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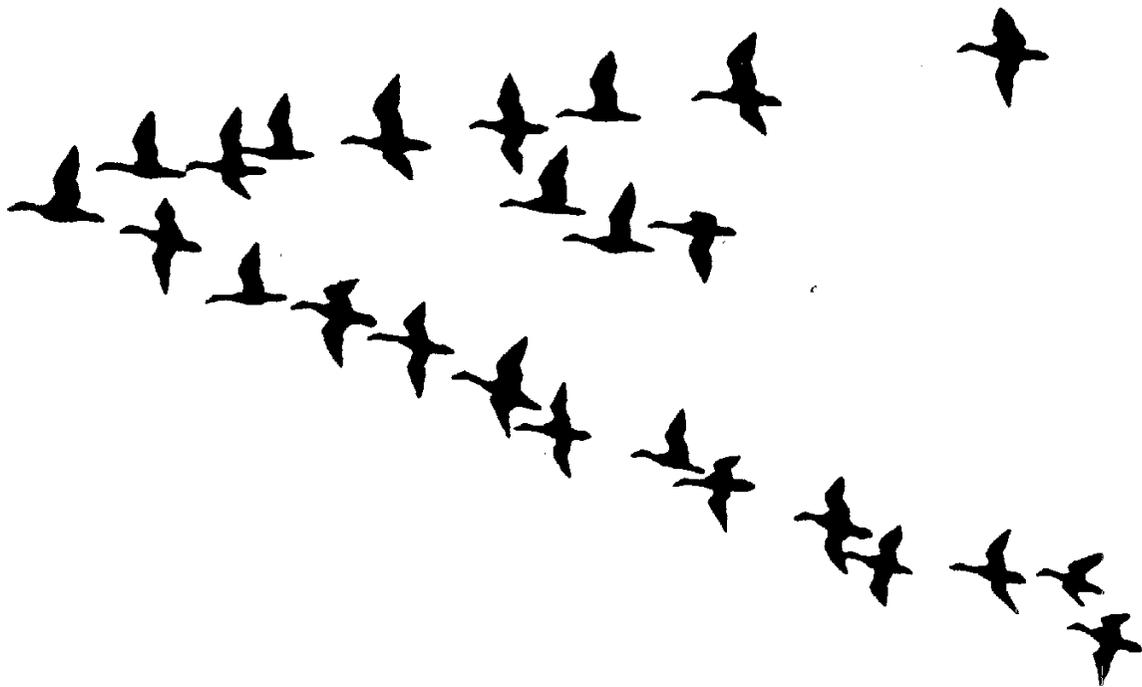
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Satisfaction, Valuation, and Views Toward Allocation of Vermont Goose Hunting Opportunities

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Abstract

Goose hunting opportunities are becoming increasingly limited and demand often exceeds supply. The results of a survey of goose hunters on Dead Creek Goose Management Area in Vermont indicated that hunters were satisfied with the management of the area, approved of the regulations imposed, and enjoyed interacting with management staff. With respect to motivations for goose hunting, the highest satisfaction scores were "sharing experience with friends" and "enjoying the aesthetics of the area," whereas shooting a goose was rated mid-level. The current lottery system to select hunters was preferred over "first-come, first-served" and "pay to hunt" as the means of allocating goose hunting opportunities. Assuming goose hunting permits could be bought and sold, the average price that respondents were willing to pay was \$33.34, while the price at which they would sell a permit was \$74.44.

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Introduction

Although there has been a long tradition of free hunting in North America, changing socioeconomic conditions are reducing such opportunities in many localities so that, today, public agencies are increasingly involved in allocating hunting opportunities. In order to satisfy public wants, it is essential to develop a better understanding of hunter expectations, satisfactions, payoffs, and tolerance toward more restrictive regulations associated with scarcity.

Hunter satisfaction is related to packages of goods and services that constitute pleasurable outdoor experiences (Hendee 1974; More 1973, 1984). The components of this package include biological and physical attributes of the quarry and the hunting site, but also involve deeper interrelationships between humans and the natural environment.

Resource scarcity also implies the allocation of a limited supply to potential users. As a matter of policy, public agencies often forego monetary returns in order to satisfy other concerns like the long-term well-being of wildlife populations or equity in the distribution of wildlife-related benefits. While such policies may be representative of society in general, the views of active hunters toward the allocation of hunting opportunities are of particular interest because hunters are involved in "consumptive" use and because they have long advocated wildlife management and protective regulations. Besides pressing for wildlife conservation measures, hunters finance most programs through the purchase of licenses and hunting stamps as well as through payment of excise taxes on guns and ammunition through the Pittman-Robertson Act.

Most of Northern New England has yet to reach the stage where hunting opportunities are severely limited for most wildlife species, so residents have not experienced the sale of hunting rights to the extent that this has become commonplace in other regions (Langner 1987). However, goose hunting opportunities in Vermont traditionally have been quite limited and thus provide a means to examine hunters' views toward allocating relatively scarce hunting rights. In this paper, we examine the views of wild goose hunters on Dead Creek Goose Management Area in Addison, Vermont.

The Vermont Fish and Wildlife Department established the Dead Creek Wildlife Management Area in 1953 to develop a viable local population of Canada geese (*Branta canadensis*) (Coffin 1988). Forty-four wild, trapped Canada geese were introduced in 1956; the first viable nesting occurring in 1960. From this beginning, a nesting population of about 100 Canada geese developed, but there are often

another 10,000 to 12,000 migrating Canada and snow geese (*Chen caerulescens*) on the area during the fall. The management area includes 2,858 acres of state-owned land with 1,000 acres of adjacent private lands being leased by the state for their hunting rights.

Goose hunting was first permitted on the Dead Creek Wildlife Management Area in 1974. It is a controlled hunt in which the Vermont Department of Fish and Wildlife constructs up to 15 blinds (average of 10 to 12 blinds) accommodating a maximum of 3 hunters each. The Department also supplies about 20 silhouette goose decoys for use with each blind. Instruction on local rules and regulations, safety, and goose hunting techniques is given before the hunt. Hunting is permitted on Mondays, Wednesdays, and Fridays (one-half hour before sunrise to 11:00 a.m.) each week from early October to the end of November.

Since demand exceeds available opportunities, a lottery system has been established to select those allowed to hunt. Applications, for which there are no charges, are submitted before goose season. Applicants select three dates: their chance of success varies with the total number of hunters applying for those dates. Each successful applicant may bring two guests to share the blind. Lottery winners must be present 2 hours before the official opening time on the date for which they were successful, or forfeit the opportunity. Forfeited opportunities, or those not allocated by the lottery, may be claimed by standby hunters. Standby hunters come in before the forfeiture time and place their names on a list maintained by the Department staff. The names of hunters (maximum of three) wishing to hunt together are treated as a single entry, one person being designated to draw a number from a hat to determine which of these groups could hunt and the sequence to select the specific blind for each group. Once groups are designated, no one can be added, so a blind may have from one to three hunters, depending on the names entered. This is in contrast to lottery winners who can designate up to two additional hunters at any time, or can hunt by themselves. Lottery winners also pick numbers out of a hat to determine the sequence in which they can select individual blinds, all lottery winners making a selection before the standbys.

In this paper, we examine the results of a survey of Dead Creek goose hunters conducted by the Vermont Fish and Wildlife Department in cooperation with the Northeastern Forest Experiment Station. The views of goose hunters toward the fairness of the lottery and toward alternative systems for allocating goose hunting opportunities on Dead Creek are examined. Reasons for desiring to hunt in the area and the monetary value of the goose hunting opportunity also are discussed.

Methods

Vermont Fish and Wildlife Department staff gave each person who hunted on Dead Creek during the 1987 goose hunting season a stamped, mail-back questionnaire seeking information on the day's hunt, views toward alternative allocation systems, levels of satisfaction, and the monetary value placed on the hunt, as well as selected personal characteristics. Hunters were asked to complete only one questionnaire during the season to eliminate the remote possibility of double responses from the few hunters who might have had an opportunity to hunt on the area more than once. Mail-back questionnaires designed according to Dillman's (1978) Total Design Method were used since there was limited time and opportunity to complete them at the site. A follow-up reminder post card was mailed after the close of goose season in December. In total, 598 questionnaires were distributed, of which 275 were returned completed, a 46 percent response rate.

Individual questions varied in form depending upon the kind of response being solicited. Those questions relating to satisfaction with the physical setting, special regulations, and interactions with the Management Area staff called for "yes" or "no" responses only. For questions dealing with hunter satisfactions, the respondents were asked to circle a number between 1 (strongly disagree) to 5 (strongly agree) in response to specific statements. The statements were grouped into 11 categories: friendship, novelty, meeting new people, stress reduction, aesthetics, excitement, skill sharing, nostalgia, equipment, harvest, and challenge. The average value of responses was calculated within each category and the relative importance ranked by score. Questions relating to valuation asked respondents how much they would pay for a permit or take for one that they

had drawn, assuming it was legal and proper to buy and sell permits. Respondents also rated the appropriateness of these allocation systems ("first-come, first-served," "pay to hunt," and a lottery) on a 5-point scale ranging from very inappropriate (1) to very appropriate (5). Hunters also were asked to rank these three systems in order of preference.

Results

The primary means of gaining access to hunt Dead Creek during the 1987 goose season was selection in the lottery or being a guest of someone who had been selected in the lottery; combined, these accounted for 82 percent of those hunting, while stand-by hunters accounted for the remaining 18 percent. The principal reasons for choosing Dead Creek to hunt geese were "a good quality goose hunting area" by 75 percent of the respondents; "past experience," 43 percent; "enjoy talking and dealing with Wildlife Management Area staff," 35 percent; "the availability of specialized goose hunting equipment," 30 percent; and "understood there was a good chance of bagging a goose," 29 percent.

Generally, the respondents were quite satisfied with the hunting equipment provided at Dead Creek. For seven questions dealing with physical attributes, an overwhelming majority indicated the existing situation was favorable (Table 1). In fact, 96 percent of the respondents agreed that the Management Area was a good place to hunt. Blind construction and locations also were approved by an overwhelming proportion of the respondents. Only in the case of the adequacy of the goose decoys provided at each blind did as many as one-fourth of the hunters respond negatively; still, 73 percent felt the decoys were adequate.

Table 1.—Hunters' views toward locational and physical attributes of Dead Creek goose hunt

Attribute	Hunter response			
	Yes		No	
	Number	Percent	Number	Percent
Construction and design of goose blind was satisfactory	256	93.4	18	6.6
Goose blind was far enough from next blind	245	89.4	29	10.6
Goose blind was far enough from houses, barns, and roads.	269	97.8	4	1.5
Goose blind was located ideally relative to cropping patterns in immediate area	239	87.9	73	12.1
Goose blind was located too close to restricted areas	13	4.7	262	95.3
Goose decoys provided at Wildlife Management Area were adequate	197	73.0	73	27.0
Area provided a good environment for a hunt	263	96.3	7	2.7

Finally, over 97 percent of the respondents approved of the instructions and information provided by the Dead Creek management staff (Table 2). On the negative side, 37 percent of the respondents revealed problems caused by hunters shooting at geese which were out of range, thereby diminishing shooting opportunities for other hunters.

Another source of difficulty was that some hunters would stand around their blinds talking after bagging their limits of geese' making it more difficult for those in adjacent blinds to draw geese into shotgun range.

Table 2.—Hunters' views toward interaction with other people

	Hunter response			
	Yes		No	
	Number	Percent	Number	Percent
Human contact				
Instructions and information provided by Management Area staff prior to hunt was useful	265	97.4	7	2.6
Hunters shooting at geese that were out of range was a distraction	102	37.1	171	62.2

With respect to special regulations imposed upon hunters at Dead Creek, the hunters generally agreed with existing policies (Table 3). The most notable exceptions pertained to closing Dead Creek to goose hunting before the statewide

Table 3.—Views of hunters toward special regulations for goose hunting on Dead Creek Goose Management Area

Regulation	Hunter response			
	Favored		Opposed	
	Number	Percent	Number	Percent
Limit of eight (8) shotgun shells per hunter	197	72.2	76	27.8
Shooting hours, one-half hour before sunrise to 11:00 a.m.	233	85.1	41	14.9
Hunts available only three days per week	246	90.1	27	9.9
Limit of two geese per hunter per day	212	77.1	63	22.9
Prohibition against using dogs	235	85.8	39	14.2
Maximum of three people per blind	263	95.6	12	4.4
Closing of goose season on the Management Area before statewide season closes	136	51.9	126	48.1

season closure. In this case, 48 percent opposed the early closure as opposed to 52 percent who favored it. Having hunts available only 3 days per week and a maximum of three people to a blind were approved by over 90 percent of the respondents. The bag limit of two geese per day and limit of eight shotgun shells per hunter were generally approved, but 23 percent and 28 percent of the respondents, respectively, disapproved of these regulations. Regulations barring the use of dogs and limiting the hunting hours from one-half hour before sunrise to 11:00 a.m. met the approval of over 85 percent of the respondents.

The most important motives or satisfactions related to the Dead Creek goose hunt were friendship (being with friends), aesthetics (enjoying the natural environment), temporary escape (relaxing and relieving tensions), excitement (action), and nostalgia (past memories) (Table 4). It is particularly noteworthy that harvest (bagging a goose) was ranked near the middle in relative importance rather than at the top. Lowest rated motives were spiritual contact with

Table 4.—Motivations of Dead Creek Wildlife Management Area hunters

Motive	Ranking	Mean score*	Standard deviation
Friendship	1	4.495	0.577
Aesthetics	2	4.412	0.512
Temporary escape	3	4.107	0.642
Excitement	4	4.087	0.840
Nostalgia	5	4.043	0.692
Novelty	6	3.947	0.706
Harvest	7	3.760	0.764
Equipment	8	3.541	0.748
Meet new people	9	3.519	0.769
Teaching others	10	3.461	0.889
Spiritual	11	3.181	0.968

*Ranked on a scale of 1 (strongly disagree) to 5 (strongly agree).

nature, teaching others about goose hunting, meeting new people, and using goose hunting equipment. With the respect to hunters' motive structure, age appears to be an important factor. With increasing age, the importance of the harvest and excitement motives tend to decline, while there is increased emphasis on teaching others.

Respondents were queried regarding the appropriateness of using alternative allocation systems for Dead Creek goose hunting opportunities. Three systems were examined in this context: "first-come, first-served," "pay to hunt," and the current lottery system. An overwhelming majority of hunters rejected both "first-come, first-served" and "pay to hunt," but accepted the lottery system. With respect to "first-come, first-served," over 86 percent of the respondents thought it either "very inappropriate" or "inappropriate." In fact, only slightly over 6 percent favored the "first-come, first-served" allocation system.

Allocating goose hunting opportunities by pay-to-hunt privileges also was soundly rejected by goose hunters. More than 86 percent of the respondents viewed "pay to hunt" as "very inappropriate" or "inappropriate" as compared to 6 percent who viewed it favorably.

By contrast, allocation of hunting opportunities by the lottery system was viewed favorably. Over 90 percent of hunters rated the lottery as either "very appropriate" or "appropriate" as compared to less than 7 percent that felt this system was not appropriate to allocate goose hunting opportunities.

The respondents also ranked the three alternative allocation systems. Here again, the lottery system was most favored; ranked first by 93 percent and second by 6.2 percent of the hunters. By contrast, neither "first-come, first-served" nor "pay to hunt" was ranked first by as many as 4 percent of the respondents. However, the "first-come, first-served" allocation system was placed second by 64 percent, while "pay to hunt" was ranked second by 29 percent of the respondents. Thus, two-thirds of the respondents ranked market pricing as the least favored means to allocate goose hunting permits at Dead Creek Goose Management Area.

To provide a basis for valuation, hunters were asked four questions relating to the price at which they would buy or sell permits if it was legal and considered proper to do so. The average price that hunters would spend for a permit was \$33.34, with the median at \$20.00. On the other hand, the average price for which hunters would sell a permit was \$74.44.

While many goose hunters prefer the Dead Creek area, other opportunities are available nearby. In fact, 61 percent of the hunters at Dead Creek intended to hunt geese at least once more in Vermont during the current year, and 42 percent planned to hunt geese five times or more. Dead Creek goose hunters also were quite active in pursuing other game species. Eighty-four percent of the respondents hunted both big game and wild ducks whereas 75 percent hunted upland game birds. With respect to hunting small mammals such as rabbits and squirrels, 37 percent of the respondents participated.

Discussion

As hunting opportunities become increasingly scarce, a number of actions are necessarily undertaken by public management agencies to provide opportunities for people to engage in this activity. Many of the actions are likely to infringe upon the latitude in which individuals can participate in the hunt: seasons are shortened, bag limits reduced, restrictions placed on hunt techniques, and other limitations may be placed on traditional forms and styles of hunting. Dead Creek provides an opportunity to examine the response of goose hunters to a relatively structured hunting environment.

It is noteworthy that the respondents appeared to readily accept the myriad of special restrictions and limited access imposed upon them at Dead Creek. Those who opposed participation in such a structured situation probably did not apply for a hunting permit or may have sought hunting opportunities elsewhere. On the other hand, those who hunted generally accepted the imposition of a number of restrictions including access itself.

The most frequently cited motivations of Dead Creek hunters also revealed that interrelationships with other people (friends) and nature (aesthetics) were important motivational factors. While bagging a goose was an important consideration, it ranked near the middle of the various motivations in terms of importance. However, the presence of geese certainly contribute to other factors such as aesthetics and excitement.

Of the three alternatives presented as a means of allocating goose hunting opportunities on Dead Creek, only the current lottery system was widely accepted. Familiarity with the existing system may have contributed to its support. The respondents apparently appreciated the difficulties associated with administering the "first-come, first-served" approach, considering a relatively high demand for limited opportunities. However nearly two-thirds of the respondents placed "first-come, first-served" as the second most favored allocative process. "Pay to hunt" received very little support, although it would have assured a blind for those willing to pay for an opportunity to goose hunt rather than being content with a 1-in-8 probability of being selected. In other regions where hunters have become accustomed to pay for hunting opportunities, "pay to hunt" might be more favorably viewed.

Other studies involving both game and nongame species indicate that considerable altruistic, bequest, and intrinsic values, which occur outside of traditional concepts of the market, exist for wildlife (Glass et al. 1990). A sizable number of people apparently believe that wildlife cannot and should not be valued within the traditional precepts of neoclassical economic theory. Further, many believe that publicly-owned resources should be allocated in a manner where fairness in distribution should be given emphasis over market efficiency.

Concern for equity in the distribution of hunting opportunities has a long history in North America and is still a basic consideration when allocating hunting opportunities. When wildlife populations are at reduced levels that will not sustain open hunting even with abbreviated seasons, the most common practice employed by public wildlife management agencies is the use of lotteries to determine who is to receive hunting rights. This is in sharp contrast to the traditional economic efficiency approach which would advocate auctioning of hunting rights to generate maximum revenue and provide hunting opportunities only to those willing to pay the highest prices—theoretically a reflection of the value that they place on the opportunity. However,

maximizing monetary returns is seldom a politically acceptable objective for public agencies when allocating wildlife-related opportunities. While the views of present or potential users toward the allocation of hunting opportunities provides useful insights, it represents a small portion of all Vermont hunters and does not consider the views of other segments of the general population. Even though hunters have traditionally provided the revenues supporting wildlife management, more information is needed on the attitudes, concerns, and values associated with wildlife by the general public. Common property resources belong to all, and a broader spectrum of public opinion must be considered in allocation and management policy formulation.

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A survey of goose hunters on a limited access area, Dead Creek Goose Management Area, in Vermont, was conducted during the fall of 1987. Respondents appeared well adapted to the structured hunting environment and agreed with most of the special rules and regulations. The current lottery system was favored over "first-come, first-served" and market pricing as alternative marketing systems.

Keywords: Goose hunting; wildlife allocation; hunting values; structured hunts

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