**Yellow perch population in Lake Erie dries up**

Sandusky Register

The yellow perch population in Lake Erie has been down since 2003.  Stuart Ludsin, a professor at The Ohio State University, thinks he knows why yellow perch numbers in the lake are only about half of the population recorded in the 1960s and the 1970s.  A new study, “Short winters threaten temperate fish populations” argues that climate change has caused warmer water temperatures that harm the fishes’ eggs and make it less likely yellow perch larvae will survive.  The piece, published in the journal Nature Communications, is co-authored by Troy  M. Farmer, Elizabeth Marschall, Konrad Dabrowski, all scholars associated with OSU, although Farmer now is a postdoctoral fellow at Auburn University. Ludsin was the principal investigator for the study and is an associate professor of evolution, ecology and organismal biology at OSU.  The scientists ran a lab experiment to see how the change in climate associated with global warming could be affecting the fish.  When they reproduced the conditions associated with long, cold winters in their lab, they found that yellow perch eggs were 30 to 40 percent larger, and that the hatching success of the eggs was two to four times better than in water that replicated shorter, warmer weather, according to a summary of the research released by OSU’s news service.  “There are a lot of factors that can help explain why yellow perch numbers are low in Lake Erie. The warmer winter temperature clearly is an important one,” said Ludsin. “For management agencies, there is no easy fix to this problem”  Ludsin, also co-director of the university’s Aquatic Ecology Laborator, has spent much of his career studying the yellow perch population.  So far, yellow perch just haven’t adapted to the shift in climate. That’s in contrast to walleye, who seem to be able to adapt.  “In lots of cold-blooded species, we find that as spring occurs earlier, the timing of reproduction will also move forward,” Ludsin said. “Walleye are a great example. In the record short winter of 2012, walleye moved their spawning period up by several weeks. With yellow perch, we didn’t see that”

Scientists don’t know why yellow perch haven’t adapted yet.  “It could be that we’ll have to wait for adaptation to occur because there is no obvious quick fix. And, other ongoing stressors like nutrient pollution that causes low-oxygen zones and harmful algal blooms in Lake Erie don’t help the situation” Ludsin said.    The Register contacted Ludsin and asked if the state could provide a possible fix by putting more yellow perch hatched in state facilities into the lake, and if he had any other suggestions for raising the yellow perch population.  “With our study, we identified one potential limiter of successful recruitment of yellow perch to the fishery in Lake Erie. But, many other ones also exist, including invasive white perch and perhaps nutrient pollution through formation of hypoxia (low oxygen zones) and harmful algal blooms. Thus, in my opinion, the best ‘fix’ would be to improve habitat conditions for yellow perch by reducing nutrient runoff in the short term and reducing greenhouse gas emissions in the long term,” he replied.  “I personally don’t see hatchery supplementation as the solution for Lake Erie’s yellow perch population, as warm winters had the same negative effects on hatchery-reared fish in our experiment as the wild (Lake Erie) ones. And, I would be concerned about hatchery fish tainting the wild population’s gene pool, which could have all that is needed for the population to adapt and cope with a changing climate, given time. Further, hatchery reared fish would face the same poor conditions for growth and survival that wild fish are experiencing now, owing to invasive white perch and nutrient pollution” Ludsin said.  More information on the study is available at OSU’s Aquatic Ecology Laboratory website.  Ludsin has been busy lately with another study.  Scientists at eight Ohio universities are working on 18 different projects focusing on Lake Erie’s algal bloom problem, funded by $2 million of grants.  Ludsin is the lead investigator for one of the 18. Ludsin’s $258,000 study is examining whether people can be exposed to algal bloom toxins by eating fish caught in the lake, or eating vegetables grown using lake water.