Plan Overview

A Data Management Plan created using DMP Tool

DMP ID: https://doi.org/10.48321/D1461N

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

Creator: Derek Broughton - **ORCID:** 0000-0002-2896-0906

Affiliation: Marine Biological Association of the United Kingdom (mba.ac.uk)

Principal Investigator: Peter H. Wiebe

Data Manager: Derek Broughton

Project Administrator: David Johns

Funder: National Science Foundation (nsf.gov)

Grant: https://www.bco-dmo.org/project/879000

Template: BCO-DMO NSF OCE: Biological and Chemical Oceanography

Project abstract:

The Continuous Plankton Recorder (CPR) survey (1931 to present) is the only long-term and ocean-basin-wide in-situ survey of plankton in the world. This award continues the CPR survey in the western Atlantic from Iceland to the eastern margin of the United States. It uses a consistent, cost-effective methodology deployed from ships-of-opportunity to continue a unique and invaluable time series of phytoplankton and zooplankton observations in the surface ocean. The primary objective of this project is to maintain the spatial and temporal integrity of the CPR time series and facilitate marine ecological research. Because plankton form the base of the marine food web, long-term and basin-scale observations allow us to understand how marine ecosystems respond to stressors such as climate change, acidification, eutrophication, and loss of biodiversity from fishing pressure, ultimately enabling ecosystem-based management of marine resources.

Broader impacts include contributions to U.S. and international and integrated observing systems, marine policy, and marine resource management. Data from the CPR survey are made publicly accessible through the Biological and Chemical Oceanography Data Management Office. In addition, maintenance of a sample archive will maximize its use by the wider scientific community.

This project observes and describes long-term, pelagic plankton variability and diversity in the Northwest Atlantic Ocean. The data are enabling scientists to interpret marine biological change and assess anthropogenic, climatically forced, and natural plankton variability over multi-decadal time scales. Scientific research is anticipated to advance a number of key lines of scientific inquiry that will incorporate responses of the marine plankton community to large-scale environmental change, how changes can impact ecosystem productivity, and how connected these changes are across the wider Atlantic. In addition, CPR research focuses on biodiversity and invasive species; sustainable use of marine bio-resources; and ecosystem health, ocean acidification, and micro-plastics. These themes are highly relevant to timely and compelling scientific questions, marine policy and management interests of the United States, and broad societal concerns regarding the marine environment.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

Start date: 09-01-2022

End date: 08-31-2023

Last modified: 07-08-2024

Copyright information:

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

Data Policy Compliance

Identify any published data policies with which the project will comply, including the NSF OCE Data and Sample Policy as well as other policies that may be relevant if the project is part of a large coordinated research program (e.g. GEOTRACES).

The project investigators will comply with the data management and dissemination policies described in the NSF Award and Administration Guide (AAG, Chapter VI.D.4) and the NSF Division of Ocean Sciences Sample and Data Policy.

Additionally, as the CPR Survey data is archived at DASSH (Data Archive for Marine Species and Habitats), we use the DASSH Data Policy.

Pre-Cruise Planning

If the proposed project involves a research cruise, describe the cruise plans. (Skip this section if it is not relevant to your proposal.) Consider the following questions:

1. **How will pre-cruise planning be coordinated? (e.g. email, teleconference, workshop)**
2. **What types of sampling instruments will be deployed on the cruise?**
3. **How will the cruise event log be recorded? (e.g. the Rolling Deck to Repository (R2R) event logger application, an Excel spreadsheet, or paper logs)**
4. **Will you prepare a cruise report?**

1. The CPR Survey uses vessels of opportunity to tow a sampling device (the CPR — Continuous Plankton Recorder). Cruise plans are generally made in the month prior to deployment.
2. The CPR samples plankton on a continuous roll of silk, sieving approximately $3m^3$ per sample.
3. Ship movement is recorded through a combination of paper logs and AIS (automatic identification system) data from marinetraffic.com. Sampling events are then calculated after the fact.
4. There will be no cruise reports.

Description of Data Types

Provide a description of the types of data to be produced during the project. Identify the types of data, samples, physical collections, software, derived models, curriculum materials, and other materials to be produced in the course of the project. Include a description of the location of collection, collection methods and instruments, expected dates or duration of collection. If you will be using existing datasets, state this and include how you will obtain them.

Plankton sampling logs: Plankton will be sampled via CPR tow during the cruise. Shoot, haul, and course change times and locations are hand recorded on a log form (supplemented by AIS data) The silk cartridge used in the CPR is returned to the Marine Biological Association for cutting into individual samples and analysis. Cutting points are calculated to ensure each sample has filtered the same amount of water and time and position for each sample is calculated and stored in a database. Species identified on each sample will be recorded by hand on log sheets, and then transferred to the database. Sampling methodology is described in https://doi.org/10.1016/j.pocean.2005.09.011. The resulting data is available on the DASSH server at https://www.dassh.ac.uk/ipt/resource?r=bco-dmo and saved to the BCO-DMO repository.

Data and Metadata Formats and Standards

Identify the formats and standards to be used for data and metadata formatting and content. Where existing standards are absent or deemed inadequate, these formats and contents should be documented along with any proposed solutions or remedies. Consider the following questions:

1. **Which file formats will be used to store your data?**
2. **What type of contextual details (metadata) will you document and how?**
3. **Are there specific data or metadata standards that you will be adhering to?**
4. **Will you be using or creating a data dictionary, code list, or glossary?**
5. **What types of quality control will be used? How will data quality be assessed and flagged?**

Data is published as a Darwin Core Archive (DwC-A) using the GBIF IPT (Global Biodiversity Information Facility - Integrated Publishing Toolkit), which is a standardized format for sharing biodiversity data as a set of one or more data tables.

Metadata is as required by GBIF. Vocabularies are used from WoRMS (World Register of Marine Species) and the NERC Vocabulary Server - British Oceanographic Data Centre

The CPR Survey is a member of the NE Atlantic Marine Biological Analytical Quality Control (NMBAQC) Scheme and uses these standards.

Data Storage and Access During the Project

Describe how project data will be stored, accessed, and shared among project participants during the course of the project. Consider the following:

1. **How will data be shared among project participants during the data collection and analysis phases? (e.g. web page, shared network drive)**
2. **How/where will data be stored and backed-up?**
3. **If data volumes will be significant, what is the estimated total file size?**

Data is continuously available from https://www.dassh.ac.uk/ipt/resource?r=bco-dmo and updated annually.

The data is initially stored in a Microsoft SQL Server database, backed up offsite daily. It's also copied daily to a PostGreSQL server.

Estimated data volume is < 0.5MB annually.

Mechanisms and Policies for Access, Sharing, Re-Use, and Re-Distribution

---

Describe mechanisms for data access and sharing, and describe any related policies and provisions for re-use, re-distribution, and the production of derivatives. Include provisions for appropriate protections of privacy, confidentiality, security, intellectual property, or other rights or requirements. Consider the following:

1. **When will data be made publicly available and how? Identify the data repositories you plan to use to make data available.**
2. **Are the data sensitive in nature (e.g. endangered species concerns, potential patentability)? If so, is public access inappropriate and how will access be provided? (e.g. formal consent agreements, restricted access)**
3. **Will any permission restrictions (such as an embargo period) need to be placed on the data? If so, what are the reasons and what is the duration of the embargo?**
4. **Who holds intellectual property rights to the data and how might this affect data access?**
5. **Who is likely to be interested in re-using the data? What are the foreseeable re-uses of the data?**

The data will generally be available within a year after collection from https://www.dassh.ac.uk/ipt/resource?r=bco-dmo.

There are currently no concerns of sensitivity.

Plans for Archiving

Describe the plans for long-term archiving of data, samples, and other research products, and for preservation of access to them. Consider the following:

1. **What is your long-term strategy for maintaining, curating, and archiving the data?**
2. **What archive(s) have you identified as a place to deposit data and other research products?**

CPR Survey data is archived at DASSH, a UK national Data Archive Centre. BCO-DMO will also ensure that project data are submitted to the appropriate US national data archive

Roles and Responsibilities

Describe the roles and responsibilities of all parties with respect to the management of the data. Consider the following:

1. **If there are multiple investigators involved, what are the data management responsibilities of each person**
2. **Who will be the lead or primary person responsible for ultimately ensuring compliance with the Data Management Plan?**

Derek Broughton is responsible for Data Management. David Johns is responsible for metadata and coordinating the the analysis of samples to ensure data is available in a timely manner.
