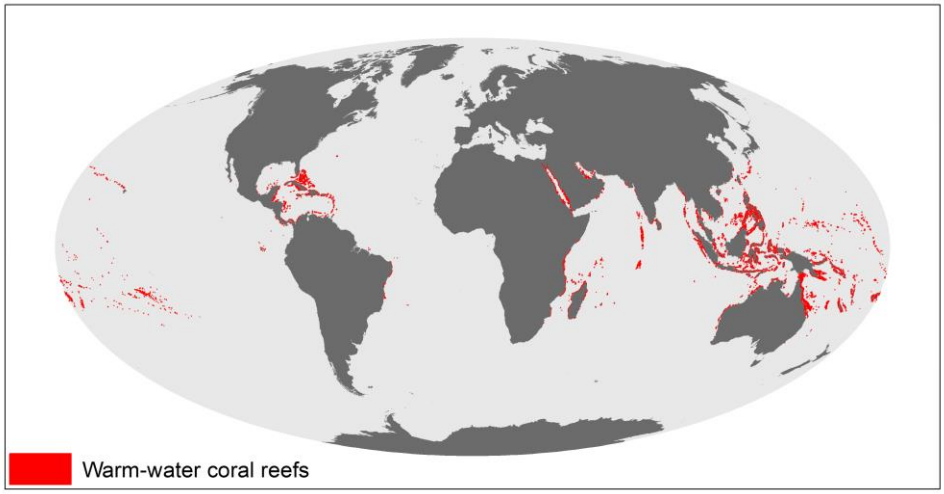
Dataset ID: WCMC-008

Global Distribution of Coral Reefs



Description: This dataset shows the global distribution of coral reefs in tropical and subtropical regions. It is the most comprehensive global dataset of warm-water coral reefs to date, acting as a foundation baseline map for future, more detailed, work. This dataset was compiled from a number of sources by UNEP World Conservation Monitoring Centre (UNEP-WCMC) and the WorldFish Centre, in collaboration with WRI (World Resources Institute) and TNC (The Nature Conservancy). Data sources include the Millennium Coral Reef Mapping Project (IMaRS-USF and IRD 2005, IMaRS-USF 2005) and the World Atlas of Coral Reefs (Spalding et al. 2001).

Citation(s): UNEP-WCMC, WorldFish Centre, WRI, TNC (2010). Global distribution of coral reefs, compiled from multiple sources including the Millennium Coral Reef Mapping Project. Version 2.0, updated by UNEP-WCMC. Includes contributions from IMaRS-USF and IRD (2005), IMaRS-USF (2005) and Spalding et al. (2001). Cambridge (UK): UNEP World Conservation Monitoring Centre. URL: http://data.unep-wcmc.org/datasets/1

For further information on the Millennium Coral Reef Mapping Project, see: Andréfouët S, Muller-Karger FE, Robinson JA, Kranenburg CJ, Torres-Pulliza D, Spraggins SA, Murch B. (2006). Global assessment of modern coral reef extent and diversity for regional science and management applications: a view from space. Proceedings of 10th International Coral Reef Symposium: 1732-1745.

Citations for the separate entities:
IMaRS-USF (Institute for Marine Remote Sensing-University of South Florida) (2005). Millennium Coral Reef Mapping Project. Unvalidated maps. These maps are unendorsed by IRD, but were further interpreted by UNEP World Conservation Monitoring Centre. Cambridge (UK): UNEP World Conservation Monitoring Centre.

IMaRS-USF, IRD (Institut de Recherche pour le Developpement) (2005). Millennium Coral Reef Mapping Project. Validated maps. Cambridge (UK): UNEP World Conservation Monitoring Centre.

Spalding MD, Ravilious C, Green EP (2001). World Atlas of Coral Reefs. Berkeley (California, USA): The University of California Press. 436 pp. URL: https://archive.org/details/worldatlasofcora01spal

A form of this dataset was used in the following publication:
Burke L, Reytar K, Spalding M, Perry A. (2011). Reefs at Risk Revisited. Washington, DC: World Resources Institute. 115 pp. URL: http://www.wri.org/publication/reefs-risk-revisited

Temporal range: 1954-2009

Geographical range: Global

Supplementary information: Attribute table: Automatically generated number (OBJECTID); Unique ID distinguishing the data entry (LAYER_ID); Metadata ID linking to the source of the dataset, found in the associated metadata table (METADATA_ID); ISO 3166-3 character code of country or territory where the feature is located (PARENT_ISO and ISO3); ISO 3166-2 sub-national code(s) where the feature is located (SUB_LOC); English name of the feature as provided by the data provider (NAME); Name of the feature as provided by the data provider in original language (ORIG_NAME); Local definition of feature as provided by the data provider (LOC_DEF); Scientific (Latin) name(s) of family, genus and species (FAMILY, GENUS, SPECIES); Reported area in square kilometres (REP_AREA_KM2); Area calculated using GIS, in square kilometres (GIS_AREA_KM2); description of whether data have been obtained through remote sensing and/or field survey (DATA_TYPE); data gathering approach (SURVEY_MET); start and end date of data collection (of survey), supplied as text in the format YYYY-MM-DD (ISO date format) (START_DATE, END_DATE); character code that identifies accuracy of dates used in START_DATE and END_DATE to the nearest day(s), month(s), or year(s) (DATE_TYPE); Minimum/maximum depth in metres that the feature was found (MIN_DEPTH and MAX_DEPTH); binomial value indicating whether the feature occurs in an area protected by law or any other conservation measure, where '0' = not within a protected area, '1' = partially within a protected area, and '2' = fully within a protected area (PROTECT); feature protected by law or by any other conservation measures (PROTECT_FEAT); measure that protects the feature (PROTECT_STAT); verification by government or expert (VERIF).

Purpose of creation: IMaRS-USF was funded by the Oceanography Program of NASA (National Aeronautics and Space Administration) to provide an exhaustive worlwide inventory of coral reefs using high-resolution satellite imagery, under the framework of the Millenium Coral Reef Mapping Project (Andréfouët et al. 2006). As a fully validated Millennium Coral Reef Mapping Project product was not available at the global scale, there was a need to create an 'interim' global amalgamated map product. The dataset was hence created to further mobilise the Millennium Coral Reef Mapping Project products and their validation.

Creation methodology: Approximately 85% of this dataset originates from the Millennium Coral Reef Mapping Project, of which 35% was validated (by IMaRS-USF and IRD-Noumea) and 50% remains unvalidated (but was interpreted by UNEP-WCMC). Millennium Coral Reef Mapping Project products (validated or not) are at a consistent 30 m resolution (multispectral Landsat 7 images acquired between 1999 and 2002, http://www.imars.usf.edu/MC/index.html). Additional information regarding methodology and 'validated' and 'unvalidated' polygons can be obtained from http://oceancolor.gsfc.nasa.gov/LANDSAT/HTML/README.html.

Where there were no Millennium Coral Reef Mapping Project products, data

(representing the remaining 15%) were compiled from other sources by UNEP-WCMC. These sources include data from the World Atlas of Coral Reefs (Spalding et al. 2001) and coral reef maps reproduced with permission from the Controller of Her Majesty's Stationery Office and the UK Hydrographic Office (www.ukho.gov.uk) © British Crown Copyright and/or database rights. The dataset is mostly fitted to ESRI's base layer.

Version: 2.0

Data lineage: Version 2.0 (December 2017): Standardises the feature and metadata attributes using a new schema, which aligns the attributes used across the habitat datasets curated by UNEP-WCMC. The updated attribute schema is outlined in "Supplementary Information." Specific changes include the addition of information on level of protection (e.g. PROTECT, PROTECT_FEAT, PROTECT_STAT), indication of whether the data have received expert or government verification (VERIF), and information on the start and end dates of data collection (i.e. START_DATE, END_DATE). The new schema will be used to inform a set of quality indicators, assessing changes in data quality over time.

This dataset supersedes the one used in the World Atlas of Coral Reefs (Spalding et al. 2001), and should by no means replace the official release of the Millennium Coral Reef Mapping Project. There may be future updates as better information becomes available and as further Millennium Coral Reef Mapping Project products become available. Changes to the original dataset (ver. 1.0) include:
- Ver. 1.1: Attributes were consolidated in July 2012;
- Ver. 1.2: Duplicate polygons were removed in April 2013;
- Ver. 1.3: further minor-scale corrections (spatial shifts reported by users, duplicate polygons) were carried out in April 2014, and were updated online on the 11th February 2015. The total extent (after dissolve) is 150,048 sq km (326,019 polygons).

Category: Biogenic habitat

Keywords: coastal, marine, corals, biogenic

Similar datasets: WCMC-09

Limitations: While having global coverage, the dataset was compiled from multiple sources with varying scale and quality (outlined in "Metadata_CoralReefs.dbf" included in the package). The dataset has yet to undergo external review.

The 'validated data' correspond to the final standard of Millennium Coral Reef Mapping Project products; they can evolve according to minor corrections and modifications, but no major changes should be expected. In the 'unvalidated data', boundaries of occurrence polygons are unchecked and associated attributes are incomplete. In some areas, unvalidated and validated polygons of differing shapes overlap.

As the dataset may still contain overlapping polygons, a dissolve operation (within a GIS) might be needed before surface area calculations are carried out. Most of the dataset's polygons align relatively well (spatially) to the base layer (coastline) of Open Street Map (used in ESRI ArcGIS software).

Maintenance frequency:	Corrections are made on an ad-hoc basis.
Main access/use constraint:	UNEP-WCMC General Data License (excluding WDPA). See www.unep-wcmc.org/policies/general-data-license-excluding-wdpa#data_policy and www.unep-wcmc.org/policies. For commercial use, please contact business-support@unep-wcmc.org.
Other access/use constraints:	For display and use of data below global scale, please cite individual data sources (listed in "Metadata_CoralReefs.dbf").
Contact organisation:	UN Environment World Conservation Monitoring Centre
Organisation type:	Custodian
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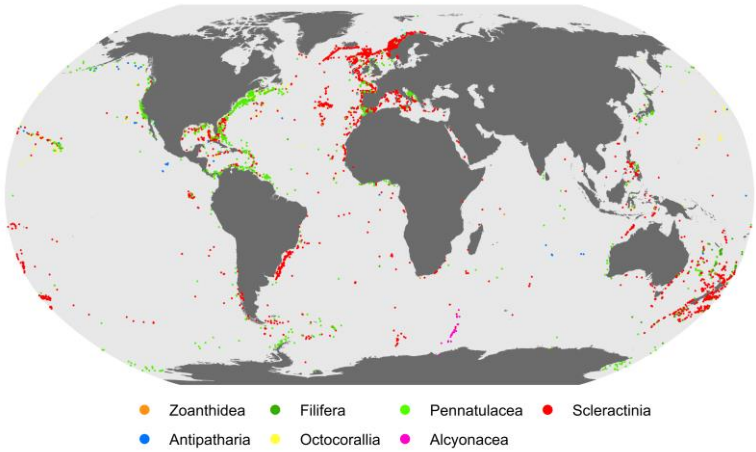
Data format(s):	KML, Vector (polygon; .shp), WMS
Distribution format(s):	KML, Vector (polygon; .shp), WMS
Dataset size (uncompressed):	1.33 GB
Webpage and/or download:	http://data.unep-wcmc.org/datasets/1
Other webpage:	http://www.arcgis.com/home/item.html?id=97071c96008d4ea6b0aabe4ed125661f
Web map service:	http://ec2-54-204-216-109.compute-1.amazonaws.com:6080/arcgis/rest/services/marine/WCMC_008_CoralReefs2010/MapServer
Factsheet:	http://wcmc.io/warm_coral_reef
Resolution, scale:	Variable
Reference system:	WGS 1984
West bounding:	-180.0
East bounding:	180.0
South bounding:	-34.3
North bounding:	32.5
Metadata standard:	UNEP-WCMC Specific
Date of metadata:	21/12/2017

Global Distribution of Cold-water Corals



Description: This dataset shows of the global distribution of cold-water corals. Occurrence records are given for the subclass Octocorallia (octocorals; also known as Alcyonaria) and four Orders (in Class Anthozoa): Scleractinia (reef-forming corals), Antipatharia (black corals), Zoanthidae (encrusting or button polyps), and Pennatulacea (sea pens). Occurrence records are also available for the order sub-Order Filifera (lace corals) in Class Hydrozoa.

Citation(s): Freiwald A, Rogers A, Hall-Spencer J, Guinotte JM, Davies AJ, Yesson C, Martin CS, Weatherdon LV (2017). Global distribution of cold-water corals (version 4.0). Third update to the dataset in Freiwald et al. (2004) by UNEP-WCMC, in collaboration with Andre Freiwald and John Guinotte. Cambridge (UK): UN Environment World Conservation Monitoring Centre. URL: http://data.unep-wcmc.org/datasets/3

Other cited reference(s):
Freiwald A, Fosså JH, Grehan A, Koslow T, Roberts JM (2004). Cold-water coral reefs: out of sight – no longer out of mind. Biodiversity Series 22. Cambridge (UK): UN Environment World Conservation Monitoring Centre. 86 pp. URL: https://archive.org/details/coldwatercoralre04frei

OSPAR Commission. (2015). OSPAR Threatened and/or Declining Habitats 2015. URL: http://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats. Data URL: http://www.emodnet-seabedhabitats.eu/download.

Temporal range: 1915-2014

Geographical range: Global

Supplementary information: Attribute table: Automatically generated number (OBJECTID); Unique ID distinguishing the data entry (LAYER_ID); Metadata ID linking to the source of the dataset, found in the associated metadata table (METADATA_ID); ISO 3166-3 character code of country or territory where the feature is located (PARENT_ISO and ISO3); ISO 3166-2 sub-national code(s) where the feature is located (SUB_LOC); English name of the feature as provided by the data provider (NAME); Name of the feature as provided by the data provider in original language (ORIG_NAME); Local definition of feature as provided by the data provider (LOC_DEF); Scientific (Latin) name(s) of family, genus and species (FAMILY, GENUS, SPECIES); Reported area in square kilometres (REP_AREA_KM2); Area calculated using GIS, in square

kilometres (GIS_AREA_KM2); description of whether data have been obtained through remote sensing and/or field survey (DATA_TYPE); data gathering approach (SURVEY_MET); start and end date of data collection (of survey), supplied as text in the format YYYY-MM-DD (ISO date format) (START_DATE, END_DATE); character code that identifies accuracy of dates used in START_DATE and END_DATE to the nearest day(s), month(s), or year(s) (DATE_TYPE); Minimum/maximum depth in metres that the feature was found (MIN_DEPTH and MAX_DEPTH); binomial value indicating whether the feature occurs in an area protected by law or any other conservation measure, where '0' = not within a protected area, '1' = partially within a protected area, and '2' = fully within a protected area (PROTECT); feature protected by law or by any other conservation measures (PROTECT_FEAT); measure that protects the feature (PROTECT_STAT); verification by government or expert (VERIF).

Purpose of creation: Version 1 of the dataset was created to accompany the report by Freiwald et al. (2004). Versions 2, 3 and 4 were created as updates to the original dataset, to provide a more complete picture of the locations of cold corals globally.

Creation methodology: Occurrence records were obtained from various sources, including reports, peer-reviewed articles and expert consultations. Many individuals and organisations contributed by providing UNEP-WCMC with their data in electronic form. For more information regarding sources please see the "Metadata_Cold_corals.dbf" table included.

Version: 4.0 (December 2017)

Data lineage: Version 4.0 (December 2017): Standardises the feature and metadata attributes using a new schema, which aligns the attributes used across the habitat datasets curated by UNEP-WCMC. The updated attribute schema is outlined in "Supplementary Information." Specific changes include the addition of information on level of protection (e.g. PROTECT, PROTECT_FEAT, PROTECT_STAT), indication of whether the data have received expert or government verification (VERIF), and information on the start and end dates of data collection (i.e. START_DATE, END_DATE). The new schema will be used to inform a set of quality indicators, assessing changes in data quality over time.

Versions 2 and 3 were updates implemented by UNEP-WCMC to the original dataset, in collaboration with Andre Freiwald and John Guinotte. Version 2 (with data between 1915 and 2006) consisted of 6,551 data points. Version 3.0 comprises 32,631 occurrences of cold corals, a five-fold increase, as well as an additional 1,203 polygons (covering 4,012 square kilometres), with data collected between 1915 and 2014. The polygon dataset derives from data obtained from OSPAR and Dorschel et al.'s "Atlas of the Deep-water Seabed - Ireland". Version 2 obtained data for 80 countries, as well as locations of cold corals within the high seas, while version 3 obtains data for 132 countries, in addition to the locations within the high seas.

Category: Biogenic habitat

Keywords: deep sea, high seas, benthic, marine

Similar datasets: Yesson-001, Davies-001

Limitations:	The high density of reefs shown in the North Atlantic most probably reflects the intensity of research in this region. Further discoveries are expected worldwide, particularly in the deeper waters of subtropical and tropical regions. Please note that taxonomic classifications change frequently.
Maintenance frequency:	Data are updated in intervals that are uneven in duration.
Main access/use constraint:	UNEP-WCMC General Data License (excluding WDPA). See www.unep-wcmc.org/policies/general-data-license-excluding-wdpa#data_policy and www.unep-wcmc.org/policies. For commercial use, please contact business-support@unep-wcmc.org.
Other access/use constraints:	None
Contact organisation:	UN Environment World Conservation Monitoring Centre

Organisation type:	Custodian	Acronym:	UNEP-WCMC
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City:	Cambridge	Country:	United Kingdom
E-mail:	steve.fletcher@unep-wcmc.org		
Web site:	www.unep-wcmc.org		
Data format(s):	KML, Vector (point; .shp), Vector (polygon; .shp), WMS		
Distribution format(s):	KML, Vector (point; .shp), Vector (polygon; .shp), WMS	Dataset size (uncompressed):	23 Mb

Webpage and/or download:	http://data.unep-wcmc.org/datasets/3
Other webpage:	http://www.arcgis.com/home/item.html?id=3ecb764343324bcab4c64c66d324cbd0
Web map service:	http://ec2-54-204-216-109.compute-1.amazonaws.com:6080/arcgis/rest/services/marine/WCMC001_ColdwaterCorals2017/MapServer/WMSServer
Factsheet:	http://wcmc.io/cold-coral

Resolution, scale:		Reference system:	WGS 1984
West bounding:	-179.9	East bounding:	179.9
South bounding:	-77.9	North bounding:	71.4
Metadata standard:	UNEP-WCMC Specific	Date of metadata:	21/12/2017