

# Squam Lakes Recreationists

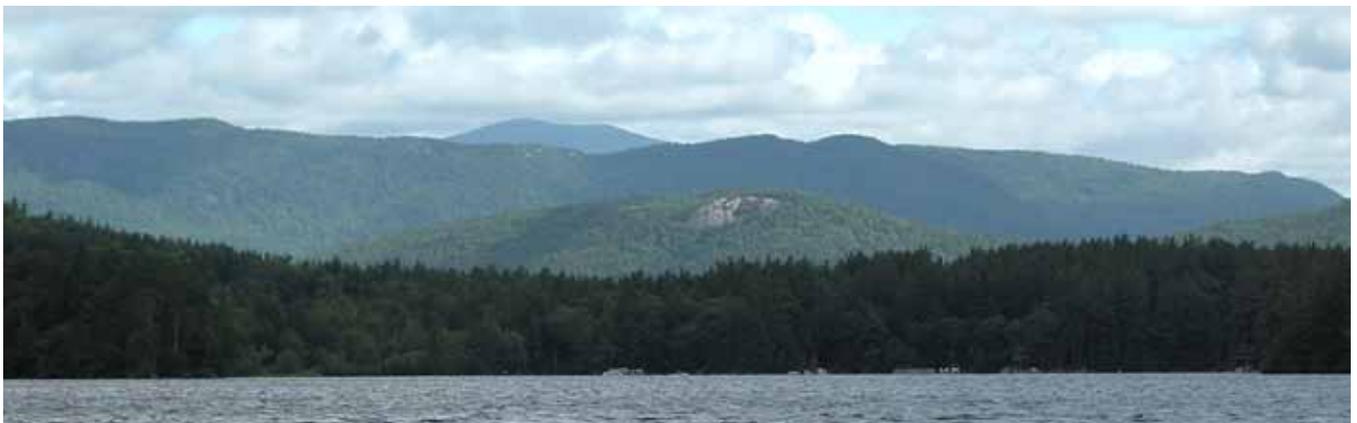
## Mapping Project



## INTRODUCTION

With the growing population there come many changes. These changes take place in our social and natural environments. Generally, population will create a higher demand for natural resources. Since there will never be an increase in the supply of natural resources, we must learn how to use the landscape sustainably. When many people are attracted to a resource, such as a lake, crowding can create a major problem as it stresses the carrying capacity of an area, or the ability of that resource to sustain the impacts of human use. Crowding is often a problem with recreational activities; however, it does not grow proportionally with the population. Because crowding is a perception of too many people in one area, we can assume that each individual may perceive the same situation differently. When assessing these situations, we may find the same impacts (or even worse impacts) in areas that aren't necessarily associated with crowding. These locations may be areas that recreationists frequently gather at, and therefore do not feel crowded when surrounded by others relative to different areas; or the recreationists could be congregating purposefully for socializing, not invoking a sense of being crowded. We must find out what factors affect the perception of crowding, and then how to manage natural resources to combat negative impacts from crowding. As a case study, we have surveyed local residents, members of the Squam Lake Association, and other concerned recreationists of Squam Lake in New Hampshire.

**Purpose:** to identify hotspots of crowding, as well as to define qualities and perceptions commonly associated with specific locations. This research can be used to help develop management options for the lake. The survey included 281 out of 1000 watershed property owners invited to participate, 125 SLA members and 100 participants who requested randomly generated access codes. The random access codes represents recreationists met at boat ramps with informational material as well as members or property owners that forgot their assigned access code. The data reported here is from the combination of these three samples, as statistical analyses indicated very few significant differences between these groups of respondents.



## EXPECTATION – PERCEPTION = SATISFACTION

Crowding relies not on the number of people or boats in the area, but on the expectation before the recreation takes place. If a group or individual expects to be crowded and does not perceive crowding during recreation they will have a positive experience. They may derive a social benefit from the presence of a group. Conversely, if a group or individual does not expect to be crowded and experiences crowding they will have a negative experience. We can see that it is not only difficult to predict the presence of crowding, but also the impact of crowding on the recreation environment.



## SQUAM LAKES REGION

The Squam Lakes Region in New Hampshire is packed with great recreation opportunities and spectacular scenery. The watershed is home to many animals including bears, loons and bald eagles. It is also the home of 10,650 people (2010 US Census), not to mention the thousands who come to the lake seasonally. The region must struggle with the balance of satisfying those who recreate on the lake while not compromising the habitats of plants and animals. Other than logging, New Hampshire's economy relies heaviest on the income from rentals, recreation, and retail in these areas. Tourism plays a major role in these industries. Squam Lake's natural features include

18 basins, three bays, 20 coves, 30 islands to make up 6,765 acres. The lake is the second largest in the state with many areas of seclusion and serenity. Surrounding mountains create an impressive backdrop to the time spent on the lake. The landscape adds up to be one of the most beautiful areas in New England. The Squam Lake Association is one of the major conservation associations in the watershed striving to protect the lake from the impacts of recreation, tourism, and resource use.



### **PUBLIC PARTICIPATION GIS**

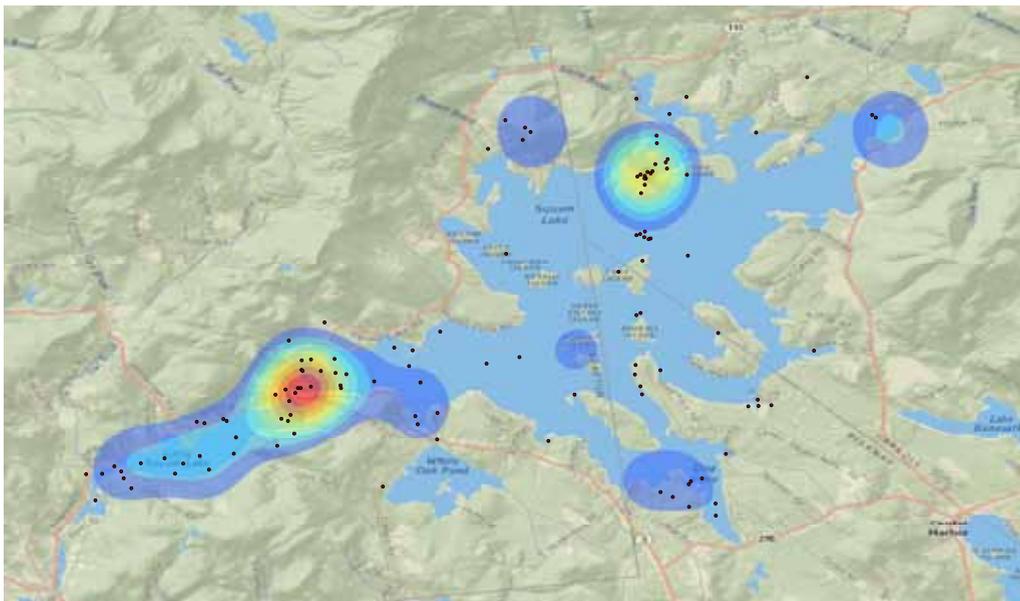
To combat the inconsistencies when predicting a level of crowding in the area, we have used a mapping technique in our research. The method is called Public Participation GIS. The platform allows the public to assign attributes spatially to areas of the lake on an interactive web-based mapping platform. Survey participants choose markers associated with qualities, perceptions, and recreation activities from a menu and “drag and drop” those markers to exact locations on a map. Benefits from this method include ease of participation and an easily understandable medium to share with the public and resource managers upon collection of the data. The product of the survey includes many different maps representing an abundance of information about the lake. Resource managers can use the information to make management decisions and recreationists can use the maps to plan their activity habits and patterns.

Current resource management practices rely heavily on “expert” opinions, relying on public meetings as the only method of input from the community with little emphasis on the experiential and social component of recreation in current management styles. The knowledge and perceptions of recreationists on the lake, including local and non-local, can be useful to managers. These opinions can greatly affect recreational habits and influence tourism. This survey encouraged communication by allowing the public to provide detailed information to managers that can complement the current information known about the lake.

## RESULTS AND CONCLUSIONS

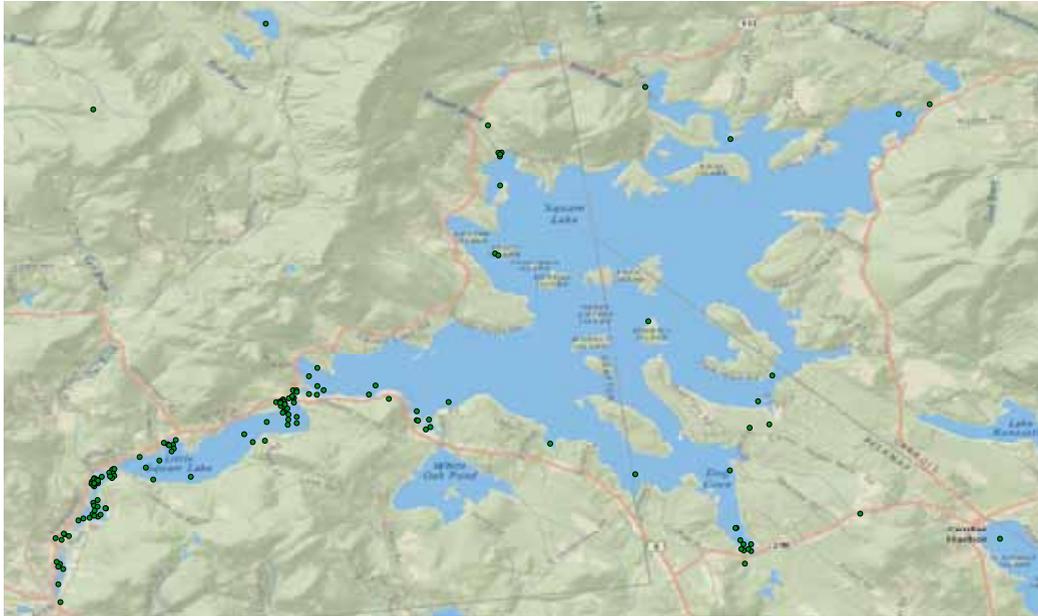
Having a map of perceptions and qualities on the lake is extremely beneficial for resource managers. Efforts can be allocated and prioritized depending on existing information and results from this project. The maps are available on the web allowing the public to use the maps to make informed decisions concerning recreation on the lake. Results can be accessed through the Internet at <http://www.landscapemap2.org/plymouth/mapviewer.php> using an interactive map. Layers of information can be shown or hidden depending on the interests of the viewer. An example of some information that is available:

### CROWDING HOTSPOTS, ENDANGERED MARKERS



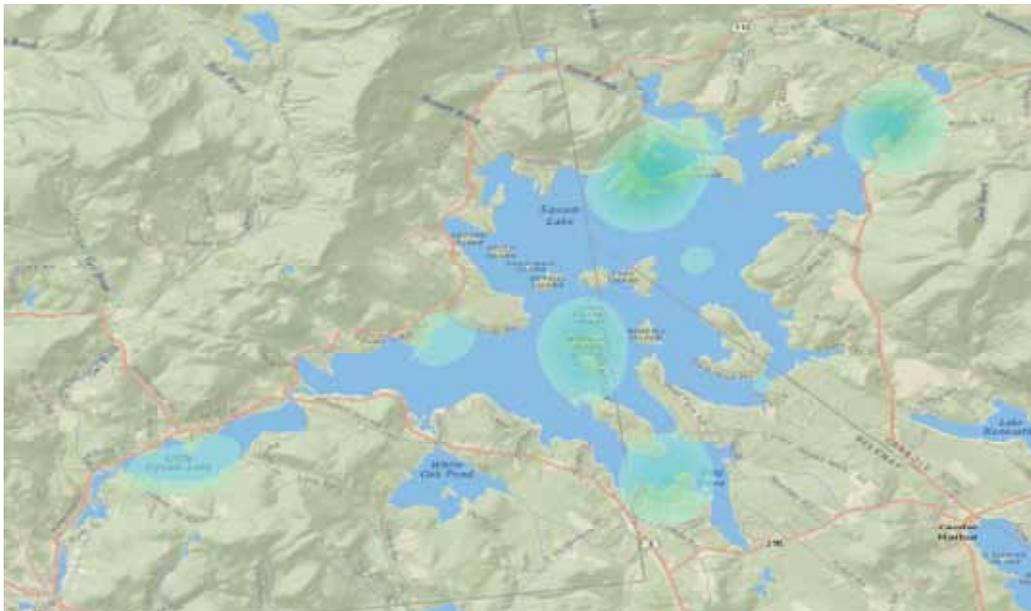
- Crowding is worst at the Public Boat ramp and a popular swimming spot near Five Finger Point known as “Jumping Rock.”
- Areas of crowding correspond roughly with areas participants perceived as poorly managed.

## INVASIVES



- Invasive species are present near marinas and the public boat launch, as well as several small areas around the lake.

## SWIMMING



- Swimming spots such as town beaches and public areas were identified by survey participants. Boats must use caution when approaching these areas.

## WHAT NOW?

This research is one step in the efforts to improve the efforts in place to conserve our natural resources. Studies such as this should be completed regularly and on several lakes in the state. By tracking the changing trends in recreation we begin to see a visual representation of management effectiveness. From this information, managers can increase attention towards growing issues and concerns while continuing to improve successful management practices.



All photographs courtesy of Squam Lakes Association.

## PROJECT PARTNERS

This project was completed by Andrew Veilleux as part of his research for his MS in Environmental Science and Policy, and in partnership with the Center for the Environment at PSU, the Squam Lakes Association, the NH Department of Environmental Services, and University of Queensland. Support for the project was provided by the Center for the Environment at PSU, Squam Lakes Association, and the Davis Conservation Foundation.

