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What are the characteristics of useful zooplankton indices?

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Zooplankton, as “little drifters,” have a long history of use as indicators of water mass movements, as unique species have been observed to move into and away from areas with changes in circulation. Recently, indices based on zooplankton community composition, size structure, and phenology have been shown to be powerful indicators of ocean change, ecosystem health, or fluctuations in economically valuable fisheries. This is not surprising to zooplankton ecologists, given our understanding of the zooplankton’s strong responses to environmental change and their critical importance as prey for upper trophic level organisms. But most studies that show potential for specific zooplankton metrics to be used as indicators have not translated into actual use of those metrics in policy or management. Potential reasons for the gap may include a lack of understanding of the specific mechanisms underlying the environment-zooplankton-fish links, the difficulty in collecting and analyzing zooplankton, or the relatively short time scales over which many indices have been calculated. In this talk, I will discuss several studies that have developed zooplankton indices, and will discuss where they have and have not been successfully employed— either in management decisions or to increase our understanding of ocean change—in an attempt to distinguish the characteristics of useful zooplankton indices.

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