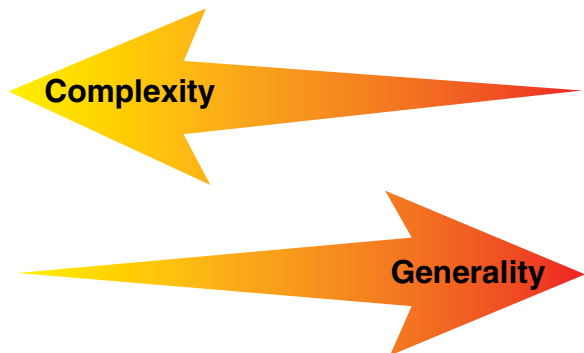


# MULTISPECIES MODELLING OF NORTH SEA FISH STOCKS

## Trade offs in Modelling

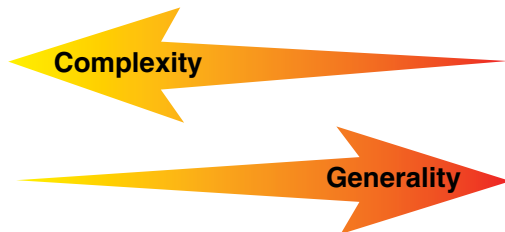
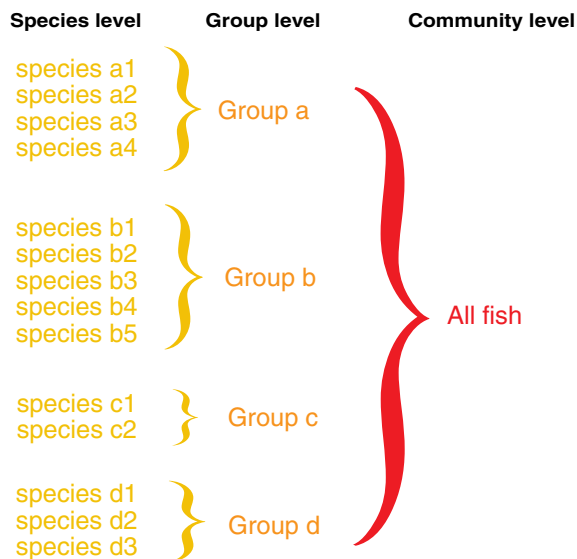


In modelling there is a trade-off between complexity and generality.

Complex models can provide specific quantitative answers. Unfortunately, these models may be highly sensitive to certain assumptions and have the potential to give detailed but wrong answers.

General models may not provide as specific answers, but they are likely to be more robust.

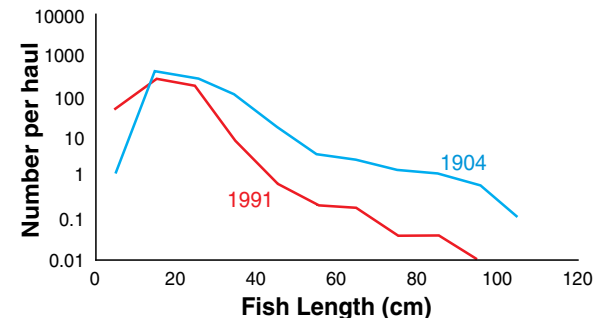
## Properties of the Ecological Hierarchy



Ecosystems often contain a natural hierarchy such that complexity at one level can be subsumed under a simple process at a higher level.

Models can be constructed at different levels of complexity to exploit this hierarchy and answer different questions.

## Example: Community Analysis using Size Spectra



Size spectrum analysis is a community based method where fish are classified by size rather than species.

The size spectrum for the southern North Sea above indicates that there were 10 to 100 fold more large fish in 1904 than in 1991, relative to the small fish.

This simple approach reflects the large changes fishing has had on the North Sea.