

## **ACKNOWLEDGMENTS**



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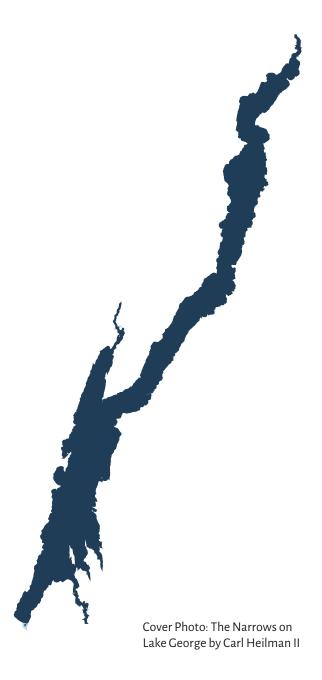
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## **FOREWORD**

Lake George is one of the most magnificent natural resources on the planet. As such, it is treasured and enjoyed by tens of thousands of visitors annually from both near and far, as it has for many generations. The crystal clear waters of Lake George make it one of the most widely visited lakes in the Northeast United States, all of whom come to the region to experience both the scenic splendor and the adventure that the lake provides. Given the grandeur and uniqueness of Lake George, the New York State Legislature created a Commission more than 50 years ago that is charged with its long-term protection while ensuring that Lake George remains a high quality recreational resource for the future.

I have the distinct pleasure of being the Chairman of this Commission, and have been honored to occupy this role for more than 15 years. The Lake George Park Commission has several considerable responsibilities, not least among those is to maintain a balance between its use and its protection. Towards this goal, it is important for all of us to have a greater understanding of how the public uses and recreates on Lake George. We also benefit from knowing how the public perceives the lake and their interaction with it.

The report you are about to read endeavors to provide an analysis and overall understanding of these topics, in a way that is both credible and accessible. This effort is a comprehensive update to the Commission's 2005 Recreation Study, drawing comparisons, trends and conclusions based on an array of data and an inclusive public user survey.

I believe you will find this report both enlightening and readable. This report was put together by the Saratoga-based LA Group consulting firm, which has vast experience on recreational studies and a deep knowledge of Lake George. The firm was the perfect choice to work with the Commission to create this document. LA Group staff was joined by the Siena Research Institute which created and managed the public survey, a respected leader in this field both locally and nationally. We thank them both for their considerable efforts.

Lastly, this effort was co-funded with a very generous donation of \$25,000 from the Lake George Association. The LGA is the oldest lake association in the United States and is a leader in lake management issues, accomplishing amazing things for the lake in the 130 year existence of the organization.

I would like to thank LGA President Mike Dier, LGA Executive Director Walt Lender and the rest of the Lake George Association Board and staff for their tremendous support of this important project.

I hope to see you on the lake!

Brun E Jy

Bruce Young, Chairman Lake George Park Commission



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# EXECUTIVE SUMMARY

#### Introduction

For hundreds of years, Lake George has been a major destination for vacationers: starting with the hearty visitors who came by foot and horseback, to the wealthy vacationers who came by train, to the families who came via automobile and stayed in motor courts. What has drawn people here throughout the years has been the clear, protected waters, the easy access to the Lake, 32 miles of destinations and nightlife coupled with wildlife. Even as a public recreational Lake, the water is rated Class AA Special – meaning it is safe to drink right from the Lake. There are a number of dedicated civic and government groups that work all year round to keep it that way.

In 2005 the Lake George Park Commission performed the first of its kind study that looked at Lake George with an eye toward effective management of access, safety, and recreational use of the Lake. During interviews as part of the study, researchers found that of the qualities that contributed to the satisfaction of a Lake George recreation experience, top of the list was "scenic beauty" and a "beautiful, clean lake." Results of a 30-year water quality monitoring study

by the Rensselaer Polytechnic Institute's (RPI) Darrin Fresh Water Institute on Lake George indicate that water quality in Lake George continues to be excellent, exceeding a 30-40 foot transparency in most of the lake. While the study has shown a slight decline in the more developed South Basin, it remains drinking water quality throughout the waterbody. What has changed is the number of people coming to the area for vacation. In the last ten years, data from the Warren County Tourism Department shows steady growth up to the 2008 economic downturn followed by continued growth in visitors (lake users) through the high point of 2014. Following a long period of decline since their high in 2002, Lake George annual boat registration numbers began to rebound in 2014 and exceeded 2005 levels in 2015.

#### **Study Objectives**

The purpose of this study is to provide both a snapshot in time and an analysis of current recreational boating and general use trends on Lake George over the past decade to provide a better understanding of the Lake and its use. It will also help inform and guide future decisions. This document is intended to be a resource for the casual reader interested in recreation on the lake, and also as a guiding document and tool for both short and long-term planning.

#### **Report Content and Methodology**

The study is comprised of a Summary Report and a Full Unabridged Report. The Summary Report condenses information from the Full Report into an attractive readable format. The Full Report, including Appendices, can be found on the LGPC website.

The Summary Report is divided into five chapters: an introduction, an inventory and comparison of recreational data; review of the outcome of the recreational perception survey; a boating surface use assessment; and a summary of report findings. The main body of the study represents the primary findings of each study component. These components provide a comprehensive look at what is happening on the Lake, plus an assessment of what the public perceives is happening.

#### **Public Outreach Efforts**

To gain the broadest cross-section of public opinion and involvement, this effort endeavored to include extensive outreach. This outreach was achieved through publicity in myriad local and national news outlets; a formal presentation introducing the project at the June 30, 2015, Lake George Park Commission meeting; emailing of the survey to the LGPC email list; advertisements in the Lake George Mirror and The Glens Falls Chronicle by the Lake George Association: fliers at commercial recreation yendors.

tourist accommodations, and marinas; and email blasts through the Lake George Association and the Lake George Land Conservancy. The goal was to gather a broad range of input from a variety of users of the lake so that all perspectives were taken into account and included in the analyses and findings.

#### **Summary of Trends and Key Findings**

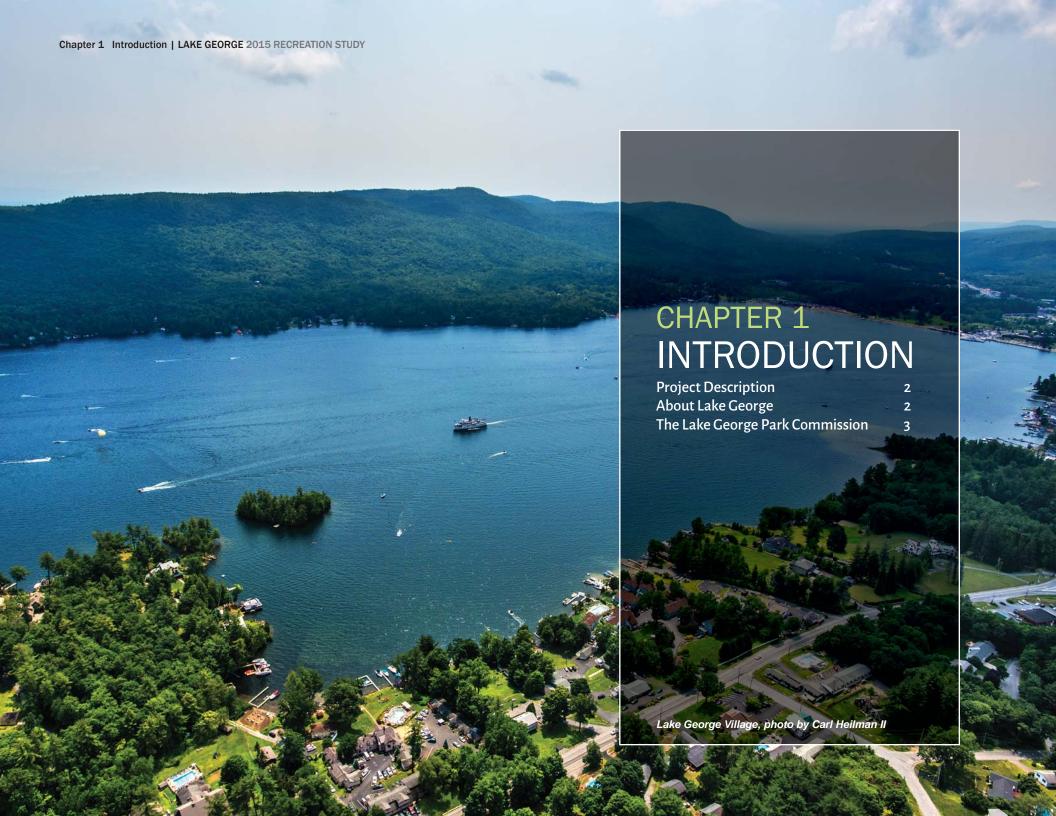
Visitors, residents and businesses continue to recreate on Lake George with a high level of enjoyment. With the increase in dock permit applications and the upward trend in boat registration, there is the potential for increased pressure on Lake George and its resources. Potential impacts of an improved economy and lower gas prices could result in more boats on the lake. The construction of future new docks may also significantly increase the number of new boats on the lake. The trend of wider boat beams and increased numbers of rental boats is causing a rise in applications for marina expansions. Rental boats typically generate up to 20 times more boat trips in those affected areas. The displacement of seasonal rental slips for rental boats may result in an increase in the demand for Class B Marinas.

Lake George is unique when it comes to boating patterns. Lake George's surface must be able to safely balance the passage of five very large tour boats, multiple parasail operations, fleets of rental boats, and movements of private

craft from public docks and public launches, as well as accommodate non-motorized craft and anglers. Many of these operations are concentrated in the south lake segment. The diversity of boat types and recreational uses requires a more careful consideration of boat density as it relates to boats per acre, and boater enjoyment and their experience on the lake.

Lake George is also a tale of two lakes. The trend of boaters congregating in popular areas continues to be extremely prevalent with Lake George boaters, while boating for solitude and tranquility on the lake is also a highly treasured experience. While the north and central areas of the lake appear to be operating under capacity during peak use days, the southern area of Lake George consistently supports nearly 65% of the overall boat traffic. The Recreational Experience Perception Survey found that even though people are generally very pleased with their overall experience on Lake George, the factors that can be controlled, such as safety and crowding, show some growing concerns.

Sources for all data is the Lake George Park Commission unless otherwise noted. Sources for the photographs are Carl Heilman II, the Lake George Association, LGPC, and The LA Group.



#### **Project Description**

In 2005 the LGPC commissioned a study that looked at recreational uses of Lake George. The overall purpose of the project was to collect relevant information, sample user perceptions, and develop a flexible plan to assist the LGPC in fulfilling its legislative mission of providing reasonable public access and recreational use of Lake George without congestion, overcrowding, and safety hazards. The resulting database established a benchmark of use levels and activities that also provided a framework for monitoring and evaluating changes in use. This 2015 study update builds on the database developed in the 2005 study and where possible, repeats the relevant study elements so that comparisons can be made.

Chapter 2: Recreational Facilities: Inventory,
Management and Trends, presents an inventory
of the recreational facilities on Lake George.
Historical permit data and trends analysis for
the LGPC boat registration program, wharfs and
moorings registration program, marina program,
recreational uses program, and enforcement
program are also presented. The following
questions are investigated in this chapter:

- » What are the historic statistics for facilities, boats, commercial uses and enforcement?
- » How have these statistics changed since 2005?

Chapter 3: Recreational Experience Perception Survey, reports on the findings from the webbased survey that recorded user perceptions of their 2015 recreational experience on Lake George. The data in this study was collected through an online survey developed by the Siena Research Institute (SRI) of Siena College. The following questions are investigated:

- » Are residents and visitors satisfied with their recreational experience?
- » Has this opinion changed over the last ten years?

Chapter 4: Lake Surface Use Assessment, was conducted as a means to assess the overall capacity of Lake George to support recreational boating demands. The Assessment is an analysis of the surface use of Lake George that measures existing boat traffic and establishes the "carrying capacity" of the lake to support existing boat traffic. It also estimates future peak boat traffic from land use data to complete a qualitative and quantitative assessment. The collection of data entailed a helicopter flyover and spot boat counts—conducted by volunteers throughout the summer of 2015. The following questions are investigated:

- » What are the overall peak boat counts throughout the lake?
- » How do they compare to counts conducted in 2005?

Chapter 5: Key Findings and Conclusion, offers a compilation summary of the different parts of the project and some findings that came out of the review of the data.

#### **About Lake George**

Located 62 miles north of New York's capital city of Albany, 211 miles north of New York City, and 162 miles south of Montreal, Lake George is well known for its roles in the French and Indian War and Revolutionary War. The lake also played an integral role in the early development of the 6.1-million-acre Adirondack Park, the largest state-protected area in the contiguous United States and the largest wilderness area east of the Mississippi River. Figure 1.1 provides a snapshot of Lake George watershed statistics.

Named "the most beautiful lake in the US" (Oyster. com, 2015), Lake George is notably one of the clearest of all large lakes in the United States and valued by residents and visitors as an outstanding recreational paradise.

New York State has classified Lake George as Class AA-Special, meaning the water is "best used as a source of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing." It is one of only five lakes in the state that are in this classification.

Figure 1.1 Lake George by the Numbers

32 Miles Long

2.05 Miles Wide

196 Feet Deep

**42.45** Square Miles (Surface Area)

**176** Total Miles of Shoreline

20 Miles of State-Owned Shoreline

**170+** Islands

**320** Feet (Shoreline Elevation)

2,646 Feet (Watershed Peak Elevation)

233 Square Miles (Watershed Area)

**550** Billion Gallons of Water

Up to 40 Feet of Water Clarity

Sources of Water:

55% Streams

**27%** Lake Surface Precipitation

18% Groundwater

Lake George flows from south to north, emptying into the LaChute River and then into Lake Champlain. The lake's elevation above sea level is managed by the outlet dam and a penstock (a pipe ten feet in diameter) located at the hydroelectric plant at the entrance of the LaChute River.

The construction of the outlet dam in 1903 resulted in an increase of the average lake level by approximately 3 feet. The dam is located about three-quarters of a mile beyond the natural rock dam at Ticonderoga.

The LaChute River winds through the Ticonderoga business district, dropping 226 feet in elevation and drains into Lake Champlain just west of Fort Ticonderoga. The Lake George Park Commission is responsible for managing the lake level under an agreement with the NYS Department of Environmental Conservation and in cooperation with La Chute Hydro, Inc. Lake level readings are updated daily by the U.S. Geological Service and the data is available on the LGPC website at www.lgpc.state.ny.us.

#### The Lake George Park Commission

In 1961 New York State established the "Lake George Park," designating the lake and its watershed as an area so distinctive in natural qualities and scenic beauty that it deserves special protection. The Lake George Park consists of a spectacularly beautiful 300-square-mile land and water area lying within



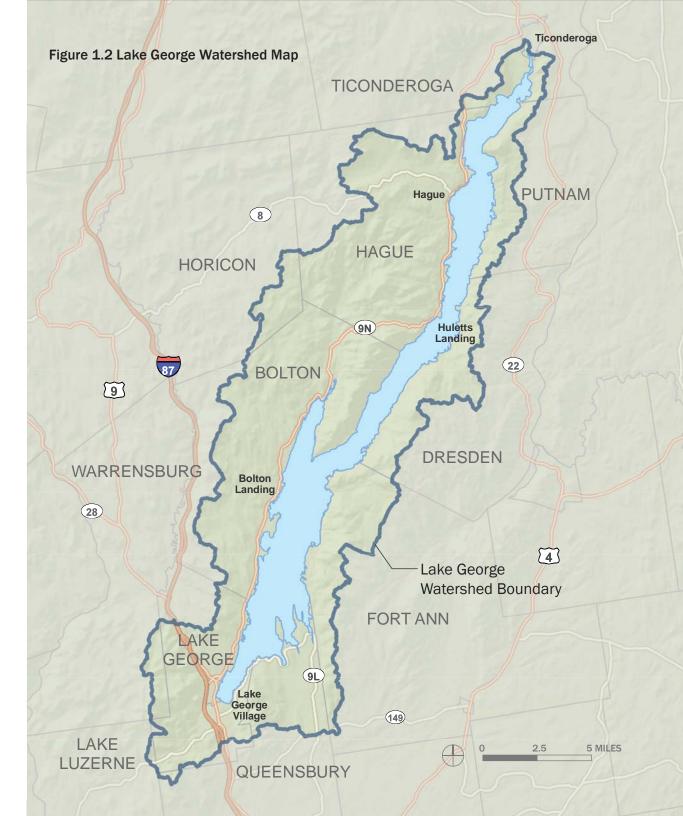
Lake George is notably one of the clearest of all large lakes in the United States and valued by residents and visitors as an outstanding recreational paradise. three counties and twelve municipalities (see Figure 1.2). With the Park, the legislature also established the Lake George Park Commission as a NYS agency charged with the long-term protection of Lake George, working in concert with communities and nonprofits around the lake.

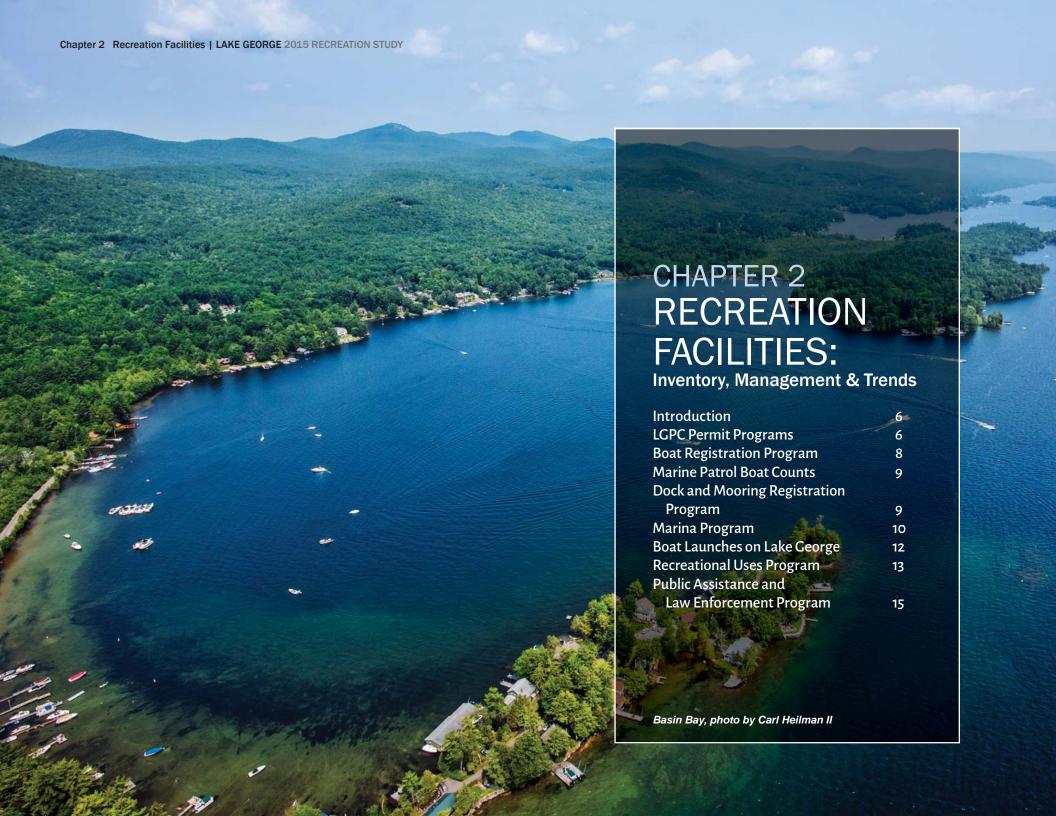
The LGPC has six specific mission areas:

- » Water Quality;
- » Watershed and Scenic Protection;
- » Lakeshore Protection:
- » Lake Safety and Recreation Quality;
- » Aquatic Invasive Species (AIS);Prevention and Management; and
- » Marine Patrol.

Patrolling the waters of Lake George since 1962, the LGPC's Marine Patrol completed 53 years of continuous service in 2015. The primary mission of the Marine Patrol is to promote the safe and enjoyable use of Lake George. The officers achieve this by enforcing the New York State Navigation Law, Environmental Conservation Law, Lake George Park Commission Rules and Regulations, and all other laws. The Marine Patrol provides a wide array of services to the boating public including:

- » Assisting stranded boaters;
- » Vessel safety inspections;
- » Emergency response and first aid;
- » Search and rescue;
- » Fire suppression;
- » Removal of hazards;
- » Recovery of lost property;
- » Boater safety training; and
- » Public education and outreach security details for special events.





#### Introduction

This chapter presents the highlights of the inventory and data related to recreational facilities on Lake George. A complete report of these statistics can be found online in the Full Unabridged Report.

These facilities consist primarily of boat launches, marina services, and boat rentals but also include tour boats, parasail and tubing/waterskiing, sailing, and fishing charters. Historical permit data and trends analysis for the LGPC boat registration program, wharfs and moorings registration program, marina program, recreational uses program, and enforcement program are also presented in this chapter. These trends are intended to assist the LGPC in identifying areas of special concern and assist in determining future program needs.

# Lake George Park Commission Permit Programs

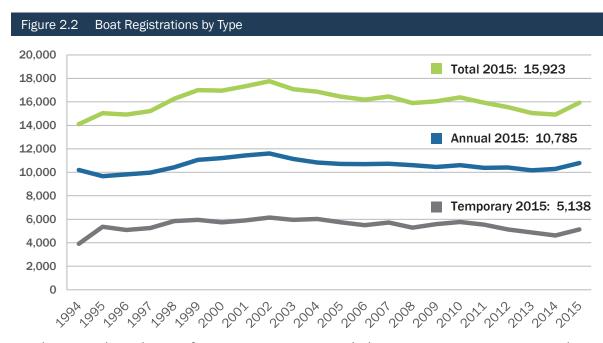
#### Overview

The purpose of the dock and mooring regulatory program is to minimize congestion, overcrowding, and safety hazards and to protect the resources of the lake, especially its exceptional water quality. Standards in the LGPC Permit Program establish environmental and navigational review criteria including specific design limitations on the number, size, spacing and configuration of docks and moorings. The first significant dock and mooring density controls were established in 1981. The current standards became effective in 1988 and use the amount of available lake frontage as the primary

Figure 2.1 Projects, Permits and Registration	ns		
Item	2006 - 2010	2011 - 2015	2006 - 2015
New Docks	70	71	141
Dock Modifications	218	347	565
Boathouse Modifications	59	53	112
New Moorings	33	29	62
Mooring Modifications	2	7	9
Crib Dock Repairs	81	96	177
Dock Excavation/Fill for Dock Modifications	124	229	353
Marinas Class A: Renewals	81	88	169
Marinas Class A: Modifications	15	18	33
Marinas Class B	20	16	36
Recreational Uses*	9	11	20
Stormwater: Minor	83	91	174
Stormwater: Major	8	17	25
Stormwater Jurisdictional Requests	23	98	121
Total * Includes new, modifications and renewals.	826	1,171	1,997

regulatory limiting factor. Dock and mooring standards are aimed at limiting over development, congestion, undue interference of structures with the natural setting and undue impact on the immediate neighborhood. The majority of permits requested are reviewed and issued by LGPC staff and do not require a variance from LGPC regulations and standards. The full Board of Commissioners reviews an average of 20 applications for projects each year that exceed LGPC standards and require a variance. Figure 2.1 presents permit data for the last 10 years.

- » Dock modifications dominate the permit activity with 565 issued over the past 10 years. The number more than doubled in the last 5 years over the period 2006-2010. Major permitting trends in recent years include the addition of boat lifts, canopied boat lifts and personal watercraft lifts to docks. Articulating docks, docks lifted in place either horizontally or almost vertically over the water, are also growing in popularity.
- » An average of 14 permits are granted each year to construct new docks. This equates



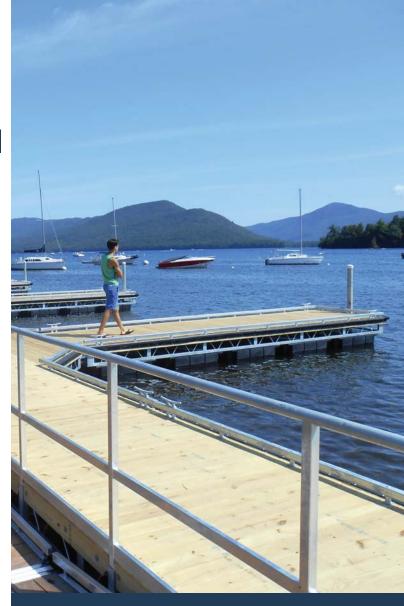
to the potential introduction of up to 60 boats to the lake from this source annually.

- There are 107 Class A Marinas permitted
   (11 of them upland storage only) and
   47 Class B Marinas registered on Lake George.
- » Compliance inspections were conducted on 146 docks and dock modifications constructed between January 1, 2012 and October 7, 2014. 59% were found to be in compliance, 23% were out of compliance with their permit but were approvable, and 18% were referred to law enforcement.
- » Second to docks, stormwater management permits dominate the permit requests.

- Over the last 10 years, 199 permits were issued for stormwater projects. The stormwater permit numbers do not include the towns of Queensbury, Lake George, Bolton and the village of Lake George who administer the Commission's stormwater program themselves.
- » Total permits and jurisdictional determinations increased by 429 in the last 5 years compared with the previous 5-year period. This equates to a 34% increase.

#### **Boat Registration Program**

Boating on Lake George is an activity enjoyed by thousands of residents and visitors each year.



An average of 14 permits are granted each year to construct new docks, potentially resulting in the introduction of up to 60 boats to the lake annually.

In order to protect the lake, the LGPC has special authority to register and collect regulatory fees on all vessels 18 feet or longer, or any vessel mechanically propelled by a motor 10 horsepower or greater. These boats must all register with the LGPC and display a registration decal. Boat owners can apply for a temporary or annual registration. Fees are offered on a per-day or per-week basis for temporary decals. Annual decal fees depend on the boat's length and whether the boat is equipped for overnight use or not. Fees from the LGPC's boat registration program are collected and placed into a fund that can only be used for the betterment of the lake and the safety of its users. Besides the benefit of the fees, the boat registration program gives the LGPC valuable information on year to year boater trends. Regular shifts in boat registration numbers are expected from year to year depending on gas prices, weather, and the national economy.

Annual boat registrations rose steadily since the inception of the program in 1988. As illustrated in Figures 2.2 and 2.3, registrations peaked in 2002 with 11,607 boat decals issued. Between 2002 and 2013, annual registrations fell a net 1,446. Registrations began to rebound in 2014-2015 making up nearly half this loss in registrations since 2002. The level of annual registrations in 2015 was the highest since 2004 (10,832), and is back up to its traditionally higher levels. A similar pattern emerges for temporary registrations (purchased on a daily or weekly basis) with sales decreasing more than 15% between the 2004 to 2014 seasons. The 2015

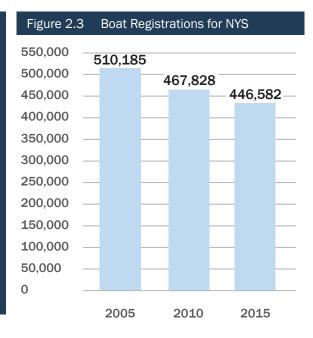
While both have been trending downward since 2005, Lake George boat registrations shifted upward in 2015 by 1,015 while NYS registrations declined by 2,907, suggesting that Lake George remains a high value recreational boating asset.

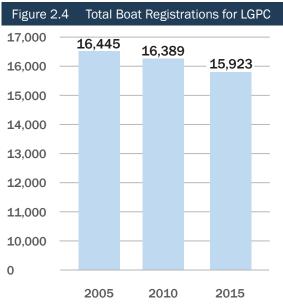
season rebounded with a gain of 515 registrations over the 2014 season. closer to traditional levels.

Figures 2.3 and 2.4 compare NYS boat registration sales with LGPC registration sales. While both have been trending downward since 2005, Lake George boat registrations shifted upward in 2015 by 1,015 while NYS registrations declined by 2,907, suggesting that Lake George remains a high value recreational boating asset.

#### **Marine Patrol Boat Counts**

LGPC Marine Patrol conducts a statistical boat count of docked and moored boats on a regular basis to get a more complete understanding of the general



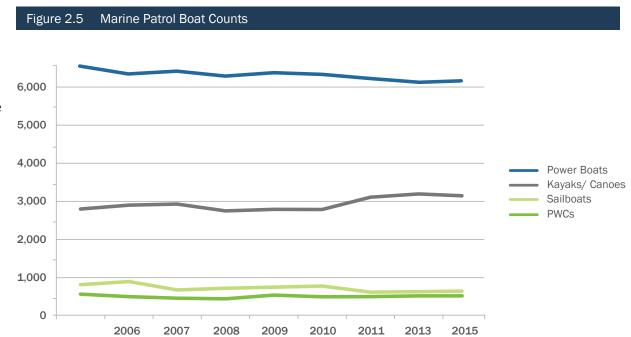


number of boats berthed on Lake George during the summer season. The count was conducted sporadically since 1984, annually between 2006-2011, and biannually since 2011. The Marine Patrol typically conducts the count on a day in August in inclement weather conditions when most boats are at berth. Detailed records for 2006-2015, reported in Figure 2.5, indicate 2006 as the peak year for all boats. There was a decline in the number of power boats, sailboats and PWCs. Even with much of the decline being made up by the significant increase in the number of canoes and kayaks on the lake, there seems to be a slight downward trend in berthed boats observed over the past decade. This generally aligns with the LGPC boat registration number trends over the same period.

#### **Dock and Mooring Registration Program**

#### Overview

Docks and moorings provide berthing for some 4,000 lakefront homeowners and association members, and are the economic life blood for dozens of commercial facilities on Lake George. LGPC requires all docks and moorings on Lake George to be registered by landowners annually. Fees have been collected through the registration process since 1988, with charges based on a per-dock basis for residential docks, per-slip basis for association docks, and by the foot for commercial docks. The Commission has tracked docks and moorings by type for last 24 years. The density and location of the nearly 3,800 residential and commercial docks around the lake



impacts the level of boat traffic in specific areas. The future growth in the number of docks and moorings is linked directly to the potential increase in boating-related activity on the Lake. Limitations on dock and mooring density have long been perceived as a means to limit general boat congestion and over development of the shoreline. LGPC conducted a build-out analysis that considers the length of shoreline, existing docks, and potential for new docks on the approximately 2,768 non-state-owned lakefront parcels along the Lake George

shoreline, excluding islands. Figure 2.6 illustrates the distribution of docks and moorings throughout the towns, and projects the number of potential new docks and moorings should the shoreline be completely built out under the current regulations.

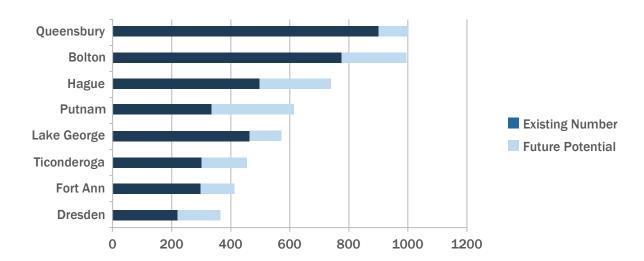
#### **Trends in Dock Registrations**

- » Just under two-thirds of the docks in the south segment of Lake George are in the towns of Bolton and Queensbury. The town of Hague in the north segment has the third highest number of docks on the lake and the highest number in the north segment.
- » In recognition that the larger properties will not likely ever fully build out, a deeper analysis that subtracts out properties with more than 500 feet on the lake (5%), finds a more modest and realistic potential for 737 new docks and 2,475 new moorings on the lake.
- » Using the current average rate of 14 new docks per year, total build out for the 737 potential new docks is 52 years.
- » An estimated 60% of potential new docks could occur in the north segment. The potential for additional docks and moorings is highest in the towns of Dresden, Putnam, Ticonderoga and Hague where there are many more lots with 500 feet or more of lakefront.

#### **Marina Program**

The marina permitting program provides for a comprehensive environmental review of any plan to build or expand a marina. A "Class A" Marina is the rental to an outside party of more than one slip in a dock complex, whereas a "Class B" Marina

Figure 2.6 Number of Existing and Projected Docks by Municipality 2015



is the rental of one slip in a dock complex. Permits are required for Class A Marinas which may include traditional boat yard and dock side services including water-based instruction, boat rentals, launches, quick launch, and boat storage. It also extends to tour boat terminals and resorts and others that limit services to just the rental of boat slips.

Class B Marinas are only required to be registered with the Commission. This type of marina refers to residential properties that offer one dock or mooring slip to anyone other than the owner or immediate family living with the owner. The registration process calls for a review of availability of waste disposal and bathroom facilities, and an assessment of the potential

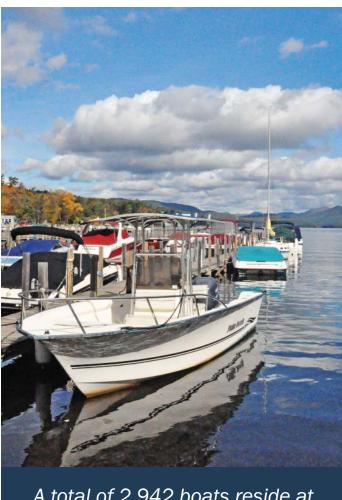
impacts on nearby residential neighborhoods. "Quick launch" facilities are commercial marinas that store vessels on land which are periodically launched for use during a single boating season. Figure 2.7 illustrates changes in marina services on Lake George over the past 25 years.

#### Marina Findings

» There are a total of 2,942 boats residing at commercial and resort marinas for which approximately 86% are located in the south segment (Million Dollar Beach to the Narrows) and 14% are located in the north segment (Huletts Landing to Ticonderoga).

- » Approximately 35% of the boats berthed at Class A Marinas are located in Bolton, followed by Queensbury at 33% and Lake George at 17%. The remaining 15% are distributed throughout the rest of the Lake.
- » There are two types of Class A Marinas those traditional stand-alone marinas and those located at resort facilities. About 81% of boats at Class A Marinas exist at traditional marinas versus 19% at resorts.
- » Class B Marinas are residential dock owners that provide one seasonal berthing slip to an outside party (regardless of compensation). An estimated 10-15% of dock facilities that would technically classify as a Class B Marinas have actually registered with the LGPC. The Commission is currently working to improve public awareness and compliance with this registration process.
- » Approximately 2,127 seasonal berthing slips are offered for seasonal rental at marinas lakewide. Class A Marinas include residential properties that offer more than one space at their dock for rent as well as full service marinas offering scores of berths and other marina services. Approximately 39% of all seasonal berths are in Queensbury, 33% are in Bolton, 18% are in Lake George, 4% are in Hague, 3% are in Dresden, 2% are in Ticonderoga, and 1% is in Fort Ann.

- » There were approximately 509 boats for rent at marinas lakewide in 2015. The highest numbers of rental boats are in Bolton (50%). Approximately 25% are in Hague, 12% in Lake George, 8% in Ticonderoga, and 5% in Queensbury. There are no rental boats located in Dresden, Putnam, or Fort Ann.
- » At commercial marinas, there is currently a fairly significant shift away from the rental of seasonal berths to individuals, and a shift towards the rental of boats owned by the marina facility. These marina modifications require approval from the Commission. The shift from seasonal berthing to rentals can have a significant impact on the number of boats on the water, and ultimately congestion on the lake. Rental boats are out on the water much more often than seasonally berthed boats. This trend is being looked at very closely by the Commission.
- » Approximately 67% of all rental boats are berthed in the south segment compared with 33% in the north segment.
- » There are 16 marina facilities that offer quick launch lakewide. Together these facilities manage 478 private boats. Marinas in every town, but Putnam, have quick launch facilities. The vast majority of boats are quick launched from facilities in Bolton (47%) and Queensbury (36%). New quick launch facilities are not allowed on Lake George by regulation, due to the ability of these facilities to provide a significant



A total of 2,942 boats reside at commercial and resort marinas with 86% in the south lake segment and 14% in the north lake segment.

The current popular trend of commercial marinas applying for marina permits to increase rental vessels and decrease seasonal berthing slips has the potential to greatly impact boating traffic on the lake. Rental boats are generally on the water 10 to 20 times the amount of privately owned boats.

number of new boats to the lake without regard for docking or boat density issues.

- » On Lake George, sanitary facilities on boats must be permanently sealed to prevent discharge into the lake. There are 12 pump out facilities on Lake George. Eleven pump out facilities are in the south segment and 1 state-owned pump out is available free of charge at Mossy Point State Boat Launch in the north segment.
- » The boating industry and marina owners on Lake George indicate that boats are getting wider and longer. A recent study reports that the number of boats in New York with beam widths of 6'6"-13' is increasting at a rate of approximately

4% per year (Recreational Boating Feasibility and Capacity Study, Phase 1-Final Report, June 2014). The greatest impact on marinas is that slip widths need to expand 2-3 feet to safely accommodate boats with wider beams which is leading to an increase in the number of applications for marina expansions and renovations.

» Rental boats are also in growing demand on the lake. In some cases, the demand is great enough to result in the displacement of boat dock rental slips at some marinas. The perception survey (Chapter 3) found that individual boaters with annual registrations used their boat an average of once per week over a three hour period for 10 weeks. Rental boats on Lake George are typically rented out 3 times per day for a period of 2-3 hours during peak use days throughout the summer. The average marina that offers 19 boat rentals would have the potential to generate 57 boat trips in one day. While good for commerce, this has the impact to generate many more boats in a given location at one time. In addition, the displacement of seasonal berthing slips, may ultimately result in an increased demand for Class B marinas.

#### **Boat Launches on Lake George**

Nearly one-half of all boat launch sites on the lake are associated with commercial marinas and motels (see Figure 2.8) Figure 2.9 maps the locations of all public and commercial launches, and invasive species

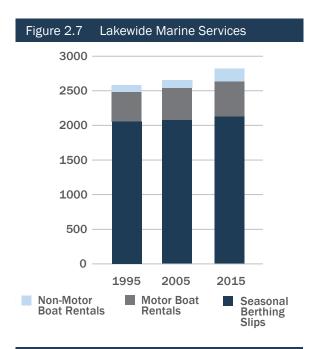
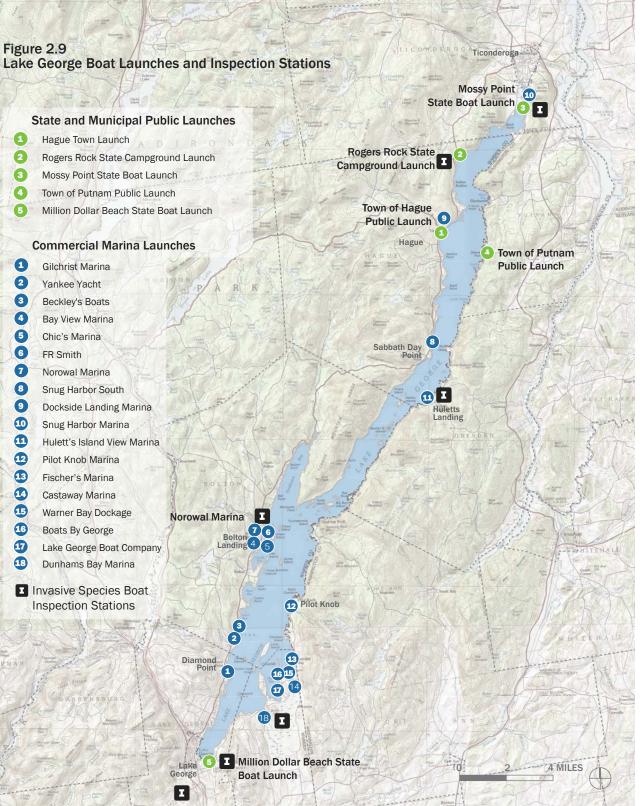


Figure 2.8 L	Launches by Kind and Location				
Launch Type	North Segment	South Segment	Total Launches		
State	2	1	3		
Municipal	2	0	2		
Commercial Mari	na 4	20	24		
Motel/Restauran	t 0	17	17		
Association	4	5	9		
Private Property	6	23	29		
Total Launches	18	66	84		



inspection stations. The majority of the boat activity in the north segment is initiated from state-owned facilities at Mossy Point Boat Launch in the town of Ticonderoga and Rogers Rock Campground in the town of Hague. Boating activity in the south segment is largely generated from the new state-owned launch at Million Dollar Beach in the town of Lake George and Norowal Marina in the town of Bolton.

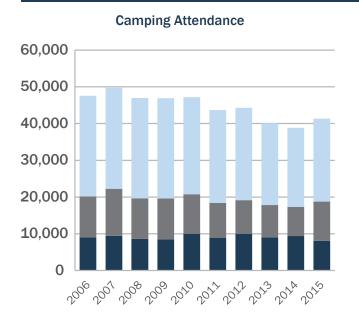
#### **Recreational Uses Program**

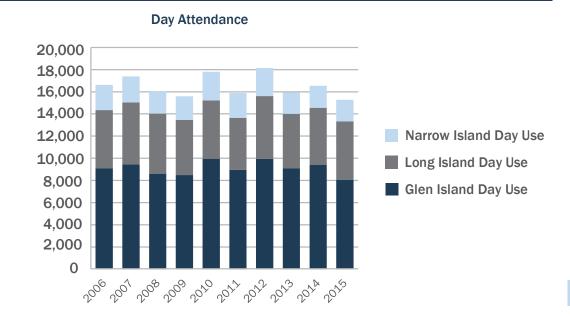
The purpose of the Commission's Recreational Use program is to maintain oversight over the existing commercial recreational uses on the lake, to allow public scrutiny of new proposals in order to protect existing recreational users, and to provide for reasonable public access to the lake. Commission statutory authority over certain vessels offering food, beverage, amusements, etc., has been in effect since 1961. Regulations requiring operational permits for parasails, seaplanes, tour boats, and new recreational uses began in 1991. Operators of parasail companies, tour boats and seaplanes that were active before the adoption of the permit requirements were issued permits as a matter of right but still must adhere to the adopted restrictions.

#### Day and Overnight Anchoring

There are a number of destinations on Lake George where boaters regularly day-anchor. The most popular areas are Sandy Bay (LGPC buoys

Figure 2.10 Attendance on Lake George Islands





only), Shelving Rock Bay, Log Bay, and Red Rock Bay. Anchoring also occurs along the Tongue Mountain shoreline west of Turtle Island, and outside the Waltonian Islands. Floating is common in Paradise Bay since anchoring is prohibited.

Recent years have seen an expanded use of other areas for day-anchoring. In the south segment, day-anchoring occurs in the English Brook delta (also an attraction for kayaks and stand-up paddle boards from Lake George Village resorts), Happy Family Islands in Harris Bay, Boon Bay, Basin Bay, and the west side of Tongue Mountain shoreline in Northwest Bay. In the north segment considerably more boats are anchoring in Blairs Bay, and the

northern shoreline area of Anthony's Nose.

Overnight anchoring is an allowed use on Lake George as long as it is not a hazard to navigation. Overnight anchoring tends to be sporadic and limited to only a few areas on Lake George. One of the areas that is checked on a regular basis by the Marine Patrol is the shoreline north of Paradise Bay and the Mother Bunch Islands between Little Burgess and Duran Islands.

There were up to eight boats checked and recorded by the Marine Patrol in the area just north of Paradise Bay over a period of 5 weekend evenings. There were no reported issues with overnight boats in 2015.

#### User Counts on Camping and Picnicking Islands

Camping and day-use activities on the Lake George Islands are managed by the New York State Department of Environmental Conservation (NYSDEC) and are not a formal part of this study. However, the campsites in the Narrow Island Group, the Glen Island Group, and on Long Island are only accessible by boat, which affects recreation and boat use on Lake George and is therefore useful data to report.

There are 365 overnight campsites and 116 day-use or picnic sites located on 44 state-owned islands and shoreline. The Glen Island Group has a total of

201 sites – 40 reserved for day-boaters only and 161 campsites. There are 80 campsites in the Narrow Island Group and 84 campsites in the Long Island Group. Picnicking is permitted in designated dayuse areas. There are 116 day-use sites on 8 islands and 2 mainland areas. Statistics for camping and day use since 2005 are reported in Figure 2.10.

#### Trends in Recreational Use

- » There are a total of 7 boats permitted as tour boats. This number has remained the same since 2006 when 3 smaller craft were removed from service.
- » There are a several businesses providing regular transportation services on Lake George, including rides out to the islands and to hiking areas only accessible by boat. Services are in demand that "do it all" for clients that include businesses that provide "glamping" (luxury camping) equipment, supplies and transportation. There is one boating club starting up in 2016 where clients regularly lease boats on an as needed basis through membership. These services may be relieving some of the demand for boat rentals on Lake George.
- » Campsite use was at a high point in 2007 when more than 97,000 people enjoyed the boating-camping experience on Lake George. In 2007, more than half (58%) of the camping occurred in the Glen Island Camping group (in The Narrows).

» Camping and day use on the Lake George Islands is down significantly over the last 10 years. Camping alone was down nearly 25% from its high in 2007 and day use down 12% from its high in 2012. The majority of island campers and day users get to the islands with their own boat. Camping trends are consistent with boat registrations, both of which have been in decline up until the 2014 season.

# Public Assistance and Law Enforcement Program

#### Overview

For 53 years, the LGPC's Marine Patrol has been serving Lake George residents and visitors to keep them safe and enforce the LGPC's regulations. At 32 miles long, Lake George presents the Marine Patrol officers with over 44 square miles to protect, covering 9 municipalities and three counties. The primary mission of the Marine Patrol is to promote the safe and enjoyable use of Lake George. It accomplishes this primarily by protecting and educating the public. The Marine Patrol began the 2015 season on April 15 with one patrol vessel operating daily and three vessels operating on weekends. Beginning on July 1, the Marine Patrol operated at full strength, seven days a week until Labor Day: During the week, there was an average of five patrol vessels on the lake daily, and six patrol vessels were on duty Fridays, Saturdays, Sundays and holidays. As in past years, a two-person night patrol unit operated on Thursdays, Fridays, Saturdays and holidays. From Labor Day to Columbus Day patrols were reduced, two vessels



Approximately 2,127 seasonal berthing slips are offered at marinas lakewide:

- » 39% Queensbury
- » 33% Bolton
- » 18% Lake George
- » 4% Hague
- » 3% Dresden
- » 2% Ticonderoga
- » 1% Fort Ann

patrolled the lake daily. After Columbus Day, one vessel patrolled the lake each day until early December. Figure 2.11 shows the escalation in officer hours since 2013, much of the increase correlating to a longer season due to the new aquatic invasive species prevention/boat inspection program.

The Marine Patrol keeps careful records of all data related to its daily activities. These statistics help identify areas of special concern and assist in determining future program needs. Figure 2.12 indicates how the Marine Patrol shows the various types of contacts that officers have with the public on Lake George.

One of the largest events that the Marine Patrol has to handle is the annual Log Bay Day, traditionally celebrated as the last Monday in July. Hundreds of boaters gather for a day-long party in this beautiful bay, which requires considerable coordination from LGPC Patrol and other law enforcement agencies to ensure public safety and emergency response. Figure 2.13 illustrates key statistics for Log Bay Day in 2015. Figure 2.14 presents recent trends in the types of appearance tickets issued on the lake. Tickets issued in 2015 were down by 18% compared to 2012.

#### **Enforcement Trends**

» The Marine Patrol worked a total of 6,285 hours over 232 days in 2015, which is an increase of 256% in total days covered on the lake from a decade ago, with only an increase of 38% of hours. The increase in



Figure 2.11 Total Logged Marine Patrol Officer Hours

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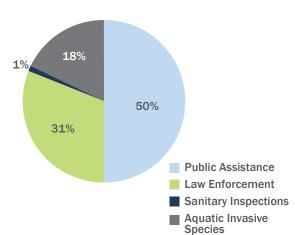


Figure 2.12 Marine Patrol Activity Statistics

days worked is largely due to the inception of the LGPC's new aquatic invasive species prevention/boat inspection program.

- » Over the past few years there has been a significant drop in vessel noise violations on Lake George. In 2015, Marine Patrol Officers conducted 11 tests and issued 3 tickets for loud exhausts. The continued low number of tests this year shows the Marine Patrol has done a very good job in educating the public that extremely loud boats will not be tolerated on Lake George.
- » PWCs accounted for approximately 5% of the total vessels on the lake in 2015. In 2015, out of the 171 citations issued by the Marine Patrol, 62 were issued for offenses which involved a PWC. Therefore, approximately 5% of the vessels on the lake accounted for 36% of the charges filed by the Marine Patrol. Citations written for operating a PWC without a boater's safety certificate and operating after hours make up the majority of these tickets.
- » NYS data indicates that 17 out of 19 boating accidents recorded in Warren County in 2014 occurred on Lake George.
- » There were 46 new enforcement cases in 2015 related to docks, marinas and stormwater.

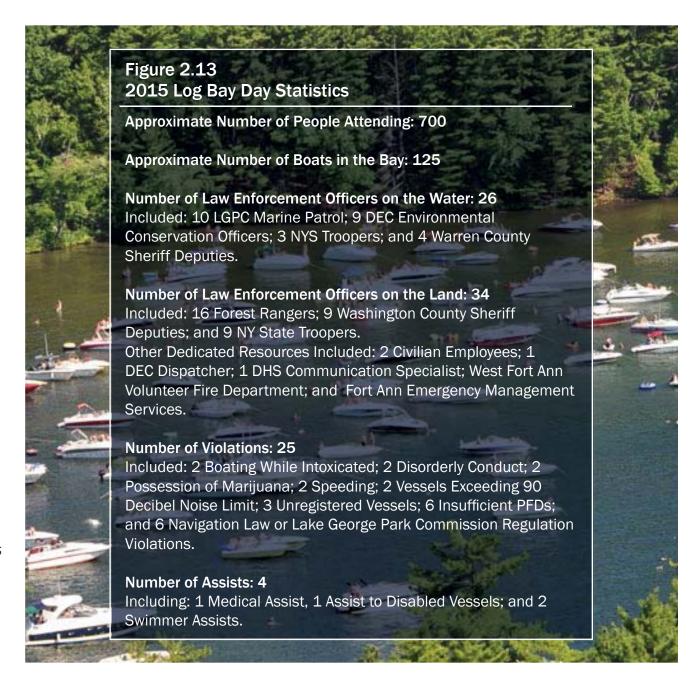


Figure 2.14 Marine Pa	trol Ticl	kets 20	)12-20	15
Ticket Type	2012	2013	2014	2015
Equipment				
No LGPC Registration Decals	38	20	26	28
Unregistered Vessel	24	28	18	18
Lifejacket Violation	29	30	18	24
Other Equipment Violations	11	5	4	5
Operation				
Vessel Noise Violations	1	5	0	3
Speed Restricted Limit	14	12	11	17
Exceed Speed Limit	5	9	3	2
Boating While Intoxicated	5	4	3	6
Reckless/Unsafe Operation	3	2	2	2
Skiing/Towing Violations	10	16	9	5
No Boater Safety Certificate	41	23	28	24
PWC After Hours	10	8	8	8
Other Operation Violations	5	5	5	8
Other				
Water Quality, Littering, etc.	2	4	2	1
Fishing, State Lands, etc.	10	6	10	16
Underage Alcohol	0	0	0	0
Disorderly Conduct, etc.	1	2	0	0
All Others	0	0	0	2
Total	209	179	147	169





Annual number of boater contacts by Marine Patrol in 2015 more than doubled in the last 10 years. The vast majority involved providing information and assistance to the boating public.



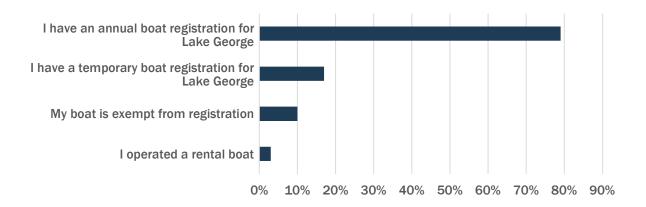
#### Introduction

As an update to its 2005 Lake George Recreation Study, the Lake George Park Commission and Lake George Association invited the public to take a short survey to record their perceptions of their 2015 recreational experience on Lake George. The survey was designed to provide the Park Commission with contemporary information that will inform and guide decisions on public safety, resource protection and regulatory programs in the Lake George Park. Results of the survey are intended to help understand current conditions, identify on-lake issues and ultimately improve the public's recreational experience on Lake George.

Every effort was made to be consistent with the questions asked in the original 2005 Recreation Study. However, in the 2005 survey, specific participants were targeted through mailings and interviews. The 2015 Recreation Study was different in that it invited all those who recreate on Lake George to participate through an electronic webbased survey. The data was collected through an online survey developed by the Siena Research Institute (SRI) of Siena College in Loudonville, NY. SRI regularly conducts regional, statewide and national surveys on business, economic, political, voter, social, academic and historical issues. Highlights of the recreational survey are presented below. The complete report can be found in the Full Unabridged Report on the LGPC website.

Figure 3.1 Boat Registrations





The perception survey began on July 1, 2015 and ended on September 15, 2015. Participants were solicited using the LGPC's email lists – those who hold boat or dock registrations as well as their general list. The public was engaged throughout the process through widely publicized articles and advertisements in local papers and on websites sponsored by the LGPC and the LGA.

A flier announcing the survey was developed to enable residents and visitors to use their smartphones or other electronic devices to access the survey via a Quick Response (QR) Code that linked directly to the survey through the web. The hard-copy flier was distributed

to marinas, town halls, campgrounds and beaches for posting in public areas.

The information collected from the perception surveys is reported below under the following subject areas: Demographics; Recreational Activities; Satisfaction, Importance and

Detractions; and Rules and Regulations.

#### **Demographics**

A total of 977 surveys were received through September 15, 2015. Of those respondents, 428 (44%) came from boat owners on the LGPC's list of boat or dock permit holders. This represents a response rate of 41 percent for this sample. Another 549 respondents (56% of the sample were received through other invitations and outlets (flier, ads, and articles). Figure 3.1 indicates the type of boat registrations purchased for those who took the survey. Figure 3.2 indicates that nearly one-half of survey respondents berthed their boat at residential facilities during the 2015 season.

#### **Recreational Activities**

Given a list of activities over the season, Figure 3.3 indicates that most respondents used their boats for relaxing, cruising, swimming, as transportation (to the market, restaurant, or visit friends), anchoring, and island picnicking. Notable changes from the 2005 survey indicated more people spent time picnicking and camping a decade ago than recently. The reduction in picnicking and camping reservations on the Lake George Islands is consistent with this finding.

#### Importance, Satisfaction And Detractions

Figures 3.4 through 3.6 assess the levels of importance and satisfaction given by respondents regarding key features of their experience while recreating on Lake George. In comparison to the 2005 survey findings, respondents ranked clean water, not feeling crowded, enjoying water sports, and exercise considerably higher in 2015. Findings in Figure 3.6 indicate that 92% of respondents were satisfied with their recent Lake George experience.

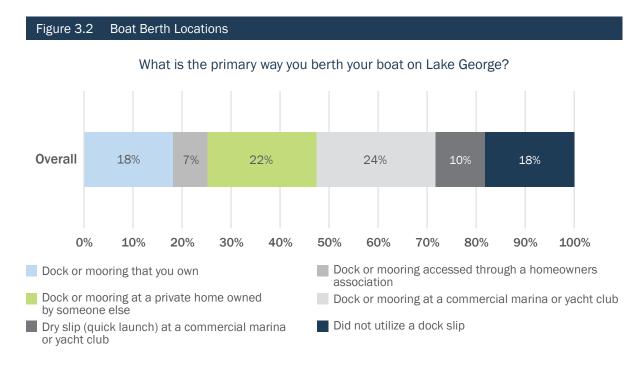


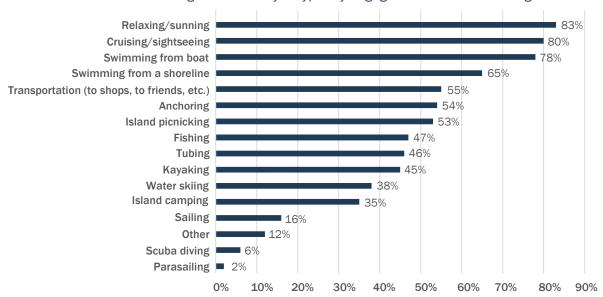
Figure 3.7 indicates that a majority of respondents support the LGPC charging a modest fee for the Boat Inspection Program. Figure 3.8 indicates how people reacted to what they perceived as negative experiences on Lake George. The highest percentage of negative encounters related to jet skis. Figure 3.9 reports how respondents chose to modify their behavior (if they did so) to avoid certain experiences. Most boaters chose to boat on weekdays and/or avoid the afternoons when boat traffic is highest.

#### **Rules and Regulations**

The LGPC is the state regulatory agency solely dedicated to Lake George. It manages the boat registration program as well as implements and enforces navigation, sanitary and aquatic invasive species laws. In order to ensure safety on Lake George, it is critical that the LGPC continually educate the boating public on laws and regulations. Five questions in the survey focused on the public's familiarity with these rules and how those rules impact their boating behavior.

Figure 3.3 Recreational Activities





Four survey questions were directed at the business of the Marine Patrol and quality of the job they are doing on the lake. Survey respondents were asked to grade the LGPC's job performance on four aspects of its mission:

- Limiting congestion and overcrowding on the lake;
- 2) Reducing safety hazards through special lake regulations;

- 3) Maintaining a safe boating environment through use of the Marine Patrol; and
- 4)Preserving lake water quality.

Approximately one in four persons reported some kind of contact with a Marine Patrol Officer in 2015.

Figure 3.10 reports that only one in ten persons received a warning or ticket during that encounter. Figures 3.10 through 3.12 reflect respondent's views of their experience with the Marine Patrol.



Findings indicate that ninety-two percent (92%) of respondents were either very satisfied (73%) or satisfied (19%) with their recent Lake George experience.

Figure 3.4 Most Important Lake George Characteristics

How important is this feature to you while recreating on or near Lake George?

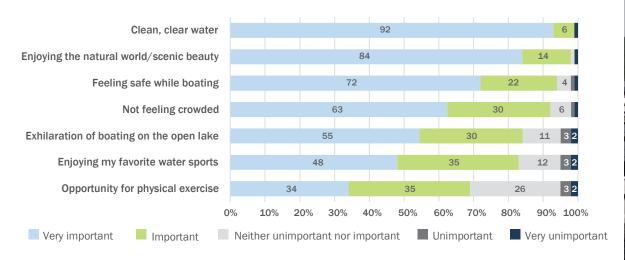
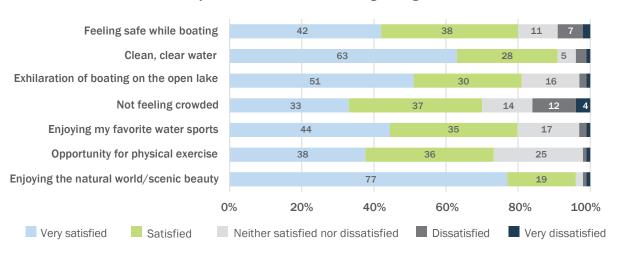


Figure 3.5 Satisfaction with 2015 Season

How satisfied were you with each of the following during the 2015 season?

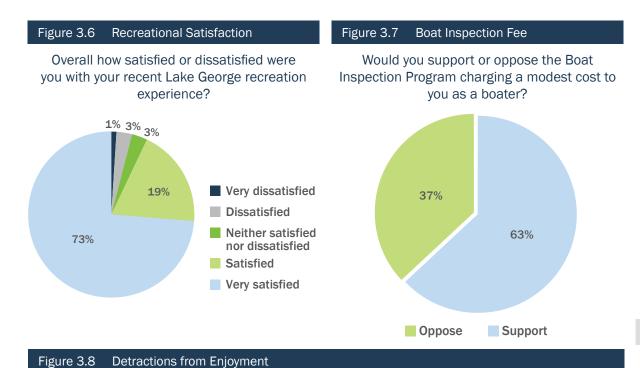




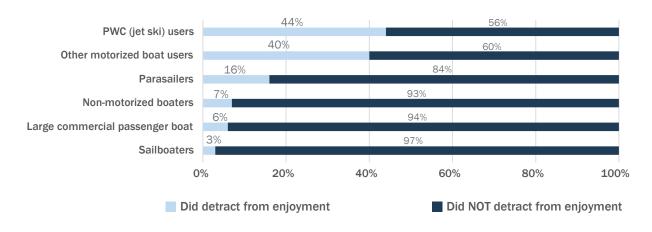
Eighty-three percent (83%) of respondents rated the job done by the Commission to protect the lake and the safety of its users as good or excellent.



Sixty-three percent (63%) of survey respondents support charging boaters a modest fee for the Boat Inspection Program.

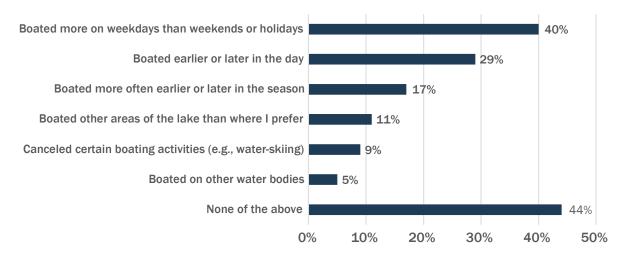


How important is this feature to you while recreating on or near Lake George?



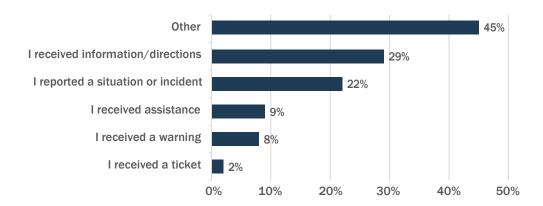
#### Figure 3.9 Recreational Behavior Shifts 2015

Did you change your plans or modify your behavior in any of the following ways because of problems you experienced on your recent visit to Lake George?



#### Figure 3.10 Types of Marine Patrol Contact

What type of contact(s) did you have with Marine Patrol?



#### **Summary of Findings**

- » The majority of respondents are seasonal visitors or residents of a second home (52%) and the remainder are evenly divided between year-round residents and day users.
- » Of respondents who register their boat on Lake George, approximately 79% hold an annual boat registration and 17% hold a temporary boat registration. The remaining 4% represent boaters that were exempt from registration or were operating a rental boat.
- » During the peak season, on average, boaters went out on Lake George for a total of 30 hours over the summer season. These trips broke out to an average of 10 boating days per year for 3 hours a day.
- » Eighty-eight percent of respondents are aware of the special rules and regulations that govern speed, engine noise, anchoring, PWC use and parasailing on Lake George.

- » Approximately one out of four respondents experienced direct contact with the Marine Patrol officers during the 2015 summer season.
- » Sixty percent of respondents report that the rules and regulations on Lake George add to the enjoyment of their experience.
- » Eight out of ten respondents rate the job done by the Commission to protect the lake and the safety of its users as good or excellent.
- » Ninety-nine percent of respondents are aware of the mandatory Boat Inspection Program that seeks to manage the introduction of invasive species to Lake George. Ninety-six percent believe that the program is important.
- » Approximately 63% of respondents support charging a modest cost to boaters to support the mandatory LGPC Boat Inspection Program.



Based on your experience, how would you rate the job the Marine Patrol officers have done during your recent visit?

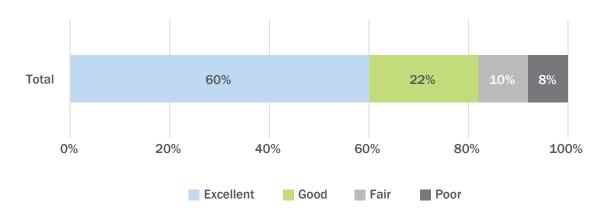
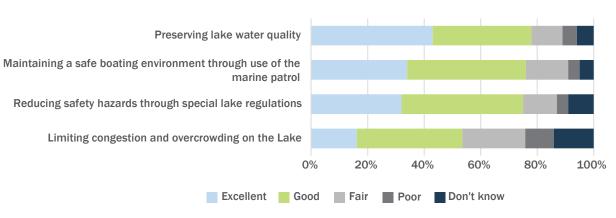
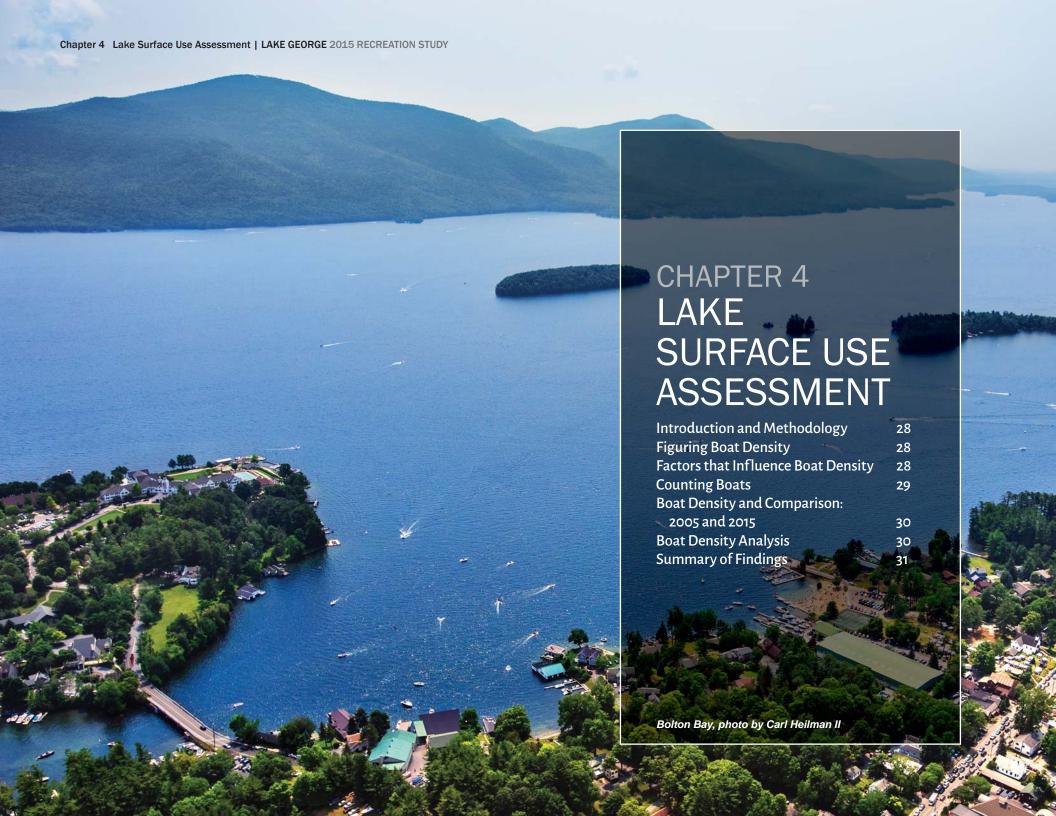


Figure 3.12 Rating the Job of the Commission

How would you rate the job the Lake George Park Commission is doing on each of the following aspects of its mission statement?





#### **Introduction and Methodology**

This Lake George Surface Use Assessment is included as a means of assessing the overall capacity of Lake George to support current and future recreational boating demands. The assessment is a mathematical calculation that measures existing boat traffic on the surface of Lake George and establishes a carrying capacity of the lake regarding existing and future boat traffic. Chapter 4 represents a summary of the full unabridged report.

The "existing boat count" analysis was arrived at by using manual boat counts and a lake wide flyover. For purposes of this analysis, Lake George was divided into three distinct segments (See Figure 4.1 Lake Segments Map):

- The north segment extends from
   Ticonderoga south to the Hague/Bolton
   Town line below Huletts Landing.
- » The middle segment lies between the Hague/ Bolton Town line in the north to the southern end of the Narrows at Montcalm Point.
- » The south segment extends from the Narrows at Montcalm Point south to Million Dollar Beach and includes the Northwest Bay.

#### **Figuring Boat Density**

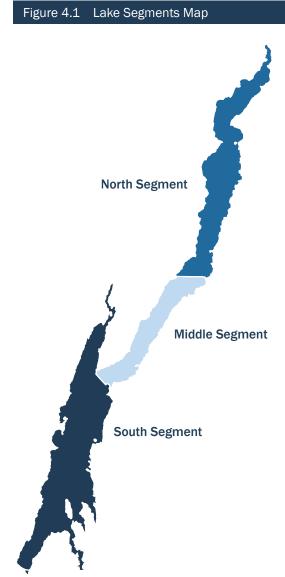
There are many different ways of figuring carrying capacity or maximum preferred boat density on lakes. When figuring the density of

Lake George in 2005, the previous study used the generally accepted minimum recommended density of 6 acres per boat – which was based on standards from the New York State Office of Parks, Recreation and Historic Preservation (OPRHP).

More recent thinking and studies indicate that professional recreational planners are increasing the standards for needed acres per boat. This recreation study for the Lake George region has been developed using a generally accepted standard of 13 acres per boat. This 13 acre per boat standard accounts for the mix of all boat types within a more refined definition of usable lake area which excludes the surface area 100 feet from shore, restricted speed and use zones, and other areas unsuitable for motor boating. Chapter 4 highlights the results of the 2015 analysis under the 13 acres per boat standard. For comparison purposes, the analysis will also consider the standard of 6 acres per boat that was utilized in the 2005 Study.

#### **Factors that Influence Boat Density**

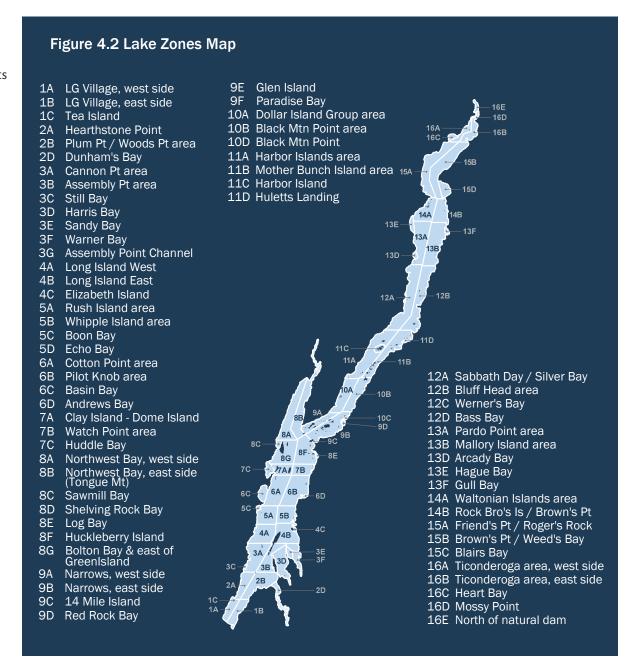
While Lake George is one lake, the three segments represent markedly different characteristics when it comes to boating – and observed and predicted boat densities for one area could never be applied to one of the other areas. That is why each segment is considered a distinct "system" for this analysis. We recognize however, that there are certain interconnections that drive a certain level of cross-segment traffic, which we have considered in the overall assessment.



#### **Counting Boats**

A series of boat counts was conducted during the summer of 2015 to capture the peak number of boats on Lake George. This activity included a helicopter flyover and on-lake boat counts of specific areas. The helicopter flyover was conducted by pilot Bruce Mowery of North Country Heliflite over the Fourth of July weekend. Photographer Carl Heilman II of Wild Visions, Inc. captured the number and distribution of boats on Lake George on Sunday, July 5 in fair weather. These aerial photos provided a snapshot of all boat traffic on the lake over the period of one hour.

Recognizing that there were other days of the season that also represent peak use, 16 individual volunteers from all parts of the lake were recruited to collect boat counts in specific lake zones on four good weather Saturdays. Volunteers manually counted boats on July 25, August 1, August 15, and August 29. Protocol included counting the number of boats underway or anchored by boat type in as many of the individual 67 zones. The data collected was compared to the flyover data and the highest numbers were used for the analysis. Figure 4.2 indicates the same 67 lake zones used for both the 2005 and 2015 studies.



## Boat Density Comparison: 2005 and 2015

A comparison of 2005 to 2015 maximum boat counts was completed using common acreage and area calculations. The analysis illustrates those zones that were listed as overcapacity in the 2005 study along with those that demonstrated significant change. It shows that aside from a handful of select zones, the lake as a whole appears to be operating with slightly improved boat densities. The analysis only compared those zones that were identified in 2005 as being over capacity and other zones that exhibited a no figure change in capacity from 2005 to 2015 (See Figure 4.2 Lake Zones Map). The capacity for this comparison uses the 6 acres per boat threshold that was calculated in the 2005 study and is based upon the total number of boats counted.

On the whole, the boat counts in many areas of Lake George are fairly consistent with those generated in the 2005 Study. However, comparing the maximum count totals in 2005 to the maximum count totals in 2015, there is evidence of an overall shift for 2015 Maximum Count Data with Comparison to 2005 Data. The average overall boat count per zone in 2005 was 36, while in 2015 the average declined to approximately 29.

Some zones that experienced congestion in 2005 (primarily around population centers and areas with several marinas) continue to do so at what appears to be about the same or in some cases, somewhat lower density. The drop in the numbers of PWCs,

Figure 4.3 Summary of Boats and Density on Lake George								
Parameter	Entire Lake	North Segment	Middle Segment	South Segment				
Lake Area (acres)	28,524	10,301	5,351	12,872				
Usable Lake Area (acres)	25,389	9,265	4,643	11,481				
Estimated Potential Peak Number of Boats*	2,314	830	41	1,443				
Optimal Number of Boats (13 acres per)	1,953	713	357	883				
2015 Carrying Capacity Based on Actual Peak Counts	62%	35%	48%	88%				

<sup>\*</sup> Projected based upon typical use at marinas, private docks, resorts, and public launches on peak days.

particularly in the south area, has noticeably reduced the congestion. The 2005 study indicated that of all boats on the lake, approximately 75% were motor boats and PWCs, while the data collected since that time suggests this figure dropped to 65%. Several factors may be involved in this change. The decrease in PWCs and a proportional increase in non-motorized water craft (kayaks, stand-up paddle boards, etc.) would likely be contributing factors.

## **Boat Density Analysis**

A second analysis of boat carrying capacity utilizes the 13 acre per boat standard and 2015 boat count

data. Figure 4.3 summarizes the findings by lake section (see Figure 4.1 for map of segments). The 2015 assessment includes the use of density factors such as peak boat usage rates and usable lake area (ULA) which excludes restricted use and speed limit zones. Figure 4.4 provides a targeted breakdown of lake zones with the estimated capacity within the usable lake area (ULA). The number of acres column is represented by area within the ULA which excludes near-shore areas and 5 mph zones. The number of boats column represents the highest number of boats counted in the flyover on July 5th or in spot boat counts throughout the summer.

Figure 4.4 Summary of Findings by Lake Zone								
Zone		Number of Acres	Number of Boats	Boat Density Acres/Boat	Percent of Capacity			
1A	LG Village West	75	17	4.4	290%			
1B	LG Village East	376	9	41.8	31%			
1A/1B	Combined	451	26	17.3	75%			
2A	Hearthstone	346	15	23.1	56%			
2B	Diamond Island E.	843	38	22.2	59%			
3B	Assembly Point	513	93	5.5	238%			
7A	Dome Is./Clay Is.	365	125	2.9	448%			
7C	Huddle Bay	73	36	2.0	650%			
8G	Bolton Bay Green Is.	689	41	16.8	77%			
7A/7C/80	G Combined	1,127	202	5.6	232%			
9B	Narrows East Side	702	42	16.7	78%			
12B	Bluff Head Area	1,169	35	33.4	39%			
15A	Friends Pt./Rogers Slide	1,095	38	28.9	45%			

## **Summary of Findings**

## Boat Counts, Origin and Distribution

» On the afternoon of July 5, a total of 913 boats were observed on Lake George from the air during the flyover. Distributed over the entire lake (25,389 usable lake acres), this equates to a boat density of approximately 28 acres per boat and 46% of carrying capacity. However, this assumes that all boats are distributed evenly throughout the lake, which is not the case. Data shows that several areas of the lake were seen as operating well under optimal capacity and others can be well over optimal capacity on any given day.

» Based on the observed distribution patterns, the south segment appears to host (berth or launch) approximately 68% of the boat traffic on a given peak day, while generating approximately 62% of the overall boat traffic. The north segment appears to host approximately 20% of the boat traffic, while generating approximately 35%. The middle segment appears to host approximately 12% of the boat traffic, while generating approximately 3%. This suggests a higher movement from north to south than from south to north, although travel patterns vary widely on the lake.

#### **Boat Density**

- » Lake George appears to be operating at an overall boat density of much as it was at the time of the 2005 study. The north and middle segments continue to operate well below capacity during peak use days.
- » The south segment consistently supports roughly 65% of the overall boat traffic on the lake. The findings suggest that during peak use, the southern-most zone is potentially operating at or above the recommended boat density threshold of 13 acres per boat. The extensive 5 mph zone on the west side serves to concentrate the freely moving boats in predominantly north/south movements nearer the center of the lake in that area. A contributor to boat density in this area is the new public boat launch at Million Dollar Beach, which launched the highest number of boats lakewide in 2015.
- » The near-shore zones off Bolton Landing are some of the busiest on Lake George, south of

the Sagamore Resort, with more than double the optimum density using maximum peak day counts (13 acres per boat), slightly more than the optimum number using the July 5 flyover, and slightly above the optimum density threshold using the 2005 criteria of 6 acres per boat. Regardless of the standard, the statistics show that the area is likely to be near or possibly exceed its optimal boating density during peak use days.

#### **Boat Anchoring Patterns**

- » Zones 8D Shelving Rock and 8E Log Bay continue to be focal points for boat clusters, as seen by the 118 boats observed in the approximately 15 acres of lake surface area. These peak counts, however, were lower than that seen in the 2005 study when the area was identified as "exceeding carrying capacity".
- » Buoys installed in Sandy Bay appear to be effective in maintaining a reasonable and safe boat density. The buoys are distributed over a surface area of approximately 12 acres, indicating a stationary boat density of approximately 0.25 acres per boat which is approximately one-half that observed at Shelving Rock Bay and Log Bay.

## **Future Boat Density Considerations**

» Based on current trends, an approximate 35% increase in the number of docks is possible

over the next 20 years. Also, up to 2,693 new moorings are possible in the same time period. Such increases have the potential to add 1,873 boats lakewide which could result in an overall increase of 18% more boats on Lake George.

### **Detailed Bay Analysis**

A detailed analysis of eight specific bay areas on Lake George was completed and is reported online in the Full Unabridged Report. The bays included many that were flagged in the 2005 Recreation Study and reported as bays of concern in terms of the potential for conflicts of use and overcrowding. According to the Lake Surface Use Assessment conducted in 2015, these bays remain areas of high interest for the Commission.

Since the Commissions goal is to make boating on Lake George as safe as possible, this report takes a detailed survey of the following areas: Lake George Village Waters, Dunham's Bay, Harris Bay, Warner Bay, Basin Bay, Huddle Bay, Bolton Bay, and Sawmill Bay. This information will give the Commission a deeper understanding of surface use issues on the lake and whether future changes in the intensity and/or type of surface use in these areas can be safely accommodated.

The Detailed Bay Analysis specifically considers physical factors including the overall shape and depth of the bay; surface use conditions such as the presence of special speed zones, buoys





Boat density in individual bay areas with increasing or potential new boat traffic should be carefully evaluated based upon current boat traffic patterns, enforcement trends, and natural and social environmental factors.

and shoals or sand bars; shoreline conditions such as the distribution of land uses on shore, the presence of marinas and resorts, and public access areas; trends in Marine Patrol violations; average number of launches; and the number of boats per acre on high use days.

The Detailed Bay Analysis also considers boat density which can be described as the number of boats per acre in any given area. The number of boats per acre is a general rather than a specific finding.

Boat carrying capacity is an expression of a maximum number of boats per acre in a given area. Theoretically, any number of boats above a maximum could potentially result in a negative impact on the quality of experience and level of safety for the individual boater.

Two issues should be considered when working with boat density and lake carrying capacity. First, boats are never distributed evenly across the water, and more typically on Lake George, drive in north-south, east-west or the reverse patterns. In bays particularly, boats are on their way in or on their way out - they appear in the landscape for a short time and then are gone to their destination. In the open lake areas there are other more random boat traffic patterns that occur from tubing and other water sports. The general rule is the faster a boat travels on a water body, the more acres per boat are needed to allow for safe maneuverability.

Recreational standards do not typically suggest minimum boat densities for bays that have speed limits, but do address the activity of fishing and suggest a standard of 10 acres per boat (Jackson et. al., 1989). This may be an applicable boat density standard for many bays on Lake George however boat traffic in individual bays is influenced by a variety of environmental and social factors. Boat density in individual bay areas with increasing or potential new boat traffic should be carefully evaluated based upon current boat traffic patterns, enforcement trends, and natural and social environmental factors.

The second consideration is that the number of boats counted in the flyover and by on-lake volunteers represent only a snapshot in time. The number of boats in any one area can fluctuate widely depending on the time of the season, time of the week, and time of the day. Even during the period of a full hour of observation, boat activity in any single bay will experience wide swings in the number and concentration of boats. The trends are dependent on the ebb and flow of rental boat traffic, marina service stops and, to a large degree, the weather. These variables could account for the differences between the boat counts in the 2005 Recreation Study and the 2015 Recreation Study. The Detailed Bay Analysis, found in Chapter 5 of the Full Unabridged Report, should therefore be utilized as a tool for decision-making, rather than an absolute measurement of boat density or carrying capacity.



On peak use days, the north segment appears to be operating well below capacity and the middle segment and south segment are potentially operating at or above the recommended density threshold of 13 acres per boat.



## **Key Findings for Recreation Facilities**

#### **Docks**

- Dock modifications dominate the LGPC's permit activity with 353 permits issued over the past 10 years. The number nearly doubled in the last five-year period over the period of 2006 to 2010. The major permitting trend in recent years is the addition of boat lifts, canopied boat lifts and personal watercraft lifts to docks. The requests for articulating docks docks that lift in place either horizontally or almost vertically over the water is also growing.
- An analysis of land parcels around the shoreline finds a realistic potential for the addition of 737 new docks and 2,475 new moorings on the lake. This number was achieved by examining the existing dock database and potential capacity for additional docks. Such increases have the potential to add between 1,000-2,000 new boats lakewide and result in substantial increases in boat density.
- With the average of 14 new docks built per year on Lake George, the maximum shoreline build out for docks on the lake would take another 40-50 years. This assumes the same rate of new dock construction as seen over the past decade.

#### **Boats**

- Annual boat registrations rose steadily since the inception of the program in 1988. Registrations peaked in 2002 with 11,607 boat decals issued. Between 2002 and 2013, annual registrations fell a net 1,446. Registrations began to rebound in 2014-2015 with a total increase of 624 registrations, making up nearly half this loss in registrations since 2002. The level of annual registrations in 2015 was the highest since 2004 (10,832), and is back up to its traditionally higher levels.
- A similar pattern emerges for temporary registrations. These boat registrations, which are purchased on a daily or weekly basis, began decreasing from 6,027 in 2004 to 5,138 in 2015, representing a drop of more than 15%. The 2015 season rebounded with a gain of 515 registrations over the 2014 season, closer to traditional levels.
- Over the last 25-year period, the peak year for total boat registrations (annual and temporary) was 2002 with 17,752 total registrations sold. The 10-year low in the purchase of LGPC registrations occurred in 2014 at 14,908 which was on par with the total number of registrations sold in 1996. In 2015, total registrations rose to 15,923, which was still 1,829 under the highest registrations sold occurring in 2002.



- Comparing the LGPC boat registration data overall, from 2005 to 2015, the total annual boat registrations dropped by approximately 4%, and temporary registrations dropped by nearly 22%. A rebound in annual boat registrations in 2015 brought the numbers up to and slightly above the 2005 total. Temporary registrations, while also showing a marked increase in 2015, remained 10% lower than the 2005 total.
- Boat registrations on Lake George follow NYS registration trends, both of which reflect the general conditions of the economy. Downward trends in the Lake George boat registrations are less than the NYS average, suggesting that Lake George remains a high value recreational boating asset.

• Anchoring patterns are shifting on Lake George. Both single anchoring and group rafting has increased in the following areas: English Brook Delta; Basin Bay (south side); Northwest Bay (east side); Tongue Mountain (east side); Happy Family Islands; and Anthony's Nose (north side). Anchoring remains high in Shelving Rock and Log Bays and on the mooring balls of Sandy Bay as well, particularly on weekends.

#### Marinas

• There are a total of approximately 2,127 boats berthed at 115 Class A and B marinas lakewide. The majority of these boats are berthed at commercial marinas (81%) with



the remaining berthed at Class B and resort marinas. Class B Marinas are known to be widely under reported and the Commission will be addressing this issue in 2016 to better account for and register these facilities.

- The 509 total boats for rent at Class A Marinas lakewide generate another major source of boat traffic on the lake. The majority of those rental boats (approximately 67%) are berthed in the south lake area (south of the Narrows). Most of the rental boats can be found in three distinct areas: 51% are located in the town of Bolton, 25% in the town of Hague and 12% in the town/village of Lake George.
- Rental boats are much more heavily used than boats that are privately owned and seasonally berthed on Lake George. As such, small increases in rental boats can represent large increases in boat traffic on the lake. Information reported from the user survey noted that the average boater is on the lake approximately 30 hours per season. By contrast, rental boats have been reported to be on the lake an average of 3-7 days per week, averaging 6 hours per day for the season (totaling 30 hours per week). This equates to commercial rental boats being on the lake 10 to 15 times the amount of privately owned boats.
- The current trend of commercial marinas requesting shifts reducing seasonal berthing

slips and increasing rental vessels under their marina permits has the potential to significantly impact boating traffic on the lake. The Commission must evaluate these impacts individually for each request for a marina permit modification. Factors include the much higher percentage of use of rental boats, the lesser experience of the user, and general boating conditions in the lake at the location of the marina.

#### Enforcement

- A total of 6,285 Marine Patrol officer hours were logged over 232 days in 2015. Approximately 1,155 (18%) of these hours were spent assisting the LGPC's new mandatory aquatic invasive species prevention/boat inspection program. These efforts included checking and assisting at public and private launches throughout the season.
- Over the past few years there has been a significant drop in vessel noise violations on Lake George. In 2015, Marine Patrol Officers conducted 11 tests and issued 3 tickets for loud exhausts. The continued low number of tests this year shows that the Marine Patrol has done a good job in educating the public that the LGPC will exhibit zero tolerance of extremely loud boats.
- PWCs accounted for approximately 5% of the total vessels on the lake in 2015. In 2015,

out of the 171 citations issued by the Marine Patrol, 62 were issued for offenses which involved a PWC. Therefore, approximately 5% of the vessels on the lake accounted for 36% of the charges filed by the Marine Patrol. Citations written for operating a PWC without a boater's safety certificate and operating after hours make up the majority of these tickets.

## **Key Findings for Recreation Experience Perception Survey**

- A total of 977 surveys were received. Of those respondents, 428 (44%) came from boat owners on the LGPC's list of boat or dock permit holders.
- Of respondents who register their boat on Lake George, approximately 79% percent held an annual boat registration and 17% held a temporary boat registration in the 2015 season. During the peak season respondents boated on Lake George an average of 2 days per week for a period of 3 hours a day for a total of 10 days.
- Approximately 92% of survey takers responded that they were very satisfied or satisfied with their recent Lake George experience. In order of importance, respondents cited the following characteristics: clean water; enjoying the natural beauty; feeling safe while boating; not feeling crowded; exhilaration of boating; enjoying favorite water sports; and the opportunity for physical exercise.

- Eighty-eight percent of respondents are aware of the special rules and regulations that govern speed, engine noise, anchoring, PWC use and parasailing on Lake George. Approximately one out of four respondents experienced direct contact with the Marine Patrol Officers during the 2015 summer season. Sixty percent of respondents report that having the Lake George Park Commission's rules and regulations somewhat or greatly adds to their enjoyment. Eighty-three percent of respondents rate the job done by the LGPC to protect the lake and the safety of its users as good or excellent.
- Ninety-nine percent of respondents were aware of the LGPC's Boat Inspection Program that seeks to manage the introduction of invasive species to Lake George. Ninety-six percent agree that the program is very important or somewhat important and a majority (63%) of respondents support charging a modest cost to boaters to support the Mandatory Trailered Boat Inspection Program.
- The Recreational Experience Perception Survey found that even though people are generally pleased with their overall experience on Lake George, the factors that can be controlled, such as safety and crowding, show some growing concerns.

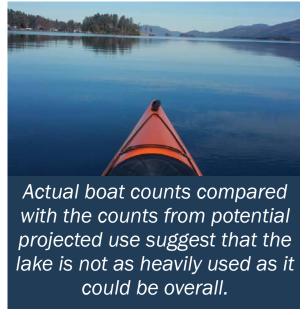


The number and distribution of boats in any one area can fluctuate widely depending on the time of the season, time of the week and day, rental boat traffic, marina service stops and the weather.

## **Key Findings for Lake Surface Assessment**

- Much as it was during the 2005 study, Lake George as a whole appears to be operating at a satisfactory level with regard to congestion. On peak use days, the north segment appears to be operating well below capacity and the middle segment and south segment are potentially operating at or above the recommended density threshold of 13 acres per boat on weekends and peak summer days.
- Actual boat counts compared with the counts from potential projected use suggest that the lake is not as heavily used as it could be overall. Projected use relates to the potential amount of boats that could be out on the lake from the existing stock of registered boats. This overall assessment includes areas of low use (north of the Narrows) and areas of moderate to relatively high use (south of the Narrows). Various popular areas on the lake can be very low intensity to fairly high intensity during busy periods (summer weekends and holidays).
- Approximately 40% of all boat traffic is generated from private properties, 40% from rental slips and rental boats at marinas and resorts, and 20% is generated from public boat launch facilities.
- Based on the observed distribution patterns, the south segment appears to host approximately (berth or launch) 68%

- of the boat traffic on a given peak day, while generating approximately 62% of the overall boat traffic. The north segment appears to host approximately 20% of the boat traffic, while generating approximately 35%. The middle segment appears to host approximately 14% of the boat traffic, while generating approximately 2%. This suggests boat movements are generally towards the middle segment from both the north and south segments consistent with visiting the camping and picnicking islands in The Narrows and Mother Bunch Island groups.
- The findings regarding Zone 1A, Lake George Village West, would suggest a significant number of boaters operate just outside the 5 mph speed zone. The extensive low-speed zone serves to concentrate boat movements in predominantly north-south traffic, resulting in a more crowded mid-lake condition. An additional contributor to this traffic pattern are new public docks in Lake George Village and the new public boat launch in operation at Million Dollar Beach, which experienced the highest launch use on the lake in 2015. When Lake George Village West Zone is blended with the East Zone, boat density falls within the recommended 13 acres per boat, however, only 9 additional boats, on average, would put these zones at or above 100% carrying capacity. These figures are representative of the maximum peak use periods, which occur on only a handful of days each summer.



- Shelving Rock Bay/Log Bay continue to be focal points for boat anchoring and rafting: 118 boats were observed operating or anchoring in the estimated 15 acres of lake surface during 2015 boat counts. The density for these anchored boats has an average density of approximately 0.13 acres per boat. The 2005 study suggested anchored or moored boats would require a safe density of approximately 0.15 acres per boat.
- Buoys installed at Sandy Bay have been effective in maintaining a reasonable and safe boat density. Fifty buoys are distributed over approximately 40-acres of surface lake area resulting in a density of 0.5-acres per boat, which 3-4 times the density observed at Shelving Rock Bay/Log Bay.

#### Conclusion

Visitors, residents, and businesses continue to recreate on Lake George with a high level of enjoyment. With the increase in dock permit applications and the recent upward trend in boat registration following an improving economy, there is the potential for increased pressure on Lake George and its resources over time. Potential impacts of an improved economy and lower gas prices could potentially result in more boats on the lake. The likely increase in future new docks may also significantly increase the number of new boats. The trend of wider boat beams and increased numbers of rental boat applications is already resulting in the increased applications for marina expansions and renovations. Potential impacts include additional boat traffic from boat rentals that can generate significantly more boat trips on the lake. The displacement of seasonal berthing slips for boat rentals may also result in an increase in the demand for Class B Marinas (seasonal berthing slips for rent at private properties).

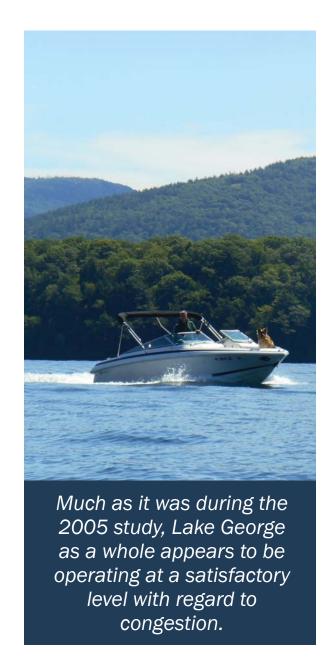
Lake George has a variety of uses and patterns when it comes to boating. Lake George's surface must be able to safely balance the passage of five very large tour boats, multiple parasail operations, fleets of rental boats, and movements of private craft from public docks and public launches, as well as accommodate non-motorized craft and anglers. Many of these operations are

concentrated in the southern end of Lake George. This diversity of boat types and recreational use requires a more careful consideration of boat density as it relates to boats per acre.

Lake George is also a tale of two lakes. The trend of group rafting continues to be extremely popular with Lake George boaters while the beauty and tranquility of boating on the lake is also a highly valued experience. While the north and middle areas of the lake appear to be operating under capacity during peak use days, the southern areas of Lake George consistently supports nearly 65% of the overall boat traffic on Lake George.

The Recreational Experience Perception Survey found that even though people are generally very pleased with their overall experience on Lake George, the factors that can be controlled, such as safety and crowding, show some growing concerns. It is important for the Lake George Park Commission to continually monitor marina and boating trends on the lake, so that it can provide effectively for both public safety and help ensure that Lake George is as treasured by future generations as it is today.

Please note that the Full Unabridged Report for the 2015 Recreation Study can be found on the LGPC website at: www.lgpc.state.ny.us



LAKE GEORGE 2015 RECREATION STUDY



# Lake George Park Commission

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