

Size as a master trait

“Size has a remarkably great influence on the organisation of animal communities”

Elton, Animal Ecology, 1926

“For every type of animal there is a most convenient size, and a large change in size inevitably carries with it a change of form”

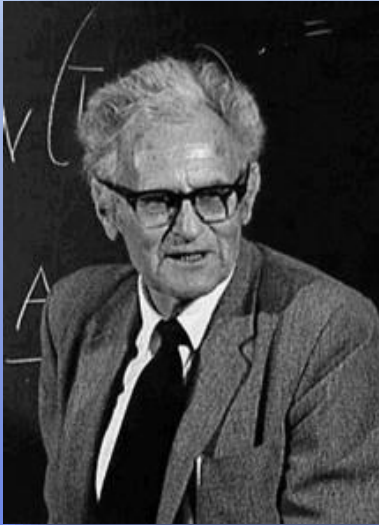
Haldane, On Being the Right Size, 1928

The logo for 'Ocean Life' is set against a blue background with wavy lines representing water. A red line graph with several peaks and valleys is overlaid on the scene. Various marine organisms are depicted: a green, oval-shaped organism at the top left, a yellow, segmented worm-like creature in the middle left, a green, oval-shaped organism in the middle right, and a grey fish with a large eye on the far right. The text 'Ocean Life' is written in a bold, blue, sans-serif font.

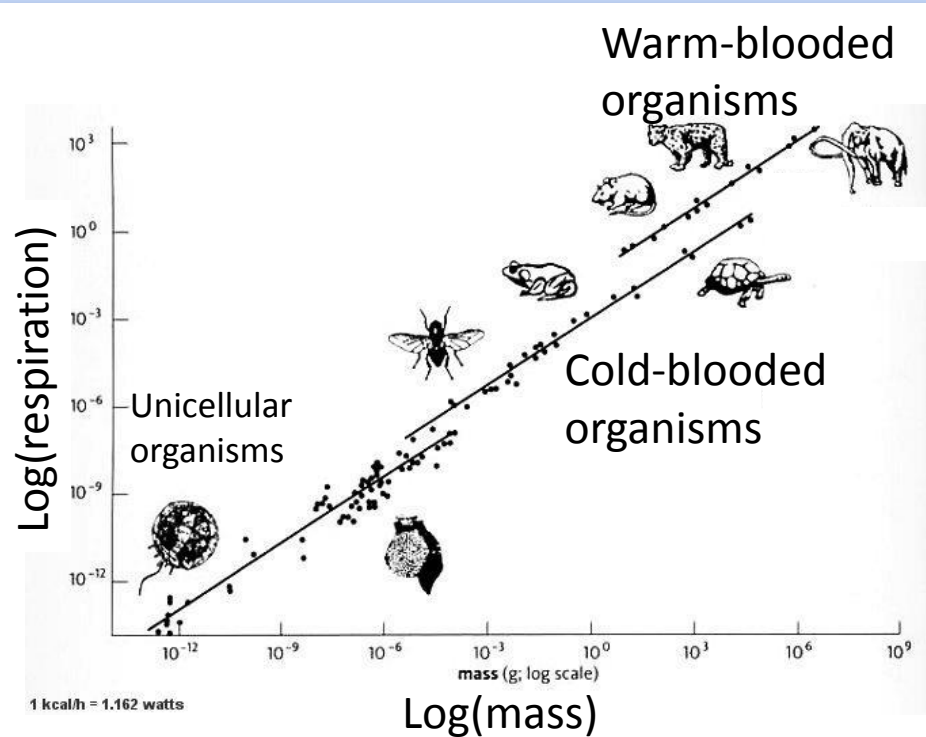
Ocean Life

- a VKR centre of excellence

Size and metabolism #1: individual physiology



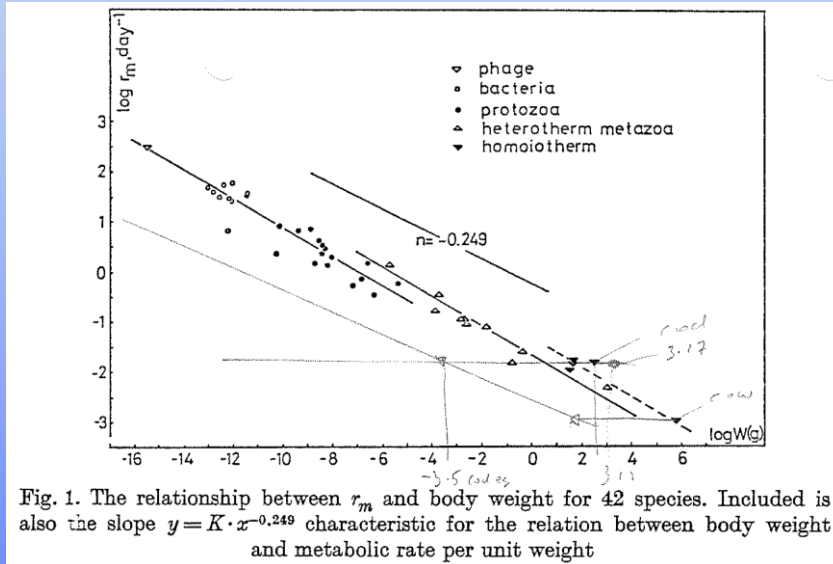
Max Kleiber



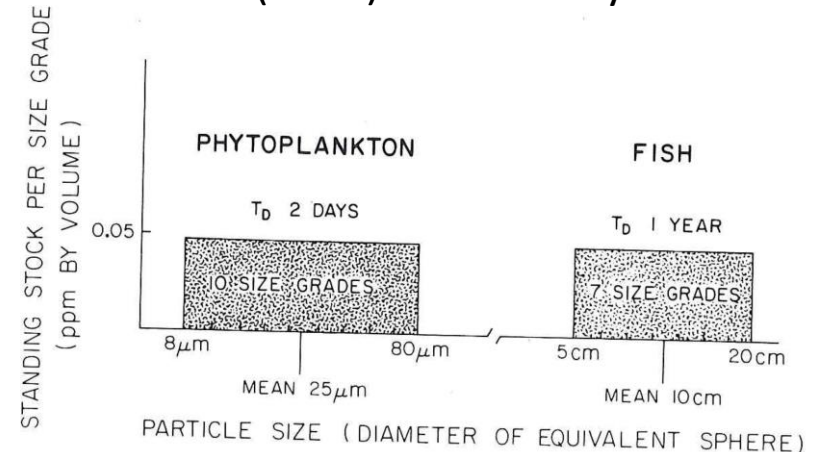
Size and metabolism #2:

from individuals -> populations & communities

Fenchel (1974): population growth rate



Sheldon et al (1977): community structure

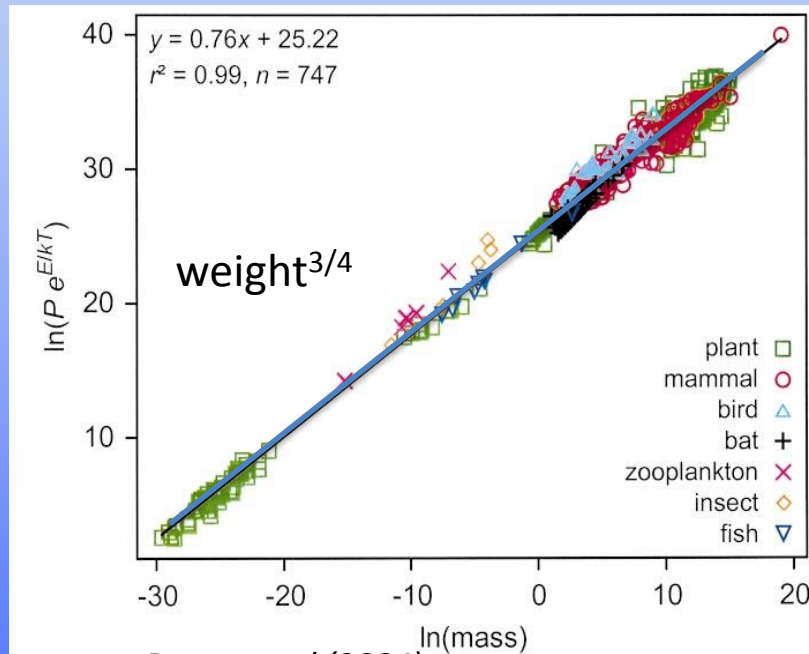


There is a definite relationship between growth rate and body size that is simply a variant of the well known "metabolic law." This can be expressed as $r = aW^n$, where W is the body weight and a and n are constants. Fenchel (1974) considers n to have a value of around -0.275.

Size and metabolism #3

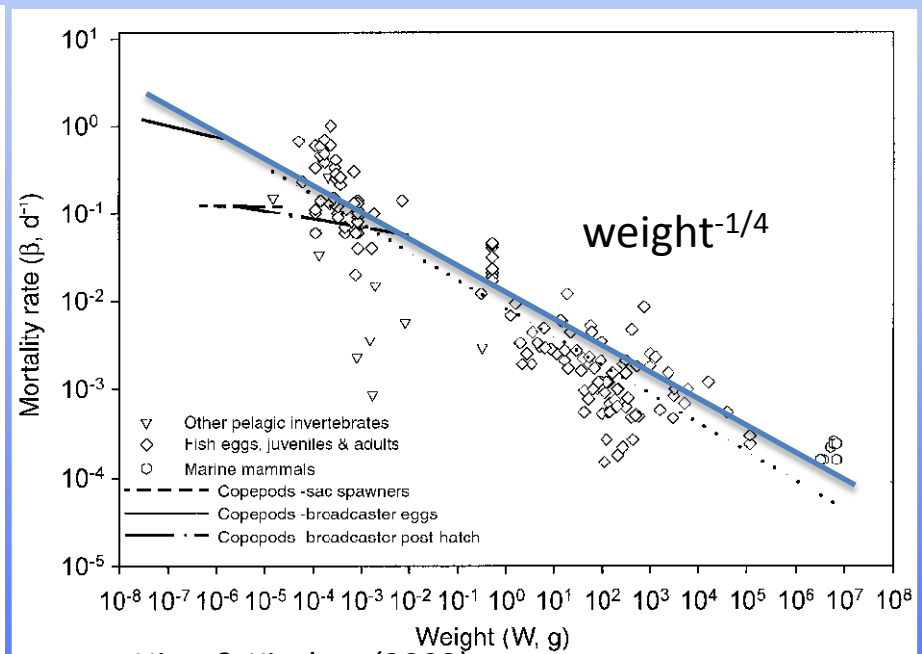
Metabolic theory of ecology

Metabolism



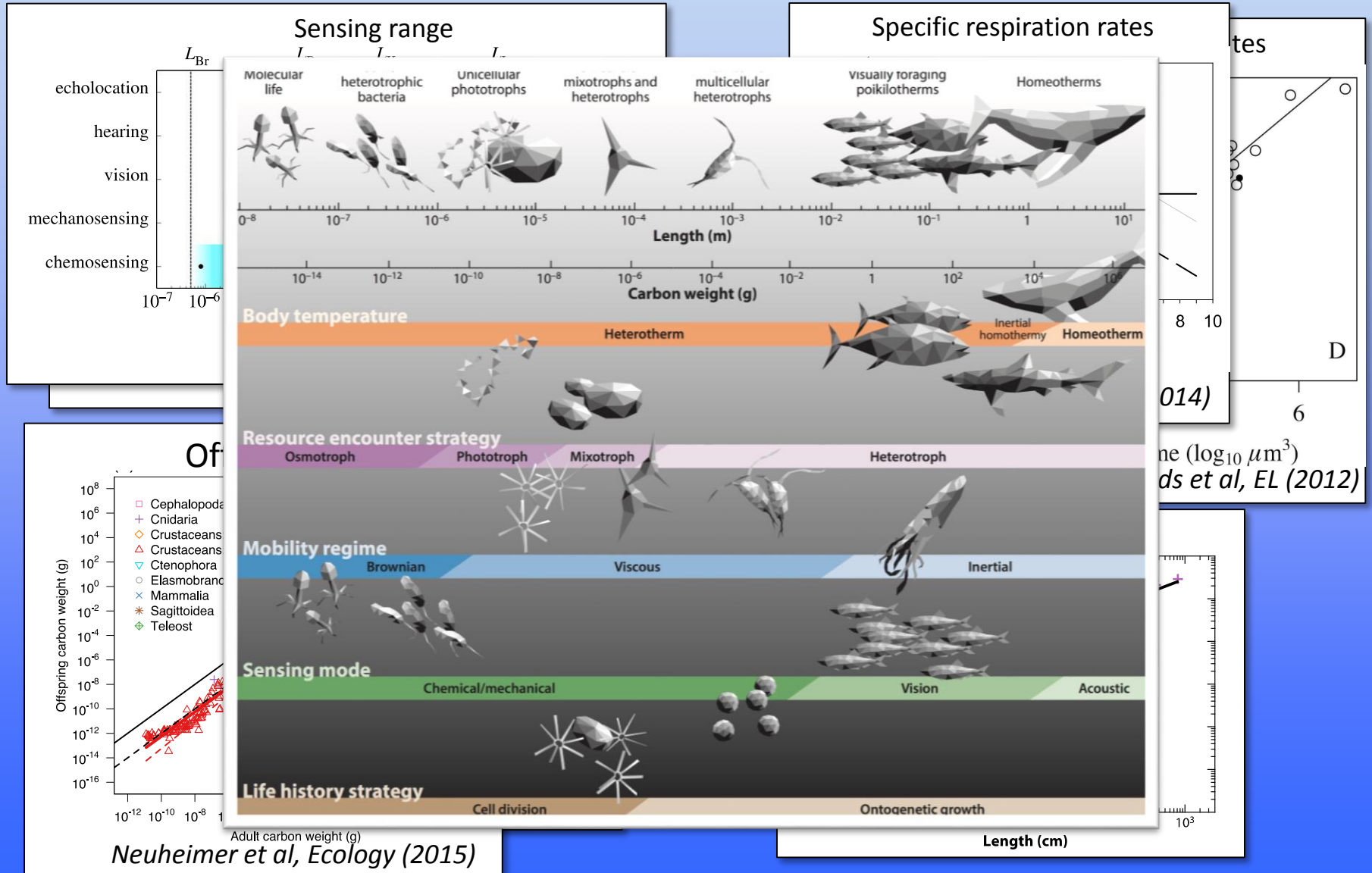
Brown et al (2004)

Mortality

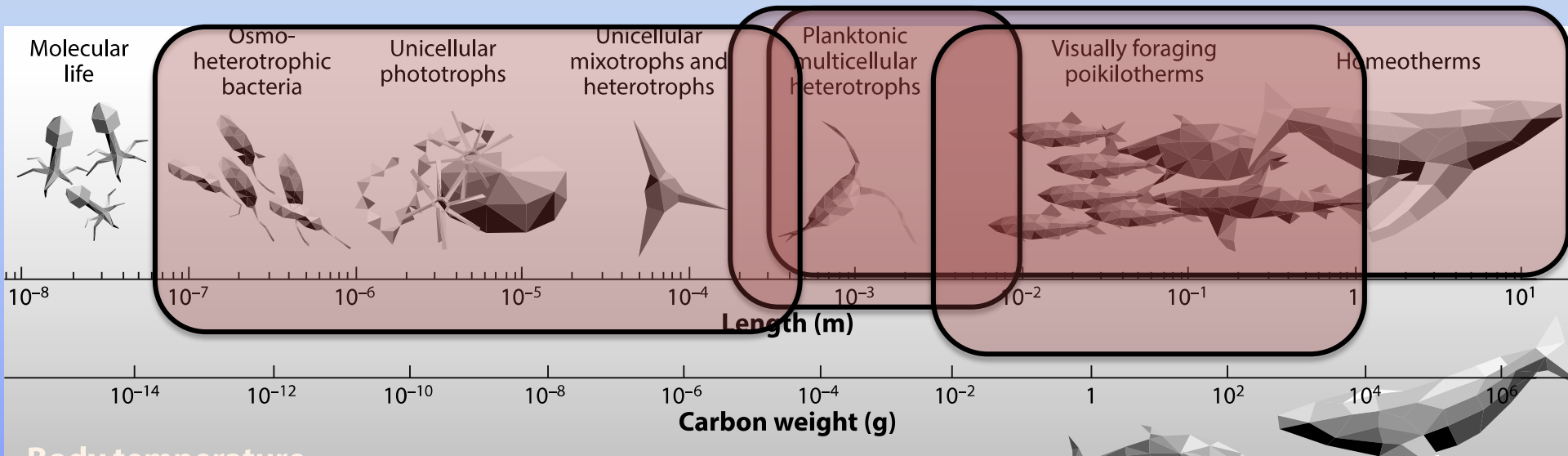


Hirst & Kiørboe (2002)

Size as a master trait



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Andrew Hirst: New insights from body surface: a major trait in determining life sustaining rates in metazoans

Karen Stamieszkin: Changes in North Atlantic copepod community size structure and fecal pellet carbon flux over 55 years

Subhendu Chakraborty: Correlation between organism size and trophic strategies

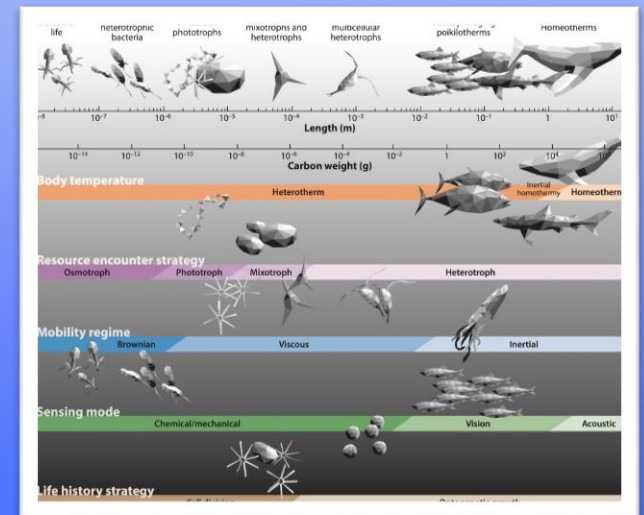
Kathy Mills: Using size structure and metabolic theory to forecast fish community characteristics in a changing climate

Size as a master trait: posters

Esteban Acevedo-Trejos - A comparative modelling analysis of phytoplankton size diversity

James Allen - Retrieval of phytoplankton size distribution from satellite imagery

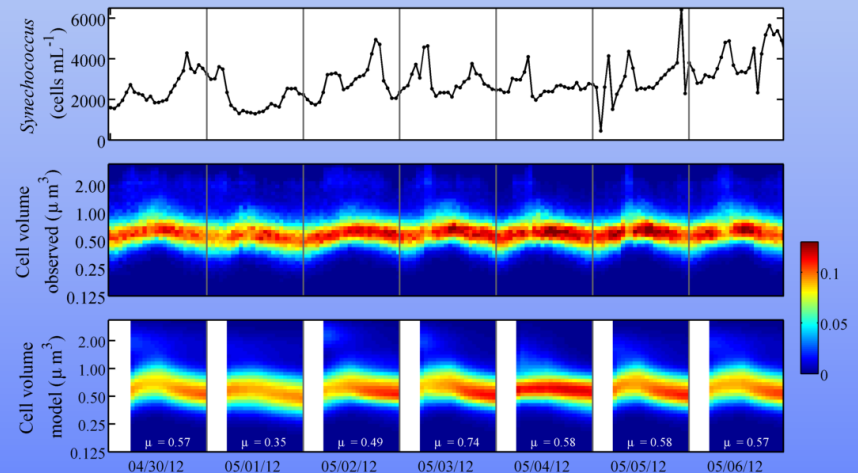
Ken Andersen – Characteristic sizes of life in the ocean



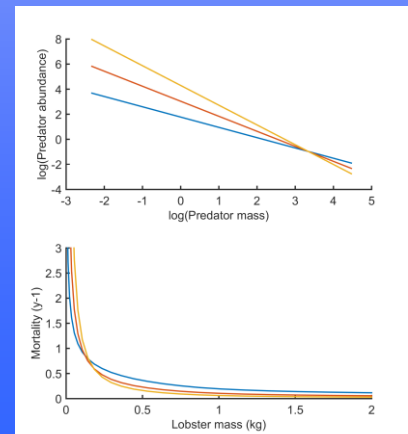
Kelsey Bisson - Linking shifts in remotely sensed planktonic community structure to changes in carbon export flux from the surface ocean to the mesopelagic

Size as a master trait: posters

Kristen Hunter-Cevera - Seasonal shifts in division rate determine *Synechococcus* population dynamics



Arnault Le Bris - Temperature induced variation in life-history trade-offs

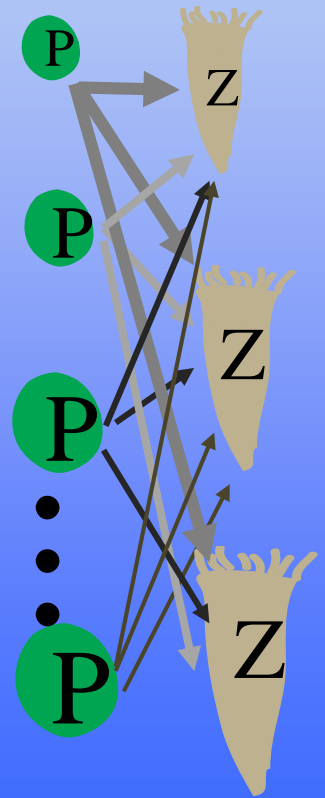


Size as a master trait: posters

Clinton Leach - Exploring the lack of recovery of Scotian Shelf cod through the development of a statistical framework for size-structured predator-prey models

Darcy Taniguchi – How top-down effects influence predator:prey ratios and planktonic community diversity in a size-structured model of phyto- and microzooplankton

Sebastien Portalier – Size-related effects of physical factors on the structure of food webs



Size as a master trait

Limits to body size as a trait:

What can, and what cannot, be described by body size?

