NExUS Ongoing Projects and Activities Thu Feb 21 21:44:21 EST 2019

Name	Otolith Condition and Growth of Juvenile Scup, Stenotomus chrysops, and Embryonic and Larval Development in the Black Sea Bass (Centropristis striata spp.)
Description	This study explores the effects of elevated levels of CO2 on scup (Stenotomus chrysops), and the black sea bass (Centropristis striata spp.), two important marine fish that are caught both recreationally and commercially in the eastern US. Scientists at NOAA's Milford Laboratory at Northeast Fisheries Science Center are examining the otoliths of scup, a structure in the inner ear that is comprised in part of aragonite, one of two forms of calcium carbonate. Because otoliths are comprised of a carbonate mineral, their formation (via calcification) can be directly affected by changes in the ocean's carbonate chemistry, or ocean acidification. Otoliths are linked to a fish's sensory ability and thus, if altered by changes in pCO2, could affect the feeding behavior of scup, and could potentially impact the fishery and food web dynamics. The scup study examined structural abnormalities, asymmetries, size and mass of the otoliths as a function of pCO2 levels (900, 1,500, and 2,200 ppm). Additionally somatic growth (i.e. length and weight) in young-of-the-year fish was analyzed due to the potential reduction in growth caused by a possible increase in energy required to maintain otolith growth at increased pCO2 concentrations. Results showed no significant difference in the mass, or size of the otoliths and no asymmetries were detected in any of the otoliths from any of the treatments. Results also indicated no significant difference in the length of scup as a function of CO2 levels, although the weight of the fish increased with increased pCO2 concentration. Also, all of the scup were subjected to x-ray analysis to determine if there were any skeletal or calcification anomalies. Preliminary findings indicate greater than normal deposition of calcium in the vertebrae in a few fish exposed to increased levels of CO2. Additionally, this year black sea bass embryo and larval development will be examined experimentally to determine the sensitivity of different early-life stages to ocean acidification. This is crucial information to understand the impacts of changing ocean chemistry on future fish stocks.
Category	- Climate-change Specific Projects
Sector	- Managed Ecosystems
Focus Area	- Sustainability of Marine Ecosystems
Region	- Regional Or State -- New England
Status	- Ongoing

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