.”

Table 5.—Perceived hunting constraints of the Oregon big game hunters (n= 359)

To what extent do the following constraints affect your participation in hunting?	Percentage agreeing			mean	s. d.
	Not at all	A little or some	Quite a bit or a lot		
Lack of/difficulty finding deer	26.7%	51.5%	21.7%	2.58	1.232
Sites too crowded in Oregon	22.3%	58.4%	19.2%	2.58	1.135
Lack of time	31.5%	50.9%	17.6%	2.35	1.198
Complex rules and regulation	31.8%	50.7%	17.6%	2.33	1.215
Sites are closed	37.3%	47.1%	15.6%	2.26	1.215
Like to do other things for recreation	35.9%	53.5%	10.6%	2.16	1.102
Sites are far away	37.3%	52.1%	10.5%	2.12	1.071
Your physical health	46.2%	39.0%	14.8%	2.06	1.226
Physical health of someone you like to hunt with	39.3%	49.9%	10.9%	2.03	1.066
Can't afford	41.8%	53.2%	5.0%	1.94	0.952
Don't have anyone	53.2%	36.2%	10.6%	1.88	1.159
Inadequate facilities in OR	49.0%	45.9%	5.0%	1.79	0.931
Conflict with other uses/users	51.8%	40.9%	7.3%	1.78	0.993
No opportunity to hunt	47.9%	49.0%	3.1%	1.75	0.85
Lack of info	55.4%	41.2%	3.4%	1.64	0.831
Feeling unwelcomed by ranger/staff	62.1%	33.8%	5.1%	1.58	0.88
Lack of training facilities	69.4%	28.7%	1.9%	1.43	0.732
Fear of crime	72.1%	25.1%	2.8%	1.40	0.766
Lack of skills	70.8%	28.9%	0.3%	1.37	0.629
Lack of transportation	73.5%	25.3%	1.1%	1.35	0.664
Don't like to do things in outdoor	82.2%	13.6%	4.2%	1.33	0.837
Lack of self-confidence	82.5%	16.1%	1.4%	1.24	0.592
Racial conflicts among users	83.6%	16.1%	0.3%	1.19	0.478
Fear of outdoors	85.5%	14.5%	0.0%	1.17	0.438
Fear of sexual assault	85.5%	13.7%	0.9%	1.18	0.517
Overall Mean				1.78	0.436

4.8 Factors Affecting Quality of Experience

Table 6 displays the results of *T*-tests, *F*-tests, and correlation tests conducted to examine the effects of various factors on overall quality of hunting experience in 2008. The *T*-test results show that harvest success played a significant role in hunters' overall perceptions of hunting quality. The mean values indicate that hunters who were able to harvest a deer/elk/bear expressed higher levels of satisfaction (mean 3.6) than those who did not harvest any animal (mean 2.4). On the other hand, hunting motivation, either for meat/trophy or for any non-consumptive use, did not have a significant effect on quality of experience. Likewise, the *F*-values of the ANOVA test indicated there were no significant differences in the quality of experience of hunters by the type of big game species they hunted. The mean values, however,

indicated that hunters who “hunted all the three species” or “hunted deer and elk” were relatively more satisfied (2.9), while those who participated in “only bear hunting” were least satisfied (mean 1.3).

The correlation analysis (Table 6) showed that the age of the hunters, number of days spent hunting, and number of years hunting are negatively correlated with quality of hunting experience. This indicates that more experienced hunters were less satisfied with their hunting experiences. However, this correlation was not statistically significant. The correlation analysis also showed that among the three types of meanings, “a hunting trip could be successful even if no deer is harvested” was significantly correlated with quality of experience. This means the hunters who placed a high value on hunting regardless of outcome were more satisfied with their hunting experience.

Table 6.—Effects of various factors on quality of hunting experience

T-test		Mean quality of experience	Std. dev	<i>t</i> -value	<i>p</i> -value
Harvested deer or not	N				
No	195	2.44	1.227	-7.622**	.000
Yes	120	3.581	.382		
Motivation					
Meat/Trophy		2.77	1.437	1.097	.274
Non-Consumptive		2.95	1.364		

ANOVA		Mean quality of experience	Std. dev	<i>F</i> -value	<i>p</i> -value
Species hunted	N				
hunted only deer	50	2.60	1.370	1.139	.338
hunted only elk	2	2.50	.707		
hunted only bear	3	1.33	.577		
hunted only deer and elk	121	2.94	1.362		
hunted only deer and bear	17	3.12	1.453		
hunted only elk and bear	1	2.00	.		
hunted all 3 species	118	2.94	1.434		
Total	312	2.87	1.399		

Correlations	Person's <i>r</i>	<i>p</i> -level
Number of days hunted in 2008	-.029	.311
Number of years hunting in OR	-.042	.239
Age of the respondents	-.066	.124
Emotional, Traditional N Association meaning	.057	.158
Consumptive, Investment and Testing	.020	.363
A hunting trip can be successful to me even if no deer harvested	.155**	.003

Note: * significant at .05 and ** significant at .01 alpha level.

5.0 MANAGEMENT IMPLICATIONS

The data reported here, along with a plethora of previous research, show an alarming trend in the decline of big-game hunting participation. To counter this, land and wildlife managers may need to develop strategies for retaining existing hunters and recruiting new hunters. Enhancing hunters' satisfaction by providing quality hunting experiences and reducing hunting constraints, especially site-related constraints, are very much within the control of wildlife managers and could be two major strategies for retaining existing hunters. Gigliotti (2005, 2010) observed that hunters' satisfaction is highly correlated with the number of deer seen (buck or doe) and harvesting success. This study found that although hunters gave high scores to the emotional and traditional meanings of hunting, their quality of experience depended largely on hunting success. In addition, seeing/finding big game animals was the biggest constraint for hunters in Oregon. Therefore, strategies designed to increase the chances of hunter-game encounters – for example, through programs like habitat extension and improvement, predator control, identifying and opening up more areas, and properly regulating the number of hunters related to available game – may prove successful. Regarding the recruitment of new hunters, additional research on existing hunters is needed in order to understand who and what encouraged or discouraged their first participation in hunting and what factors have encouraged or discouraged their continued participation. New extension programs could then be designed to generate greater public support for hunting, especially among youths.

6.0 LITERATURE CITED

- Anderson, M.W.; Reiling, S.D.; Criner, G.K. 1985. **Consumer demand theory and wildlife agency revenue structure.** *Wildlife Society Bulletin*. 13: 375-384.
- Brown, P. 2009. **Introduction: perspectives on the past and future of human dimension of fish and wildlife.** In: Manfredo, M.J.; Vaske, J.J.; Bown, P.J.; Decker, D.J.; Duke, E.A. eds. *Wildlife and Society: the science of human dimensions.* Washington, DC: Island Press.
- Brown, T.L.; Decker, D.J.; Enck, J.W. 1995. **Preliminary insights about the socio-cultural importance of hunting and trapping.** Human Dimensions Research Unit Series Report 95-2. Ithaca, NY: Cornell University. 90 pp.
- Brown, T.L.; Decker, D.J.; Siemer, W.F.; Enck, J.W. 2000. **Trends in hunting participation and implications for management of game species.** In: Gartner, W.C.; Lime, S.W. eds. *Trends in outdoor recreation, leisure and tourism.* New York, NY: CABI Publishing: 780-787.
- Burns, R.C.; Graefe, A.R. 2007. **Constraints to outdoor recreation: exploring the effects of disabilities on perceptions and participation.** *Journal of Leisure Research*. 39: 156-181.
- Dean Runyan Associates. 2009. **Fishing, hunting, wildlife viewing, and shellfishing in Oregon 2008: state and county expenditure estimates.** Report prepared for Oregon Department of Fish and Wildlife, Portland, Oregon.
- Floyd, M.F.; Lee, I. 2002. **Who buys fishing and hunting licenses in Texas? results from a statewide household survey.** *Human Dimensions of Wildlife*. 7: 91-106.
- Gigliotti, L.M. 2010. **2009 Black Hills deer hunter survey report.** Report ID number: HD-3-10.AMS. Pierre, SD: South Dakota Game, Fish, and Parks.
- Gigliotti, L.M. 2005. **2004 Black Hills deer hunter survey.** Report ID number: HD-3-05.AMS. Pierre, SD: South Dakota Game, Fish, and Parks. Available at <http://e.library.sd.gov/SodakLIVE-Docs/content/gfp/GFPdoc053.pdf>.
- Lauber, T.B.; Brown, T.L. 2000. **Deer hunting and deer hunting trends in New York State.** HDRU Series No 00-1. Human Dimensions Research Unit, Department Of Natural Resources. Ithaca, NY: Cornell University.
- NSSF (National Shooting Sports Foundation)/Southwick Associates. 2008. **Lifetime value from newly recruited hunters and target shooters.** Fernandina Beach, FL.

- Responsive Management. 2006a. **Sportsmen's attitudes.** Unpublished Survey about Various Hunting and Fishing Issues. Harrisonburg, VA: Responsive Management.
- Responsive Management. 2006b. **The public's attitudes toward and participation in the shooting sports.** Harrisonburg, VA: Responsive Management.
- Responsive Management. 2008. **Increasing hunting participation by investigating factors related to hunting license sales increases in 1992, 1999, and 2004 against 13 other years of hunting license sales decline between 1990 - 2005.** Harrisonburg, VA: Responsive Management.
- RM (Responsive Management)/NSSF (National Shooting Sports Foundation). 2008. **The Future of hunting and the shooting sports: research-based recruitment and retention strategies.** Final Report. Produced for U.S. Fish And Wildlife Service. Harrisonburg, Virginia: Responsive Management/National Shooting Sport Foundation.
- Shinew, K.J.; Floyd, M.F.; Parry, D. 2004. **Understanding the relationship between race and leisure activities and constraints: exploring an alternative framework.** Leisure Science. 26: 181-199.
- Southwick Associates. 2007. **Hunting in America: an economic engine and conservation powerhouse.** Fernandina Beach, FL.
- Sun, L.; Van Kooten, G.C.; Voss, G.M. 2005. **Demand for wildlife hunting in British Columbia.** Canadian Journal of Agricultural Economics. 53: 25-46.
- USDI and USDC (U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau). **2006 national survey of fishing, hunting, and wildlife-associated recreation.** Washington DC: U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau.

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