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Ecosystem acoustics: meeting management needs

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Marine ecosystems and their exploited resources are often monitored through quasi-synoptic scientific surveys that produce estimates of population characteristics at periodic intervals. Spatial and temporal variability is an integral part of ecosystem function but is often ignored in traditional assessment methodology due to the inability of conventional surveys to resolve and quantify such effects. This confounds estimates of the state of the ecosystem and its main populations and obscures understanding of its dynamics and function. The concept and approach of ecosystem acoustics, which are elaborated and illustrated in this presentation, exploit both active and passive acoustics over their full bandwidth from a range of platforms giving temporal and spatial resolution sufficient for assessing the state of ecosystems including their main component organisms. Application of new platforms and sensors, as well as combinations of these, is enhancing the power of the approach. Ecosystem acoustics enables observations of marine life to be made on spatial and temporal scales relevant to understanding ecosystem function and assessment of system dynamics and state.