

## Trophic levels and Isotopes

Johannes A. Iitembu

Ministry of fisheries and Marine resources

### Abstract

The principal aim of WP2, Task 2.4 of the ECOFISH project is to determine the trophic positions of hake, horse mackerel, sardinella, and other important pelagic and demersal species using stable isotopes ( $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$ ) in the northern Benguela ecosystem (Namibia and Angola). Primary results (with a special focus on hake) showed nitrogen isotopes ( $\delta^{15}\text{N}$ ) having a significant positive relationship with size in both *M. capensis* and *M. paradoxus*; however, the correlation slopes of size and  $\delta^{15}\text{N}$  in the two species were significantly different, with *M. paradoxus* displaying a steeper trophic shift. A significant increase in carbon isotope signature ( $\delta^{13}\text{C}$ ) with size was observed in *M. capensis* but not in *M. paradoxus*. Results indicated that *M. paradoxus* feed at higher trophic level than *M. capensis*. A Bayesian isotope mixing model indicated cannibalism accounted for less than 6% and less than 4% of the diets of *M. capensis* and *M. paradoxus* respectively. Isotope-based estimates of prey dietary contributions differed from those of published accounts of gut content analyses, an indication of overestimation by the latter. Field sampling for this task is finished, however more isotopic analyses and data analysis will be conducted to answer more questions related to the task objectives.