



Attitudes Toward Beaver and Beaver Management: Results From Baseline Studies in New York and Massachusetts

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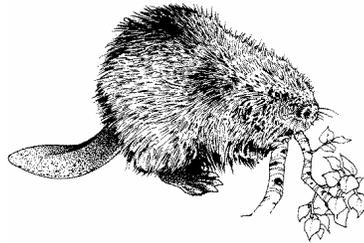
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INTRODUCTION

Many communities in the Northeastern United States are witnessing increases in local beaver populations. High beaver populations often result in frequent interactions – including negative interactions -- between beaver and people in residential areas. Such interactions also can lead to an increase in the number of complaints residents make to government officials about beaver-related problems (e.g., flooding, pond raising, water contamination, tree damage).

Some wildlife management professionals wonder whether public attitudes toward beaver will become increasingly negative as negative human-beaver interactions increase in residential areas (Bishop et al. 1992). Such a shift in attitudes would have important implications for wildlife management. For example, if negative interactions exceed tolerable levels, community support for wildlife, wildlife management agencies, and habitat conservation may be reduced. Wildlife managers recognize that trend data on attitudes toward beaver and beaver management in suburban areas is one part of the

information base needed to guide beaver management programs across the northeast. Wildlife managers in New York and Massachusetts recognize that efficient resolution of beaver-human conflicts is a critical part of beaver management (Bishop et al. 1992, Jackson and Decker 1995) and they have demonstrated a commitment to research that will help managers better understand the factors that influence beaver damage tolerance (Enck et al. 1988, 1992, 1996; Purdy and Decker 1985).



In September 1996, the Northeast Furbearer Resources Technical Committee asked the Division of Federal Aid of the U.S. Fish and Wildlife

Service to initiate a study to document the effects of a trapping ban in Massachusetts. The justification was to provide other states and their policy-makers with reliable information in the event they would be faced with a similar initiative. The Northeast Wildlife Administrators Association, representing wildlife agency administrators in the northeast and overseeing the Technical Committee, endorsed the study. In Massachusetts, where beaver trapping is now highly restricted, Federal Aid funded the research that focused on how public attitudes and perceptions related to beaver and beaver management change as beaver populations and human contact with beaver increase.

The Massachusetts Division of Fisheries and Wildlife (MassWildlife) agreed to cooperate in the study so that biological status information on beaver could be coupled with the human dimension aspect of the study. In New York, DEC's Bureau of Wildlife (BOW) agreed to cooperate by funding research in New York State, where beaver may be legally taken with leg-hold and body-gripping traps. Data collection in Massachusetts and New York will allow researchers to compare and contrast public attitudes and perception in places that represent

a range of beaver population and beaver management characteristics. Findings from this line of research will improve understanding of the factors that influence attitudes toward beaver and beaver management in suburban landscapes. As understanding increases, wildlife management agencies will be able to adjust program actions to better serve wildlife management stakeholders.

In 2002, staff at Cornell University and the University of Massachusetts conducted survey research in New York and Massachusetts. The objectives of the study were to:

1. Measure attitudes toward beaver and tolerance of beaver damage.
2. Compare attitudes toward beaver and tolerance of beaver damage in relation to different levels of beaver damage and different beaver management approaches.
3. Collect baseline data for a longitudinal study to assess change in attitudes toward wildlife management given different levels of beaver damage and different management approaches.
4. Test the null hypotheses that people's tolerance for beaver, attitudes toward beaver, and attitudes toward beaver management do not change as conflicts with beaver increase.

The purpose of this report is to provide a brief overview of study findings and a reference to the first in a series of attitude studies that will be repeated in both states in coming years. Our intended audience for this report includes study participants and other interested residents of New York and Massachusetts. The four objectives stated above will be addressed at greater length in a series of other published reports and articles for professional journals. Single copies of any forthcoming reports will be

available to the public through the Human Dimensions Research Unit at Cornell University.

METHODS

The survey instrument

We used a mail survey to collect information for this study. We designed our survey instrument to explore the following topic areas: demographic characteristics, participation in wildlife-related activities, attitudes toward beaver, experiences with beaver damage, beaver problem tolerance, acceptability of various beaver management activities, wildlife value orientation, importance placed on obtaining wildlife-related benefits, and importance placed on avoiding wildlife-related costs.

We implemented a pretest survey in January-February, 2002. We sent the pretest questionnaire to a sample of 150 people in DEC region 6 (northern New York) who had filed a nuisance beaver complaint with DEC in 1999 or 2000. We also sent the pretest questionnaire to a random sample of 150 Massachusetts residents. All members of the pretest sample received an initial mailing and follow-up reminder letter. We received completed questionnaires from 69 people in New York and 33 people in Massachusetts. We combined all 102 useable returns for analysis. All the data from returned pretest questionnaires were entered and analyzed using SPSS software. Analysis suggested that, in general, respondents could read and understand the questions. Based on our analysis, we revised some items. We also reduced questionnaire length by dropping several items.

Sampling and survey implementation

We implemented the Massachusetts and New York mail surveys in April-May, 2002. We used a standard 4-wave implementation (i.e., all members of the sample received an initial mailing and follow-up reminder letter; nonrespondents

received up to two additional reminder mailings, including a replacement questionnaire). Both state surveys included a subsample of private individuals who had submitted a residential nuisance beaver complaint to the wildlife agency. Members of this subgroup were selected from agency records of complaints filed in 1999 and 2000 (the most recent years for which these data were available from both states). Individuals who made complaints about nonresidential problems (e.g., damage to public roads, businesses) were not included in this study.

The Massachusetts study included subgroups of people from three geographic regions (Figure 1). The study sites were located in western, central, and northeastern portions of the state. Two (northeast and central) of the three sites were chosen because they are part of ongoing beaver surveys started in 1994 (Langlois 1999) that provided high quality information on beaver abundance and distribution. The western site was added so that the study would provide data from three regions of the state as well as depict differences in the results of the 1996 ballot initiative vote banning all body-gripping traps in Massachusetts.

In New York, we implemented the study in two geographic sites (Figure 2). These sites were selected because they had several characteristics that made them comparable to the sites in central and western Massachusetts. It is important to note that these study sites were selected to facilitate testing of hypotheses. The New York sites were not intended to be representative of a larger region or the state as a whole.

In New York, we contacted a total sample of 2,400 people in three subgroups or strata. Stratum 1 was a random sample of 900 listed households in portions of Rensselaer and Washington counties (i.e., the Northern Taconic Aggregated Wildlife Management Unit (WMU)). Stratum 2 was a random sample of 900 listed households in portions of Fulton, Herkimer,

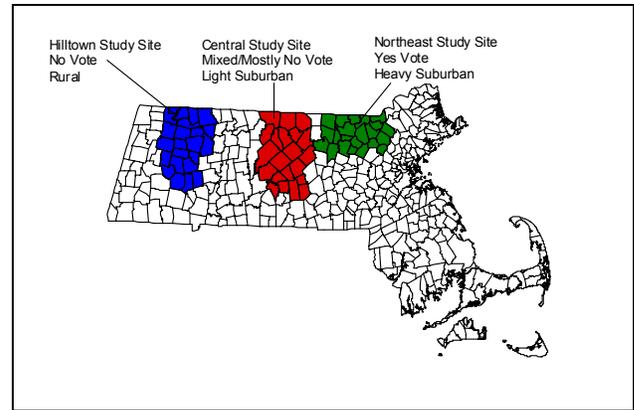


Figure 1. Massachusetts study areas.

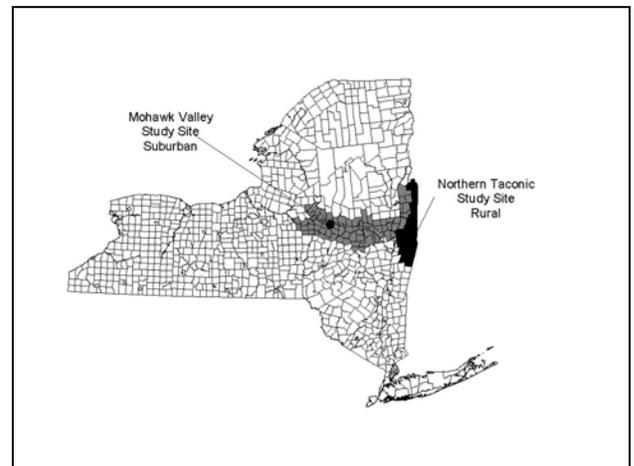


Figure 2. New York study areas.

Montgomery, Oneida, Saratoga, Schenectady, Schoharie, and Washington counties (i.e., the Mohawk Valley Aggregated WMU). Stratum 3 was a statewide sample of 600 people who had contacted DEC with a beaver damage complaint in 1999 or 2000. After adjusting for undeliverable questionnaires, the combined useable response rate for strata 1 and 2 was 38%. The adjusted response rate for stratum 3 (the statewide sample of beaver damage complainants) was 71%.

Given that fewer than 40% of people in the two general population strata responded, we conducted follow-up telephone interviews with a total of 100 nonrespondents in New York.

Nuisance complainants were not part of the follow-up study because they responded at higher rates. Using a computer-assisted telephone interviewing (CATI) system, the Cornell University Computer Assisted Survey Team (CAST) completed a short (less than 5-minute) follow-up telephone interview with 100 non-respondents from a pool of 973 nonrespondents in strata 1 and 2. CAST staff completed the interviews between June 5 and June 15, 2002. They had attempted to contact 618 people before they reached the target of 100 completed interviews (408 people were called but never reached, 77 people were unreachable at the telephone number provided in the database, 29 refused to be interviewed, and 4 were too ill to respond or deceased).

In Massachusetts, we also implemented the mail survey in April-May, 2002. We contacted a total sample of 5,563 people in 4 subgroups or strata. We sampled 1600 in each of the three geographic strata and sampled 763 people who had contacted MassWildlife with a beaver damage complaint in 1999 or 2000. Of the 5,563 surveys sent out across all sample strata, 311 surveys were non-deliverable or non-useable surveys. With 2,486 useable surveys this represents a 47.3% overall response rate. After adjusting for non-deliverable/non-useable questionnaires the useable response rate for the Northeast, Central, and Hilltown study sites combined was 43.5% (4800 sent out, 222 non-deliverable, 1990 useable). The adjusted response rate for the statewide sample of beaver damage complainants was 73.6% (763 sent out, 89 non-deliverable, 496 useable).

We selected a random sample of 300 non-respondents for the non-response follow-up telephone interviews. We completed the Massachusetts interviews over a 3-week period (June 4 – June 25, 2002). Each respondent was called up to 4 times before being rejected from the sample. We obtained 100 completed non-response interviews (95 people were called but never reached, 37 people were unreachable at

the telephone number provided, 29 people had no time or were not interested in participating, 27 people refused to be interviewed, and 12 people were deceased or could not respond due to medical reasons.

Both follow-up studies found significant differences between respondents and nonrespondents. In New York nonrespondents were more likely to be female and were less likely to have a strong interest in wildlife or participate in wildlife-related activities. In Massachusetts nonrespondents were more evenly distributed between gender, and in both states nonrespondents were also less likely than respondents to have had personal experience with a beaver-related problem. No adjustments were made to account for potential nonresponse bias because this study was not intended to provide a representative depiction of all state residents. We anticipated low response rates from the general public samples and we oversampled to ensure that we would have adequate numbers of respondents to conduct all planned analyses.

RESULTS HIGHLIGHTS AND DISCUSSION

A number of interesting findings have emerged from our early analysis. In this section, we highlight and discuss some of the research questions raised to date. We will explore all of these questions in greater detail as the analysis phase of this research continues.

Respondent characteristics

Nearly all respondents were white and most were male (75% in NY; 69% in MA). Most (90% or more) were home owners and the mean age for all subgroups in both states was over 50 years old. The median household income for respondents was \$30,000 - \$60,000 in New York and \$60,000 - \$90,000 in Massachusetts. The majority of respondents in all subgroups had participated in wildlife viewing in the previous year and many defined themselves as anglers.

In comparison to other subgroups, damage complainants were more likely to be hunters, anglers, and homeowners.

Our early analyses suggest some association between beaver damage tolerance, attitudes toward wildlife, and respondent characteristics such as gender. Additional work is planned to explore relationships between beaver problem tolerance and gender, urban-rural background, age, income, and education level.

Experiences with beaver damage

Personal experience with beaver-related problems varied across study sites. About 11% of respondents in the Mohawk Valley of New York had experienced a problem with beaver. Twenty-two percent of respondents from the Taconic sample had experienced a beaver-related problem. Experience with beaver damage varied by study area in Massachusetts (17% in the Hilltowns area, 30% in the Central area, and 16% in the Northeast area).

Nearly all respondents in the nuisance complaint strata had personal experience with beaver-related problems (a few had contacted their state wildlife agency with questions or concerns about beaver, but had not actually experienced property damage or other problems).

Attitudes toward beaver

Overall, the data from this study show a positive correlation between negative attitudes toward beaver and beaver damage experience (including the type and severity of damage experienced). That is, people who have experienced beaver-related problems are more likely to agree with statements like, “in the area where I live there are too many beaver,” “beaver are a nuisance,” “beaver populations should be controlled,” and “the presence of beaver makes it a burden to have beaver near your home.” People who had experienced beaver-related problems were also more likely than others to

perceive that beaver-related property damage had increased in their state in the past 5 years.

Beaver problem tolerance

Past research has suggested that population preference can be used as one indicator of wildlife problem tolerance. Typically, studies show that people desire a wildlife population decrease when their tolerance for wildlife-related problems has been exceeded. In New York, 23% of respondents in the geographic samples wanted a beaver population decrease (23% wanted an increase and 48% wanted no change). In Massachusetts, the majority of respondents in all strata preferred a decrease in the beaver population.

Population preference was highly correlated with beaver damage experience. In New York, only 20% of respondents who had never experienced a problem with beaver preferred a beaver population decrease, while 65% of those who had experienced problems preferred a beaver population decrease. A similar pattern was found in Massachusetts. In addition, tolerance of beaver damage was lower among those who perceived that beaver damage had increased. These findings provide some evidence to suggest that problem tolerance has been exceeded for many of those who have experienced problems and that tolerance of beaver-related problems decreases as conflicts increase. Therefore, it is important to understand and monitor public attitudes, perceptions, and tolerance in a longitudinal framework and couple this information with biological data to determine trends in public attitudes, perceptions, and tolerance in relation to increases in beaver populations and human-beaver conflicts.

Beaver management preferences

We found that management preferences varied across individuals, but collectively they show a pattern that supports more invasive management techniques as problem severity increases and as

personal experience with problems increases. People who have experienced beaver-related problems were more likely to support invasive management actions and were less likely to support a “no action” approach under most of the scenarios we presented.

Acceptability of lethal control was greater among people who had experienced beaver-related problems. Across groups, people were more likely to support lethal control as the intensity of the human-beaver interaction increased.

NEXT STEPS

In the coming months, we will complete data analysis and we will prepare a series of manuscripts that contain more extensive analysis of the data described here. Those reports will include more interpretation and discussion related to specific hypothesis testing. In coming years, this study will be replicated so that wildlife managers can track attitude trends and continue to test hypotheses about issues like wildlife problem tolerance and social acceptability of various beaver management techniques. Findings from this research will be communicated to wildlife management professionals through publications in professional journals and through presentations at professional meetings.

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LITERATURE CITED

Bishop, P., M. Brown, R. Cole, M. Ermer, R. Gotie, J. Lamendola, B. Penrod, S. Smith, and W. Sharick. 1992. Beaver management in New York State: history and specification of future management. New York State Department of

Environmental Conservation, Bureau of
Wildlife, Delmar, NY. 87pp.

- Enck, J. W., K. G. Purdy, and D. J. Decker.
1988. Public acceptance of beavers and
beaver damage in Wildlife Management
Unit 14 in DEC Region 4. HDRU Series
Publ. 88-1. Human Dimensions
Research Unit, Dept. of Natural
Resources, Cornell Univ., Ithaca, NY.
46pp.
- Enck, J. W., P. G. Bishop, T. L. Brown, and J. E.
Lamendola. 1992. Beaver-related
attitudes, experiences, and knowledge of
key stakeholders in Wildlife Management
Unit 21. HDRU Publ. No. 92-7, Human
Dimensions Research Unit, Dept. of
Natural Resources, Cornell Univ., Ithaca,
NY. 74pp.
- Enck, J. W., N. C. Connelly, and T. L. Brown.
1996. Management response to beaver
complaints: defining problems and
acceptable solutions. HDRU Publ. No.
96-3, Human Dimensions Research Unit,
Dept. of Natural Resources, Cornell
Univ., Ithaca, NY. 29pp.
- Jackson, S. and T. A. Decker. 1995. Beavers in
Massachusetts: Natural history, benefits,
and ways to resolve conflicts between
people and beavers. University of
Massachusetts Extension and
Massachusetts Division of Fisheries and
Wildlife. 16pp.
- Purdy, K. G. and D. J. Decker. 1985. Central
New York beaver tolerance study.
HDRU Series Publ. 85-5. Human
Dimensions Research Unit, Dept. of
Natural Resources, Cornell Univ., Ithaca,
NY. 116pp.

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