

Testimony on agricultural regulations; 21 Feb 2012

My name is Bill Dennison, and I am a Professor and Vice President for Science Applications at the University of Maryland Center for Environmental Science (UMCES). I have been leading the effort to develop scientifically rigorous environmental report cards for Chesapeake Bay and the Maryland Coastal Bays, both in producing the Bay wide report card with the EcoCheck partnership between NOAA and UMCES and working with various Riverkeepers and Waterkeepers to produce regional report cards. My comments are based on analyses of these report card indicators. All of the report cards and data supporting the report cards are available on the EcoCheck website (www.ian.umces.edu/EcoCheck) which also serves as the 'Health' section of the Maryland BayStat website (www.baystat.maryland.gov).

I would like to make three points based on these report cards and the conclusions that I have made based on these points. I have focused my comments on the Delmarva peninsula for several reasons; a) the predominance of agriculture without major human populations, b) the influence of Delmarva on both Chesapeake and Chincoteague Bays and c) it is where I live.

First, analyzing the trends in report card scores over the past twenty-five years, which integrate three water quality parameters (dissolved oxygen levels, water clarity, chlorophyll a) and three biotic indicators (aquatic grasses, benthic index of biotic integrity, phytoplankton index of biotic integrity), reveal important patterns and trends. The trend for all the Eastern Shore tributaries is negative, with degrading water quality in Upper Eastern Shore, Choptank and Lower Eastern Shore tributaries. These negative trajectories are not universal throughout Chesapeake Bay. In fact, there are improving conditions in the Upper Western shore (Bush and Gunpowder Rivers) and the James River in Virginia. The resurgence of aquatic grasses and associated fisheries in the Susquehanna flats is remarkable, and this resurgence appears to be resilient even to the large floods this past summer. A recent analysis by University of Maryland Center for Environmental Science and Johns Hopkins University scientists shows that the so-called 'dead zone' in central Chesapeake Bay is decreasing in the summer. ***So what is unique about the Delmarva peninsula that is leading to degradation of the Eastern Shore tributaries?***

Second, we had an interesting rainfall pattern in 2009 that provided us with an insight into the causes of the ongoing degradation of Eastern Shore tributaries. In the summer of 2009, we had intense rainfall in Maryland and Virginia, but this intense rainfall did not occur in the portions of Pennsylvania and New York that are in the Chesapeake watershed. So this provided us with a natural experiment in nutrient loading since rainfall induced runoff is the major delivery mechanism for diffuse nutrients. In 2009, the Upper Bay and Mid Bay sections in the mainstem improved, demonstrating the important role that the Susquehanna River has in controlling conditions in the Chesapeake mainstem. But this improvement observed in the mainstem was NOT evident in the Eastern Shore tributaries, so the Susquehanna River does not have that much influence on conditions in the Eastern Shore tributaries. Our conclusion is that

the Delmarva peninsula tributaries have issues that cannot be blamed on the Susquehanna River.

Third, tracking conditions by a similar environmental reporting framework in the Maryland Coastal Bays has revealed an ongoing degradation that has been occurring since around 2000 in Chincoteague Bay, in the most rural portions of the Coastal Bays watershed. Yet, over the same time period, conditions in the northern Coastal Bays near Ocean City are getting marginally better. Once again, ***something is happening on the Delmarva peninsula that is leading to this degradation in adjacent waters***, both to the east and west of the Delmarva Peninsula.

Based on these observations, we need to examine what has been changing on the Delmarva peninsula that has been leading to the degradation of Chesapeake and Chincoteague Bays. The dramatic expansion of the chicken industry since World War II has led to the current situation in which there are over a hundred million chickens at any point in time. A large amount of fertilizer and feed are imported to the Delmarva peninsula, well in excess of the amount of grain and chicken that is exported from the peninsula, thus there is a net accumulation of nitrogen and phosphorus on the Delmarva peninsula. We have calculated that the people equivalents of chicken waste that is generated from the 4,600 poultry houses on the Delmarva peninsula is to have 8 million people on septic systems. This is many times greater than the current population of 1.1 million people on Delmarva. ***Regulations that reduce the impact of nutrients generated from the chicken industry in Maryland are important to protect both Chesapeake and Chincoteague Bays.***

References:

Nutrient management of Delmarva soils & waters. 2003.
(ian.umces.edu/pdfs/ian_newsletter_9.pdf)

Oyster del15 N as a bioindicator of water nitrogen and degraded water quality in a sub-estuary of Chesapeake Bay. 2009
(ian.umces.edu/pdfs/ian_poster_205.pdf)

Long-term trends in Chesapeake Bay seasonal hypoxia, stratification, and nutrient loading. 2011. R.R. Murphy, W.M. Kemp & W.P. Ball. *Estuaries and Coasts* 34: 1293-1309.