

COMPARATIVE ANALYSIS OF THE ATTITUDES AND PERCEPTIONS OF THREE TYPES OF LAKE GEORGE BOATERS

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Abstract.—The experiences and concerns of three types of Lake George recreational boaters were assessed to see if different levels of investment and experience with the lake lead to potentially different perceptions and concerns regarding congestion, overcrowding, and safety hazards on the lake. Mail questionnaires were sent out in the summer/fall of 2005 to the three types of users: (1) residential dock owners; (2) annual boat permit holders; and (3) temporary boat permit holders. Results highlight the similarities between residential dock owners and annual boat permit holders, and the differences between these two groups and temporary boat permit holders. Residential dock owners and annual boat permit holders have a longer history of involvement with Lake George, spend more time on the Lake, and are more likely to be concerned about crowding-related and safety issues than temporary boat permit holders. Recreation planners can use the results of this analysis to inform planning and communication with stakeholders on Lake George issues and perhaps other areas with similar types of recreational boaters.

1.0 INTRODUCTION

A large study was undertaken to provide the Lake George Park Commission (LGPC) with planning information to assist it in fulfilling its legislative mission of providing reasonable public access to Lake George without congestion, overcrowding, or safety hazards. As part of the study, the experiences and concerns of three types of Lake George recreational boaters were assessed. Each of these types of recreational boaters may have different

levels of investment and experience with the lake, which may lead to potentially different perceptions and concerns regarding congestion, overcrowding, and safety hazards on the lake. By understanding the potential differences between users, the LGPC can better develop a management plan for the Lake.

2.0 METHODS

Three types of Lake George recreational boaters were surveyed by mail for this study. The first group, residential dock owners, represents residential landowners with lakeshore property and recreational boats. Any residential landowner with a dock on the Lake must obtain a permit from the LGPC. We drew a systematic sample of 600 names from the 2005 permit list of 2,380 for our survey sample. The second group, annual boat permit holders (n=10,713), purchased a permit from the LGPC allowing them to use motorboats (10 hp. or more) or larger sailboats (18 ft. or more) on Lake George during the 2005 season. In drawing our sample of 600 names from this list, we excluded residential dock owners. Thus, this group represents annual users who do not own land along the Lake. The third group, temporary boat permit holders, purchased a permit from the LGPC allowing them to use motorboats (10 hp. or more) or larger sailboats (18 ft. or more) on Lake George for a day or a week during the 2005 season. We drew a systematic sample of 599 names from the 2005 list of 5,732 permit holders.

Mail questionnaires were developed based on a review of the literature (e.g., Dawson et al. 2005a, Graefe et al. 2005), and input from stakeholders. Questionnaires were reviewed by the LGPC staff and given final approval by the LGPC. The questionnaire asked about use of the Lake for recreation, satisfaction with the experience, and perceptions of potential water-based recreation issues or problems.

The temporary boat permit holders' surveys were mailed out over the course of the summer of 2005 as names became available. This strategy allowed for better recall of the trip experience than would have been obtained if we

Table 1.—Socio-demographic characteristics of survey respondents, by lake user group

| User Characteristics | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|---------------------------------------|-------------------------|----------------------------|-------------------------------|
| | <i>Percent</i> | | |
| Gender* | | | |
| Male | 66.5 | 81.8 | 88.1 |
| Female | 33.5 | 18.2 | 11.9 |
| Permanent Residence Community Type* | | | |
| Rural | 19.6 | 19.5 | 28.2 |
| Community with <5,000 people | 15.4 | 19.2 | 9.1 |
| Community with 5,000-24,999 people | 34.9 | 40.8 | 40.7 |
| Community with 25,000-1000,000 people | 18.4 | 14.2 | 14.9 |
| Community with >100,000 people | 11.7 | 6.3 | 7.1 |
| Mean Age | 62.6 | 55.1 | 48.0 |

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

waited until the end of the season. We anticipated that the other groups would use Lake George over the entire summer season, so mailings went out to them right after Labor Day. Up to three reminder letters were sent to nonrespondents over the course of the month following the first mailing to try to encourage their participation in the study, as advocated by Dillman (2000).

Data were entered on the computer and analyzed using the SPSS statistical package. Statistical comparisons between user groups were made using chi-square tests. Reliability and factor analysis (principal components with Varimax rotation) were used to analyze the questions on the satisfaction with the features of the 2005 recreation experience.

3.0 RESULTS AND DISCUSSION

3.1 Survey Response Rates and User Characteristics

The response rate, adjusted for undeliverable surveys, ranged from 42 percent to 60 percent. Residential dock owners had the highest response rate—60 percent with 355 usable surveys, followed by annual boat permit holders—55 percent with 329 usable surveys, and temporary boat permit holders—42 percent with 246 usable surveys.

Several variables can be used to characterize Lake George recreational boaters and distinguish between user groups. First is gender, with most responding boaters being male

(Table 1). Second, the average age of survey respondents was over 45 years for all groups, but residential dock owners were by far the oldest with an average age of 63 years. The third variable we can use to characterize users is the size of the community where they live year-round. The majority of users live in rural to small communities of less than 25,000 people.

Most Lake George users do not live in the area year-round (Table 2). Residential dock owners and annual boat permit holders were most likely to be seasonal residents, with a second home or condo in the area. As expected, temporary boat permit holders considered themselves to be visitors or day-users.

Most respondents, especially residential dock owners and annual boat permit holders, have had a long association with the Lake George area—on average in the 30 to 40 year range (Table 2). Temporary boat permit holders have had on average a shorter association. Users were willing to travel substantial distances from their permanent residences to visit Lake George. The average distance traveled ranged up to nearly 300 miles, and a number of respondents traveled 2,000 to 3,000 miles.

Residential dock owners owned on average one to two motorized boats and the same number of non-motorized boats (Table 3). Annual and temporary boat permit holders were more likely to own one or more motor boats, but very few non-motorized boats. Few

Table 2.—Survey respondents’ relationship and experience with Lake George, by lake user group

| Users’ Relationships with Lake George | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|--|-------------------------|----------------------------|-------------------------------|
| | <i>Percent</i> | | |
| Residence* | | | |
| Year-round | 22.3 | 20.1 | 1.2 |
| Seasonal | 77.1 | 57.6 | 28.1 |
| Visitor/Day-user | 0.6 | 22.3 | 70.7 |
| Mean # years visited or lived in Lake George area | 40.3 | 32.8 | 18.3 |
| Mean distance (miles) from Lake George to year-round residence | 299 | 169 | 220 |

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

Table 3.—Boat ownership characteristics of survey respondents, by lake user group

| Boat Ownership | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|----------------------------|-------------------------|----------------------------|-------------------------------|
| Mean # motorized boats | 1.4 | 1.3 | 1.1 |
| Mean # non-motorized boats | 1.5 | 0.7 | 0.2 |
| % Owning a PWC | 12.4 | 12.5 | 15.6 |

respondents from any user group indicated that they owned a personal watercraft (PWC). Therefore, the majority of motor boats on the Lake were larger.

Boaters enjoyed a variety of activities while boating; primary among them were cruising, swimming, water skiing, and fishing. Cruising was enjoyed by more residential dock owners than other groups (87% vs. 75-80%). Swimming and fishing from the boat were enjoyed by more annual and temporary boat permit holders than residential dock owners (swimming—65-69% vs. 46%, fishing—46-51% vs. 30%).

Estimates of days boated on Lake George differed by user group. As an illustration, Figure 1 shows motorboat use (other than PWCs) for the three groups. Annual boat permit holders accounted for the largest percentage of use in all months and had especially high use in July and August. Residential dock owners used the lake in all months at a more steady rate. Temporary boat permit holders, who made up the smallest proportion of total use, were present on the lake mostly in July and August. The pattern of use among groups was the same for the other types of boats.

3.2 Satisfaction with the Recreation Experience

A list of 13 features of the Lake George recreational experience, such as “scenic beauty” and “enjoying my favorite water sports,” was developed based on previous research identifying the likely range of important items (Connelly 1987, Dawson et al. 2005b) and discussions with LGPC staff. Respondents were asked to rate on a 5-point Likert-type scale their satisfaction with each feature over the course of their Lake George recreation experience in 2005. Using the results of reliability and factor analysis (63% of total variance explained), we have grouped the features into three factors for ease of discussion, and present them here in order based on the percent of variability explained by the factor.

Respondents were generally satisfied with each of the features during the 2005 season (Table 4). Most people were satisfied with the features that made up the first factor—“nature appreciation and social bonding.” Very few people were dissatisfied with any of these features. This was not the case with the “high-quality environment” factor, in which up to 25 percent of respondents in some groups were dissatisfied with

Table 4.—Satisfaction with features during 2005 season on Lake George, by lake user group

| Features | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|--|-------------------------|----------------------------|-------------------------------|
| <i>Percent</i> | | | |
| NATURE APPRECIATION AND SOCIAL BONDING | | | |
| <i>Scenic Beauty</i> | | | |
| Satisfied | 96.7 | 96.2 | 99.1 |
| Neutral | 1.2 | 1.2 | 0.9 |
| Dissatisfied | 2.1 | 2.1 | 0.0 |
| <i>Sharing the experience with my family</i> | | | |
| Satisfied | 94.5 | 95.7 | 94.9 |
| Neutral | 5.2 | 3.5 | 4.6 |
| Dissatisfied | 0.3 | 0.8 | 0.5 |
| <i>Enjoying the natural world</i> | | | |
| Satisfied | 88.7 | 89.7 | 94.1 |
| Neutral | 8.1 | 8.1 | 5.9 |
| Dissatisfied | 3.2 | 2.2 | 0.0 |
| <i>Feeling of relaxation</i> | | | |
| Satisfied | 88.1 | 89.4 | 91.9 |
| Neutral | 8.8 | 5.3 | 6.3 |
| Dissatisfied | 3.1 | 5.3 | 1.8 |
| <i>Feeling of camaraderie within my group*</i> | | | |
| Satisfied | 77.2 | 78.1 | 87.0 |
| Neutral | 21.8 | 21.1 | 12.1 |
| Dissatisfied | 1.0 | 0.8 | 0.9 |
| HIGH-QUALITY ENVIRONMENT | | | |
| <i>Clear, clean water**</i> | | | |
| Satisfied | 70.9 | 83.6 | 94.6 |
| Neutral | 12.0 | 9.1 | 3.6 |
| Dissatisfied | 17.1 | 7.3 | 1.8 |
| <i>Feeling of peace and quiet**</i> | | | |
| Satisfied | 67.9 | 70.4 | 82.3 |
| Neutral | 17.5 | 14.1 | 13.0 |
| Dissatisfied | 14.6 | 15.5 | 4.7 |
| <i>Feeling safe while boating**</i> | | | |
| Satisfied | 67.8 | 71.5 | 86.3 |
| Neutral | 16.1 | 12.8 | 7.8 |
| Dissatisfied | 16.1 | 15.7 | 5.9 |
| <i>Not feeling crowded by other boaters**</i> | | | |
| Satisfied | 54.2 | 52.7 | 74.2 |
| Neutral | 21.1 | 20.8 | 17.2 |
| Dissatisfied | 24.7 | 26.5 | 8.6 |
| WATER ACTIVITIES | | | |
| <i>Enjoying my favorite water sports**</i> | | | |
| Satisfied | 74.3 | 72.0 | 86.2 |
| Neutral | 23.0 | 26.2 | 11.5 |
| Dissatisfied | 2.7 | 1.8 | 2.3 |
| <i>Opportunity for physical exercise</i> | | | |
| Satisfied | 71.7 | 66.4 | 66.0 |
| Neutral | 26.9 | 32.5 | 33.0 |
| Dissatisfied | 1.4 | 1.1 | 1.0 |
| <i>Challenging my boating skills**</i> | | | |
| Satisfied | 38.1 | 39.3 | 53.8 |
| Neutral | 60.4 | 59.3 | 43.4 |
| Dissatisfied | 1.5 | 1.4 | 2.8 |
| <i>The thrill of a speed boat ride**</i> | | | |
| Satisfied | 41.8 | 34.9 | 48.1 |
| Neutral | 55.2 | 60.2 | 49.9 |
| Dissatisfied | 3.0 | 4.9 | 2.0 |

*To increase sample sizes in each cell, we collapsed "dissatisfied" and "neutral" into one category, then found a statistically significant difference between lake user groups using Chi-square test at P = 0.05.

**Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

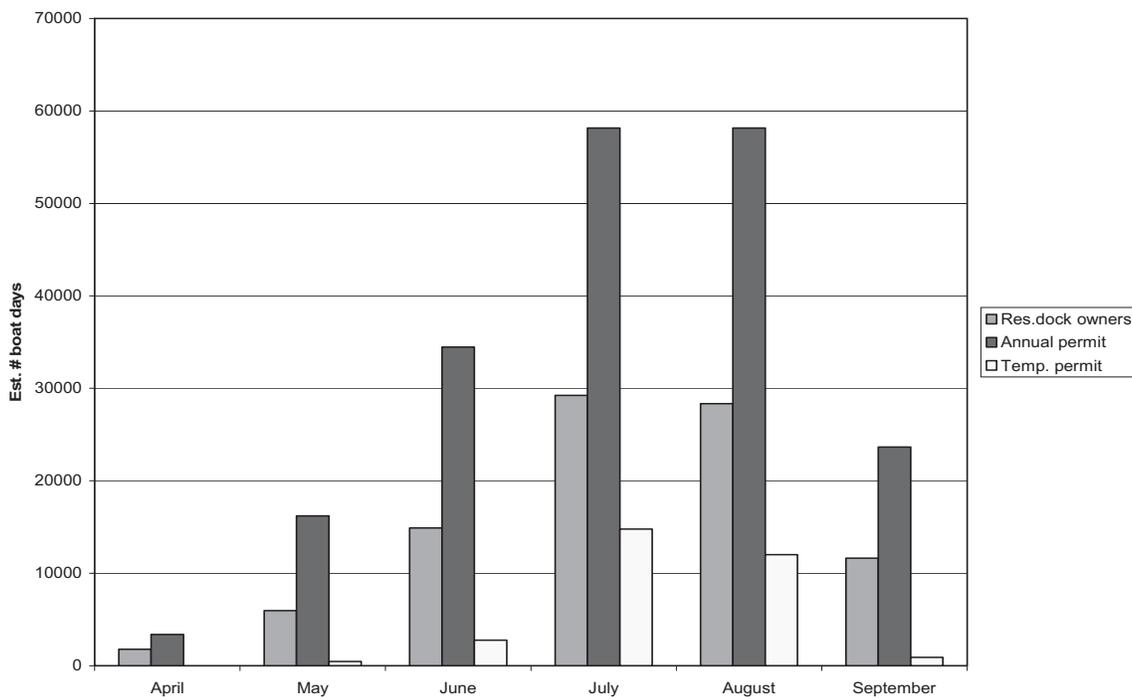


Figure 1.—Estimated number of boat days on Lake George in 2005 by month and boater type, based on respondents' recall of use listed in the mail questionnaire.

specific components. Dissatisfaction was highest among residential dock owners and annual boat permit holders on the issue of crowding and to a lesser extent feeling safe while boating. For the third factor, “water activities,” respondents were generally satisfied or neutral. Very few respondents were dissatisfied with features grouped into the third factor. Generally, more temporary boat permit holders were satisfied with these features than other groups. Overall satisfaction with the 2005 Lake George experience was high, with over 90 percent of respondents indicating some level of satisfaction. Less than 5 percent of respondents were dissatisfied, and there were no significant differences between groups in terms of overall satisfaction.

The aspects that contributed most to respondents' dissatisfaction with their 2005 Lake George experience centered around feeling crowded on the water (Table 5). There were too many boaters, making too much noise, not following the rules, creating boat wakes and speeding. A number of respondents said PWCs were a problem, but did not specify why. Others indicated the problem with PWCs was that they were too noisy, running too

close to shore, or going too fast. Others indicated a type of problem—noise or speed for example—but did not specify the type of boat causing the problem. Noise and PWCs were sources of dissatisfaction for more residential dock owners than for other users.

3.3 Concerns Related to Congestion and Overcrowding

Crowding at anchorages, swimming areas, and campgrounds along with related issues such as noise and rowdy behavior were seen as the biggest problems on Lake George by 27 percent of respondents. Other issues written in by respondents as being the biggest problem included conflicts between different types of boaters and too many boats on the lake. Noise from personal watercraft was considered a major problem by one-third of annual boat permit holders and residential dock owners; another third thought it was a minor problem (Table 6). Two-thirds or more of the temporary boat permit holders did not think noise was a problem from personal watercraft or other boats. This same pattern was seen for other issues associated with congestion such as rowdy behavior, where residential dock owners

Table 5.—Most common written descriptions of things that contributed most to respondents’ dissatisfaction with their 2005 Lake George recreation experience, by lake user group

| Things That Contributed Most to Dissatisfaction | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|--|--|----------------------------|-------------------------------|
| | <i>Percent of respondents who wrote down something</i> | | |
| Overcrowding, too many boaters | 26.7 | 33.3 | 26.9 |
| Motorized noise—too much or too loud | 28.1 | 13.0 | 4.8 |
| Decline of water quality | 11.1 | 12.5 | 5.8 |
| Problems with other boaters—too rowdy, not following rules | 7.4 | 8.9 | 11.5 |
| PWCs (type of problem not specified) | 13.4 | 7.8 | 2.9 |
| Speeding by other boaters, feeling unsafe | 6.0 | 5.2 | 6.7 |
| Too expensive | 3.2 | 3.1 | 8.7 |
| Limited public access to the water | 0.5 | 3.6 | 4.8 |
| Boat wakes | 4.6 | 3.1 | 3.8 |
| Too much upland development, concerned about stormwater runoff | 6.0 | 2.6 | 2.9 |

and annual boat permit holders were more likely than temporary boat permit holders to think there was a problem.

3.4 Concerns Related to Safety

Unsafe operation of boats, unmarked boating hazards, and the number of boating accidents or “near-misses” were seen as the biggest problems on Lake George by 16% of respondents. Two-thirds of residential dock owners and annual boat permit holders thought unsafe operation of boats was a problem on Lake George, compared with only one-third of temporary boat permit holders (Table 6). Unmarked boating hazards and the number of boating accidents or “near-misses” were not problems for most boaters.

Some respondents wrote in that they were concerned that other boaters were not aware of the rules for boating on Lake George and this lack of awareness contributed to unsafe conditions. However, when boaters were asked about their awareness of the special rules and regulations on Lake George, almost all indicated some level of awareness (Table 7). Temporary boat permit holders were the least likely to be aware of the special regulations. Some would argue that too many rules can detract from a person’s enjoyment of a recreation experience, but most boaters on Lake George did not indicate that this was

the situation for them. Over half of the residential dock owners and annual boat permit holders indicated that the rules added to their enjoyment of the Lake. Temporary boat permit holders were more likely to be neutral regarding the rules’ effects on their enjoyment.

4.0 CONCLUSIONS

Results of this analysis appear to highlight the similarities between residential dock owners and annual boat permit holders, and the differences between these two groups and temporary boat permit holders. For almost every characteristic, perception, or concern examined, these similarities and differences existed. Residential dock owners and annual boat permit holders have a longer history of involvement with Lake George, spend more time on the Lake, and are more likely to be concerned about crowding-related and safety issues than temporary boat permit holders. Recreation planners can use the results of this analysis to inform planning and communication with stakeholders on Lake George issues and perhaps other areas with similar types of recreational boaters.

5.0 ACKNOWLEDGMENTS

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Table 6.—The extent to which respondents found potential recreation-related issues to be a problem on Lake George in 2005, by lake user group

| Recreation-related Issues | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|---|-------------------------|----------------------------|-------------------------------|
| | <i>Percent</i> | | |
| <i>Noise from personal watercraft*</i> | | | |
| Not a problem | 27.2 | 34.6 | 68.4 |
| A minor problem | 36.4 | 35.0 | 23.6 |
| A major problem | 36.4 | 30.4 | 8.0 |
| <i>Noise from other boats*</i> | | | |
| Not a problem | 25.4 | 43.8 | 77.6 |
| A minor problem | 48.2 | 35.0 | 18.8 |
| A major problem | 26.4 | 21.2 | 3.6 |
| <i>Unsafe operation of other boats*</i> | | | |
| Not a problem | 32.8 | 35.1 | 67.6 |
| A minor problem | 49.3 | 45.9 | 27.0 |
| A major problem | 17.9 | 19.0 | 5.4 |
| <i>Crowding at boat anchorages*</i> | | | |
| Not a problem | 74.4 | 54.4 | 76.3 |
| A minor problem | 17.9 | 29.1 | 17.2 |
| A major problem | 7.7 | 16.5 | 6.5 |
| <i>Rowdy behavior of other boaters*</i> | | | |
| Not a problem | 47.8 | 53.6 | 75.9 |
| A minor problem | 39.6 | 32.5 | 21.4 |
| A major problem | 12.6 | 13.9 | 2.7 |
| <i>Crowding at public boat launching sites*</i> | | | |
| Not a problem | 87.2 | 68.6 | 69.6 |
| A minor problem | 9.0 | 24.4 | 18.7 |
| A major problem | 3.8 | 7.0 | 11.7 |
| <i>Activities on the water disturbing my enjoyment when I am onshore*</i> | | | |
| Not a problem | 45.3 | 65.6 | 88.3 |
| A minor problem | 38.8 | 24.9 | 9.0 |
| A major problem | 15.9 | 9.5 | 2.7 |
| <i>Unmarked boating hazards*</i> | | | |
| Not a problem | 64.0 | 63.8 | 77.5 |
| A minor problem | 29.4 | 28.8 | 19.8 |
| A major problem | 6.6 | 7.4 | 2.7 |
| <i>The number of boating accidents or "near-misses"</i> ** | | | |
| Not a problem | 73.2 | 69.2 | 86.0 |
| A minor problem | 20.2 | 23.3 | 12.2 |
| A major problem | 6.6 | 7.5 | 1.8 |

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

Table 7.—Recreational boaters' awareness of and feelings about special rules and regulations in place on Lake George, by lake user group

| Awareness of Special Rules and Regulations on Lake George* | Residential Dock Owners | Annual Boat Permit Holders | Temporary Boat Permit Holders |
|--|-------------------------|----------------------------|-------------------------------|
| | <i>Percent</i> | | |
| Little awareness | 4.3 | 4.3 | 15.9 |
| Some awareness | 35.8 | 39.0 | 49.8 |
| Great deal of awareness | 59.9 | 56.7 | 34.3 |
| <i>Rules' effect on enjoyment*</i> | | | |
| Adds | 72.0 | 59.8 | 40.8 |
| Neither adds nor detracts | 22.6 | 31.8 | 45.7 |
| Detracts | 5.4 | 8.4 | 13.5 |

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

6.0 CITATIONS

Connelly, N.A. 1987. **Critical factors and their threshold for camper satisfaction at two campgrounds.** Journal of Leisure Research. 19: 159-173.

Dawson, C.P.; Connelly, N.A.; Brown, T.L. 2005b. **Adirondack visitor studies conducted in support of NYSDEC unit management planning: Lake George Wild Forest (North) and William C. Whitney Wilderness.** HDRU Publ. No. 05-7. Dept. of Nat. Resour., N.Y.S. Coll. Agric. and Life Sci., Cornell Univ., Ithaca, N.Y. 87pp.

Dawson, C.P.; Peters, N.; Connelly, N.A.; Brown, T.L. 2005a. **Adirondack visitor studies conducted in**

support of NYSDEC unit management planning: Bog River Unit, Mc Kenzie Mountain Wilderness, and West Canada Lake Wilderness. HDRU Publ. No. 05-6. Dept. of Nat. Resour., N.Y.S. Coll. Agric. and Life Sci., Cornell Univ., Ithaca, N.Y. 121pp.

Dillman, D.A. 2000. **Mail and internet surveys: the tailored design method.** New York: Wiley.

Graefe, A.R.; Absher, J.D.; Ye, Y.J.; Nyaupane, G. 2005. **Shasta and Trinity Lakes Boating Carrying Capacity Study.** USDA Forest Service, Pacific SW Research Station, Research Work Unit 4902 Technical Report. http://www.fs.fed.us/psw/programs/recreation/update/u_oct2005.html