Lake Michigan Fisheries Forum Meeting Notes
12 October 2013
Lakeshore Technical College

Salmon Allocation

After welcome and introductions around the room, Brad Eggold ran through a re-cap of the Forum meetings to date and the discussion of salmon stocking allocation.

The presentation was broken down into several components.

1) Brief history on past LMFF meetings and consensus from those meetings highlighting the items.
    a. LMFF agreed that a new simple strategy was needed
    b. LMFF agreed that stocking should provide a fall fishery at all stocking locations
    c. LMFF agreed that chinook salmon were nomadic during the open water fishery
2) Previous version of the stocking strategy that included these components
    a. Number of charter boat trips per port
    b. Directed effort for chinook salmon
    c. Harvest rate for chinook salmon
3) Current version of the strategy and step by step information on how to interpret the strategy. This version of the strategy included the average of the last 10 years for charter boat trips, directed effort for Chinook salmon and harvest rate for Chinook salmon and placeholder for CWT information. It also set the strategy to account for 25% of the stocking with 8 counties receiving a base allocation of 75% of the remaining Chinook salmon after allocation to Strawberry Creek. This version has an overall reduction of 30% for Chinook salmon with each county receiving about 61,711 fish plus an allotment based on the above parameters.

Brad presented the results of a new, simpler model for stocking allocation that used charter trip data, both recent year trips and ten-year trend data and tag return information. The model affects 25% of the total allocation per county. Brad offered an example as an illustration:

The WI 2012 Chinook Quota	1,164,000
2013 37.8% reduction leaves	723,700
Unstocked coho (Chinook equivalents)	+31,250
Unstocked rainbows	+29,164
Unstocked lake trout	+24,138
Total Chinook	808,255
Strawberry Creek get 150,000	-150,000
Remaining number for other locations	658,255
Divide by 8 (number of stocking counties)	82,282

So without the allocation formula, each county would get 82,282 Chinook. So now we take 75% of 82,282. That gives 61,711 Chinook for each location. The remaining 25% (164,564) is modified by the allocation formula.

The formula combines a percentage based on the number of charter boats operating out of the county, the directed harvest and the normalized harvest and will in the future consider coded wire tag returns. These sum of these percentages yields a multiplier that is applied to the 25% value. The resulting number of the additional Chinook that will be stocked at a given location. In Kenosha County, the percentage comes to 8.53%. This when applied to the 164,564 value yields 14,041 Chinook to be added to the 61,711 provided to all counties giving a total of 75,752 Chinook to be stocked in Kenosha County.

There was considerable discussion about why to stock by county instead of by port. Right now, the creel results are county based so the allocation is county based. It may be possible to modify the creel results in the future to yield a per-port stocking allocation. But modifying the creel census is neither cheap nor easy.

There was a question about what can be done with the forage fish. The forage fish abundance relies on over-winter survival of the young. Quagga mussels are adversely affecting the abundance of food for the forage fish (alewife etc.). Without enough food the alewife growth and consequently survival falls limiting the forage for Chinook. Harvey Bootsma will talk about the effects of quagga mussels later. You need to understand the full story regarding forage. The enemy is the quagga mussel.

Marinette is the biggest loser in the scheme. Sheboygan favors the allocation strategy. How long would we operate under this strategy? Three years. How quickly could the allocation be changed? It could take a while.

Why does the allocation strategy only affect 25% of the total? “fairness”.

People from Ellison Bay are concerned about any reduction in Chinook stocking numbers. Tourism is important for the Ellison Bay economy.

Could the predator stocking be diversified, not all kings? If coho are planted instead, they tend to stay south. How about allocating kings north and coho south?

What about the difference between the quality of the fish and the quantity of the fish; number versus size?

Tourist anglers want to go home with full coolers.

The salmon move around. Do we have information on their movements?The Coded Wire Tag (CWT) data will help. On the pacific coast there is a straying rate. It is higher in stocked fish than in natural fish. Would net pens help with straying? We don’t have data on that and there are legal constraints. Net pens do help in MI.

It helps to hold the fish in the net pens until they smolt – a longer hold time.

Is natural reproduction occurring? Yes, but mostly in MI. Here ins WI we need better land management, more forest instead of dairy production.

So we're stocking 800,000 fish. How long will this reduction be in place? Can we stock more? There have been stocking reductions in '86, '92, '98, '06 and now in '13 all due to changes in alewife abundance. The cuts are not due to budget constraints. If we need to increase stocking, we can do that quickly with Chinook.

Kathy Stepp – WI cooperates with other states. It is important for anglers to know that the DNR works hard for them. As anglers, what is your objective for the fishery? Do you want big fish or lots of fish?

One angler prefers lots of fish for family and visiting friends but bigger fish for him.

The license fees have been fixed for a long time. Why do the fees stay the same with a reduction in salmon stocking? The rearing costs don't change.
Are the forage fish being sampled? Yes, each year.

The Conservation Congress passed a motion to support the CWT study. Anglers needs to help.

What about forage consumption of the Chinook? Is Chinook harvest considered?

We need more detail on the creel survey – size. Ask for more data on the creel sheet. Use the charters as a monitoring tool. We need people at the cleaning stations to collect heads.

Will salmon be stocked at Gills Rock? The northern Door County stocking locations are up to the local biologist.

Discussion notes from DNR note taker:
1) Directed effort and directed harvest rate isn't specific enough by county. Public wants the strategy to use ports instead of counties. The DNR explained that all current information is based on counties including creel survey data and to change that to a port basis would be costly and may not change the outcome. Some stakeholders suggested that we change the strategy and use port specific information and change the creel survey to a more specific chinook salmon survey
2) How many salmon stocking sites are there? DNR staff present couldn't exactly answer that question but in 2013 over 15 locations were stocked with Chinook salmon. The number of stocking sites is more than these 15 if you count all the areas stocked in the last 15 years.
Should we have site specific model?
3) How variable is the formula per year? Consider shore fishery vs. boat catch. DNR does use ramp, pier, shore and stream information for the two creel survey parameters used in the model.
4) Doesn't matter if those caught are from everywhere, the fall fishery is gone in Gills Rock. Ellison Bay is too far to have a good impact on Gills Rock.

5) Gills Rock doesn't know what they have for bait fish numbers. Is this an area that we should be helping with? How do the other ports get this info?

6) Stock the Coho and Rainbows to get us through until the lake forage for the Kings are back. It helped in the 1990's when bacterial kidney disease killed the kings. Brad explained that the lake can support only so many predators and that all stocking numbers from all salmon and trout are mutually agreed to by the various state agencies. In addition, Wisconsin can only produce a certain level of fish and some of the salmon and trout are already stocked at maximum levels.

Some stakeholders stated they want 100,000 Coho's rather than 31,250 Kings.

7) Some Sheboygan stakeholders are willing to give up 31,000 Chinook's for 100,000 Coho.

8) The real enemy is the Quagga mussels

Someone said there's a study in the UP on trout or salmon that eats them

9) If you stock less, take less. The bag limit for salmon and trout should be reduced from 5 fish per day to 5 fish per day but only 3 can be salmon, 2 lake trout

10) Is DNR ready to go back to the 1.5 million fish? Are they capable of raising them? Yes, it is not a budget issue that is causing us to reduce Chinook salmon, it is a forage issue in Lake Michigan. We'll be ready once we get the agreement from the other states to increase stocking numbers.

11) Fish cleaning stations have bags for heads for CWT, but no information on what we need the fisherman to do. Better info needed. DNR will be working on a better system for 2014

Need a cooler and someone to pick them up at the launch/cleaning spot

12) Develop an app to collect the necessary data for survey info. Available to any/all fishermen (charters, etc.)

13) Sport trolling license monthly report- not updated since 2004. This needs to be updated to get what we need.

Quagga Mussel impacts on the food web – Harvey Bootsma

- Unlike the zebra mussel, which was confined to rocky nearshore areas, the quagga mussel now occupies almost the entire bottom of Lake Michigan.
- Quagga mussels represent a huge filtering mechanism in the lake; they can consume large amounts of plankton. As a result, lake water has become clearer, because plankton concentrations have gone down.
- We used to know the relationship between phosphorus loading and plankton production in Lake Michigan. Quagga mussels have changed that relationship, because they remove plankton from the water faster than previously.
- As a result, the previous models don't work as well. We need to figure out how this "new" lake works, to understand how phosphorus loading will affect plankton (and ultimately, fish) production.
- An animation of satellite imagery shows how we no longer have the large phytoplankton blooms that we used to.
- While quagga mussels have increased, Diporeia, which was an important food for many fish, has dramatically declined.
- Forage fish have also declined.
- While pelagic production has gone down, nearshore production (in the form of benthic algae) has gone up.

- Chinook salmon feed almost exclusively on alewife. So if the alewife suffer, the chinook will suffer.
- Our stable isotope data suggest that some fish (sculpin, bloater, smelt) are adapting to the new conditions, by getting some of their energy from the nearshore zone.
- In the nearshore zone, round goby numbers have really increased.
- Some of the piscivores, such as brown trout, appear to have adapted well to the "new" food web. Atlantic salmon appear to be doing well in Lake Huron. It may be useful to consider these changes when developing stocking strategies.

The mussels remove Phosphorus (P) from the water column by feeding on plankton. Lake Michigan is well below the P target of 3-4 micrograms/liter and is lower than predicted by modeling. The external P load is slowly decreasing and the P concentration in the water is decreasing quickly.

This results in less spring bloom of phytoplankton which in turn yields less invertebrate forage such as Diporeia. The mussels excrete 5x more P than is discharged by the MKW River but the P stays near the mussels and fertilizes Cladophora, a filamentous algae. Round gobies benefit from this nearshore nutrient dump.

Will the P decrease fix the P problem? We don't know. It could exacerbate the plankton problem off shore. We need to manage the spring P loads. Update the P models. Cold we add P at the middle of the lake? Put raw sewage in the middle of the lake? Adding P is risky.

Maybe we should stock browns. Can we stock plankton? No.
We need fertilizer. Need to remove mussels.

There is 4-10X more biomass in mussels than the fish. Mussels consume in one year what MKE eats in 12 yrs. The mussels are the main problem.

Lamprey Control Program – Lisa Walters

Lisa described the history and development of the sea lamprey control program. The total funding for the program is $19-23 million annually. Current control tactics include:

- Treatment of infested streams with the lampricide TFM and treatment of infested lentic areas with the lampricides granular Bayluscide.
    - Streams are generally treated once every 3 to 4 years, since larvae take three to five years to transform and migrate to the lakes.
    - About 110 streams and 20 deepwater offshore areas are treated basin-wide annually.
    - Larval assessment surveys, conducted with granular Bayluscide and electrofishing, are used to rank streams and lentic areas for treatment based on cost per kill of large larvae.
    - During 2013, only Lake Superior Wisconsin streams ranked for lampricides treatment. Treatment of the Peshtigo River and Casco Creek (Kewaunee R.) is planned for 2014.

The Peshtigo and Oconto rivers and Shivering Sands Creek have been treated since 2011.

- Sea lamprey barriers block sea lampreys from spawning. Many have traps incorporated to capture adult sea lampreys during upstream migrations. These adult captures are used to estimate the number of adults in the lake annually. Currently, there are two main challenges for the barrier program: 1) the aging inventory of existing structures that have historically limited sea lamprey infestations; and 2) increased efforts to reconnect fragmented habitats by removing blocking structures or creating fish passage blocking structures.
    - The East Twin, Oconto, Peshtigo and Menominee rivers are trapped annually. Barriers on all of these streams reduce the amount of spawning and larval habitat available to sea lampreys and reduce the length of stream treated with lampricides.
    - The GLFC is continuing to pursue a new sea lamprey barrier on the Manistique River. The barrier would replace an existing dam that has deteriorated and is allowing lamprey to pass. Currently, over 300 miles of the Manistique is infested with larval sea lampreys and a single treatment costs $661,000. Larval sea lamprey densities are high in the river, and it has been treated 5 times in the past 8 years. Treatment is planned for 2014. A construction date is uncertain at this time.
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Current research topics are focusing on enhancing trap capture of adult lampreys by baiting traps with pheromones or using electric guidance systems. Additional research is investigating the usefulness of blocking off tributaries using repellents or non-physical barriers (lights, sound, bubbles), and the usefulness of eDNA to determine presence of larvae in tributaries. Research is being conducted by scientists at USGS, Michigan State University, University of Guelph, University of Vermont, Wilfred Laurier University, and elsewhere.

TFM, the chemical used to treat streams to kill lampreys, builds up in the tissues of the lamprey and depresses glycogen. The lampreys die due to hypoglycemia. The first TFM treatment took place in 1958. The lamprey abundance decreased by 85%.

The FWS lamprey control program has 130 staff members to do the work. The treat 110 streams each year. There are 5300 tributaries to the Great Lakes; 450 have sea lamprey in them. 260 produce sea lamprey. About 170 streams are treated every 3-5 years. There are only a few tributaries that are treated in WI. They look at the per capita cost to kill to determine the treatment locations.

The Manistique River is the largest treatment. It costs $661,000 and covers 303 miles. It has been treated 5 times in the last 8 years and will be treated again in 2014 and 2015. The effort expended $4 million in the last two years in northern Lake Michigan. The lamprey numbers are starting to diminish.

Possible Topics for the next Forum Meeting:

- Report on the CWT project/effort

- Species/strains mix for stocking
- Cormorant and pelican impacts and control
- Atlantic salmon stocking program
- Waterflea impacts
- Net pens legislation

Next Meeting: April 5, 2014