A multispecies, intraspecific functional traits data set on fish species from the Bay of Biscay, France

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DATA PAPER

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Abstract

The global biodiversity crisis due to anthropogenic pressures jeopardizes marine ecosystem functioning and services. Community responses to these environmental changes can be assessed through functional diversity, a biodiversity component related to organism–environment interactions, and estimated through biological traits related to organism functions (locomotion, feeding mode, and reproduction). Fish play a key role in marine systems functioning and supply proteins for billions of humans worldwide, yet most of the knowledge is limited to several commercial species and little is known about the intraspecific variability of their functional traits. The data provided here consist of 867 records of individuals from 85 species of ray-finned (Actinopterygii) and cartilaginous (Chondrichthyes) fish sampled in the Bay of Biscay (Atlantic, France) between autumn 2017 and 2019. We provided for each individual the taxonomic classification, 16 ecomorphological measures (5 directly made on fresh individuals and 11 realized using individual pictures) that were converted into nine ecomorphological traits classically documented in the literature (biomass, protrusion, oral gape shape, surface and position, eye size and position, body transversal shape and surface, pectoral fin position and caudal peduncle throttling) and eight life history traits obtained from FishBase (maximum length, average depth, depth range, trophic level, reproduction mode, fertilization mode, parental care, vertical position in the water column). These traits document several functions such as dispersion, feeding mode, habitat use, position in the food web, and reproduction. To improve the development of new traits, we provided a picture of each individual with an ROI file containing the different morpho-anatomical measures made using "ImageJ" software and an R function to extract them. In addition, we provided the metadata from each sampling site (years, dates, stations, sampling hours, strata, gears, latitudes, longitudes, and depths) and environmental variables measured in situ (conductivity, salinity, water temperature, water density, and air temperature). This data set accounting for the intraspecific variability

among 85 fish species is of interest to better understand the effects of environmental forcing in a global change context as in the Bay of Biscay, a highly fished transition zone harboring mixed assemblages of boreal, temperate, and subtropical fish species that are susceptible to display variability in functional trait to adapt to changing conditions. The data set is freely available without copyright restrictions; users should cite this paper in research products (publications, presentations, reports, etc.) derived from the data set.

KEYWORDS
Actinopterygii, Atlantic Ocean, ecomorphological traits, functional diversity, intraspecific traits variability, life history traits

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

A compressed file entitled "Fish_pictures_&_ROI_files.zip" containing the 867 pictures of fish individuals (JPEG format) and the 867 ROI files is too large to be included as Supporting Information and these items are only available in Figshare at https://doi.org/10.6084/m9.figshare.19410818.v2. Remaining data and code are provided as Supporting Information and are also available in Figshare at https://doi.org/10.6084/m9.figshare.19410818.v2.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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