
SHORT COMMUNICATION

GENDER DIFFERENCES IN HUNTER RECRUITMENT AND DEDICATION IN DENMARK

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Abstract

Females represent a growing and important demographic among hunters, yet relatively little is known about female hunting recruitment and dedication. We began to address the need for research on the role of gender in hunter recruitment and dedication with a mail survey of Danish Hunters Association members (n = 701). Females were older (\bar{x} = 21.5, SE = 2.5) than males (\bar{x} = 14.9, SE = 0.5) when they first participated in hunting as a spectator. Females were less dedicated to hunting than males based on days spent hunting in the 2005-06 hunting season (10.4 days [SE = 1.8] versus 23.4 [SE = 1.0]) and the amount of money spent on hunting annually (6,419 Danish kroner [SE = 1,753] versus 11,086 Danish kroner [SE = 646]). The lower dedication among female respondents may be explained in part by previous research suggesting that early engagement in hunting is a predictor of persistence as a hunter. Thus, addressing the gender gap in hunter recruitment, retention, and dedication will likely require engaging females at younger ages and through familial networks. Given the increasingly important role of women in decision making in family activities, the importance of family in maintaining hunting participation, and the gender bias among hunters, investing in efforts to promote female hunting participation may be critical to the future of hunting.

Introduction

Worldwide, hunting plays an important role in human societies and wildlife conservation. Hunting is an activity of cultural importance [1, 2], provides recreation and food for participants [3], and commonly serves as an important tool for managing wildlife populations [4]. In some Scandinavian countries, including Denmark, the hunt provides both recreation and food, but also includes custom wherein hunters lay out their take for the day, and play a salute on a hunting horn while the hunters doff their hats in respect for the animals taken and to the hunt leader in thanks [5]. Hunting also provides necessary social capital that assists wildlife agencies with controlling populations of abundant wildlife [6, 7].

Funding generated by hunting expenditures is critical to wildlife conservation efforts [8]. In the United States (U.S.), wildlife management agencies depend on money generated by license sales and excise taxes on firearms and ammunition to fund their annual budgets [9, 10]. In Canada, hunting licenses and fees constituted over 80% of wildlife agencies' budgets in 1998 [11]. In Scandinavian countries, hunting licenses and fees generate funds for management, research, and monitoring [12]. Additionally, hunting-related revenue benefits national and local economies. In the U.S. in 2006, 12.5 million hunters spent 22.9 billion dollars on hunting related items [13]. The 7 million Europeans who hunt support 100,000-120,000 jobs and generate 10 billion Euros annually [14, 15], and in Canada, hunters spend 1.2 billion Canadian dollars on hunting-related trips and another 1.5 billion on wildlife-related activities outside the hunting season each year [11]. Further, rural communities benefit from hunting-related revenue that brings much-needed cash into local economies [14, 11, 16].

Understanding hunter recruitment and dedication is important because declines in the popularity of hunting can result in not only decreased revenue available for wildlife conservation and economic hardship for rural communities, but also decreased opportunity for game species management through hunting, and an increasingly distanced relationship between humans and nature. Since the 1980's, U.S. hunter numbers have been in decline [17, 18], with a marked decrease from 14.1 million hunters in 1990 to 12.5 million hunters in 2006 [19]. Likewise, numerous European countries have experienced similar declines in hunting participation [14, 20]. Worldwide declines in recruitment and dedication among hunters may result in less money available for wildlife conservation because more dedicated hunters tend to spend more on hunting-related activities and are willing to pay more for continued opportunities through licenses and access [16]. Thus, understanding trends in hunter recruitment and dedication are crucial if funding for wildlife conservation is to be maintained.

The age at which hunters begin hunting has been shown to be a reliable driver of hunter retention and dedication. Bevins et al., 1968 [21], found childhood participation in hunting to be a primary factor in patterns of adult participation. Hunters who were initiated to hunting early in life tend to have higher hunting dedication levels than those who began hunting later in life [22, 23, 24, 25] and were more likely to continue hunting throughout their lifetimes [26, 27, 28]. Further, some studies suggest hunters who were family-initiated at a young age have lower attrition rates. Langenau and Mellon, 1980 [27], speculated that young Michigan hunters who were initiated in

their childhood by family would continue to hunt through their adolescence, while Applegate, 1977 [26], and Adams and Thomas, 1983 [29], suggested the influence of older family members and friends kept these hunters actively hunting. Although research has implicated gender as an explanatory variable in models predicting hunting participation, few studies have addressed the role of gender in hunter dedication, particularly in settings outside the U.S.

Females represent a growing, yet still under-represented demographic among hunters [30], particularly given that proportionally fewer hunters worldwide are female than male, and proportionally fewer females have been exposed to hunting than males [31]. In the U.S., women's participation in hunting increased between 1990 and 1995, potentially due to a shift in traditional gender roles in society [32] where women began participating in activities that previously were only acceptable for their male counterparts [33]. Despite this increase, only 1% of females hunted in the U.S. in 2006, compared to 6% of males [13]. In Europe, female hunters comprised a small fraction of the hunting population in 2010, ranging from about 1% in Hungary and Belgium to 5% in Denmark and the Netherlands [20]. In 2006, 10% of new Danish hunters were female [34], and other Nordic countries show similar trends. In Sweden, the number of female members of the Swedish Hunting Association almost doubled between 2001 and 2012, and female hunters represented 6% of the hunters in Sweden and 8% of the hunters organized within the Swedish Hunting Association by 2013 [35, 36]. Similar growth of the female portion of the hunting population has occurred in Norway; the total numbers of registered female hunters increased every year between the 2002-03 and 2012-13 hunting seasons. By the 2012-13 hunting season, 22.3% of new Norwegian hunters, and approximately 12.1% of registered Norwegian hunters, were women [37]. Although still primarily a male activity, the growing percentage of female hunters is expected to have an important impact on the future of hunting [38], and it has been suggested the female recruitment into hunting could offset overall declines in hunting participation [31]. Increasing female participation in hunting would also make justifying hunting as a family activity a more compelling argument, since females logically play an equal role with males in families, but not in hunting [39]. Further, a significant female presence among hunters may make it more difficult to stereotype hunters as dominionistic and utilitarian, making it easier to justify hunting to the general public given that women tend to have more humanistic and moralistic attitudes towards animals, exhibit more concern towards animal welfare, and less support for animal research than men [40, 41].

Despite the importance of gender issues associated with hunting, little research has addressed the subject [31]. The research that does exist suggests that males are more likely to hunt for sport [42], while females tend to be less achievement-oriented in hunting [23, 43, 32]. One case study of Danish hunters, however, found no remarkable difference in the attitudes of female hunters toward hunting as compared to their male counterparts [44, 45]. We build on this research with a case study of Danish hunters. The objectives of this study were to assess: (1) gender differences in the age of first participating in hunting as a spectator, and (2) gender differences in hunting dedication as measured by hunting frequency, hunting expenditures, and willingness to pay to maintain the opportunity to hunt in the future.

Methods

We conducted a nationwide mail survey of Danish Hunters Association (DHA) members. We used a mail survey of 1,000 randomly selected DHA members from the 81,504 DHA membership between August and October 2006. The questionnaire focused on socio-demographic data including age, gender, marital status, and household income. Respondents were also asked what year they first participated in a hunt as a spectator, and from that variable, we created the variable for the age they first participated in hunting as a spectator relative to the 2006 survey administration (SPECTATOR; objective 1). All methods were performed in compliance with Danish law, and access to the membership of the DHA was approved by the organization.

Three questions were used to measure dedication to hunting (objective 2). Respondents were asked to indicate how many days they hunted during the 2005-06 hunting season (DAYS). Answer options included: 1) 0-4 days; 2) 5-9 days; 3) 10-19 days; 4) 20-29 days; 5) 30-49 days; 6) 50-99 days; and 7) more than 100 days. We also asked respondents to indicate how much money (in Danish kroner [Dkk]) they spend on hunting annually (SPEND; i.e., what they spend on equipment, land leasing costs, transportation, and hunting and license fees). Answer options were: 1) 0-999, 2) 1,000-1,999; 3) 2,000-4,999; 4) 5,000-9,999; 5) 10,000-19,999; 6) 20,000-29,999; 7) 30,000-39,999; 8) 40,000-49,999; 9) 50,000-99,999; 10) 100,000-149,999; 11) 150,000-199,999; and 12) more than 200,000 Dkk. Lastly, we asked how much more money (in Dkk) respondents would be willing to pay per year (i.e., how much in addition to what they already spend on hunting annually) to maintain the option of hunting (WTP). Answer options included: 1) 0-999; 2) 1,000-1,999; 3) 2,000-4,999; 4) 5,000-9,999; 5) 10,000-19,999; 6) 20,000-29,999; 7) 30,000-39,999; 8) 40,000-49,999; and 9) more than 50,000 Dkk.

We used ordinal regression to determine the influence of four independent variables (age, gender, income and SPECTATOR) on three dependent variables related to hunting dedication (DAYS, SPEND, WTP). Because cohort effects can confound effects attributed to age [18], we also examined the relationship between current age, year of recruitment into hunting as a spectator, and SPECTATOR using a correlation analysis. All descriptive and inferential statistics were calculated using Statistical Package for Social Sciences 22.0.0 [46].

Results

We received 701 responses to our survey for a 70.1% response rate. Mean respondent age was 40.8 years, and most respondents were married (79.4%). Median household income was 350,000 Dkk (USD \$59,679.41). Most respondents lived in and grew up in the countryside (32.7%) or villages of <200 inhabitants (35%). Nearly 29% of respondents had a vocational education (trade, service or craftsmanship). Gender in our sample (94.2% male) was nearly identical to gender in the overall hunting population in Denmark (95% male) [20], yielding a small sample size for females (n = 41) in the study. Given the small sample size of females, our results should be interpreted with some caution. A larger portion of females than males had

hunters in their immediate family (males, 67%, females 90%; $z = 3.11$, $p = 0.05$), but males and females were similar with respect to coming from families that practiced hunting over several generations (males 39.5%, females 38.5%). The majority of respondents (85.5%) were members of a local hunting club.

In our sample, age and SPECTATOR were not very correlated ($r = 0.21$), but as expected year and age of recruitment into hunting as a spectator were correlated ($r = 0.6$). We also found that mean age of first participation in hunting as a spectator was 15, but females were older ($\bar{x} = 21.5$, $SE = 2.5$) than males ($\bar{x} = 14.9$, $SE = 0.5$) when they first participated in a hunt as a spectator. However, the mean current age of female respondents ($\bar{x} = 36.7$, $SE = 1.9$) was lower than males ($\bar{x} = 41.1$, $SE = 0.5$).

Gender, age, and SPECTATOR were significant predictors of the number of DAYS respondents hunted in the 2005-06 hunting season (Table 1). Gender was positively related to DAYS, with males spending more than twice as many days hunting in 2005-06 hunting season (23.4 days, $SE = 1.0$) than females (10.4 days, $SE = 1.8$). Age and SPECTATOR were both related to DAYS, thus the older respondents were and the older they were when they first participated in a hunt as a spectator, the fewer days they spent hunting in 2005-06.

Table 1: Estimated coefficients and standard errors of models for predicting the number of days respondents spent hunting in the 2005-06 hunting season (DAYS), how much money respondents spend on hunting annually (SPEND), and how much money respondents would be willing to pay per year to maintain the option of hunting (WTP) from a survey of Danish hunters (August–October, 2006).

Model	Coefficient (Standard Error)		
	DAYS	SPEND	WTP
Age	-0.012** (0.006)	-0.009 (0.006)	-0.006 (0.006)
Gender ¹	-1.344*** (0.337)	-1.277*** (0.338)	-0.197 (0.341)
Income ²	-0.001* (>0.001)	0.004*** (0.001)	0.002*** (0.001)
SPECTATOR ³	-0.020*** (0.007)	0.003 (0.006)	0.002 (0.007)
Nagelkerke R-squared ⁴	0.072	0.113	0.028

*significance at 0.10; **significance at 0.05; ***significance at 0.01

¹ Male = 1 and Female = 2

² Income scale midpoint ranged from 50 Dkk to 650 Dkk

³ Age first participated in hunting as a spectator

⁴ Cameron and Windmeijer (1997)

Gender and income were both significant predictors of how much respondents spent on hunting annually (SPEND; Table 1). Males spent nearly twice as much money on hunting during the 2005-06 seasons (11,124 Dkk, $SE = 646$; USD \$1,897, $SE = \$110$) as females (6,419 Dkk, $SE = 1,753$ Dkk; USD \$1,095, $SE = \$299$). Annual hunting expenditures were positively related with the income level of respondents (Table 1). Income was also positively related to how much respondents were willing to pay annually to maintain the opportunity to hunt (WTP; Table 1). For example, respondents with an income of 100,000 Dkk or less (USD \$17,051 or less) indicated willingness to pay 5,512 Dkk ($SE = 1,877$; USD \$940, $SE = \$320$) more, on average, for the opportunity to hunt, whereas respondents with an income of over 600,000 Dkk or more (USD \$102,308 or more) were willing to pay an average of 9,335 Dkk

(SE = 1,414; USD \$1,592, SE = \$241). All exchange rates were calculated using the average exchange rate for the Aug-Oct 2006 timeframe.

Discussion

Females may be introduced to hunting at different ages than males because their introduction is different in terms of who participates and the role it plays in their lives. Females in our sample were introduced to hunting at a later age than males, which is consistent with previous literature on hunting recruitment in New York and Texas [47, 48]. Literature also indicates females are typically introduced to hunting by non-family members, such as husbands, significant others, friends, or colleagues [49, 50, 48], while males are introduced to hunting by male relatives, usually their father, before the age of independence [29, 23, 51, 47].

Our finding of proportionally more hunters in the immediate family of the female respondents seems at odds with the age at which our female hunters were initiated into hunting and begs the question of why females with hunters in their immediate family are not introduced by family earlier in their lives. In a study of Texas hunters, Adams and Steen, 1997 [48], found male Texan hunters were more than 3 times more likely to teach their sons to hunt than their daughters. Our findings and previous studies suggest that this pattern has persisted in Denmark as well [52, 53, 54], but that such patterns may also be beginning to change [44, 45]. Future research addressing the degree to which parents (fathers in particular) are less likely to introduce their daughters to hunting, why the phenomenon occurs, and how and why it is changing, as well as an assessment of young female interest, would provide additional insight into the gender differences among hunters. Further, such insight might make programs designed to increase the recruitment of young female hunters more feasible.

Our finding that female dedication to hunting was lower than that of males may be explained in part by gender differences in the age at which each group began hunting. Previous research indicates introduction to hunting earlier in life is correlated to higher levels of dedication to hunting later in life [22, 23, 55]. Stedman and Heberlein, 2001 [56], found that males more than females, and individuals who were socialized into hunting at a young age by immediate family, were more likely to hunt. Given that females in our population first participated in hunting as a spectator at a significantly later age than the males, it makes sense that they would also be less dedicated than the males. However, other issues can also potentially affect dedication such as cohort effects [18], which can confound age effects when cohorts from different time periods are different in size. We found little correlation between age and SPECTATOR and did not detect any unexpected large age classes, but we do note that SPECTATOR and year of recruitment into hunting as a spectator were correlated. Thus, while we attribute differences in dedication to age of first recruitment, it is possible that a cohort type effect of year of first recruitment as a spectator is influencing dedication as well. Future research with larger sample size, however, could more rigorously evaluate and remove potential cohort effects, particularly for males and females [57, 18].

This trend may be further explained by females being more likely than males to exhibit declines in participation in physical and outdoor activities in their mid-

adolescent years [58], which is likely related to decreased confidence in physical prowess [59], development of identity [60], the influence of gender roles and sex role stereotypes [61], changes in interests [55], or the availability of substitute activities [62]. Because the females in our sample were introduced to hunting after the mid-teen years, it is feasible that the lower levels of dedication can be attributed to their initiation into hunting after a general transition away from avid participation in outdoor recreation. However, future research comparing female and male hunters who were initiated into hunting at the same age might provide insights about gender effects related to hunting dedication.

The weaker relationship between gender and WTP may be related to large gender specific differences in the amount of time and money males dedicated to hunting. Males spent more than twice the number of days hunting in 2005-06 and nearly twice as much money on hunting annually than females. Thus, males may have indicated a slightly higher WTP to maintain the option of hunting mainly because they were already paying twice as much for hunting than females. Positive relationships between income and SPEND and WTP provide face validity for these conclusions.

Efforts to address the gender gap in hunter recruitment, retention, and dedication may benefit from engaging females at younger ages, and encouraging parents to provide daughters the same opportunities as sons. Doing so, however, could prove difficult because recruitment, among both males and females, is trending towards middle age, and introduction by peers [25, 23]. Considering other variables such as urban background [63, 56], race [9], education [64, 9], hunting motivations [23, 43, 32], access [65], time [66], financial constraints [65], and familial responsibilities [67] might enrich future studies exploring the role of gender in hunter recruitment and dedication. Regardless, several programs have been developed to specifically recruit female hunters (e.g., Becoming an Outdoors Woman [BOW], National Turkey Federation's Women in the Outdoors program) and families (e.g., Becoming an Outdoor Family program). Welch, 2004 [68], found women who had participated in the Texas BOW program reported an increase in hunting participation versus women who had enrolled in the program but had not participated in it. We are aware of very little additional research that has addressed the success of such programs to recruit and increase dedication and retention in women and families. Ideally, experimental research could be utilized to causally link recruitment and dedication program attributes to successfully recruiting and retaining female hunters.

Conclusions

Heberlein, Serup and Ericsson, 2008 [31], suggested the recruitment of females into hunting could help compensate for overall declines in hunter participation. Given the increasingly important role of women in decision-making (including within the recreational activity context), the importance of family in maintaining hunting participation [29], and the gender bias among hunters, investing in efforts to promote hunting among females may be key to international hunting recruitment and retention efforts. If so, focusing recruitment efforts on younger females is likely the best way to increase the number of women hunters and improve their hunting dedication.

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Five “key references”, selected by the authors, are marked below (Three recommended (●) and two highly recommended (●●) papers).

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