

September/October 2015



# Environmental Update



*Diana M.C. Rashash*

Diana MC Rashash, PhD  
Area Specialized Agent,  
Natural Resources  
diana\_rashash@ncsu.edu

NCCE-Brunswick Co.  
25 Referendum Dr.,  
Bldg. N  
PO Box 109  
Bolivia, NC 28422  
(910) 253-2610

<http://brunswick.ces.ncsu.edu>

NCCE-Onslow Co.  
4024 Richlands Hwy.  
Jacksonville, NC 28540  
(910) 455-5873  
(910) 455-0977 Fax

<http://onslow.ces.ncsu.edu>

And the rest of the  
Southeast District:

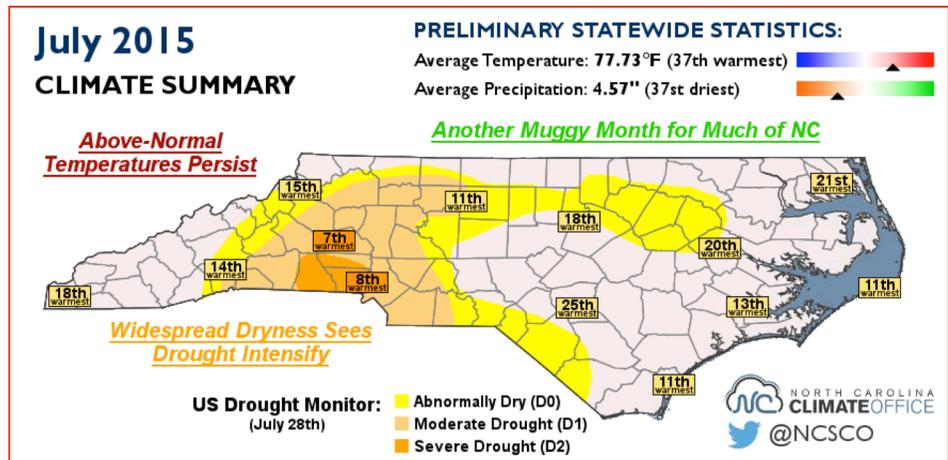
<http://southeast.ces.ncsu.edu/>

NC State University promotes  
equal opportunity and prohibits  
discrimination and harassment  
based upon one's age, color,  
disability, gender identity,  
genetic information, national  
origin, race, religion, sex  
(including pregnancy), sexual  
orientation and veteran status.



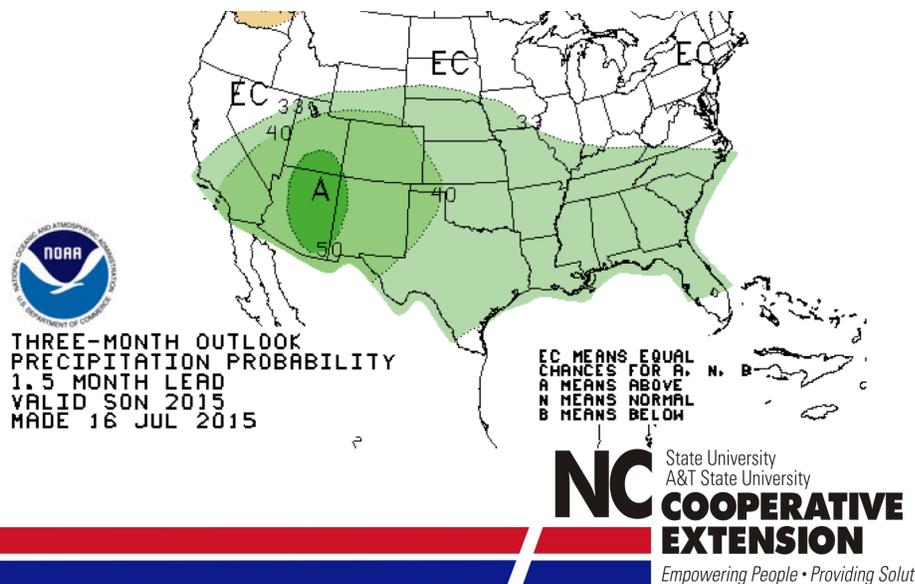
## Weather prediction update...

Way back in April, the NOAA prediction for June-July-August and July-August-September showed our region continuing to have a slightly increased chance for higher temperature, drying out, and then having an increased chance for below normal precipitation. The NC State Climate Office's climate summary graphic (below) for July shows that July was indeed warmer and drier than average. Eastern NC was hot, but received sufficient rainfall to stay out of drought conditions.



Source: <http://nc-climate.ncsu.edu/climateblog?id=144>

The NOAA Climate Prediction Center's forecast map for September-October-November shows continued higher temperatures and possibly wetter conditions than average.



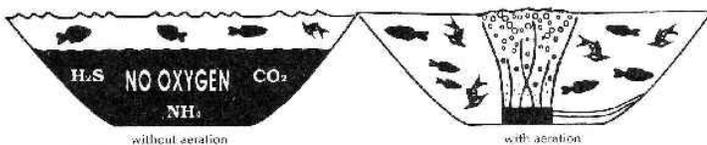
## Water woes ...

Numerous hot and sunny days in June, July, and August caused some local waterways to have temperatures hit 90°F. The dissolved oxygen (DO) content of these waterways was also quite low, some as low as 1-2 mg/L DO. Such conditions can cause very stressed fish.

Calls were received from folks in several counties about dead fish in their ponds. Pond owners mentioned seeing other fish at the water surface trying to breathe. There was also one very small fish kill - six fish - in an Onslow waterway. That small kill was much better than the 150,000 dead fish that occurred in the Neuse in July.

What can pond owners do? Several things. First, try to get some oxygen into the pond. Just pumping in well water will not work; well water does not contain oxygen. The *Pond Management Guide* (<http://appliedecology.cals.ncsu.edu/extension/fisheries/pond-management-guide/>) provides the following information (Chapter 4):

*During extremely hot weather, check your pond regularly at sunrise for signs of stressed fish. If fish are observed at the pond's surface gulping for air, stop feeding the fish and aerate the pond as soon as possible. Oxygen can be added to the pond by circulating the water with an irrigation pump or by running an out-board motor around in the pond. Commercial aerators do an excellent job of aeration. The paddlewheel type is especially effective, as it moves a large volume of water.*



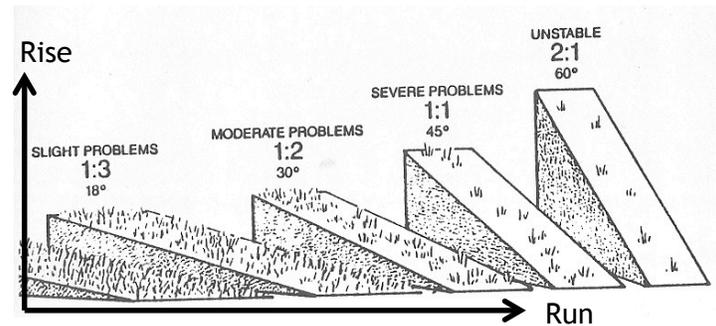
An Internet search of “pond aeration” brings up many articles. Some aerators are commercially available; others are do-it-yourself versions. There are solar powered models and those that use a windmill. Air-diffusers that sit on the bottom and surface paddlewheels are both popular types. The important thing is to find an option that works for your situation.

Algae blooms make the oxygen situation even worse. The algae produce oxygen during the day, and then use it up at night. This leads to low DO in the early morning. A good hint that you have an algae bloom is if the pond water has turned green.

Algae can be controlled with chemicals - commonly some form of copper; however, it is important to have an analysis of the water first. If the water has a low pH or low alkalinity, the copper is much more toxic to the fish. It is easy to have the water tested. Collect a sample in a well-rinsed 16-ounce plastic water or soda bottle. Take the sample to your local NC Cooperative Extension office. Ask them to submit it to NCDCA for a “solution analysis”. The fee - payable to NCDCA - is \$5. This is a small price to pay, compared to having dead fish from copper toxicity.

## Ditch stability revisited ...

In the May/June issue, the topic of *slope* was discussed. Soils with a more clayey texture can remain stable at steeper slopes than soils with a sandier texture. In general, steeper slopes are harder to maintain and are more prone to erosion, regardless of soil type (see figure below).



For the ratios used in the above figure, the first number is the change in vertical height relative to the change in horizontal distance represented by the second number. You can think of it as “rise over run”. For example, a 1:3 slope would have a 1-ft change in height for every 3-ft of horizontal distance.

The topic is being revisited, because not everyone expresses slope in this manner. In fact, engineers may use the exact opposite - “run over rise”. This

can lead to confusion and disagreements as to how a ditch or pond slope was installed. There is a big difference between a 3:1 slope and a 1:3 slope. When having work done on a slope, make sure everyone is talking about the same thing.

### Introducing Dr. Chuck Weirich ...

Dr. Chuck Weirich is NC Sea Grant's Marine Aquaculture Specialist, based in Morehead City. He provides support to North Carolina's developing marine aquaculture industry – encompassing the production of molluscan shellfish, crustaceans, and finfish – through outreach and technology transfer activities. He oversees and assists with research and demonstration projects designed to improve and refine production methods for the aquaculture industry. As an example of his work, he recently received a grant from NOAA geared toward expanding the state's shellfish industry by establishing demonstration sites to test oyster culture gear types, monitor production of oyster strains native to NC, and to evaluate Sunray venus clam culture as a means to diversify the industry.



He has held positions with universities, federal and state governmental agencies, and the commercial aquaculture industry. A native of the central Texas Hill Country, Weirich holds a bachelor's degree from Texas A&M, a master's degree from Texas State University (formerly Southwest Texas State University) and a doctoral degree from Clemson University. Dr. Weirich can be contacted at: [crweiric@ncsu.edu](mailto:crweiric@ncsu.edu)

Dr. Weirich...welcome to coastal NC!

### Who joins our other “fishy” folk ...



Dr. Jim Rice is a Professor and Extension Fisheries Specialist in the Department of Applied Ecology at NC State. As an Extension Fisheries Specialist, Jim provides information and training to County Extension Agents and the public on a wide range of issues related to fish, aquatic ecosystems, and fisheries management.

Most of these issues concern aspects of managing ponds for recreational fishing. Unlike aquaculture, where fish are fed artificial food and raised at high densities for food production, managing ponds for quality recreational fishing involves manipulating predator-prey dynamics and pond productivity to enhance the size and numbers of sportfish available. Some of the kinds of topics Jim addresses include how and when to stock ponds, ways to maximize pond productivity, how to use size-selective harvest to improve fishing, strategies to minimize risks of fish kills, management options to meet different objectives, and a host of other fish and aquatic subjects.

In his research, Jim tackles questions on the interface of basic and applied science with the dual goals of expanding our knowledge and also using that knowledge to address real-world problems. He works in a wide range of aquatic systems, from ponds and reservoirs to streams and estuaries, using a combination of field studies, lab experiments, statistical analyses, and computer modeling. Much of his research concerns how habitat variables - such as temperature, hypoxia (low oxygen) and food availability - interact to affect the distribution, growth, and survival of fish; how interactions between predators and prey alter the structure and productivity of food webs; how invasive species affect ecosystems; and how biological and environmental variables determine levels of mercury contamination in fish. Dr. Rice can be contacted at: [jrice@ncsu.edu](mailto:jrice@ncsu.edu)



Mike Frinsko is Extension's Area Aquaculture Agent for the southeast region. For more than 20 years, Mike has provided technical training and other help to commercial fish and crustacean producers covering most aspects of production and marketing. This includes hatchery management,

feeds, facility design, water quality management, harvesting, post-harvest handling, live-shipping, and cooperative development, among others.

For producers to stay competitive, they realize the need to work "ahead of the curve". To provide such cutting-edge solutions, Mike interacts with researchers and industry producers both nationally and internationally. This has carried him to farms throughout the US and to such places as Bangladesh, Myanmar, and India. Mike's goal is to support a modern and profitable aquaculture industry by bringing the best information and insight to our producers. For more information, Mike can be reached at: [Mike\\_Frinsko@ncsu.edu](mailto:Mike_Frinsko@ncsu.edu)

### **Southeast Regional Climate Hub ...**

The Southeast Regional Climate Hub (SERCH) just released a new website that contains some neat maps. The task of SERCH is to "provide tools and

strategies for climate change response to help producers cope with challenges associated with drought, heat stress, excessive moisture, longer growing seasons, and changes in pest pressures." Visit their website for more information and to access the collection of climate maps (<http://globalchange.ncsu.edu/serch/climate-viz/>). Available maps include crop productivity, percent of land in farms, crop loss and cause, property damage and cause, and avian flu locations. For most topics, the information is available by state and county. Additional climate and weather information is available through the NC State Climate Office blog: <http://nc-climate.ncsu.edu/climateblog>.



### **Don't forget ...**

Help save paper, postage, and your tax dollars! This newsletter and the annual reader survey are available online at:

<http://www.ces.ncsu.edu/?p=154971>

Thank you to the folks who have completed the online survey! For those who have not yet done so, please do. The information is very important. Suggestions you make are used to make this a better newsletter.

North Carolina Cooperative Extension Service  
North Carolina State University  
Onslow County Center  
4024 Richlands Hwy.  
Jacksonville, NC 28540