



Ecological data for western Indian Ocean tuna

NATHALIE BODIN,^{1,2,6} EMMANUEL CHASSOT,^{1,2} FANY SARDENNE,¹ IKER ZUDAIRE,^{1,3} MAITANE GRANDE,^{1,3}
ZAHIRAH DHURMEEA,^{1,4} HILARIO MURUA,³ AND JULIEN BARDE⁵

¹Research Institute for Sustainable Development (IRD) - Marine Biodiversity Exploitation & Conservation Unit, Fishing Port, Victoria, Mahe, Republic of Seychelles

²Seychelles Fishing Authority (SFA), Fishing Port, Victoria, Mahe, Republic of Seychelles

³Marine Research Division, AZTI-Tecnalia, Herrera Kaia-Portu aldea z/g, Pasaia, Gipuzkoa, Spain

⁴Department of Biosciences & Ocean Studies, Faculty of Science, University of Mauritius (UoM), Réduit, Mauritius

⁵Research Institute for Sustainable Development (IRD) - Marine Biodiversity Exploitation & Conservation Unit, Indian Ocean Commission (IOC), Ebène, Mauritius

Abstract. Tuna are marine apex predators that inhabit the tropical and sub-tropical waters of the Indian Ocean where they support socially and economically important fisheries. Key component of pelagic communities, tuna are bioindicator species of anthropogenic and climate-induced changes through modifications of the structure and related energy-flow of food webs and ecosystems. The IndianEcoTuna dataset provides a panel of ecological tracers measured in four soft tissues (white muscle, red muscle, liver, gonads) from 1,364 individuals of four species, i.e., the albacore (ALB, *Thunnus alalunga*), the bigeye (BET, *T. obesus*), the skipjack (SKJ, *Katsuwonus pelamis*), and the yellowfin (YFT, *T. albacares*), collected throughout the western Indian Ocean from 2009 to 2015. Sampling was carried out during routine monitoring programs, at sea by observers onboard professional vessels or at landing. For each record, the type of fishing gear, the conservation mode, as well as the fishing date and catch location are provided. Individuals were sampled to span a wide range of body sizes: 565 ALB with fork length from 58 to 118 cm, 155 BET from 29.5 to 173 cm, 304 SKJ from 30 to 74 cm, and 340 YFT from 29 to 171.5 cm. The IndianEcoTuna dataset combines: (1) 9,512 records of carbon and nitrogen stable isotopes (percent element weights, $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values) in 1,185 fish, (2) 887 concentrations of total proteins in 242 fish, (3) 8,356 concentrations of total lipids and three lipid classes (triacylglycerols TAG; phospholipids PL; sterols ST) in 695 fish, and (4) 1,150 and 1,033 profiles of neutral and polar fatty acids in 397 and 342 fish, respectively. Information on sex and weights of the whole fish, gonads, liver and stomach is provided. Because of the essential trophic role and wide-ranging of tuna in marine systems, and the large panel of tropho-energetic tracers and derived-key quantitative parameters provided (e.g., niche width, trophic position, condition indices), the IndianEcoTuna dataset should be of high interest for global and regional research on marine trophic ecology and food web analysis, as well as on the impacts of anthropogenic changes on Indian Ocean marine ecosystems. There are no copyright restrictions for research and/or teaching purposes. Usage of the dataset must include citation of this Data Paper.

Key words: energetics; fatty acids; lipids; morphometrics; multi-tissues; proteins; stable isotopes; trophic ecology; tropical marine ecosystems; tuna fisheries.

The complete data set is available as Supporting Information at <https://onlinelibrary.wiley.com/doi/10.1002/ecy.2218/supinfo>