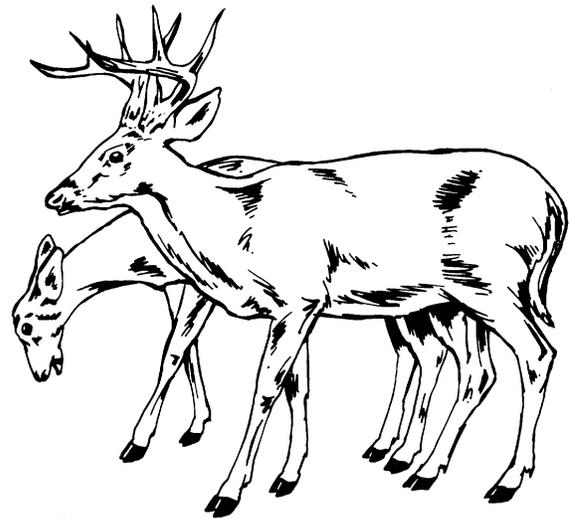

Factors Influencing Hunter Use of Deer Management Permits



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EXECUTIVE SUMMARY

Deer management capability in New York State depends on hunters applying for and filling DMPs. We identified and categorized those factors correlated with DMP use by 1997 New York State deer hunters. Understanding these factors will help the New York State Bureau of Wildlife (BOW) devise strategies for maximizing DMP use.

Theoretical Background

The Theory of Planned Behavior identifies the types of factors that influence whether people will apply for a DMP. The most direct influence on whether hunters apply for DMPs is their "intention to apply for a DMP." The intention to apply for a DMP is determined by three interrelated factors: (1) "perceived behavioral control" (How easy or difficult do hunters think it is to apply?); (2) "attitude toward DMP application" (Do hunters think applying for a DMP is good or bad?); and (3) "subjective norm" (What social pressures exist for hunters to apply or not apply for a DMP?).

Each of these factors is affected by others:

- "Perceived behavioral control" is determined by "control beliefs" and "perceived facilitation." "Control beliefs" are hunters' beliefs about the presence of factors that could make applying for a DMP easier or more difficult (e.g., the time period during which an application must be made). "Perceived facilitation" refers to perceptions as to whether these factors will make applying for a DMP easier or more difficult (e.g., some hunters might perceive the time period as too short).
- "Attitude toward DMP application" is determined by "behavioral beliefs" and "outcome evaluation." "Behavioral beliefs" are the outcomes hunters expect if they apply for a DMP (e.g., a better opportunity to take at least one deer). "Outcome evaluation" is the hunter's judgment about whether those outcomes are good or bad (e.g., it is important to some hunters to take at least one deer).
- "Subjective norms" are determined by "normative beliefs" and "motivation to comply." "Normative beliefs" are hunters' beliefs about whether people they know would approve of applying for a DMP (e.g., a hunter's friends may think "real men don't take does"). "Motivation to comply" refers to how important the hunters think it is to comply with these people (e.g., it may be very important to comply with friends who are hunting companions).

We used the Theory of Planned Behavior to design and interpret our analyses in order to achieve the following objectives:

- identify factors correlated with whether hunters apply for DMPs;
- classify these factors according to the Theory of Planned Behavior;
- identify strategies for increasing DMP applications; and
- suggest further research that could help increase BOW's deer management capability.

Methods

We selected a random sample of 5,323 1997 New York State deer hunters. We collected data through a mail survey. The primary data from the survey used in this report included:

- how many DMPs hunters applied for, received, and filled in 1997 and 1998;
- reasons why hunters applied or did not apply for DMPs; and
- reasons why hunters supported or opposed regulatory changes.

We mailed the questionnaires early in January 1999. The response rate to our survey was 61.9%. A telephone survey of nonrespondents was conducted beginning in February 1999. Nonrespondents were asked a subset of questions modified from the mail questionnaire. We selected an initial random sample of 298 nonrespondents. We attempted to reach each a minimum of four times and completed 50 interviews.

We grouped our predictor variables into three sets and conducted analyses separately on each set:

- DMP applicants were asked why they applied for DMPs; non-applicants were asked why they did not apply. We calculated the percentage of applicants and non-applicants who checked each reason.
- We asked respondents how important various criteria were to them when they evaluated hunting regulations. We used a factor analysis to categorize these 23 questions into conceptually similar groups. The factor analysis identified 6 factors, which included 18 of the 23 questions. We created scales from these 6 factors by calculating the mean response to all the questions in each scale. These 6 scales and the remaining 5 questions were used to characterize 11 types of outcomes hunters wanted from regulations and to measure how important each of these outcomes were. Using these scales and questions as explanatory variables, we conducted a logistic regression to predict the probability of hunters applying for DMPs.
- The survey also collected a wide variety of other data types including: demographic characteristics; hunting history; characteristics of participation in 1997; deer take statistics; and deer take desires. In a third set of analyses, we determined which of these variables were correlated with whether hunters applied for DMPs.

Results

Some 48.8% of New York State deer hunters applied for at least one DMP in 1997 – 24.3% applied for one DMP, and 24.3% applied for two. Of DMPs issued, 44.9% were filled.

Each of the 3 sets of analyses identified different factors affecting DMP applications, but some factors were identified in more than one analysis. We classified these factors using the Theory of Planned Behavior.

Control beliefs (factors that could make applying for a DMP easier or more difficult) we identified included beliefs about:

- whether enough time was available to complete the application process;
- how easy and costly the application process was to complete; and
- whether one could apply for DMPs in the area in which one hunts.

Behavioral beliefs (what would or might happen if one applies) we identified included beliefs about:

- the likelihood of receiving a DMP;
- the likelihood of being able to use a DMP to hunt (because of time or other constraints);
- the likelihood of taking a deer with a DMP;
- the likelihood of being able to spend more time afield;
- the likelihood of an increased total doe harvest (for those concerned about deer management capability); and
- the likelihood of a decreased doe harvest (for those concerned about too many deer being taken who apply to prevent others from taking does).

Outcome evaluations (judgments about whether the outcomes of applying for a DMP would be good or bad) we identified included judgments about:

- the value of time spent hunting;
- the value of taking deer oneself;
- the value of reducing crowding in hunting areas;
- the value of increasing special hunting opportunities; and
- the value of increasing BOW's management capability.

Recommendations

Based on our analyses, the management actions most likely to increase the number of DMP applicants include:

- Streamline the DMP application process. "Not getting around to it" is an important reason hunters do not apply.
- Evaluate BOW communication about DMP availability. Many hunters seem unsure about their likelihood of receiving a DMP if they apply.
- Provide more opportunities to hunt with DMPs. The time available to hunt is limited for many hunters. More opportunities to use DMPs would increase the likelihood of their use.
- Provide outlets for unwanted deer meat. Many hunters do not apply because they do not need or want an extra deer.
- Educate hunters to appreciate the importance of BOW's deer management capability. Enhancing management capability has increased in importance to hunters over the last 10 years and may continue to do so.

Although our findings answer some questions, they raise others. Additional research or adaptive management trials addressing the following objectives could also enhance BOW's management capability.

- Identify other factors that influence DMP applications. This study did not make a comprehensive attempt to identify all such factors.
- Clarify why certain factors are related to DMP applications. Some ambiguity remains about why certain variables are correlated with DMP applications.
- Determine the relative importance of different influences on DMP applications. Although we identified many factors related to DMP applications, for the most part we did not determine which factors had the greatest influence
- Identify factors that influence: (1) whether DMPs received are used and (2) whether hunters take deer with these DMPs. Knowing what influences DMP applications is important, but hunters must hunt and take deer with DMPs in order to increase BOW's deer management capability.
- Determine what management strategies are most successful for influencing whether hunters apply for, hunt with, and fill DMPs. Many strategies were suggested by our results. Evaluating the effectiveness of these strategies will be important.

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We are particularly grateful to those deer hunters who agreed to be interviewed or to complete a questionnaire as part of this research project.

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INTRODUCTION

White-tailed deer populations are at historic highs and increasing in much of the United States (Warren, 1997). Deer-related problems, including deer-vehicle collisions (Stout et al., 1997), environmental damage (Healy, 1997), property damage (Conover, 1997), and disease (Ostfield et al., 1996), also are increasing.

Keeping deer populations in check is challenging for wildlife managers. Population control requires the harvest of antlerless deer (Ellingwood and Caturano, 1988). With larger deer populations, more antlerless deer must be harvested. Because the number of deer hunters in New York State is decreasing (NYSDEC license data), however, harvesting large numbers of antlerless deer is becoming more difficult.

The current hunting license system was developed when the primary concern was protecting deer rather than controlling overabundant herds (Curtis et al., 2000). In New York State, a deer license allows a hunter to take a buck. Since 1919, deer of either sex have been harvested in areas needing population control (Severinghaus and Brown, 1956). Beginning in 1960, party permits, which are now called deer management permits, allowed harvest of antlerless deer for population control in areas of New York State (Goff and Decker, 1974). Deer management permit regulations require an additional step beyond purchasing a big game license. To take an antlerless deer, most hunters must have a deer management permit (DMP) in addition to their deer license.

Deer management capability in New York State, therefore, depends on hunters applying for and filling DMPs. The New York State Bureau of Wildlife (BOW) decides how many DMPs to make available to manage the size of the deer population as desired. In some parts of the state, hunters apply for more DMPs than BOW makes available – in these areas, hunter interest in antlerless deer harvest is greater than necessary to manage the deer population. In other areas, even if hunters could take as many does as they wanted, the doe harvest would still not be great enough to stop the growth of the deer population at present (Curtis et al., 2000). In these areas, hunter use of DMPs may never be great enough to manage the existing deer population under current regulations.

In this report, we are interested in parts of the state that lie somewhere between these two extremes – areas in which hunters are not currently harvesting as many antlerless deer as BOW would like, but in which hunters would be willing to harvest more. In these areas, BOW could use an understanding of the factors associated with DMP applications to encourage hunters to apply for more. Why do some hunters apply for and hunt with DMPs while others do not? How committed are hunters to helping manage the deer herd?

Decker and Connelly (1989) showed that hunters in New York State apply for DMPs for various reasons. Hunters may want to:

- increase their chances of taking at least one deer;
- take an additional deer after filling their buck tag;

- continue to hunt after taking a buck; and even
- prevent others from taking antlerless deer.

Decker and Connelly (1989) found that hunter interest in helping to manage the deer herd was relatively low.

Decker and Connelly's (1989) study is now over 10 years old, however, and DMP regulations have changed since that time¹. We identified and categorized those factors correlated with DMP use by 1997 New York State deer hunters. Understanding these factors will help the BOW devise strategies for maximizing DMP use.

THEORETICAL BACKGROUND

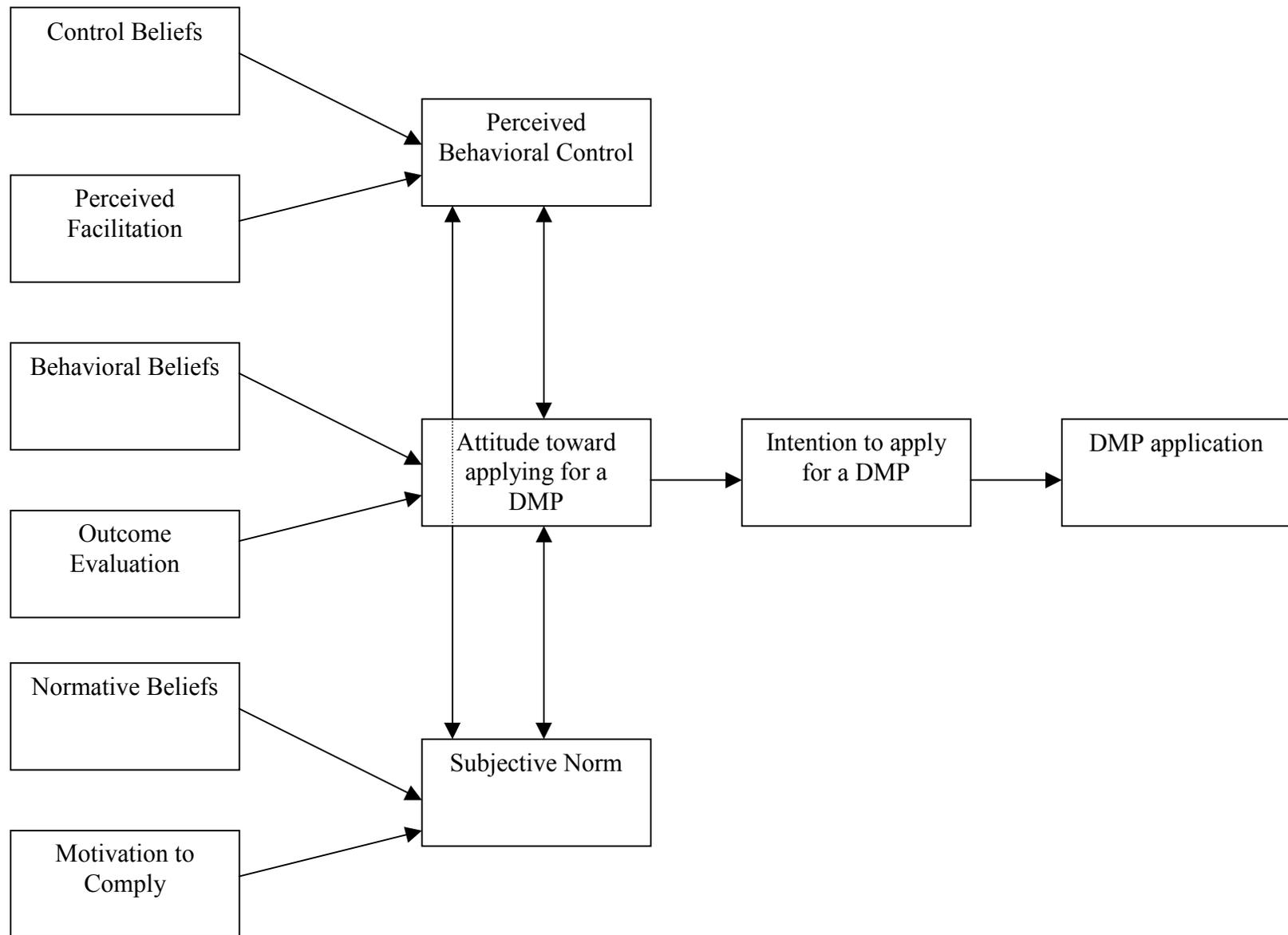
The Theory of Planned Behavior (Ajzen, 1989) identifies the types of factors that influence whether people engage in a behavior (Figure 1). We are interested in a particular behavior – applying for a DMP. The most direct influence on whether hunters apply for DMPs is their "intention to apply for a DMP." The intention to apply for a DMP is determined by three interrelated factors: (1) "perceived behavioral control" (How easy or difficult do hunters think it is to apply?); (2) "attitude toward DMP application" (Do hunters think applying for a DMP is good or bad?); and (3) "subjective norm" (What social pressures exist for hunters to apply or not apply for a DMP?).

Each of these factors is affected by others:

- "Perceived behavioral control" is determined by "control beliefs" and "perceived facilitation." "Control beliefs" are hunters' beliefs about the presence of factors that could make applying for a DMP easier or more difficult (e.g., the time period during which an application must be made). "Perceived facilitation" refers to perceptions as to whether these factors will make applying for a DMP easier or more difficult (e.g., some hunters might perceive the time period as too short).
- "Attitude toward DMP application" is determined by "behavioral beliefs" and "outcome evaluation." "Behavioral beliefs" are the outcomes hunters expect if they apply for a DMP (e.g., a better opportunity to take at least one deer). "Outcome evaluation" is the hunter's judgment about whether those outcomes are good or bad (e.g., it is important to some hunters to take at least one deer).
- "Subjective norms" are determined by "normative beliefs" and "motivation to comply." "Normative beliefs" are hunters' beliefs about whether people they know would approve of applying for a DMP (e.g., a hunter's friends may think "real men don't take does"). "Motivation to comply" refers to how important the hunters think it is to comply with these people (e.g., it may be very important to comply with friends who are hunting companions).

¹ DMPs formerly allowed hunters to take any deer (antlered or antlerless). Beginning in 1990 and 1991, DMPs allowed hunters to take only antlerless deer.

Figure 1. Factors that could influence whether hunters apply for DMPs according to the Theory of Planned Behavior.



We used the Theory of Planned Behavior to design and interpret our analyses. It helps explain why certain variables might be correlated with DMP applications. Using it as a theoretical framework, we designed this study to achieve the following objectives:

- identify factors correlated with whether hunters apply for DMPs;
- classify these factors according to the Theory of Planned Behavior;
- identify strategies for increasing DMP applications; and
- suggest further research that could help increase BOW's deer management capability.

METHODS

Sample Selection

We selected a random sample of 5,323 1997 New York State deer hunters, including people who bought senior licenses, big game licenses, sportsman licenses, junior archery licenses, and one or more nonresident licenses (combination, big game, bowhunting, and/or muzzleloading).

New York State was divided into four geographic strata, and a random sample of hunters was drawn from each stratum (Figure 2):

- 1,300 from Metro/Long Island;
- 1,250 from the Catskills;
- 1,250 from the Adirondacks²; and
- 1,250 from western New York.

We drew an additional sample of 273 nonresidents to ensure adequate representation of that group. This sample was drawn in proportion to the number of nonresident licenses sold in each region:

- 67 from Metro/Long Island;
- 120 from the Catskills;
- 43 from the Adirondacks; and
- 43 from western New York.

Questionnaire Development

We collected data through a mail survey (Appendix A). The primary data from the survey used in this report included:

- how many DMPs hunters applied for, received, and filled in 1997 and 1998;
- reasons why hunters applied or did not apply for DMPs; and
- reasons why hunters supported or opposed regulatory changes.

² As defined in this study, the Adirondack region included much of DEC's Northern Zone.

Figure 2. Geographic strata used in study.



Other data collected, some of which also was used in this report, included:

- demographic characteristics;
- hunting history;
- participation during the 1997 and 1998 deer seasons, including:
 - seasons hunted;
 - counties hunted;
 - types of land hunted (private, public, etc.); and
 - deer take;
- number of deer desired each year; and
- attitudes toward proposed regulatory changes.

Group and individual interviews of approximately 65 deer hunters aided the design of the questionnaire. These interviews took place over the telephone or face-to-face and were tape recorded when possible. Questions were open-ended and explored hunters' attitudes toward proposed regulatory changes.

Survey Implementation

To implement the survey, we followed the 4-wave approach advocated by Dillman (1978) and Brown et al. (1989). We mailed the questionnaires early in January 1999. A reminder letter followed one week later. We mailed a second reminder letter and an additional copy of the questionnaire 10 days later. A final reminder letter was sent to nonrespondents one week after that. The response rate was 61.9%.

A telephone survey of nonrespondents was conducted beginning in February 1999. Nonrespondents were asked a subset of questions modified from the mail questionnaire, focusing on:

- whether they hunted deer in 1997 and 1998;
- the seasons during which they hunted;
- their take of antlered and antlerless deer;
- their use of DMPs;
- their desired deer take; and
- their attitudes toward two proposed regulatory changes.

We selected an initial random sample of 298 nonrespondents. We attempted to reach each a minimum of four times and completed 50 interviews.

Analysis

This survey was conducted for several reasons, only one of which was to identify factors related to DMP use. Collecting data in a form that could serve multiple purposes placed some limitations on our ability to assess factors influencing DMP applications:

- Not all types of factors which could influence DMP applications, as suggested by the Theory of Planned Behavior, were well-represented in our data set.

- Some variables related to DMP applications could not be unambiguously categorized according to the Theory of Planned Behavior.
- Not all variables included in our analyses were in the same format. They included Yes/No questions, 5-point Likert scale responses, open-ended numerical responses, and categorical responses.

Because of the different formats of the variables which might predict DMP use, we did not combine all these variables into a single analysis, such as a regression. We grouped our predictor variables into three sets and conducted analyses separately on each set. One set characterized the reasons hunters did or did not apply for DMPs. The second quantified the outcomes hunters wanted from hunting regulations, such as regulations governing DMP use. The final set was a miscellaneous set of variables which could be correlated with DMP use.

Reasons for Applying and Not Applying for DMPs

DMP applicants were asked why they applied for DMPs; non-applicants were asked why they did not apply. Both sets of questions were asked in a checklist format; respondents checked those reasons which applied to them. More than one reason could be checked. We calculated the percentage of applicants and non-applicants who checked each reason. The Theory of Planned Behavior was used to explain the relationship between these reasons and DMP applications.

Reasons Why Hunters Support or Oppose Regulations

We asked respondents how important various criteria were to them when they evaluated hunting regulations. We posed the statement: "When I consider proposed deer hunting regulatory changes, it is important to me that these changes . . ." Twenty-three statements followed, to which hunters responded using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." For example, we asked respondents whether it was important to them that regulatory changes:

- do not result in an increased total doe harvest;
- increase hunting opportunities for bow hunters;
- increase their own chances of taking bucks; and
- protect the interests of farmers and other landowners.

Because some of the outcomes hunters wanted from regulations were closely related, we used a factor analysis (unweighted least squares method, Varimax rotation) to categorize these 23 questions into conceptually similar groups. Questions were placed into a single group if hunters tended to answer them similarly. The resulting groups, therefore, provided a simplified list of outcomes that hunters might want from hunting regulations.

The factor analysis identified 6 factors, which included 18 of the 23 questions. We created scales from these 6 factors by calculating the mean response to all the questions in each scale. These 6 scales and the remaining 5 questions were used to characterize 11 types of outcomes hunters wanted from regulations and to measure how important each of these

outcomes were. We named these scales and questions for the interests and concerns they addressed:

- herd health (protecting the health of the deer herd – Question 22d);
- ethics (hunter behavior, safety, how deer are treated, and protecting landowners – Questions 22q, r, s, and t);
- crowding (reducing crowding – Questions 22u and v);
- management capability (increasing DEC's management capability – Questions 22c);
- individual limits (limiting the number of deer individual hunters can take – Question 22h);
- hunting opportunity (having more opportunities to hunt and take deer – Questions 22g, j, k, l, m, and n);
- participation (increasing hunting participation – Questions 22 o and p);
- special opportunities (increasing bow hunting and muzzleloading opportunities – Questions 22e and f); and
- landowners (providing landowner harvest opportunities – Question 22i);
- funding (increasing agency revenue – Question 22w); and
- harvest limits (limiting total harvest – Questions 22a, b).

Using these scales and questions as explanatory variables, we conducted a logistic regression to predict the probability of hunters applying for DMPs. We deleted nonsignificant explanatory variables from the equation one at a time (least significant variables first) until only significant variables remained. The Theory of Planned Behavior was used to interpret these relationships.

Other Variables

The survey also collected a wide variety of other data types including:

- demographic characteristics;
- hunting history;
- characteristics of participation in 1997;
- deer take statistics; and
- deer take desires.

In a third set of analyses, we determined which of these variables were correlated with whether hunters applied for DMPs, using the Theory of Planned Behavior to explain these relationships.

RESULTS AND DISCUSSION

DMP Use

Some 48.8% of New York State deer hunters applied for at least one DMP in 1997³. They could apply for either one or two DMPs – 24.3% applied for one DMP, and 24.3% applied for two. Of DMPs issued, 44.9% were filled⁴. Among hunters receiving at least 1 DMP, 49.3% filled at least one. Among those receiving 2 DMPs, 26.0% filled both.

Reasons for Applying and Not Applying for DMPs

Results

The most common reason for applying for a DMP was "to increase my chances of taking at least one deer" (83.6% of DMP applicants, Table 1). Other reasons cited by at least half of all DMP applicants included: (1) to be able to take an additional deer after filling my buck tag; (2) to allow me to hunt legally with friends and family after filling my buck tag; and (3) to help manage the size of the deer herd. Only 4.2% of DMP applicants applied for a DMP to keep someone else from taking a doe.

Some non-applicants wanted to apply but did not (40.8%), and the others did not want to apply. Among those who wanted to apply but did not, the most common reason for not applying was: "I did not get around to it" (28.9% of non-applicants, Table 2). Other reasons included: (1) I did not think I would have enough time to hunt; (2) I did not think my chances of getting a permit were good; and (3) the permit application period was too short.

The most commonly cited reason by hunters who did not want to apply for a DMP was that: "I did not need or want an extra deer" (29.0% of non-applicants, Table 2). A total of 17.2% of non-applicants did not apply because they were concerned about too many does being shot in their area.

Discussion

Over half of DMP applicants (54%) were interested in helping to manage the size of the deer herd; this is a marked increase from the 44% who wanted to help manage the herd in 1989 (Enck and Decker, 1991). Meanwhile the percentage of non-applicants who were concerned about too many does being shot in their area decreased from 27% to 17%. Together, these results show that deer hunters are more receptive to deer population control, even if this is not their primary hunting motivation.

³ Adjusted for nonresponse bias. Other data presented in this report did not differ significantly between respondents and nonrespondents.

⁴ This figure is considerably higher than BOW's estimate that 28.3% of DMPs were filled in 1997. Mail surveys tend to overestimate hunters' success at bagging deer because those who bag deer are more likely to respond to surveys.

Table 1. Reasons why DMP applicants applied.

| Reason | Percent of applicants for whom reason applied |
|---|---|
| To increase my chances of taking at least one deer | 83.6 |
| To be able to take an additional deer after filling my buck tag | 59.6 |
| To allow me to hunt legally with friends and family after filling my buck tag | 57.3 |
| To help manage the size of the deer herd | 54.1 |
| To keep someone else from taking a doe | 4.2 |

Table 2. Reasons why DMP non-applicants did not apply.

| Reason | Percent of non- applicants for whom reason applied |
|---|--|
| I wanted to apply but: | |
| I did not get around to it | 28.9 |
| I did not think I would have enough time to hunt | 17.8 |
| I did not think my chances of getting a permit were good | 14.4 |
| The permit application period was too short | 13.2 |
| I did not want to apply because: | |
| I did not need or want an extra deer | 29.0 |
| I was concerned about too many does being shot in my hunting area | 17.2 |

Both control beliefs (factors that make applying for a DMP easier or more difficult) and behavioral beliefs (what hunters expect will happen if they apply for DMPs) influence whether hunters apply for DMPs (Figure 1). The 28.9% of non-applicants who said they wanted to apply but "did not get around to it" reflect an unspecified control belief that their opportunity to apply for a DMP was constrained – perhaps by time, effort required, or awareness of how to apply. The belief that the application period was too short was a more specific control belief that time constrained the application process.

Most of the reasons cited by applicants and non-applicants, however, reflected behavioral beliefs rather than control beliefs. One behavioral belief was that applying for a DMP could lead to taking a deer. This belief was evident among applicants who wanted to increase their likelihood of taking at least one deer and among those who applied to take an additional deer. It also was implied by non-applicants who did not apply because they did not need or want an extra deer – they expected that an outcome of applying for a DMP would be taking a deer with a DMP, but this was not an outcome they valued.

Many applicants believed that applying for a DMP could result in more time spent afield. Some non-applicants chose not to apply because they thought they would be too busy to use the DMP, and so this outcome would not occur for them.

A third set of behavioral beliefs had to do with the impact of applying for DMPs on the total doe harvest. More than half of applicants applied for DMPs to help manage the deer herd, reflecting a belief that applying for a DMP could increase the doe harvest. Those non-applicants who were concerned about too many does being shot also reflected the same belief, but since they did not want the doe harvest to increase, they did not apply.

Some applicants held the opposite belief – that applying for a DMP could help reduce the doe harvest. They did not want does harvested, and believed that if they applied for and received a DMP, they could limit the doe harvest because their DMP would be unavailable to another hunter.

Another behavioral belief implied in many of the reasons for applying for a DMP is that those who apply for a DMP may receive one. Some non-applicants did not apply specifically because they did not expect this outcome – they reasoned that their chances of getting a DMP were not good.

Reasons Why Hunters Support or Oppose Regulations

Results

We conducted a logistic regression analysis to predict the probability of hunters applying for at least one DMP. The predictor variables we used in the equation were the 11 outcomes we had identified hunters might want from regulations (p. 8). We reasoned that the types of hunting-related outcomes they were interested in would be related to their DMP use. Specifically, we hypothesized that hunters interested in "hunting opportunity" and "management capability" would be more likely to apply for DMPs and hunters concerned about "harvest limits" (limiting the total deer harvest) would be less likely to apply.

The final logistic regression equation was:

$$\ln(\text{Pr} / 1 - \text{Pr}) = -0.627 + 0.212 * \text{HO} - 0.190 * \text{C} + 0.075 * \text{P} + 0.124 * \text{MC}$$

in which:

- Pr = probability of a hunter applying for at least one DMP;
- HO = hunting opportunity;
- C = crowding;
- P = participation; and
- MC = management capability.

The sign of a coefficient indicates whether an interest in that outcome was positively or negatively related to DMP use. The absolute value of the coefficient reflects the strength of the relationship. "Hunting opportunity," "management capability," and "participation" were positively correlated with the likelihood of applying for a DMP; hunters were more likely to apply for DMPs if:

- they wanted more opportunities to hunt and take deer;
- they wanted to increase DEC's management capability; or
- they were interested in increasing participation in hunting.

The relationship of "participation" with DMP applications was the weakest. "Crowding" was negatively related to the likelihood of applying for a DMP – people who were concerned about crowding were less likely to apply for DMPs (an unanticipated result). Although we hypothesized that "harvest limits" (a desire to limit the total deer harvest) would be negatively correlated with DMP applications, it was not.

Table 3 depicts how the probability of applying for a DMP varies for hunters who place different importance on these outcomes. Depending on how much importance hunters place on improving their hunting opportunities or reducing crowding (with other variables held constant), the probability of applying for a DMP can range from 40% to over 60%. Depending on the importance placed on increasing DEC's management capability or increasing hunting participation, the likelihood ranges from 45% to 57%.

Discussion

The variables related to DMP use in the regression models can be considered "outcome evaluations" in the Theory of Planned Behavior – these variables show how much importance hunters place on outcomes associated with applying for DMPs. Some variables also imply "behavioral beliefs" – not only do hunters value these outcomes, but they expect them to occur if they apply for a DMP.

- Hunters who value increased opportunities to hunt and take deer, increased management capability, and increased hunting participation are all more likely to apply for DMPs. A value placed on hunting opportunities had the largest effect while a value on increased participation

Table 3. The probability of applying for a DMP (%) given the importance of different regulatory outcomes^a.

| Outcome | Do you agree this outcome is important? | | |
|----------------------------------|---|---------|----------------|
| | Strongly Disagree | Neutral | Strongly Agree |
| More hunting opportunities | 40.4 | 50.9 | 61.3 |
| Increased management capability | 44.7 | 50.9 | 57.1 |
| Greater participation in hunting | 47.2 | 50.9 | 54.6 |
| Reduced crowding | 60.3 | 50.9 | 41.5 |

^a When assessing the relationship between one outcome and probability of applying for a DMP, the importances of other outcomes are held at their mid-values ("neutral").

had the smallest. When hunters value reducing crowding in hunting areas, they are less likely to apply for DMPs.

Some of these results are logical:

- Applying for a DMP is a way to increase hunting and harvest opportunities for those who value these things. Of all the variables considered, an interest in increased hunting and harvest opportunities had the largest effect on whether hunters applied for DMPs. Applying for a DMP can help contribute to BOW's management capability for hunters who believe that is important.
- Hunters may believe that the additional hunting opportunities DMPs create will help to maintain or increase hunting participation.

We did not anticipate that a concern about hunter crowding would make hunters less likely to apply for DMPs. At least two possible explanations for this result exist:

- Hunters bothered by crowding may be less likely to pursue additional hunting opportunities because those opportunities would expose them to crowding.
- Hunters concerned about crowding may tend to hunt on lands where crowding is a factor (e.g., public lands). In these areas, deer populations may be lower and hunters may be less likely to perceive the need to control the deer herd. Hunters in these areas also may believe their chances of taking a deer with a DMP are lower and so have less incentive to apply for a DMP.

Without further data, however, it is impossible to determine with certainty why a concern about crowding is inversely correlated with DMP applications.

Although we expected that hunters who wanted to limit the harvest would be less likely to apply for a DMP, this was not the case. One explanation for this finding is that a concern about limiting the doe harvest was only one component of this scale. The other component was a concern about limiting the buck harvest. Although concern about the doe harvest was correlated with concern about the buck harvest, it was less important to most hunters. Issues surrounding DMP use, therefore, may not be the dominant factor in this scale.

Importance of Other Variables

Several other variables also were correlated with whether hunters applied for DMPs. Relationships between this diverse array of variables and DMP applications were useful to explore, but some were difficult to interpret. We developed hypotheses about why these variables were correlated with DMP use, but other interpretations are also possible.

Participation Variables. Several measures of hunting participation were related to DMP applications. Hunters who hunted in the special seasons were more likely to apply for DMPs than those who did not (Tables 4 and 5). The relationship between muzzleloader hunting and DMP applications is not apparent in the statewide figures (Table 4) because most muzzleloader

Table 4. Percentage of hunters applying for DMPs by seasons hunted.

| Season | Percentage of DMP applicants |
|----------------------|------------------------------|
| Regular gun only | 52.2 |
| Bow | 66.5 |
| Muzzleloader | 47.4 |
| Bow and muzzleloader | 73.9 |

Table 5. Percentage of hunters applying for DMPs by participation in the muzzleloader season and region of license application.

| Region | Hunt during muzzleloader season? | |
|--------------------|----------------------------------|------|
| | No | Yes |
| Metro/Long Island | 62.3 | 86.5 |
| Catskills | 53.0 | 70.1 |
| Adirondacks | 37.1 | 48.6 |
| Central/Western NY | 59.1 | 70.3 |
| Statewide | 54.3 | 59.3 |

hunters are from the Adirondacks, where the fewest DMPs are available⁵. Within each region, however, the relationship between DMP use and muzzleloader hunting is obvious – those participating in the muzzleloader season were more likely than those who did not to apply for DMPs. Consistent year-to-year participation in hunting also was correlated with DMP applications. Although 58.1% of continuous⁶ hunters applied for DMPs, only 27.9% of sporadic hunters who bought a license in 1997 applied for DMPs.

We believe the participation variables can reflect overall interest in hunting. Those who are more likely to participate in various hunting opportunities, and to participate on a continuing basis from year to year, demonstrate a high level of interest in hunting. Hunters with a high level of interest in hunting are more likely to apply for DMPs than others because DMPs provide them with another hunting-related pursuit.

Interest in hunting could be classified as an outcome evaluation in the Theory of Planned Behavior (Figure 1). It is a measure of the value that hunters place on the outcome of being able to hunt.

Desired Deer Take. Those hunters who wanted to take more deer were more likely to apply for DMPs. DMP applicants, on average, would like to take 2.18 deer each year (SEM = 0.03), if they were unrestricted by regulations. Non-applicants would like to take 1.81 deer each year (SEM = 0.03).

The relationship between desired deer take and DMP applications is logical given that most DMP applicants wanted to increase their chances of taking a deer. Desired deer take is also an outcome evaluation, indicating the value hunters place on taking deer.

Actual Deer Take. DMP applicants had a history of taking more deer than non-applicants (Table 6). Applicants had both a higher mean buck take during the 1997 gun season and a higher lifetime deer take than non-applicants. Actual deer take arguably could serve as an indicator for several factors that influence whether hunters apply for DMPs.

- Deer take could indicate interest in hunting. Those who are most interested in hunting spend more time hunting and, therefore, take more deer. Such hunters would be more likely to apply for DMPs.
- Deer take, like desired deer take, could indicate the value hunters place on taking deer. Although desired deer take does not determine actual deer take, it does influence it. Hunters who place a higher value on taking deer may be more likely to apply for DMPs.
- Deer take could reflect skill in hunting. Those hunters who take the most deer are the most skilled at taking deer. Hunting skill could influence an important behavioral belief – whether hunters believe they will be able to take a deer with a DMP. Skilled

⁵ Until 1998, no DMPs had been available in the Northern Zone since 1970, and even today the availability of DMPs is very limited in this area.

⁶ For the purposes of this study, "continuous" hunters are defined as those who purchased a license both in 1997 and 1998. "Sporadic" hunters are defined as those who purchased a license in 1997, but not 1998.

Table 6. Deer take statistics for DMP applicants and non-applicants.

| | Applied for DMP? | | | |
|---------------------------------|------------------|------|-------|------|
| | No | | Yes | |
| | Mean | SEM | Mean | SEM |
| Buck take in 1997 gun season | 0.29 | 0.01 | 0.38 | 0.01 |
| Lifetime deer take | 12.70 | 0.68 | 17.94 | 0.45 |

hunters are more likely to believe that applying for a DMP will result in taking another deer. This belief, in turn, could influence DMP applications.

Use of Public Land. The types of land on which DMP applicants and non-applicants hunted differed. DMP applicants in the Catskills and Central/Western New York did less of their hunting on public land than non-applicants (Table 7). Two possible explanations exist for why hunters who depend more heavily on public lands are less likely to apply for DMPs:

- The use of public land could reflect problems in gaining access to hunting lands. Those hunters who depend most heavily on public lands may do so because they do not have access to other lands. Hunters with limited access will have less opportunity to use DMPs, even if they apply for and receive one (a behavioral belief). This behavioral belief in turn could make hunters less likely to apply for DMPs.
- A related interpretation could be that public lands that can be hunted are the most heavily hunted lands and have the lowest deer populations. Hunters using heavily hunted lands could be less likely to believe that they would be able to take a deer with a DMP – a behavioral belief that could inhibit them from applying. They also might place lower value on having does taken out of the population – an outcome evaluation that might inhibit DMP applications.

Geographic Region. Geographic variation in DMP applications was evident (Table 8). Hunters from the Adirondacks⁷ were least likely to apply for DMPs (41.2%). Those from the Metro/Long Island region and Central/Western New York were most likely to apply (over 60%). Two possible explanations exist for this result:

- Because very few DMPs are available in the Adirondacks, Adirondack hunters might hold the behavioral belief that if they apply for a DMP they will not get one. Adirondack hunters could, of course, apply for DMPs in other regions, increasing their chances of receiving one. They may not be willing to travel to other regions to hunt, however, and might thus hold the behavioral belief that applying for DMPs will not give them more opportunities to hunt.
- This regional difference could reflect a normative belief. Doe harvest has been very controversial in the Adirondacks. According to the Theory of Planned Behavior, one influence on whether hunters apply for DMPs will be whether important individuals and groups approve of those behaviors.

License Type. License type correlated with DMP applications (Table 9). Those buying sportsman's licenses were most likely to apply for DMPs (66.8%). The least likely to apply for DMPs were those buying big game licenses (33.3%) or nonresident licenses (37.2%).

The difference between sportsman's license holders and big game license holders is striking because both are resident license buyers but sportsman's license holders are twice as likely to apply for DMPs. This difference is likely because Big Game license holders have to pay a ten dollar fee to apply for a DMP, while Sportsman, Senior, and Nonresident Combination

⁷ As defined in this study, the Adirondack region included much of DEC's Northern Zone.

Table 7. Amount of deer hunting done on public land by DMP applicants and non-applicants^a.

| Region | Applied for DMP? | | | |
|---------------------------------|------------------|------|------|------|
| | No | | Yes | |
| | Mean | SEM | Mean | SEM |
| Metro/Long Island | 0.88 | 0.08 | 0.78 | 0.05 |
| Catskills ^b | 0.84 | 0.06 | 0.69 | 0.05 |
| Adirondacks | 1.06 | 0.06 | 1.10 | 0.06 |
| Central/Western NY ^b | 0.83 | 0.06 | 0.65 | 0.04 |

^aScale of 0 to 3. 0=none; 1=some; 2=most; 3=all.

^bMeans differ significantly ($P \leq 0.05$).

Table 8. Percentage of hunters applying for DMPs by region.

| Region | % who applied for DMP |
|--------------------|-----------------------|
| Metro/Long Island | 63.5 |
| Catskills | 55.0 |
| Adirondacks | 41.2 |
| Central/Western NY | 60.1 |
| Statewide | 55.1 |

Table 9. Percentage of hunters applying for DMPs by license type.

| License type | % who applied for DMP |
|--------------|-----------------------|
| Senior | 51.5 |
| Big Game | 33.3 |
| Sportsman | 66.8 |
| Nonresident | 37.2 |

license holders do not. Charging an additional fee to Big Game license holders will influence their control beliefs by making the application process more expensive. Eliminating the additional fee for Big Game license holders could lead to an increase in DMP applications.

CONCLUSIONS

In this study, we explored the factors that were related to whether hunters applied for DMPs. By understanding the factors that limit DMP applications, we expect that BOW may be able to encourage more applications and increase its deer management capability. It is important to note, however, that an increase in DMP applications is not synonymous with an increase in management capability. Management capability depends on the number of does harvested, and, as this report shows, hunters apply for DMPs for many reasons besides harvesting does. Increasing DMP applications should be viewed, therefore, as only one strategy for increasing management capability – a strategy likely to be most successful in areas in which BOW is not currently harvesting as many antlerless deer as it would like, but in which hunters would be willing to harvest more.

Summary of Factors Influencing DMP Applications

Each of the 3 sets of analyses identified different factors affecting DMP applications, but some factors were identified in more than one analysis. We classified these factors using the Theory of Planned Behavior (Figure 1):

Control beliefs (factors that could make applying for a DMP easier or more difficult) we identified included beliefs about:

- whether enough time was available to complete the application process;
- how easy the application process was to complete; and
- whether one could apply for DMPs in the area in which one hunts.

Behavioral beliefs (what would or might happen if one applies) we identified included beliefs about:

- the likelihood of receiving a DMP;
- the likelihood of being able to use a DMP to hunt (because of time or other constraints);
- the likelihood of taking a deer with a DMP;
- the likelihood of being able to spend more time afield;
- the likelihood of an increased total doe harvest (for those concerned about deer management capability); and
- the likelihood of a decreased doe harvest (for those concerned about too many deer being taken who apply to prevent others from taking does).

Outcome evaluations (judgments about whether the outcomes of applying for a DMP would be good or bad) we identified included judgments about:

- the value of time spent hunting;

- the value of taking deer oneself;
- the value of reducing crowding in hunting areas;
- the value of increasing special hunting opportunities; and
- the value of increasing BOW's management capability.

Normative beliefs concerned whether important groups or individuals would approve of hunters applying for DMPs. Although we identified this as a possible factor influencing DMP applications, we did not have sufficient data to identify specific groups or individuals who might influence hunters.

These results can serve as the basis of recommendations about how to make the most effective use of DMPs to manage deer. They also lead to additional questions that could serve as the basis of further research.

Management Recommendations

Deer management capability is and will remain important to BOW. In the current regulatory framework, maximizing deer management capability depends on insuring that as many hunters apply for (and use) DMPs as possible. The list of factors we developed can help BOW determine how to maximize the use of DMPs. Although BOW will not be able to influence all of these factors, they can influence some.

Specific management actions that BOW could consider include:

Streamline the DMP application process. "Not getting around to it" was the most frequently cited reason for not applying for a DMP by hunters who wanted to apply. Even though the application process is not cumbersome, any additional steps that hunters must take to apply for a DMP when buying their license will discourage some applications. Computerized licensing or over-the-counter DMPs may present new ways to streamline the application process.

Evaluate communication DMP availability. Some hunters from throughout the state did not apply for DMPs because they did not think their chances of getting one were good. If their chances of getting a DMP are good, but they do not believe that they are, both BOW and hunters lose. Although BOW communicates about the availability of DMPs in different parts of the state, this communication may not be reaching some hunters. Evaluating and possibly improving BOW communication about DMP availability could help hunters can make a more well-informed decision about whether or not to apply.

Provide more opportunities to use DMPs. Deer hunters sometimes do not apply for DMPs because they do not think they will have the chance to use them. Indeed, hunters in general may find their hunting opportunities constrained by the time they must put into work, family, and other obligations. Although BOW can not remove these constraints, they can lessen them by expanding the opportunities hunters have to use DMPs. Indeed, BOW has taken such steps already by expanding the opportunities to use DMPs in the bow season.

Provide outlets for unwanted deer meat. Many hunters do not apply for DMPs because they do not need or want an extra deer. The more aware hunters are of the opportunities to

donate unwanted deer meat to a suitable cause, the less this constraint will stop hunters from applying for DMPs.

Educate hunters to appreciate the importance of BOW's deer management capability. If hunters share BOW's deer management goals, they will be more likely to take part in hunting opportunities which contribute to achieving them. Although helping to manage the deer herd will never be the primary reason for applying for DMPs among all applicants, it may become a more important motivation. Since 1989, the percentage of DMP applicants interested in helping to manage the deer herd has increased to more than half of all applicants. Publicity by BOW to stress the importance of this goal could help to increase this percentage in the future.

Research Recommendations

Although our findings answer some questions, they raise others. Additional research addressing the following objectives also could enhance BOW's management capability.

Identify other factors that influence DMP applications. Through this study, we have identified a number of factors as control beliefs, behavioral beliefs, and outcome evaluations that influence DMP applications. The primary purpose of this study, however, was not to identify these factors; thus, our list of factors is undoubtedly incomplete. A more comprehensive effort to identify the range of factors that influence DMP applications is necessary. Indeed, our knowledge of some influences specified by the Theory of Planned Behavior is particularly limited. We have little understanding of the categories that contribute to "subjective norms." What beliefs about applying for DMPs are held by important peer individuals and groups? Who are these individuals and groups? How motivated do hunters feel to comply with them? Answering these questions could suggest new strategies for maximizing use of DMPs.

Clarify why certain factors are related to DMP applications. Why some variables are correlated with DMP applications is unclear. We found that a hunter's geographic region was also related to DMP applications. This could be because: (1) DMPs are less readily available in the Adirondacks⁸; (2) deer populations are lower in parts of the Adirondacks and the chance of taking a deer with a DMP are less; or (3) the culture of the Adirondacks is not supportive of hunting with DMPs. Understanding why these and other variables are related to DMP applications could help determine the most appropriate management strategies.

Determine the relative importance of different influences on DMP applications. Although we have developed a list of factors that influence DMP applications, the relative importance of each factor is unclear. Understanding which factors exert the greatest effects and how these factors are related to each other could help BOW prioritize management actions.

Identify factors that influence: (1) whether DMPs received are used and (2) whether hunters take deer with these DMPs. We identified whether hunters apply for DMPs as our behavior of interest. Having hunters apply for DMPs is not BOW's ultimate interest, however. For DMP applications to translate into management capability, hunters must hunt and take antlerless deer. Although some of the same factors will influence all three of these behaviors, some unique factors will influence each. For example, hunters may apply for DMPs thinking

⁸ As defined in this study, the Adirondack region included much of DEC's Northern Zone.

they will use them, but if they believe the weather is unsuitable, they may not hunt with them. Or hunters may hunt with DMPs because it gives them the opportunity to spend time with family and friends, but they may have very little interest in harvesting does. Or, perhaps most importantly, regulatory incentives may be able to influence whether hunters try to take does – either by filling DMPs or through new opportunities created by these regulations. Although the current study was not well-suited for identifying these other factors, a future study to target them could prove useful in helping BOW identify other weak links in the process by which hunters take antlerless deer.

Determine what management strategies are most successful for influencing DMP application and fill rates. We suggested an initial list of management actions that might influence DMP applications. If BOW wishes to undertake these actions, it will be important to evaluate the effectiveness of strategies for trying to achieve them. For example, BOW may want to encourage hunters to place more value on management capability or provide outlets for deer meat to encourage them to take additional deer. Research could help evaluate the effectiveness of communication strategies or hunter response to new opportunities, helping managers to understand not just the human dimension as it currently exists, but how to influence it most effectively.

Even if BOW were to take all of the management and research actions outlined above, however, these actions might prove insufficient to maintain BOW's management capability in the coming years. Curtis et al. (2000) have raised questions about the sufficiency of the regulatory tools BOW has available to manage the deer herd, particularly given the expected continuing decline in the number of deer hunters in New York State. The current license system is rooted in a time when the primary management problem was protecting a scarce wildlife resource rather than managing an overabundant one. As the problem of overabundant deer in New York State continues to grow, BOW may find that the modest gains in management capability that can be gained by following steps such as those outlined above are not enough. Rather, BOW may find it necessary to advocate a more complete overhaul of deer hunting regulations. New regulatory options, such as earn-a-buck programs (in which hunters must take one or more does before harvesting a buck) and switching the basic deer license to a doe license (and making buck harvest a special opportunity) have been discussed and will need to continue to be discussed into the future.

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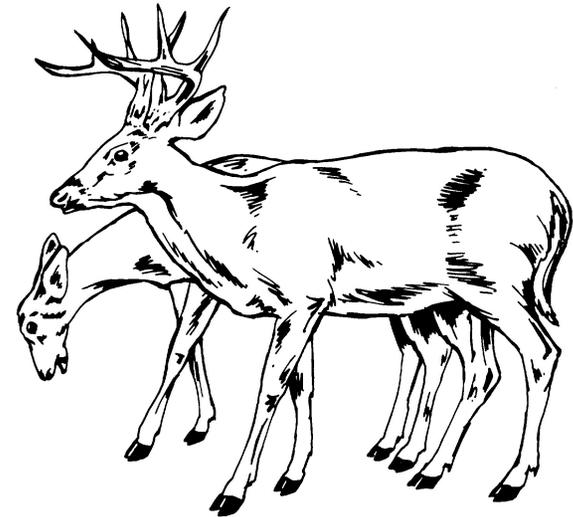
APPENDIX A
Mail Survey Instrument

DEER HUNTING

IN

NEW YORK:

A SURVEY OF HUNTERS



Human Dimensions Research Unit
Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University, Ithaca, NY 14853

DEER HUNTING IN NEW YORK:

A SURVEY OF HUNTERS

Research conducted by the
Human Dimensions Research Unit
in the
Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University

Sponsored by the
Bureau of Wildlife
in the
New York State Department of Environmental Conservation

Your answers to this questionnaire will help the New York State Department of Environmental Conservation make decisions about deer management. Please complete this questionnaire at your earliest convenience, seal it, and drop it in any mailbox (no envelope needed); return postage has been provided. **Your responses will remain confidential and will never be associated with your name.**

THANK YOU FOR YOUR ASSISTANCE!

General Information

1. In approximately what year did you first hunt deer in New York or elsewhere?
19 _____
2. In approximately how many different years have you hunted deer in New York or other places?
_____ Years
3. Approximately how many deer have you bagged in New York or other places since you started deer hunting?
_____ Deer

Participation in 1997 and 1998 New York Deer Hunting Seasons

4. Did you purchase a license that allowed you to hunt for deer in New York State during the 1998 deer hunting season? (Check one.)
_____ No
_____ Yes
5. Did you hunt for deer in New York State during the 1997 or 1998 deer hunting seasons?

| <u>Year</u> | <u>No</u> | <u>Yes</u> |
|-------------|--------------------------|--------------------------|
| 1997 | <input type="checkbox"/> | <input type="checkbox"/> |
| 1998 | <input type="checkbox"/> | <input type="checkbox"/> |

If you answered "No" for both years, skip to Question 10.

6. In which New York counties did you hunt deer during the 1997 and 1998 deer hunting seasons? (If you do not know the county name, write in a city or village near where you hunted. If you did not hunt deer during the season, write in "none.")

List all NY counties hunted in

1997 _____
 1998 _____

7. How much of your deer hunting in New York did you do on each of the following types of land during the 1997 and 1998 deer hunting seasons? (Circle one number for each item.)

| | None | Some | Most | All | Don't Know |
|---|------|------|------|-----|------------|
| a. Land that I own. | 0 | 1 | 2 | 3 | 5 |
| b. Private land that I do <u>not</u> own. | 0 | 1 | 2 | 3 | 5 |
| c. Public land. | 0 | 1 | 2 | 3 | 5 |

8. During which of the following seasons did you hunt for deer in New York in 1997 or 1998? (Check all that apply.)

| Season | 1997 | 1998 |
|--------------|--------------------------|--------------------------|
| Bow | <input type="checkbox"/> | <input type="checkbox"/> |
| Muzzleloader | <input type="checkbox"/> | <input type="checkbox"/> |
| Gun | <input type="checkbox"/> | <input type="checkbox"/> |

9a. How many antlered deer and antlerless deer did you bag during each of the following 1997 New York deer hunting seasons? (Circle "NA" if you did not hunt during that season.)

| Season | Number of deer bagged in 1997 | | |
|--------------|-------------------------------|-----------------|----|
| | Antlered Deer | Antlerless Deer | |
| Bow | _____ | _____ | NA |
| Muzzleloader | _____ | _____ | NA |
| Gun | _____ | _____ | NA |

9b. How many antlered deer and antlerless deer did you bag during each of the following 1998 New York deer hunting seasons? (Circle "NA" if you did not hunt during that season.)

| Season | Number of deer bagged in 1998 | | |
|--------------|-------------------------------|-----------------|----|
| | Antlered Deer | Antlerless Deer | |
| Bow | _____ | _____ | NA |
| Muzzleloader | _____ | _____ | NA |
| Gun | _____ | _____ | NA |

Use of Deer Management Permits

10. How many deer management permits (DMP's) did you apply for, receive, and fill in 1997 and 1998? (If none, write "0.")

| DMP's | 1997 | 1998 |
|-------------|-------|-------|
| Applied for | _____ | _____ |
| Received | _____ | _____ |
| Filled | _____ | _____ |

If you did not apply for any deer management permits in either 1997 or 1998, skip to Question 13.

11a. Why did you apply for a deer management permit in 1997 and/or 1998? (Check all that apply.)

- _____ To increase my chances of taking at least one deer.
- _____ To be able to take an additional deer after filling my buck tag.
- _____ To allow me to hunt legally with friends and family after filling my buck tag.
- _____ To help manage the size of the deer herd.
- _____ To keep someone else from taking a doe.
- _____ Other (please specify): _____

11b. Please circle the one response you checked in question 11a that was your most important reason for applying for a deer management permit?

12. How serious were you about shooting a deer using the deer management permit(s) you applied for? (Check one.)
- _____ No intention of shooting a deer using the permit.
- _____ Not too serious about shooting a deer using the permit.
- _____ Moderately serious about shooting a deer using the permit.
- _____ Very serious about shooting a deer using the permit.

Skip to Question 14.

- 13a. If you did not apply for a deer management permit in 1997 or 1998, why not? (Check all that apply.)

I wanted to apply, but:

- _____ I did not get around to it.
- _____ I did not think I would have enough time to hunt.
- _____ I did not think my chances of getting a permit were good.
- _____ the permit application period was too short.
- _____ other (please specify reason): _____

I did not want to apply, because:

- _____ I was concerned about too many does being shot in my hunting area.
- _____ I did not need or want an extra deer.
- _____ other (please specify reason): _____

- 13b. Please circle the one reason you checked in question 13a that was your most important reason for not applying for a deer management permit in 1997 or 1998?

Your Opinions about Potential Changes in Deer Hunting Regulations

Each year, DEC deer managers, sportsmen's groups, landowners, and other individuals propose changes in regulations dealing with deer hunting. The merits of each proposal must be weighed carefully. Your responses in this section will help deer managers understand your opinions about different regulations and how they would affect your participation.

14. Currently, Sunday hunting is legal in all of New York State. However, Sunday hunting was not legal in western New York until recently.

- a. Did you hunt on Sunday in New York State during either the 1997 or 1998 deer hunting seasons?

| <u>Year</u> | <u>No</u> | <u>Yes</u> |
|-------------|--------------------------|--------------------------|
| 1997 | <input type="checkbox"/> | <input type="checkbox"/> |
| 1998 | <input type="checkbox"/> | <input type="checkbox"/> |

- b. Do you support or oppose the continued opportunity for western New York deer hunters to hunt on Sundays? (Please circle the appropriate number below.)

| Strongly Oppose | | Neutral | | | Strongly Support | | | |
|-----------------|----|---------|----|---|------------------|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |

15. Currently, DMP's may be used to take antlerless deer during the last 10 days of the Southern Zone early archery season or during the regular or special late seasons. A proposed regulation would allow DMP's to be used beginning on November 1 each year, which would give bow hunters more days during which they could hunt with DMP's.

Would you support or oppose this proposal? (Please circle the appropriate number below.)

| Strongly Oppose | | Neutral | | | Strongly Support | | | |
|-----------------|----|---------|----|---|------------------|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |

16. Currently, deer management permits (DMP's) are not transferable. Only the person to whom a DMP is issued may use it to take an antlerless deer. A proposed change would allow a DMP holder to let another hunter use his or her DMP. In other words, a permit holder could let another hunter have an unused DMP to take an antlerless deer.

Hunters have different beliefs about what effects this change would cause.

- Some people support this change because they believe it would improve DEC's ability to manage the size of the deer herd AND/OR because it would provide more hunting opportunities for hunters who did not receive a DMP or who had already filled one.

- Some people oppose this change because they believe it would allow some hunters to take more than their fair share of deer AND/OR they believe that it could hurt the public image of hunters for this reason.

a. If it had been legal for hunters to let other hunters use their DMP's, would you have EITHER let another hunter use your DMP OR used another hunter's DMP during either of the last two years?

- Definitely not
- Possibly
- Probably
- Definitely
- Don't Know

b. Would you support or oppose this proposal? (Please circle the appropriate number below.)

| | | | | | | | | |
|--------------------|----|----|----|---------|---|---|---|---------------------|
| Strongly Oppose | | | | Neutral | | | | Strongly Support |
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |

17. Currently, only antlered deer may be taken during the Southern Zone muzzleloader season, unless a hunter is filling a deer management permit. A proposed change would allow a deer of either sex to be taken during the Southern Zone muzzleloader season.

Would you support or oppose this proposal? (Please circle the appropriate number below.)

| | | | | | | | | |
|--------------------|----|----|----|---------|---|---|---|---------------------|
| Strongly Oppose | | | | Neutral | | | | Strongly Support |
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |

18. Currently, the opening day of the regular deer season is the first Monday after November 15. Sometimes opening day falls the week before Thanksgiving, and sometimes it falls the week of Thanksgiving. Some people have proposed that opening day be set in relation to Thanksgiving. One change would set opening day so that it always occurs the Monday of the week before Thanksgiving. Another change would set opening day so that it always occurs the Monday of Thanksgiving week.

Which of the following options do you think is best? (Check one.)

- Keep the current system in which opening day is on the first Monday after November 15.
- Always start the season the Monday of the week before Thanksgiving week.
- Always start the season the Monday of Thanksgiving week.
- Don't Know.

19. Currently, crossbows are not legal for deer hunting in New York State. A proposed change would legalize crossbows during one or more seasons.

a. If it had been legal, would you have hunted deer with a crossbow during either of the last two years?

- Definitely not
- Possibly
- Probably
- Definitely
- Don't Know

b. Which of the following options would you support? (Check all that apply.)

- Legalize crossbows during the archery seasons.
- Legalize crossbows during the regular season.
- Legalize crossbows during a new special season.
- Do not legalize crossbows.
- Don't Know

20. Currently, muzzleloader hunters are not allowed to use telescopic scopes (optical sights) during the muzzleloader season. A proposed change would allow telescopic scopes to be used on muzzleloaders.

a. If it had been legal, would you have hunted using a telescopic scope on a muzzleloader during either of the last two years?

- Definitely not
- Possibly
- Probably
- Definitely
- Don't Know

b. Would you support or oppose this proposal? (Please circle the appropriate number below.)

| | | | | | | | | | |
|--------------------|----|----|----|---------|---|---|---|---|---------------------|
| Strongly Oppose | | | | Neutral | | | | | Strongly Support |
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | |

21. Currently, the Southern Zone late archery season takes place during the 5 days immediately following the close of the regular season, and the Southern Zone late muzzleloader season takes place during the 7 days immediately following the close of the regular season. One proposed change would extend both the late archery and muzzleloader seasons. Another proposal would separate the late archery and muzzleloader seasons so that bow hunters and muzzleloader hunters were not in the field at the same time.

Which of the following options would you support? (Check one.)

- Keep the current system.
- Extend, but do not separate, the late archery and muzzleloader seasons.
- Separate, but do not extend, the late archery and muzzleloader seasons.
- Separate and extend, the late archery and muzzleloader seasons.
- Don't Know

22. People have different reasons for supporting or opposing new hunting regulations. Please tell us how important to you each of the following reasons are for supporting or opposing new hunting regulations.

When I consider proposed deer hunting regulatory changes, it is important to me that these changes: (Please circle one number for each item.)

| | <u>Strongly Disagree</u> | <u>Neutral</u> | <u>Strongly Agree</u> | <u>Don't Know</u> | | |
|--|--------------------------|----------------|-----------------------|-------------------|---|---|
| a. Do <u>not</u> result in an increased total buck harvest. | 1 | 2 | 3 | 4 | 5 | 6 |
| b. Do <u>not</u> result in an increased total doe harvest. | 1 | 2 | 3 | 4 | 5 | 6 |
| c. <u>Increase</u> DEC's ability to control the size of the deer population. | 1 | 2 | 3 | 4 | 5 | 6 |
| d. <u>Improve</u> the health of the deer population. | 1 | 2 | 3 | 4 | 5 | 6 |
| e. <u>Increase</u> hunting opportunities for bow hunters. | 1 | 2 | 3 | 4 | 5 | 6 |
| f. <u>Increase</u> hunting opportunities for muzzleloader hunters. | 1 | 2 | 3 | 4 | 5 | 6 |
| g. <u>Increase</u> hunting opportunities for firearm hunters. | 1 | 2 | 3 | 4 | 5 | 6 |
| h. Keep a strict limit on the number of deer that individual hunters can take. | 1 | 2 | 3 | 4 | 5 | 6 |
| i. Increase opportunities for New York State <u>landowners</u> to harvest deer. | 1 | 2 | 3 | 4 | 5 | 6 |
| j. Increase deer hunting opportunities for hunters who have trouble taking time off from work. | 1 | 2 | 3 | 4 | 5 | 6 |
| k. Increase <u>my own</u> chances of taking bucks. | 1 | 2 | 3 | 4 | 5 | 6 |
| l. Increase <u>my own</u> chances of taking large bucks. | 1 | 2 | 3 | 4 | 5 | 6 |
| m. Increase <u>my own</u> chances of taking does. | 1 | 2 | 3 | 4 | 5 | 6 |

| | <u>Strongly Disagree</u> | <u>Neutral</u> | <u>Strongly Agree</u> | <u>Don't Know</u> | | |
|--|--------------------------|----------------|-----------------------|-------------------|---|---|
| n. Allow me more opportunity to spend time in the field. | 1 | 2 | 3 | 4 | 5 | 6 |
| o. Encourage new people to take up deer hunting. | 1 | 2 | 3 | 4 | 5 | 6 |
| p. Increase the total number of deer hunters in New York. | 1 | 2 | 3 | 4 | 5 | 6 |
| q. Lead to a better public image of hunters and hunting. | 1 | 2 | 3 | 4 | 5 | 6 |
| r. Protect the interests of farmers and other landowners. | 1 | 2 | 3 | 4 | 5 | 6 |
| s. Promote clean, humane kills. | 1 | 2 | 3 | 4 | 5 | 6 |
| t. Make deer hunting a <u>safer</u> sport. | 1 | 2 | 3 | 4 | 5 | 6 |
| u. <u>Reduce</u> crowding of hunters on particular days. | 1 | 2 | 3 | 4 | 5 | 6 |
| v. <u>Reduce</u> crowding of hunters in particular areas. | 1 | 2 | 3 | 4 | 5 | 6 |
| w. <u>Increase</u> revenue for DEC's deer management programs. | 1 | 2 | 3 | 4 | 5 | 6 |

Your Deer Hunting Preferences

23. If you were allowed to take as many deer as you wanted using whatever implements you wanted . . .

a. how many deer would you like to take each license year?

_____ Deer

b. what is the minimum number of bucks you would like to take each license year?

_____ Bucks

24. If you were allowed to take as many deer as you wanted using whatever implements you wanted and you had the opportunity to donate meat you could not use to a worthy cause . . .

a. how many deer would you like to take each license year?

_____ Deer

b. what is the minimum number of bucks you would like to take each license year?

_____ Bucks

Please use the space below for any additional comments you may wish to make.

Background Information

25. How much has each of the following factors contributed to your interest in hunting? (Circle one number for each item.)

| | | Effect on interest in hunting: | | | | Don't Know |
|----|---|--------------------------------|---------------|-----------------|---------------|------------|
| | | <u>None</u> | <u>Slight</u> | <u>Moderate</u> | <u>Strong</u> | |
| a. | Growing up in a hunting family | 0 | 1 | 2 | 3 | 5 |
| b. | Being in the armed services or national guard | 0 | 1 | 2 | 3 | 5 |
| c. | Having friends who hunt | 0 | 1 | 2 | 3 | 5 |

26. How much land do you own in New York State? (Enter "0" if you do not own any land. Enter "1" for anything 1 acre or less.)

_____ acres

27. How would you describe the type of area in which you live? (Check one.)

- _____ rural, farm
- _____ rural, nonfarm
- _____ community with under 5,000 people
- _____ community with 5,000 to 24,999 people
- _____ city with 25,000 to 100,000 people
- _____ city with over 100,000 people

Thank You For Your Time and Effort!

To return this questionnaire, simply seal it (postage has been provided) and drop it in the nearest mailbox.

