

**IMBER report: CLIOTOP Task team 2016-01 Workshop report:
Global patterns and trends of tuna isotopes**

7-14 and 16-23 November 2016, CSIRO, Hobart, Australia



Photos of the workshop participants including (left to right) for the carbon isotope paper: Heidi Pethybridge (CSIRO Oceans and Atmosphere, Hobart, Australia), Brittany Graham (NIWA, Wellington, New Zealand), Anne Lorrain (IRD, Noumea, New Caledonia), and for nitrogen isotope paper: Anela Choy (MBARI, Monterey, USA).

Stable carbon and nitrogen isotope analysis is a common tool to estimate trophic position and examine habitat patterns of a range of coastal and marine predators, but due to the extensive oceanic habitat and logistics required to conduct wide-scale sampling, global comparisons have been limited to date. Members of the task team 2016-01 'tuna isotopes' met in Hobart, Australia to draft up text that will form a solid foundation of two scientific papers. For both workshops, first we interpreted and selected key results based on a global isotope analysis of a dataset of 4281 tuna isotope values previously compiled by the task team (formerly WG3; Young et al. 2015). Generalized Additive Mixed Models were used to explore the influence of spatial, biological and environmental variables on the tuna isotope values. Model predictions were then overlaid on a world map to show the global spatial distribution of isotope values of tuna (Figure 1). Additional approaches were applied to examine differences between regional isotope gradients of tuna to model derived baseline isoscapes. We used these differences to identify regions of high and low movement. Complementary time-series analyses were also performed to explore potential temporal trends in the dataset.

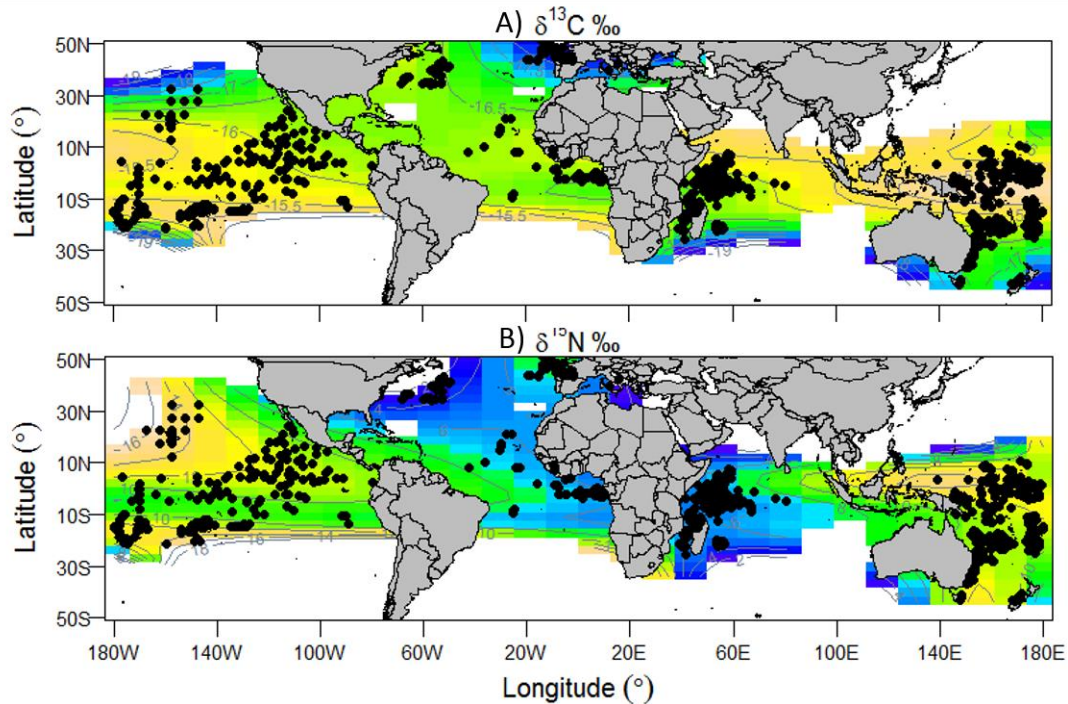


Figure 1. Global isoscapes of model predicted stable (a) carbon and (b) nitrogen isotope values in tunas. Overall, the two workshops were a success with exciting and high impact publications anticipated in the near future. Local CLIOTOP scientists (Drs. Jock Young, Alistair Hobday, Clothilde Langlais and Karen Evans) also participated in the workshops and shared their excitement in the results and offered useful input. The members briefly discussed project ideas and potential funding opportunities to facilitate future research. This workshop recognized the value of international collaboration to bring disparate dataset together to look at large-scale ecological patterns that are relevant to fisheries and ecosystem based management, especially in times of a changing climate. We thank CSIRO and CLIOTOP for sponsoring these writing workshops.

Reference: Young, J.W., R.J. Olson, F. Menard, P.M. Kuhnert, L.M. Duffy, V. Allain, J.M. Logan, A. Lorrain, C.J. Somes, B. Graham, N. Goni, H. Pethybridge, M. Simier, M. Potier, E. Romanov, D. Pagendam, C. Hannides, C.A. Choy (2014). [Setting the stage for a global-scale trophic analysis of marine top predators: a multi-workshop review](#). Rev. Fish Biol. Fisheries. DOI 10.1007/s11160-014-9368-4