

Perceptions of Four Stakeholder Groups Towards Boating in the Saranac Lakes Wild Forest Area



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INTRODUCTION

The Saranac Lakes Wild Forest of New York's Adirondack Park comprises 79,000 acres of forest and water resources, and contains 142 water bodies used for motorized and non-motorized boating, swimming, and fishing (NYSDEC, 2008). Interspersed with these state-owned lands and water bodies are private lands owned by local residents, business owners, and organizations. Local landowners have a long-standing tradition of using state forest lands within the Saranac Lakes Wild Forest as access for recreational boating and fishing, and for water-based transportation to shoreline homes and properties. Business owners depend on the recreational value of these lands for attracting customers, and campers come to the area to enjoy the recreational benefits these forest and water resources provide.

Concerns about various issues related to water-based recreation (e.g., between motorized and non-motorized boat use) have been voiced by stakeholders (such as landowners, business owners, and visitors) over the past several years. Information about the perceptions of stakeholder groups towards water-based recreation is needed to identify strategies for resolving stakeholder concerns. The objective of this study is to identify the perceptions of business owners, shoreline landowners, inland landowners, and campers towards three forms of water-based recreation (i.e., non-motorized boating, motorized boating, and personal watercraft use) within the Saranac Lakes Wild Forest area. Funding for this study was provided by the Northeastern States Research Cooperative, with additional funding from the New York State Department of Environmental Conservation for the camper survey.

Three behaviors were included in this study: non-motorized boat use, motorized boat use (i.e., with a gas-powered engine), and personal watercraft use. Two types of perceptions towards these behaviors are examined: beliefs and attitudes. While beliefs are defined as an individual's conceptions about a specific behavior (Ajzen, 1991), attitudes are defined as an individual's positive or negative evaluations of the behavior (Ajzen and Fishbein, 1980). For example, an individual may believe that boating spreads invasive species throughout an area, which may lead to a negative attitude towards boating. Conversely, the belief that boating is an enjoyable recreational activity might lead to positive attitudes towards boating.

For this study, interviews with 20 land managers were used to identify beliefs and attitudes related to boating in the Saranac Lakes Wild Forest area. The beliefs and attitudes identified through the interviews were then incorporated into three similar stakeholder mail surveys (i.e., for shoreline and inland landowners, business owners, and campers). Results from the surveys were compared between stakeholder groups to identify the perceptions of stakeholders towards boating.

METHODS

This study comprised two phases: (1) preliminary qualitative interviews with 20 public and private land managers (i.e., state agency personnel, non-governmental organization directors, and commercial business owners who manage private shoreline areas), and (2) three mail surveys (i.e., shoreline and inland landowners, business owners, and state campground users).

Interviews. The land managers were interviewed either by phone or in-person for their perspectives on recreational use of water bodies in the Saranac Lakes Wild Forest. Interviewees consisted of nine state agency personnel, four commercial recreation property managers, and seven directors of non-governmental organizations involved with land management. Interviewees were asked to identify three issues related to water-based recreation in the Saranac Lakes Wild Forest that they think are important, and their beliefs related to these issues. Interviews were recorded (with interviewee permission), transcribed (i.e., typed) into Microsoft Word, and analyzed to identify the perceptions of interviewees. The issues most commonly mentioned were related to boat use in the area; thus, it was determined to focus the subsequent surveys on boating. Beliefs related to boating were tabulated to identify the number of interviewees indicating each, and were used to write the belief statements included on the mail survey questionnaires.

Mail surveys. Three separate mail surveys were conducted: (1) a business owner survey (conducted in 2006), (2) a shoreline and an inland landowner survey (2006), and (3) a camper survey (2007). Questions on demographics and characteristics specific to each stakeholder group were included on the questionnaires. For the landowner survey, questions related to property type and length of residence were included. The business owner survey asked for information about the type of business and the business' customer base. Camper survey questions asked for information on public areas used, length of stay, number of trips, and group composition. Questions related to experiences with various types of outdoor recreation and demographics were included on all three questionnaires. In addition, identical questions related to the beliefs and attitudes of each stakeholder group towards the three types of boating were used to enable comparisons between stakeholder groups. Five-point scales (i.e., -2 = strong disagreement, -1 = disagreement, 0 = neutral, 1 = agreement, and 2 = strong agreement) were included to identify each respondent's level of agreement or disagreement with the statements concerning beliefs and attitudes. Because of space limitations on the questionnaires, questions on motorboat use referred only to gas-powered engines, not electric motors.

Landowner contact information was obtained through the county property tax records for the Saranac Lakes area (contained within both Essex and Franklin Counties in New York State). Contact information for both inland and shoreline properties was collected. In Essex County, 52 properties were classified as shoreline properties in the Saranac Lakes area; the remaining 759 were classified as inland properties. In Franklin County, 634 properties were classified as comprising shoreline in the Saranac Lakes area and 1,807 were classified as inland. In total, 686 of the 3,252 properties (21%) in the study area were identified as shoreline parcels. The final samples, derived using ARC GIS, consisted of 500 randomly-selected shoreline parcels and 500 randomly-selected inland parcels. Due to potential differences in the beliefs and attitudes of shoreline and inland property owners related to boat use (i.e., shoreline property owners likely experience boat use to a greater extent), the two landowner groups were included in the analysis as separate stakeholder groups.

The mailing list of business owners was obtained from business brochures and area telephone directories. Only recreation-related businesses (i.e., campgrounds, marinas, restaurants, guide services, hotels and motels, bed and breakfasts, boat tour and rental companies, and recreational outfitters) were included in the mailing. Sixty-six recreation-related businesses were identified in the area, all of which were included in the business owner survey.

Contact information for campers was identified with the assistance of the New York State Department of Environmental Conservation. Specifically, a proportional sample of campers using three of the state-managed campgrounds in the Saranac Lakes Wild Forest in 2006 was randomly selected as follows: 564 campers were selected from Fish Creek, 366 from Rollins Pond, and 70 from Saranac Lake Islands State Campground. A total of 1,000 campers were included in the camper survey.

Four mailings, spread two weeks apart each, were used for each of the three surveys (i.e., the first and third mailings included the questionnaire, a postage-paid return envelope, and a cover letter; the second and fourth mailings were reminder postcards; Dillman, 2000). Due to privacy issues, the mailing of the camper survey was conducted by the NYS Department of Environmental Conservation (DEC) with detailed instructions for sample collection and mailing from the researchers.

Non-response bias was examined by surveying non-respondents from each of the three stakeholder samples (i.e., 30 shoreline landowners, 30 inland landowners, 33 business owners, and 60 campers). Two-independent-sample t-tests and z-tests ($p \leq 0.05$) were used to identify significant differences between the means and proportions of respondent and non-respondent groups concerning demographic characteristics and attitudes towards the use of non-motorized boats, motorized boats, and personal watercraft.

Data from completed questionnaires were entered into SPSS (a computer software program used for statistical analysis). The demographics and characteristics specific to each stakeholder group were calculated. Responses to questions concerning local enforcement, access, and invasive species were summarized for each stakeholder group. Responses to the questions concerning attitudes and beliefs were grouped into factors based on interview results and definitions of concepts included in the Theory of Planned Behavior; a confirmatory factor analysis was used to confirm the factor groupings. Two factors (i.e., natural/social beliefs and attitudes towards boat use) were calculated for each type of boating by averaging together the responses to the survey questions in each factor grouping. In addition, based on the results of the factor analysis, a separate variable (i.e., economic belief towards boat use) was identified for each type of boat use. The reliability (i.e., internal consistency) of each factor was checked using Cronbach's alpha; an alpha of 0.70 or greater was considered suitable for further analysis (Hair, et al., 1998).

ANOVAs (Analysis of Variance tests) were conducted between stakeholder groups for each type of boating to identify significant differences between the stakeholder groups concerning their beliefs and attitudes towards each type of boating. When a significant difference between the means of stakeholder groups was identified, between-group comparisons were made to identify the groups between which the differences were occurring.

RESULTS

LAND MANAGER INTERVIEWS

Through analysis of the land manager interview data, specific concepts were noted as being frequently mentioned by interviewees. Concepts mentioned by five or more interviewees were identified as important and became the basis for questions included on the stakeholder questionnaires. Table 1 includes the behavioral beliefs related to boat use that were identified in the interviews (note: beliefs related to access and regulations (called control beliefs) will be presented in a future report). Concepts were reworded as needed for the surveys so that they would be applicable to each type of boating for each stakeholder group. The attitude and belief statements used on the questionnaires are listed in Table 2.

Table 1. The number of interviewees indicating each code related to behavioral beliefs towards boat use (n = 20).

| Behavioral belief codes | Concepts | Number of interviewees | | | |
|-----------------------------|--|------------------------|-----------------------|----------------------|-------|
| | | Business owners | Association directors | Public land managers | Total |
| Impact on natural resources | Gas-powered boats affect water quality (oil/fuel leakage, spread of invasives). | 1 | 4 | 4 | 9 |
| | Boat wakes disturb wildlife and shorelines. | 0 | 2 | 1 | 3 |
| Peaceful, quiet setting | Gas-powered motorboat use affects the peace and quiet of the natural setting. | 1 | 3 | 3 | 7 |
| | Personal watercraft use affects the peace and quiet of the natural setting. | 1 | 4 | 2 | 7 |
| Social conflicts | A balance between motorized and non-motorized boat use is needed to reduce social conflicts. | 0 | 1 | 6 | 7 |
| | Responsible (safe) use of water resources by boaters is necessary to prevent accidents. | 0 | 6 | 2 | 8 |
| Economic impacts | Boating is important to the local economy. | 4 | 5 | 4 | 13 |

Table 2. Belief and attitude statements used on the questionnaires. These six questions were repeated for each type of boating (i.e., non-motorized boating, motorboating with a gas-powered engine (not including personal watercraft use), and personal watercraft use).

| Concept | Statement |
|-----------------------------------|--|
| Behavioral beliefs about boat use | <ul style="list-style-type: none"> • I believe that [type of boating] is harmless to the high quality and cleanliness of the SLWF's natural resources (e.g., lakes, ponds, and forests).^a |
| | <ul style="list-style-type: none"> • I believe that [type of boating] helps maintain a natural setting in the SLWF that is free of conflicts between [type of boater] and other water body users.^a |
| | <ul style="list-style-type: none"> • I believe that [type of boating] preserves the peaceful, quiet natural setting of the SLWF.^a |
| | <ul style="list-style-type: none"> • I believe that [type of boating] benefits the economy of the SLWF area.^b |
| Attitude towards boat use | <ul style="list-style-type: none"> • I have a positive attitude towards [type of boating] in the SLWF. |
| | <ul style="list-style-type: none"> • I think [type of boating], in general, is well suited to the natural setting of the SLWF area |
| | <ul style="list-style-type: none"> • I think [type of boating] is a good recreational activity to have in the SLWF. |

^a Variable was included in the natural/social belief, based on the results of the factor analysis.

^b Variable was identified as the economic belief, based on the results of the factor analysis.

SURVEY RESULTS FOR STAKEHOLDER GROUPS

Shoreline and Inland Landowners

Response rate. Of the 500 questionnaires mailed to shoreline landowners in the Saranac Lakes area, 75 were undeliverable or sent to individuals who no longer owned property in the area; out of a qualified sample of 425 individuals, 251 shoreline property owners returned the completed questionnaire for a response rate of 59%. For inland property owners, 60 were undeliverable or sent to individuals who no longer owned property in the area. The response rate of 39% for inland property owners (172 responses out of 440 in the qualified sample) was lower than that of the shoreline property owners.

Sixteen inland and 12 shoreline non-responding landowners completed and returned the short, one-page questionnaire used to check for non-response bias. Results from two-independent-sample t-tests indicate no significant differences ($p \leq 0.05$) between respondents and non-respondents for either the shoreline or inland group for the number of months the individual resides in the area annually, and attitudes towards the use of non-motorized boats, motorized boats, and personal watercraft. For the number of years that the individual has resided in the Saranac Lakes area, there was a significant difference between the shoreline respondents and non-respondents only ($p = 0.03$); no significant difference was identified for the inland respondents and non-respondents. The significant difference for shoreline property owners (though based on a small number of non-respondents) indicates that non-respondents are likely to have resided for a longer period of time in the area (44 years on average) than respondents (31 years on average). It is important to realize, however, that significant differences in attitudes were not identified between shoreline respondents and non-respondents, indicating that this difference in length of residence may not be an important influence on perceptions towards boat use.

Demographics. Responding shoreline and inland landowners both had resided in the Saranac Lakes area for an average of 31 years ($n = 235$ and $n = 167$, respectively). While shoreline landowners lived in the area an average of 6 months out of the year ($n = 241$), inland landowners stayed an average of nearly 10 months out of the years ($n = 166$). The average age of shoreline respondents was 62 years, while that of inland respondents was 59 years. Responding shoreline landowners ($n = 249$) were 68% male and 32% female, while inland property owners were 72% male and 27% female ($n = 171$). The two groups varied slightly with regard to race with 98% of the shoreline owners and 94% of the inland owners being Caucasian. Small proportions of both groups were of Native American descent (2% of shoreline owners and 4% of inland owners); approximately 1% of the inland property owners were of Hispanic or Asian origin ($n = 242$ and 167 , respectively; Table 3). Shoreline respondents had an average of 17 years of education (i.e., 12 years of high school plus 5 years of college or vocational training; $n = 246$); inland respondents had an average of 16 years of education ($n = 172$).

Property characteristics. Sixty-nine percent of the respondents of both landowner groups owned one parcel of land ($n = 226$ for shoreline owners and $n = 157$ for inland owners); 19% of shoreline respondents and 22% of inland respondents owned two parcels, and 6% of both groups owned three. Many respondents indicated that their property was used for residential purposes (79% of shoreline and 85% of inland owners; $n = 245$ and $n = 168$, respectively), had a landscaped backyard (32% and 44%), and included undeveloped forest land (24% and 19%)

and/or undeveloped wetlands (9% and 7%). The majority of shoreline respondents (70%) used their property as a secondary home (n = 245), while 72% of inland owners used it as a primary residence (n = 168). Of the shoreline landowners, 85% indicated that they had a boat dock on their property; 33% used a portion of their shoreline area to launch non-motorized boats, and 7% had a boat launch suitable for either motorized or non-motorized boats (n = 244).

Participation in recreational activities. Shoreline property owners participated in most water-based recreational activities to a greater extent than did inland property owners (i.e., 92% and 83% of respondents, respectively, had participated at least once in swimming in 2005; 88% and 69% in motorboat use; 85% and 68% in canoeing; 56% and 43% in kayaking; and 13% and 6% in personal watercraft use; n = 245 and n = 170, respectively); nearly equivalent percentages of the two groups participated in fishing (63% and 59%, respectively). Tables 4 and 5 list the specific participation percentages for both landowner groups.

Table 3. Demographics of stakeholder groups.

| Demographic characteristic | Stakeholder Group | | | |
|----------------------------|-------------------------------------|--|--------------------------|---|
| | Shoreline Landowners | Inland Landowners | Business Owners | Campers |
| Gender | 68% males 32% females | 72% males 28% females | 64% males 36% females | 63% males 37% females |
| Age (average years) | 62 years | 59 years | 55 years | 51 years |
| Race | 98% Caucasian 2% Native American | 94% Caucasian 4% Native American 1% Asian 1% Hispanic | 100% Caucasian | 96% Caucasian 3% Native American 1% Other |
| Education (average years) | 17 years | 16 years | 15.2 years | 15.7 years |

Table 4. Percent of responding shoreline landowners by level of participation within SLWF in 2005 for each type of activity.

| Type of recreational activity | n | Percent participation in 2005 | | | | | |
|---|-----|-------------------------------|--------------|--------------|---------------|----------------|--------------------|
| | | Never | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 20 times | More than 20 times |
| Motorboating (excluding personal watercraft) | 245 | 12% | 5% | 9% | 10% | 15% | 49% |
| Personal watercraft use | 242 | 87 | 3 | 2 | 1 | 2 | 5 |
| Non-motorized boating (kayaking and canoeing) | 249 | 11 | 8 | 12 | 16 | 17 | 36 |
| Kayaking | 247 | 43 | 7 | 12 | 14 | 8 | 16 |
| Canoeing | 248 | 15 | 13 | 19 | 17 | 14 | 22 |
| Fishing | 248 | 37 | 10 | 12 | 15 | 9 | 17 |
| Hunting | 248 | 81 | 3 | 2 | 4 | 3 | 7 |
| Swimming | 249 | 8 | 5 | 10 | 16 | 14 | 47 |
| Hiking | 247 | 15 | 10 | 19 | 23 | 12 | 21 |

Table 5. Percent of responding inland landowners by level of participation within SLWF in 2005 for each type of activity.

| Type of recreational activity | n | Percent participation in 2005 | | | | | |
|---|-----|-------------------------------|--------------|--------------|---------------|----------------|--------------------|
| | | Never | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 20 times | More than 20 times |
| Motorboating (excluding personal watercraft) | 170 | 31% | 14% | 10% | 12% | 14% | 19% |
| Personal watercraft use | 171 | 93 | 2 | 1 | 1 | 2 | 1 |
| Non-motorized boating (kayaking and canoeing) | 171 | 26 | 12 | 13 | 12 | 16 | 21 |
| Kayaking | 171 | 57 | 10 | 7 | 9 | 13 | 4 |
| Canoeing | 171 | 32 | 18 | 15 | 14 | 11 | 10 |
| Fishing | 170 | 41 | 11 | 16 | 16 | 9 | 7 |
| Hunting | 170 | 81 | 1 | 5 | 3 | 3 | 7 |
| Swimming | 170 | 17 | 11 | 12 | 16 | 12 | 32 |
| Hiking | 170 | 13% | 15% | 24% | 16% | 14% | 18% |

Business owners

Response rates. Of the 66 surveys mailed to recreation-related business owners, 58 were included in the qualified sample. Twenty-five business owners responded for a response rate of 43%. Thirteen non-responding business owners completed and returned the short, one-page non-response questionnaire. Results from two-independent-sample t-tests indicate no significant differences ($p \leq 0.05$) between respondents and non-respondents for the number of years in business, number of months in operation in 2005, and attitudes towards the use of non-motorized boats, motorized boats, and personal watercraft.

Demographics. The average age of responding business owners was 55 years with a range of 29 to 75 years. Sixty-four percent were males and 36% females; 100% were Caucasian (Table 3). Respondents had an average of 15.2 years of education (i.e., 12 years of high school plus 3.2 years of college or vocational training on average).

Business characteristics. Of the responding business owners, 32% owned a fishing, hunting, or other type of guide service, 32% a bed and breakfast or inn, 20% a hotel or motel, 12% a sporting goods store, 12% a restaurant, 8% a marina, and 28% some other type of recreation business. Due to business diversification, nine businesses fit into more than one category, creating overlap. Respondents had owned or managed their business for an average of 17.2 years, and 18 out of the 25 indicated that their businesses were open year-round (the remainder were open 11 months out of each year). Seventy-one percent of responding business owners indicated that their customers participated in non-motorized boating; 42% had customers that participated in motorized boat use and 13% had customers who were personal watercraft users.

Participation in recreational activities. Business owners participated in a diversity of recreational activities in the Saranac Lakes Wild Forest. The activities that respondents participated in most often in 2005 were swimming, hiking, non-motorized boating, motorized boating, fishing, and camping (Table 6). A moderate percentage of respondents participated in hunting, while a small percentage participated in personal watercraft use.

Table 6. Percent of responding business owners (n = 25) by level of participation within SLWF in 2005 for each type of activity.

| Type of recreational activity | n | Percent participation in 2005 | | | | | |
|---|----|-------------------------------|--------------|--------------|---------------|----------------|--------------------|
| | | Never | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 20 times | More than 20 times |
| Motorboating (excluding personal watercraft) | 25 | 32% | 8% | 8% | 20% | 0% | 32% |
| Personal watercraft use | 25 | 96 | 4 | 0 | 0 | 0 | 0 |
| Non-motorized boating (kayaking and canoeing) | 25 | 16 | 12 | 12 | 8 | 20 | 32 |
| Kayaking | 25 | 36 | 16 | 24 | 4 | 4 | 16 |
| Canoeing | 25 | 16 | 16 | 24 | 12 | 4 | 28 |
| Fishing | 25 | 36 | 12 | 4 | 16 | 4 | 28 |
| Hunting | 24 | 71 | 0 | 4 | 8 | 4 | 13 |
| Swimming | 25 | 12 | 0 | 12 | 8 | 20 | 48 |
| Hiking | 25 | 16 | 8 | 20 | 8 | 4 | 44 |
| Camping | 25 | 40% | 8% | 28% | 8% | 8% | 8% |

Campers

Response rate. The response rate for campers was relatively high -- 46% (442 completed questionnaires) out of the qualified sample of 950 campers. The response rates for the individual campgrounds were 43% for Fish Creek, 43% for Rollins Pond, and 60% for Saranac Lake Islands.

Eighteen non-responding campers completed and returned the short, one-page non-response questionnaire. Results from two-independent-sample t-tests and z-tests indicate no significant differences ($p \leq 0.05$) between respondents and non-respondents for the number of trips and camping trips made to the Saranac Lakes area in 2006, proportion of campers who had visited prior to 2006, proportions of campers who used motorboats, non-motorized boats, and personal watercraft, and attitudes towards the use of non-motorized boats, motorized boats, and personal watercraft.

Campground use. From April through October in 2006, 8,683 individuals registered for campsites in the Fish Creek, Rollins Pond, and Saranac Lake Islands State Campgrounds. The three campgrounds combined received an estimated 34,700 campers during this time period (based on a group size of 4.0 people per site; does not include those who camped on multiple sites in groups of 10 or more). The average number of campers per campsite was 4.1 people for Fish Creek, 3.7 for Rollins Pond, and 4.3 for Saranac Lake Islands (these averages do not include those who camped on multiple sites in groups of 10 or more). These means were used to calculate the following estimates for total number of campers in 2006: 18,500 for Fish Creek, 10,800 for Rollins Pond, and 5,400 for Saranac Lake Islands.

Demographics. The demographic characteristics of responding campers are shown in Table 3. The average age of responding campers was 51 years with a range of 23 to 84 years. Sixty-three percent were males and 37% females; 96% were Caucasian, 3% of Native American descent, and less than 1% each were Black and Asian (Table 3). Respondents had an average of 15.7 years of education (i.e., 12 years of high school plus 3.7 years of college or vocational training on average). The average group size of respondents comprised approximately 5 people (including the respondent and those who traveled in groups of 10 or more). Most groups consisted of family (42%), friends (6%), or both (48%); 9% camped in groups of 10 or more. Demographic characteristics for campers using each state campground are shown in Table 7.

Of the 8,683 registered campers in 2006, the majority was from New York State (5,721 people or 67%). In addition, many campers also came from surrounding or nearby states (4% from NJ; 2% each from MA, CT, and VT; 1% each from OH and NH) and Canadian provinces (11% from Quebec and 3% from Ontario).

Trip characteristics. Of the responding campers, 88% had visited the Saranac Lakes Wild Forest for recreational purposes before 2006. The average camper made 2.5 trips to the SLWF in 2006, an average of 1.8 of which were camping trips. The average trip was 4 days long. Trip characteristics for campers using each state campground are shown in Table 7.

Table 7. Demographic and trip characteristics of campers registered in the three state campgrounds in 2006.

| Characteristic | Percentage of respondents by campground | | |
|---------------------------|---|---|-----------------------------------|
| | Fish Creek ^a | Rollins Pond ^b | Saranac Lake Islands ^c |
| Gender | 65% males 35% females | 57% males 43% females | 79% males 21% females |
| Age (average years) | 51.6 years | 50.2 years | 46.9 years |
| Race | 95% Caucasian 4% Native American <1% Black <1% Asian <1% Hispanic | 97% Caucasian 2% Native American <1% Black <1% Asian | 100% Caucasian |
| Education (average years) | 15.4 years | 15.9 | 17.2 |
| Average SL trips | 3.0 trips | 2.0 | 1.4 |
| Average SL camping trips | 2.1 trips | 1.6 | 1.3 |
| Average days per trip | 4.4 days | 4.3 | 4.0 |
| Average number in group | 5 people | 4 | 5 |

^a n = 236

^b n = 159

^c n = 42

Participation in recreational activities. Campers participated in a diversity of recreational activities during their stay in the Saranac Lakes Wild Forest. The activities that respondents participated in most often in 2006 were non-motorized boating, swimming, hiking, fishing, and camping (Table 8). A moderate percentage of respondents participated in motorboating (39%), while small percentages participated in personal watercraft use (8%) or hunting (6%).

Differences in the percentages of participation in recreational activities in the Saranac Lakes Wild Forest in 2006 were also noted between respondents of the three campgrounds (Table 9). For example, the percentage of respondents who used motorboats was higher for Fish Creek State Campground respondents (54%) than for either Rollins Pond or Saranac Lake Islands respondents (17% and 42%, respectively). The percentage of respondents using non-motorized boats was higher for Rollins Pond and Saranac Lake Islands campers (93% and 95%, respectively) than for Fish Creek campers (80%). High percentages of respondents from all three campgrounds participated in swimming, while low percentages participated in personal watercraft use. The percentages of respondents who participated in fishing were similar for the three campgrounds (62% for Fish Creek, 56% for Rollins Pond, and 65% for Saranac Lake Islands).

Table 8. Percent of responding campers (n = 416) by level of participation within SLWF in 2006 for each type of activity.

| Type of recreational activity | n | Percent participation in 2006 | | | | | |
|---|-----|-------------------------------|--------------|--------------|---------------|----------------|---------------|
| | | Never | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 20 times | Over 20 times |
| Motorboating (excluding personal watercraft) | 416 | 61 % | 15% | 10% | 5% | 4% | 5% |
| Personal watercraft use | 408 | 92 | 3 | 2 | 1 | 1 | 1 |
| Non-motorized boating (kayaking and canoeing) | 434 | 14 | 20 | 30 | 18 | 10 | 8 |
| Kayaking | 411 | 42 | 24 | 16 | 10 | 4 | 4 |
| Canoeing | 422 | 26 | 30 | 23 | 13 | 4 | 4 |
| Fishing | 411 | 40 | 23 | 16 | 12 | 4 | 5 |
| Hunting | 384 | 94 | 2 | 1 | 1 | 1 | 1 |
| Swimming | 423 | 11 | 32 | 22 | 17 | 8 | 10 |
| Hiking | 422 | 12 | 40 | 30 | 10 | 5 | 3 |
| Camping | 437 | 2 % | 52% | 22% | 12% | 5% | 7% |

Table 9. Percentages of responding campers of the three state campgrounds who participated in recreational activities in the Saranac Lakes Wild Forest area one or more times in 2006.

| Recreational activity | Percentages of respondents who participated in 2006 (number of respondents) | | | | | |
|---|---|-------|---------------------------|-------|-----------------------------------|------|
| | Fish Creek ^a | | Rollins Pond ^b | | Saranac Lake Islands ^c | |
| Motorboating (excluding personal watercraft) | 54% | (224) | 17% | (152) | 42% | (40) |
| Personal watercraft use | 13 | (217) | 2 | (152) | 0 | (39) |
| Non-motorized boating (kayaking and canoeing) | 80 | (234) | 93 | (159) | 95 | (41) |
| Kayaking | 57 | (221) | 62 | (151) | 51 | (39) |
| Canoeing | 68 | (227) | 80 | (156) | 90 | (39) |
| Fishing | 62 | (220) | 56 | (151) | 65 | (40) |
| Hunting | 8 | (202) | 4 | (146) | 0 | (36) |
| Swimming | 87 | (229) | 88 | (153) | 98 | (41) |
| Hiking | 87% | (228) | 91% | (156) | 84% | (38) |

Access areas used. Table 10 shows the access areas used by campers during their visit(s) to the Saranac Lakes Wild Forest in 2006. It is important to note that these data provide only an indication of the actual use of these areas by campers, since it is likely that respondents did not accurately recall all of the sites that they had used in 2006.

Table 10. Percent of responding campers who reported the use of each access area.

| Access Area | Percent of respondents | | | |
|--|-----------------------------------|---------------------------------|-----------------------------------|---|
| | All campers combined ^a | Fish Creek campers ^b | Rollins Pond campers ^c | Saranac Lake Islands campers ^d |
| Rollins Pond Campground | 52% | 28% | 100% | 2% |
| Fish Creek Campground | 62 | 100 | 22 | 0 |
| Saranac Lake Islands Campground/Boat Launch | 13 | 6 | 1 | 100 |
| Meadowbrook State Campground | <1 | <1 | 0 | 2 |
| Rollins Pond State Boat Launch | 15 | 16 | 18 | 0 |
| Fish Creek Pond State Boat Launch | 19 | 30 | 7 | 0 |
| Lower Saranac Lake (Ampersand Bay Boat Launch) | 4 | 5 | 2 | 9 |
| Lower Saranac Lake (Second Pond Boat Launch) | 5 | 2 | 1 | 39 |
| Middle Saranac Lake (South Creek Boat Launch) | 8 | 6 | 1 | 44 |
| Upper Saranac Lake (Saranac Inn Boat Launch) | 5 | 7 | 1 | 2 |
| Upper Saranac Lake (Indian Carry Boat Launch) | 2 | 3 | 1 | 2 |
| Raquette River Boat Launch | 8 | 9 | 9 | 2 |
| Lake Flower Boat Launch | 4 | 6 | 1 | 2 |
| Lake Colby Boat Launch | 1 | 2 | 1 | 0 |
| Little Clear Pond Boat Launch | 2 | 2 | 3 | 0 |
| Follensby Clear Pond Boat Launch | 9 | 11 | 6 | 2 |
| East Pine Pond Boat Launch | 1 | 1 | 1 | 0 |
| Lake Placid Boat Launch | 1 | 2 | 1 | 2 |
| Hiking trails access area(s) | 21% | 19% | 25% | 17% |

^a n = 437; ^b n = 237; ^c n = 159; ^d n = 41

Invasive Species. Campers who had participated in boating in the Saranac Lakes area in 2006 were asked to identify the extent to which invasive aquatic plant species in the water affected their boating experience. Most (79% of 401 respondents) indicated that invasive aquatic plants did not negatively affect their boating experience at all in 2006; 11% indicated that aquatic plants became tangled in their boat motor or paddle infrequently (i.e., once per day or less), and 4% that aquatic plants became tangled in their boat motor or paddle more than once per day. Only 13% of respondents recalled being informed at the boat launch site about rinsing their boat after use to prevent the spread of invasive aquatic plants; 13% indicated that they had actually rinsed their boat.

Comparisons Between Stakeholder Groups

Recreational experiences. Differences in recreational participation between the three stakeholder groups were identified (Table 11). For example, landowners and business owners participated in motorboating, non-motorized boating, fishing, hiking, and swimming within the Saranac Lakes Wild Forest to a greater extent than campers. This result is likely due to the fact that landowners and business owners reside locally and, thus, have greater year-round access to the SLWF than do campers. Similarities were identified for all three groups for personal watercraft use (which was low), and between landowners and campers for hunting. Business owners hunted to a greater extent than the other two stakeholder groups, likely due to the inclusion of guide service owners in the business owner survey.

Table 11. Average recreational participation^a by stakeholder group.

| Type of recreational activity | Average level of participation ^a in 2005 or 2006 ^b (number of responses) | | | | | |
|---|---|-------|-----------------|------|---------|-------|
| | Landowners | | Business Owners | | Campers | |
| Motorboating (excluding personal watercraft use) | 3.0 | (415) | 2.4 | (25) | 0.9 | (416) |
| Personal watercraft use | 0.3 | (413) | 0.0 | (25) | 0.2 | (408) |
| Non-motorized boating (kayaking and canoeing) | 2.9 | (420) | 3.0 | (25) | 2.2 | (434) |
| Kayaking | 1.6 | (419) | 1.7 | (25) | 1.2 | (411) |
| Canoeing | 2.3 | (419) | 2.6 | (25) | 1.5 | (422) |
| Fishing | 1.9 | (418) | 2.2 | (25) | 1.3 | (411) |
| Hunting | 0.7 | (418) | 1.1 | (24) | 0.2 | (384) |
| Swimming | 3.4 | (419) | 3.7 | (25) | 2.1 | (423) |
| Hiking | 2.6 | (417) | 3.1 | (25) | 1.6 | (422) |
| Camping | 0.8 | (417) | 1.6 | (25) | 1.8 | (437) |

^a Levels of participation are according to the following scale: 0 = did not participate in 2005/2006; 1 = participated 1 to 2 times; 2 = 3 to 5 times; 3 = 6 to 10 times; 4 = 11 to 20 times; 5 = more than 20 times.

^b Landowner and business owner data are for the 2005 calendar year; camper data are for the 2006 calendar year.

Access. Respondents to the three surveys were asked if boat launch access for each type of boating is adequate as it currently exists or not. In general, the majority of the three stakeholder groups each indicated that access for each type of boating is suitable as is. About one-quarter of the responding shoreline landowners and one-fifth of the business owners and campers would like to see increased access for non-motorized boating. One-quarter of shoreline landowners and one-fifth of business owners would also like to see increased access for motorized boats. Over one-third of responding inland property owners, campers, and business owners, and 46% of responding shoreline landowners, would like to see less access for personal watercraft use. The results for the four stakeholder groups are shown in Table 12. Table 13 presents the results concerning access for responding campers of the three state campgrounds.

Table 12. Stakeholders' perceptions of the suitability of current boating access.

| Type of boating | Stakeholder group | n | Percentage of respondents | | |
|-------------------------|----------------------|-----|---------------------------|--------------------------|------------------|
| | | | Need less access | Access is suitable as is | Need more access |
| Non-motorized boating | Shoreline landowners | 234 | 1 % | 72 % | 27 % |
| | Inland landowners | 159 | 3 % | 84 % | 13 % |
| | Business owners | 24 | 0 | 83 | 17 |
| | Campers | 410 | 2 | 79 | 19 |
| Motorized boating | Shoreline landowners | 235 | 7 | 67 | 26 |
| | Inland landowners | 159 | 13 | 79 | 8 |
| | Business owners | 25 | 4 | 76 | 20 |
| | Campers | 373 | 16 | 76 | 8 |
| Personal watercraft use | Shoreline landowners | 233 | 46 | 54 | 0 |
| | Inland landowners | 157 | 40 | 52 | 8 |
| | Business owners | 25 | 40 | 56 | 4 |
| | Campers | 357 | 32 % | 67 % | 1 % |

Table 13. Campers' perceptions of the suitability of current boating access.

| Type of boating | Campground | n | Percentage of respondents | | |
|-------------------------|----------------------|-----|---------------------------|--------------------------|------------------|
| | | | Need less access | Access is suitable as is | Need more access |
| Non-motorized boating | Fish Creek | 221 | 1 % | 80 % | 19 % |
| | Rollins Pond | 149 | 3 | 77 | 20 |
| | Saranac Lake Islands | 40 | 2 | 80 | 18 |
| Motorized boating | Fish Creek | 208 | 9 | 80 | 11 |
| | Rollins Pond | 129 | 26 | 71 | 3 |
| | Saranac Lake Islands | 36 | 19 | 67 | 14 |
| Personal watercraft use | Fish Creek | 198 | 23 | 75 | 2 |
| | Rollins Pond | 127 | 41 | 58 | 1 |
| | Saranac Lake Islands | 32 | 47 % | 53 % | 0 % |

Boating regulations. Two questions were asked regarding whether changes were needed to boating regulations or not. The first question was:

(1) Currently boating regulations within the Saranac Lakes Wild Forest limit the use of boats on Little Square Pond, Rollins Pond outlet, Whey Pond, and portions of Fish Creek to non-motorized boats and to boats powered by an electric motor with a rating of 5 horsepower or less. Do you agree with these regulations as they currently exist or would you like to see changes in these specific boating regulations within the Saranac Lakes Wild Forest? If you think changes are needed to these specific boating regulations, what changes do you think should be made?

The responses to this question are listed below in Table 14. A large majority of all three stakeholder groups indicated that no change is needed to the regulations outlined in question one. Small percentages of each stakeholder group mentioned expanding the regulations to other water bodies; other changes identified by respondents are shown in Table 15.

Table 14. Percent of respondents indicating that a change to regulations concerning horsepower limitations on Little Square Pond, Rollins Pond outlet, Whey Pond, and portions of Fish Creek is or is not needed.

| Stakeholder group | Sub-groups | n | Percent of Respondents | |
|----------------------|----------------------|-----|------------------------|---------------|
| | | | No change needed | Change needed |
| Shoreline landowners | na | 236 | 86% | 14% |
| Inland landowners | na | 167 | 81 | 19 |
| Business owners | na | 25 | 72 | 28 |
| Campers | All combined | 427 | 81 | 19 |
| | Fish Creek | 228 | 86 | 14 |
| | Rollins Pond | 158 | 75 | 25 |
| | Saranac Lake Islands | 41 | 76% | 24% |

Table 15. Regulation changes recommended by respondents. Only changes mentioned by 5 or more respondents in one or more of the stakeholder groups are included.

| Regulation changes identified | Number (percentage) of respondents | | | | | |
|--|------------------------------------|------|------------------------------|-------|----------------------|-------|
| | Landowners ^a | | Business Owners ^b | | Campers ^c | |
| Expand the regulations to other water bodies. | 21 | (5%) | 4 | (16%) | 29 | (7%) |
| Permit non-motorized use only on the regulated water bodies. | 7 | (2) | 0 | (0) | 30 | (7) |
| Increase horsepower allowance to 10 on the regulated water bodies. | 9 | (2) | 2 | (8) | 8 | (2) |
| Remove regulations limiting motorboat and PWC use on the regulated water bodies. | 6 | (1%) | 1 | (4%) | 2 | (<1%) |

^a n = 403; ^b n = 25; ^c n = 427.

The second question was as follows:

(2) Both non-motorized and motorized boats (including personal watercraft) are permitted on waterbodies within the Saranac Lakes Wild Forest (with the exception of Little Square Pond, Rollins Pond outlet, Whey Pond, and portions of Fish Creek). Do you agree with these regulations as they currently exist or would you like to see changes in these specific boating regulations within the Saranac Lakes Wild Forest? If you think changes are needed to these specific boating regulations, what changes do you think should be made?

The results to this question indicate that slightly more than half of both the landowners and campers would like to see no change in regulations; the majority of business owners (68%) indicated that a change is needed (Table 16). A larger percentage of inland property owners indicated that no change is needed as compared to shoreline property owners. Over half of campers to Rollins Pond indicated that a change is needed, while 64% of campers to Fish Creek indicated that no change is needed. The changes mentioned are included in Tables 17 and 18.

Table 16. Percent of respondents indicating that a change to regulations concerning use of both non-motorized and motorized boats within the Saranac Lakes Wild Forest is or is not needed.

| Stakeholder group | Sub-groups | n | Percent of respondents | |
|----------------------|----------------------|-----|------------------------|---------------|
| | | | No change needed | Change needed |
| Shoreline landowners | na | 239 | 51% | 49% |
| Inland landowners | na | 167 | 55 | 45 |
| Business owners | na | 25 | 32 | 68 |
| Campers | All combined | 420 | 56 | 44 |
| | Fish Creek | 223 | 64 | 36 |
| | Rollins Pond | 155 | 46 | 54 |
| | Saranac Lake Islands | 42 | 50% | 50% |

Table 17. Regulation changes mentioned by respondents. Only changes mentioned by 5 or more respondents in one or more of the stakeholder groups are included.

| Regulation changes identified | Number (percentage) of respondents | | | | | |
|---|------------------------------------|-------|------------------------------|-------|----------------------|------|
| | Landowners ^a | | Business Owners ^b | | Campers ^c | |
| Expand current boating restrictions to additional water bodies (small lakes and ponds frequently indicated) | 32 | (8%) | 8 | (32%) | 32 | (8%) |
| Ban personal watercraft | 73 | (18) | 2 | (8) | 32 | (8) |
| Restrict horsepower of motorboats | 20 | (5) | 2 | (8) | 33 | (8) |
| Restrict/Limit use of motorboats and PWC | 10 | (2) | 0 | (0) | 23 | (5) |
| Restrict/Limit PWC use only | 23 | (6) | 1 | (4) | 9 | (2) |
| Ban both motorboats and personal watercraft in the SLWF | 3 | (1) | 0 | (0) | 31 | (7) |
| Ban PWC use on small lakes | 11 | (3) | 2 | (8) | 0 | (0) |
| Enforce existing regulations | 8 | (2) | 2 | (8) | 1 | (<1) |
| Limit boat speeds | 5 | (1) | 1 | (4) | 7 | (2) |
| Permit 4-stroke motorboat engines only | 6 | (1) | 1 | (4) | 1 | (<1) |
| Ban both motorboat and PWC use on small lakes | 2 | (<1%) | 0 | (0%) | 7 | (2%) |

^a n = 406; ^b n = 25; ^c n = 420.

Table 18. Regulation changes mentioned by responding campers. Only changes mentioned by 5 or more campers are included.

| Regulation changes identified | Number (percentage) of respondents | | | | | |
|---|------------------------------------|------|---------------------------|-------|-----------------------------------|-------|
| | Fish Creek ^a | | Rollins Pond ^b | | Saranac Lake Islands ^c | |
| Expand current boating restrictions to additional water bodies (small lakes and ponds frequently indicated) | 7 | (3%) | 20 | (13%) | 5 | (12%) |
| Ban personal watercraft | 12 | (5) | 14 | (9) | 6 | (14) |
| Restrict horsepower of motorboats | 14 | (6) | 16 | (10) | 3 | (7) |
| Restrict/Limit use of motorboats and PWC | 10 | (4) | 9 | (6) | 4 | (9) |
| Restrict/Limit PWC use only | 6 | (3) | 3 | (2) | 0 | (0) |
| Ban both motorboats and personal watercraft in the SLWF | 9 | (4%) | 20 | (13%) | 2 | (5%) |

^a n = 223; ^b n = 155; ^c n = 42.

Enforcement. One question on the surveys asked:

Do you think enforcement of posted speed limits for motorized boats on water bodies within the Saranac Lakes Wild Forest is adequate as it currently exists or not?

The majority of both landowners and business owners indicated that more enforcement of speed limits is needed. About half of the campers indicated that more enforcement is needed and half that no change is needed. Small percentages of each stakeholder group indicated that less enforcement is needed. The responses of the three stakeholder groups are shown in Table 19.

Table 19. Percentages of respondents indicating levels of enforcement needed.

| Stakeholder group | Subgroups | n | Percent of respondents | | |
|----------------------|----------------------|-----|------------------------|----------------------------|-----------------------|
| | | | Need less enforcement | Enforcement adequate as is | Need more enforcement |
| Shoreline landowners | na | 239 | 8 | 39 | 53 |
| Inland landowners | na | 162 | 4 | 33 | 63 |
| Business owners | na | 24 | 4 | 21 | 75 |
| Campers | All combined | 407 | 1 | 50 | 49 |
| | Fish Creek | 225 | 1 | 54 | 45 |
| | Rollins Pond | 140 | 1 | 42 | 57 |
| | Saranac Lake Islands | 42 | 2% | 53% | 45% |

Beliefs and attitudes of stakeholder groups

Non-motorized boating. The means of the natural/social and economic beliefs and attitudes towards non-motorized boating were generally positive (Table 20). Results indicate that, in general, the average responding shoreline and inland landowner, business owner, and camper believed that non-motorized boating does not negatively impact local natural resources or the area's natural setting, or cause social conflicts, and that non-motorized boating is important to the local economy. The factor means for attitudes towards non-motorized boating were all highly positive, indicating that the average responding shoreline and inland landowner, business owner, and camper had a positive attitude towards non-motorized boating.

Analysis of variance (ANOVA) statistical tests identified significant differences among the stakeholder groups for the natural/social belief, economic belief, and attitude towards non-motorized boating. Further analysis was completed to identify the stakeholder groups that differed. Significant differences were found for both natural/social beliefs and attitudes between shoreline landowners and campers, and between inland landowners and campers; no significant differences were identified between landowners and business owners, or between business owners and campers. No significant differences were identified between any of the stakeholder groups for the economic belief towards non-motorized boat use, although an important difference was identified between shoreline landowners and campers. These results indicate that the perceptions of campers are likely to be different (and slightly more positive) than those of local residents with regard to non-motorized boat use.

Subgroups of the campers were also examined for beliefs and attitudes towards non-motorized boating. Responding campers at Rollins Pond had economic beliefs and attitudes towards non-motorized boating that were significantly more positive than those of campers staying at Fish Creek (Table 21); a similar significant difference between Fish Creek and Saranac Lake Islands respondents was identified for the attitude factor. No significant differences were identified between any of the camper subgroups for the natural/social belief.

Motorized boating. The beliefs and attitudes of landowners, business owners, and campers towards motorized (i.e., gas-powered) boat use varied. For example, the average responding shoreline and inland landowner, business owner, and camper believed that motorized boating had a moderate, negative impact on the natural and social setting of the SLWF, but a strongly positive impact on the local economy (Table 20). The attitude of the average shoreline and inland landowner was moderately positive; the attitude of business owners was positive and low, while that of campers was nearly neutral. As indicated by survey comments and interview results, motorboating is important to local residents, especially those who depend on it for transportation to and from their homes.

An analysis of variance (ANOVA) was completed to identify if significant differences exist between the average beliefs and attitudes of the stakeholder groups towards motorized boat use. Significant differences were found for the natural/social belief, economic belief, and attitude towards motorized boating. Further analysis was completed to identify the stakeholder groups that differed. Significant differences were found between shoreline landowners and campers, and between inland landowners and campers. These results indicate that the perceptions of campers to the area are likely to be different (and slightly less positive) than those of landowners with regard to motorized boat use, but similar to those of business owners. Likewise, responding

landowners and business owners had similar attitudes and beliefs towards motorized boating, with factors means being slightly lower for the responding business owners.

Campers at Rollins Pond had strongly negative natural/social beliefs and moderately negative attitudes towards motorized boating, while those at Saranac Lake Islands and Fish Creek had moderately negative beliefs and near neutral attitudes (Table 21). Economic beliefs were moderately positive for each of the three camper subgroups. Significant differences between Fish Creek and Rollins Pond campers were identified for the natural/social belief, economic belief, and attitude towards motorized boat use.

Personal watercraft use. The natural/social belief of the average responding shoreline and inland landowner, business owner, and camper towards personal watercraft use was moderately to strongly negative (Table 20). These results indicate that, in general, the average responding landowner, business owner, and camper believed that personal watercraft use negatively impacts local natural resources and the natural setting, and cause social conflicts. The economic beliefs of the stakeholder groups towards personal watercraft use were near neutral. The factor means for attitudes towards personal watercraft use were moderately negative, indicating that the average responding shoreline and inland landowner, business owner, and camper had a moderately negative attitude towards personal watercraft use. Furthermore, the ANOVA indicates that there are no significant differences between the natural/social beliefs and attitudes of the four stakeholder groups towards personal watercraft use (i.e., the three stakeholder groups generally agree with each other in their natural/social beliefs and attitudes towards personal watercraft use). A significant difference among stakeholder groups was, however, identified for economic beliefs towards personal watercraft. Further analysis revealed an important (but not a significant) difference in the economic belief between inland landowners and campers.

Campers at Rollins Pond and Saranac Lake Islands State Campgrounds had strongly negative natural/social beliefs and attitudes towards personal watercraft use, while campers staying at Fish Creek had moderately negative natural/social beliefs and attitudes (Table 21). The economic beliefs of the three subgroups were low to neutral. Significant differences were identified between Fish Creek and Rollins Pond campers, and between Fish Creek and Saranac Lake Islands campers for the natural/social belief and attitude towards personal watercraft use.

Attitudes and beliefs of the anglers within each stakeholder group towards each type of boating are shown in Table 22.

Table 20. Factor means for beliefs and attitudes of stakeholder groups towards each type of boating.

| Concept | Boating type | Factor/Variable means for stakeholder groups ^a | | | |
|---|-------------------------|---|--------------------------------|------------------------------|----------------------|
| | | Shoreline landowners ^b | Inland landowners ^c | Business owners ^d | Campers ^e |
| Natural/ Social behavioral beliefs | Non-motorized boating | 0.92 | 0.89 | 0.81 | 1.31 |
| | Motorized boating | -0.47 | -0.67 | -0.87 | -0.96 |
| | Personal watercraft use | -1.24 | -1.28 | -1.44 | -1.32 |
| Economic behavioral belief | Non-motorized boating | 1.12 | 1.16 | 1.48 | 1.30 |
| | Motorized boating | 1.38 | 1.18 | 1.12 | 0.84 |
| | Personal watercraft use | 0.02 | -0.12 | -0.44 | 0.15 |
| Attitude towards behavior | Non-motorized boating | 1.44 | 1.42 | 1.51 | 1.67 |
| | Motorized boating | 0.75 | 0.52 | 0.33 | -0.15 |
| | Personal watercraft use | -1.07 | -0.92 | -1.24 | -1.02 |

^a Factor means are on a scale of -2 (strong disagreement) to 0 (neutral) to 2 (strong agreement) with the statements in Table 2.

^bn = 234; ^cn = 165; ^dn = 25; ^en = 423.

Table 21. Factor means for beliefs and attitudes by campground in which respondents were registered.

| Concept | Boating type | Factor means for camper subgroups ^a | | |
|---|-------------------------|--|---------------------------|-----------------------------------|
| | | Fish Creek ^b | Rollins Pond ^c | Saranac Lake Islands ^d |
| Natural/ Social behavioral beliefs | Non-motorized boating | 1.24 | 1.38 | 1.48 |
| | Motorized boating | -0.68 | -1.40 | -0.89 |
| | Personal watercraft use | -1.11 | -1.58 | -1.45 |
| Economic behavioral belief | Non-motorized boating | 1.19 | 1.44 | 1.39 |
| | Motorized boating | 0.98 | 0.63 | 0.90 |
| | Personal watercraft use | 0.30 | -0.02 | -0.02 |
| Attitude towards behavior | Non-motorized boating | 1.52 | 1.86 | 1.78 |
| | Motorized boating | 0.21 | -0.69 | -0.14 |
| | Personal watercraft use | -0.72 | -1.37 | -1.31 |

^a Factor means are on a scale of -2 (strong disagreement) to 0 (neutral) to 2 (strong agreement) with the statements in Table 2.

^bn = 227; ^cn = 155; ^dn = 41.

Table 22. Factor means for beliefs and attitudes of anglers within stakeholder groups towards each type of boating.

| Concept | Boating type | Factor means ^a for anglers | | | |
|-----------------------------------|-------------------------|---------------------------------------|--------------------------------|------------------------------|----------------------|
| | | Shoreline landowners ^b | Inland landowners ^c | Business Owners ^d | Campers ^e |
| Natural/Social behavioral beliefs | Non-motorized boating | 0.88 | 0.88 | 0.82 | 1.28 |
| | Motorized boating | -0.35 | -0.48 | -0.69 | -0.80 |
| | Personal watercraft use | -1.14 | -1.20 | -1.48 | -1.21 |
| Economic behavioral beliefs | Non-motorized boating | 1.18 | 1.04 | 1.56 | 1.30 |
| | Motorized boating | 1.49 | 1.22 | 1.25 | 0.92 |
| | Personal watercraft use | 0.09 | -0.06 | -0.50 | 0.18 |
| Attitude towards behavior | Non-motorized boating | 1.45 | 1.34 | 1.60 | 1.61 |
| | Motorized boating | 0.89 | 0.68 | 0.52 | 0.15 |
| | Personal watercraft use | -1.00 | -0.82 | -1.38 | -0.86 |

^a Factor means are on a scale of -2 (strong disagreement) to 0 (neutral) to 2 (strong agreement) with the statements in Table 2.

^b n = 150; ^c n = 99; ^d n = 16; ^e n = 241.

Relationships between attitudes and recreation participation

The relationships between the level of recreation participation of respondents and their attitudes towards each of the three types of boating were examined using correlations (Table 23). Correlations vary from 0 to 1 and can be positive or negative. The higher the correlation (i.e., r value), the stronger the relationship between level of recreation participation and respondent attitude. A positive correlation indicates that as participation in the activity increases, so does the attitude (i.e., it becomes more positive). Negative correlations indicate an inverse relationship (i.e., as participation increases, attitude decreases or becomes less positive, and visa versa).

Important (i.e., $r \geq 0.3$) and significant, *positive* relationships were found between the following:

- attitudes towards non-motorized boating and participation in non-motorized boating for business owners;
- attitudes towards motorized boating and participation in motorized boating for all four stakeholder groups; and
- attitudes towards personal watercraft use and participation in personal watercraft use for all four stakeholder groups.

In other words, the more frequently respondents participated in a type of boating, the more positive were their attitudes towards it.

Important (i.e., $r \geq 0.3$) and significant, *negative* relationships appeared between the following:

- participation in non-motorized boating and attitudes towards personal watercraft use for inland landowners and business owners;
- participation in motorized boating and attitudes towards non-motorized boating for business owners;
- participation in personal watercraft use and attitudes towards non-motorized boating for business owners.

The more frequently some respondents participated in non-motorized boating, the less positive were their attitudes towards personal watercraft use. Similarly, the more frequently some respondents participated in motorized boating or personal watercraft use, the less positive were their attitudes towards non-motorized boating.

Table 23. Correlations between level of recreation participation and attitudes towards the three types of boating for each stakeholder group. Significant correlations ($p \leq 0.05$) are in bold. Correlations above 0.3 are considered important.

| Recreation participation ^a | Attitude towards type of boating | Correlations (r) | | | |
|---------------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------|----------------------|
| | | Shoreline landowners ^b | Inland landowners ^c | Business owners ^d | Campers ^e |
| Non-motorized boating | Non-motorized boating | 0.215 | 0.271 | 0.444 | 0.197 |
| | Motorized boating | -0.052 | -0.298 | -0.212 | -0.056 |
| | Personal watercraft use | -0.172 | -0.341 | -0.538 | -0.104 |
| Motorized boating | Non-motorized boating | -0.191 | -0.164 | -0.471 | -0.296 |
| | Motorized boating | 0.424 | 0.513 | 0.512 | 0.586 |
| | Personal watercraft use | 0.131 | 0.119 | 0.010 | 0.325 |
| Personal watercraft use | Non-motorized boating | -0.150 | -0.137 | -0.424 | -0.164 |
| | Motorized boating | 0.170 | 0.178 | 0.269 | 0.237 |
| | Personal watercraft use | 0.376 | 0.322 | 0.443 | 0.411 |
| Fishing | Non-motorized boating | -0.054 | -0.132 | 0.061 | -0.141 |
| | Motorized boating | 0.174 | 0.186 | 0.096 | 0.277 |
| | Personal watercraft use | 0.138 | 0.140 | -0.343 | 0.122 |

^a The level of recreation participation used to calculate the correlations is on a scale of 0 (did not participate in 2005/2006) to 5 (participated more than 20 times in 2005/2006).

^b n = 248; ^c n = 170; ^d n = 25; ^e n = 438.

Other issues

Respondents to the three surveys were asked:

What do you think are the top three issues affecting water-based recreation in the Saranac Lakes Wild Forest area today?

Table 24 presents the issues mentioned by five or more respondents of any one stakeholder group. The issues of most concern to all stakeholder groups were invasive species (aquatic plants were most frequently mentioned), water pollution, and water quality and cleanliness. Boating in general and fishing were also frequently mentioned by the three stakeholder groups. Information on issues for the three camper subgroups is included in Table 25.

Table 24. Issues identified by number (and percent) of respondents within each stakeholder group. Only issues mentioned by five or more respondents of any one group are included.

| Type of concern | Issue | Number (Percent) of Respondents | | | | | |
|-----------------------|---|---------------------------------|------|------------------------------|-------|----------------------|------|
| | | Landowners ^a | | Business owners ^b | | Campers ^c | |
| Environmental | Acid rain | 29 | (8%) | 2 | (8%) | 16 | (5%) |
| | Air pollution from boat engines | 4 | (1) | 1 | (4) | 1 | (<1) |
| | Algae blooms | 7 | (2) | 0 | (0) | 0 | (0) |
| | Invasive species | 110 | (29) | 9 | (38) | 52 | (16) |
| | Shoreline development | 18 | (5) | 0 | (0) | 4 | (1) |
| | Noise pollution from motorboats and PWC | 42 | (11) | 3 | (12) | 76 | (23) |
| | Shoreline erosion from boat use | 8 | (2) | 0 | (0) | 16 | (5) |
| | Water pollution (septic systems, boat engines, and runoff from shoreline development & a fish hatchery) | 41 | (11) | 3 | (12) | 62 | (19) |
| | Water quality & cleanliness | 38 | (10) | 3 | (12) | 19 | (6) |
| | Concerns about impacts of water-based recreation on wildlife | 3 | (1) | 0 | (0) | 13 | (4) |
| Regulatory and Safety | Attempts to restrict motorized use | 5 | (1) | 1 | (4) | 3 | (1) |
| | Need for more enforcement of boating regulations | 17 | (4) | 1 | (4) | 10 | (3) |
| | Safety/Reckless boating | 26 | (7) | 2 | (8) | 50 | (15) |
| | Boats being used at excessive speeds | 19 | (5%) | 3 | (12%) | 24 | (7%) |

^a n = 385; ^b n = 24; ^c n = 324.

Table 24 (continued). Issues identified by number (and percent) of respondents within each stakeholder group. Only issues mentioned by five or more respondents of any one group are included.

| Type of concern | Issue | Number (Percent) of Respondents | | | | | |
|---------------------------------|---|---------------------------------|-------|------------------------------|-------|----------------------|------|
| | | Landowners ^a | | Business owners ^b | | Campers ^c | |
| Recreation-related ^d | Boating in general | 109 | (28%) | 5 | (21%) | 0 | (0%) |
| | Campers/Camping | 11 | (3) | 2 | (8) | 0 | (0) |
| | Fishing, declining catch, and fish stocks | 108 | (28) | 6 | (25) | 7 | (2) |
| | Motorized boating | 14 | (4) | 2 | (8) | 18 | (6) |
| | Non-motorized boating | 12 | (3) | 0 | (0) | 2 | (1) |
| | Personal watercraft | 76 | (18) | 6 | (25) | 49 | (15) |
| | Swimming | 87 | (23) | 2 | (8) | 0 | (0) |
| | Water skiing | 7 | (2) | 0 | (0) | 1 | (<1) |
| Social issues and conflicts | Non-motorized boats interfering with motorized boat use | 4 | (1) | 0 | (0) | 1 | (<1) |
| | Motorized boats interfering with non-motorized boat use | 0 | (0) | 1 | (4) | 8 | (2) |
| | Motorboat use versus non-motorized boat use in general | 8 | (2) | 0 | (0) | 7 | (2) |
| | Conflicts between water-based recreationists in general | 6 | (2) | 3 | (12) | 1 | (<1) |
| | Use of large, powerful motorboats on small water bodies | 15 | (4) | 2 | (8) | 30 | (9) |
| | Congestion/Crowding of boats on water | 31 | (8) | 3 | (12) | 43 | (13) |
| Facility-related | More/Improved access for boating needed | 28 | (7) | 1 | (4) | 41 | (13) |
| | Congestion/Crowding at access areas | 8 | (2%) | 0 | (0%) | 12 | (4%) |

^a n = 385; ^b n = 24; ^c n = 324.

^d Some respondents indicated that a type of recreation in general was an issue (i.e., the specific issue related to the activity was not identified). These general comments are summarized under this category.

Table 25. Issues identified by number (and percent) of responding campers registered within each campground. Only issues mentioned by five or more responding campers are included.

| Type of concern | Issue | Number (Percent) of Respondents | | | | | |
|---------------------------------|---|---------------------------------|------|---------------------------|------|-----------------------------------|------|
| | | Fish Creek ^a | | Rollins Pond ^b | | Saranac Lake Islands ^c | |
| Environmental | Acid rain | 8 | (3%) | 7 | (4%) | 1 | (2%) |
| | Invasive species | 25 | (10) | 22 | (14) | 5 | (12) |
| | Noise pollution from motorboats and PWC | 39 | (16) | 31 | (19) | 6 | (14) |
| | Shoreline erosion from boat use | 12 | (5) | 4 | (2) | 0 | (0) |
| | Water pollution (septic systems, boat engines, and runoff from shoreline development & a fish hatchery) | 33 | (14) | 25 | (16) | 4 | (10) |
| | Water quality & cleanliness | 11 | (5) | 8 | (5) | 0 | (0) |
| | Concerns about impacts of water-based recreation on wildlife | 6 | (2) | 5 | (3) | 2 | (5) |
| Regulatory and Safety | Need for more enforcement of boating regulations | 9 | (4) | 1 | (1) | 0 | (0) |
| | Safety/Reckless boating | 30 | (12) | 15 | (9) | 5 | (12) |
| | Boats being used at excessive speeds | 16 | (7) | 6 | (4) | 2 | (5) |
| Recreation-related ^d | Fishing, declining catch, and fish stocks | 6 | (2) | 3 | (2) | 0 | (0) |
| | Motorized boating | 5 | (2) | 9 | (6) | 4 | (10) |
| | Personal watercraft | 12 | (5) | 5 | (3) | 1 | (2) |
| Social issues and conflicts | Motorized boats interfering with non-motorized boat use | 2 | (1) | 5 | (3) | 1 | (2) |
| | Motorboat use versus non-motorized boat use in general | 9 | (4) | 8 | (4) | 1 | (2) |
| | Use of large, powerful motorboats on small water bodies | 16 | (7) | 12 | (8) | 1 | (2) |
| | Congestion/Crowding of boats on water | 13 | (5) | 25 | (16) | 5 | (12) |
| Facility-related | More/Improved access for boating needed | 27 | (11) | 12 | (8) | 2 | (5) |
| | Congestion/Crowding at access areas | 6 | (2%) | 4 | (3%) | 2 | (5%) |

^a n = 241; ^b n = 159; ^c n = 42.

^d Some respondents indicated that a type of recreation in general was an issue (i.e., the specific issue related to the activity was not identified). These general comments are summarized under this category.

DISCUSSION AND CONCLUSION

Understanding the perceptions of stakeholder groups is essential to residents and land managers as they seek to enhance local quality of life in the Saranac Lakes area and create opportunities for recreation. The results of this study indicate that the four stakeholder groups who provided information are concerned about conserving the quality of the natural resources in the Saranac Lakes Wild Forest, and about maintaining boat access to water bodies within the area. Both similarities and differences among stakeholder groups were identified.

With regard to access, the majority of stakeholders are satisfied with the level of access currently provided for each type of boating. However, about one-fifth or more of each group would like to see an increase in non-motorized boat access. Differences were noted between the stakeholder groups with regard to motorized boat access, with about one-fourth of shoreline landowners and one-fifth of business owners wanting more motorized access, and 16% of campers wanting less. Issues raised concerning access included crowding at boat access areas and the need for improved access areas (especially with regard to the need for additional parking at highly used access areas); several individuals also mentioned the need for access areas designed for people with disabilities.

With regard to regulations, the majority of each stakeholder group did not want to see any changes to regulations concerning horsepower restrictions on Little Square Pond, Rollins Pond outlet, Whey Pond, and portions of Fish Creek. However, most stakeholder groups were split when asked about regulations concerning motorized and non-motorized boat use throughout the rest of the Saranac Lakes Wild Forest. Small percentages of each stakeholder group mentioned that they would like to see increased restrictions on personal watercraft use and the expansion of boating regulations (i.e., with regard to speed and/or horsepower limitations) to additional small water bodies. With regard to the enforcement of speed limit regulations, the majority of landowners and business owners indicated that more enforcement of existing regulations is needed, while the majority of campers indicated that enforcement is currently adequate.

One of the most frequently mentioned issues facing the Saranac Lakes Wild Forest area today was invasive species. The species most frequently mentioned was milfoil. Larger percentages of landowners and business owners than campers mentioned this issue. Most campers who had participated in boating indicated that they did not have problems with aquatic species tangling in their motors during their visits; 15% did have this problem. Only 13% of campers had received information about rinsing their boats and had actually rinsed their boats, indicating that more educational information about invasive species and additional boat rinsing facilities at boat launch sites may be needed.

Water quality and pollution were also mentioned as important issues by each stakeholder group (both of these issues were also mentioned in the land manager interviews). In particular, stakeholders were concerned about the cleanliness of water for drinking, swimming, and fishing purposes. With regard to water pollution, the sources of pollution mentioned were faulty septic systems, fluids leaking from boat motors, run-off resulting from shoreline development, and effluent from a fish hatchery.

The results concerning beliefs and attitudes indicate both similarities and differences between the four stakeholder groups for each type of boating. Beliefs and attitudes towards non-motorized

boating on average were positive. Beliefs and attitudes towards motorized boat use (i.e., with gas-powered engines) were mixed, with stakeholder groups having moderately negative natural/social beliefs, positive economic beliefs, and positive to neutral attitudes towards motorized boating. The positive to neutral attitudes likely due to the long standing use of motorboats in the Saranac Lakes Wild Forest, and the need for motorized boats by residents as a means of transportation to shoreline properties. Several respondents commented that motorized boating was essential for older residents of the area as well.

The natural/social beliefs and attitudes of the four stakeholder groups with regard to personal watercraft use were negative, and there were no significant differences in these negative perceptions between stakeholder groups. Personal watercraft use in general was identified frequently as an issue by stakeholders. In particular, the speed and noise associated with personal watercraft use was mentioned; a small number of respondents also mentioned concerns over the use of personal watercraft near swimming areas and loon nesting sites. Concern over wakes and shoreline erosion were mentioned by survey respondents for both personal watercraft and motor boat use. Personal watercraft use had the lowest level of participation by respondents in each of the three stakeholder groups.

While the results of this study are important for informing stakeholders about perceptions of boating, there were several limitations to this study that need to be mentioned. First, only individuals owning land within the Saranac Lakes Wild Forest area were included in the landowner survey; residents who rent apartments or other residences were not included. It is possible that residents who rent in the area have different views on boating than those who own land. Second, because of space limitations on the questionnaires, questions concerning the beliefs and attitudes towards the use of electric motorboats were not included. It is likely that respondents have different perceptions concerning electric motor use as compared to gas-powered motor use. Third, the campers included in the camper survey were only those who registered for campsites. Other individuals in the groups with whom the respondents camped might have had different perspectives about boating than those of the respondents. Finally, due to financial limitations, this study did not survey stakeholder groups such as anglers and day users.

In summary, differences in opinion between stakeholders about boating can be better understood by examining their beliefs and attitudes towards boating. By understanding stakeholders' perceptions, local residents, business owners, and land managers can cooperatively make decisions concerning water-based recreation that reflect the needs and interests of user groups. Creating a balance between providing boat access for residents, sustaining the use of different types of boats for recreational purposes, protecting local natural resources for wildlife and people, and maintaining the peaceful, natural setting on which much of the area's tourist economy is based are necessary for the future of the Saranac Lakes Wild Forest.

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