

# Center for Community-Based Resource Management (CBRM)

Natural Resources Institute, University of Manitoba

## CBRM Database

<b>Date:</b>	<b>12/08/2011</b>	<b>Entry Number:</b>	<b>1139</b>
<b>Case Study Name:</b>	Testing candidate indicators to support ecosystem-based management: the power of monitoring surveys to detect temporal trends in fish community metrics		
<b>Author:</b>	Mike D Nicholson and Simon Jennings		
<b>Document Type:</b>	Paper in scientific journal		
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<b>Region:</b>	Europe		
<b>Country:</b>	UK		
<b>Ecosystem Type:</b>	Aquatic		
<b>Social Characteristics:</b>	Coastal communities		
<b>Scale of Study:</b>	Regional		

<b>Resource Type:</b>	Fisheries
<b>Type of Initiative:</b>	Research driven project
<b>Community Based Work:</b>	Resource management
<b>Keywords:</b>	Community metrics, community structure, ecosystem-based fishery management, indicators, power analysis.
<b>Summary:</b>	<p>Community metrics describe aspects of community structure and are often calculated from species-size-abundance data collected during fish stock monitoring surveys. Several community metrics have been proposed as indicators to support ecosystem-based fishery management. These metrics should be sensitive to fishing impacts and respond rapidly to management action, so that managers can assess whether changes in the fish community are a desirable or undesirable response to management. It should also be possible to estimate metrics with sufficient precision so that changes in the community can be detected on management time scales of a year to a few years. Here, we test the power of a large-scale annual trawl survey (North Sea International Bottom Trawl Survey, IBTS) to detect trends in six community metrics: mean length, mean weight, mean maximum length, mean maximum weight, slope of the biomass size spectrum, and mean trophic level. Our analyses show that the power of the trawl survey to detect trends is generally poor. While community metrics do provide good long-term indicators of changes in fish community structure, they are unlikely to provide an appropriate tool to support short-term management decisions. If fish community metrics are to provide effective support for ecosystem-based management, and management time scales cannot be extended, then the power of many surveys to detect trends in fish community structure will need to be improved by increased replication and standardization.</p>