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Lake Michigan Constituent Newsletter

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This newsletter covers information from field sampling activities during 2016 that were provided by our Lake Michigan Program (LMP) biologists as well as other Lake Michigan fishery management agencies. Many of our LMP fishery reports can be found on the Lake Michigan pages of the fishillinois.org website along with specific information on stocking sites and numbers. Sport fish creel and other Lake Michigan research reports from the Illinois Natural History Survey (INHS) are available on UIUC's Ideals.illinois.edu website. Following are topics of interest to those who fish in the Illinois waters of Lake Michigan.

New Salmon and Trout Stocking Targets for 2017 Due to Changes in Forage Abundance

During the summer of 2016, the Lake Michigan Committee adopted new salmon and trout stocking targets for the four states. The new targets include stocking reductions for Chinook Salmon, Lake Trout, Brown Trout, and Coho Salmon. This represents a transition to multiple species stocking reductions rather than reducing only Chinook Salmon. Changes in stocking were necessary because of continued declines in Alewife and other prey fish populations in the lake, and documented natural reproduction for Chinook Salmon and Lake Trout. Managers anticipate that these proactive changes to the stocking strategy will move us closer to a balance between predator and prey species and allow enough spawning Alewife to remain to produce strong year classes when conditions allow. The only change specific to Illinois is a decrease in Chinook Salmon stocking from 235,000 to 150,000 fingerlings. All other species remain at previous stocking levels: Coho Salmon 300,000; Rainbow Trout 110,000; Brown Trout 110,000; and Lake Trout 120,000. We will again be using the stocking tube at various locations to deliver

fish from the stocking truck into the water. In the past two years, we have found that using the tube is less stressful on the fish than traditional stocking methods. Ideally, this equates to better survival for our stocked fish and better returns.

Alewife Numbers Continue to Decline in Lake Michigan

Forage fish assessments are conducted by the USGS Great Lakes Science Center. Two lakewide surveys are conducted annually – a bottom trawl survey with multiple tows at seven sample stations (trawl depths from 30 to 420 feet in 2016) and an acoustics/mid-water trawl survey sampling at multiple transect locations around the lake (34 acoustics transects and 68 trawl tows in waters 13 to 767 feet deep in 2016). The lakewide estimates of forage fish abundance and biomass (weight), including Alewife, derived from these surveys is used by the Lake Michigan Technical Committee to estimate recruitment of Alewife and other forage species and assess the potential impacts of stocked and natural salmon and trout on the forage community. From the bottom trawl survey, the estimated lakewide biomass of Alewife was 0.35 kilotonnes (~772,000 lbs.) which was a record low and a

30% decline from 2015. From the acoustic survey, the abundance of Alewife \geq age 1 was similar to 2015 and an increase in age-0 Alewife (2016 year class) was observed. It is important to note that these two assessment methods sample different areas of the water column and differ in their ability to sample age-0 fish. Estimates from both surveys are incorporated into a lakewide model of Alewife abundance for management purposes.

Illinois Sport Harvest Stable in 2016

Total harvest of salmon and trout declined by 6% between 2015 and 2016 which corresponded to a modest decline in effort (angler hours) for both sport (8%) and charter (6%) anglers. We also noted changes to the composition of the catch. The most notable differences were that charter harvest of Coho Salmon dropped 42% and sport harvest of coho dropped 25% between 2015 and 2016, yet harvest of Rainbow Trout for both angler groups increased by 50%. Sport angler harvest of Lake Trout increased by 67% but charter harvest declined by 11% for this species. A decline in Chinook Salmon harvest by sport anglers was nearly countered by an increase in harvest by charter boat anglers.

Sport harvest of Yellow Perch in 2016 increased from the record low harvest observed in 2015 (8,289 fish). However, the 2016 estimated harvest of 11,231 perch is still very low relative to previous years. The continued low harvest is representative of the low abundance of the Yellow Perch population and mirrors the relatively few Yellow Perch that were sampled in LMP nets during 2014 - 2016. An abundant year class of Yellow Perch, produced in 2015, has yet to recruit to the fishery due to slow growth of those fish.

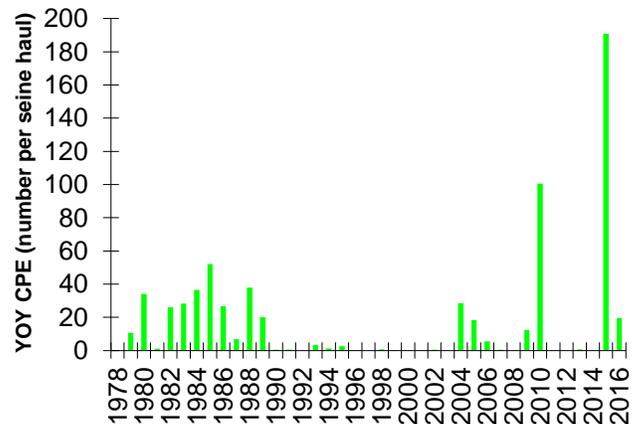
Adult Yellow Perch Abundance Remains Low, Second Year of Perch Recruitment Detected

Catches of adult Yellow Perch (total catch = 35 perch) remained low at our two annual sampling

sites similar to the low catches in 2014 and 2015. We like to see a Yellow Perch population comprised of multiple year classes including older, larger individuals that anglers prefer and that may have higher reproductive success.

Yellow Perch seining in 2016 yielded a good catch of young-of-year. While not as strong as the record number of age-0 Yellow Perch sampled in 2015, this is a significant change from the relatively poor recruitment that we had seen over the previous 4 years (2011-2014) and during the 1990s. These results are encouraging; however, additional strong year classes will be needed for a recovered and stabilized Yellow Perch population and fishery. Additionally, these young perch will need to find adequate food, survive and grow over the next few years before they reach a harvestable size and contribute to the angler harvest.

Yellow Perch: Young-of-the-Year
Relative Abundance, 1978 - 2016



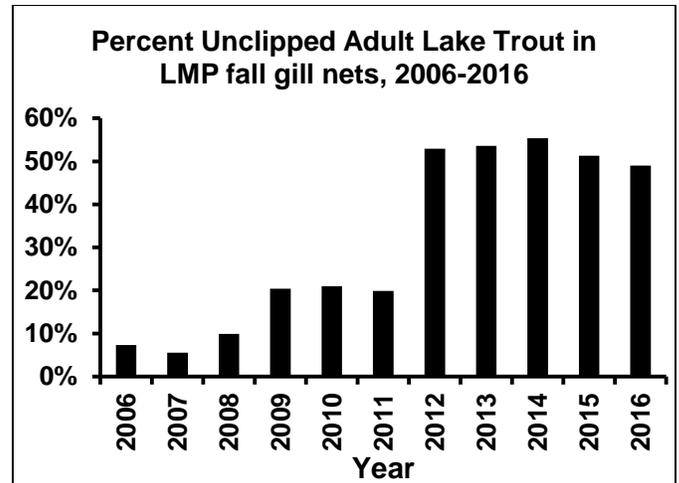
Coded-wire Tag Study Adds Rainbow Trout, Monitoring of Chinook Salmon and Lake Trout Ongoing

Chinook Salmon and Lake Trout natural recruitment are being documented by use of coded-wire tags and adipose fin clips. In addition, data on movements of these two species throughout Lake Michigan are being collected. In 2017 and going forward, Chinook will receive only an adipose fin clip and will not receive a coded wire tag. The change was necessary to allow for tagging of Rainbow Trout

(including steelhead) and monitoring of their natural recruitment and movements throughout the lake. Tags were implanted in juvenile Arlee-strain Rainbow Trout at Jake Wolf hatchery this spring and Chinook Salmon were fin-clipped by the USFWS personnel. Our Skamania-strain (steelhead) Rainbow Trout will be tagged in June. In addition, Coho Salmon were fin-clipped by Salmon Unlimited again this year as part of a study to monitor their survival and movements. From data collected in 2014-2015 on Chinook Salmon by USFWS headhunters, we find that Illinois anglers catch 61% natural Chinook Salmon during April-August with the remainder coming from Wisconsin (22%), Michigan (7%), Lake Huron (4%), and Indiana and Illinois (3% each). Thank you to all of the anglers, charter captains, and Salmon Unlimited of Illinois members that have been instrumental in the collection of biological data and tags to make this study a success.

Lake Trout Natural Recruitment Evident in Lake Michigan, When Do We Stop Stocking?

Lake Trout without a fin clip are being caught more frequently in Illinois waters and constituted 27-49% of fish caught out of northern ports during summer, 2014-2016. All lake trout stocked in lakes Michigan and Huron receive a fin clip and coded-wire tag to designate them as hatchery-origin fish. The largest proportion of Lake Michigan's unmarked spawning Lake Trout in fall are found in Illinois waters (~50% of Lake Trout in LMP fall gill net surveys). Smaller percentages of unclipped fish are being sampled as you move north through the lake (~25% Midlake Refuge; 4% Northern Refuge). This appears to indicate that sustained natural reproduction is occurring in Lake Michigan and it is likely happening in Illinois waters. What is less clear is whether the increase in unclipped fish is due to spawning success by natural fish, stocked fish or a combination of both.



Researchers from the INHS have been using a remotely operated vehicle (ROV) and egg traps to document spawning at Julian's Reef. They collected one Lake Trout fry and observed another during spring 2016. Researchers also collected freshly deposited Lake Trout eggs and captured sculpins and Round Gobies with eggs in their stomachs during fall egg trap sampling. Additional ROV sampling will occur this spring.

For 2017, Wisconsin and Indiana will be raising their bag limits for Lake Trout. A change to the bag limit for Lake Trout is under consideration in Illinois and any adopted changes to the Lake Michigan sport fishing regulations would be implemented in 2018. Concurrent with an internal review of Lake Trout bag limits for Illinois, a sub-group of the Lake Trout Working Group of the Lake Michigan Technical Committee is proposing criteria by which stocking will be ceased on a reef by reef (or regional) basis when natural reproduction is considered sustainable. From the first draft of the proposal, Julian's Reef is meeting nearly all of the criteria with the exception of some age-related measures where information on ages of untagged fish is currently lacking. Illinois fishery managers and anglers will need to consider the consequences of a bag limit increase in light of potential cessation of stocking at Julian's Reef in the near future.