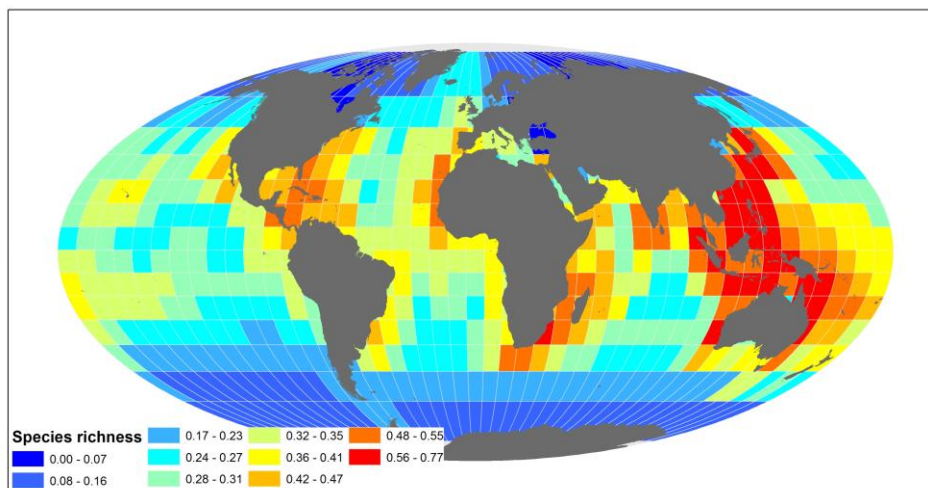


## Global Patterns of Marine Biodiversity (2010)



**Description:** The dataset shows the global patterns of marine biodiversity (species richness) across 13 major species groups ranging from zooplankton to marine mammals (11,567 species in total). These groups include marine zooplankton (foraminifera and euphausiids), plants (mangroves and seagrasses), invertebrates (stony corals, squids and other cephalopods), fishes (coastal fishes, tunas and billfishes, oceanic and non-oceanic sharks), and mammals (cetaceans and pinnipeds). Two major patterns emerged from this work: coastal species showed maximum diversity in the Western Pacific, whereas oceanic groups consistently peaked across broad mid-latitude bands in all oceans. The findings indicate a fundamental role of temperature in structuring cross-taxon marine biodiversity, and indicate that changes in ocean temperature, in conjunction with other human impacts, may ultimately rearrange the global distribution of life in the ocean.

**Citation(s):** Tittensor DP, Mora C, Jetz W, Lotze HK, Ricard D, Vanden Berghe E, Worm B (2010). Global patterns and predictors of marine biodiversity across taxa. *Nature* 466: 1098-1101. URL: [www.nature.com/nature/journal/v466/n7310/full/nature09329.html](http://www.nature.com/nature/journal/v466/n7310/full/nature09329.html), <http://data.unep-wcmc.org/datasets/17>

**Temporal range:** OBIS data obtained up to 2009

**Geographical range:** Global

**Supplementary information:** WCMC-019-PatternsBiodiversity2010-AcrossTaxa.shp: This subset contains the underlying data used to create Figure 2 from Tittensor et al. (2010) and consists of gridded cross-taxon species richness. Attribute table: code for the individual grid cell (GRIDCODE); longitude of the cell mid-point (X\_COORD); latitude of the cell mid-point (Y\_COORD); summed species richness across all taxa (Figure 2a; AllTaxa); normalized species richness across taxa (Figure 2b; AllNorm - displayed here); normalized species richness for coastal taxa only (Figure 2c; CoastNorm); normalized species richness for oceanic taxa only (Figure 2d; OceanNorm).

WCMC-019-PatternsBiodiversity2010-IndivTaxa: This subset contains the underlying data used to create Figure 1 from Tittensor et al. (2010) and consists of gridded species richness for each taxon. Attribute table: code for the individual grid cell (GRIDCODE); longitude of the cell mid-point (X\_COORD); latitude of the cell mid-point (Y\_COORD); derived coral species richness (Coral); derived cetacean species richness (Cetacean); derived pinniped

species richness (Pinniped); derived mangrove species richness (Mangrove); derived seagrass species richness (Seagrass); derived squid species richness (Squid); derived coastal fish species richness (co-kriged; CoasFishCK); derived non-oceanic shark species richness (NonOcShark); derived non-squid cephalopod species richness (NonSqCeph); derived tuna & billfish species richness (TunaBillfish); derived oceanic shark species richness (OceanShark); derived euphausiid species richness (Euphausiid); derived foraminifera species richness (co-kriged; ForamCK).

For both subsets, grid cells are equal-area, with cell size of 880 km (approx. 8 degrees at the equator).

**Purpose of creation:**

The dataset was created alongside the publication by Tittensor et al. (2010a), to address the need for understanding on the distribution and drivers of marine biodiversity.

**Creation methodology:**

The analysis built on the decade-long effort by the Census of Marine Life to compile occurrence records for marine species in an Ocean Biogeographic Information System ([www.iobis.org](http://www.iobis.org)). Relationships between species richness and environmental predictors (e.g. coastline length, sea surface temperature, oxygen, primary productivity, etc) were modelled using both generalised linear models and multivariate spatial linear models. Full details of the methodology (including data processing and cleaning) can be found in Tittensor et al. (2010).

**Version:**

**Data lineage:**

**Category:**

Biodiversity metric

**Keywords:**

coastal, marine, high seas, model, COML, OBIS, species richness, biodiversity

**Similar datasets:**

**Limitations:**

Species included in the analysis of richness were limited to taxa for which sufficient records were accessible to determine global distribution. For example, data on deep-sea diversity and marine invertebrates are limited, and microbes and viruses were excluded.

**Maintenance frequency:**

Data are not being updated.

**Main access/use constraint:**

UNEP-WCMC General Data License (excluding WDPA). See [www.unep-wcmc.org/policies/general-data-license-excluding-wdpa#data\\_policy](http://www.unep-wcmc.org/policies/general-data-license-excluding-wdpa#data_policy) and [www.unep-wcmc.org/policies](http://www.unep-wcmc.org/policies). For commercial use, please contact [business-support@unep-wcmc.org](mailto:business-support@unep-wcmc.org).

**Other access/use constraints:**

Full Terms and Conditions can be found in the file "TermsConditionsOfUseForDataSources.pdf" distributed with the dataset. Use of the dataset constitutes acceptance of these Terms and Conditions. The dataset may not be used for commercial or revenue-generating activities.

If working with individual taxa (rather than cross-taxa), consider using the original data sources, as they tend to be of higher spatial resolution. In this case, individual

Dataset ID: WCMC-019

data sources should be credited appropriately (see files "Metadata for Tittensor10Nature\_across\_taxa.pdf" and "MetadataTittensor10Nature\_individual\_taxa.pdf" for lists).

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Data format(s):	Vector (polygon; .shp)		

Distribution format(s):	Vector (polygon; .shp)	Dataset size (uncompressed):	1.04 MB
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Webpage and/or download: <http://data.unep-wcmc.org/datasets/17>

Other webpage: <http://www.arcgis.com/home/item.html?id=0118186f2e144cb38579e477e10e2221>

Web map service: [http://ec2-54-204-216-109.compute-1.amazonaws.com:6080/arcgis/rest/services/marine/WCMC\\_019\\_PatternsBiodiversity2010/MapServer](http://ec2-54-204-216-109.compute-1.amazonaws.com:6080/arcgis/rest/services/marine/WCMC_019_PatternsBiodiversity2010/MapServer)

Factsheet:

Resolution, scale:	880 km	Reference system:	WGS 1984
West bounding:	-180.0	East bounding:	180.0
South bounding:	-74.8	North bounding:	81.8
Metadata standard:	UNEP-WCMC Specific	Date of metadata:	09/06/2015