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Submitting to theme 3, **Invasive Species Early Detection, Rapid Response, Containment and Preparedness**. Asking for oral session (20 minutes).

Aquatic invasive species early detection in the Great Lakes: lessons concerning strategy

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Great Lakes coastal systems are vulnerable to introduction of a wide variety of non-indigenous species (NIS), and the desire to effectively respond to future invaders is prompting efforts towards establishing a broad early-detection network. Such a network requires statistically-valid sampling designs to assess survey performance, detection probability, and effort required. Our research into NIS search strategies began by intensively sampling the invasion-prone Duluth/Superior harbor, to build data sets with which to conduct numerical analyses. The 2005-2007 sampling detected 21 benthos NIS and 10 fish NIS, including several new invaders. Key findings are that: 1) detecting NIS while they are still rare is inherently resource intensive; 2) designs need spatial coverage with variety of habitats and sampling gear, 3) complete counts and taxonomy are needed to fully evaluate performance, 4) optimizing sampling design requires system-specific knowledge, and 5) as-yet undetected NIS are likely out there because most systems have not been examined intensively. These findings provide a basis for ongoing efforts to expand and refine early-detection strategies for Great Lakes coastal systems.