

Session F2: Planning and Enhancing the 2012 National Lakes Assessment

Room A106
1:30 – 3:00 pm

0116
F2-1

Evaluation of Sublittoral and Littoral Indexes of Macroinvertebrate Integrity for Southern New England and Mid-Atlantic Lakes

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Most states lack lake monitoring programs with direct assessment and reporting on biological conditions. Due to a greater emphasis on lake biological indicators by the US Environmental Protection Agency, two macroinvertebrate integrity indexes were evaluated for their effectiveness in assessment of lakes in southern New England and Mid- Atlantic. Benthic macroinvertebrates were collected from sublittoral and littoral zones of 69 lakes in EPA Region's 2 and 3, as part of the 2007 National Lakes Assessment. The Lake Macroinvertebrate Integrity Index (LMII) and more recent developed Multimetric Macroinvertebrate Index (MMI) were compared for their relationships with several potential stressors (percent forest, chloride, total phosphorus, chlorophyll a, dissolved oxygen, secchi depth, and turbidity). This comparison was done for all lakes across the regions and within Region 2. Across regions the MMI outperformed the LMII, except for the correspondence with dissolved oxygen. However, neither index showed strong relationships with the stressors examined. Evaluation of both indexes for the Region 2 lakes demonstrated that the LMII outperformed the MMI and always corresponded strongly with the stressors examined, except for secchi depth and dissolved oxygen. Despite the risk of spurious correlation with other underlying causes, these analysis help to provide some insight on which macroinvertebrate assemblage can be used to assess lake condition.

0237
F2-2

Measuring Reservoir Drawdown Effects in Texas as Part of the 2012 National Lakes Assessment: A Pilot Study to Enhance National Methods

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In 2004, the EPA initiated a program to implement a statistical monitoring design which attempts to answer questions about the general health of the nation's waters which are not effectively addressed by a targeted monitoring approach. To accomplish this EPA requested participation by all states in a series of national probabilistic surveys of water quality and biological resources called the National Aquatic Resource Surveys (NARS). Eight years later, five national probabilistic surveys have been completed. The next phase of NARS will begin next year with the 2012 National Lakes Assessment (NLA).

One of the significant outcomes of the initial 2007 NLA report was that more than a third of the nation's lakes exhibited poor lakeshore habitat condition. Many western states surveyed that year, including Texas, were in flood condition due to significant rains. In analyzing the data it became apparent that riparian and terrestrial flooding introduced bias with some shoreline condition measurements. In other areas of the country, significant drawdown of lake waters, either from withdrawal or drought, caused the lake substrate bordering the shoreline to be exposed as the "riparian area" which then also misrepresented the lakeshore condition scores. Due to these discrepancies, it was decided that a modification to the shoreline physical habitat measurements was needed for the 2012 NLA. Texas, along with eight states and five EPA offices, volunteered to help pilot these modified methods. The pilot was conducted in the summer of 2011 using the 2007 NLA shoreline methods along with new methods that include characterization of the drawdown zone. Texas chose five lakes in various stages of drawdown on which to conduct the pilot surveys. The major modification to the new shoreline assessment method is the addition of a "drawdown zone" section where information on lake levels (above or below normal) is captured. In contrast to the wet conditions in 2007, Texas experienced a drought of record in 2011 and drawdown effects were significant in all but one constant-level reservoir. These modifications to the shoreline methods will have the potential to provide a more meaningful and accurate accounting of the condition of the nations' lakes.

0408
F2-3

National Lakes Assessment: Overview of 2007 Results and Plans for the 2012 Assessment

Amina Pollard

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The Survey of the Nation's Lakes is a partnership between the EPA, states, tribes and other federal agencies to assess the condition of the Nation's freshwater lakes and ponds using a statistically valid design. This Survey is designed to help us to provide regional and national estimates of the condition of lakes. It uses a statistically-valid dataset that represents the condition of all lakes in similar regions sharing similar ecological characteristics. States and tribes used consistent sampling and analytical procedures to ensure that the results can be compared across the country. This presentation is presented in two sections. First, we provide a brief review of the results from the 2007 National Lakes Assessment, which was released in a 2010 report. Approximately 1000 lakes were sampled across the conterminous United States and these lakes were assessed for ecological condition (*e.g.* plankton, benthic macroinvertebrates, habitat quality) and human use (*e.g.* algal toxins). In addition to the condition estimates, we present results of an analysis that ranked stressors based on their relative associations between indicators of condition and indicators of stress. Second, we discuss details about the plans for the 2012 National Lakes Assessment. We describe the planning process, objectives, and schedule for the 2012 National Lakes Assessment. In addition, we identify changes in the target population and indicators between the 2007 and 2012 National Lakes Assessments. Finally, we will provide a status update, describe upcoming efforts, and provide preliminary thoughts on the path forward.

0545
F2-4

Results of Pilot Testing in Wisconsin to Add Rapid Macrophyte Assessment to the 2012 National Lake Assessment

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We developed and tested a rapid-assessment method for aquatic macrophyte communities in lakes and reservoirs. This method requires use of a rake sampler to observe macrophytes at points stratified by depth and lying along transects. It is compatible with the National Lakes Assessment (NLA) protocol and relies on coarse morphological distinctions instead of detailed species accounts, making it appropriate for implementation by technicians with very little knowledge of plant taxonomy. Data collected from 14 Wisconsin lakes allowed us to estimate macrophyte density, habitat structure, species richness, and maximum depth of colonization, all important indicators of ecological integrity and stressors to lakes, including eutrophication, habitat degradation, and hydrologic alterations. Variation was observed according to lake type, nutrient status, and geographic region. Further testing and revisions from partners in North Dakota, Washington, Colorado and Vermont have led to refinements in the protocol. Results from the pilot study will be presented, and potential applications discussed, including the 2012 NLA.