

# Recreational Fishing Creel Survey of Saratoga Lake 2015

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## ABSTRACT

A recreational boat angler survey was conducted on Saratoga Lake from May 1 to October 31, 2015. The roving-roving survey method was used to estimate angling effort and catch and harvest information. A total of 74 days were surveyed and included 683 boat interviews from 1,266 anglers who fished for 3,819 hours. The average party size interviewed was 1.9 anglers. The average trip length was 6 hours. Anglers fished Saratoga Lake for just under 20,000 hours (SE = 986) from 2,184 trips. Black bass comprised primarily of largemouth bass (*Micropterus salmoides*) and to a lesser extent smallmouth bass (*Micropterus dolomieu*) accounted for about 78% of the total estimated fishing effort. Other species were targeted less often with none accounting for over 10% of the effort. Throughout the creel survey black bass effort dominated with the exception of the month of May when black crappie (*Pomoxis nigromaculatus*) fishing was a close second. An estimated 32,400 fish were caught at a rate of 1.6 fish per angler hour. Total harvest estimate was 7,000 fish or a rate of 0.35 fish per hour. Black bass were targeted exclusively for 1,561 angler hours. Black bass total catch estimate was 20,989 fish at a rate of 1.06 fish per hour. An estimated 5% (1,100) of black bass were harvested by anglers. A large portion (85%) of legal (12 inches) sized black bass were returned to the water. Total catch for sunfish was estimated at 6,075 fish. Sunfish had the highest catch rate with 4.5 fish per hour with a harvest rate of 15%. Walleye total catch estimate was 375 fish, a catch rate of 0.02, the lowest, with an overall harvest rate of 1%. Nearly all (95%) of the estimated yellow perch (*Perca flavescens*) caught, 2060 fish, were harvested. A total of 3,254 angler hours were recorded from interviews. Total mean catch was 1.4 fish per angler hour for targeted species by anglers. Nearly 45% of anglers interviewed were very satisfied with the Saratoga Lake fishery, giving it an overall rating of 81% satisfaction.

## INTRODUCTION

Saratoga Lake located southeast of Saratoga Springs, New York is the largest lake contained entirely in Saratoga County, at 3,762 surface acres (Figure 1). It is a moderately shallow, eutrophic lake with a mean depth of 25 feet and maximum depth of 96 feet. The watershed is 210.04 square miles (Aulenbach et al. 1980). Its main tributary, Kayaderosseras Creek, drains 186.54 square miles of Saratoga County. The outlet of Saratoga Lake is Fish Creek which is a tributary to the Hudson River. Public access is limited, due to a majority of the shoreline being privately owned. The Office of Parks, Recreation and Historic Preservation operates a public boat launch off State Route 9P at the head of Fish Creek that is open year-round. Various marinas on the lake also provide boat launching for a fee.

Saratoga Lake is in close proximity to large population areas in one of the fastest growing counties of the state. It is one of most fished water in the state with an estimated 201,385 angler days of effort (Duda et al. 2019), and it has a statewide reputation as a quality black bass and sunfish water. Within DEC Region 5, Saratoga Lake is a highly productive warm water system which contrasts significantly to the nutrient deficient high elevation trout waters found in the Adirondack Park and surrounding waters of the region. Because of its popularity and importance as a high quality warmwater fishery and the need to evaluate management actions, directly assessing the fishery by gathering angler effort, catch and harvest information via a creel survey was warranted.

Saratoga Lake provides one of the most popular fisheries in New York State, ranking 15<sup>th</sup> in overall number of angler days (Duda et al. 2019). The lake is managed for its warmwater fishery, comprised primarily of largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreum*), yellow perch (*Perca flavescens*), northern pike (*Esox lucius*), chain pickerel (*Esox niger*), black crappie (*Pomoxis nigromaculatus*), redbreast sunfish (*Lepomis auritus*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), rock bass (*Ambloplites rupestris*) and brown bullhead (*Amerius nebulosus*).

Sunfish and walleye are intensively managed in Saratoga Lake. Bluegill, pumpkinseed and redbreast sunfish have a combined daily creel limit of 15 fish. This was implemented to protect the exceptional bluegill fishery. In 1998 the 15 sunfish per day limit was implemented to deter commercial sale of sunfish from Saratoga Lake. The regulation change has not been evaluated for its effectiveness until 2015, see Fiorentino and D'Arco 2018. Walleye fry are stocked on an annual basis to support a more diverse fishery. To promote natural reproduction and protect the walleye in their spawning ground, Kayaderosseras Creek from the mouth upstream to the first railroad bridge is closed to fishing from March 16 to opening of walleye season. Little is known about the walleye fishery and thus there is a need to obtain information from anglers to appropriately manage it. Saratoga Lake is one of the most popular black bass fisheries in New York State, 59% (Duda et al. 2019). The lake has a storied reputation as a quality largemouth water and has hosted bass tournaments regularly during the summer months.

In 2015 DEC Region 5 fisheries staff conducted a fisheries survey of Saratoga Lake, which consisted of two separate efforts to collect information on the centrarchid and percid populations (Fiorentino and D'Arco 2018). A June electrofishing and gill net survey was conducted to collect information on black bass and sunfish populations, while a July gill netting effort targeted walleye. Results from the centrarchid survey indicated that the black bass fishery is in good health with an abundant, and balanced population. Sunfish were also plentiful with an excellent

size structure, which supports Saratoga Lake's reputation as an exceptional sunfish fishery. The percid survey yielded too few walleye for meaningful analysis. The yellow perch population was moderate in abundance with a good size structure.

## **METHODS**

A creel survey was conducted on Saratoga Lake from May 1 to October 31, 2015. The survey was designed to estimate angling effort, catch and harvest of fish on Saratoga Lake during the boating season. The survey consisted of boat angler counts and interviews using a roving-roving survey design (Pollack et al. 1994). No shore anglers were interviewed while conducting the survey. The following outputs were produced with emphasis on black bass:

1. Total effort
2. Total catch, harvest and legal release
3. Catch rates
4. Species targeted
5. Targeted effort and catch rates
6. Angler opinion of Saratoga Lake fishing
7. Method of fishing
8. Specific species interaction

Pollock et al. (1994) recommends a roving survey method for obtaining angling information from lakes with multiple access points. This is especially emphasized for lakes with high private development despite well-established public access sites as a considerable amount of angling originates from boats kept at private docks. Saratoga Lake meets the criteria for a roving-roving survey, thus this method was chosen. For safety reasons the boat survey required two creel agents.

### **Census Days**

Survey effort was divided into two periods: weekdays (Monday – Friday) and weekends (Saturday – Sunday). All weekend days and holidays were scheduled to be sampled along with three weekdays that were randomly selected. Surveys were conducted over a nine-hour period during a 10-hour work shift. To capture angling throughout the day, random start and end survey times were selected. AM days had start times beginning 30 minutes after sunrise and ending nine hours later. PM days had an end time at dusk, thus start times began 9 hours prior. Times were adjusted throughout the creel survey to account for changing sunrise and sunset times.

### **Survey Design and Questions**

The lake was divided into three zones. The direction travelled, North or South, between zones was chosen at random. Counts were conducted by two creel clerks twice in each zone, one AM and one PM. The first count was conducted when creel clerks reached the starting zone and immediately continued to the next zone. The counting route was completed in less than 30 minutes, and thus was considered instantaneous (Pollock, et al. 1994). A pair of 8 X 25mm binoculars aided creel clerks in distinguishing boats with people fishing from other recreational users. Once counts were completed, angler interviews were conducted by boat in each zone. Clerks were instructed to intercept as many boats as possible during the allotted time. The date,

interview time, and zone were recorded. Interview questions included: number in party, home zip code, previously interviewed, time beginning and end fishing, trip complete, target species, species caught, number caught, number legal size released, and number kept (Appendix 1). Six additional questions, some with multiple parts, were asked of anglers on their first interview by creel clerks. These questions were not asked to anglers that had multiple interviews, only on the first interview. The questions were asked to collect data on the anglers' interpretation of the quality of the fishery and for more information on specific species. Surveys were not conducted during hazardous weather conditions.

## Data Analysis

Data was recorded on sheets in the field and were later entered into an Excel file. Using R scripts, the data were tabulated by month, weekend/weekday daytime for effort, catch and harvest estimates. Catch and harvest rates were further sorted by fish species. Effort estimate was calculated with the following equation:

$$(1) \quad E = I \times T$$

where  $I$  is the mean of the two instantaneous counts of boats for that day and  $T$  is the fishing hours for that day. The daily mean number of anglers from interviews per boat for each day was used to determine daily effort as angler-hours.

Since interviews from a boat roving survey are mostly incomplete trips, a mean of the ratios calculation is used. Trips less than 0.5 hours were ignored to eliminate the potential bias from short trips (Pollock, et al. 1994). Catch rate was calculated as:

$$(2) \quad R_1 = \frac{\sum_{i=1}^n ci/Li}{n}$$

where  $ci$  is the catch for the  $i$ th sampling unit,  $Li$  is the length of the fishing trip at the time of the interview, and  $n$  is the number of sampling units in the sample.

Catch estimate was calculated by:

$$(3) \quad C = E \times R_1$$

where  $R_1$  is the mean of the ratio from equation (2). Harvest estimate was calculated using the same rate estimators as using creel fish and equation (3). Standard errors were calculated as described in Pollock, et al. (1994).

Also, total catch and harvest rates were calculated by species from interview data. Although anglers were asked separately about catching largemouth and smallmouth bass, so few smallmouth bass were caught that all bass were calculated together as black bass. The 2015 centrarchid survey of Saratoga Lake supports this finding (Fiorentino and D'Arco 2018).

## RESULTS

### Interview Statistics

A total of 74 days were surveyed from May 1 to October 31, 2015. Creel agents conducted 683 interviews that included 1,266 anglers who fished for 3,819 hours (Figure 2). The average party size interviewed was 1.9 anglers as calculated by the mean of the daily counts. The average

incomplete fishing trip was 6 hours. Since a roving-roving survey was conducted, very few completed trips were recorded (3.4%). The average length for completed trips was 3.05 hours. A majority of these completed trips were data collected from a single bass fishing tournament that by design only ran for two hours on weekend nights. Of interviewed anglers, 44.5% were targeting or fishing for specifically black bass, followed by anything (32.3%) and crappie (6.8%) (Table 1). Zip code data collected revealed that 91.5% of anglers interviewed lived in New York State. Of those, 40.9% were Saratoga County residents. Only 8.5% of anglers interviewed were from outside New York State, the highest percentage originating from the state of New Jersey at 37.0%.

## **Effort**

Saratoga Lake anglers fished for approximately 20,000 hours (SE = 986) during 2,184 trips (Table 2). The greatest fishing effort was during the month of June. Effort decreased slightly during July and August with a steep drop in September. Black bass accounted for about 78% of the total estimated fishing effort (Table 3). Other species were less frequently targeted, and none accounted for more than 10% of the estimated effort. Crappie (7.7%) was the only other species above 5% effort with a vast majority of the effort occurring in May.

## **Catch, Harvest and Release Estimates**

An estimated 32,400 fish were caught at a rate of 1.6 fish per angler hour on Saratoga Lake. Total estimated harvest of all species was 7,000 fish with a harvest rate of 0.35 fish per hour (Table 4). The total and targeted black bass catch rates were 1.06 per hour and 1.20 per hour, respectively, with a total estimated catch of 20,989 fish. Black bass were the only species with a total catch rate above 0.5 fish per hour. The harvest rate was 0.06 fish per hour, with a total harvest of 1,105 bass (5% of the total catch).

The total and targeted sunfish catch rates were 0.31 per hour and 4.52 per hour, respectively, with a total estimated catch of 6,075 fish. Sunfish had the second highest harvest rate at 15% with a total harvest of 2,888 fish. Walleye total and targeted catch rates were 0.02 per hour and 0.34 per hour, respectively, with a total estimated catch of 375 fish, accounting for only 1% of the total harvest. Nearly all (95%) of yellow perch caught, 2,060 fish, were harvested. August had the highest catch rate with 1.9 fish per hour, due primarily to high sunfish catches.

A total of 3,254 exclusive angler hours were recorded from interviews (Table 5). Black bass were the most targeted species with 1,561 angler hours documented, followed by anglers targeting anything with 1,311 angler hours. Total mean catch per angler hour was 1.4 (Table 6).

## **Interview Questions**

Most anglers (57%) had not fished for black bass during the spring catch and release season on any New York water, and a similar number (54%) had not fished for bass during the spring season on Saratoga Lake (Figure 3). Anglers mostly responded “yes” to having fished for walleye during the season and catching them (Figures 4). When asked, 57% of anglers had caught walleye while fishing for other game fish on Saratoga Lake. A majority of anglers responded yes when questioned about fishing for and catching northern pike on Saratoga Lake (Figure 5). A vast majority of anglers choose to fish with artificial lures, but when using natural baits worms were the most frequently selected choice (Figures 6 and 7). Nearly 75% of anglers

interviewed were very satisfied with fishing on Saratoga Lake, 218 total responses. The overall satisfaction rating of the Saratoga Lake fishery was 81% when averaged (Figure 8).

## **DISCUSSION**

The Saratoga Lake creel survey from May 1 to October 31, 2015, estimated a total of 19,882 angler hours from 2,184 angler boat trips. Saratoga Lake has long been known as a destination for black bass angling and is recognized as a top New York State fishing water (Duda et al. 2019). The data collected during the creel survey supported the idea that Saratoga Lake is a bass centric fishery. This was also supported by the results from the 2015 NYS DEC survey of the fishery (Fiorentino and D'Arco 2018). Both of these investigations were conducted to collect specific use and fishery information because of the importance of the lake and fishery in New York State.

### **Effort**

When comparing the angling effort on Saratoga Lake to other New York State waters that have had creel surveys conducted on them there are some interesting findings. Saratoga Lake had the lowest angler hours per acre (5.3) for daytime boat effort (Table 7). Prospect Park Lake (Cohen 2016) had the highest effort by far with over 300 angler hours per acre, from shore anglers fishing a pond in New York City. Saratoga Lake was second to Oneida Lake (Krueger 2009) for lowest trips per acre, while Prospect Park Lake had the highest in 2001 (Van Maaren 2003), the 2014 trips per acre are unavailable. Low angling effort on Saratoga Lake is likely due to extremely high non-angling recreational use from June through August. Although creel clerks did not count non-angling boats their estimate was that at times there was a 10:1 ratio of recreational boaters to anglers. This amount of boat traffic may have significantly impacted the ability and pleasure of anglers on the lake. Also, weekend rowing regattas utilizing the public boat launch in the spring and fall severely restrict access to non-resident anglers. According to creel clerks this deterred numerous anglers from fishing Saratoga Lake. These other recreational uses impacted angling on weekends which is confirmed by greater fishing pressure during the weekdays compared to the weekends over the angling season. The months of May, and September to a lesser degree, had more weekend effort, probably due to local schools and colleges being back in session and cooler water temperatures, reducing other recreational activities.

Black bass received the most angler effort on the lake over all other species by far. Anglers targeting black bass fished an estimated 15,409 hours, almost 10 times greater than crappie which had the second highest effort, 95% of which was from May alone. A surprisingly low amount of effort was directed towards sunfish, especially since Saratoga Lake is known for large sunfish and has a special regulation for those species. NYS DEC has long considered Saratoga Lake one of its top largemouth bass and sunfish fisheries.

An interesting finding of this creel when looking at the effort for black bass and “anything” is the impact of bass fishing tournament participants. Creel agents became familiar with tournament anglers over the course of the study and found that these anglers tend to fish longer hours than anyone else. Those targeting “anything” fish for the shortest amount of time.



## **Catch, Harvest and Release**

An estimated 21,000 black bass were caught, making up more than half the total estimated catch (Figure 9). This estimate of black bass is a good indicator of a strong fishery. Sunfish had the second highest catch estimate of 6,000 fish, far behind black bass, but again an indicator of their dominance in the lake. Saratoga Lake and Swinging Bridge had the highest estimated black bass catch rates from recent creel surveys in New York waters (Table 8). These rates were by far the highest being above 1 fish per angler hour while other waters were all below 0.5 bass per angler hour.

A moderate amount of fish were estimated to be harvested (21%) by anglers on Saratoga Lake. Sunfish had the highest harvest estimate with yellow perch next, comprising some 70% of the fish harvested. This may indicate a preference towards sunfish and yellow perch for consumption by anglers. The quality of the sunfish fishery appears to be one of the highest in the state. These rates support the special regulation on the number of sunfish an angler can harvest per day. Also, this may contribute to the strong bass fishery in Saratoga Lake due to the removal of larger panfish allowing for a greater number of smaller fish in the system for forage. Further, the small amount of harvest on black bass supports the theory of Saratoga Lake being a black bass dominated fishery. A high percentage of anglers return black bass to the water to be caught again, perpetuating a sustainable recreational resource. Also, interesting but understandable is the harvest rate of walleye. Very few walleye were estimated to be caught during the survey but 50% were estimated to be harvested. It has long been known by anglers that walleye are very palatable with their mild taste and firm flesh. Further reason to monitor the walleye fishery.

Although white perch have been documented in Saratoga Lake, no white perch were documented in this survey, so at least their numbers remain low.

## **Targeted Effort and Catch**

Saratoga Lake anglers primarily target black bass, but another large portion of anglers are not targeting any specific species and are looking to catch any fish. Directed effort towards other species is extremely low compared to black bass. However, targeted catch rates for sunfish were extremely high (4.5 fish per hour) relative to other recent creel surveys (Angyal 2016, Cohen 2016, Sanderson 2010, Sanderson 2009, Sanderson et al. 2009). The quality of the sunfish fishery has been recognized for many years by the NYS DEC. Interestingly, targeted effort towards sunfish was low, which could reflect the fact that it primarily attracts harvest-oriented anglers who can quickly catch their limit.

More people target and spend time fishing for black bass on Saratoga Lake than any other fish. Saratoga Lake continues to be a black bass angling destination and a top water of New York State for black bass. The high amount of black bass fishing effort reflects the lake's reputation as a high-quality bass fishing destination, which is supported by the 2015 black bass population assessment which showed abundant, balanced populations, particularly for largemouth bass (Fiorentino and D' Arco 2018). The quality of the fishery and the size of the lake make it conducive for local and regional bass tournaments, and these types of tournaments are a major component of the fishery, driving effort up

The catch rate for yellow perch was approximately equivalent to crappie but it is believed that they are heavily targeted through the ice. A better assessment of this fishery would include a

creel survey during the ice fishing season. Even so, 95% of the yellow perch caught were harvested, and thus it is an important component of the open water fishery in the lake. The crappie fishery appears to be driven by a small, but dedicated group of anglers, as creel clerks indicated that a majority of the crappie anglers were interviewed repeatedly.

Walleye and northern pike had the lowest catch rates in the survey. This is not surprising given the amount of personal communication with the public about the lack of each species in the lake. For many years the NYS DEC has taken calls on the lack of or difficulty catching walleye. These data confirm that they are difficult to catch in the lake. Successful walleye anglers had indicated to creel clerks that walleye occupy different habitats in Saratoga Lake as compared to other waters, making targeting them more difficult. This may be due to the high population of black bass that walleye compete with for resources, and so walleye may occupy alternative habitats in the lake not typical for them. Anglers have reported an increase catch rate of walleye during the ice fishing season but due to poor ice conditions creel data for ice fishing on Saratoga Lake was unable to be collected. Of interest to the NYS DEC is the high amount of angling pressure the walleye spawning run generates. Anglers along with NYS DEC law enforcement staff have requested an adjustment to the season closing date to better protect walleye as they move up Kayaderosseras Creek. This request will be addressed when regulation changes are open. Saratoga Lake provides a diverse angling opportunity in the county with walleye which is a management objective of the DEC. For both walleye and northern pike, their low catch rate agree with the 2015 fishery surveys of the lake where very few fish were captured (Fiorentino and D' Arco 2018).

### **Interview Questions**

Spring catch and release black bass fishing was an unknown angling opportunity to many interviewees, some thought creel clerks were trying to get anglers to admit to illegal fishing before the classic black bass open season date. Better informing anglers of the spring catch and release black bass season could be accomplished by posting signs at access locations and by increasing visibility of the opportunity on the DEC web site. There would be less competition with other recreational users during this season for anglers.

From the interview questions, a vast majority of anglers responded that they had fished for walleye during the season and reported catching them, even though this was not reflected in the catch results. Most anglers do not catch walleye while targeting other game fish. Creel clerks noted that many anglers are not successful in targeting walleye. Creel data collected did not support the amount of reported walleye catches. A take away from this discrepancy is that walleye angling is important on Saratoga Lake and there is a high level of interest by anglers. Walleye management will continue on Saratoga Lake due to this interest.

Many anglers target northern pike and have reported catching them. However, creel clerks remained skeptical of anglers' ability to distinguish northern pike from chain pickerel. This may be due to anglers not being familiar with identifying chain pickerel or that they are unaware of the high numbers of chain pickerel in Saratoga Lake. The 2015 NYS DEC fisheries survey of the lake found very few northern pike present in the lake which agrees with the consensus of anglers that have called into the DEC to discuss the lack of northern pike. There are no longer fishing tournaments targeting northern pike due to the lack of fish being caught and presented in past contests. Increased information on how to identify northern pike from chain pickerel may need to be made more available to the public.

Artificial lures are most often used by black bass angler which is evident from the results of the survey. The enormous number of artificial lures available to anglers is astounding. Whereas it the majority of anglers using worms may have been fishing for sunfish and yellow perch.

Overall, anglers were very satisfied with the Saratoga Lake fishery. This is most likely due to the high number of black bass anglers interviewed in the survey. As the fishery survey from 2015 indicates, Saratoga lake is one of the most bass-centric fisheries in New York. Information about the angler interpretation of a fishery is very valuable to help guide fisheries management decisions. The secondary fisheries of sunfish, yellow perch and walleye provide an opportunity for anglers to harvest fish. The exceptional size of sunfish in Saratoga Lake most likely added to the high satisfaction rating also.

## **RECOMMENDATIONS**

1. Monitoring the fishery over time will be important to protect and maintain the quality fishery and to provide population status updates to anglers. The standard protocol for sampling black bass and sunfish (Brooking et al. 2018) will be followed in 10 years. Creel information in conjunction with fisheries survey data will be used to guide management decisions to maintain a strong fishery for the future.
2. The black bass fishery should be managed under the statewide black bass regulations.
3. Walleye fry stocking should continue to help maintain the fishery. The stocking location was moved to directly into Saratoga Lake in the hopes of increasing recruitment in 2016.
4. The walleye fishery will continue to be monitored over time to gather more data on the population. A survey will be conducted in 10 years to gather information on the walleye population using the standard sampling protocol (Forney et al. 1994).
5. Fishery surveys indicate low to no reproduction of walleye, increasing the need to protect walleye while they are spawning. The closure date for the fishery should be adjusted to better protect vulnerable fish. A closure date of March 1 will be proposed.
6. Sunfish have the highest catch rate of all species on Saratoga Lake. The special regulation is working and should remain in place to prevent over harvest. The standard protocol for sampling black bass and sunfish (Brooking et al. 2018) will be followed in 10 years to monitor the fishery and to provide data to anglers.
7. Increase fish identification information on the DEC web site for northern pike and chain pickerel to reduce angler confusion between the two species.
8. Promote the early season bass fishing opportunities on Saratoga Lake and other lakes around New York State.

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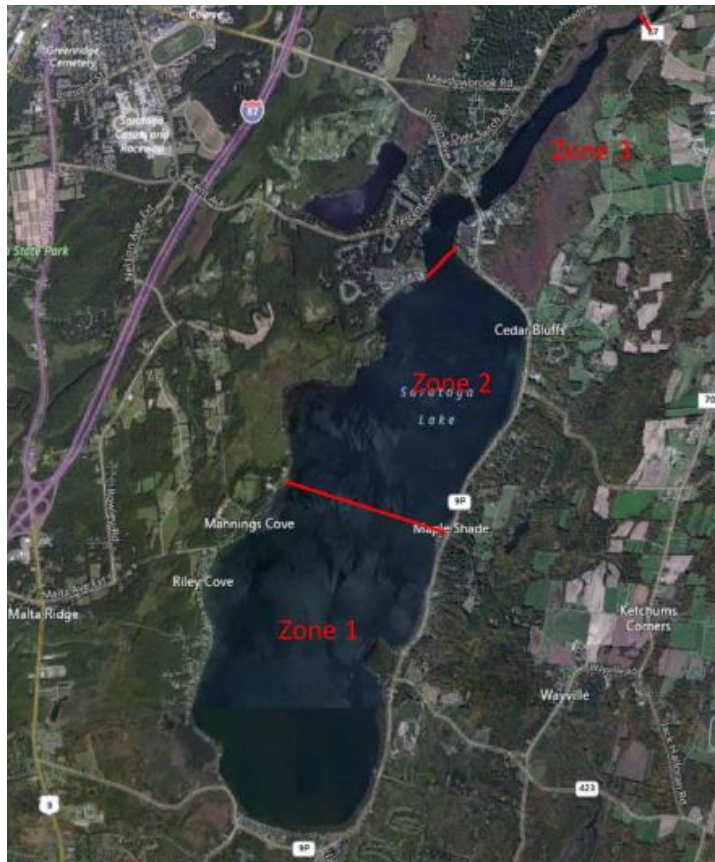


Figure 1. Saratoga Lake location map

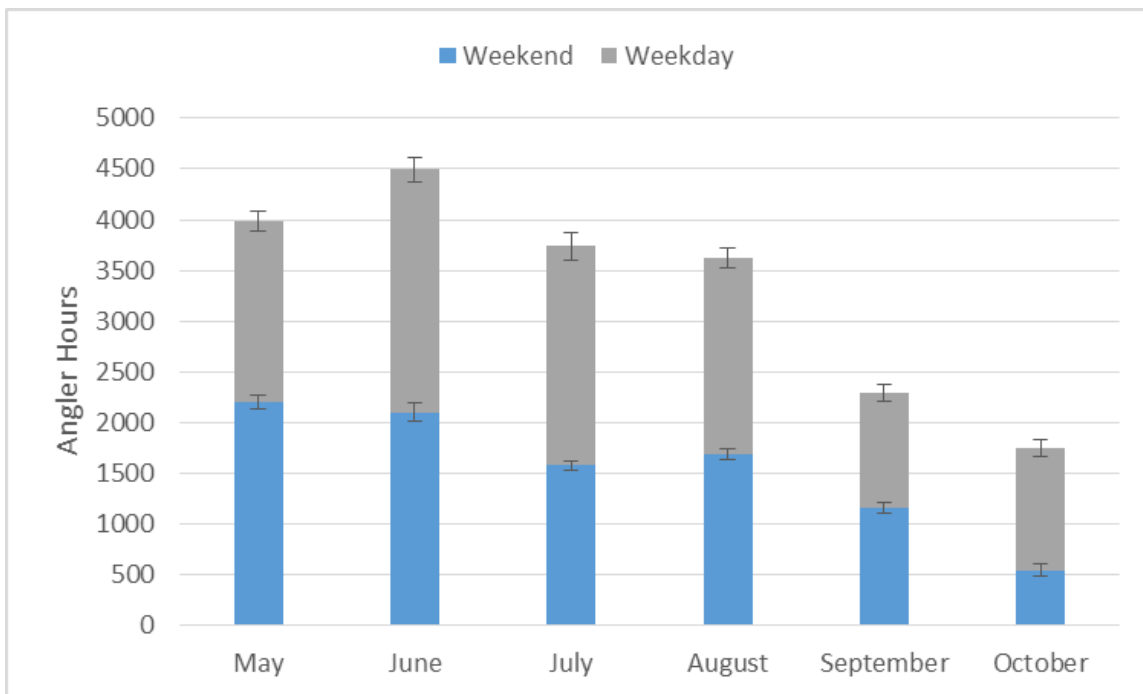


Figure 2. Estimated fishing effort (angler hours) on Saratoga Lake from May 1 to October 31, 2015.

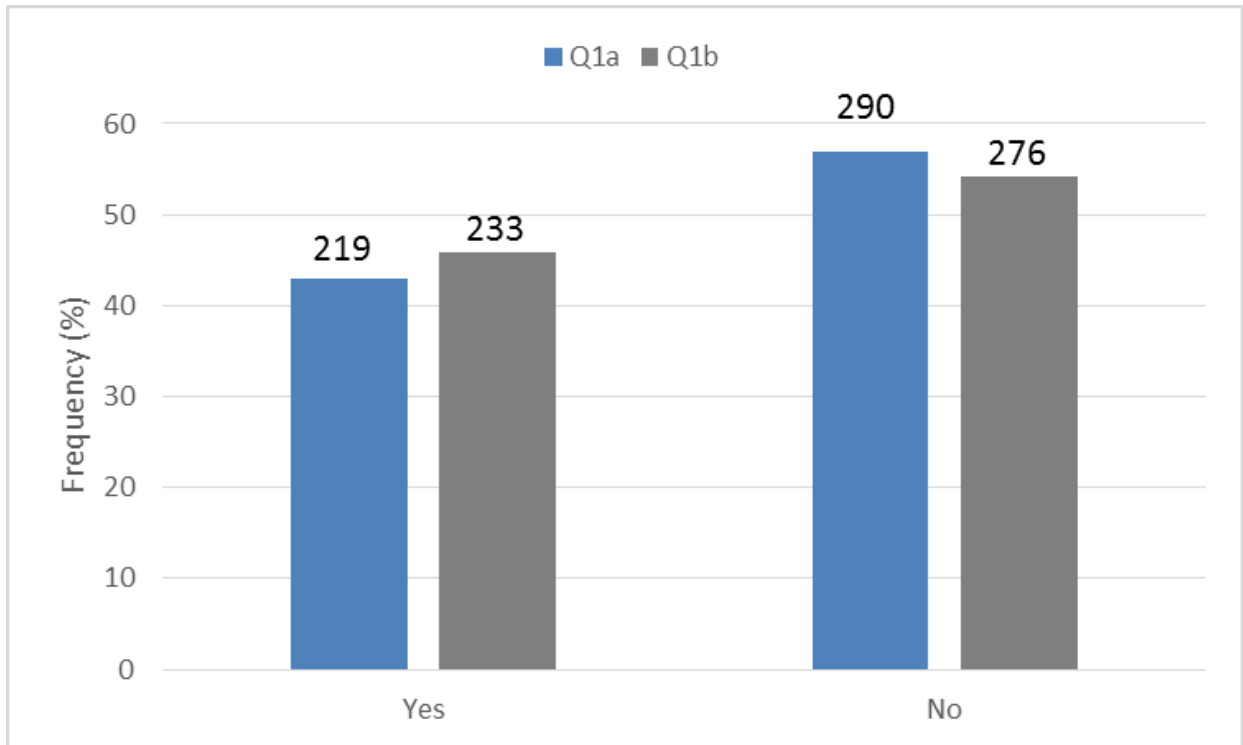


Figure 3. Frequency of responses to question 1: Have you fished for black bass during the spring catch and release season on any New York waters since the regulation changed, Have you fished the spring season for black bass on Saratoga Lake?

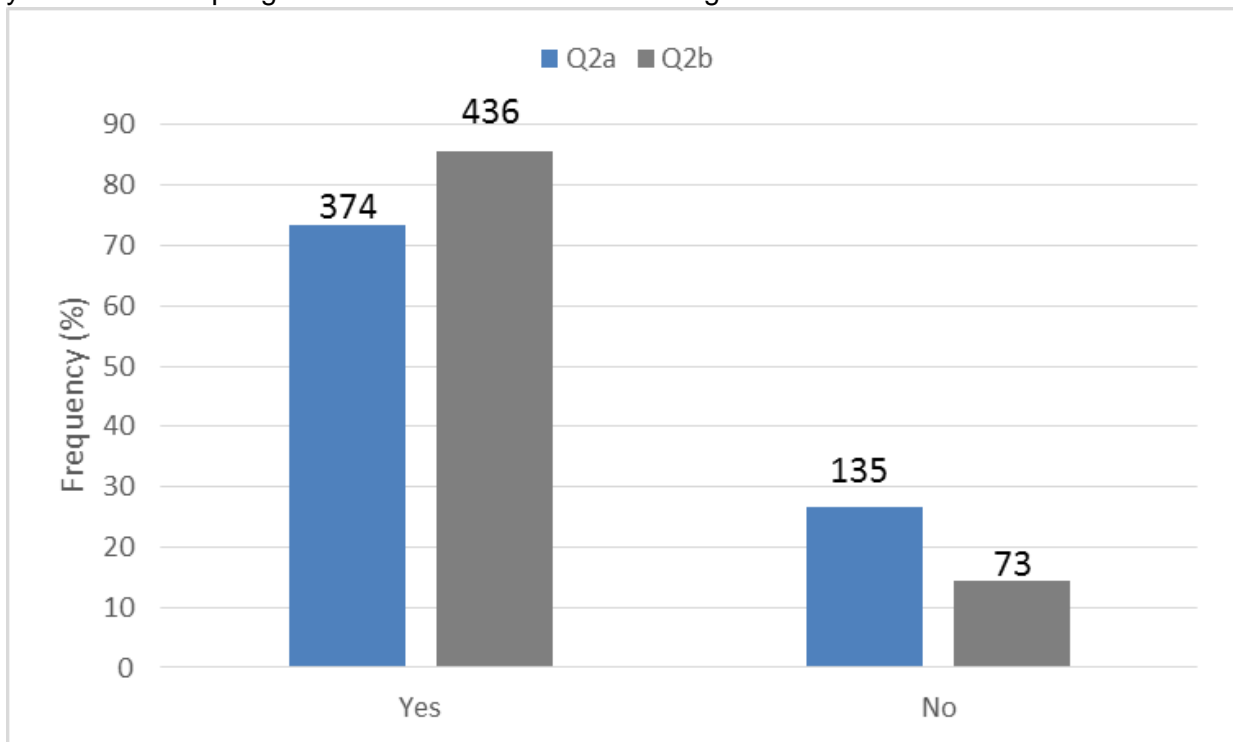


Figure 4. Frequency of responses to questions 2a and 2b: Have you fished for walleye this season on Saratoga Lake, Did you catch any?

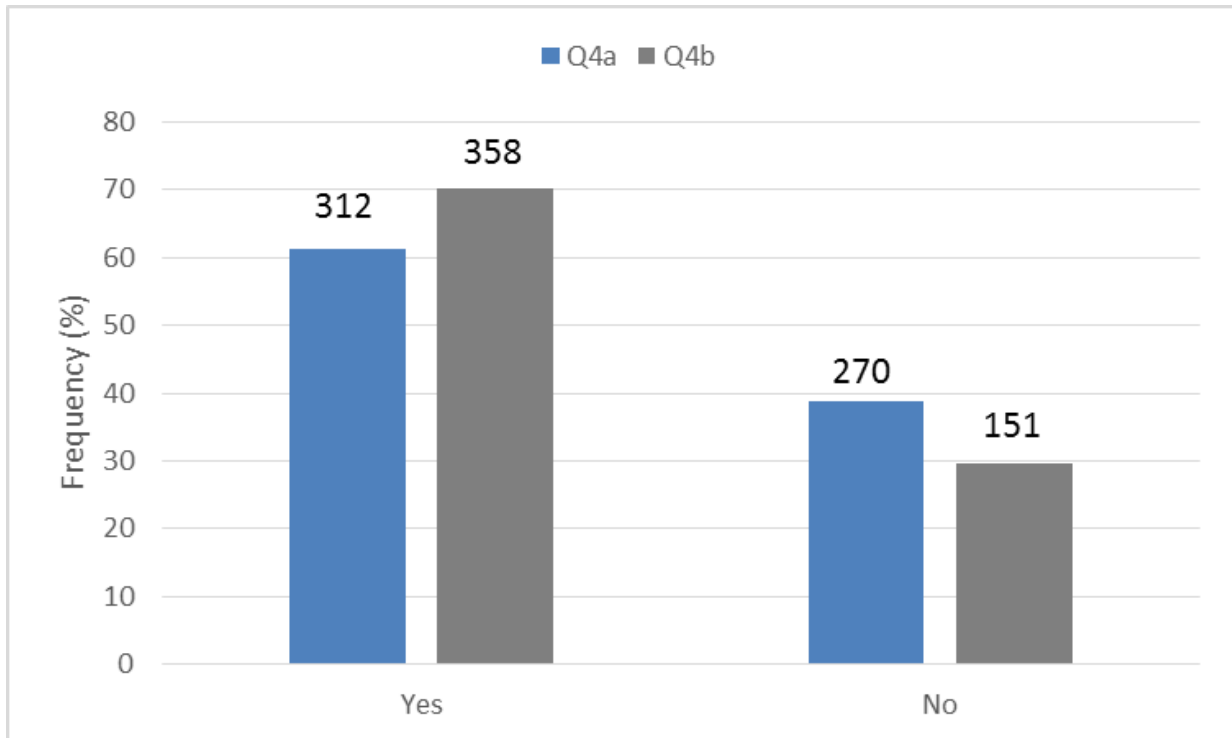


Figure 5. Frequency of responses to questions 4a and 4b: Do you fish for northern pike on Saratoga Lake, Have you caught any northern pike this season on the lake?

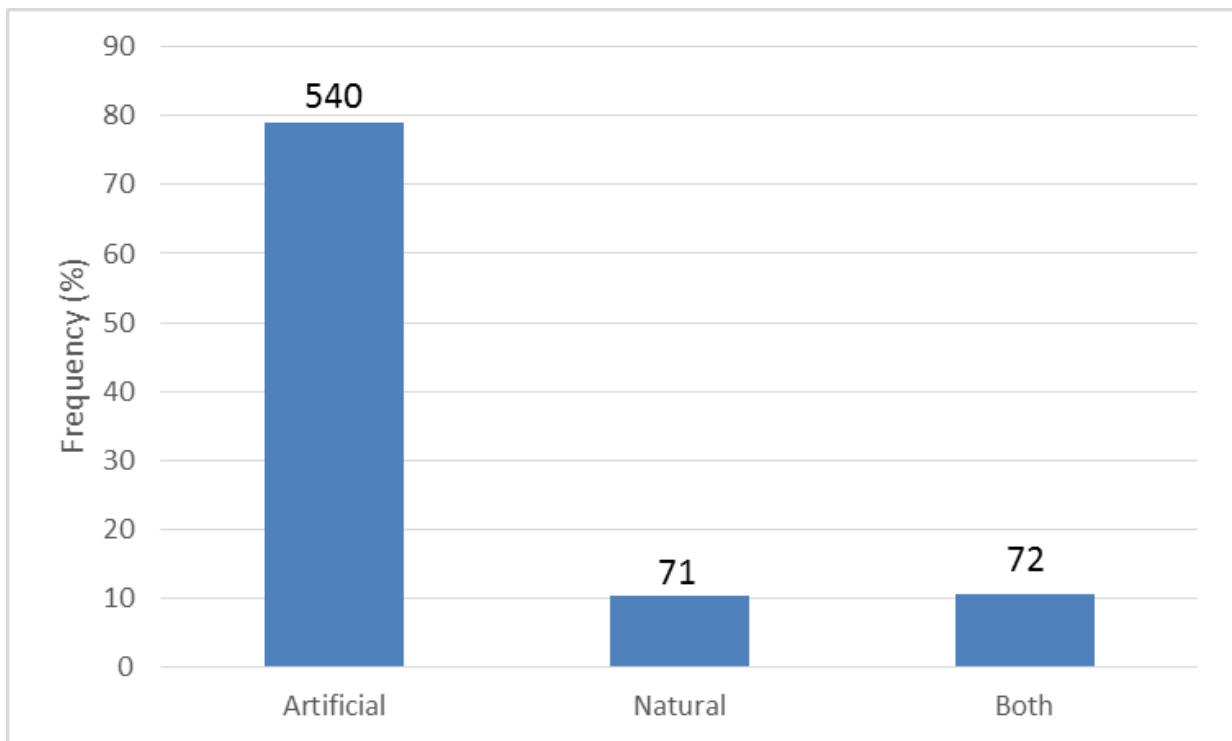


Figure 6. Frequency of responses to questions 5a: On this fishing trip, which of the following have you fished with Artificial lures or Natural baits?



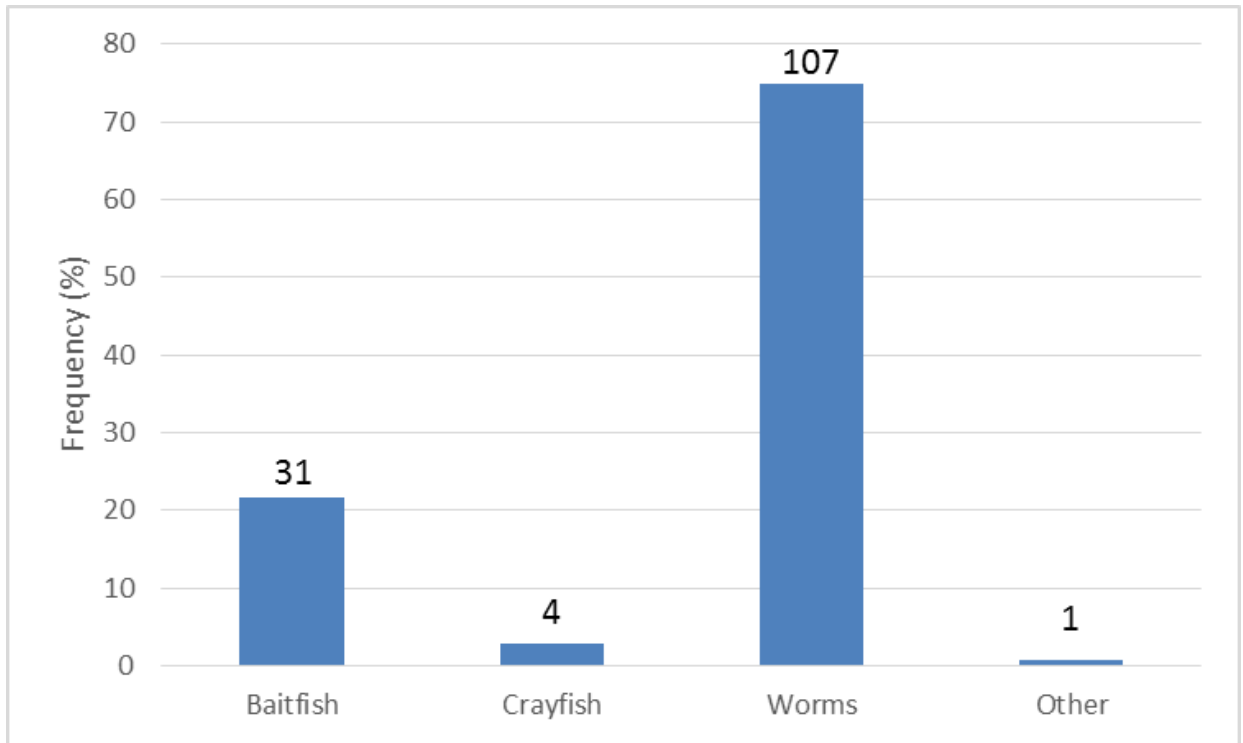


Figure 7. Frequency of responses to question 5b: If natural baits, Baitfish, Crayfish, Worms or Other?

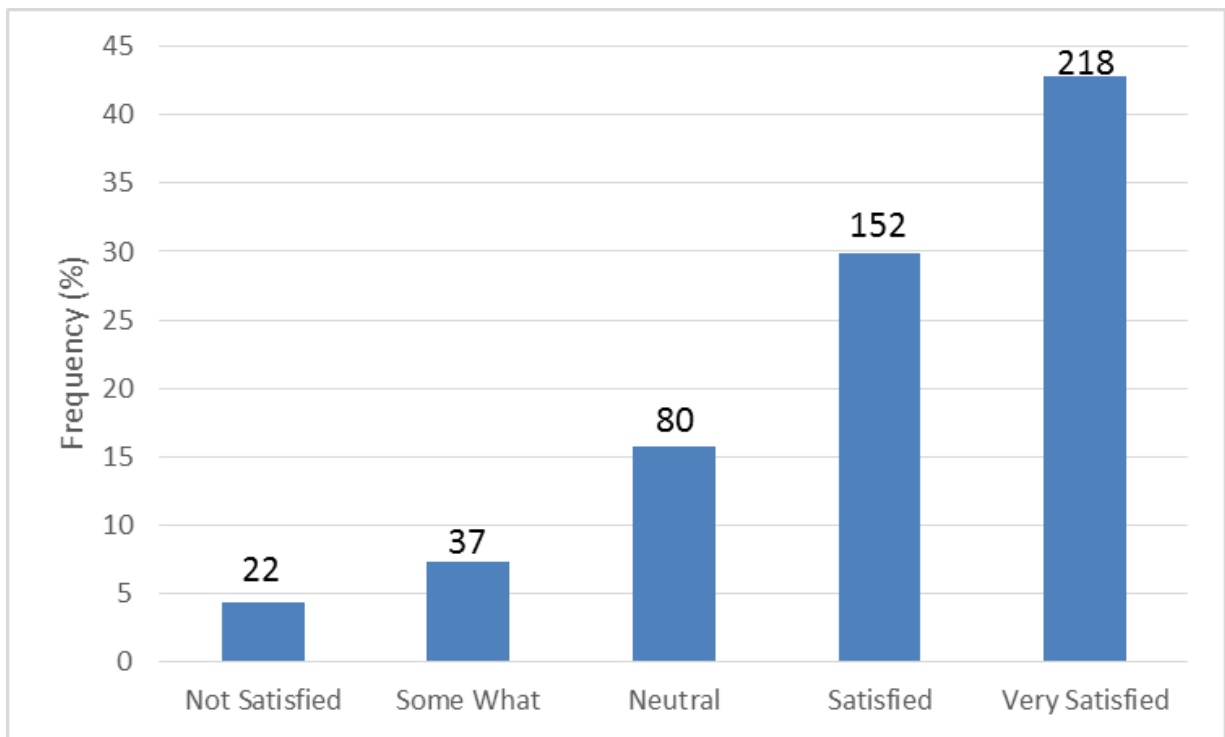


Figure 8. Frequency of responses to question 6: On a scale of 1 to 5, with 5 being very satisfied, how satisfied are you with the overall quality of fishing on Saratoga Lake?

1. Not Satisfied, 2. Some What, 3. Neutral, 4. Satisfied, 5. Very Satisfied.

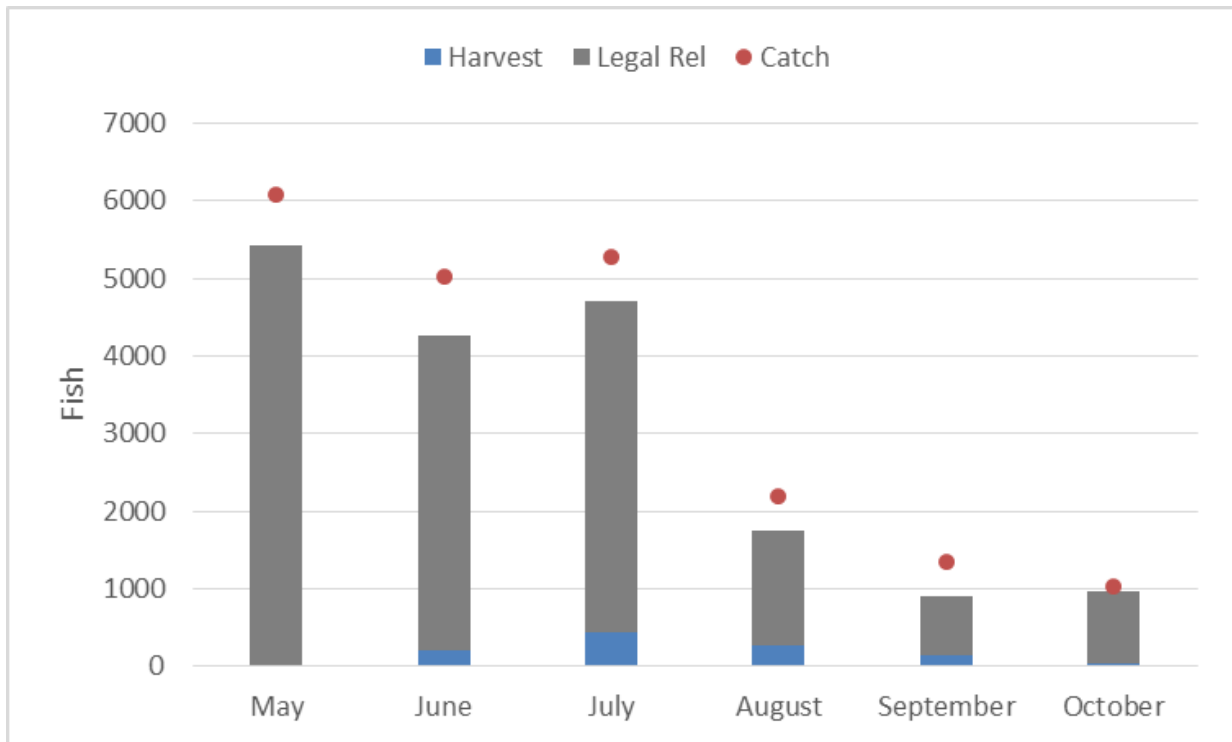


Figure 9. Estimated of total catch, harvest and legal release of black bass on Saratoga Lake from May 1 to October 31, 2015. Black bass open season is from the 3<sup>rd</sup> Saturday in June to November 30.

Table 1. Fish species targeted by anglers in Saratoga Lake from May 1 to October 31, 2015.

<b>Target</b>	<b># Anglers</b>	<b>Percent (%)</b>
Anything	251	32.3
Black Bass	346	44.53
Crappie	53	6.82
N. Pike	33	4.25
Sunfish	42	5.41
Walleye	31	3.99
Yellow Perch	21	2.7
<b>Total</b>	<b>777</b>	<b>100</b>

Table 2. Estimated fishing effort (angler hours) on Saratoga Lake from May 1 to October 31, 2015.

<b>Month</b>	<b>Weekend Days</b>		<b>Weekdays</b>		<b>Total</b>	
	<b>Effort</b>	<b>SE</b>	<b>Effort</b>	<b>SE</b>	<b>Effort</b>	<b>SE</b>
May	2,205	67.43	1,782.06	102.25	3,987.06	169.68
June	2,102.4	86.6	2,390.08	121.76	4,492.48	208.36
July	1,578.88	49.87	2,161.5	134.68	3,740.38	184.55
August	1,687.5	47.73	1,932	99.32	3,619.5	147.05
September	1,162.32	56.62	1,131.46	80.26	2,293.78	136.88
October	546.66	59.56	1,202.3	79.76	1,748.96	139.32
<b>Grand Total</b>	<b>9,282.76</b>	<b>367.81</b>	<b>10,599.4</b>	<b>618.03</b>	<b>19,882.16</b>	<b>985.84</b>

Table 3. Estimated fishing effort (angler hours) by target and month on Saratoga Lake from May 1 to October 31, 2015.

<b>Target</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>Total</b>	<b>%</b>
Anything	228.4	335.0	99.8	81.6	69.2	39.9	854.0	4.3%
Black Bass	1,769.7	3,424.3	3,479.3	3,197.3	1,993.5	1,545.0	15,409.1	77.5%
Crappie	1,474.9	32.0	31.0	0.0	0.0	0.0	1,537.9	7.7%
N. Pike	241.5	249.7	0.0	0.0	76.2	80.6	648.0	3.3%
Sunfish	60.1	167.4	0.0	80.9	0.0	0.0	308.4	1.6%
Walleye	212.4	62.9	130.3	259.6	154.9	83.5	903.7	4.5%
Yellow Perch	0.0	221.2	0.0	0.0	0.0	0.0	221.2	1.1%
<b>Total</b>	<b>3,987.1</b>	<b>4,492.5</b>	<b>3,740.4</b>	<b>3,619.5</b>	<b>2,293.8</b>	<b>1,749.0</b>	<b>19,882.2</b>	<b>100.0%</b>
<b>Percent</b>	<b>20.1%</b>	<b>22.6%</b>	<b>18.8%</b>	<b>18.2%</b>	<b>11.5%</b>	<b>8.8%</b>	<b>100.0%</b>	

Table 4. Estimated catch, harvest and legal release of total effort on Saratoga Lake from May 1 to October 31, 2015.

<b>Species</b>	<b>Catch</b>		<b>Harvest</b>		<b>Legal Release</b>	
	<b>Number</b>	<b>% total catch rate</b>	<b>% total harvest</b>	<b>Number</b>	<b>% total catch</b>	
Black Bass	20,989	1.06	0.05	16,895	0.85	
Crappie	2,062	0.10	0.04	317	0.02	
N. Pike	830	0.04	0.00	487	0.02	
Sunfish	6,075	0.31	0.15	3,188	0.52	
Walleye	375	0.02	0.50	68	0.00	
Yellow Perch	2,061	0.10	0.95	101	0.05	
<b>Total</b>	32,392	1.63	0.21	17,766	0.55	
<b>Effort</b>	19,882 hr					

Table 5. Angler trips by month on Saratoga Lake from May 1 to October 31, 2015.

<b>Target</b>	<b>Month</b>						<b>Total</b>
	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	
Anything	272	475	185	184	116	80	1,311
Black Bass	186	388	294	379	171	142	1,561
Crappie	155	4	3	-	-	-	162
N. Pike	25	28	-	-	7	7	68
Sunfish	6	19	-	10	-	-	35
Walleye	22	7	11	31	13	8	92
Yellow Perch	-	25	-	-	-	-	25
<b>Total</b>	668	945	493	603	307	237	3,254

Table 6. Mean catch per targeted effort angler hour on Saratoga Lake from May 1 to October 31, 2015.

Target	Month						Total
	May	June	July	August	September	October	
Anything	3.05	1.67	1.18	0.85	0.82	0.35	1.32
Black Bass	1.73	1.50	1.67	0.93	0.78	0.60	1.20
Crappie	1.50	2.75	0.38	-	-	-	1.55
N. Pike	0.42	0.67	-	-	0.00	0.14	0.31
Sunfish	3.71	4.00	-	5.85	-	-	4.52
Walleye	0.36	0.00	0.22	0.17	0.00	1.30	0.34
Yellow Perch	-	0.36	-	-	-	-	0.36
<b>Total</b>	1.80	1.56	0.86	1.95	0.40	0.60	1.37

Table 7. Total fishing effort and pressure estimates from New York waters. Type: 1, daytime/nighttime boat and shore effort; 2, daytime boat and shore effort; 3, daytime boat effort only; 4, shore effort only.

Water (year)	Angler hrs	Trips	Angler hrs/Acre	Trips/Acre	Type	Region	Source
Saratoga Lake (2015)	19,882	2,184	5.3	0.6	3	5	Present Survey
Prospect Park Lake (2014)	16,762	na	305	na	2	2	Cohen et al. (2016)
Prospect Park Lake (2001)	16,964	3,945	308.4	71.7	4	2	Van Maaren (2003)
Swinging Bridge (2014-15)	15,508	2,770	17.5	3.1	3	3	Angyal (2016)
Irondequoit Bay (2007-08)	96,197	23,946	58.3	14.5	1	8	Sanderson (2009)
Conesus Lake (2000-01)	60,397	12,252	17.7	3.6	1	8	Sanderson (2003)
Hemlock Lake (2005-06)	35,278	8,820	19.6	4.9	2	8	Sanderson et al. (2008)
Canadice Lake (2005-06)	26,419	9,110	40.7	14	2	8	Sanderson et al. (2008)
Oneida Lake (2007-08)	369,495	13,323	7.2	0.3	3	7	Krueger et al. (2009)

Table 8. Estimated catch rates (#/angler-hour) by species from New York waters. \* denotes reported as black bass; na = “not available”. Type: 1, daytime/nighttime boat and shore effort; 2, daytime boat and shore effort; 3, daytime boat effort only, YP = yellow perch, LMB = largemouth bass, SMB = smallmouth bass, WAE = walleye.

Water (year)	YP	LMB	SMB	WAE	Type	Region	Source
Saratoga Lake (2015)	0.1	1.06*	*	0.01	3	5	Present Survey
Prospect Park Lake (2014)	na	0.39	na	na	2	2	Cohen et al. (2016)
Prospect Park Lake (2001)	na	0.3	na	na	2	2	Van Maaren (2003)
Swinging Bridge (2014-15)	na	1.03*	*	0.09	3	3	Angyal (2016)
Irondequoit Bay (2007-08)	2.41	0.11	<0.01	<0.01	1	8	Sanderson (2009)
Conesus Lake (2000-01)	0.01	0.22	0.06	0.005	1	8	Sanderson (2003)
Hemlock Lake (2005-06)	0.01	0.08	0.08	<0.01	2	8	Sanderson et al. (2008)
Canadice Lake (2005-06)	0.02	0.05	0.06	na	2	8	Sanderson et al. (2008)
Oneida Lake (2007-08)	0.52	0.19*	*	0.19	3	7	Krueger et al. (2009)

**APPENDIX 1**

**Creel Survey Interview Form**

Date \_\_\_\_\_ day type \_\_\_\_\_ Lake Zone - 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ Interview # \_\_\_\_\_.  
 No. in party \_\_\_\_\_ Home Zip Code? \_\_\_\_\_ **Have I interviewed you before? Y \_\_\_\_\_ N \_\_\_\_\_**

**What time did you begin fishing today? Military Time \_\_\_\_\_ 0=weekend, 1=weekday**

**What time did you finish fishing today? Military Time \_\_\_\_\_**

**Is your trip completed? Y \_\_\_\_\_ N \_\_\_\_\_**

“What species were you fishing for today?” SMB \_\_\_\_\_ LMB \_\_\_\_\_ Walleye \_\_\_\_\_ N. Pike \_\_\_\_\_ Crappie  
 Sunfish \_\_\_\_\_ Yellow Perch \_\_\_\_\_ Anything \_\_\_\_\_ Other? \_\_\_\_\_.

Species	No. Caught	Legal # Released	# Kept

(1) Have you fished for black bass during the spring catch and release season on any New York waters since the regulation changed? Y \_\_\_\_\_ N \_\_\_\_\_ Have you fished the spring season for black bass on Saratoga Lake? Y \_\_\_\_\_ N \_\_\_\_\_.

(2) Have you fished for walleye this season on Saratoga Lake? Y \_\_\_\_\_ N \_\_\_\_\_. Did you catch any? Y \_\_\_\_\_ N \_\_\_\_\_

(3) Have you caught any walleye while fishing for other game fish on Saratoga Lake? Y \_\_\_\_\_ N \_\_\_\_\_.

(4) Do you fish for NOP on Saratoga Lake? Y \_\_\_\_\_ N \_\_\_\_\_. Have you caught any NOP this season on the lake? Y \_\_\_\_\_ N \_\_\_\_\_.

(5) On this fishing trip, which of the following have you fished with? Artificial lures \_\_\_\_\_ or Natural baits \_\_\_\_\_  
 If natural baits: Baitfish \_\_\_\_\_ Crayfish \_\_\_\_\_ Worms \_\_\_\_\_ Other \_\_\_\_\_.

(6) On a scale of 1 to 5, with 5 being very satisfied, how satisfied are you with the overall quality of fishing on Saratoga Lake?  
 1. Not Satisfied      2. Some What      3. Neutral      4. Satisfied      5. Very Satisfied.

Good morning (afternoon, evening), my name is \_\_\_\_\_ and I am conducting an angler survey for the DEC. We are collecting information that will be used to help manage the fish population of Saratoga Lake. Do you mind if I ask you a few questions about your fishing trip today?” “I would like to start by asking you a few questions about your catch.”

“How many of each species did you catch?” (Data: number of each species caught during trip) “How many of each species are you keeping?” (Data: number of each species harvested)

For walleye, black bass, NOP and crappie: “Did you release any legal size fish?” (Data: number of legal fish released- walleye > 15”, bass > 12”, Northern pike > 15”, crappie > 9”