

Appendix B – Calibration diagnostics from the PREBAL analysis

The pre-balance (PREBAL) analysis depicted by Link (2010) consists of a set of calibration diagnostics to ensure that the Ecopath model is parameterised with a coherent and ecologically sound mass-balance.

The biomass slope on a log scale declines by ca. 5 – 10% with increasing trophic levels

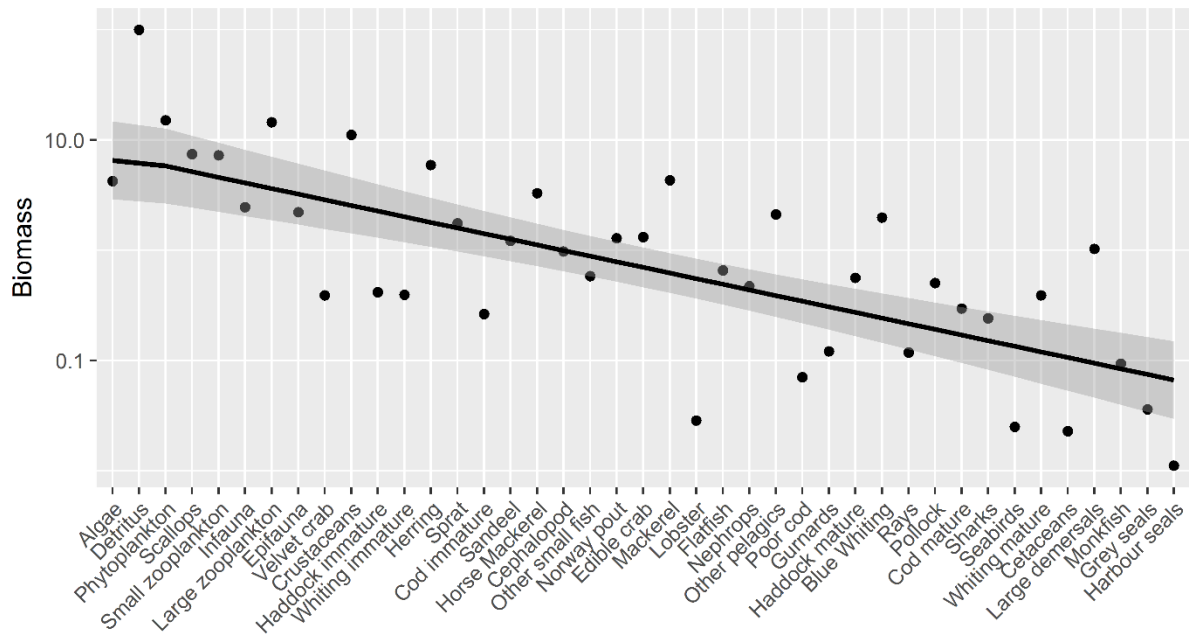


Figure 1. Biomass of the functional groups included in the model on a log scale (black dots) and arranged by increasing trophic level from left to right. The black line depicts a linear model fitted through the data (slope: -0.051 , P-value: 7.34×10^{-9}), with the corresponding 95% confidence interval shown by the grey shaded area.

Predator/biomass ratios are <1

Table 1. Ratio between predator and prey biomass for the functional groups included in the model

| Group name | Biomass ratio |
|------------------|---------------|
| Grey seals | 0.00 |
| Harbour seals | 0.00 |
| Cetaceans | 0.00 |
| Seabirds | 0.00 |
| Cod mature | 0.01 |
| Cod immature | 0.00 |
| Haddock mature | 0.02 |
| Haddock immature | 0.01 |

| | |
|-------------------|------|
| Whiting mature | 0.01 |
| Whiting immature | 0.01 |
| Saithe | 0.01 |
| Gurnards | 0.00 |
| Monkfish | 0.00 |
| Flatfish | 0.01 |
| Rays | 0.00 |
| Sharks | 0.00 |
| Hake | 0.02 |
| Other small fish | 0.02 |
| Mackerel | 0.08 |
| Horse Mackerel | 0.08 |
| Blue Whiting | 0.05 |
| Other pelagics | 0.04 |
| Herring | 0.14 |
| Norway pout | 0.05 |
| Poor cod | 0.00 |
| Sandeel | 0.03 |
| Sprat | 0.05 |
| Nephrops | 0.01 |
| Lobster | 0.00 |
| Edible crab | 0.01 |
| Velvet crab | 0.00 |
| Crustaceans | 0.07 |
| Cephalopod | 0.02 |
| Large zooplankton | 0.11 |
| Small zooplankton | 0.06 |
| Infauna | 0.02 |
| Scallops | 0.06 |
| Epifauna | 0.02 |

Vital rates decline with increasing trophic levels

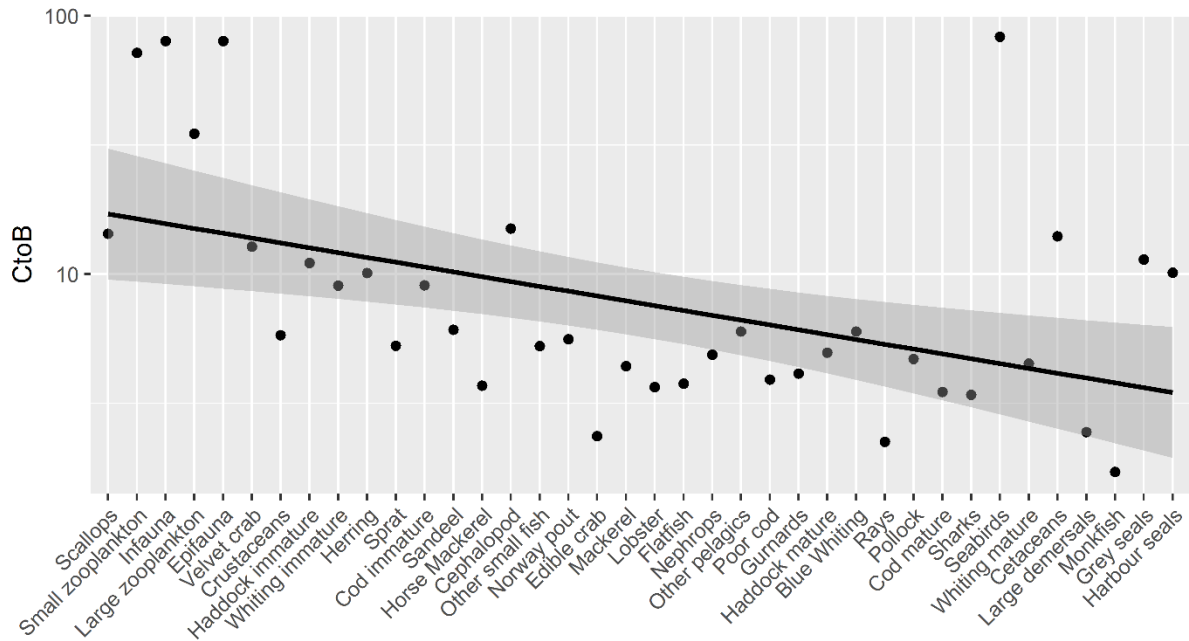


Figure 2. Consumption to biomass ratio (CtoB) of the functional groups included in the model (black dots) and arranged by increasing trophic level from left to right. The black line depicts a linear model fitted through the data (slope: -0.73 , P-value: 0.03), with the corresponding 95% confidence interval shown by the grey shaded area.

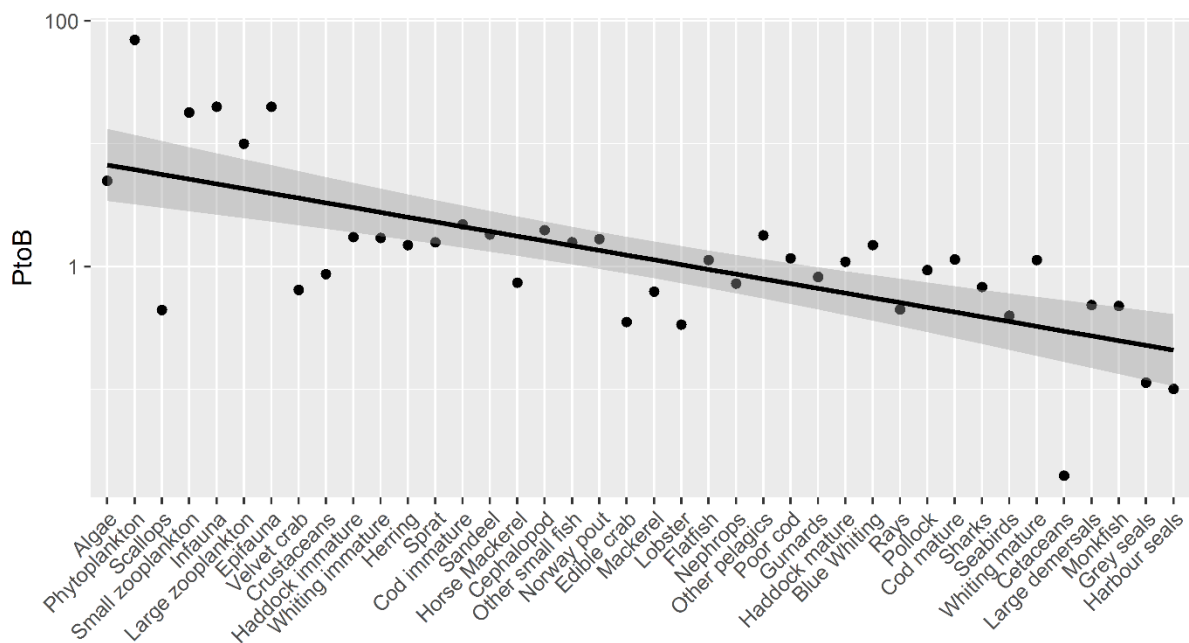


Figure 3. Production to biomass ratio (PtoB) of the functional groups included in the model (black dots) and arranged by increasing trophic level from left to right. The black line depicts a linear model fitted through the data (slope: -0.45 , P-value: 0.003), with the corresponding 95% confidence interval shown by the grey shaded area.

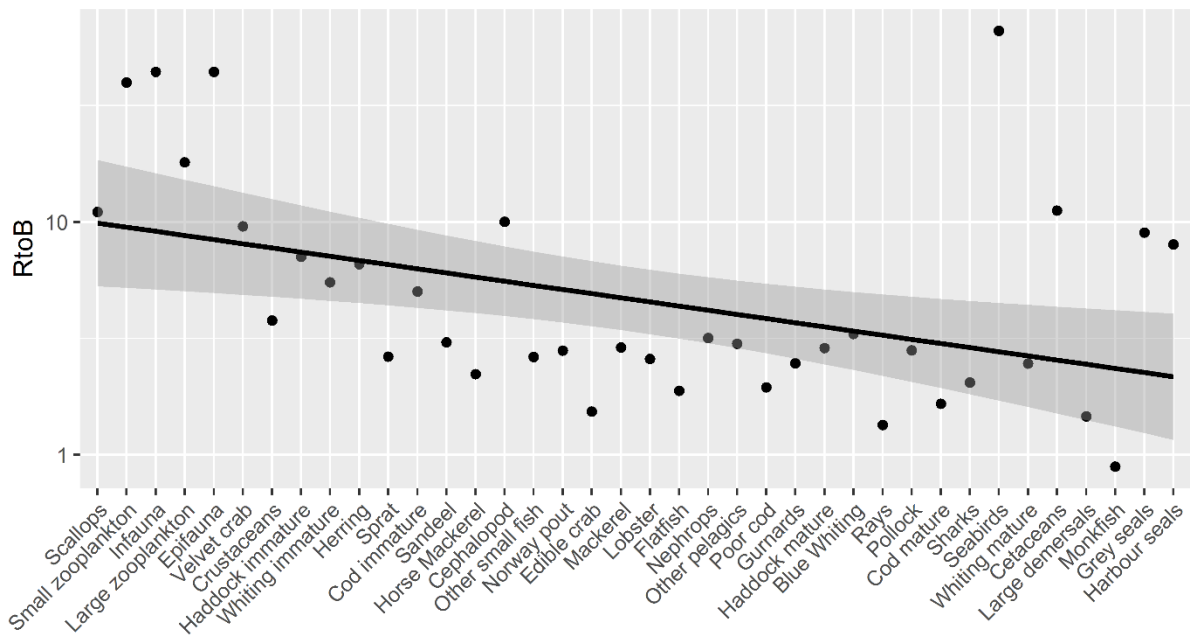


Figure 4. Respiration to biomass ratio (RtoB) of the functional groups included in the model (black dots) and arranged by increasing trophic level from left to right. The black line depicts a linear model fitted through the data (slope: -0.33, P-value: 0.12), with the corresponding 95% confidence interval shown by the grey shaded area.

References

Link, J.S., 2010. Adding rigor to ecological network models by evaluating a set of pre-balance diagnostics: A plea for PREBAL. *Ecol. Modell.* 221, 1580–1591. <https://doi.org/10.1016/j.ecolmodel.2010.03.012>