Llopiz Lab EDI: Stable Isotope Data

**Proposed Title:** Carbon and NitrogenStable Isotope Signatures for Small Pelagic Fishes across the Northeast U.S. Continental Shelf, 2013-2015.

**Proposed Keywords:** Fish, Carbon, Nitrogen, Stable Isotope, Northeast U.S. Shelf.

**Proposed Abstract:** *The abstract should provide a description of the dataset, summarizing what are these data, where, when (is the dataset complete or ongoing?), and an overview of why and how collected (put details how in the Methods). Mention the taxonomic standard that you used (if applicable). Please do not use special characters, symbols, or formatting.*

These data represent the carbon and nitrogen stable isotope signatures of small pelagic fishes across the Northeast U.S. Continental Shelf as reported by Suca, J.J., et al. (2018) Feeding dynamics of Northwest Atlantic small pelagic fishes. Progress in Oceanography, 165, 52-62, https://doi.org/10.1016/j.pocean.2018.04.014. The five species of fish in this dataset represent a subset of the species collected in bottom trawls conducted by the NOAA NEFSC Ecosystems Survey Branch from Cape Hatteras to the Gulf of Maine for years 2013-2015. Sampling occurred in the Spring and Fall seasons. Sections of dorsal musculature were analyzed for carbon and nitrogen isotopes using mass spectrometry. Carbon-to-nitrogen isotopic ratios were reported along with the isotopic signatures for carbon and nitrogen respectively. Additionally, a lipid-corrected carbon signature was calculated for the fish muscle tissue. The dataset was supplemented with geospatial and temporal information from NOAA Fisheries trawl databases.

**Proposed Methods:** *Separate your methods into steps (e.g., sample collection, data processing). Be specific, include instrument descriptions, provide a citation to a paper or protocol if applicable. Please do not use special characters, symbols, or formatting.*

## Fish Collection

Alewife, blueback herring, Atlantic mackerel, Atlantic herring, and Atlantic butterfish were collected from four NOAA Northeast Fisheries Science Center (NEFSC) trawl surveys: spring 2013, spring 2014, fall 2014, and fall 2015. Each survey spanned the continental shelf from the northern Gulf of Maine to Cape Hatteras. The number of fish analyzed per species per station ranged from 1 to 5. Fish were frozen shipboard at −80 °C and stored at −80 °C until processed in the laboratory.

## Stable Isotope Data Collection

Small sections of dorsal musculature of the five small pelagic species were analyzed for bulk carbon and nitrogen stable isotopes. Samples were dried at 60 degrees Celsius in a drying oven for at least 48 hours and then pulverized to a powder. Subsamples (1.2–1.5 mg) were weighed, wrapped in tin foil, and then analyzed with a PDZ Europa ANCA-GSL elemental analyzer interfaced to a PDZ Europa 20-20 isotope ratio mass spectrometer (Sercon Ltd., Cheshire, UK) by the University of California Davis Stable Isotope Facility. Analyses yielded carbon-to-nitrogen ratios and the isotopic ratios of 13C-to-12C and 15N-to-14N in each sample. These isotopic ratios are reported in standard delta notation, with the reference standards of Pee Dee belemnite (for d13C) and atmospheric nitrogen (for d15N). A lipid correction curve was applied to each sample using the C-to-N ratio from the mass spectrometry results. This correction was made using the model created for fish muscle tissue, as reported by Logan et al., (2008) Lipid corrections in carbon and nitrogen stable isotope analyses: comparison of chemical extraction and modeling methods. Journal of Animal Ecology, 77, 838-846, https://doi.org/10.1111/j.1365-2656.2008.01394.x.

## Data Cleaning

A column was added which contained a unique identifier for each fish examined. Diets for many of these same specimens are reported in a separate data package. Columns containing decimal latitude and longitude, UTC date and time, and average depth during sampling events were merged from NOAA Fisheries trawl databases (Northeast Fisheries Science Center, 2019: Fall Bottom Trawl Surveys from 2013-2015. NOAA National Centers for Environmental Information, https://inport.nmfs.noaa.gov/inport/item/22560, Northeast Fisheries Science Center, 2019: Spring Bottom Trawl Surveys from 2013-2015. NOAA National Centers for Environmental Information, https://inport.nmfs.noaa.gov/inport/item/22561). Additional columns were added which contain the vernacular name for each fish, the best matched scientific name for each fish species from ITIS, along with the corresponding taxonomic serial number (TSN). The data cleaning and metadata template assembly was performed in R Markdown. Further documentation can be found on GitHub, at https://github.com/WHOIGit/nes-lter-fish-diet-isotope.

## Quality Assurance

We assured that the geographic and temporal coverage of the clean data table were within expected ranges.