

Why we should not necessarily expect life history strategies to inform on sensitivity to environmental change

Mark Rademaker¹, Anieke van Leeuwen², and Isabel Smallegange³

¹Koninklijk Nederlands Instituut voor Zeeonderzoek

²NIOZ Royal Institute for Sea Research and Utrecht University

³Newcastle University

March 28, 2022

Abstract

Speed of life and reproductive strategy form the two major axes that organise variation in life history strategies across plant and animal species. This cross-taxonomical structuring can inform on the sensitivity of species to environmental change. However, predictions based on broad cross-taxonomical patterns do not necessarily align with those from detailed research on a smaller range of species. Here, we use Dynamic Energy Budget Integral Projection Models (DEB-IPMs) to quantify the extent to which patterns in the life history strategies of a large and diverse taxonomic class of fish (Actinopterygii) inform on their sensitivity to environmental change. By accounting for additional complexity in individual life histories, the classical association between life history strategies and sensitivity to environmental change breaks down. We discuss which trait-based approach is best suited to tackle challenges in linking life histories to population responses to change, and summarise our perspective in a conceptual framework

Hosted file

DEB_IPM_MAIN.pdf available at <https://authorea.com/users/448945/articles/561124-why-we-should-not-necessarily-expect-life-history-strategies-to-inform-on-sensitivity-to-environmental-change>