



Energetic Value of Zooplankton and Nekton of the Southern Ocean: A Review

Fokje L. Schaafsma¹, Yves Cherel², Hauke Flores³, Jan A. van Franeker¹, Mary-Anne Lea⁴, Ben Raymond^{4,5}, Rowan Trebilco⁶, Andrea Walters⁴, Anton P. Van de Putte⁷ (anton.vandeputte@kuleuven.be)

¹Wageningen Marine Research, Den Helder, Netherlands, ²Centre d'Etudes Biologiques de Chizé, Villiers-en-Bois, France, ³Alfred Wegener Institute Helmholtz Center for Polar and Marine Research, Bremerhaven, Germany, ⁴Institute for Marine and Antarctic Studies, University of Tasmania, Hobart, Australia, ⁵Australian Antarctic Division, Kingston, Australia, ⁶Antarctic Climate and Ecosystems Cooperative Research Centre, University of Tasmania, Hobart, Australia, ⁷Royal Belgian Institute for Natural Sciences, Brussels, Belgium





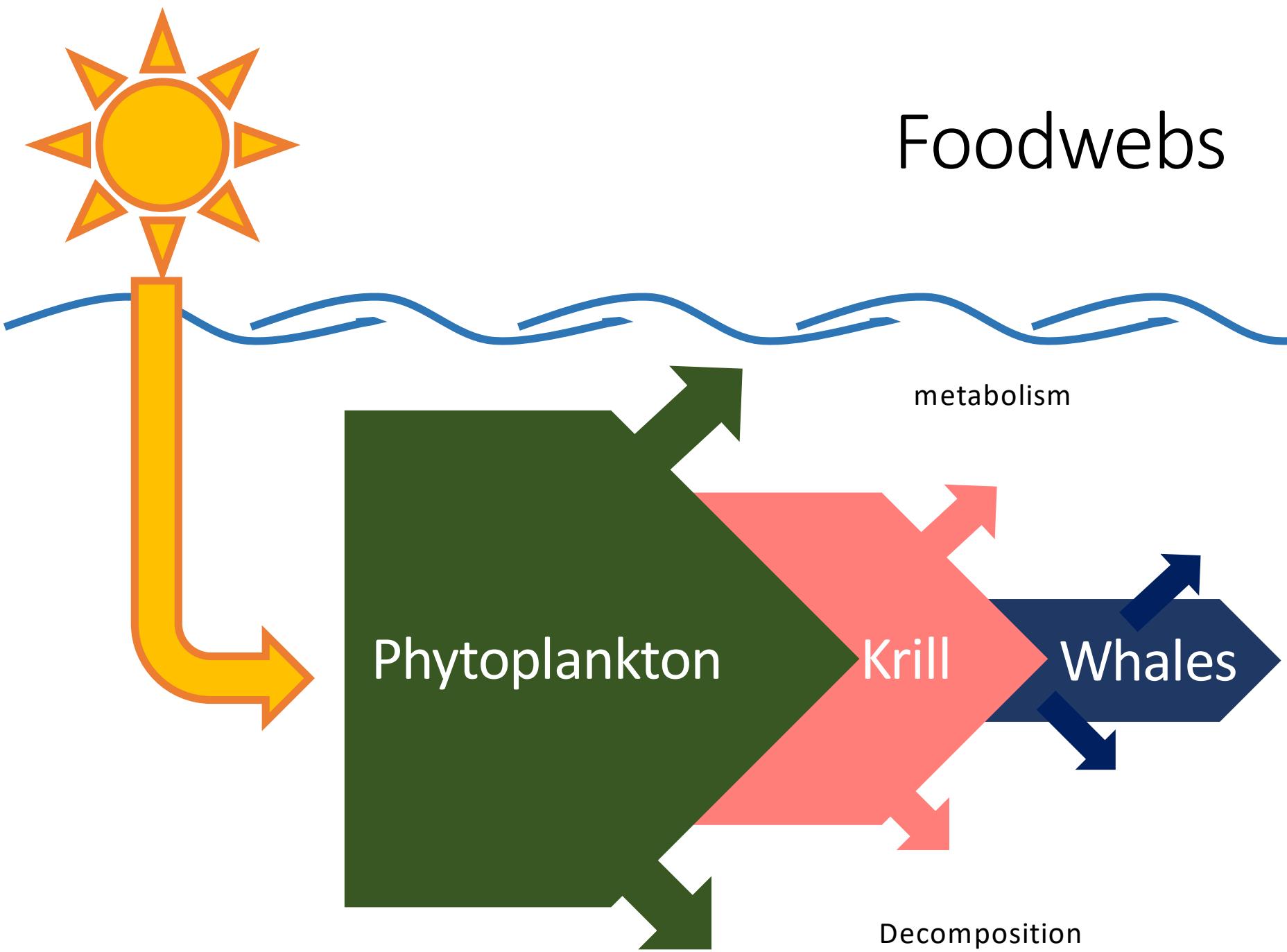
SCAR Southern Ocean Diet and Energetics Database

SCAR Expert group on Antarctic Bioinformatics with contributors

Non-exhaustively:

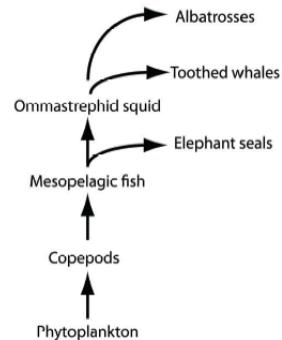
Antonio Agüera - Rachael Alderman - Claudia Andrade - Julia Blanchard - Madeleine Brasier - Thomas Brey - Alison Cleary - Yves Cherel - Maëlle Connan - Bruce Deagle - Hauke Flores - Miguel Guerreiro - Nicole Hellessey - Mark Hindell - Luis Hückstädt - Simon Jarman - Kit Kovacs - Mary-Anne Lea - Silvia Lourenço - Stacey McCormack - Julie McInnes - Jess Melbourne-Thomas - Loïc Michel - Ben Raymond - Ryan Reisinger - Andy Revill - **Fokje Schaafsma** - Jonny Stark - Gabriele Stowasser - Arnaud Tarroux - Megan Tierney - Rowan Trebilco - *Anton Van de Putte* - Jan van Franeker - Filip Volckaert - Andrea Walters - José Xavier

Foodwebs

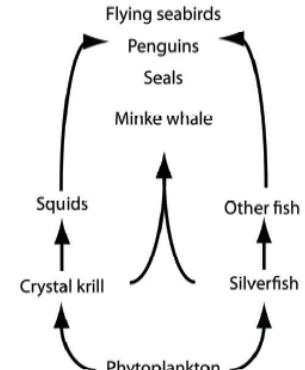


Foodwebs

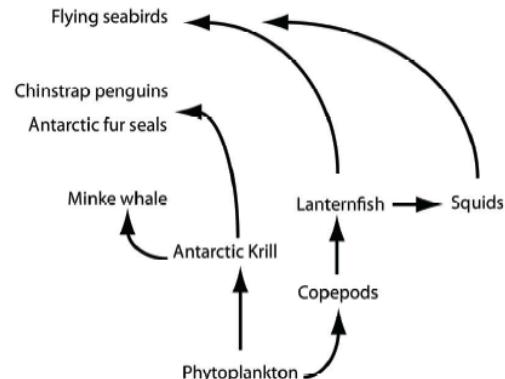
- There is a variety of foodwebs
- See e.g. Rodhouse & White, 1995
- e.g. Thomas & Greene, 1998
- e.g. Hopkins et al., 1993



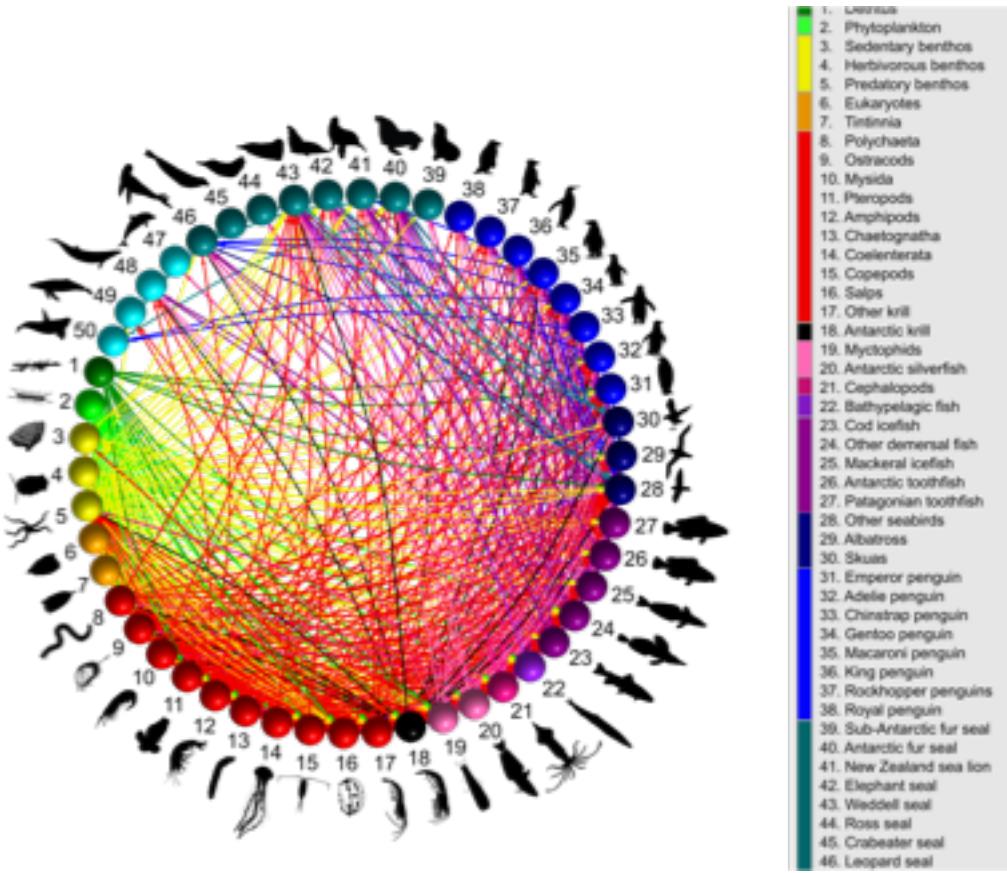
Antarctic Polar Front



Shelf Zone



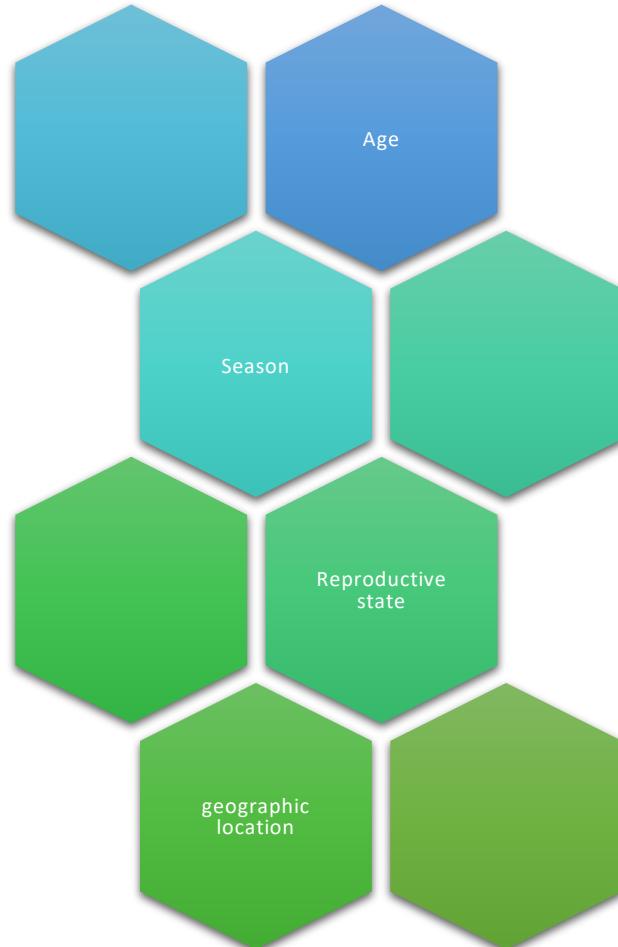
Marginal Ice Zone

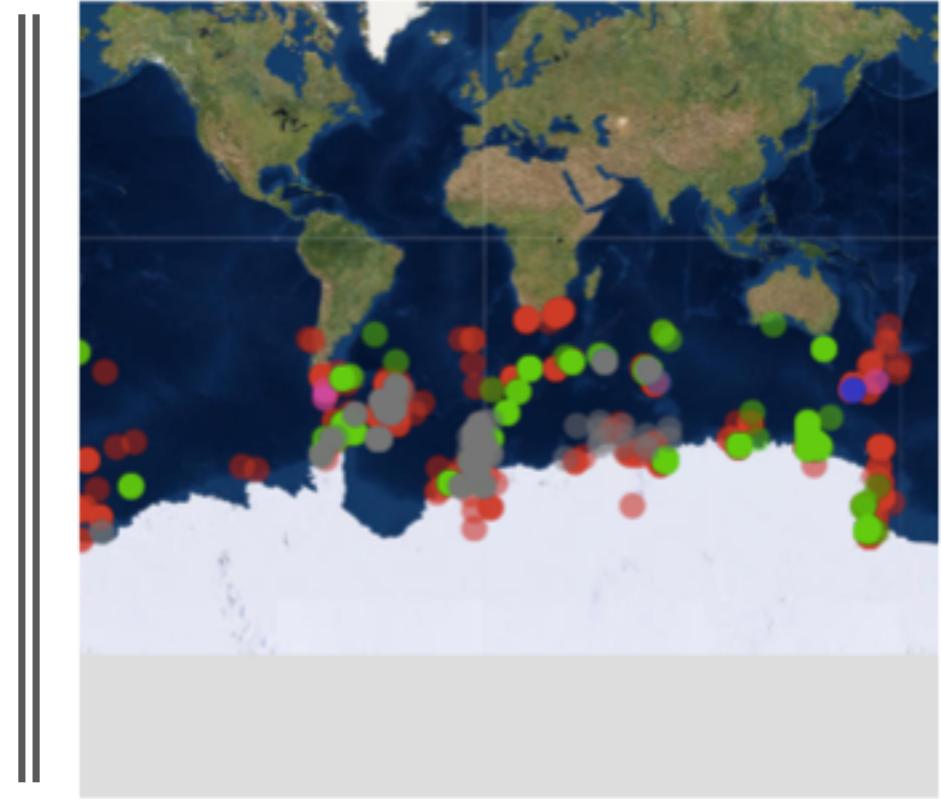
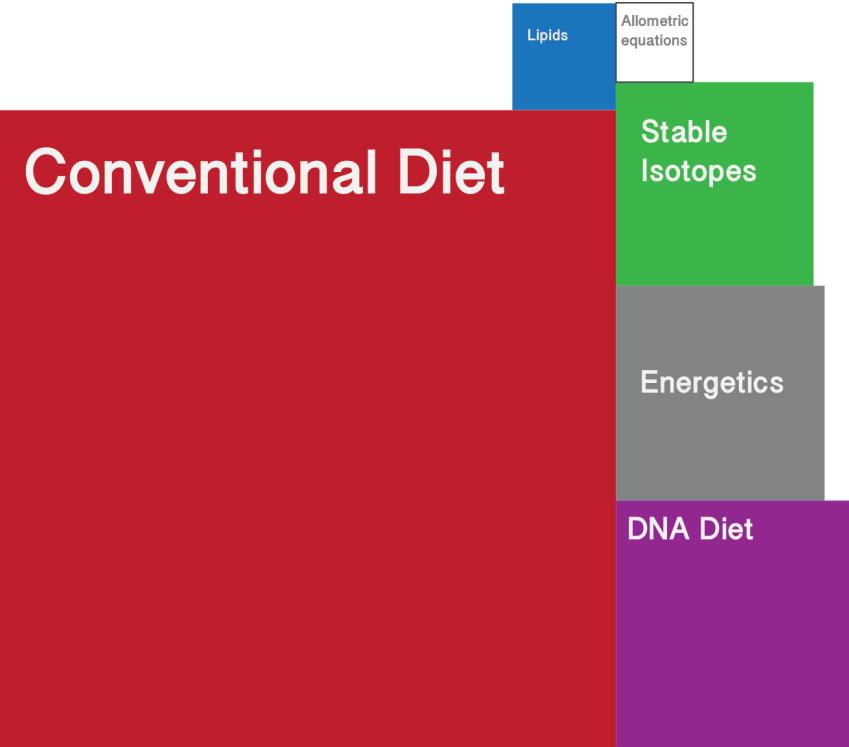


Foodwebs

- **Stacey A. McCormack et al. (in press)**
- **How Universal is the Keystoneness of Krill in Southern Ocean Food Webs?**
- B Jakobshorn
- 20.06.2018
- 17:00-17:15

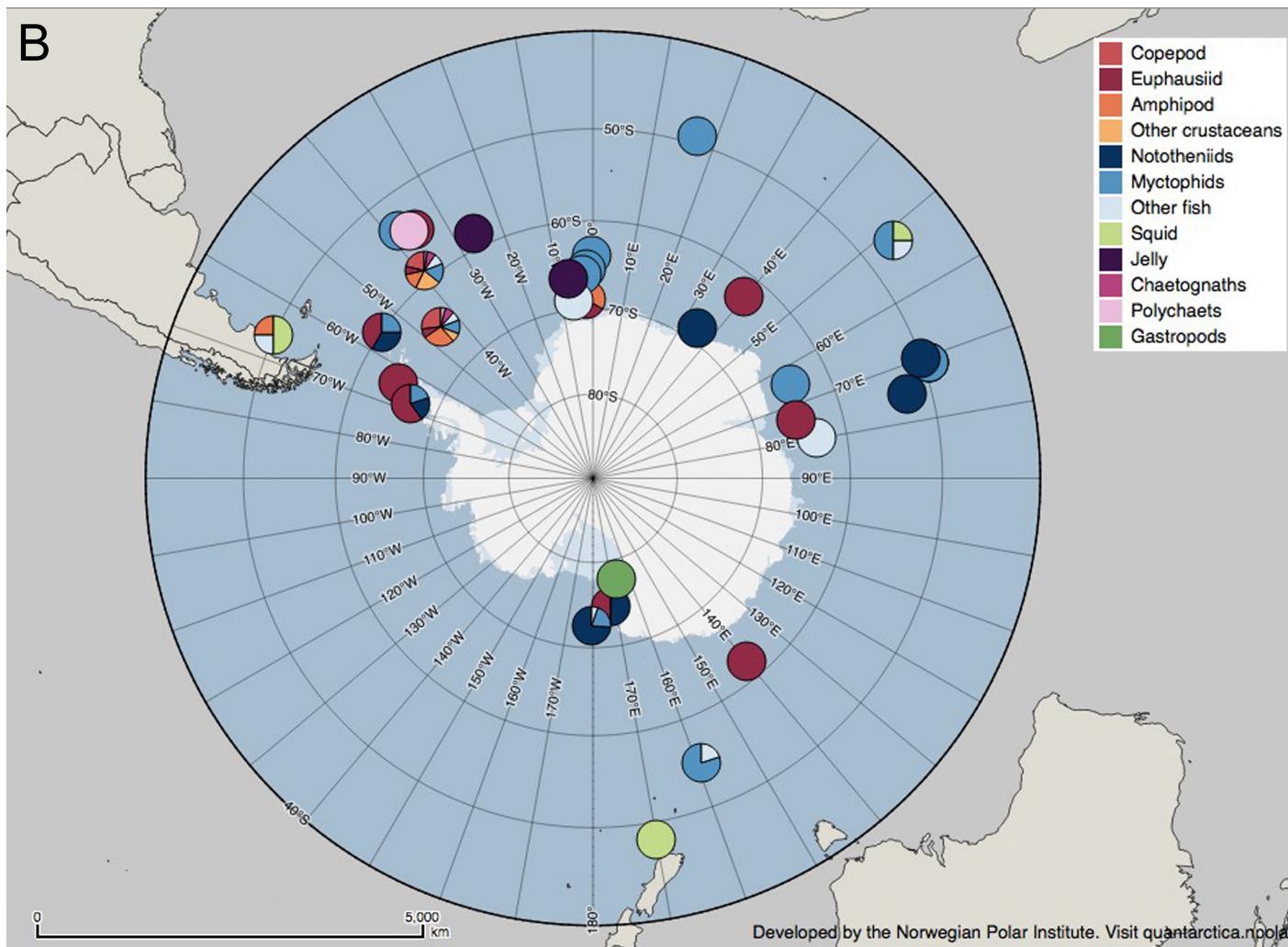
What determines Energy content?





SCAR Southern Ocean Diet and Energetics Database:Data types

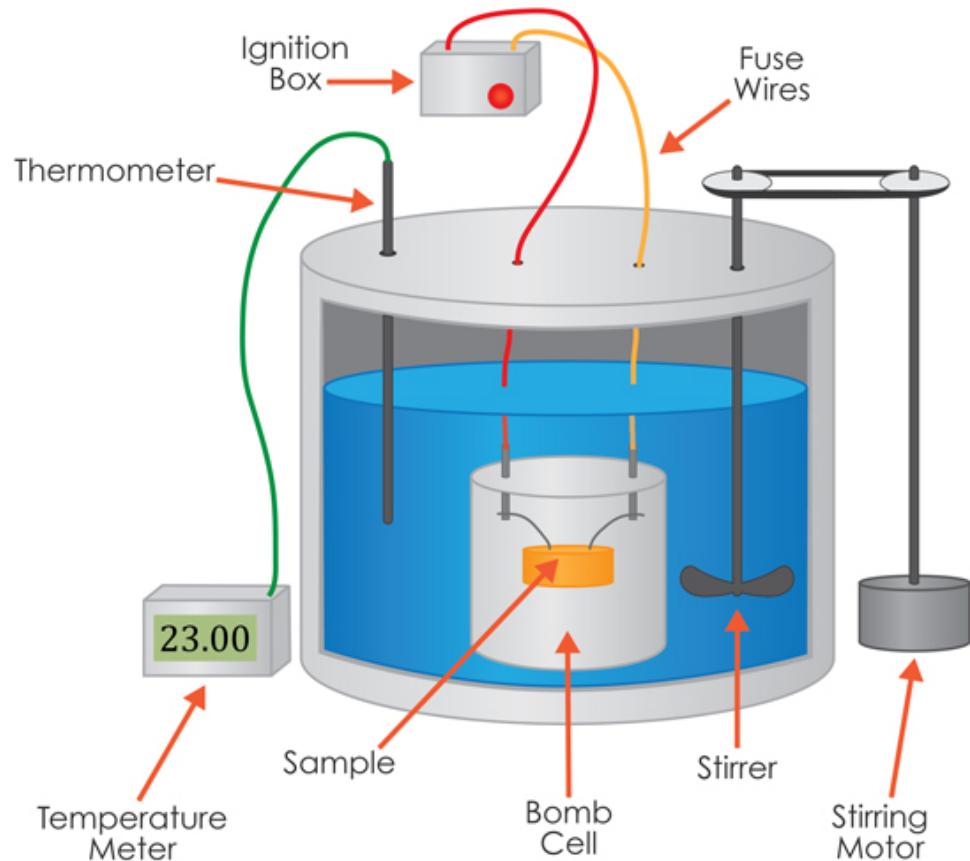
Sampled locations



Measuring energy density

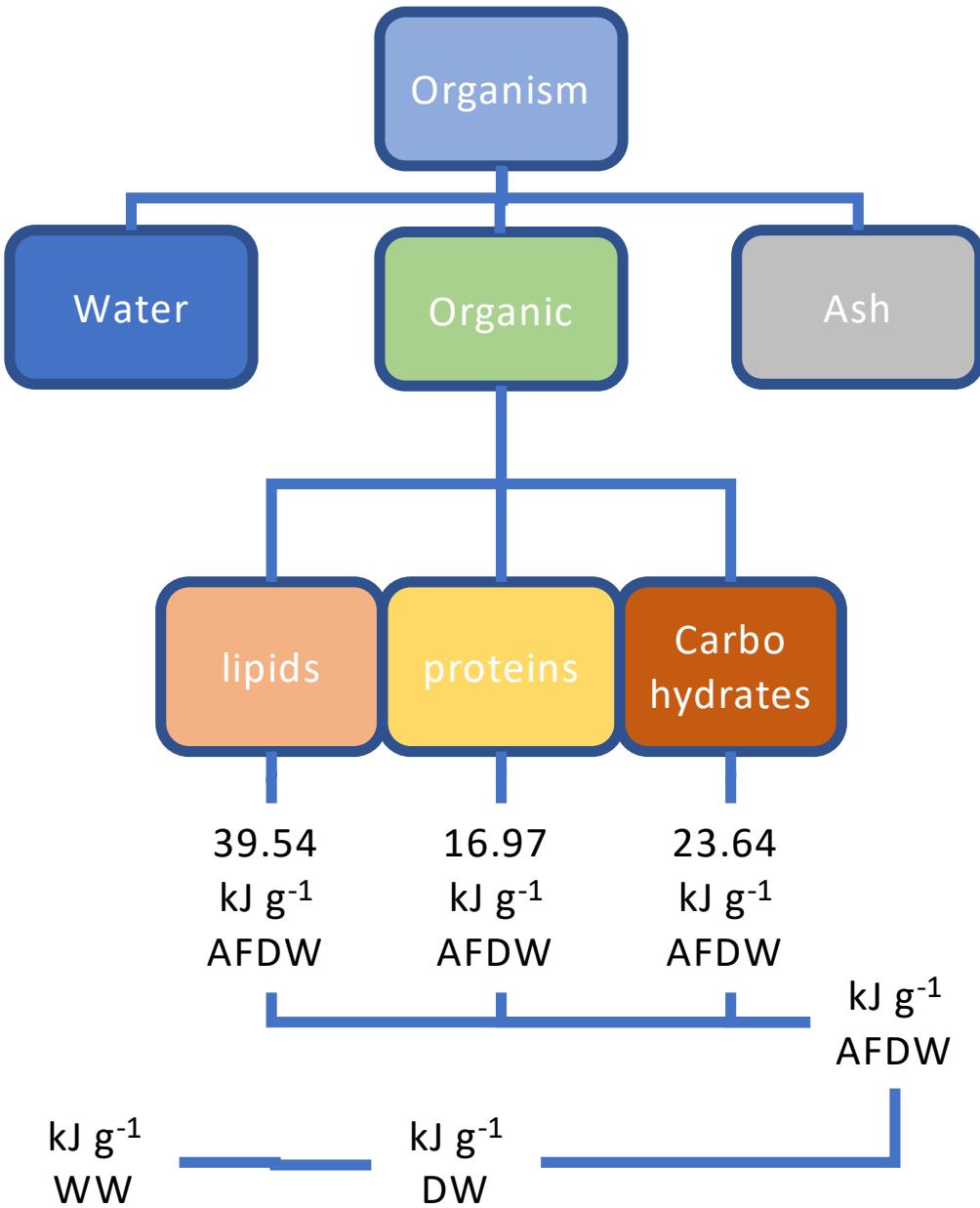
- *Bomb calorimetry*

Bomb Calorimeter

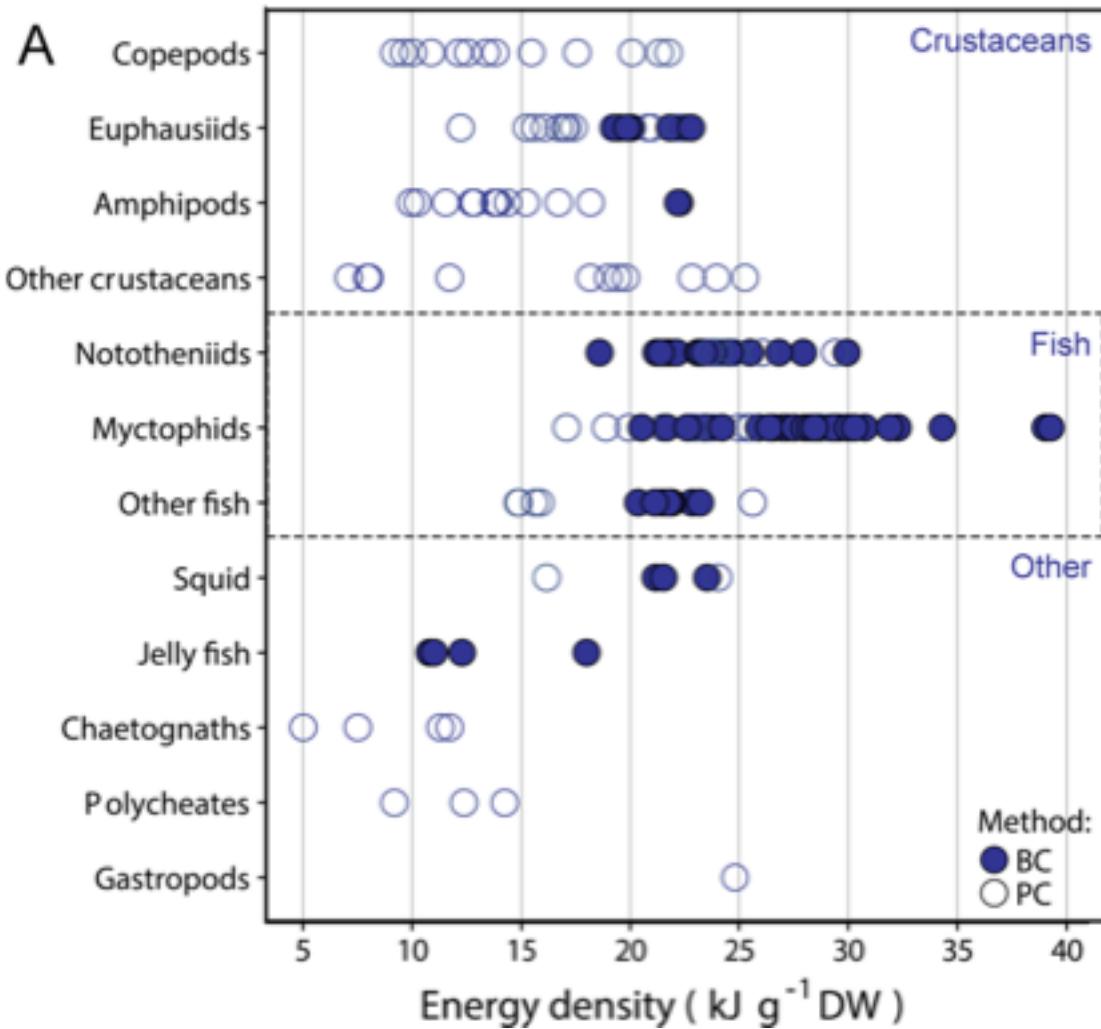


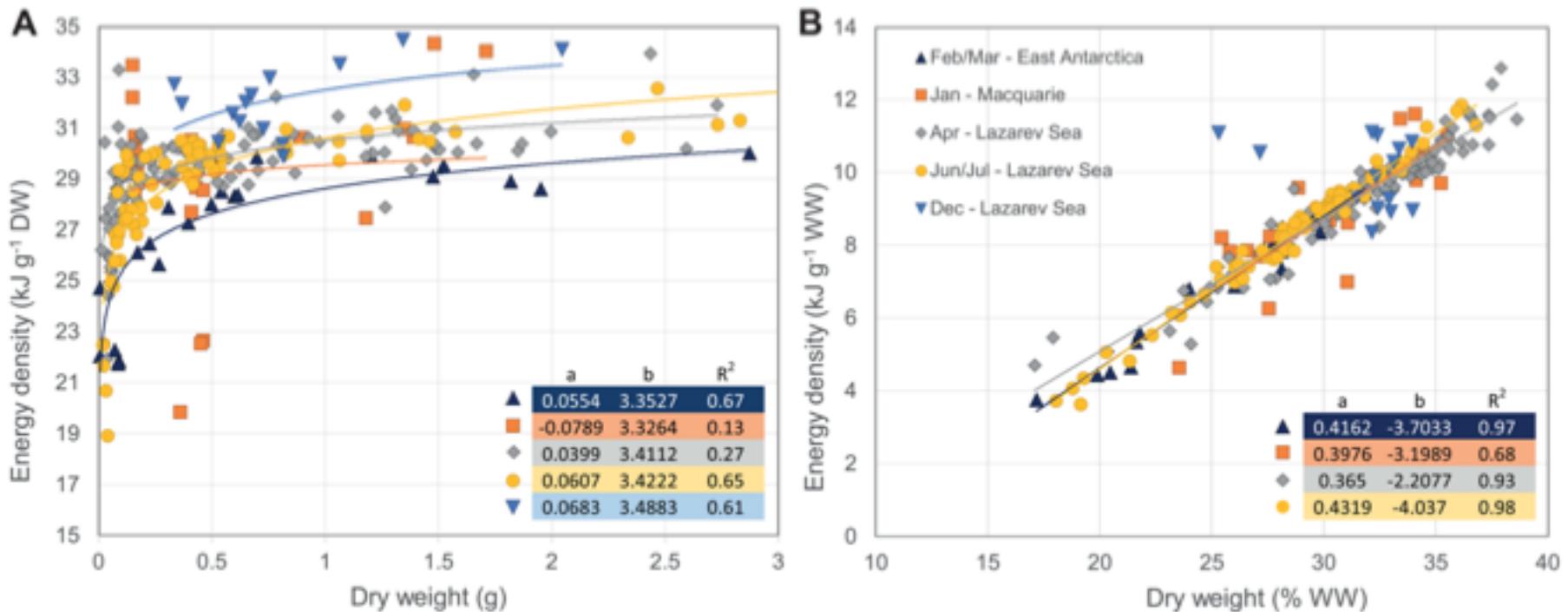
Measuring energy density

- *Bomb calorimetry*
- *Proximate composition*



Interspecies comparison





Effects of size and season



Conclusion

- large amount of data is available
- skewed towards a few large, abundant and relatively easily accessible taxa
- information on the seasonal and regional variability of energy densities is still limited

- small and gelatinous zooplankton

How can I get involved?

- **Contribute data** (particularly from under-represented taxa, regions, or data types). If you have data from an unpublished paper, the data can be embargoed until publication.
 - templates: <https://github.com/SCAR/DietAndEnergetics>
 - or, particularly if you have a lot of data, we may be able to script a batch import
 - submit in parallel with journal papers?
- **Join a group** working on a paper
- **Use the database and R packages**, contribute analytical code (package or code snippets)
- **Make suggestions** so that this is more useful to the community
 - how you might use such data
 - what analytical functionality is needed
- Contact: ben.raymond@aad.gov.au



Data citation



The database is released under a CC-BY license: please cite these data when using. If you have used data from a small number of individual sources, please cite the original data sources and additionally acknowledge this database. For example:

Smith J (2008) On the use of stable isotopes. *Journal of Stable Isotope Stuff* **123**:100–110. Data obtained from the SCAR Southern Ocean Diet and Energetics Database
If you have used data from many individual sources, the overall citation for this database is:
Scientific Committee on Antarctic Research (2018) Southern Ocean Data and Energetics Database. However, you are encouraged to cite all primary sources (possibly in supplementary material, if there are many).