

CREDIT RIVER ANGLERS ASSOCIATION

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July 5, 2010

MNR - Lake Ontario Management Unit
Attn : Jim Bowlby, Marion Daniels and Kevin Loftus
41 Hatchery Lane
RR 4 Picton ON K0K2T0

Dear Jim Bowlby, Marion Daniels and Andy Todd,

Re : Lake Ontario Steelhead management - CRAA response to the Lake Ontario Management Unit to Email and Attachment (Dated April 6, 2009) in reply to John Kendell

In review of LOMU's position on steelhead populations in Lake Ontario and tributaries CRAA submits the following information for further review and discussion. CRAA appreciates the LOMU's support in discussing the issues and working with our large membership towards a better understanding of the specie in our local rivers and best management practices.

However, and I will be blunt, CRAA does not support the limited steps LOMU has taken in the past 25 years at protecting our GTA wild steelhead stocks whatsoever. In our opinion, and this is based on significant scientific review, peer reviews and consultations with virtually every jurisdiction in the Great Lakes, LOMU has done a very poor job at protecting wild steelhead stocks from severe over exploitation in both our tributaries and Lake Ontario. It is our hope that LOMU will work with us and other NGO's to make positive changes to lower harvest to protect maiden spawners, increase repeat spawner rates and improve wild steelhead populations. It is our assertion that steelhead runs will improve, catch rates will improve and larger, trophy steelhead will become more common by lowering limits and reducing harvest on the north shore of Lake Ontario.

CRAA appreciates MNR and LOMU have a delicate balance to meet anglers varying desires. However, MNR/LOMU needs to take a greater leadership role in educating anglers and discussing potential outcomes for the fishery based on various management options. The general public has been very clear in demanding more and larger steelhead and wild steelhead for the past decade in every survey undertaken in southern Ontario. Yet the present management of Lake Ontario steelhead does not meet the demands of the public and in our opinion does not fit with Great Lakes steelhead knowledge or best management practices. By taking a leadership role and educating user groups and partners at events such as FMZ 20 meetings it will help shape a better fishery. Simply asking for input from angler groups that do not have a scientific based knowledge and extensive literature review will result in a scattered approach based on individuals 'experience' and not with a measure of scientific focus.

The fact NYSDEC has a significantly lower harvest limit with a minimum size limit of 21" on steelhead in New York state on a predominately hatchery based put and take fishery is arguably the greatest example of Ontario's lax management of steelhead. Ontario just recently lowered the tributary limit for steelhead to two fish, while leaving Lake Ontario at five fish. Ontario's tributary fishing relies almost exclusively on wild steelhead, yet our harvest limits are far higher than New York and our runs are severely depressed compared to the 1985-95 era. For the past three years New York has seen a substantial increase (up to 200%) in their steelhead fishery and adult river returns, which coincides precisely with the lower limits imposed in the fall of 2006. Meanwhile, Ontario's steelhead runs (except the Credit River) have shown no statistical change in returns. Research into Great Lakes steelhead has shown where exploitation occurs, a two fish limit by itself is grossly inadequate and does little or nothing to reduce harvest impacts on the population (reduction from 5 to 2 fish). Ontario moved from 5 to 2 fish on tributaries a few years ago and as predicted, it has done nothing to improve the fishery!

The evidence that LOMU's management of steelhead has created severely depressed stocks is very strong and growing. Older studies on the Brule River in Wisconsin and ongoing studies on Portage Creek, Ontario provide excellent data. LHMU of MNR has clear creel and model data to support lower limits (highlighted in Table 3 of the attached document), as does Michigan DEC, Wisconsin DEC, Ohio and New York. Factor in peer reviewed studies and graduate work like Addison and Doctoral work such as Swank and you have mounting evidence. But the LOMU has argued these are other great lakes and do not reflect Lake Ontario. The exploding steelhead fishery in New York tributaries provides crystal clear results as to the benefit of lower limits and reduced harvest on the Lake Ontario population. Stocking has remained stable for the period and natural reproduction for the period was at or below normal. Yet their steelhead runs have jumped almost 200% since the substantial limit reduction.

This population rebound has been seen on many species in Ontario where MNR has made the leadership decision to lower harvest. Musky are a leading example with very strict limits and minimum size limits. The Severn Sound walleye population is another prime example. In the 1950's the area became a popular walleye fishery. The fishery collapsed in the 1960's. Walleye were scarce in the 1970's and 80's. In the early 90's MNR implemented a low limit and a slot limit. In recent years the population has rebounded to a strong fishery once again!

CRAA believes LOMU is also working with severely limited creel data on the lake and tributary fishery. This is in our opinion a result of steady budget cuts from the MNR's fish and wildlife budget. It makes LOMU's job very difficult not to have extensive creel data covering the entire fishery on any and all systems. Lake creel employees have rarely been seen for over a decade by the author of this report, even though I employ staff every summer at Port Credit, the highest launch port on Ontario's side of the lake. In 25 years I have never once seen a creel survey on a tributary, except Les Stanfield's weir on Wilmot Creek in 1993. With over 1,500 days spent on a north shore tributary in 25 years I have never seen a creel study person! Yet in Owen Sound and southern Georgian Bay I was

surveyed at least a dozen times in the early-mid 90's and have been surveyed several times in the US. Luckily NYSDEC does have some long standing and steady creel data that is comparable year to year for the Lake Ontario fishery and their tributaries.

Jim has expressed in recent years that he believes a bottleneck between smolt and adult survival is the cause for steelhead declines. Based on this analysis the population should therefore remain stable, regardless of juvenile reproduction in the stream. The bottleneck would limit smolt survival and adult returns would remain stable in this scenario. Jim expressed that lower limits would not change adult returns to the river or subsequent reproduction. The Credit River is proving this theory wrong, as our runs have doubled in the past three years and continue a strong growth trend. This is a result of access to new and better spawning grounds and increased juvenile reproduction. The NY returns are also proving the theory wrong in that runs have jumped substantially on the south shore where limits were cut, whereas they have remained stable on the north shore where limits have not been lowered to a level to cause such a change.

CRAA would like to move forward with LOMU/MNR to discuss management tools to lower harvest in both the lake and tributaries on wild steelhead. Angling pressure is growing through more targeting in the lake and intense pressure on shore. We must address harvest and move to protect our wild steelhead immediately. The Ganaraska lift is running at 30% of its record in 1989 and other rivers are a mere shadow of themselves in the GTA, except the Credit. The Credit is breaking the trend based on millions of dollars in work by CRAA working with MNR and partners.

A meeting to discuss some alternatives on this subject is appropriate between CRAA and LOMU and district MNR staff and management. If we can find some common ground we can move forward to committees and look at public consultations. Time is of the essence.

Sincerely,

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cc: Mark Heaton, MNR Aurora
 Jon Clayton, CVC
 Float Fishing.net
 Ganaraska Wild Steelhead Association
 Chris Robinson, OFAH

To clarify prior to responding to certain items, CRAA's purpose for writing this response is to implement the following objectives for Lake Ontario Rainbow Trout management;

- Protect the biological needs of Lake Ontario Rainbow Trout by optimizing the survival of adult spawners and the natural production of young fish
- Preserve and enhance the productivity, abundance, spatial distribution, life-history and genetic diversity of Lake Ontario Rainbow Trout by promoting natural reproduction and local adaptation
- Provide a “quality angling experience” for Lake Ontario anglers, where a “quality angling experience” is defined by:
 - Participating in a diversity of angling opportunities throughout the year in a healthy, clean environment
 - Catching lots of wild Rainbow Trout (high catch per unit effort) including an excellent chance of catching large, old “trophy” fish. These trophy fish are often absent where angling harvest is high
 - Catching wild fish which have superior sporting attributes and are an excellent indicator of a healthy stream environment and ecosystem capable of supporting natural reproduction
 - Harvesting some Rainbow Trout for the table so long as the rate of harvest does not impact upon the health of wild Rainbow Trout populations

1.

Without using the stock recruitment model proposed by LOMU, and examining peak population size followed by declines, it can be demonstrated that the peak for the Ganaraska occurred in 1989, followed by a significant decline in population size. Despite not having pre-1992 data for Wilmot Creek, it can be seen based on the available data that the peak population was in 1993, followed by a significant decline (Figure 1). From this, we deduct that the peak of the populations followed by a decline were approximately four years apart, or one generation for a Rainbow Trout population. Given the proximity of both tributaries, one would suspect that limitation within Lake Ontario would affect both populations simultaneously. CRAA agrees that both populations are holding at a stable, although depressed, population size. Without having a comparable stock recruitment model for Wilmot Creek, can you state that the two populations declined within a one year lag of each other?

CRAA also contends that this population impact follows angler pressure and harvest rate precisely based on anecdotal information and does not fit with LOMU's past creel data from the era, which as outlined in our opening letter was extremely limited. The lower Ganaraska fishery exploded amongst anglers in the 1990-91 eras. The author fished the site regularly in 1989-96 (1-4 times per week in fall and spring). In 1989 angler pressure in the Port Hope harbour was light (10-20 guys per outing average). By 1991 it was common to see 200-300 per outing on average. In 1992 at peak fish movements it was also common to see garbage cans filled with gutted hen steelhead. Unethical fishing was common place at the time and fish were plentiful. Catches of 10 to 50 steelhead per experienced angler in 1990 were common from October to April. Whereas today catches of 0-5 are common in the same time.

Angling pressure on Wilmot Creek also grew exponentially in 1993-96 as a direct result of the Canadian Sportfishing Show. The hosts aired at least a dozen shows fishing Wilmot Creek in the 92-94 era causing widespread angler awareness to the small stream and the great steelhead run. Up to and including 1992 fishing pressure in the pre-season March-April fishery was light. It was uncommon to see more than 5 to 10 anglers in March at peak season fishing and catches of 10-50 fish were common place. By 1993-94 fishing pressure had exploded, with 300-500 anglers at peak run times. On a single day the author witnessed over 1,000 pre-spawn steelhead harvested from lower Wilmot Creek in early April, 1994. In both cases the fishery collapsed within 1-2 years of massive angling pressure and harvest. The collapses were four years apart, and so was the exponential growth of fishing pressure. LOMU's data from very limited creel surveys in this period does not reflect what actually occurred on the ground in the period.

NYSDEC creel data shows an increase in catch/angler hour through the 1990s, declining through the early 2000, and then responding favorably in 2007 to NY's new regulation of a one fish 21" minimum size restriction (shore is 1 fish, lake is 3 fish) (Figure 2). This data is in disagreement with LOMU's, where they noted a stable abundance of Rainbow Trout since the early 1990s, following high abundance through the mid/late 1980s. NYDEC data show similar abundance during the mid/late 1980s as the early 2000's which contradicts MNR's data. We also contend that DEC has far more creel agents and detailed data than MNR. Again this is the result of MNR budget cuts and does not reflect the staff, but rather the fiscal limitations they are forced to work with.

Looking at NYSDEC's lake angler data the best steelhead runs should have occurred in 1992 to 1999 and 2008 to present. Yet MNR's fish population data from the Ganaraska and Wilmot Creek peaked in 1989 and 1993 respectively. These two same systems showed a substantial crash (by 50% or more) within one generation (4 years) by 1993 for the Ganaraska River and 1997 for Wilmot Creek. The steelhead runs in these two systems has performed the exact opposite of the Lake Ontario population looking at NYSDEC's very detailed creel data. With clear evidence that the lake fishery was strong at the same time two rivers with dramatic increases in fishing pressure crashed locally proves irrefutable evidence that specific impacts on the watersheds in question caused the crash and it had nothing to do with changes in the lake.

1992 and 1994 were also considered widely as strong year classes, yet the fishery continued to collapse in the face of favourable natural reproduction. The lake is clearly not the culprit based on NYSDEC's data, again forcing us to examine what changed in the two study streams causing the massive decline. The only major force that changed in the period was fishing pressure. The two streams are adjacent to each other and thus have almost identical environmental influences. This precludes weather and year class strength as the force of impact due to massive declines occurring four years apart! Only harvest, in particular, the pre-spawn run period of fall and spring had dramatic changes that correspond to the population crashes!

Examining spawning survey data from 16-Mile (Oakville) Creek, which does not receive heavy angling pressure or exploitation, it has not undergone the decline seen on the

Ganaraska River or Wilmot Creek (Figure 3). Spawning surveys were conducted in 1992-1995 and 2002 across the same stream reaches. This is corroborated with spring fishway data from the Credit River, where a decline is not found; in contrast, the population has been increasing since 2004 (Figure 4).

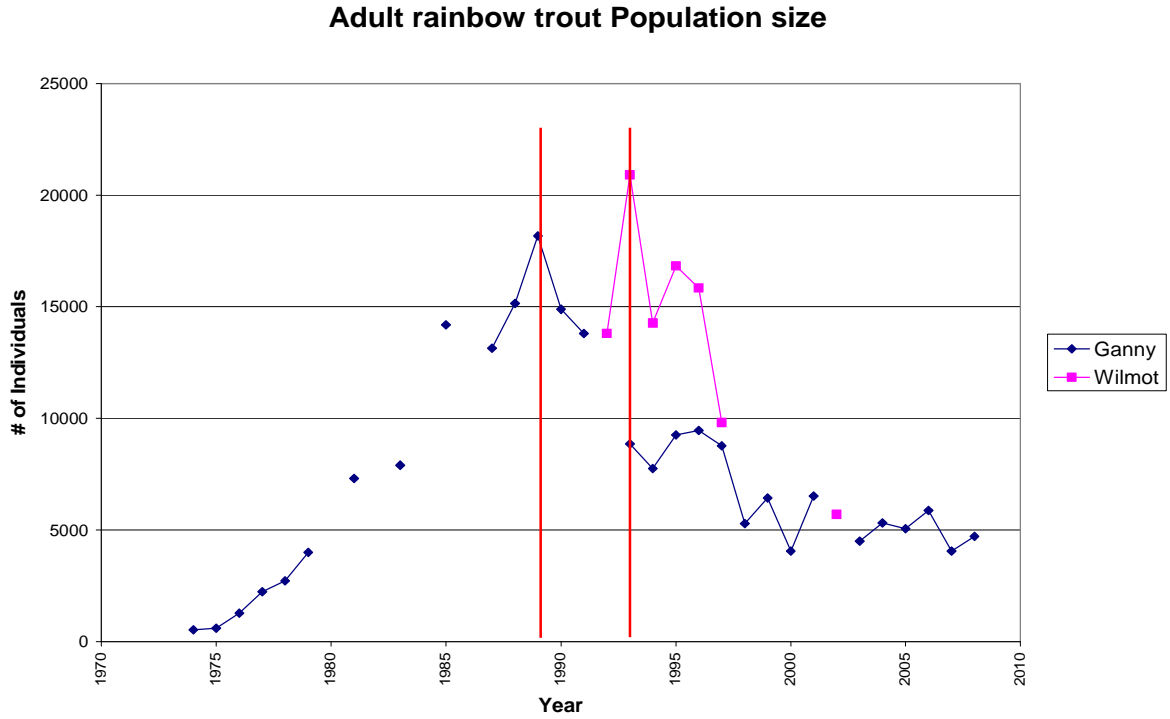


Figure 1. Adult Rainbow Trout population size for the Ganaraska River and Wilmot Creek. MNR unpublished data

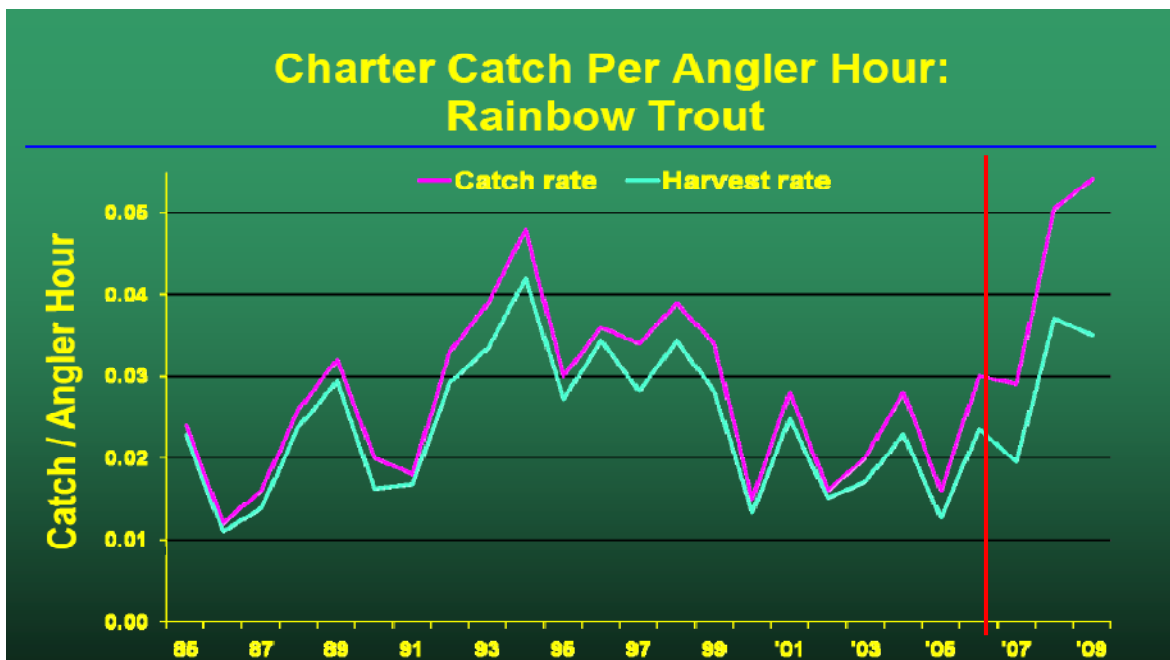


Figure 2. New York charter catch per angler hour. Vertical red line indicates reduced possession and increased minimum size regulation. Source: J Lantry, NYDEC Aquatic Biologist, Pers. Comm.

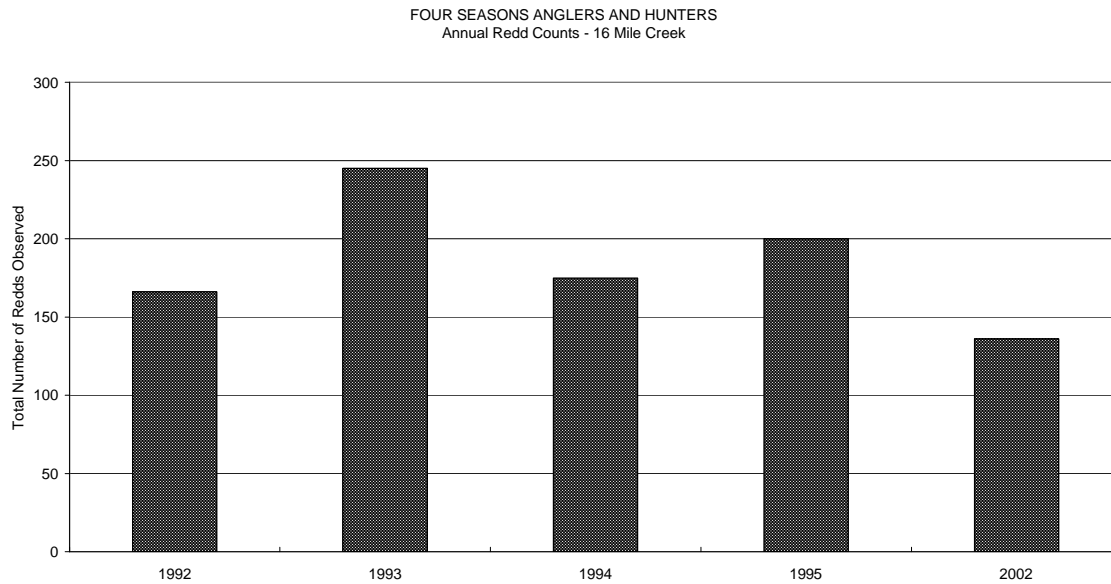


Figure 3. Annual spring redd count data on 16 Mile Creek. Data provided by the Four Seasons Anglers and Hunters

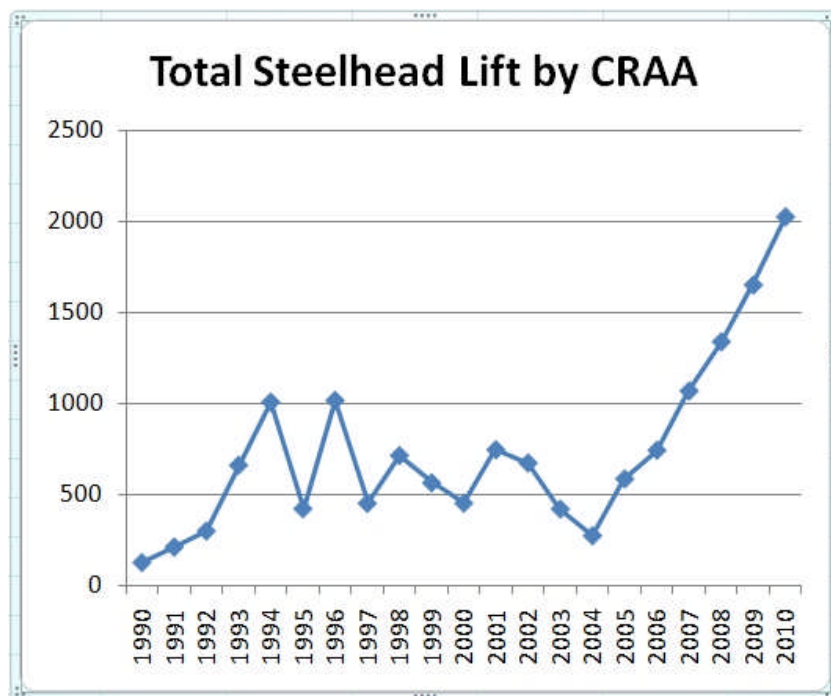


Figure 4. Credit River fishway Rainbow Trout counts. CRAA unpublished data

The Gannaraska River has dropped below 50% repeat spawning rate in recent years that coincides with population decline and periods of heavy fishing pressure. (Figure 5). Other studies have shown that a minimum of 50% total repeat spawners is required for a healthy population. The Gannaraska River has remained below this threshold since about the early 1990s, when the population stabilized at its current population size. **If harvest**

was not an issue, it would be expected that the repeat spawner rate would have increased above the threshold required.

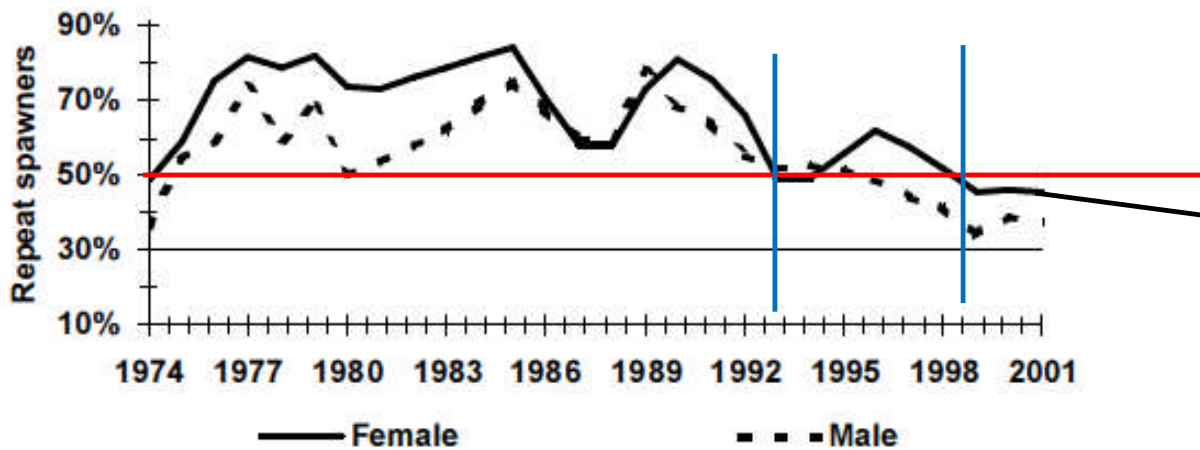


Figure 5. Repeat spawning rates for Ganaraska River Rainbow Trout 1974-2004. Red line indicates 50% repeat spawner threshold. Source LOMU annual report 2001. LOMU data to 2005 shows repeat rates at less than 50% and no data for the subject after 2005 in their reports. The post 2001 trend has been averaged and added to graph. The blue lines represent two major population declines.

Declines in natural recruitment or over-harvest of pre-spawning maidens and immature fish may not be detected by using the repeat spawning index method¹. LOMU claims that “a significant portion of the harvest in some fisheries came from sub-adult fish”. If this were the case, we would not expect to see declines in repeat spawner rates, while in fact, the opposite is occurring. CRAA agrees that a large year class can cause the repeat spawner rate to decline, but acknowledges that the repeat spawning index tool is meant to be averaged over several years (one generation) within populations where fluctuating recruitment occurs. Only examining one year of data does not effectively measure repeat spawning rates. Figure 5 shows a repeat spawner rate based on several years of data. The decline in repeat rates in 1987-88 most likely represent a major year class (seen by record run in 1989). However the blue lines added to the graph show repeat rates dropping below 50% coinciding with major population drops. This is no coincidence. Repeat rates above 70% are steady for the 1976 to 1990 era, then falling to below 50% in 1993 and getting even worse post 2000. CRAA also encourages LOMU to examine the number of repeat spawning events greater than one repeat, as well as the total age of individuals. An example is given in Figure 6, examining a heavily exploited population, and then the same population following the prohibition of harvest, with the population showing a higher proportion of repeat spawners, along with a larger diversity of ages comprising repeat spawners. Data available from the Altmar Hatchery on the Salmon River, New York indicates a favorable response in the population following the late 2006 regulation change to a one fish 21” minimum size restriction (Figure 7). Anecdotal

¹ Clarkson, J., and M.L. Jones. 1997. A method to estimate an index of mortality based on proportion of repeat spawners in a rainbow trout (*Oncorhynchus mykiss*) population. Ontario Ministry of Natural Resources technical paper.

evidence also indicates increased angler satisfaction with the increased population size, catch rates and overall quality of the fishery.

Portage Creek Steelhead

Comparison of Repeat Spawners 2004 to 2009

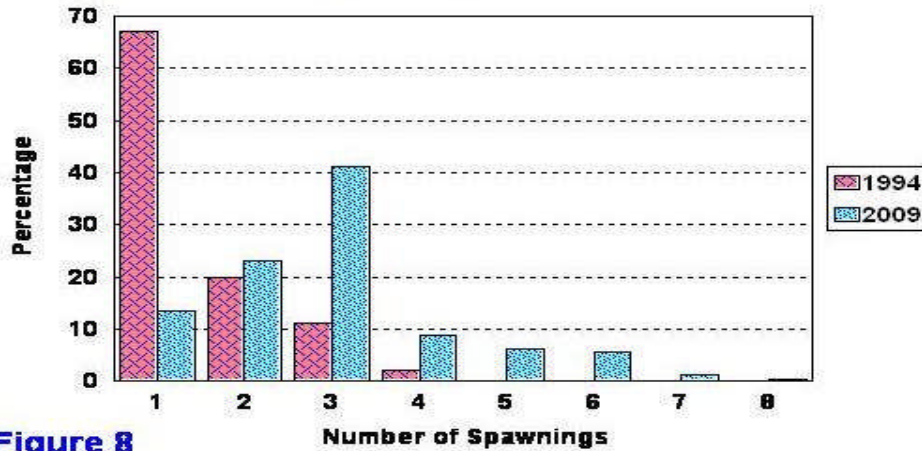


Figure 8

Figure 6. Comparison of heavy exploitation (1994) with no-exploitation (2009) on the same population. MNR unpublished data

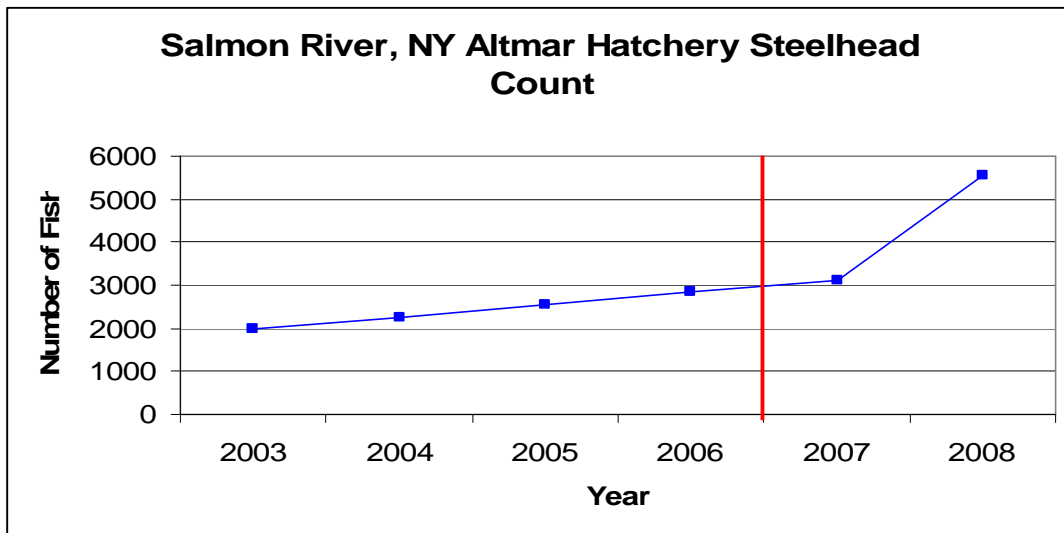


Figure 7. Salmon River, NY Altmar Hatchery steelhead Count. Vertical red line indicates reduced possession and increased minimum size regulation. Source: D. Bishop, NYSDEC Pers. Comm

2. LOMU states that post opening day of trout season effort in 1994 was just 74% of the effort of 1992. The 1994 creel survey states that angling hours dropped by 11% between 1992 and 1994, and angler success (measured in catch and effort expended) has increased (Table 1). The study continues to state that a decrease in actual angler hours may be related to differences in weather patterns between the two years. The winter of 1992 was relatively mild, with an early spring allowing for a longer fishing season. In 1994,

temperatures were bitterly cold late into the spring. The weather on opening weekend for the 1994 season was also dismal, with rain and cold temperatures recorded. These two factors may have played a large part in the reduced angler hours.

Table 1. Wilmot Creek creel survey results

Creel	Angler pressure total hours (opening weekend)	Catch per hour angling	Number Rainbow Trout harvested	Total catch Rainbow Trout	Percent harvested from total population
1977 pre and post opening weekend	14,000	N/A	N/A	N/A	N/A
1977 spring (opening weekend)	6,200	0.0245	152	152+	N/A
1977 Fall	9,408	0.067	646	771	N/A
1976 Fall	5,846	0.060	353	474	N/A
Spring 1992	38,480	0.159	2,526	6,267	40%
Spring 1994	34,306	0.283	3,528	9,715	42%
Fall 1994	6,520	0.238	467	1,314	3%

Adapted from The Wilmot Creek Study: spatial and temporal analysis of fish communities in the Wilmot basin and The Wilmot Creek 1994 creel summary and population assessment report

Fishing opportunities have also increased over the years. Prior to 1957, Rainbow Trout season was closed from the end of September to the opening weekend the following spring. In 1957, an extended season (Oct-Dec) was offered for portions of Durham County streams south of Hwy 2. In 1990, fishing opportunities were again enhanced, by designating all-year fishing zones on portions of Durham County streams south of the CNR tracks. Angling effort in this early season is twice that for 1977, apart from opening weekend.

The creel data collected and available for comparison is severely limited and lacks far too much data to provide a reliable or accurate look at the fishery and harvest impacts. Steelhead are present in the tributary streams from September 1 to June 15 and open to harvest in the lake all year, with peak activity occurring at piers in Fall and Spring and in the open water fishery from March to October. Creel data needs to be collected on the streams, piers and lake in a consistent manner, year after year and include a proper look at the whole fishery throughout the fishing period. This data is grossly inadequate.

Table 2 shows past creel survey results and how harvest is directed at Rainbow Trout within the Ganaraska River, with higher levels of harvest during the fall. The highest levels of harvest occurred during the peak of the overall population size. It is stated in the 1979 fall creel survey that approximately 40 % of the Rainbow Trout caught were released, with the average size harvested being 50.9cm FL. The relatively high release rate was undoubtedly related to publicity concerning contaminants in Lake Ontario salmonids, and to the fact that large numbers of small precocious fish were caught by anglers. The harvest levels in 1999 likely underestimate harvest, as the fall component of the fishery is not incorporated, which based on past creel surveys has the highest harvest rate. Also, the 1999 survey was conducted later in the season, missing the pre-trout

opening harvest which has been the second highest period of harvest. It can also be seen, especially **in 1999, where the total catch of Rainbow Trout is higher than the total population size (The total population estimate is 6,442 for the year, yet total catch in the spring alone is estimated at 10,693 fish).** This shows the importance of maximizing the number of released fish to provide a lot of sport for anglers. It is estimated that each fish in the population is caught 1.7 times during the late-spring component of the fishery based on the creel data available. With heavy angler exploitation, the quality of the angling experience (lower CPUE) declines.

Table 2. Ganaraska River creel survey results

Creel	Harvest per angling hour	Effort (Angler – hr)	Number Rainbow Trout harvested	Total catch Rainbow Trout	Percent harvested from total population
1976 Fall	0.061	12,253	806	N/A	N/A
1977 early spring	0.038	28,561	1,026	N/A	45.9%
1977 Fall	N/A	N/A	617	N/A	N/A
1979 Fall	0.065	16,808	1,097	N/A	
1980 Spring	0.025	21,500	522	750	29%*
1991 Fall	N/A	41,544	2,140	3,367	13.3%
1992 Spring	N/A	31,766	1,433	5,177	8.9%
1999 Spring	N/A	24,400	1,707	10,693	18.7%†

Smith, P.A. Creel Survey of Ganaraska River at Port Hope 1976 extended fall angling period and 1977 early spring angling period

* estimated from an adult population size of 5,655 individuals

† Total population size in 1999 was 6,442 indicating that percent harvest should be 27%

Again, the first issue is there is absolutely no consistent creel data for managers to develop a proper and complete look at the population and harvest impacts. In the 1999 creel the fall and winter fishery are totally excluded. Yet the fall of 1991 shows much higher fall harvest. The spring creel does not encompass the peak winter fishing months of December to mid-march either. Again, the creel is looking at such a small portion of the river fishing activity that the data is severely inadequate.

3. LOMU states “Since 2001 we have aged scales from rainbow trout harvested in a number of Ganaraska and other Lake Ontario fisheries. From this new data it quickly became apparent that a significant portion of the harvest in some fisheries came from sub-adult fish.”

Can LOMU please provide more information on what is classified a ‘sub-adult’ fish, and what fisheries these were harvested within? Is it possible that these ‘sub-adult’ fish were maiden spawning individuals? Based on LOMU’s assertion that there is a high level of harvest of sub adult fish (presumably small males and maiden spawning males and females), it should skew the repeat spawning rates to much higher levels which has not happened. The LOMU 1999 Ganaraska River creel states that 97% of the Rainbow Trout harvested were adults. Further, LOMU state that the harmonizing of harvest levels with NYDEC’s 1 fish 21” (533 mm) minimum size “would be less effective in Ontario waters of Lake Ontario than in New York waters” because of the lower harvest levels on this size class of fish, ***yet LOMU contradicts this statement, stating that there is significant***

harvest of sub adult fish in some fisheries. The LOMU 1999 Ganaraska River creel states that 97% of the Rainbow Trout harvested were adults. Furthermore, this is inconsistent with angler catch rates, that often run 20-40% as smaller steelhead, often referred to as 'silvers' between 1 and 3 pounds. These silvers are often the target of harvest and take young adult fish out of the population prior to ever contributing to the spawning run.

Life history data from Bronte Creek indicate that only 44% of the population recruits into the spawning population after one lake year. The LOMU assumption used to 'standardize' age of recruitment may be off, resulting in an over simplification of the harvest issues. Angling evidence notes male Rainbow Trout entering streams in the fall and spring as small as 325 mm FL, which likely have not spent one year in Lake Ontario (fall captures), or two lake years (validated through scale ageing), again compounding the LOMU assumption of an even age or size of maturation.

4. CRAA agrees that there are differences in life history traits between populations. This has been clearly demonstrated across the Great Lakes. This does not mean that management should not be similar across populations. The figure that LOMU provided clearly demonstrates that each lake has constraints upon ultimate body size. It is understandable that Lake Superior (low productivity) poses different constraints (e.g. food resources – lower growth rate) on adult body size when compared to Lake Ontario (high productivity). The ellipses that LOMU designated just highlight this further. CRAA overlaid a new ellipse that groups populations based on repeat spawning, not adult body size (Figure 8). CRAA feels that this is a more appropriate designation. Data on Great Lakes population is more robust than when Biette et al. conducted their review, which LOMU failed to incorporate into their interpretation. Review of Table 2 would place an average of Lake Superior populations into the blue ellipse, making Lake Superior similar to Lake Ontario and Lake Huron/Georgian Bay populations. CRAA contends that the variation in life history characteristics of Rainbow Trout is much smaller between lakes, compared to between populations as illustrated below.

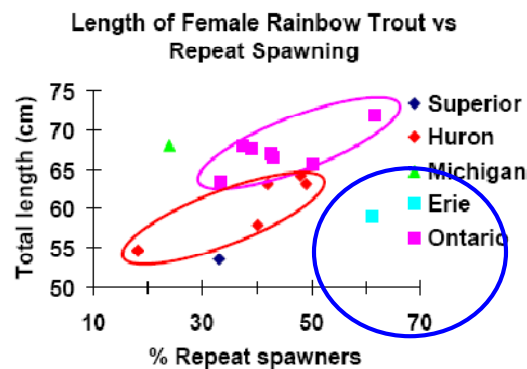
LOMU claims that the Ganaraska River and Wilmot Creek databases are amongst the best in the Great Lakes. However LOMU's data only looks at 1/3 of the migration period. Steelhead are reported passing Corbett's Dam from the end of August until early June every year. Yet MNR's sampling only looks at the peak of the spring migration, from late March to May. The entire fall run and mid winter movements of fish in warmer weather, plus the onset of early and warm springs (such as the spring of 2010) highlight just how much fish data MNR is missing.

Sampling for the Ganaraska River only occurs during a portion of the spring run (example, fish were observed migrating upstream from mid-March into June 2009). It has been demonstrated that approximately 56% of the egg deposition into the upper Ganaraska River is contributed by fall run fish². LOMU does not monitor the number of adult Rainbow Trout migrating upstream during the fall, or have continuous biological data from this component of the population, along with only sampling a portion of the spring run. Any model that does not account for approximately half of the egg deposition, while claiming that the system is at egg deposition carrying capacity is

inherently flawed. Further, LOMU cannot qualify exactly when declines occurred for adult Rainbow trout in Wilmot Creek as mark-recapture estimates from Wilmot Creek have much higher error bars over the seven years of monitoring than the counts from the Ganaraska River. The inaccuracy of the Ganaraska has been noted above, which leaves the datasets open to be challenged as “among the best in the Great Lakes”.

Swank³ states that “Changes in stream fishing mortality had a much larger impact on percent repeat spawners than did changes in lake fishing mortality, while changes in lake fishing mortality had larger impacts on adult population size”. Both of these drivers are likely impacting north shore Rainbow Trout populations. Swank concurs with LOMU that a limit of 2 fish/day would have very minor impacts. A minimum size limit of 26 inches would be needed to significantly increase the adult population size based on modeling for the Little Manistee River, Michigan. Gonder⁴ provides an example of different types of reductions in catch and possession limits and estimated reductions in harvest based on creel data (Table 3). This data supports a one fish with a minimum size restriction as the best management tool to protect the population.

CRAA believes that to ignore the “less specific and less appropriate data” from other Great Lakes to make management decisions for Lake Ontario Rainbow Trout populations in light of their demonstrated results, peer reviewed scrutiny, adaptive management approach, and public support might be considered irresponsible.



The relationship between repeat spawning and length of female rainbow trout in Great Lakes tributaries. Ellipses for Lake Ontario (red) and Lake Huron (fuchsia) were placed by eye. Data from Lake Ontario were from seven Ontario tributaries (OMNR unpublished data), and data from the other Great Lakes were from Biette *et al.*¹

Figure 8. CRAA interpretation of LOMU repeat spawning and mean length of female Rainbow Trout in Great Lakes tributaries. Ellipse (blue) was placed by eye.

2 Karges, R.G. 1987. Life history, reproductive success, and abundance of Rainbow Trout (*Salmo gairdneri*) in the Ganaraska River, Ontario. MSc dissertation. University of Waterloo

3 Swank, D.R. 2005. Life-history and management of wild Great Lakes steelhead populations. PhD Dissertation. University of Michigan

4 Gonder, D.J.A. 2005. Status of Rainbow Trout (*Oncorhynchus mykiss*) in southern Georgian Bay and Lake Huron

Tributary	Lake	Mean Female Fork Length (cm)	Proportion repeat spawning
Neebing River	Superior	58.0	47%
McIntyre River	Superior	57.3	45%
McVickers Creek	Superior	55.3	51%
Sibley Creek	Superior	61.0	38%
Portage Creek	Superior	57.0	74%
Coldwater Creek	Superior	54.2	40%
Wolf River	Superior	58.5	37%
Black Sturgeon River	Superior	61.2	58%
Trout Creek	Superior	56.6	30%
Jackpine River	Superior	60.0	59%
Cypress River	Superior	61.3	57%
Steel River	Superior	62.5	58%
Stokely Creek	Superior	57.2	40%
Chippewa River	Superior	62.0	53%
Pancake River	Superior	62.5	56%
Average		59.0	50%

Source OMNR unpublished data

Table 2. Mean female fork length and proportion repeat spawning for Lake Superior Rainbow Trout populations

Table 3.

The potential effects and associated management risks of different types of reductions in catch and possession limits, in concert with changes in river seasons in some cases. Estimated reductions in harvest were calculated using available creel data.

Restriction level (fork length in inches)	Anticipated decrease in harvest	Proportion of maiden spawners protected	Management risk if implemented in isolation	Management risk, in concert with changes in river seasons
5 fish/day	Status quo (as of 1998)	0%	high	N/A
2 fish/day	3%	N/A	high	N/A
1 fish/day	13%	N/A	high	N/A
Minimum size limits				
10"	0%	0%	high	high
12"	2%	1%	high	high
14"	10%	3%	high	high
16"	21%	4%	high	high
18"	31%	6%	high	moderate
20"	47%	12%	moderate	low
22"	62%	25%	moderate	low
24"	70%	52%	low	low
26"	81%	75%	low	low
28"	91%	93%	low	low
30"	100%	99%	low	low
Slot size limits				
14"-20"	37%	9%	high	moderate
15"-20"	31%	8%	high	moderate
16"-20"	26%	8%	high	high
14"-22"	51%	22%	moderate	low
16"-22"	41%	21%	moderate	low
18"-22"	31%	19%	high	high
14"-24"	60%	49%	low	low
16"-24"	50%	48%	moderate	low
18"-24"	39%	46%	moderate	moderate
20"-24"	23%	40%	high	high

Table 3 highlights the potential reduction in harvest to the population by a mixture of a lower limits and a slot limit or minimum size limit. LHMU had extensive creel data to support this model. It highlights how a one fish or two fish limit does very little. Only a slot/minimum length limit achieve a significant harvest reduction.

LOMU states that data sets do not show a decline in juvenile Rainbow Trout from the 1980s to the 1990s. CRAA looked at the average number of young-of-year Rainbow Trout captured at the five long term monitoring sites on Wilmot Creek, and although there may not be a significant trend towards fewer juveniles, it can be seen that a declining trend is present (Figure 9). The last two cold, wet summers (2008 and 2009) have allowed for strong year classes that help modify the trend of declining young-of-year cohort strength. The trend is more dominant (showing a 50% decline) when the 2008 and 2009 years are excluded (Figure 10). Density of Rainbow Trout has declined since the 1988-1991 period as shown in the Wilmot Creek FMP background report (Figure 11). Other salmonids species shown within the background document have not shown the same decline since the 1991 period, indicating that it was not the change in sampling methodology driving this decline (Figure 12).

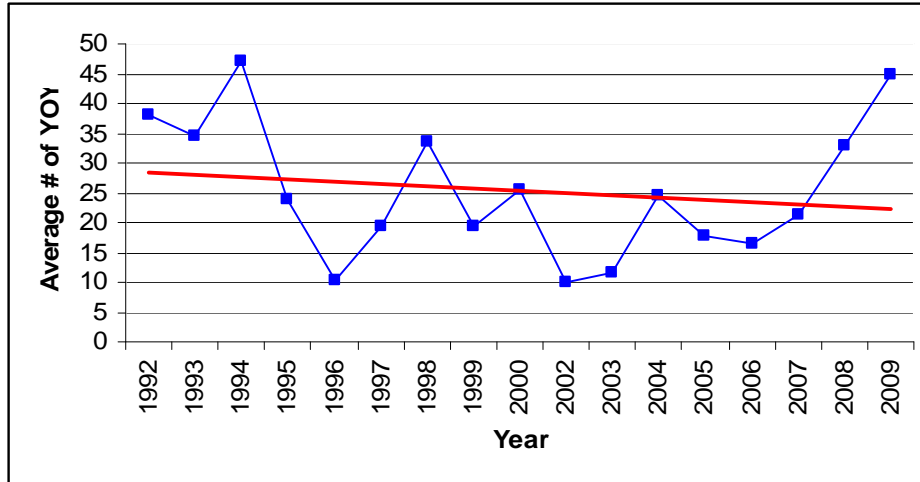


Figure 9. Average number of young-of-year Rainbow Trout captured at five long term monitoring sites

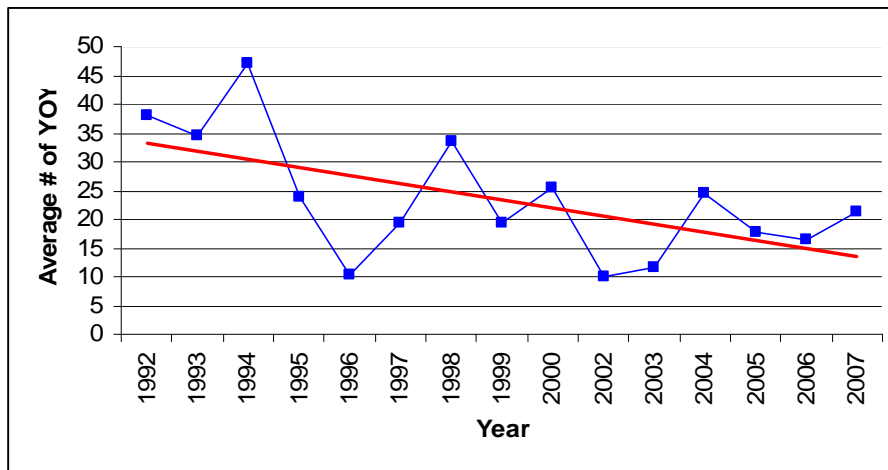


Figure 10. Average number of young-of-year Rainbow Trout captured at five long term monitoring sites, excluding the strong 2008 and 2009 year classes

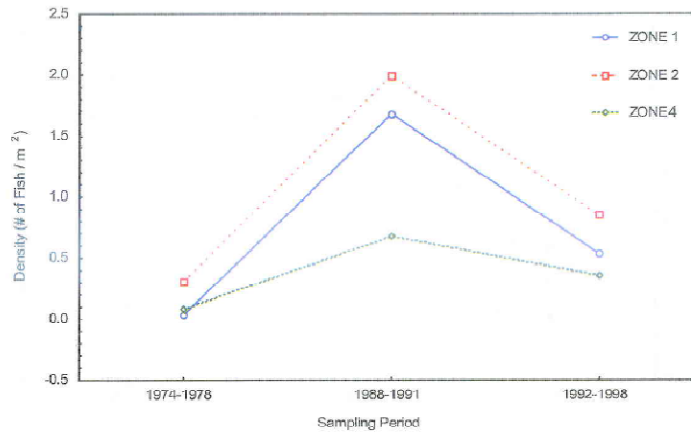


Figure 7.1. Mean density values of rainbow trout across the three sampling periods for each of the three Fish Community Zones (1, 2, and 4).

Figure 11. Mean density of Rainbow Trout across three sampling periods from The Wilmot Creek Study: spatial and temporal analysis of fish communities in the Wilmot basin

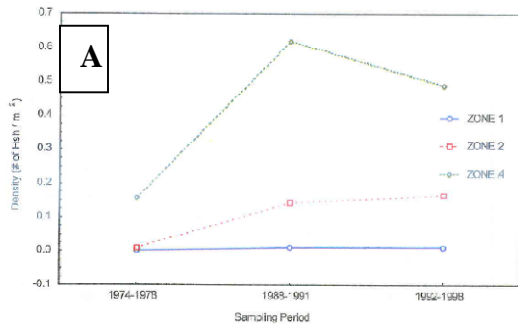


Figure 7.3. Mean density values of brown trout across the three sampling periods for each of the three Fish Community Zones (1, 2, and 4).

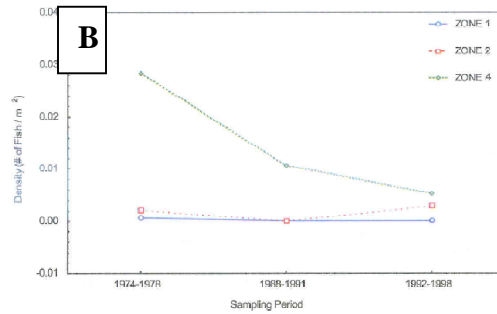


Figure 7.7. Mean density values of brook trout across the three sampling periods for each of the three Fish Community Zones (1, 2, and 4).

Figure 12. Mean density of **A**, Brown Trout and **B**, Brook Trout across three sampling periods from The Wilmot Creek Study: spatial and temporal analysis of fish communities in the Wilmot basin

LOMU state the size of rainbow trout in the Ganaraska River and Wilmot Creek has not declined, but, the largest average female rainbow trout were observed in 1997 and 2003. Perhaps the larger average size is an artifact of the high harvest of ‘sub-adult’ or maiden spawning fish, artificially increasing the average size. Is this same trend towards larger average size evident with males within the population as well? Contrary, LOMU has also confirmed that the body condition, calculated as the estimated weight of a 635 mm Rainbow Trout, has been declining since about 1996 (Figure 13). This is also seen in the Salmon River, NY at the Salmon River hatchery, where mean weights have declined since the late 1990’s, especially for age-4 adults (Figure 14).

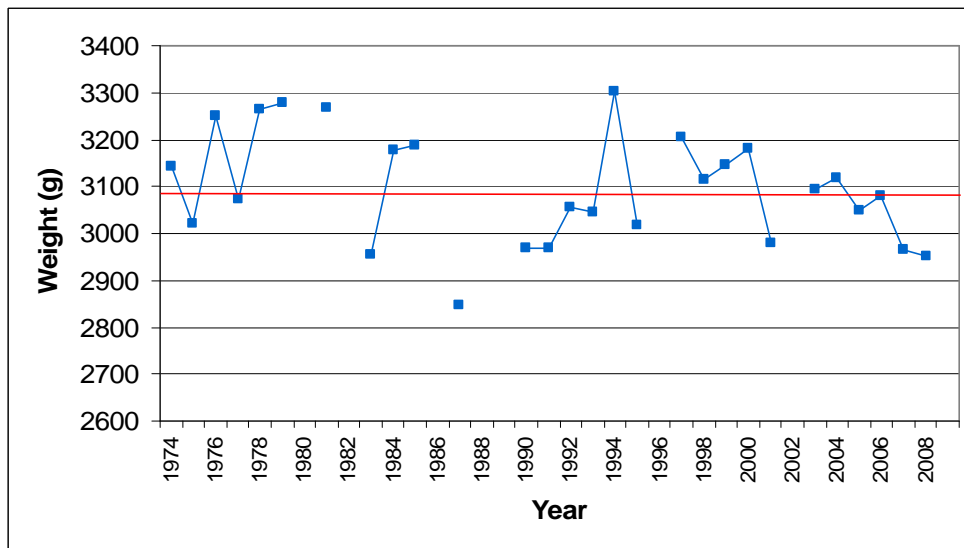


Figure 13. Estimated body condition of a 635 mm Rainbow Trout (sexes combined). Red line is the average estimated body condition

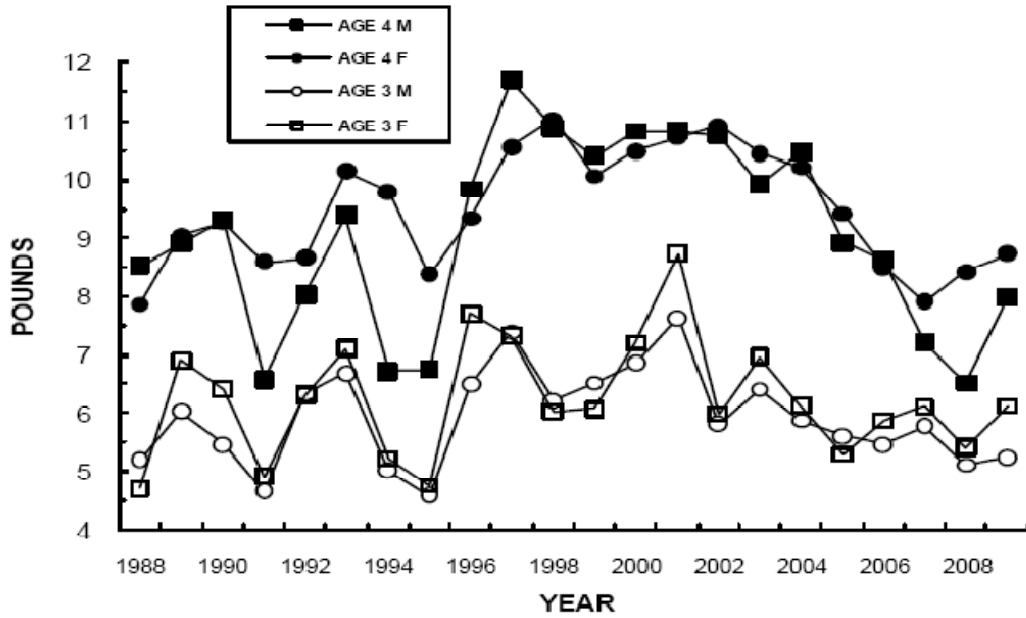


Figure 14. Mean weights of Washington steelhead ages 3-4 at Salmon River Hatchery, New York 1988-2009.

In contrast to LOMU’s statement that the largest average size of a female for the Ganaraska and Wilmot Creek occurred in 1997 and 2003, length data from the Credit River fishway does not show a trend towards increasing average length of a female Rainbow Trout (Figure 15). Credit River length data tends to follow the decline in condition factor since about 2004. The Credit River’s trend is more closely matched to the NYSDEC trend in Figure 14.

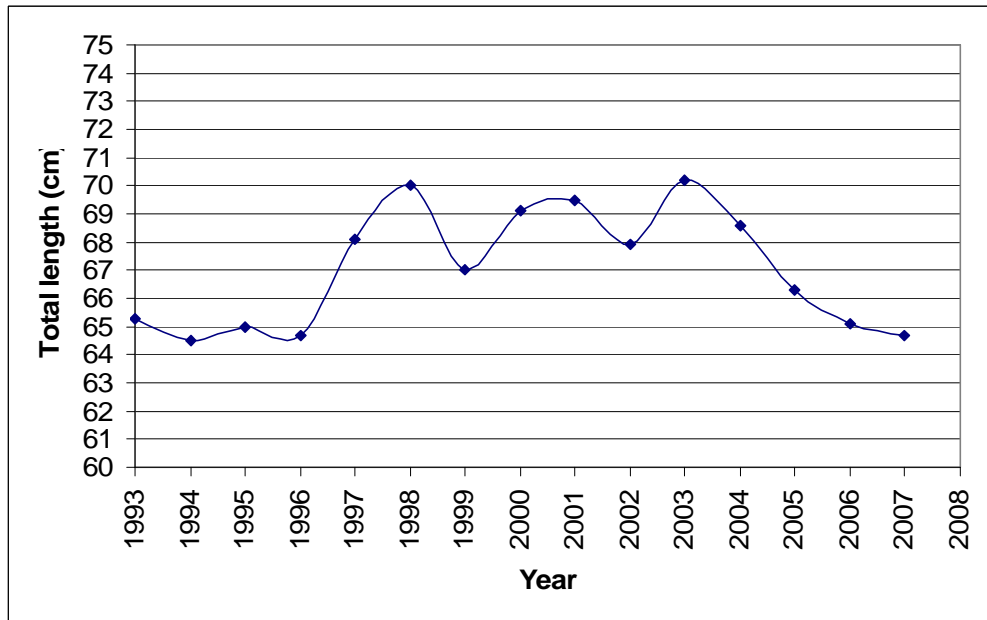


Figure 15. Mean length of female Rainbow Trout during spring in the Credit River (CRAA unpublished data)

LOMU's summary slide from their FMZ 20 presentation states that "reducing catch limit of rainbow trout has minor benefit to the population, and little effect on the boat fishery, but offers other social benefits". Again, LOMU has reaffirmed that a reduction to a two fish limit will result in little change. LOMU has not shown the modeled (predicted) increase in population size with a one fish limit, or in combination with a one fish and a minimum size limit (e.g. Table 3). As noted above, at least a one fish 26" minimum is necessary to significantly increase the adult population size based on modeling from the Little Manistee River, MI. CRAA is interested in exploring other benefits (e.g. creation of a trophy fishery with a high CPUE) of having a reduced exploitation rate.

Further, CRAA supports Addison (2007)⁵, which states; the presence of locally acclimated and adapted populations suggests that individual tributaries are the most appropriate management unit and that relying on natural reproduction will provide the best opportunity for populations to maintain and further accumulate locally selected adaptations. CRAA also supports Addison and Wilson⁶, who suggest that where locally adapted, self-sustaining steelhead populations are desired, limited stocking (artificial gene-flow) and transfers among populations will provide the greatest opportunity for local adaptation and future production. If LOMU is able to foster this management paradigm in combination with restricted harvest limits, the north shore of Lake Ontario could emerge as the prominent Rainbow Trout fishery in the Great Lakes basin. CRAA challenges LOMU to become leaders in wild salmonid management by not continually implementing a reactionary management response, and by being proactive in protecting our valued wild fishery resources.

5 Addison, P. A. 2007. Adaptive naturalization of steelhead (*Oncorhynchus mykiss*) populations from northern Lake Superior tributaries. MSc. Dissertation. University of Toronto.

6 Addison, P.A., and C.C. Wilson. 2007. Report on the genetic structure of Credit River steelhead

Next steps

CRAA proposes a meeting with LOMU senior staff, Aurora MNR staff and the lake manager and our biologists to review and find common ground to move forward.

Presentation of this information to the FMZ 20 group and discussion.

If LOMU is not willing or prepared to lead a limit change to improve the fishery based on overwhelming scientific data and data from NYSDEC from their lower limits, then LOMU should immediately initiate a major steelhead creel on the north shore and collect data to develop a proper look at harvest and angling pressure.

MNR should also look at selecting a harvest study stream (Wilmot or Ganaraska is best with the long, but scattered historical data). This fishery should be treated with a strict reduction in harvest (i.e. the maximum proposed limit reduction short of a no kill, being a 1 fish limit with a minimum of 30" harvest). Detailed creel studies for 5 years following to monitor the populations reaction must follow. This will provide the answers to address all concerns and give managers and the public the information needed to make the best management decisions for the fishery.

CRAA would be a willing and leading NGO partner on such study work. I suspect OFAH, Float Fishing.net, the Ganaraska Wild Steelhead Association and other NGO's would also support the project through angler diaries, staff assistance and more. There is a good chance local CA's would also assist.

Without better data managers and the public are left with best guesses and a shot in the dark to maximize and protect the steelhead fishery.

In the mean time Ontario anglers are left fishing for crumbs, or forced to cross the boarder to New York, Pennsylvania, Ohio and Michigan to have a good day steelhead fishing when we should have the best fishing in our own back yards!

CRAA