

Environmental link to pelagic fish life cycle, distribution, and abundance: determining governing factor

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Outline

- 1 Background: modelling environmental influence
 - Some of the works: small pelagics
- 2 What is lacking
 - Relative importance
- 3 What this project is trying to do
 - Modelling distribution of pelagic fishes

The interest in understanding the role of the environment

- In ecology/biology the most important currency that we work on is variance/variability
- Inter-annual variability in abundance, variability in growth rate, variability in distribution
- Many variables, processes are known affect distribution and abundance of fish populations
- Variation in environmental condition (as defined by a set of environmental variables), is known to affect distribution and abundance, but still remains least used in the management of most fisheries resource - lack of strong relationship, relationship that breaks after some time, lack of suitable environmental data collected at the right spatial and temporal scale.

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Work in the BCLME: Southern Benguela

summary

- In the context of small pelagic fishes most of the studies deal with the influence of the environmental condition recruitment
- These studies range from those that are purely conceptual, observational, to those that are model based
- The conceptual deal with identification of potential processes controlling/determining the location of the spawning/recruitment and their spatial connectivity
- Most of the observational studies deal with linking occurrence of eggs to in-situ environmental variables
- The modelling work using coupled hydrodynamic-Individual Based Model deals with factors influencing the location and success of recruitment

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- We do know some environmental variables affect distribution and abundance of these pelagic and mesopelagic fishes
- The relative importance of the different environmental variables at least at zero spatial and temporal lag is least known
- The relative importance of these variables across the life-history stages is also not known (not well understood)
- Does the change in environmental condition relate to the change abundance/biomass

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- Most of the previous studies rely either on qualitative linking between response and predictors or simpler models
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- Which of the variables included in the model are most important? how do the variables rank in terms of their relative importance?

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- Model distribution and abundance of mesopelagic fishes
- Does the relative importance of the environmental variables on distribution and abundance vary across life-history stages, and species
- Are there areas that are more suitable?
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