**Using ecological traits of marine fish to detect responses to environmental change: which traits to choose?**

**Theme:** Linking biodiversity to ecosystem function and services + Integrative frameworks to link environmental & biological drivers of biodiversity + Biodiversity in a changing ocean

**Presentation format:** oral, poster

**Abstract**

Ecological traits are increasingly used by marine ecologists to study the response of ecosystems to natural or anthropogenic disturbance and to assess the functional diversity and functioning of ecosystems. However, the choice of traits remains challenging due to lack of knowledge on which traits affect ecosystem functioning and which are most responsive to environmental change. In this study, we shine light on the latter issue using a dataset containing traits and species abundances of marine fish communties in European seas - from Greenland to Portugal. Variables representing the oceanographic and physical habitat were collected, as well as species traits related to diet, size, reproduction and life history. Three-dimensional matrix approaches (RLQ and fourth-corner analysis) and random forest modelling of community mean traits against environmental variables revealed that traits related to growth, maturity and lifespan of fish varied most strongly across environmental gradients. Fast-growing and short-lived species were dominant in shallow areas with high primary production, whereas large-sized and slow-growing species preferred deeper and colder waters at higher latitudes. Our study demonstrates the importance of identifying the key traits most responsive to the environment in order to understand and anticipate future changes in marine biodiversity and community composition under climate change.

**Key words:** traits, fish, functional diversity

**Short description:** We identified the key traits of marine fish that show the most strong responses to environmental change.

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