

Continous Plankton Recorder phytoplankton and zooplankton occurrence and count data from The CPR Survey in the North Atlantic Ocean from 2014 to 2019

Website: <https://www.bco-dmo.org/dataset/765141>

Data Type: Cruise Results

Version: 3

Version Date: 2021-02-10

Project

» [The Continuous Plankton Recorder \(CPR\) Survey: Monitoring the Plankton of the North Atlantic](#) (CPR Plankton Survey)

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Abstract

Continous Plankton Recorder phytoplankton and zooplankton occurrence and count data from the Marine Biological Association of the UK, the CPR Survey, in the North Atlantic Ocean from Jan. 2014 to April 2019.

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Coverage

Spatial Extent: N:64.907 E:-23.092 S:36.28 W:-74.743

Temporal Extent: 2014-01-12 - 2019-01-02

Dataset Description

This dataset includes phytoplankton and zooplankton found in Continuous Plankton Recorder (CPR) tows from 2014 to 2019 in the North Atlantic Ocean.

Over the last 90 years, the CPR Survey analysis team has analyzed more than a quarter of a million samples from over 7 million miles of tows in the North Sea, Norwegian Sea, North and South Atlantic, North Pacific, and Indian Oceans.

Spatial and temporal data are stored at the Marine Biological Association of the UK (MBA) for every sample analyzed by the CPR Survey, since 1946. This amounts to over 261,000 samples, with around 200 more samples added per month. The presence of every planktonic entity identified on each sample is stored in the database, and there are over 2 million plankton records in total. The database also contains supportive information such as tow locations, times and dates, ship details, a taxon catalog and analyst details.

Over 800 zooplankton and phytoplankton entities have been identified on CPR samples, and the 'abundance' of each entity on each sample can be extracted from the database. Some plankton are identified to species level, some to genus level, and some at a higher taxonomic level. Some entities are groups of other entities. The complete Species List is kept in the database.

Data can be extracted from user-defined areas, over specified periods, for selected entities [from the 'The CPR Survey' site]. For example, all samples taken from the Dogger Bank area in the North Sea during March, April, and May since 1946 could be extracted from the database, and the 'abundance' of selected diatom species on each sample could be listed. Alternatively, an average value, number of samples, and standard deviation per year per month could be retrieved. The data can be exported to statistical and presentation packages in many popular formats such as text, rich text, comma-separated, MS Excel, MS Access, MS Word, Fox Pro, Dbase, Lotus, and to SQL compliant databases. The CPR Survey can supply some descriptive data at little cost (usually free).

If you would like to know more about CPR coverage of a particular location, contact David Johns at The CPR Survey.

For information about methods and parameters, and link to The CPR Survey data page:
<https://www.cprsurvey.org/data/our-data/>.

Acquisition Description

Sampling occurred between 5 and 10 meters depth. The sample size was 3 cubic meters. For complete methodology, refer to Richardson et al (2006).

Data were extracted and zipped from the CPR Survey database using GBIF/IPT (<https://www.gbif.org/ipt>) v. 2.3.6.

The occurrence.txt table contains rows for every taxon that was identified. To determine which taxa were looked for but not found, cross-reference the TaxonId field with the contents of <https://www.dassh.ac.uk/ipt/archive.do?r=cpr-taxodata>

Processing Description

BCO-DMO Processing:

- Occurrence and event files were joined into a single dataset.
- Dates (modified and event) were reformatted to ISO_DateTime_UTC format: yyyy-mm-ddTHH:MM:SSZ
- Sorted the records by event_ISO_DateTime_UTC

Versions:

v3, 2021-02-10, covers 2014-01-12 to 2019-04-09

v2. 2020-05-25, covers 2014-01-12 to 2019-01-02

v1: 2019-04-17, original 2014-01-12 to 2018

Related Publications

Johns, D. (2019). North Atlantic samples for BCO-DMO (CPR Survey) v1.2 [Data set]. Marine Biological Association of the UK, CPR Survey. <https://doi.org/10.17031/1627>

Results

Richardson, A. J., Walne, A. W., John, A. W. G., Jonas, T. D., Lindley, J. A., Sims, D. W., ... Witt, M. (2006). Using continuous plankton recorder data. *Progress in Oceanography*, 68(1), 27–74.

doi:[10.1016/j.pocean.2005.09.011](https://doi.org/10.1016/j.pocean.2005.09.011)

Methods

Parameters

Parameter	Description	Units
eventID	CPR Survey unique sample identifier	unitless
modified_ISO_DateTime_UTC	Last date modified (UTC)	unitless
rightsHolder	entity holding rights for data	unitless
institutionID	institution identifier	unitless
datasetName	name of dataset (CPR = Continuous Plankton Recorder)	unitless
sampleSizeUnit	sample size units	meters ³
sampleSizeValue	volume of sample	unitless
event_ISO_DateTime_UTC	Date and time sample was collected (UTC)	unitless
fieldNumber	CPR Survey tow ID	unitless
maximumDepthInMeters	maximum depth of sampling	meters
minimumDepthInMeters	minimum depth of sampling	meters
decimalLatitude	latitude of sample; north is positive	decimal degrees
decimalLongitude	longitude of sample; east is positive	decimal degrees
geodeticDatum	EPSG Geodetic location code	unitless
basisOfRecord	method by which sample identification and count were determined	unitless
taxonID	CPR Survey's taxon id	unitless
scientificNameID	APHIA id from WoRMS (http://www.marinespecies.org/)	unitless
scientificName	Taxonomic name from WoRMS	unitless
occurrenceID	CPR Survey unique occurrence identifier	unitless
catalogNumber	CPR Survey catalog number	unitless
individualCount	number of individuals counts on sample mesh. See Richardson et al (2006) for details.	unitless

Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	Continous Plankton Recorder
Generic Instrument Description	<p>The CPR is a plankton sampling instrument designed to be towed from merchant ships or ships of opportunity on their normal sailings. The CPR is towed at a depth of approximately 10 metres. Water passes through the CPR and plankton are filtered onto a slow-moving band of silk (270 micrometre mesh size) and covered by a second silk. The silks and plankton are then spooled into a storage tank containing formalin. On return to the laboratory, the silk is removed from the mechanism and divided into samples representing 10 nautical miles (19 km) of tow. CPR samples are analyzed in two ways. Firstly, the Phytoplankton Color Index (PCI) is determined for each sample. The colour of the silk is evaluated against a standard colour chart and given a 'green-ness' value based on the visual discoloration of the CPR silk produced by green chlorophyll pigments; the PCI is a semiquantitative estimate of phytoplankton biomass. In this way the PCI takes into account the chloroplasts of broken cells and small phytoplankton which cannot be counted during the microscopic analysis stage. After determination of the PCI, microscopic analysis is undertaken for each sample, and individual phytoplankton and zooplankton taxa are identified and counted. Reid, P.C.; Colebrook, J.M.; Matthews, J.B.L.; Aiken, J.; et al. (2003). "The Continuous Plankton Recorder: concepts and history, from plankton indicator to undulating recorders". <i>Progress in Oceanography</i> 58(2-4): 117-175. doi:10.1016/j.pocean.2003.08.002. Warner, A.J., and Hays, G.C.,; Hays, G (1994). "Sampling by the Continuous Plankton Recorder survey". <i>Progress in Oceanography</i> 34(2&3): 237&256. doi:10.1016/0079-6611(94)90011-6.</p>

Deployments

CPR_1946-2019

Website	https://www.bco-dmo.org/deployment/660422
Platform	MBA (SAHFOS)
Start Date	1946-03-30
End Date	2018-05-14
Description	Continuous Plankton Recorder deployments on many ships of opportunity

Project Information

The Continuous Plankton Recorder (CPR) Survey: Monitoring the Plankton of the North Atlantic (CPR Plankton Survey)

Website: <https://www.mba.ac.uk/fellows/cpr-survey>

Coverage: Western North Atlantic Ocean

NSF award abstract (OCE-1657887):

The Continuous Plankton Recorder (CPR) survey (1931 to present) is the only long-term and ocean basin wide operational survey of plankton in the world. CPR observations are critical in evaluating and quantifying the scale and effects of impacts from climate change, acidification, eutrophication, loss of biodiversity to over fishing as well as providing a "backbone" to developing Ecosystem-Based Fisheries Management practices. The required ecosystem observing program includes phytoplankton and zooplankton that are measured by the Continuous Plankton Recorder surveys. These surveys represent some of the longest and most cost effective observing programs in marine systems. This project will significantly contribute to international programs such as the Global Ocean Observing System (GOOS), GEO-BON, the International Oceanographic Commission (IOC), the Scientific Commission on Oceanic Research (SCOR), the International Council for the Exploration of the Sea (ICES), the Partnership for Observation of the Global Oceans (POGO), and the North Pacific Marine Science Organization (PICES). Products from the survey are also being used to construct and validate a new generation of ecosystem, fishery, and climate models.

This award will support the continuation of USA support to help maintain core monitoring of zooplankton and phytoplankton by the CPR routes in the western Atlantic from Iceland down to the eastern margin of the USA. Maintaining the CPRs, their internal mechanisms, and the preparation of the silks is an important part of the work of the survey. Samples cut from the silk that represent ~10 nautical miles are analysed under a microscope and the species identified, all to standard procedures. In the analysis, the color of the silks is assessed visually to a standard scale as the "Phytoplankton Color Index". The data will be used to describe the long-term, pelagic variability and diversity of plankton in the NW Atlantic and will help scientists interpret marine biological changes and to distinguish between anthropogenic, climatically forced, and natural plankton variability. The analysis of the CPR data will be directed to incorporate marine management issues and include studies on: large-scale environmental change; biodiversity and invasive species; sustainable use of marine bio-resources; ecosystem health and ocean acidification. All these themes are highly relevant to emerging scientific questions, US marine policy and management interests, and the main societal concerns on the marine environment. Throughout the duration of the project it is envisaged that the data collected will provide invaluable information in addressing these highly topical themes and understanding these impacts on the marine ecosystems of the NW Atlantic.

Note: The project description from the previous award (OCE-1154661) can be found [on the NSF website](#).

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1154661
NSF Division of Ocean Sciences (NSF OCE)	OCE-1657887

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