

A Recreational Fishery Survey of Irondequoit Bay

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Irondequoit Bay is a large embayment (surface area 1,648 acres, or 6.67 km²) of Lake Ontario, located northeast of Rochester, New York. It is considered a moderately shallow, eutrophic bay with a maximum depth of 78 feet (23.8 m) and a mean depth of 22 feet (6.8 m). It is primarily a warm water fishery composed of walleye (*Sander vitreum*), northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*) and bluegill sunfish (*Lepomis macrochirus*), yellow perch (*Perca flavescens*), white perch (*Marone americana*), gizzard shad (*Dorosoma cepedianum*), and brown bullhead (*Ameiurus nebulosus*) (Bannister and Brubeck 1978). Because it is connected to Lake Ontario by a dredged channel, and because the bay lies between Lake Ontario and a major spawning tributary, Irondequoit Creek, migratory species such as Chinook salmon (*Onchorynchus tshawytscha*), coho salmon (*Onchorynchus kisutch*), brown trout (*Salmo trutta*), and rainbow trout (*Onchorynchus mykiss*) are found in the bay at certain times of the year. A one year recreational fishery survey was conducted on Irondequoit Bay from April 3, 2007 to March 29, 2008. The survey permitted the examination of the current levels of angling effort and success on the bay measured as total effort, total catch and harvest, catch and harvest rates, targeted species, origin of fishing trips, directed effort, catch, and harvest, and directed catch and harvest rates.

Methods

A roving-roving survey design (Pollock, et al 1994) was used to estimate angling effort, catch, and harvest for three fishing seasons during the 2007-08 fishing year: Spring/summer/fall open water daytime, (April 1 to October 31, 2007) spring/summer open water nighttime (May 1 to September 30, 2007), and winter daytime (November 1, 2007 to March 31, 2008).

Open water daytime survey effort was evenly divided among four time periods: 1. Weekend/holiday morning (0800-1400), 2. Weekend/holiday afternoon (1400-2000), 3. Weekday morning, and 4. Weekday afternoon. Open water night time (2000-0200) surveys were conducted twice a week on randomly selected nights, once on a weekday and once on a weekend/holiday. Friday night was considered a weekend night and Sunday night was considered a weekday night. This allowed 4 daytime and 2 nighttime slots per week to be surveyed. Only one daytime slot (0900-1700) during the winter season was surveyed on two randomly selected weekday days, and two weekend/holiday days per week.

All boats that were fishing and shoreline anglers were counted from a boat twice during the survey period. The first count was at zero, one, or two hours into the survey period, randomly chosen. The second count was three hours after the first. The bay was divided into nine approximately equal size grids (Figure 1). A random numbers generator was used to determine the starting grid and direction of travel between the grids. All fishing boats and shoreline anglers within each grid were counted. The counting route took approximately 30 minutes to complete, and thus was considered instantaneous (Pollock, et al 1994). A pair of Wind River 10 X 40 binoculars aided the agents with identifying boats and people that were fishing. Additional data recorded include: wind direction and relative magnitude, precipitation, and cloud cover. Ice fishing anglers were counted in the same manner during the winter, except that counts were made from four access points on the shoreline (Figure 1, sites 10, 11, 14, 15).

The roving-roving survey design as described in Pollock, et al. (1994, Chapters 11, 15) was used to conduct angler interviews. Between counts, angler interviews were conducted by two creel census clerks in a boat during the open water

season and by one agent on foot during the winter. As described in the previous section on the roving counts, the bay was divided into nine areas (Figure 1). A random numbers generator determined what area to begin with and which direction the clerks traveled. The clerks counted the number of boats (open water) or anglers (winter) to determine the portion of boats/anglers to interview to complete 9 five minute interviews in the area (45 minutes/area). Clerks were instructed to intercept as many boats or anglers as possible. Interview questions included: date, time, grid, fishing method, number of anglers in boat, targeted species, time fishing began, anticipated ending time, origin of trip (launch/access point or dock/cottage on bay), if launch, what Town/County from, number of each species caught, number of each species kept, and number of legal sized fish released. Any comments the interviewee made were also recorded.

The roving-access survey design as described in Pollock, et al. (1994, Chapters 10, 15) was used to conduct angler interviews when hazardous weather or ice conditions prevented a roving survey. Counts and interviews were conducted at four access points. A random numbers generator was used to determine the starting access point and the clerk's travel direction. Boats and/or anglers were counted at each area. The clerk conducted interviews for 216 minutes at the NYS OPRHP boat launch (Figure 1, site 10), 72 minutes at the Irondequoit Bay Park West/Sutters Marina (site 12), and for 36 minutes at each the Newport Marina access point (site 11) and Bounty Harbor Marina access points (site 13). During the ice season, the clerk conducted interviews for 216 minutes at the Irondequoit Bay Park West/Sutters Marina site (site 12), for 72 minutes at the NYS OPRHP boat launch (site 10), and for 36 minutes at each the Newport Marina access point (site 11), and the Northeast bay access point (site 15). The same interview as the roving survey was conducted, except that the ending time and trip origin was known.

In the field, data was entered directly into a Microsoft Access electronic database using a handheld Hewlett-Packard iPaq Pocket PC, which was later transferred to a desktop PC. Using the desktop PC, the data was tabulated by month, and weekend/weekday daytime, and nighttime. Boat

and shoreline angling was treated separately. Effort, catch, and harvest results were further stratified by fish species. Daily effort was calculated with the following equation:

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

where I is the mean of the two instantaneous counts of boats or shore/ice anglers for that day and T is the fishing hours for that day. Daily estimates of effort for the open water season in boat hours was multiplied by the daily mean number of anglers (from interviews) per boat for each day to determine daily effort as angler hours. Shore and ice fishing effort is expressed as angler hours. Angling effort was converted from hours to trips by dividing the total hours expended by the mean trip length, calculated from complete trips, through the open water or ice season.

Since the interviews from the boat roving survey and from shoreline and ice anglers recorded mostly incomplete trips, the average of the individual catch rates for each angler-group for each day was used, and all trips less than 0.5 hr were ignored to eliminate the potential bias from short trips (Pollock, et al.1994). This catch rate estimator is expressed as:

$$(2) \quad R2 = \frac{\sum_{i=1}^n c_i/L_i}{n}$$

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

Access point survey interviews recorded complete trips, so the ratio of the means was used to calculate the catch rate:

$$(3) \quad R1 = \frac{\sum_{i=1}^n c_i/n}{\sum_{i=1}^n L_i/n}$$

Catch was calculated with the following equation:

$$(4) \quad C = E \times R$$

where R is the appropriate catch rate estimator from equation (2) or (3), above. Harvest was calculated using the same rate estimators using creel fish and equation (4).

Monthly total effort, catch, and harvest and their associated standard errors were calculated in accordance with procedures outlined in Pollock, et al. (1994). Monthly catch and harvest estimates and associated standard errors for walleye, northern pike, smallmouth bass, largemouth bass, salmonids, yellow perch, and panfish (bluegill sunfish, pumpkinseed sunfish, rock bass, black crappie, and bullhead) were also calculated.

Lastly, directed angler catch rates by month were calculated using interview data from trips during which the species in question was targeted (Malvestuto 1996). The ratio of the means catch rate estimator (equation 3) was used as the measure of angling success (Grosslein 1961, Malvestuto 1996, Pollock, et al. 1994) and expressed as angler-hours. Rates for each period and species were calculated separately

Results

Interview Statistics

Over 267 survey days (236 daytime, 31 nighttime) from April 1, 2007 to March 31, 2008 creel survey agents interviewed 3,865 anglers from 2,169 interviews, who fished 12,144 hours. The average party size was 1.8 anglers. Anglers interviewed from complete trips on average fished for 4.6 hours (Table 1). Since a roving survey was conducted on most survey days, the majority of the interviews (74%) came from incomplete trips. About two thirds (66 %) of the interviews came from anglers fishing from a boat, twenty percent came from ice anglers, and fourteen percent came from shore anglers. Most of the anglers interviewed were still fishing (44%), casting (32%), or a combination of still fishing and casting (20%). The majority of the anglers' trips originated from a public access point (87%), rather than a private residence or marina (Table 2). Most of the anglers fishing the bay resided in the immediate Rochester area (84% from Monroe County, 3.5% from Wayne County). However, a fair number came from the Buffalo area (4% from Niagara County, 2.4% from Erie County). Forty four percent of the anglers interviewed were

fishing for yellow perch, followed by anything (21%), bass (19%), and gamefish (7%) (Table 3).

Effort

It is estimated that from April 1, 2007 to March 31, 2008, anglers fished Irondequoit Bay for approximately 71,000 angler hours (SE= 2,370) from a boat, or 15,800 boat trips, and 93,000 angler hours (SE=7,370) from shore, or 20,200 angler trips, during the daytime. Anglers fished Irondequoit Bay for approximately 2,000 angler hours (SE=349) from a boat, or 443 boat trips, and 1,400 angler hours (SE=361) from shore, or 314 angler trips, at night (Tables 4 and 5 and Figures 2 and 3).

Boat fishing accounted for most of the open water (April through November) fishing season. Daytime boat fishing peaked in July, but substantial effort continued through October. The most nighttime boat fishing effort occurred in July. The most nighttime shore fishing occurred in June. No nighttime fishing took place in September. During the survey, ice fishing was recorded as shore fishing. The majority of the daytime shore fishing effort took place during 74 days of safe ice from December 22, 2007 to March 25, 2008. Ice fishing effort accounted for almost the same amount of fishing effort as daytime boat fishing.

Yellow perch fishing accounted for about 36% of the total estimated daytime boat fishing effort (Table 6). Most of the daytime boat fishing effort in April, and September through November, and all of the December, January and March daytime boat fishing effort was directed at perch. Twenty six percent of the estimated daytime boat fishing effort was directed at bass, accounting for most of the July effort. Fishing for anything was similar to the bass effort, and made up 25% of the estimated daytime boat fishing, and accounted for most of the May, June, and August effort. Yellow perch fishing dominated the estimated daytime shore fishing effort (82%), accounting for most of the September through November, and all of the daytime shore fishing effort in December through March (Table 6). All ice fishing effort was directed at yellow perch. Fishing for anything made up approximately 10% of the daytime shore effort and made up most of the June, July, and August daytime shore fishing. Anglers targeting bullhead accounted for 5% of the daytime shore

effort, and bullhead was the most sought species from shore during the day in April and May.

Fishing for bass accounted for most of the estimated nighttime boat fishing effort (42%), followed by gamefish (17%), anything (16%), and walleye (11%) (Table 7). The majority of the nighttime boat fishing effort in June, July, and August was for bass. The most sought species from a boat at night during May was walleye. About three quarters of the total nighttime shore fishing effort was for anything (Table 7). The rest of the nighttime shore fishing effort was directed at bullhead (15%) and yellow perch (11%). Most of the June and all of the July and August night shore effort was for anything. Bullhead fishing dominated the May night shore effort.

Catch, Harvest, and Release

Panfish

From April 1, 2007 to March 31, 2008, an estimated 634,000 panfish were caught from Irondequoit Bay for a catch rate of 3.8 fish per angler hour (Table 8). It is estimated that about one third, or 246,000 panfish were harvested (1.5 per angler hour) and two thirds or 387,000, were released (2.3 per angler hour). Most of the daytime boat fishing panfish catch occurred in April and September through November (Figure 4). The estimated daytime boat fishing panfish harvest was identical in September, October, and November. Most of the daytime shore fishing panfish catch occurred in April and May, while most of the ice fishing panfish catch occurred in February. The estimated ice fishing panfish harvest was nearly the same in February and March. Most of the panfish caught by nighttime boat fishing were caught in May, but none were kept. Most of the nighttime boat fishing harvest occurred in July and August. Most of the estimated nighttime shore panfish catch occurred in May, and very few were kept (Figure 4).

The vast majority of the estimated panfish catch was yellow perch, where an estimated 610,000 were caught (3.6 per angler hour), 234,000 were harvested (1.4 per angler hour), and 377,000 were released (2.3 per angler hour) (Table 8). More than half of the yellow perch caught (378,000) and harvested (151,000) came through the ice, with the peak catch occurring in February (Figure 5). An estimated 185,000 were caught (2.6 per angler hour), and 72,000 were creel (1 per

angler hour) from a boat during the daytime, primarily from September through November. The April and May daytime shore fishing catch was also overwhelmingly composed of yellow perch. Bluegill sunfish and rock bass were caught during daytime boat fishing and pumpkinseed, bullhead, bluegill, and rock bass were caught from shore during the daytime in June and July (Figure 5). Other fish reported caught include freshwater drum (*Aplodinotus grunniens*), white bass (*Marone chrysops*), and channel catfish (*Ictalurus punctatus*).

Warm Water Gamefish

From April 1, 2007 to March 31, 2008, an estimated 21,000 warm water gamefish were caught from Irondequoit Bay for a catch rate of 0.12 fish per angler hour (Table 9). It is estimated that only 1,200 warm water gamefish were harvested (0.01 per angler hour) and most or 19,000, were released (0.12 per angler hour). Most of the daytime boat fishing warm water gamefish catch occurred in June and July (Figure 6). The estimated daytime boat fishing warm water gamefish harvest was identical from July through October. Most of the daytime shore fishing warm water gamefish catch occurred in September, while all of the ice fishing warm water gamefish catch occurred in February. The warm water gamefish caught by nighttime boat fishing peaked in July, and all of the estimated nighttime shore warm water gamefish catch occurred in May, and none were kept (Figure 6).

Most (89%) of the warm water gamefish catch was comprised of largemouth bass. An estimated 18,000 were caught at a rate of 0.11 per hour, only 1,000 were kept (0.01 per angler hour), and 7,000 of the 17,000 largemouth bass released (42%) were legal sized (Table 9). Peak catches of largemouth bass came from daytime boat fishing during June and July (Figure 7). Largemouth bass also were the most caught warm water gamefish species by anglers fishing from shore and nighttime boat fishing. An estimated 14 largemouths were caught and illegally harvested through the ice in February. These were the only warm water gamefish caught through the ice. Five hundred fifty four smallmouth bass were estimated to have been caught (<0.01 per angler hour) and nearly all (estimated 530) were released. Thirty percent of the released smallmouths were legal sized. A few smallmouth

bass (estimated 10) were caught during the day from shore in November and were released (Figure 7). A fair number of northern pike were caught (estimated 1,400; 0.01 per angler hour), primarily from a boat during the daytime in June and July. Only 20 northern pike were estimated to have been harvested and three quarters of the released pike were legal sized (>22 inches). About 130 of the estimated 229 walleye (<0.01 per angler hour) were caught while boat fishing at night in July. Most of the rest of the walleye were caught from a boat during the day in May and August. An estimated 140 walleyes (61%) were creel and 78 of the 88 walleye released (88%) were legal sized (>18 inches). No northern pike or walleye were caught through the ice (Figure 7). Anglers did not report catching any chain pickerel (*Esox niger*).

Cold Water Gamefish

From April 1, 2007 to March 31, 2008, an estimated 71 cold water gamefish were caught from Irondequoit Bay for a catch rate of <0.01 fish per angler hour (Table 10). It is estimated that 66 cold water gamefish were harvested (<0.01 per angler hour) and few (5), were released (<0.01 per angler hour). All cold water gamefish were caught during daytime boat fishing, most in April and a few in November (Figure 8). Those caught in April were creel, and those caught in November were released.

An estimated 5 Chinook salmon, 5 rainbow trout, and 61 brown trout, were caught. All of the Chinook salmon were legal sized and released, while all of the brown and rainbow trout were kept. The brown and rainbow trout were caught in April, and the Chinook salmon were caught in November (Figure 9).

Directed Effort and Catch from Interviews

Most boat-caught yellow perch were caught when the angler's target was perch, while most of the other boat-caught panfish were caught when the target was anything, rather than when panfish was the target (Table 11). Most boat-caught largemouth and smallmouth bass were caught when bass was the target, followed by anything and gamefish. Northern pike were primarily caught while boat fishing for bass, followed by anything, gamefish, and pike. Few walleye were caught while the angler targeted walleye from a boat. Most were caught while fishing for

gamefish. All of the brown trout were caught while boat fishing for salmonids, but the Chinook salmon were caught by anglers fishing for anything, and the rainbow trout was caught by a perch fisherman. The directed effort boat fishing catch rate for yellow perch was an outstanding 8.8 perch per angler hour. Excellent catch rates were observed for boat anglers targeting panfish, anything, bass, gamefish, and pike (Table 11).

From shore, most yellow perch were caught when the angler's target was perch, while most of the other shore-caught panfish were caught when the target was anything, rather than when panfish was the target (Table 11). Most bullhead were caught by shore anglers targeting them. Shore-caught largemouth bass were primarily caught equally between anglers targeting bass and anything. Only one smallmouth and one northern pike were caught by shore anglers, and the target was anything and bass, respectively. No coldwater gamefish were caught from shore. Like boat fishing, the directed effort shore fishing catch rate for yellow perch was a similarly outstanding 6.2 perch per angler hour. Very impressive targeted catch rates for panfish, anything, bass, and bullhead were observed for shore anglers.

All of the observed ice fishing effort was directed at yellow perch, and the ice fishing directed effort catch rate was an excellent 5.4 perch per angler hour (Table 11).

Discussion

Effort

The 2007-2008 estimated total effort of 167,500 angler hours, or 36,757 angler trips on Irondequoit Bay was similar to the 1996 Statewide Angler Survey estimation of 43,750 angler days of fishing for 6,780 anglers, considering the wide confidence intervals of each survey (Connelly et al. 1997). Total annual open water fishing pressure was estimated at 58.3 hours (14.5 trips) per acre and ice fishing pressure was estimated at 43.2 hours (8.5 trips) per acre. Daytime boat and shore fishing pressure was estimated at 43.1 hours (9.6 trips) and 56.4 hours (12.3 trips) per acre, respectively. Annual nighttime boat and shore fishing pressure was estimated at 1.2 hours (0.27 trips) and 0.9 hours (0.19 trips) per acre, respectively.

Fishing pressure in hours and trips per acre on Irondequoit Bay in 2007-2008 was less than Cassadaga Lake, similar to Bear Lake, and much higher than that observed on Conesus, Hemlock, Candice, Oneida, and Chautauqua Lakes, and Whitney Point Reservoir, particularly ice fishing pressure (Table 12). It was estimated that 17.7 angler hours per acre, or 3.6 trips per acre of fishing pressure occurred during the 2000 open water season on Conesus Lake. This effort was comprised of 15.4 angler hours, or 3.1 trips, per acre of daytime and 2.2 angler hours, or 0.5 trips, per acre of nighttime effort. Daytime boat fishing pressure was estimated at 11.8 angler hours (2.4 trips) per hour. About 7.6 angler hours or 2.0 trips, per acre occurred during the 2000-2001 winter season (Sanderson 2003). Approximately 9.9 angler hours (2.1 trips) per acre and 24.6 angler hours (6.3 trips) per acre of daytime boat fishing pressure were estimated on Hemlock and Canadice Lakes, respectively during the 2005 open water season (Sanderson et al. 2008). Daytime boat fishing pressure during the open water season ranged from 7.3 to 3.8 angler hours, or 0.3 to 0.1 trips, per acre on Oneida Lake from 2002-2007 (Krueger et al. 2009). VanDeValk et al. (1999) estimated 5.8 angler hours, or 0.64 trips, per acre of daytime open water boat fishing pressure and 0.7 angler hours, or 0.2 trips, per acre of ice fishing pressure on Oneida Lake in 1997-1998. Their estimate of 6.94 total angler hrs per acre was low compared to other years on Oneida Lake and to other North American lakes that support a walleye fishery. During the 1998 open water season, daytime boat anglers fished for 25.8 hours (5.5 trips) per acre on Chautauqua Lake. They also fished for 3.2 hours (0.9 trips) per acre during the winter 1999 season (McKeown and Einhouse 2000). During the 1999 open water season, daytime boat anglers fished for 93.7 hours (19.1 trips) per acre on the Cassadaga Lakes and for 47.2 hours (14.8 trips) per hour on Bear Lake. They also fished for 2.2 hours (1.0 trip) per acre and 14.2 hours (5.2 trips) per acre during the winter 2000 season on Cassadaga and Bear Lakes, respectively (McKeown and Einhouse 2002). Daytime boat fishing pressure on Whitney Point Reservoir in 1999 was estimated at 6.5 angler hours, or 1.5 trips, per acre (Bishop and Lemon 2002).

Yellow perch received the most attention by anglers fishing Irondequoit Bay in 2007-2008.

101,890 angler hours, representing 61% of the total fishing effort was directed at perch. Perch fishing made up 81% of the shore fishing effort, including all of the ice fishing effort. Ice fishing pressure (43.3 angler hours, or 8.5 trips, per acre) for yellow perch on Irondequoit Bay in 2008 exceeded that of Conesus Lake during the mid 60's and 70's, when Conesus Lake was one of the most popular yellow perch ice fisheries in Western New York (Table 15). At its peak in 1971, an estimated 28,142 anglers fished for 111,490 hours during 81 days of safe ice on Conesus Lake, or 32.6 angler hours and 8.2 trips per acre (Lane 1993). During the 1973-74 fishing season, Conesus ranked seventh among waters of the State in yellow perch harvests. Among inland waters, it was only surpassed by Oneida and Chautauqua Lakes (Brown, 1976). By comparison, in adjacent Lake Ontario, yellow perch was the third most commonly targeted species (preceded by salmonines and smallmouth bass) among open lake boat anglers in 2007, but comprised only 1.5% (1,203 boat trips) of the total fishing boat trips (Lantry 2008).

Fishing for bass, primarily largemouth bass, accounted for 19,203 angler hours, or 11% of the estimated annual fishing effort on Irondequoit Bay. About one quarter of the daytime boat fishing effort was directed at bass. Most (43%) of the boat fishing effort from June through August was for bass. Irondequoit Bay was the site of five locally sponsored bass fishing tournaments in 2007. Eleven percent of the April and May effort and none of the December through March effort was directed at bass. Approximately 20% of the bass fishing effort occurred during the new catch and release season. To a certain degree, anglers are taking opportunity of the first year of the new catch and release season for bass, specifically in early spring. Northern pike were targeted during only 0.7% of the estimated total fishing effort, or 1,210 angler hours. Walleye fishing only made up 0.4% of the total estimated effort, or 687 angler hours. However, walleyes were targeted during 11% of the estimated nighttime boat fishing effort. No ice anglers targeted northern pike or walleye. An early fall 2005 gill net fish stock assessment survey caught an average of 9.3 walleye and 2.2 northern pike per net (Sanderson in preparation). This density compares favorably with similar 2001 and 2004 survey data from Conesus Lake, where 9.0 and 8.4 walleye, and 0.8 and 1.75

northern pike per net, respectively were caught (Sanderson in preparation). Walleye and northern pike are relatively abundant in Irondequoit Bay, but anglers aren't specifically targeting them.

Fishing effort directed at salmonids was an estimated 772 angler hours, or 0.5% of the estimated annual fishing effort on Irondequoit Bay. Nearly all of the salmonid effort was from daytime boat fishing in April, suggesting that fishing in the bay is a minor alternative to fishing in the Lake Ontario at a time when trout and salmon can be caught near the surface, and close to tributary mouths and in bays.

Catch, Harvest, and Release

Panfish

In 2007-2008, the recreational fishery on Irondequoit Bay was dominated by anglers seeking and catching yellow perch. Ninety three percent of the total estimated catch and 95% of the estimated harvest was yellow perch. An estimated 275,900 were caught and 82,300 were harvested during the open water season, while 378,300 were caught and 151,250 were harvested during the ice season. Data from an early fall 2005 gill net fish stock assessment survey suggests good 2001 and 2004 yellow perch year classes. These fish would have been ages 6 and 3 in 2007, providing an excellent fishery of approximately 12- and 7-inch total length perch. (Sanderson in preparation).

The estimated April through September, 2007 catch of yellow perch from adjacent Lake Ontario was 87,736 fish, the highest estimated among the 23 years surveyed and a 189.4% increase compared to the 2002-2006 average catch. Harvest was estimated at 25,630 fish, the second highest estimate (1985 was the highest) since the Lake Ontario fishing boat creel survey was initiated in 1985, and 137.6% and 165.1% greater than the previous 5-year and 10-year averages, respectively (Lantry 2008). The estimated daytime boat fishing catch and harvest of yellow perch from Irondequoit Bay during the same time period was 77,463 and 24,286, respectively. Lake Ontario warm water fisheries assessment data and anecdotal angler reports suggest that yellow perch populations and fisheries are relatively higher in areas not covered or poorly sampled by the Lake Ontario fishing boat survey, including embayments, tributaries adjacent to the open lake

fishery, and in Lake Ontario's eastern basin (Lantry 2008). The present survey and preliminary data from a current survey (Sanderson in progress), confirms this observation is true in Irondequoit and Sodus Bays.

The overall yellow perch estimated catch rate of 3.6 fish per hour (2.41 open water, 5.39 ice) and the overall directed effort catch rate of 7.3 fish per hour (8.63 open water, 5.39 ice) exceeds the catch rates found in nearby inland water bodies with popular yellow perch fisheries (Tables 13 and 14). In 2000-2001, the estimated open water catch rate for yellow perch on Conesus Lake was 0.01 fish per hour and the ice fishing catch rate was 0.05 fish per hour. The ice fishing directed effort catch rate for yellow perch on Conesus Lake was 0.24 fish per hour (Sanderson 2003). The estimated open water catch rate for yellow perch on Oneida Lake in 1997 was 0.38 fish per hour and the ice season rate was 1.6 yellow perch per hour. The open water catch rate was 2.5 perch/hr and the ice season catch rate was 1.4 perch/hr for anglers targeting yellow perch (VanDeValk et al. 1999). More recently, the overall open water catch rates for yellow perch on Oneida Lake from 2002 to 2008 ranged from 0.58 to 0.07 fish per hour and the ice season catch rates ranged from 1.0 to 0.03 fish per hour. The targeted catch rates ranged from 2.99 to 0.64 and 1.22 to 0.13 per hour for open water and ice fishing, respectively (VanDeValk et al. 2005, 2006, Krueger et al. 2009). On Chautauqua Lake, McKeown and Einhouse (2002) estimated yellow perch directed catch rates of 6.98/hr during the 1998 open water season and 4.38/hr during the 1999 ice season.

The overall yellow perch estimated harvest rate of 1.4 fish per hour (0.85 open water, 2.12 ice) also exceeds the harvest rates found in nearby inland water bodies with popular yellow perch fisheries. The estimated 2000 open water harvest rate for yellow perch on Conesus Lake was 0.006 fish per hour and the 2001 ice fishing harvest rate was 0.05 fish per hour (Sanderson 2003). The estimated 2008 yellow perch ice fishing harvest and harvest rate on Irondequoit Bay are greater than the reported number of perch harvested and harvest rates through the ice on Conesus Lake from 1965 to 2001, except 1971 (Table 15) (Lane 1993, Sanderson 2003). Seventy two percent of the anglers who fished for perch on Conesus Lake in 1965 were from towns greater than 20 miles

from the lake (Lane 1993). These anglers may have shifted their attention to nearby Irondequoit Bay because the perch fishery on Conesus Lake collapsed by 1988 (Abraham 1988). The estimated open water harvest rate for yellow perch on Oneida Lake in 1997 was 0.23 fish per hour and the ice season rate was 1.4 yellow perch per hour (VanDeValk et al. 1999). On Chautauqua Lake, yellow perch harvest rates of 2.4 fish/hr during the 1998 open water season and 1.01 fish/hr during the 1999 ice season were estimated (McKeown and Einhouse 2002).

Local anglers who frequently fish on Irondequoit Bay have expressed concerns about a potential decline of the yellow perch fishery from over harvest, especially during the fall boat fishery, combined with consumption by an expanding double-crested cormorant colony located on the western shore, which has grown to about 75 nests (J. Eckler and H. Kennedy, NYSDEC, personal communication). They have suggested that a reduction in the creel limit from 50 perch per day to 25 perch per day is warranted, in addition to measures to controlling the cormorant colony population. In 2007-2008, 4.6 % of the anglers interviewed (178) on Irondequoit Bay creeled more than 25 yellow perch (Table 16). They harvested 6,809 perch (35% of the observed yellow perch harvest), or an average of 38 perch per angler. If a 25 fish limit were in place, these same anglers would have creeled 4,450 perch, "saving" 2,359 perch for a 12% reduction in yellow perch harvest. Since the adult yellow perch population is unknown, the angler-induced mortality of yellow perch cannot be estimated, nor can the portion the total annual mortality attributed to angler harvest be calculated. However, a 12% reduction in yellow perch harvest would likely have little effect in reducing the total annual mortality of yellow perch in Irondequoit Bay.

If double crested cormorants from Snider Island are shown to consume significant numbers of yellow perch, control of the cormorant colony is more likely to reduce yellow perch mortality in Irondequoit Bay. In Oneida Lake, double-crested cormorants were first observed nesting in 1984 and had increased to over 360 nesting pairs by 2000. Concomitant with this increase in piscivorous birds was a decrease in the adult walleye and yellow perch populations (Rudstam et

al. 2004). Cormorant consumption of adult yellow perch was similar to angler harvest, but cormorants consumed almost 10 times more age-2 yellow perch and only cormorants harvested age-1 yellow perch. Cormorants and anglers combined harvested 40% of age-1 and age-2 yellow perch and 25% of the adult yellow perch population (VanDeValk et al. 2002). VanDeValk et al. (2002) felt that the total annual mortality of adult percids had not changed since cormorant colonization, and although cormorant consumption of adult percids had little effect on harvest by anglers, consumption of subadults will reduce future angler harvest of yellow perch. Rudstam et al. (2004) analyzed a 40-yr data series that showed higher mortality of subadults for both yellow perch and walleye in the 1990s compared to the previous three decades. Cormorant diet was also investigated from 1995 to 2000 and walleye and yellow perch were a major portion of the cormorant diet. The number of subadult walleye and yellow perch consumed by cormorants suggests that the increase in subadult mortality can be explained by predation from cormorants. Mean mortality rates of adult percids attributed to cormorant predation were 1.1% per year for walleye and 7.7% per year for yellow perch. Their analysis suggests that predation by cormorants on subadult percids is a major factor contributing to the decline in both the walleye and the yellow perch populations in Oneida Lake, and other ecosystem changes are not likely explanations because the potential mechanisms involved are not consistent with auxiliary data from the lake and would not affect subadult mortality. The likely impact of bird predation on percid populations in Oneida Lake occurs because cormorants feed on larger fish that are beyond the size range where compensatory mechanisms are important (Rudstam et al. 2004).

Warm water Gamefish

The most prevalent fishing from June through August was for largemouth bass. Largemouth bass made up only 3% of the total estimated catch, but made up 89% of the estimated warm water gamefish catch. Smallmouth bass made up 0.08% of the total estimated catch and 3% of the estimated warm water gamefish catch. Ninety four percent of the largemouth bass and 95% of the smallmouth bass caught were released, with 42% of the largemouth bass and 30% of the smallmouth bass released being legal sized. The

high release rate of bass, particularly legal sized bass, observed on Irondequoit Bay in 2007 is consistent with the “catch and release” ideology practiced by most bass anglers today. Similarly, seven angler diary keepers reported catching 431 largemouth bass on Irondequoit Bay in 1985, with only 5 bass from a single trip being harvested. Lane (1988) speculated that the average area angler had not yet perceived recent water quality improvements in Irondequoit Bay and was not inclined to creel bass from the bay. Other than the largemouth bass illegally creeled through the ice in February, no bass were harvested during the new catch and release season from December through May. The vast majority of anglers are complying with the new bass regulation that became effective on October 1, 2006.

The overall daytime boat fishing catch rate of 0.22 largemouth bass per angler hour is similar to catch rates observed for open water fishing on Conesus Lake (0.22 largemouth bass per hour) (Sanderson 2003), and Cassadaga Lake (0.21 largemouth bass per hour) (McKeown and Einhouse 2002), and exceeds the catch rates observed for open water fishing on Chautauqua Lake (0.04 largemouth bass per hour) (McKeown and Einhouse 2000), daytime boat fishing on Hemlock Lake (0.11 largemouth bass per hour) and Canadice Lake (0.08 largemouth bass per hour) (Sanderson et al. 2008) (Table 13). Fishing quality for anglers targeting bass on Irondequoit Bay in 2007 was excellent, as the largemouth bass directed catch rate of 0.80 per angler hour was similar to the catch rate of Irondequoit Bay diary keepers in 1985 (0.7 largemouth bass per hour) (Lane 1988), both of which greatly exceeds the directed effort catch rates of all size largemouth bass from selected waters in New York State (0.24 bass per hour) (Green et al. 1986), Conesus Lake (0.45 largemouth bass per hour) (Sanderson 2003), Chautauqua Lake (0.23 largemouth bass per hour) (McKeown and Einhouse 2000), Bear Lake (0.20 largemouth bass per hour), and Cassadaga Lake (0.46 largemouth bass per hour) (McKeown and Einhouse 2002) (Table 14). The consistency in observed targeted catch rates from the 2007 creel survey and the 1985 angler diaries suggests that angler diaries can be used as an economically efficient tool to effectively track largemouth bass fishing quality in the future.

The overall daytime boat fishing catch rate of 0.01 smallmouth bass per angler hour is less than catch rates observed for open water fishing on Conesus Lake (0.06 smallmouth bass per hour) (Sanderson 2003), Cassadaga Lake (0.07 smallmouth bass per hour), Bear Lake (0.02 smallmouth bass per hour) (McKeown and Einhouse 2002), Chautauqua Lake (0.04 smallmouth bass per hour) (McKeown and Einhouse 2000), daytime boat fishing on Hemlock Lake (0.10 smallmouth bass per hour) and Canadice Lake (0.07 smallmouth bass per hour) (Sanderson et al. 2008) (Table 13). The smallmouth bass catch rate of 0.02 per angler hour for anglers targeting bass on Irondequoit Bay in 2007 is very much less than the directed effort catch rates of the 1985 Irondequoit Bay diary keepers (0.3 per hour), all size smallmouth bass from selected waters in New York State (0.35 bass per hour) (Green et al. 1986), Conesus Lake (0.13 smallmouth bass per hour) (Sanderson 2003), Chautauqua Lake (0.12 smallmouth bass per hour) (McKeown and Einhouse 2000), Bear Lake (0.29 smallmouth bass per hour), Cassadaga Lake (0.50 smallmouth bass per hour) (McKeown and Einhouse 2002), and Oneida Lake (0.32, 0.41, and 0.54 smallmouth bass per hour in 1997, 2004, and 2005, respectively) (VanDeValk et al. 1999, VanDeValk et al. 2005, 2006, Krueger et al. 2009) (Table 14). Many boat trips seeking smallmouth bass originate from the NYS OPRHP boat launch and marinas on Irondequoit Bay. However, most of these trips head out onto Lake Ontario to take advantage of the high quality smallmouth bass fishery that once existed in this part of the lake. Recent creel surveys have shown that Lake Ontario smallmouth bass fishing quality has declined in recent years (Lantry 2008). It appears that smallmouth bass fishermen have not chosen Irondequoit Bay as an alternative fishing location to Lake Ontario, perhaps due to low numbers caught in past fisheries surveys, low angler catch rates, and the close proximity of high quality smallmouth bass fisheries in other nearby inland lakes.

Northern pike made up only 0.22% of the total catch, but was 7% of the warm water gamefish catch. The high release rate of legal sized northern pike and the fact that none were caught through the ice suggests that Irondequoit Bay anglers value northern pike more as a sport fish, rather than as a food fish. Walleye made up only 0.03% of the total catch, and was only 1% of the

warm water gamefish catch. The overall catch rate for nighttime boat fishing was 0.07 walleye per angler hour. The catch rate for anglers targeting walleye was 0.02 per angler hour, but most walleye were caught by anglers targeting gamefish. The 2007 Irondequoit Bay nighttime boat fishing walleye catch rate is greater than the 2000 Conesus Lake nighttime open water season catch rate for walleye (0.03/hour) (Sanderson 2003), but it is less than the Oneida Lake nighttime open water season catch rate in 1997 (0.25 walleye/hr) (VanDeValk et al. 1999). Overall open water catch rates for walleye were lower than most western and central New York Waters with popular walleye fisheries (Table 13). Walleye catch rates in Oneida Lake from 2002-2007 ranged from 0.19 to 0.63 (Krueger et al. 2009) and was 0.18 walleye per hour in 1997 (VanDeValk 1999), Chautauqua Lake in 1998 was 0.16 walleye/hr (McKeown and Einhouse 2000), and boat fishing on Whitney Point Reservoir in 1999 was 0.41 walleye/hr (Bishop and Lemon 2003). The directed effort catch rate for walleye during the 2007 open water season in Irondequoit Bay was less than Conesus Lake in 2000 (0.05 walleye per hour), Oneida Lake from 2002-2007, and 1997 (0.25-0.75, and 0.21 walleye per hour, respectively) (Krueger et al. 2009, VanDeValk et al. 1999), Chautauqua Lake in 1998 (0.33 walleye per hour) (McKeown and Einhouse 2000), and Whitney Point Reservoir in 1999 (0.49 walleye per hour) (Bishop and Lemon 2003) (Table 14). Festa et al. (1987) describes walleye catch rates over 0.20/hr for anglers targeting walleye as above average for North American lakes. The 2007 Irondequoit Bay directed effort walleye catch rate is substantially below this benchmark. Despite a high relative abundance index for walleye in Irondequoit Bay (Sanderson in preparation), few anglers target them, and those anglers that do target walleyes, catch few of them. Like Conesus Lake in 2001, no walleye were caught through the ice on Irondequoit Bay in 2008, while considerable ice fisheries exist on Oneida and Chautauqua Lakes, and Whitney Point Reservoir.

Cold Water Gamefish

Cold water game fish were a minor component of the catch, accounting for only 0.01% of the total catch. Brown trout made up 86% of the estimated coldwater game fish catch and all were caught from boat fishing in April and all were creeded.

The harvest rate of brown trout for anglers targeting salmonids was 0.17 per angler hour, or 0.79 per boat trip. For comparison, the April 2007 estimated boat fishing harvest rate for brown trout in Lake Ontario was 2.08 per boat trip (Lantry 2008). Like smallmouth bass trips, many boat trips seeking trout and salmon originate from the NYS OPRHP boat launch and marinas on Irondequoit Bay. Nearly all of these trips head out onto Lake Ontario to take advantage of the high quality salmonid fishery that existed in this part of the lake in 2007.

Recommendations

1. Continue existing fishing regulations for species, seasons, size and creel limits, and fishing methods.
2. Continue biannual stocking of 36,000 walleye fingerlings in accordance with current statewide walleye management plan and Lake Ontario nearshore fish community objectives.
3. Conduct another creel survey in 10 years to track long term changes in the fishery due to walleye fingerling stocking, catch and release bass fishing, cormorant predation, invasive species and diseases, and angler exploitation. Consider a roving-access or access-access design (Pollock, et al 1994). Only conduct night surveys from May through August, or consider not surveying at night at all.
4. Consider beginning a cooperating angler diary program to monitor annual trends in effort, catch, harvest, overall catch and harvest rates, directed effort catch and harvest rates, and size quality of selected species.
5. Attempt to gauge the public perception of yellow perch harvest levels and support for a creel limit reduction. Convey to the public that the conclusions of this survey suggest that implementing a 25 yellow perch per day creel limit on Irondequoit Bay would not likely result in significant reduction in overall yellow perch mortality.
6. Use information from the results of this survey, and the 2005 fish stock assessment survey, to generate interest in the underutilized northern pike and walleye fisheries.

7. Continue to research the impacts of double crested cormorants on Irondequoit Bay fish populations. Collaborate with the DEC Region 8 Wildlife Unit and the United States Fish and Wildlife Service (USFWS) to develop and implement a double-crested cormorant control plan in accordance with existing guidelines.

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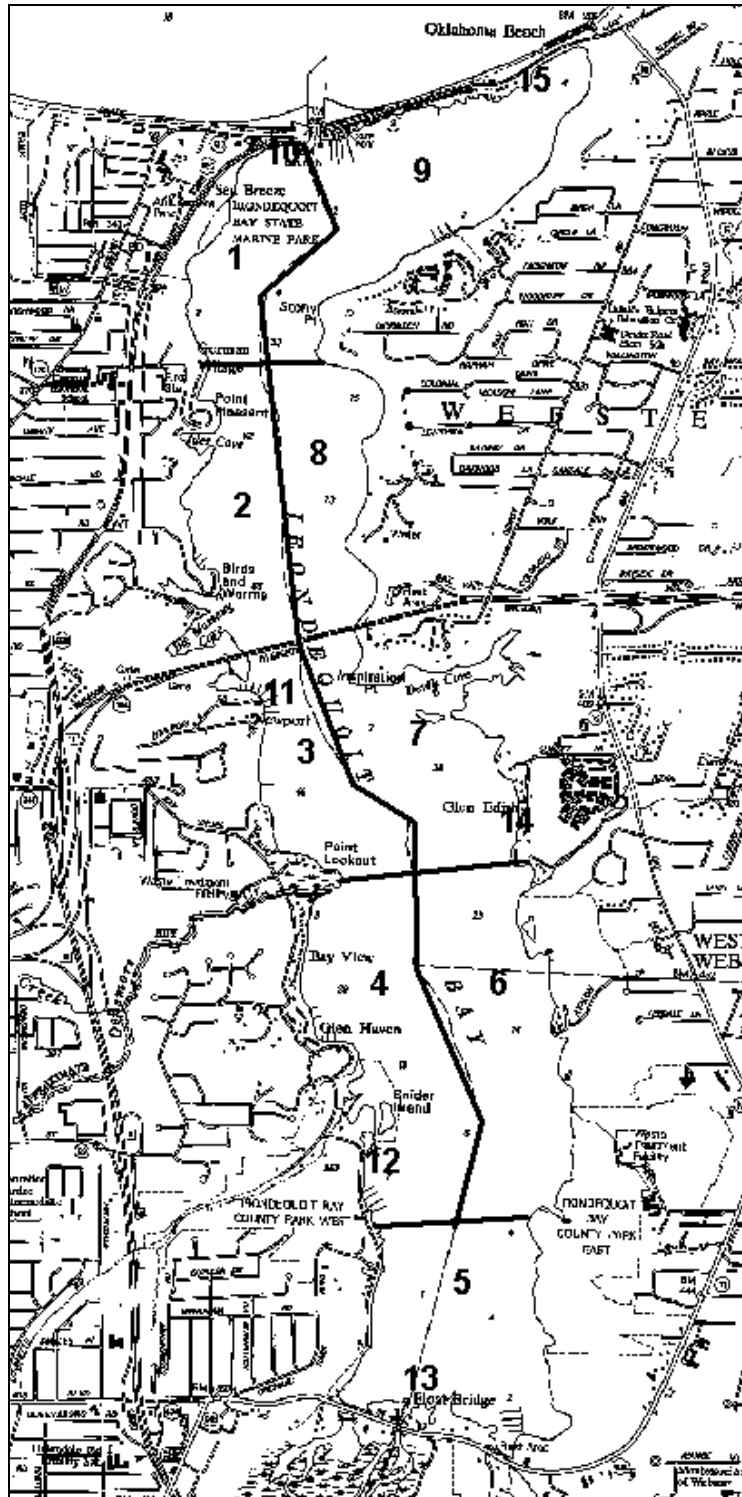


Figure 1. Map of Irondequoit Bay showing roving survey grids (1-9) and access survey sites (10-15).

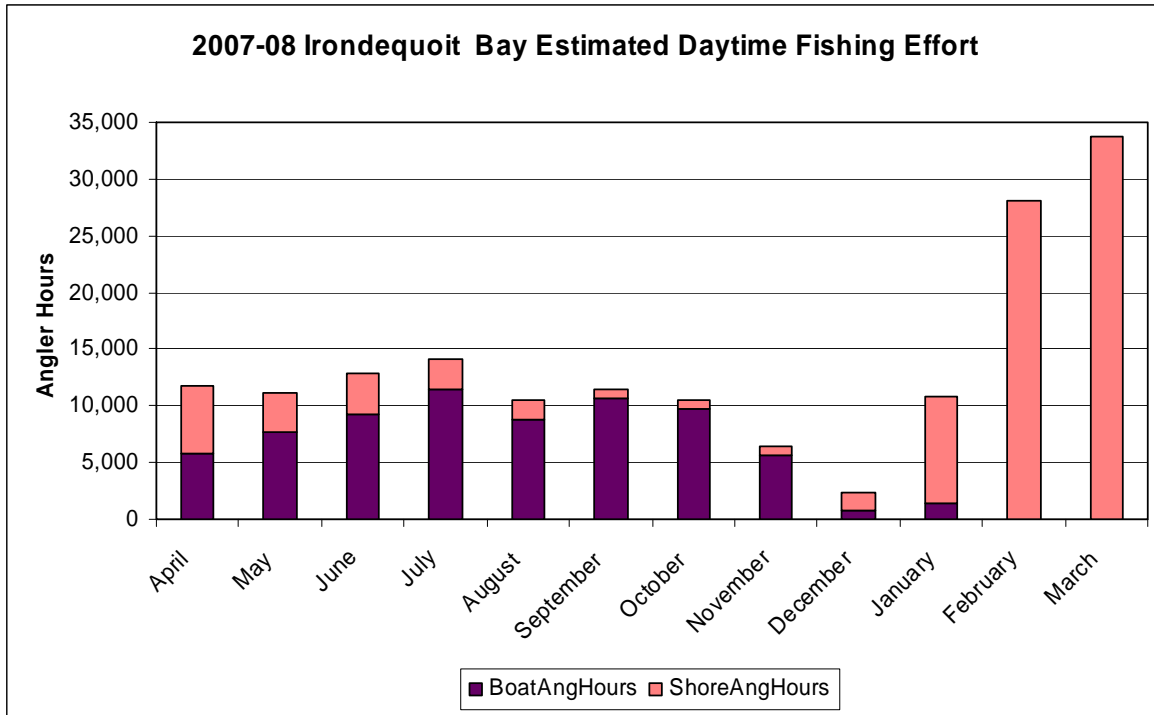


Figure 2. Estimated daytime fishing effort (angler hours) on Irondequoit Bay from April 1, 2007 to March 31, 2008.

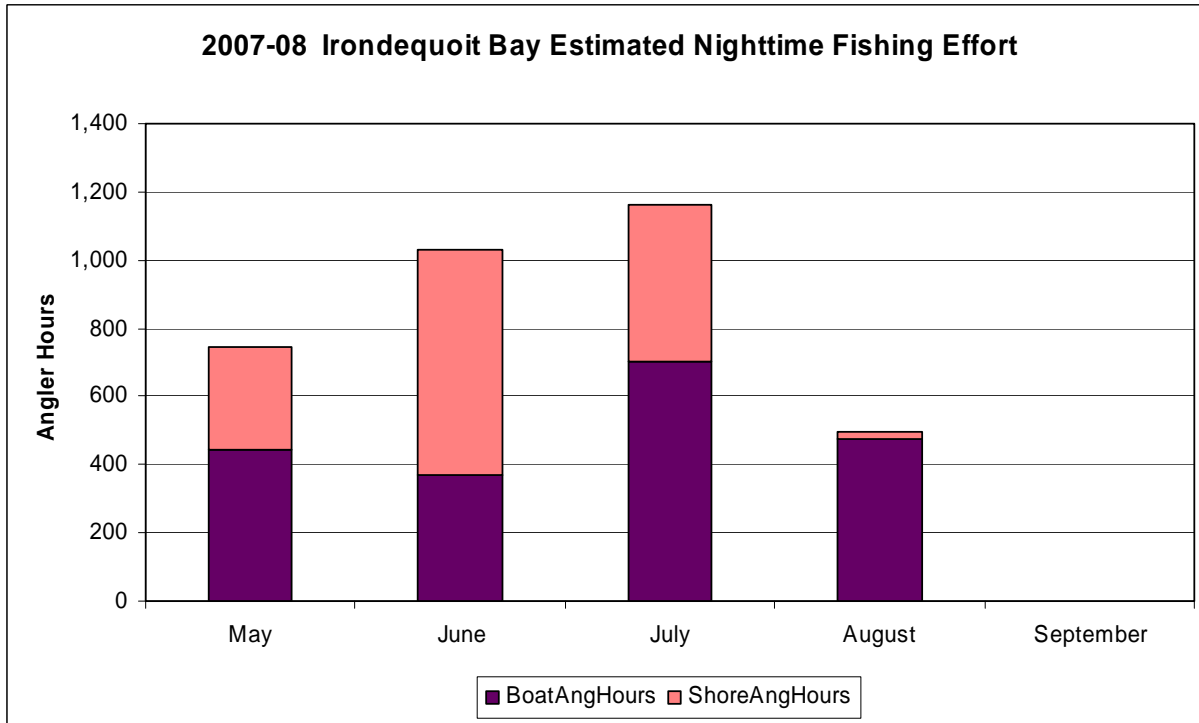


Figure 3. Estimated nighttime fishing effort (angler hours) on Irondequoit Bay from May 1, 2007 to September 30, 2007.

Figure 4. Estimated panfish catch on Irondequoit Bay from April 1, 2007 to March 31, 2008.

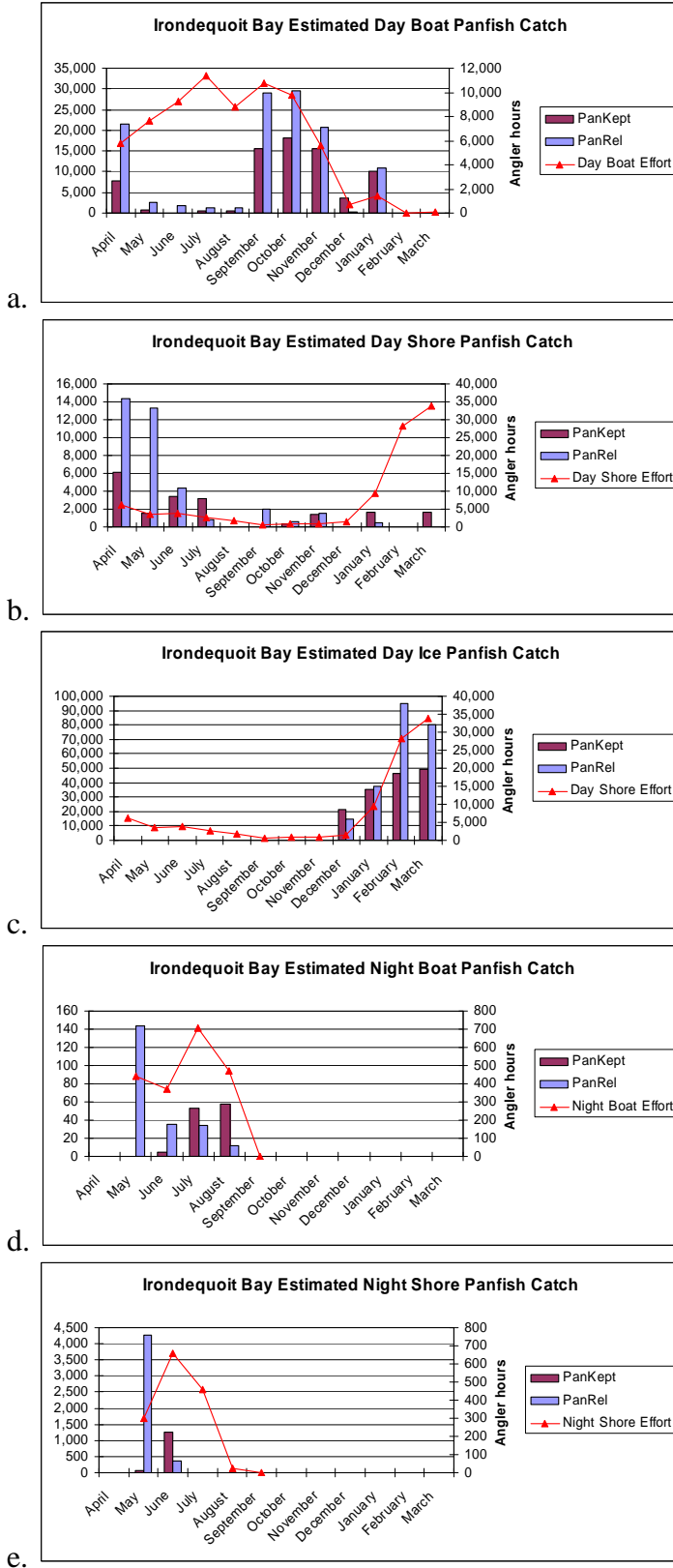


Figure 5. Estimated panfish catch on Irondequoit Bay from 4/1/2007 to 3/31/2008.

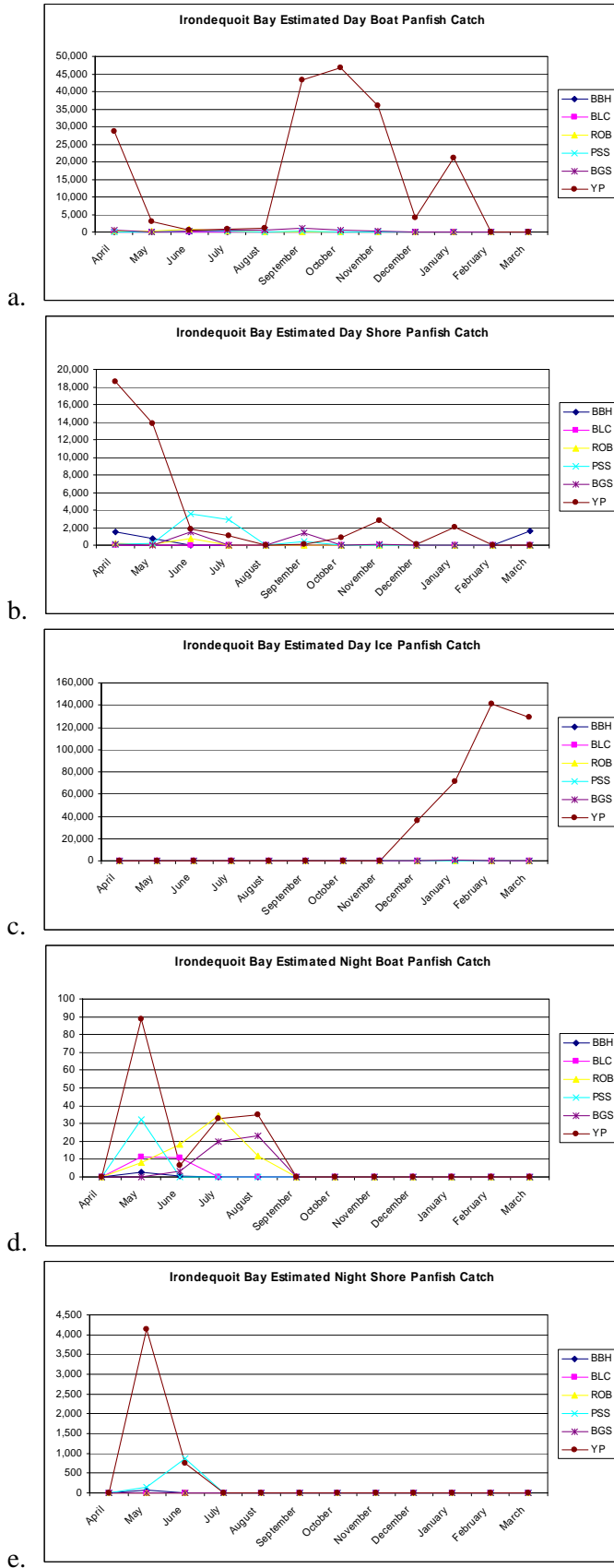


Figure 6. Estimated warm water gamefish catch on Irondequoit Bay from 4/1/2007 to 3/31/2008.

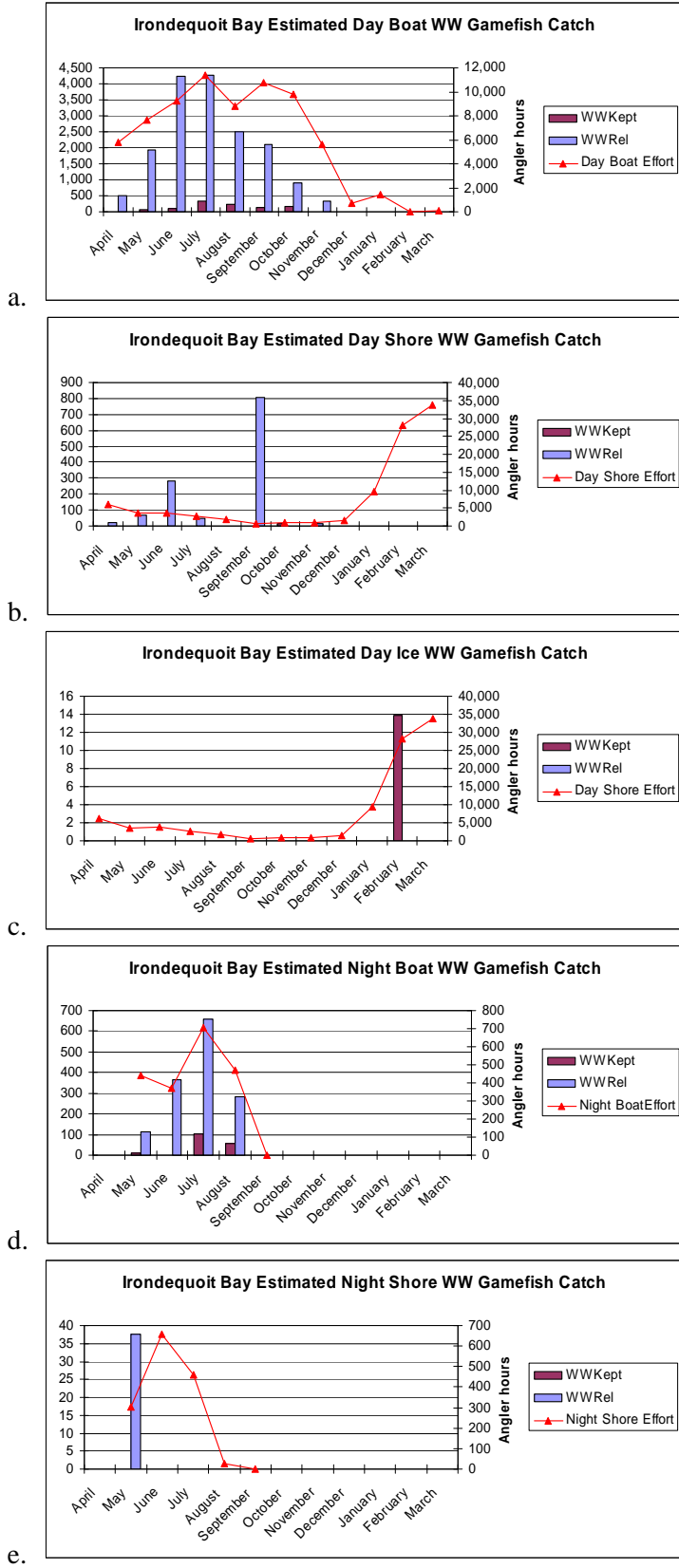


Figure 7. Estimated warm water gamefish catch on Irondequoit Bay from 4/1/2007 to 3/31/2008.

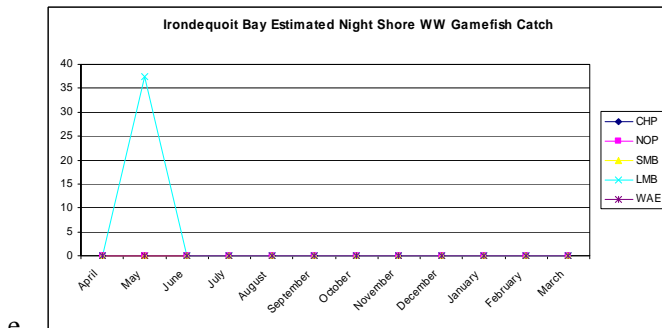
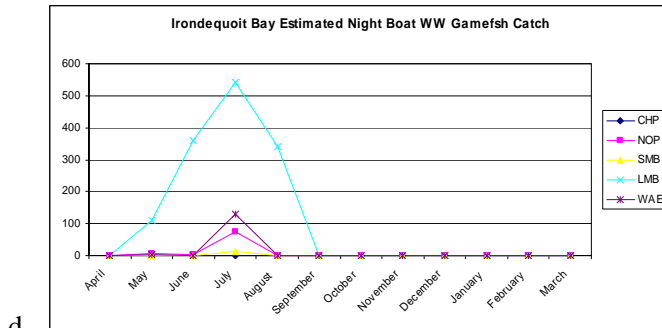
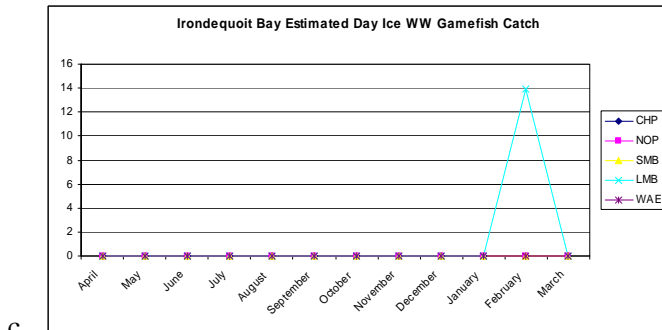
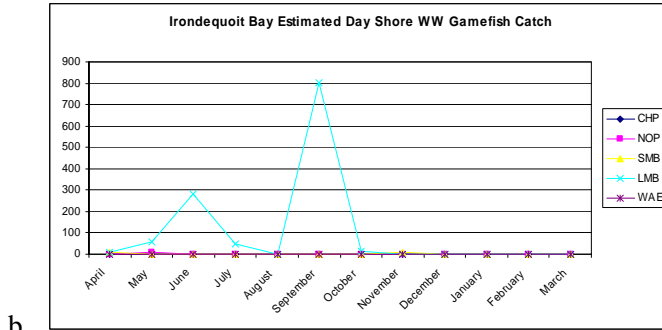
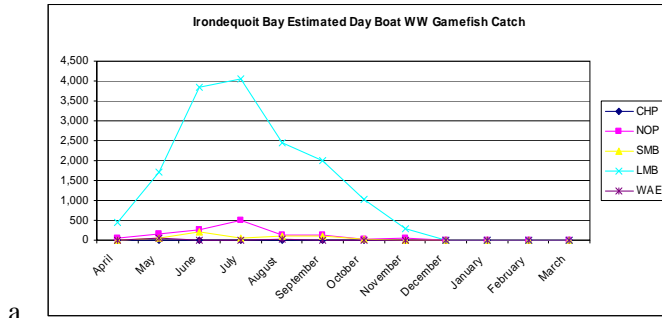
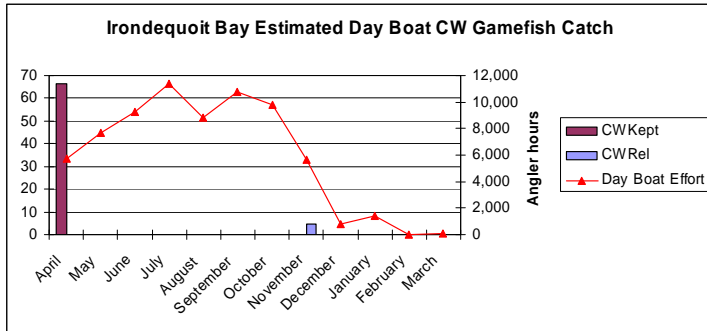
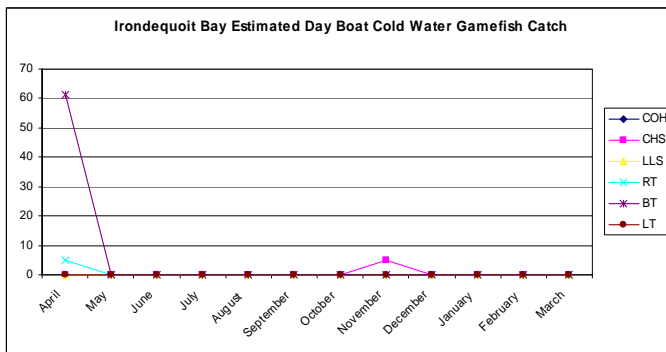


Figure 8. Estimated cold water gamefish catch on Irondequoit Bay from 4/1/2007 to 3/31/2008.



Note: No coldwater gamefish were caught from shore, ice, or at night.

Figure 9. Estimated cold water gamefish catch on Irondequoit Bay from 4/1/2007 to 3/31/2008.



Note: No coldwater gamefish were caught from shore, ice, or at night.

Table 1. Summary of Irondequoit Bay interviews from April 1, 2007 to March 31, 2008.

	Boat	Shore	Ice	Total
Interviews	1,442	297	430	2,169
Anglers Interviewed	2,892	307	666	3,865
Angler Hours	8,697.5	768.9	2,677.3	12,143.7
Avg Party size	2.0	1.0	1.5	1.8
Avg Trip Length*	4.5	3.0	5.1	4.6

* From complete trip interviews.

Table 2. Interview location and type, fishing method, and trip origin of Irondequoit Bay interviews from April 1, 2007 to March 31, 2008.

	# Interviews	Percent
Location/Type		
Incomplete Boat	1065	49.1%
Complete Boat	377	17.4%
Incomplete Shore	265	12.2%
Complete Shore	32	1.5%
Incomplete Ice	273	12.6%
Complete Ice	157	7.2%
Total	2169	100.0%
Method		
Unspecified	1	0.05%
Cast	701	32.32%
Cast/Drift	35	1.61%
Cast/Troll	14	0.65%
Drift	1	0.05%
Still	961	44.31%
Still/Cast	423	19.50%
Still/Drift	10	0.46%
Still/Troll	1	0.05%
Troll	22	1.01%
Origin		
Marina	163	7.51%
Private	129	5.95%
Public	1877	86.54%

Table 3. Angler residence and fishing target of Irondequoit Bay interviews from April 1, 2007 to March 31, 2008.

	# Interviews	Percent
Residence		
Unspecified	2	0.09%
Allegany	4	0.18%
Cattaraugus	3	0.14%
Cayuga	2	0.09%
Chautauqua	1	0.05%
Chemung	4	0.18%
Erie	51	2.35%
Franklin	1	0.05%
Genesee	12	0.55%
Jefferson	1	0.05%
Livingston	13	0.60%
Madison	1	0.05%
Monroe	1821	83.96%
Niagara	85	3.92%
Ontario	21	0.97%
Orleans	48	2.21%
Oswego	2	0.09%
Steuben	3	0.14%
Wayne	75	3.46%
Wyoming	19	0.88%
Target		
Anything	449	20.70%
Bass	415	19.13%
Bullhead	73	3.37%
Gamefish	150	6.92%
Panfish	52	2.40%
Perch	973	44.86%
Pike	25	1.15%
Salmonids	8	0.37%
Walleye	24	1.11%

Table 4. Estimated daytime fishing effort (angler hours) on Irondequoit Bay from April 1, 2007 to March 31, 2008.

Month	WD Day		WE Day		WD Day		WE Day		Day					
	BoatAngHrs	SE	BoatAngHrs	SE	ShoreAngHrs	SE	ShoreAngHrs	SE	BoatAngHrs	SE	ShoreAngHrs	SE	Total	SE
April	1017.69	300.74	4746.00	733.38	2476.38	669.07	3570.00	470.19	5,763.69	792.64	6,046.38	817.76	11,810.1	1,138.9
May	2043.46	282.94	5596.67	494.68	1632.12	385.53	1820.83	85.51	7,640.13	569.88	3,452.95	394.90	11,093.1	693.3
June	2688.00	490.06	6533.33	581.53	1756.36	280.54	1960.00	231.76	9,221.33	760.48	3,716.36	363.89	12,937.7	843.1
July	3330.46	548.82	8060.80	760.60	1015.38	223.83	1760.00	123.78	11,391.26	937.93	2,775.38	255.77	14,166.6	972.2
August	2149.62	221.51	6641.25	663.01	464.42	172.92	1250.63	176.67	8,790.87	699.04	1,715.05	247.21	10,505.9	741.5
September	4036.67	417.10	6694.55	562.37	245.00	103.58	458.18	129.45	10,731.21	700.17	703.18	165.79	11,434.4	719.5
October	4376.57	643.62	5382.00	496.52	128.14	53.08	672.75	74.49	9,758.57	812.88	800.89	91.47	10,559.5	818.0
November	1617.00	1103.76	3993.00	377.27	330.00	129.62	528.00	47.14	5,610.00	1,166.45	858.00	137.93	6,468.0	1,174.6
December	163.33	97.61	588.00	225.98	746.67	419.80	861.00	228.86	751.33	246.16	1,607.67	478.13	2,359.0	537.8
January	434.44	335.16	945.56	177.61	1558.89	677.13	7883.89	1196.92	1,380.00	379.31	9,442.78	1,375.19	10,822.8	1,426.5
February	0.00	0.00	0.00	0.00	6916.88	3299.30	21175.00	2594.33	0.00	0.00	28,091.88	4,197.13	28,091.9	4,197.1
March	0.00	0.00	45.50	21.67	8629.83	3063.30	25138.75	4898.59	45.50	21.67	33,768.58	5,777.54	33,814.1	5,777.6
Total	21,857.2	1,639.9	49,226.7	1,710.9	25,900.1	4657.17	67,079.0	5706.56	71,083.9	2,369.88	92,979.1	7,365.74	164,063.0	7,737.6

Table 5. Estimated nighttime fishing effort (angler hours) on Irondequoit Bay from May 1, 2007 to September 30, 2007.

Month	WD Night		WE Night		WD Night		WE Night		Night					
	BoatAngHrs	SE	BoatAngHrs	SE	ShoreAngHrs	SE	ShoreAngHrs	SE	BoatAngHrs	SE	ShoreAngHrs	SE	Total	SE
May	310.50	117.84	132.00	49.48	224.25	86.25	78.00	26.61	442.50	127.81	302.25	90.26	744.8	156.47
June	252.00	39.84	118.80	20.20	466.20	153.80	194.40	56.25	370.80	44.67	660.60	163.77	1,031.4	169.75
July	462.00	198.00	243.00	135.00	297.00	297.00	162.00	81.00	705.00	239.64	459.00	307.85	1,164.0	390.13
August	345.00	207.00	128.00	57.69	0.00	0.00	24.00	24.00	473.00	214.89	24.00	24.00	497.0	216.22
September	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00
Total	1,369.5	312.3	621.8	156.23	987.5	345.40	458.4	104.92	1,991.3	349.19	1,445.9	360.99	3,437.2	502.24

Table 6. Estimated daytime fishing effort (angler hours) by target and month on Irondequoit Bay from April 1, 2007 to March 31, 2008.

Estimated Daytime Boat Fishing Effort by Target and Month														
Target	April	May	June	July	August	September	October	November	December	January	February	March	Total	%
Anything	648.5	2,161.1	3,738.4	3,980.7	3,727.5	2,343.7	727.5	109.3	0.0	0.0	0.0	0.0	17,436.5	24.5%
Bass	402.4	2,092.5	3,046.6	5,836.2	3,593.0	2,082.9	912.7	137.2	0.0	0.0	0.0	0.0	18,103.5	25.5%
Bullhead	0.0	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	0.0%
Gamefish	206.2	1,375.4	1,462.9	1,367.0	936.9	539.7	226.0	0.0	0.0	0.0	0.0	0.0	6,114.1	8.6%
Panfish	103.8	303.7	445.9	42.5	109.2	106.6	76.4	0.0	0.0	0.0	0.0	0.0	1,188.1	1.7%
Perch	3,768.5	1,047.2	120.7	0.0	325.6	5,643.3	7,562.9	5,197.8	751.3	1,380.0	0.0	45.5	25,842.9	36.4%
Pike	0.0	493.7	190.0	164.9	48.3	0.0	164.3	143.7	0.0	0.0	0.0	0.0	1,205.0	1.7%
Salmonids	634.2	0.0	0.0	0.0	0.0	0.0	63.3	22.0	0.0	0.0	0.0	0.0	719.5	1.0%
Walleye	0.0	155.8	216.8	0.0	50.4	15.0	25.5	0.0	0.0	0.0	0.0	0.0	463.5	0.7%
Total	5,763.7	7,640.1	9,221.3	11,391.3	8,790.9	10,731.2	9,758.6	5,610.0	751.3	1,380.0	0.0	45.5	71,083.9	100.0%
Percent	8.1%	10.7%	13.0%	16.0%	12.4%	15.1%	13.7%	7.9%	1.1%	1.9%	0.0%	0.1%	100.0%	
Estimated Daytime Shore Fishing Effort by Target and Month														
Target	April	May	June	July	August	September	October	November	December	January	February	March	Total	%
Anything	1,641.9	850.9	1,961.2	2,093.1	1,715.0	130.4	361.1	156.2	0.0	0.0	0.0	0.0	8,909.9	9.6%
Bass	0.0	104.2	0.0	0.0	0.0	164.5	0.0	0.0	0.0	0.0	0.0	0.0	268.7	0.3%
Bullhead	2,754.7	1,487.7	547.2	0.0	0.0	0.0	39.4	0.0	0.0	0.0	0.0	233.5	5,062.5	5.4%
Gamefish	0.0	49.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.2	0.1%
Panfish	462.7	387.8	1,208.0	682.3	0.0	56.7	0.0	0.0	0.0	0.0	0.0	0.0	2,797.5	3.0%
Perch	1,134.3	573.1	0.0	0.0	0.0	351.6	400.4	701.8	1,607.7	9,442.8	28,091.9	33,535.1	75,838.7	81.6%
Pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Salmonids	52.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	0.1%
Walleye	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	6,046.4	3,452.9	3,716.4	2,775.4	1,715.0	703.2	800.9	858.0	1,607.7	9,442.8	28,091.9	33,768.6	92,979.1	100.0%
Percent	6.5%	3.7%	4.0%	3.0%	1.8%	0.8%	0.9%	0.9%	1.7%	10.2%	30.2%	36.3%	100.0%	
Grand Total	11,810.1	11,093.1	12,937.7	14,166.6	10,505.9	11,434.4	10,559.5	6,468.0	2,359.0	10,822.8	28,091.9	33,814.1	164,063.0	
Percent	7.2%	6.8%	7.9%	8.6%	6.4%	7.0%	6.4%	3.9%	1.4%	6.6%	17.1%	20.6%	100.0%	

Table 7. Estimated nighttime fishing effort (angler hours) by target and month on Irondequoit Bay from May 1, 2007 to September 30, 2008.

Estimated Nighttime Boat Fishing Effort by Target and Month							
Target	May	June	July	August	September	Totals	%
Anything	112.2	54.6	152.1	0.0	0.0	318.9	16.0%
Bass	33.4	193.5	288.3	316.1	0.0	831.3	41.7%
Bullhead	0.0	22.8	0.0	0.0	0.0	22.8	1.1%
Gamefish	112.6	0.0	76.0	156.9	0.0	345.5	17.4%
Panfish	0.0	0.0	188.6	0.0	0.0	188.6	9.5%
Perch	21.0	34.4	0.0	0.0	0.0	55.4	2.8%
Pike	5.4	0.0	0.0	0.0	0.0	5.4	0.3%
Salmonids	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Walleye	157.9	65.5	0.0	0.0	0.0	223.5	11.2%
Totals	442.5	370.8	705.0	473.0	0.0	1,991.3	100.0%
Percent	22.2%	18.6%	35.4%	23.8%	0.0%	100.0%	
Estimated Nighttime Shore Fishing Effort by Target and Month							
Target	May	June	July	August	September	Totals	%
Anything	79.3	507.7	459.0	24.0	0.0	1,070.0	74.0%
Bass	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Bullhead	223.0	0.0	0.0	0.0	0.0	223.0	15.4%
Gamefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Panfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Perch	0.0	152.9	0.0	0.0	0.0	152.9	10.6%
Pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Salmonids	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Walleye	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Totals	302.3	660.6	459.0	24.0	0.0	1,445.9	100.0%
Percent	20.9%	45.7%	31.7%	1.7%	0.0%	100.0%	
Grand Total	744.8	1,031.4	1,164.0	497.0	0.0	3,437.2	
Percent	21.7%	30.0%	33.9%	14.5%	0.0%	100.0%	

Table 8. Estimated panfish catch, harvest, and release on Irondequoit Bay from 4/1/2007 to 3/31/2008.

Species	Catch		Harvest		Release		Legal Release		Sublegal Release	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Daytime Boat Fishing										
Brown bullhead	251.9	0.00	67.6	0.00	184.3	0.00	184.3	0.00	0.0	0.00
Black crappie	54.3	0.00	30.8	0.00	23.5	0.00	6.9	0.00	16.7	0.00
Rock bass	1,397.0	0.02	161.4	0.00	1,235.6	0.02	1,235.6	0.02	0.0	0.00
Pumpkinseed	971.2	0.01	150.9	0.00	820.4	0.01	820.4	0.01	0.0	0.00
Bluegill	3,790.3	0.05	812.2	0.01	2,978.1	0.04	2,978.1	0.04	0.0	0.00
Yellow perch	185,406.8	2.61	71,561.5	1.01	113,845.2	1.60	113,845.2	1.60	0.0	0.00
Total	191,871.5	2.70	72,784.4	1.02	119,087.1	1.68	119,070.4	1.68	16.7	0.00
Effort	71,083.9									
Daytime Shore Fishing										
Brown bullhead	3,931.3	0.18	3,619.1	0.17	312.2	0.01	312.2	0.01	0.0	0.00
Black crappie	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rock bass	1,127.6	0.05	462.9	0.02	664.7	0.03	664.7	0.03	0.0	0.00
Pumpkinseed	7,351.4	0.34	4,618.3	0.21	2,733.0	0.13	2,733.0	0.13	0.0	0.00
Bluegill	3,156.3	0.15	590.8	0.03	2,565.6	0.12	2,565.6	0.12	0.0	0.00
Yellow perch	41,377.7	1.91	10,058.9	0.46	31,318.8	1.44	31,318.8	1.44	0.0	0.00
Total	56,944.3	2.63	19,350.1	0.89	37,594.2	1.73	37,594.2	1.73	0.0	0.00
Effort	21,675.9									
Daytime Ice Fishing										
Brown bullhead	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Black crappie	12.7	0.00	12.7	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rock bass	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Pumpkinseed	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Bluegill	913.4	0.01	913.4	0.01	0.0	0.00	0.0	0.00	0.0	0.00
Yellow perch	378,294.1	5.31	151,247.5	2.12	227,046.5	3.18	227,046.5	3.18	0.0	0.00
Total	379,220.1	5.32	152,173.6	2.13	227,046.5	3.18	227,046.5	3.18	0.0	0.00
Effort	71,303.2									
Nighttime Boat Fishing										
Brown bullhead	3.2	0.00	0.4	0.00	2.8	0.00	2.8	0.00	0.0	0.00
Black crappie	22.3	0.01	0.0	0.00	22.3	0.01	6.0	0.00	16.3	0.01
Rock bass	72.8	0.04	19.9	0.01	52.9	0.03	52.9	0.03	0.0	0.00
Pumpkinseed	32.4	0.02	0.0	0.00	32.4	0.02	32.4	0.02	0.0	0.00
Bluegill	46.1	0.02	43.0	0.02	3.1	0.00	3.1	0.00	0.0	0.00
Yellow perch	163.3	0.08	52.0	0.03	111.3	0.06	111.3	0.06	0.0	0.00
Total	340.1	0.17	115.2	0.06	224.8	0.11	208.6	0.10	16.3	0.01
Effort	1,991.3									
Nighttime Shore Fishing										
Brown bullhead	67.5	0.05	67.5	0.05	0.0	0.00	0.0	0.00	0.0	0.00
Black crappie	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rock bass	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Pumpkinseed	998.8	0.69	643.7	0.45	355.0	0.25	355.0	0.25	0.0	0.00
Bluegill	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Yellow perch	4,896.4	3.39	629.9	0.44	4,266.4	2.95	4,266.4	2.95	0.0	0.00
Total	5,962.6	4.12	1,341.1	0.93	4,621.5	3.20	4,621.5	3.20	0.0	0.00
Effort	1,445.9									
Total Fishing										
Brown bullhead	4,253.9	0.03	3,754.6	0.02	499.3	0.00	499.3	0.00	0.0	0.00
Black crappie	89.2	0.00	43.4	0.00	45.8	0.00	12.9	0.00	32.9	0.00
Rock bass	2,597.4	0.02	644.3	0.00	1,953.2	0.01	1,953.2	0.01	0.0	0.00
Pumpkinseed	9,353.8	0.06	5,412.9	0.03	3,940.8	0.02	3,940.8	0.02	0.0	0.00
Bluegill	7,906.0	0.05	2,359.3	0.01	5,546.7	0.03	5,546.7	0.03	0.0	0.00
Yellow perch	610,138.2	3.64	233,549.9	1.39	376,588.3	2.25	376,588.3	2.25	0.0	0.00
Effort	167,500.2									
Total Panfish	634,338.6	3.79	245,764.4	1.47	388,574.2	2.32	388,541.2	2.32	32.9	0.00

Table 9. Estimated warm water gamefish catch, harvest, and release on Irondequoit Bay from 4/1/2007 to 3/31/2008.

Species	Catch		Harvest		Release		Legal Release		Sublegal Release	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Daytime Boat Fishing										
Northern pike	1,339.9	0.02	13.9	0.00	1,325.9	0.02	985.1	0.01	340.9	0.00
Smallmouth bass	520.2	0.01	23.3	0.00	496.9	0.01	150.7	0.00	346.2	0.00
Largemouth bass	15,843.5	0.22	927.5	0.01	14,916.0	0.21	6,586.3	0.09	8,329.7	0.12
Walleye	95.3	0.00	64.4	0.00	30.9	0.00	20.2	0.00	10.6	0.00
Total	17,798.8	0.25	1,029.2	0.01	16,769.6	0.24	7,742.3	0.11	9,027.4	0.13
Effort	71,083.9									
Daytime Shore Fishing										
Northern pike	10.0	0.00	0.0	0.00	10.0	0.00	0.0	0.00	10.0	0.00
Smallmouth bass	19.0	0.00	0.0	0.00	19.0	0.00	9.5	0.00	9.5	0.00
Largemouth bass	1,223.7	0.06	14.7	0.00	1,209.1	0.06	50.0	0.00	1,159.1	0.05
Walleye	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	1,252.7	0.06	14.7	0.00	1,238.0	0.06	59.5	0.00	1,178.5	0.05
Effort	21,675.9									
Daytime Ice Fishing										
Northern pike	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Smallmouth bass	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Largemouth bass	13.9	0.00	13.9	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Walleye	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	13.9	0.00	13.9	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	71,303.2									
Nighttime Boat Fishing										
Northern pike	88.5	0.04	5.7	0.00	82.8	0.04	78.7	0.04	4.1	0.00
Smallmouth bass	14.4	0.01	0.0	0.00	14.4	0.01	0.0	0.00	14.4	0.01
Largemouth bass	1,354.6	0.68	87.5	0.04	1,267.1	0.64	621.4	0.31	645.8	0.32
Walleye	133.4	0.07	76.0	0.04	57.4	0.03	57.4	0.03	0.0	0.00
Total	1,590.9	0.80	169.2	0.08	1,421.7	0.71	757.4	0.38	664.3	0.33
Effort	1,991.3									
Nighttime Shore Fishing										
Northern pike	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Smallmouth bass	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Largemouth bass	37.5	0.03	0.0	0.00	37.5	0.03	0.0	0.00	37.5	0.03
Walleye	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	37.5	0.03	0.0	0.00	37.5	0.03	0.0	0.00	37.5	0.03
Effort	1,445.9									
Total Fishing										
Northern pike	1,438.3	0.01	19.6	0.00	1,418.7	0.01	1,063.8	0.01	355.0	0.00
Smallmouth bass	553.6	0.00	23.3	0.00	530.3	0.00	160.2	0.00	370.0	0.00
Largemouth bass	18,473.2	0.11	1,043.5	0.01	17,429.7	0.10	7,257.7	0.04	10,172.0	0.06
Walleye	228.7	0.00	140.4	0.00	88.2	0.00	77.6	0.00	10.6	0.00
Effort	167,500.2									
Total Gamefish	20,693.8	0.12	1,226.9	0.01	19,466.9	0.12	8,559.2	0.05	10,907.7	0.07

Table 10. Estimated salmonid catch, harvest, and release on Irondequoit Bay from 4/1/2007 to 3/31/2008.

Species	Catch		Harvest		Release		Legal Release		Sublegal Release	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Daytime Boat Fishing										
Chinook salmon	4.7	0.00	0.0	0.00	4.7	0.00	4.7	0.00	0.0	0.00
Rainbow trout	5.0	0.00	5.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	61.4	0.00	61.4	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	71.1	0.00	66.4	0.00	4.7	0.00	4.7	0.00	0.0	0.00
Effort	71,083.9									
Daytime Shore Fishing										
Chinook salmon	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rainbow trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	21,675.9									
Daytime Ice Fishing										
Chinook salmon	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rainbow trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	71,303.2									
Nighttime Boat Fishing										
Chinook salmon	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rainbow trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	1,991.3									
Nighttime Shore Fishing										
Chinook salmon	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Rainbow trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Total	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	1,445.9									
Total Fishing										
Chinook salmon	4.7	0.00	0.0	0.00	4.7	0.00	4.7	0.00	0.0	0.00
Rainbow trout	5.0	0.00	5.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Brown trout	61.4	0.00	61.4	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Effort	167,500.2									
Total Salmonids	71.1	0.00	66.4	0.00	4.7	0.00	4.7	0.00	0.0	0.00

Table 11. Species caught by target from 2007-2008 Irondequoit Bay interviews. Bold indicates the number caught of the target species.

Boat Fishing Species Caught by Target																				
Target	Species Caught																	Effort	Directed	
	BBH	BLC	ROB	PSS	BGS	YP	CHP	NOP	SMB	LMB	WAE	COH	CHS	LLS	RT	BT	LT			Total
Anything	7	5	80	143	243	863	1	56	24	508	0	0	3	0	0	0	0	1,933	1,904.9	1.01
Bass	4	4	63	30	31	340	0	90	38	1,636	0	0	0	0	0	0	0	2,236	2,049.8	0.82
Bullhead	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	3	10.2	0.00
Gamefish	0	0	15	4	5	71	0	45	1	254	7	0	0	0	0	0	0	402	670.6	0.46
Panfish	0	1	41	16	63	231	0	0	2	15	0	0	0	0	0	0	0	369	138.7	2.54
Perch	38	0	16	41	263	31,744	0	4	13	36	0	0	0	0	1	0	0	32,156	3,616.6	8.78
Pike	0	0	3	0	2	120	0	30	0	24	1	0	0	0	0	0	0	180	139.4	0.22
Salmonids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	57.2	0.17
Walleye	1	0	6	2	0	56	0	0	3	16	2	0	0	0	0	0	0	86	110.0	0.02
Total	50	10	224	237	607	33,427	1	225	81	2,489	10	0	3	0	1	10	0	37,375	8,697.5	4.30
Shore Fishing Species Caught by Target																				
Target	Species Caught																	Effort	Directed	
	BBH	BLC	ROB	PSS	BGS	YP	CHP	NOP	SMB	LMB	WAE	COH	CHS	LLS	RT	BT	LT			Total
Anything	33	0	28	160	34	557	0	0	1	11	0	0	0	0	0	0	0	824	242.2	3.40
Bass	0	0	0	3	0	1	0	1	0	11	0	0	0	0	0	0	0	16	6.6	1.68
Bullhead	166	0	2	8	0	381	0	0	0	2	0	0	0	0	0	0	0	559	217.4	0.76
Gamefish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0.00
Panfish	0	0	3	69	14	250	0	0	0	1	0	0	0	0	0	0	0	337	70.9	4.74
Perch	2	0	1	3	16	1,415	0	0	0	1	0	0	0	0	0	0	0	1,438	227.4	6.22
Salmonids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7	0.00
Total	201	0	34	243	64	2,604	0	1	1	26	0	0	0	0	0	0	0	3,174	768.9	4.13
Ice Fishing Species Caught by Target																				
Target	Species Caught																	Effort	Directed	
	BBH	BLC	ROB	PSS	BGS	YP	CHP	NOP	SMB	LMB	WAE	COH	CHS	LLS	RT	BT	LT			Total
Perch	0	1	0	0	10	14,420	0	0	0	1	0	0	0	0	0	0	0	14,432	2,677.3	5.39
Total	0	1	0	0	10	14,420	0	0	0	1	0	0	0	0	0	0	0	14,432	2,677.3	5.39
Species Caught By Target																				
Target	Species Caught																	Effort	Directed	
	BBH	BLC	ROB	PSS	BGS	YP	CHP	NOP	SMB	LMB	WAE	COH	CHS	LLS	RT	BT	LT			Total
Anything	40	5	108	303	277	1,420	1	56	25	519	0	0	3	0	0	0	0	2,757	2,147.1	1.28
Bass	4	4	63	33	31	341	0	91	38	1,647	0	0	0	0	0	0	0	2,252	2,056.4	0.82
Bullhead	166	0	2	9	0	383	0	0	0	2	0	0	0	0	0	0	0	562	227.6	0.73
Gamefish	0	0	15	4	5	71	0	45	1	254	7	0	0	0	0	0	0	402	672.4	0.45
Panfish	0	1	44	85	77	481	0	0	2	16	0	0	0	0	0	0	0	706	209.7	3.28
Perch	40	1	17	44	289	47,579	0	4	13	38	0	0	0	0	1	0	0	48,026	6,521.3	7.30
Pike	0	0	3	0	2	120	0	30	0	24	1	0	0	0	0	0	0	180	139.4	0.22
Salmonids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	59.9	0.17
Walleye	1	0	6	2	0	56	0	0	3	16	2	0	0	0	0	0	0	86	110.0	0.02
Total	251	11	258	480	681	50,451	1	226	82	2,516	10	0	3	0	1	10	0	54,981	12,143.7	4.53

Table 12. Total fishing effort and pressure estimates from western and central New York waters.

Water (year)	Angler-hrs	Trips	Angler-hrs/A	Trips/A	Source
Irondequoit Bay (2007-08)					Present survey
Open water ¹	96,197	23,946	58.3	14.5	
Ice	71,303	13,981	43.2	8.5	
Conesus Lake (2000-01)					Sanderson (2003)
Open water ¹	60,397	12,252	17.7	3.6	
Ice	25,872	6,917	7.6	2.0	
Hemlock Lake (2005-2006)					Sanderson et al. (2008)
Open water ²	35,278	8,820	19.6	4.9	
Ice	477	119	0.3	0.1	
Canadice Lake (2005-2006)					Sanderson et al. (2008)
Open water ²	26,419	9,110	40.7	14.0	
Ice	2,316	799	3.6	1.2	
Oneida Lake (2007-08)					Krueger et al. (2009)
Open water ³	369,495	13,323	7.2	0.3	
Ice	91,080	7,538	1.8	0.1	
Oneida Lake (2006-07)					Krueger et al. (2009)
Open water ³	373,041	13,264	7.3	0.3	
Ice	29,601	6,673	0.6	0.1	
Oneida Lake (2005-06)					Krueger et al. (2009)
Open water ³	313,398	11,259	6.1	0.2	
Ice	7,038	4,960	0.1	0.1	
Oneida Lake (2004-05)					Krueger et al. (2009)
Open water ³	291,663	10,367	5.7	0.2	
Ice	72,450	6,840	1.4	0.1	
Oneida Lake (2003-04)					Krueger et al. (2009)
Open water ³	274,275	9,564	5.4	0.2	
Ice	67,482	6,280	1.3	0.1	
Oneida Lake (2002-03)					Krueger et al. (2009)
Open water ³	193,545	6,945	3.8	0.1	
Ice	74,520	6,981	1.5	0.1	
Oneida Lake (1997-98)					VanDeValk et al. (1999)
Open water ⁴	316,796	35,635	6.2	0.7	
Ice	38,083	9,133	0.7	0.2	
Cassadaga Lake (1999-2000)					McKeown and Einhouse (2002)
Open water ³	21,731	4,435	93.7	19.1	
Ice	506	230	2.2	1.0	
Bear Lake (1999-2000)					McKeown and Einhouse (2002)
Open water ³	6,662	2,082	47.2	14.8	
Ice	1,998	740	14.2	5.2	
Chautauqua Lake (1998-99)					McKeown and Einhouse (2000)
Open water ³	339,609	71,846	25.8	5.5	
Ice	41,602	11,910	3.2	0.9	
Whitney Pt. Reservoir(1999-2000)					Bishop and Lemon (2002)
Open water ²	54,902	16,484	11.9	3.5	
Ice	11,382	3,542	2.5	0.8	

- Notes: 1. Includes daytime boat and shore, nighttime boat and shore effort.
 2. Daytime boat and shore effort.
 3. Daytime boat effort only.
 4. Includes daytime boat and nighttime boat effort.

Table 13. Estimated overall catch rates by species from western and central New York waters.

Water (year)	YP	LMB	SMB	WAE	Source
Irondequoit Bay (2007-08)					Present survey
Open water ¹	2.41	0.11	<0.01	<0.01	
Ice	5.39	<0.01	0.00	0.00	
Conesus Lake (2000-01)					Sanderson (2003)
Open water ¹	0.01	0.22	0.06	0.005	
Ice	0.05	0.01	<0.01	0.00	
Hemlock Lake					Sanderson et al. (2008)
Open water ²	0.01	0.08	0.08	<0.01	
Ice	na	na	na	0.00	
Canadice Lake					Sanderson et al. (2008)
Open water ²	0.02	0.05	0.06	na	
Ice	na	na	na	na	
Oneida Lake (2007-08)					Krueger et al. (2009)
Open water ³	0.52	0.19*	*	0.19	
Ice	0.58	na	na	0.26	
Oneida Lake (2006-07)					Krueger et al. (2009)
Open water ³	0.58	0.19*	*	0.22	
Ice	0.55	na	na	0.12	
Oneida Lake (2005-06)					Krueger et al. (2009)
Open water ³	0.07	0.17*	*	0.19	
Ice	0.03	na	na	0.05	
Oneida Lake (2004-05)					Krueger et al. (2009)
Open water ³	0.08	0.15*	*	0.63	
Ice	0.17	na	na	0.09	
Oneida Lake (2003-04)					Krueger et al. (2009)
Open water ³	0.24	0.24*	*	0.43	
Ice	0.63	na	na	0.23	
Oneida Lake (2002-03)					Krueger et al. (2009)
Open water ³	0.44	0.19*	*	0.23	
Ice	1.00	na	na	0.12	
Oneida Lake (1997-98)					VanDeValk et al. (1999)
Open water ⁴	0.38	na	0.10	0.18	
Ice	1.60	n/a	0.00	0.05	
Cassadaga Lake (99-2000)					McKeown and Einhouse (2002)
Open water ³	0.38	0.21	0.07	0.002	
Ice	0.65	0.00	0.00	0.00	
Bear Lake (99-2000)					McKeown and Einhouse (2002)
Open water ³	0.59	0.04	0.02	0.003	
Ice	0.30	0.00	0.00	0.06	
Chautauqua Lake (1998-99)					McKeown and Einhouse (2000)
Open water ³	1.11	0.04	0.04	0.16	
Ice	2.02	0.00	0.00	0.11	
Whitney Pt. Reservoir(1999-2000)					Bishop and Lemon (2002)
Open water ²	0.16	0.11*	*	0.30	
Ice	0.15	0.00	0.00	0.09	

* reported as "black bass"

- Notes: 1. Includes daytime boat and shore, nighttime boat and shore fishing.
 2. Daytime boat and shore fishing.
 3. Daytime boat fishing only.
 4. Includes daytime boat and nighttime boat fishing.

Table 14. Targeted catch rates by species from western and central New York waters.

Water (year)	YP	LMB	SMB	WAE	Source
Irondequoit Bay (2007-08)					Present survey
Open water ¹	8.63	0.80	0.02	0.02	
Ice	5.39	na	na	na	
Irondequoit Bay (1985)					Lane (1988)
Open water diaries ³	na	0.70	0.30	na	
Conesus Lake (2000-01)					Sanderson (2003)
Open water ¹	0.00	0.45	0.13	0.05	
Ice	0.24	0.15	0.00	0.00	
Hemlock Lake					Sanderson et al. (2008)
Open water ²	0.66	0.40	0.46	0.00	
Ice	na	na	na	na	
Canadice Lake					Sanderson et al. (2008)
Open water ²	0.07	0.13	0.16	na	
Ice	na	na	na	na	
Oneida Lake (2007-08)					Krueger et al. (2009)
Open water ³	1.79	0.79*	*	0.30	
Ice	0.68	na	na	0.29	
Oneida Lake (2006-07)					Krueger et al. (2009)
Open water ³	2.99	0.69*	*	0.31	
Ice	na	na	na	na	
Oneida Lake (2005-06)					Krueger et al. (2009) VanDeValk et al. (2006)
Open water ³	1.51	0.70*	0.54	0.25	
Ice	0.13	na	na	0.10	
Oneida Lake (2004-05)					Krueger et al. (2009) VanDeValk et al. (2005)
Open water ³	0.64	0.62*	0.41	0.75	
Ice	0.40	na	na	0.12	
Oneida Lake (2003-04)					Krueger et al. (2009)
Open water ³	1.10	0.71*	*	0.58	
Ice	0.71	na	na	0.34	
Oneida Lake (2002-03)					Krueger et al. (2009)
Open water ³	2.32	0.52*	*	0.35	
Ice	1.22	na	na	0.18	
Oneida Lake (1997-98)					VanDeValk et al. (1999)
Open water ⁴	2.50	na	0.32	0.21	
Ice	1.41	na	0.00	0.04	
Cassadaga Lake (99-2000)					McKeown and Einhouse (2002)
Open water ³	2.89	0.46	0.50	na	
Ice	na	na	na	0.00	
Bear Lake (99-2000)					McKeown and Einhouse (2002)
Open water ³	20.0	0.20	0.29	na	
Ice	na	na	na	0.04	
Chautauqua Lake (1998-99)					McKeown and Einhouse (2000)
Open water ³	6.98	0.23	0.12	0.33	
Ice	4.38	na	na	0.20	
Whitney Pt. Reservoir(1999-2000)					Bishop and Lemon (2002)
Open water ²	2.17	0.34*	*	0.49	
Ice	0.30	na	na	0.24	

* reported as "black bass"

Notes: 1. Includes daytime boat and shore, nighttime boat and shore fishing.

2. Daytime boat and shore fishing.

3. Daytime boat fishing only.

4. Includes daytime boat and nighttime boat fishing.

Table 15. Ice Fishing effort and associated yellow perch harvest at Conesus Lake from 1965 to 2001. (From Lane 1993 and Sanderson 2003).

Year	Angler Trips	Trip Duration (hr)	Angler Hours	Number of Perch Harvested	Harvest Rate (Perch/angler hr.)	Days Safe Ice
1965	14,500	4.7	68,585	121,945	1.78	77
1971	28,142	4.0	111,490	172,198	1.54	81
1973	17,308	4.6	79,859	129,730	1.62	46
1974	17,629	4.5	78,517	84,946	1.08	50
1988	780**	4.5*	3,509	not calculated	not calculated	74
1992	2,168**	4.5*	9,756	2,880	0.30	51
2001	6,917	3.7	25,872	1,398	0.05	84
2008 Irondequoit Bay	13,981	5.1	71,303	151,248	2.12	74

* Average of angler trip durations from 1965 - 1974

** Calculated using average angler trip duration 1965 - 1974

Table 16. Potential reduction in yellow perch harvest by a 25 fish limit from 2007-2008 Irondequoit Bay interviews.

Parties/Anglers Interviewed that Kept more than 25 Yellow Perch												
Location	Interviews	% Interviews	Anglers Interviewed	% Anglers Interviewed	YP Kept	% YP Kept	25 YP Limit	% 25 YP Limit of YP Kept	YP Saved	% YP Kept	YP Kept under 25 YP Limit	% YP Kept Reduced
Boat	73	5.1%	137	4.7%	5,190	40.2%	3,425	34.0%	1,765	13.7%	11,158	13.7%
Ice	33	7.7%	39	5.9%	1,549	27.9%	975	37.1%	574	10.3%	4,979	10.3%
Shore	2	0.7%	2	0.7%	70	8.2%	50	28.6%	20	2.3%	834	2.3%
Total	108	5.0%	178	4.6%	6,809	35.2%	4,450	34.6%	2,359	12.2%	16,971	12.2%
				YP/Angler	38.25		25.00		13.25			