

# Dynamics-based characterization and classification of the biodiversity indicators

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## Abstract

Various biodiversity indicators, such as species richness, total abundance and species diversity indices, have been developed to capture the state of ecological community over space and time. As biodiversity is a multifaceted concept, it is important to understand the dimension of biodiversity reflected by each indicator for successful biodiversity conservation and management. Here we present a method to characterize and classify biodiversity indicators according to their dynamical similarity and apply the methodology to the monitoring data of a marine fish community under the intermittent anthropogenic warm water discharge. Our analysis reveals that ten biodiversity indicators can be classified into three super-groups that possibly reflect the same dimension of biodiversity. Group I (species richness) with the most robust dynamics to the temperature changes; Group II (species diversity and total abundance) showing an abrupt change in the middle of the monitoring period, presumably due to a change in temperature; Group III (species evenness) with the highest sensitivity to temperature changes. The finding suggests that selecting indicators from different super-groups might help to fully assess biodiversity response to environmental change.

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