

**Table 2: Online databases documenting functional traits of aquatic organisms.** Databases

without a primary focus on traits, but that also provide trait information, are included. This list is available at [https://github.com/severine13/FonctionalTrait\\_databases](https://github.com/severine13/FonctionalTrait_databases).

Name of the database	Taxonomic groups of interest and habitats	Reference	Brief description	Web link
<b>Traitbank - Encyclopedia of Life</b>	All taxa across the tree of life, including marine and freshwater organisms	(Parr et al. 2014)	Provides traits, measurements, interactions and other facts. Actively growing resource covering all ecosystems (not restricted to aquatic ecosystems).	<a href="http://eol.org/info/516">http://eol.org/info/516</a>
<b>Bromeliad invertebrate traits</b>	Aquatic invertebrates in bromeliads from South America	(Céréghino et al. 2018)	12 functional traits of 852 taxa	<a href="https://knb.ecoinformatics.org/#view/doi:10.5063/F1VD6WMF">https://knb.ecoinformatics.org/#view/doi:10.5063/F1VD6WMF</a>
<b>South-East Australian freshwater macroinvertebrate traits</b>	Freshwater macroinvertebrates from South-East Australia	(Schäfer et al. 2011)	9 traits, described at the family level for 172 taxa	Supplementary information to the article
<b>EPA Freshwater Biological Traits Database</b>	Freshwater macroinvertebrates from North America rivers and streams	(U.S. EPA. 2012)	Includes functional traits (e.g. life history, mobility, morphology traits) but also ecological and habitat information for 3,857 North American taxa.	<a href="https://www.epa.gov/risk/freshwater-biological-traits-database-traits">https://www.epa.gov/risk/freshwater-biological-traits-database-traits</a>
<b>Biological Traits Information Catalogue (BIOTIC)</b>	Benthic marine macrofauna and macroalgae	(MARLIN 2006)	Includes 40 biological trait categories.	<a href="http://www.marlin.ac.uk/biotic">http://www.marlin.ac.uk/biotic</a>
<b>EMODnet Biology database</b>	European seaweeds	(Robuchon et al. 2015)	Functional traits (morphology, life history, ecophysiology) and ecological information (incl. biogeography) for the 1800 seaweed species listed in Europe.	Ongoing work
<b>Functional traits of marine macrophytes</b>	European marine macrophytes, including seaweeds	(Jänes et al. 2017)	Functional traits (morphology, ecophysiology) and ecological information for 68 species.	<a href="https://www.datadryad.org/resource/doi:10.5061/dryad.964pf/1">https://www.datadryad.org/resource/doi:10.5061/dryad.964pf/1</a>
<b>POLYTRAITS</b>	Marine polychaetes	(Faulwetter et al. 2014)	47 traits describing morphological, behavioral, physiological, life-history characteristics, as well as the environmental	<a href="http://polytraits.life-watchgreece.eu/">http://polytraits.life-watchgreece.eu/</a>

preferences, for a total of 27198 trait records for 952 species.

<b>The Arctic Traits Database</b>	Marine organisms from the Arctic	(Degen and Faulwetter 2019)	Traits for 478 species-level taxa.	<a href="https://www.univie.ac.at/arctictraits/team">https://www.univie.ac.at/arctictraits/team</a>
<b>WoRMS Marine Species Traits portal</b>	Marine species	(WoRMS Editorial Board 2019)	Provides 10 traits that have been prioritized within <u>EMODnet Biology</u> , as part of the World Register of Marine Species (WoRMS).	<a href="http://www.marinespecies.org/traits/index.php">http://www.marinespecies.org/traits/index.php</a>
<b>Functional traits of marine protists</b>	Marine protists, including fungi.	(Ramond et al. 2018)	Provides 30 functional traits for 2,007 taxonomic references associated to V4 18S rDNA sequences.	<a href="https://doi.org/10.17882/51662">https://doi.org/10.17882/51662</a>
<b>COPEPEDIA/COPEPOD</b>	Marine plankton	(O'Brien 2014)	Database of plankton taxa distribution maps, photographs, biometric traits, and genetic markers.	<a href="https://www.st.nmfs.noaa.gov/copepod/documentation/contact-us.html">https://www.st.nmfs.noaa.gov/copepod/documentation/contact-us.html</a>
<b>Trait database for marine copepods</b>	Marine pelagic copepods	(Brun et al. 2017)	Trait databases providing 9,306 records for 14 functional traits of about 2,600 species.	<a href="https://doi.pangaea.de/10.1594/PANGAEA.862968">https://doi.pangaea.de/10.1594/PANGAEA.862968</a>
<b>Mediterranean copepods' functional traits</b>	Marine copepods present in the Mediterranean Sea	(Benedetti 2015; Benedetti et al. 2016)	Seven functional traits for 191 species.	<a href="https://doi.org/10.1594/PANGAEA.854331">https://doi.org/10.1594/PANGAEA.854331</a>
<b>Freshwater Ecology</b>	European freshwater organisms belonging to fishes, macro-invertebrates, macrophytes, diatoms and phytoplankton	(Schmidt-Kloiber and Hering 2015)	Covers environmental preferences, distribution patterns, and functional traits for 20,000 taxa.	<a href="https://www.freshwaterecology.info/">https://www.freshwaterecology.info/</a>

<b>Freshwater benthic diatoms</b>	European rivers	(Rimet and Bouchez 2012)	life-forms, cell-sizes and ecological guilds for c.a. 1,200 taxa	<a href="https://data.inra.fr/dataset.xhtml?persistentId=doi:10.15454/XLQ40G">https://data.inra.fr/dataset.xhtml?persistentId=doi:10.15454/XLQ40G</a>
	Fresh and weakly brackish waters in The Netherlands	(Van Dam et al. 1994)	First comprehensive checklist of ecological traits (pH, saprobity...) for 948 diatom taxa	<a href="https://doi.org/10.1007/BF02334251">https://doi.org/10.1007/BF02334251</a>
<b>Phytoplankton of temperate lakes</b>	Phytoplankton of temperate lakes	(Rimet and Druart 2018)	Database of morphological and physiological traits of more than 1,200 taxa.	<a href="https://zenodo.org/record/1164834#.XRNRvgrOR">https://zenodo.org/record/1164834#.XRNRvgrOR</a>
<b>Freshwater benthic micro-meiofauna</b>	River benthic micro-meiofauna	(Neury-Ormanni et al. 2019)	First integrative database of 23 morphological traits linked to resource acquisition for 35 taxa	<a href="https://doi.org/10.1007/s10750-019-04120-0">https://doi.org/10.1007/s10750-019-04120-0</a>
<b>FishBase</b>	Fishes	(Froese and Pauly 2019; Beukhof et al. 2019)	Provides information on 34,100 species, including traits related to trophic ecology and life history.	<a href="http://www.fishbase.org">www.fishbase.org</a> <a href="https://doi.org/10.1594/PANGAEA.900866">https://doi.org/10.1594/PANGAEA.900866</a>
<b>The Coral Trait Database</b>	Coral species from the global oceans	(Madin et al. 2016)	Includes 68,494 coral observations with 106,462 trait entries of 158 traits for 1,548 coral species.	<a href="https://coraltraits.org/">https://coraltraits.org/</a>
<b>FishTraits</b>	Freshwater fishes of the United States.	(Frimpong and Angermeier 2010)	More than 100 traits are informed for 809 fish species of the USA, including 731 native and 78 exotic species.	<a href="http://www.fishtraits.info/">http://www.fishtraits.info/</a>
<b>ECOTAXA</b>	Marine planktonic eukaryotes and prokaryotes (Viruses in prep.)	(Picheral et al. 2017)	50 morphological features including size, shape or opacity.	<a href="http://ecotaxa.obs-uvfr.fr/">http://ecotaxa.obs-uvfr.fr/</a>
				<a href="http://ecotaxa.sb-roscoff.fr">http://ecotaxa.sb-roscoff.fr</a>
<b>Protist Ribosomal Reference database (PR2)</b>	Protists	(Guillou et al. 2013)	Sequence database for which the inclusion of functional traits is under development.	<a href="https://github.com/pr2database/pr2database">https://github.com/pr2database/pr2database</a>
<b>Eukaryotic Reference Database (EukRef)</b>	A wide range of eukaryotic organisms across the tree of life	(del Campo et al. 2018)	Collaborative annotation initiative for referencing 18S rRNA sequences, for which the inclusion of functional traits is under development.	<a href="https://eukref.org">https://eukref.org</a>
<b>The Kyoto Encyclopedia of Genes and Genomes (KEGG)</b>	A wide range of organisms across the tree of life	(Kanehisa and Goto 2000)	Collection of databases on genomes and biological pathways that provides molecular-level information on gene functions, which could inform on potential	<a href="https://www.genome.jp/kegg/">https://www.genome.jp/kegg/</a>

			functional traits.	
<b>sFDvent: A global trait database for deep-sea hydrothermal vent fauna</b>	Deep-sea hydrothermal-vent fauna with species-level identification present or in progress	(Chapman et al. 2019)	Six hundred and forty-six vent species names, associated location information, and scores for 13 traits	<a href="https://doi.org/10.5061/dryad.cn2rv96">https://doi.org/10.5061/dryad.cn2rv96</a>
<b>Hyporheic fauna</b>	Taxonomic and functional trait of hyporheic fauna of a Mediterranean stream	Di Lorenzo et al., 2021	Eleven functional traits, 54 functional modes, and 38 taxa, some of which are stygobitic (obligate-groundwater dwellers).	<a href="https://doi.org/10.1016/j.ecolind.2021.108268">https://doi.org/10.1016/j.ecolind.2021.108268</a>

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Di Lorenzo, T., Fiasca, B., Di Cicco, M., Cifoni, M., & Galassi, D. M. (2021). Taxonomic and functional trait variation along a gradient of ammonium contamination in the hyporheic zone of a Mediterranean stream. *Ecological Indicators*, 132, 108268.