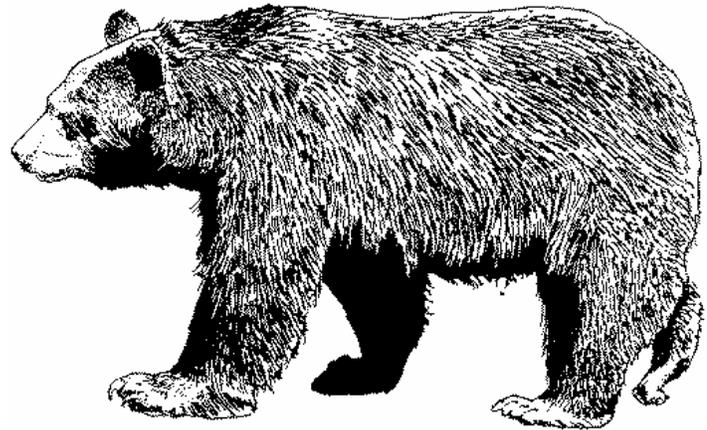

2002 New York State Black Bear Management Survey: Study Overview and Findings Highlights



November 2003

HDRU Series No. 03-6

Prepared by

William F. Siemer
Daniel J. Decker
Human Dimensions Research Unit
Department of Natural Resources
Cornell University
Ithaca, NY 14853

HUMAN DIMENSIONS RESEARCH UNIT PUBLICATION SERIES

This publication is part of a series of reports resulting from investigations dealing with public issues in the management of wildlife, fish, and other natural resources. The Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University is a nationally recognized leader in the study of the economic and social values of wildlife, fish, and other natural resources and the application of such information in management planning and policy. A list of HDRU publications may be obtained by writing to the Human Dimensions Research Unit, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, New York 14853, or by accessing our World Wide Web site at: <http://www.dnr.cornell.edu/hdru/>.

INTRODUCTION

The Bureau of Wildlife in the New York State Department of Environmental Conservation (DEC) is responsible for black bear (*Ursus americanus*) management in New York State. Black bears occur throughout New York State, with primary populations inhabiting three core ranges (Figure 1). New York's black bear population is growing and becoming more widely distributed. Land development in bear ranges and interactions between people and bears also are increasing (NYSDEC 2003a). In response to these developments, a team of DEC staff developed a new framework for black bear management in New York State (NYSDEC 2003b).



Figure 1. Core black bear ranges in New York

Stakeholder engagement is the cornerstone of the new planning framework and will continue as a key feature of the black bear management program. Stakeholders include people with an interest in or concern about black bears, and people who can affect or are affected by the black bear management program.

The new framework uses a planning cycle that begins with situation analysis (i.e., an assessment of the environmental and social conditions for bear management). Situation analysis for a first cycle of planning began in 2002. Part of the situation analysis included a mail survey of state residents in 2002. Staff in the Human Dimensions Research Unit worked closely with DEC staff to design the study.

Study Objectives

Our study had multiple objectives, all of which address information needs associated with development and implementation of the new planning framework. Objectives 2-3 are long-term objectives that are being addressed through ongoing research.

1. Characterize stakeholder experiences with black bears.
2. Identify important effects produced by interactions between people and black bears and differences in personal importance people place on those effects.
3. Identify factors that influence public perceptions of risk related to black bears.
4. Characterize people's tolerance for interactions with black bears.
5. Assess stakeholder attitudes about management response to individual bears in problem situations.

6. Assess stakeholder attitudes toward management response to bears in metropolitan areas.

The purpose of this report is to provide a brief overview of findings from the 2002 black bear management survey. It is part of a series of resource documents that provide background information to black bear management stakeholders¹. The study objectives described above will be addressed at greater length in forthcoming reports in the series. Single copies of reports in this series will be available to the public through the Human Dimensions Research Unit at Cornell University (electronic copies will be made available at HDRU's website, <www.dnr.cornell.edu/hdru>).

METHODS

Questionnaire development

We worked closely with a team of DEC wildlife managers throughout 2001 to develop a survey instrument that would address the research objectives stated above. We designed a self-administered, mail-back questionnaire to obtain information about respondents': demographic characteristics, participation in wildlife-related activities, attitudes toward bears, experiences with bears, sensitivity to interactions with bears, attitudes towards bear management activities, wildlife value orientation, and interests in or concerns about various effects produced when people interact with black bears.

We relied on preliminary input from stakeholders to develop questionnaire items on the effects produced by human-bear interactions. In the fall of 2001, we convened a series of three small group meetings (one meeting in each core bear range) with stakeholders. We used a nominal group technique to elicit information about the ways that people are affected by their interactions with black bears. We analyzed information from those meetings to formulate a list of effects people want to obtain or hope to avoid, with regard to black bears. We integrated that information with insights that the DEC Black Bear Management Plan Team had gained from their management experiences and from previous efforts to obtain public input on black bear management. Combining these sources of information allowed us to create a reduced list of bear-related effects important enough for further exploration in the mail survey.

Sampling and survey implementation

We implemented the mail survey in March 22, 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).

We conducted the study with a sample of 3,000 adults living in New York State counties north of New York City. We designed the study to sample 600 stakeholders living in each of five

¹ Additional resource documents on black bears and the bear management framework can be obtained electronically, through the NYSDEC website (<<http://www.dec.state.ny.us/website/dfwmr/wildlife/wildgame/bearplan.html>>).

geographic areas: (1) the Allegheny bear hunting zone; (2) the Adirondack bear hunting zone; (3) the Catskill bear hunting zone; (4) upstate New York outside a bear hunting zone; and (5) the downstate counties of Rockland and Westchester. The sampling frame included urban centers (e.g, Buffalo, Rochester, Syracuse, Albany).

Four hundred twenty-eight questionnaires were undeliverable, reducing the total sample size to 2,572. We received 1,036 usable returns, for an adjusted response rate of 40%. The response rates by geographic area were 42% (Adirondack bear hunting zone), 43% (Allegheny bear hunting zone), 44% (Catskill bear hunting zone), 43% (upstate areas between bear hunting zones), and 30% (Rockland and Westchester counties).

Given that fewer than half of people in any geographic area responded, we conducted a nonrespondent follow-up survey. Using a computer-assisted telephone interviewing (CATI) system, the Cornell University Computer Assisted Survey Team (CAST) completed a 3-5 minute follow-up telephone interview with 75 non-respondents. CAST staff completed the interviews between June 5 and June 15, 2002.

The follow-up study revealed that, for some background characteristics, the respondent group differed from nonrespondents and from the population of all adult residents of New York State. Respondents were more likely than the population of adults in New York State to be male (62% vs. 47%) and to participate in hunting (25% vs. 5%). We used the weight factors in Table 1 to adjust the data to reflect the actual gender ratio and rates of hunting participation in New York State in 2001. We calculated these weights based on the gender ratio and rates of hunting participation for New York State residents aged 16 and older reported in the 2001 National Survey of Hunting, Fishing, and Wildlife-related Recreation (U.S. Department of Interior and U.S. Department of Commerce 2003). Table 2 displays key characteristics of the respondent group after adjusting the data for gender and hunting participation. It should be noted that, even after data weighting, the mean level of education was higher among survey respondents than among the adult population of New York State residents.

Table 1. Weight factor calculations for the 2002 black bear management survey.

	Population (age 16 plus, in thousands)	Population proportion	Respondents (N)	Weighted (N)	Weight factor
Male, nonhunter	6141	0.4324	386	432	1.119
Male, hunter	534	0.0376	236	38	0.161
Female, nonhunter	7451	0.5247	358	524	1.464
Female, hunter	75	0.0053	19	5	0.263
Total	14,201	100.0	999	999	---

Table 2. Demographic characteristics and rates of outdoor activity involvement for survey respondents after the data were weighted to adjust for gender ratio and rates of hunting participation in New York in 2001, for residents aged 16 and older.

Characteristic	N	Response category	Percent
Gender	999	Female	53.0
		Male	47.0
Age	999	Mean age	54
Highest level of education	999	Less than high school	4.0
		High school or GED	21.5
		Technical or vocational school	4.9
		College degree	47.8
		Graduate or professional degree	21.8
Best description of the area where you live	999	Town or city with many neighbors	54.2
		Outside town, scattered neighbors	31.9
		Rural area with few neighbors	13.6
Participation in wildlife-related activities	999	Wildlife viewing	51.9
	999	Wildlife feeding	51.3
	999	Fishing	27.3
	999	Hunting	4.3

RESULTS HIGHLIGHTS AND DISCUSSION

This report highlights findings aggregated across all five study areas (a detailed breakdown of regional results is provided in a forthcoming full-length study report). The following results should not be considered representative of New York City and Long Island residents because those areas were not included in the sample frame.

Encounters with bears

Positive encounters:

In core bear ranges, and the upstate area outside core bear ranges, the majority of respondents had seen a wild black bear at some time in their life, and nearly all who had seen a bear regarded that as a positive experience. Even in the downstate sample area (i.e., Rockland and Westchester counties), 45% of respondent had seen a wild black bear at some time in their life and over 90% of those respondents regarded the encounter as a positive experience. Bear hunters were more likely than nonhunters to have seen a wild bear (95% vs. 62%), but hunters and nonhunters were equally likely to characterize seeing a bear was a positive experience.

Negative encounters:

Negative interactions with black bears were uncommon. Nine to 12% of respondents in core bear ranges had experienced property damage caused by bears. Very few respondents (0-3% by geographic area) had experienced a situation where a pet was threatened by a bear. Very few respondents (0-2% by geographic area) had experienced an encounter where they felt personally threatened by a bear.

Attitudes toward black bears

Several different study results suggest that most survey respondents held positive attitudes toward bears. However, the results also suggest that, for many people, those attitudes are based on little direct experience with or knowledge about bears. For example, most respondents knew that black bears were present in New York, but substantial portions of respondents in every geographic area said they didn't know whether the black bear population in the state had increased, decreased, or remained about the same over the past 5 years.

In all geographic areas the majority of respondents described themselves as having moderate or high interest in black bears. Interest levels were highest in the core bear ranges. People living in those core ranges were most interested in the bear population in their local area (e.g., respondents living in the Adirondacks were most interested in black bears living in northern New York).

In all geographic areas a majority of respondents agreed with the statement, "I enjoy having black bears in New York State." However, about a third of respondents in each geographic area also agreed with the statement, "I worry about problems that bear may cause."

In all geographic areas about 80% of respondents agreed with the statement, "The risk of being threatened or attacked by a black bear in New York is acceptably low." Even so, when asked to describe incidents where people encounter bears near their home as either safe or dangerous, about one in five respondents living in core bear range characterized such incidents as dangerous.

Impacts produced by interactions with bears

People interact with black bears in many ways, and those interactions produce a wide array of positive and negative effects. However, for any given group of stakeholders only a small subset of those effects are regarded as very important. Though stakeholders differ with regard to how much importance they place on various effects, there is a relatively small set of effects that many stakeholders hold to be important. We refer to that subset of important effects as "impacts" – effects that are important enough to a range of stakeholders that they warrant management attention (Riley et al. 2003).

The new framework for bear management emphasizes managing impacts within levels acceptable to a range of stakeholders. This will involve actions designed to increase positive impacts and reduce negative impacts. Several different types of information are needed to

design a management program that addresses impacts. One of the most basic information needs relates to identifying which effects matter most to (are regarded as impacts by) key stakeholders. Our survey addressed that information need.

The 2002 mail survey quantified the relative importance that various stakeholders place on a set of positive and negative effects that may result from human-black bear interactions. We focused on effects identified as important in three small group meetings with black bear management stakeholders in each of the three core bear ranges (i.e., the Allegheny Adirondack, and Catskill ranges).

We identified a range of specific effects that fall into six broad categories (Table 3). Based on a review of findings from this study and other sources of information, DEC staff identified a set of 12 specific effects as impacts which should serve as the foci of management interventions (Table 3).

Ecological impacts are effects on wildlife, wildlife habitats, and ecological systems that result from interactions between wildlife, people, and the land. The ecological effect of greatest interest in this general category is viability of the black bear population in New York State. One of the fundamental objectives of black bear management in New York is to maintain a self-sustaining population of black bears. Survey results confirm that management stakeholders continue to place high importance on ecological impacts.

Economic impacts are monetary effects produced by people engaging in bear-related recreation and by people replacing or repairing property damaged by bears. It is useful to partition this set of impacts into three subgroups: costs of addressing commercial property damage; costs of addressing noncommercial property damage, and expenditures associated with bear-related recreation.

Survey results suggest that threats to **human safety** are an effect that should be considered a management impact. This is the case even though the actual incidence of bear-related human injuries is very low.

Human-wildlife interactions produce a wide range of positive and negative **psychological effects**. This is arguably the largest general category of effects. The most important psychological effects from a management perspective include: personal satisfactions produced through bear-related recreation; negative psychological effects associated with property damage; and negative psychological effects associated with perceived risk of a black bear attack.

Social effects are produced through interactions among people where black bears are the reason for the interaction. Small group meetings and mail survey results suggested that one particular social effect merits management attention as an impact: the importance that people place on ensuring that all members of society have an understanding of the natural world.

Wildlife managers recognize that some stakeholders are just as concerned about the **effects produced by management actions** as they are about the effects produced by interactions with black bears. There is often disagreement about the acceptability of various management

actions across stakeholder groups. Various stakeholder groups may be particularly concerned about bear hunting generally, specific methods of bear hunting, lethal response to problem bear situations, or a management policy to take no action.

Table 3. Preliminary set of impacts upon which DEC will focus management attention.

Effects Categories	Specific Effects of Greatest Concern in 2002 (Impacts)
Ecological Effects:	
Effects on wildlife, wildlife habitats, and ecological systems that result from interactions between wildlife, people, and the land.	<ul style="list-style-type: none"> • Long-term population viability of black bears in New York State.
Economic Effects:	
Monetary effects produced by interactions among people, related to black bears.	<ul style="list-style-type: none"> • Costs of bear-related damage to commercial property. • Cost of bear-related damage to residential property. • Economic activity associated with bear-related recreation (hunting, viewing, photography).
Health/Safety Effects:	
Effects on human safety or health.	<ul style="list-style-type: none"> • Number and severity of actual human injuries caused by black bears.
Psychological Effects:	
Enhancement or diminishment of psychological well being for individuals, stakeholder groups, or society overall.	<ul style="list-style-type: none"> • Personal satisfaction associated with bear-related activities (hunting, viewing, photography). • Personal/psychological effect of commercial property damage. • Personal/psychological effect of residential property damage. • Perception of threat from black bears.
Social Effects:	
Social effects associated with interactions among people, where black bear are the reason for the interaction.	<ul style="list-style-type: none"> • Importance placed on understanding the natural world.
Management Effects:	
Effects associated with bear management actions.	<ul style="list-style-type: none"> • Reaction to active management or intervention. • Importance placed on having a wildlife management agency that has the knowledge and expertise to conduct black bear management.

Tolerance for interactions around the home

As human-black bear interactions have increased in New York, it has become more important for wildlife managers to learn about stakeholder tolerance for encounters with black bears, especially encounters in residential areas. Understanding more about key interactions is important because addressing those interactions can be a means of managing for desired changes in impacts. The new planning framework incorporates an approach called Adaptive impact management, or AIM (Riley et al. 2003). AIM calls for stakeholder-manager collaboration to describe the preferred nature and extent of human-black bear interaction across management zones, and to identify acceptable management interventions and their timing (a plan of action).

We used a six-item bear sensitivity index (Peyton and Bull 2000) to measure tolerance for interactions with a black bear near one's home. For research purposes, intolerance was defined as the point where someone would "ask/tell some authority to do something about the bear." The BSI index allowed us to place a respondent in one of five categories of sensitivity based on the types of bear-human interactions each person would tolerate (Table 4).

Twenty-five percent of respondents were tolerant of all the interactions presented (i.e., even an interaction where a bear entered the home, these respondents would not ask/tell an authority to do something about the bear). About 31% of respondents were tolerant of all interactions except those that involved a potential threat to pets or people. About 13% of respondents would tolerate the presence of black bears in their area, but were intolerant of actual interactions with bears. Fourteen percent of respondents were classified in the highest category of sensitivity. Those respondents were intolerant of the presence of a bear near their home.

People living in the Adirondack, Catskill, and Allegany core bear ranges were more likely than people living outside core bear ranges to express a high tolerance for interactions with black bears. Tolerance for interactions with bears was lowest in the downstate geographic area. Moreover, people who had personal experiences with bears (both positive and negative) were more tolerant of them. These findings suggest that tolerance is highest in geographic areas that have been inhabited by black bears for many years.

Attitudes about management actions

In 1999, staff within DEC's Bureau of Wildlife (BOW) developed a Standard Operation Procedures Manual (SOPM) that lays out a set of recommended actions for handling problem situations that involve black bears and people. Completed in the spring of 2000, New York's SOPM contains procedures and other recommendations for addressing over 50 situations in which people might become involved with or impacted by black bears (NYDEC 2000). In addition to describing scenarios and recommended actions, the SOPM includes appendices with information regarding types and availability of materials and supplies. It also includes a current summary of those sections of the Environmental Conservation Law (ECL) and New York Conservation Rules and Regulations (6NYCRR) which provide authority for bear interventions. The SOPM is now used by DEC field, enforcement and administrative staff as a reference and techniques manual on best practices for handling bear issues.

Table 4. Sensitivity of 2002 survey respondents to encounters with black bears, as measured by the bear sensitivity index.

<u>Sensitivity level</u>	<u>Sensitivity level definition</u>	<u>% of respondents</u> (n=933)
Level I:	Tolerant of all bear-human interaction scenarios presented.	25.0
Level II	Tolerant of all interactions except those that involve a clear personal threat.	31.4
Level III	Tolerant of occasional, but not frequent interactions with black bears.	16.6
Level IV	Tolerant of presence of bears, but intolerant of any actual interactions.	13.4
Level V	Intolerant of even the presence of bears.	13.7

The management practices described in the SOPM, and broader interventions, such as public education and regulated bear hunting, are topics very likely to come up in any discussions that stakeholders have about the black bear management program. We included several measures to assess attitudes toward a subset of management actions focused on bear population management and management of individual problem bears. Responses to these questions are intended only to provide broad insights that can improve communication among stakeholders.

Nonlethal management responses:

When human safety is not at issue, DEC staff may respond to a problem bear incident by informing people how they can remove bear attractants. The bear is left alone in these cases. Most respondents (80%) supported or strongly supported this kind of response. In rare instances, DEC staff may choose to trap a problem bear and relocate the animal to a new area after a process of negative conditioning. This practice also was supported by a majority of respondents (Table 5-6). More commonly, problem bears that are handled by DEC staff are subjected to negative conditioning and released on site (moving the bear is not commonly practiced because management experience shows that the animal often returns to the release site). Releasing bears at the same location was supported by only 37% of respondents and another third were uncertain about their opinion toward this practice.

Table 5. Percentage of respondents who agreed or disagreed with statements regarding how DEC staff should respond to interactions between people and black bears in urban areas.

<u>Questionnaire statements</u>	<u>N</u>	<u>Response categories</u>		
		<u>Agree, strongly agree</u>	<u>Neither Agree nor disagree (%)</u>	<u>Disagree, strongly disagree</u>
DEC should try to minimize interactions between people and black bears in urban areas.	969	81.4	14.2	4.4
DEC should be more willing to capture and relocate black bears in urban areas than in rural areas.	975	83.8	9.2	7.0
DEC should be more willing to destroy black bears in urban areas than in rural areas.	960	15.0	18.8	66.2

Lethal practices:

Attitudes towards euthanizing bears: Individual bears are euthanized in cases where human safety is threatened, or in cases where repeated attempts at negative conditioning of the bear have failed to change a problem behavior. The practice of destroying problem bears was opposed by over half the respondents (Table 6). Although most respondents believed that DEC should “do more to minimize interactions between people and black bears in urban areas,” few agreed with the statement, “DEC should be more willing to destroy black bears in urban areas than in rural areas” (Table 5).

Attitudes about bear hunting: Most respondents (68%) reported that the statement, “In general, I approve of regulated hunting,” best described their opinion about hunting (14% responded that in general, they do not approve of regulated hunting; 18% were unsure about their opinion toward hunting). About half (49%) supported the use of hunting seasons as a means to address problems with individual bears by reducing the size of the black bear population (Table 6). About 24% were opposed to bear hunting as a means to address problems with individual bears; 27% were unsure about their opinion on this topic. Support for using hunting seasons to address problems with bears was highest in the Adirondack and Allegany core bear ranges and lowest Rockland and Westchester counties.

Respondents were informed that black bears are expanding their ranges in western, northern, and southeastern New York. Respondents were evenly split with regard to support for expanding the size the areas where black bear are currently hunted in New York. About a third supported expansion, a third opposed expansion, and a third were unsure about their opinion toward expanding hunting areas. Hunters were more likely than nonhunters to support expanding hunting zones in one or more of the areas where black bears are legally hunted in

New York. Hunters also were more likely than nonhunters to support use of hunting seasons as a management tool to lower the number of black bears.

Table 6. Percentage of respondents who supported or opposed possible management responses to individual problem bears.

	N	Support, strongly support	Undecided	Oppose, strongly oppose
Instruct person with the problem to modify the environment (e.g., remove bird feeder, change garbage storage, etc.), but leave the bear alone as long as no one is injured. <i>Considerations</i> – the bear is not disturbed but people must take actions to avoid problems.	992	80.1	11.1	8.8
Capture bears that repeatedly cause problems for people and relocate them to a new area, after negative conditioning. <i>Considerations</i> – may solve a local problem, but the relocated bear may cause problems elsewhere.	987	65.7	23.1	11.1
Use hunting seasons to lower the number of bears. <i>Considerations</i> – may reduce the total number of bears and the probability of problems, but does not target specific bears.	990	48.8	27.2	24.0
Capture bears that repeatedly cause problems for people and release them <u>on site</u> , after frightening the bear (i.e., negative conditioning) so that it will avoid similar situations and people. <i>Considerations</i> – may give people at the site time to remove food sources that attract bears, but the bear may cause problems elsewhere.	991	37.9	32.7	29.4
Destroy bears that repeatedly cause problems for people. <i>Considerations</i> – may solve a local problem, but identifying specific problem bears can be difficult, and killing bears is objectionable to some people.	991	23.6	24.2	52.1

NEXT STEPS

In the coming months, we will complete the full-length report from this study. That report will contain more extensive analysis of the data described here. Findings from this research will be communicated to wildlife management professionals through publications in professional journals and through presentations at professional meetings.

DEC staff are convening several stakeholder input groups to seek additional insights about the current management situation. DEC staff and others will work with these input groups to interpret and use the information gathered through the 2002 mail survey of black bear management stakeholders. Input from these stakeholder engagement processes will be reflected in DEC decisions about the 2004 black bear management program.

ACKNOWLEDGEMENTS

We are grateful to the residents of New York State who provided feedback for this study by participating in small group meetings or by completing a self-administered mail-back questionnaire.

We received guidance at all points in this study from staff in the New York State Department of Environmental Conservation, Bureau of Wildlife. For their assistance and critical review, we thank: Lou Berchielli, Russ Biss, Jim Fodge, Dick Henry, Art Johnsen, George Mattfeld, Matthew Merchant, and John O'Pezio.

For their assistance with implementation of nominal group meetings, we thank Janet Aldrich, Eileen McGuire, and Bill Schwerd, all staff members of Cornell Cooperative Extension.

We extend special thanks to Jim Shanahan and Dietram Scheufele (Cornell Communication Department) for their contributions to design of questionnaire elements that examine exposure to mass media and how such exposure may influence attitudes. Special thanks are also extended to Peter Bull and R. Ben Peyton (Michigan State University) for working with us to integrate questionnaire items that explored sensitivity to bear-related interactions. The bear sensitivity index used in this research was developed by Peter Bull and R. Ben Peyton.

Many members of Cornell University's Human Dimensions Research Unit in the Department of Natural Resources contributed to this study. Shawn Riley (now at Michigan State University), Jody Enck, and Tommy Brown made valuable conceptual contributions to this study. Nancy Connelly assisted with supervision of survey implementation and data analysis. Karlene Smith, Meg Faville and Krista Guerrero assisted with survey implementation and data entry. Meredith Gore assisted with media content analysis.

Funding for this project was provided by New York Federal Aid in Wildlife Restoration Grant WE-173-G Job 146-III-3b and by the Cornell University Agricultural Experiment Station.

LITERATURE CITED

- NYSDEC. 2003a. Black bears in New York: natural history, range, and interactions with people. New York State Department of Environmental Conservation. Albany, New York.
- NYSDEC. 2003b. A framework for developing New York's black bear management plan. New York State Department of Environmental Conservation. Albany, New York.
- NYSDEC. 2000. Standard Operating Procedure Manual (SOPM) for Black Bear in New York State. New York State Department of Environmental Conservation. Albany, New York.
- Peyton, R. B., P. Bull, T. Reis, and L. Visser. 2000. An assessment of the social carrying capacity of black bears in the Lower Peninsula of Michigan. Department of Fisheries and Wildlife. Michigan State University. East Lansing, Michigan.
- Riley, S. J., W. F. Siemer, D. J. Decker, L. H. Carpenter, J. F. Organ, and L. T. Berchielli. 2003. Adaptive impact management: an integrative approach to wildlife management. *Human Dimensions of Wildlife Management* 8: 81-95.
- U.S. Department of Interior, Fish and Wildlife Service, and U. S. Department of Commerce, U.S. Census Bureau. 2003. 2001 National survey of hunting, fishing, and wildlife-related recreation.