

Global Alliance of Continuous Plankton Records Surveys (GACS) – report of activities

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The COVID-19 pandemic has made it challenging to continue the science we do. With lockdowns in many countries, the continuation of some time series has been difficult. Generally, the Continuous Plankton Recorder (CPR) surveys have coped relatively well compared to other time series programs, as global shipping has been relatively unaffected by COVID-19 ensuring continued sample collection and there is not a requirement for scientists to accompany CPRs onboard ships. Although surveys have backlogs in counting samples, the continued collection of samples enables us to address the backlogs as labs have re-opened.

The annual GACS meeting was hosted in Hobart, Australia, on the 25-27 November 2019. A total of 18 participants attended, including the heads of all CPR surveys. The focus was on discussing collaborative science, how to best run CPR activities, new developments on the horizon, and how we could expand. On this theme, a recent output from the group is the Batten et al. (2019) paper where GACS members describe the existing surveys and what a global plankton diversity survey would look like.

The annual GACS meeting was followed by a 2-day molecular workshop with 25 participants. This was led by Professor Willie Wilson from the UK Marine Biological Association. We discussed strategies for using molecular techniques on plankton samples, including those preserved in formalin. There were many robust discussions by molecular experts. The formalin preservation used in CPR samples continues to be a challenge for molecular work. GACS would like to thank POGO for sponsoring the molecular workshop.

The GACS community continued its exchange of members (pre-COVID). The Australian CPR (AusCPR) survey hosted Jenny Huggett and Marco Worship (South Africa CPR) and Octavio Esquivel (Brazil CPR) in the Brisbane CSIRO lab. They were embedded in the AusCPR lab for a week, learning CPR logistics, plankton taxonomy, databasing, the protocol for the Phytoplankton Colour Index, silk cutting, and data analysis. This exchange of personnel is important for training new GACS members and ensuring methods are consistent among surveys. Participants from the workshop can now apply their new skills to their home surveys. GACS would like to thank POGO for sponsoring the three trainees from developing nations to attend the training workshop in Hobart and Brisbane.

A focus of GACS is producing combined, global science outputs. We are currently working on several papers including using CPR data to validate a global ecosystem size spectrum model, using CPR data to test ecological theory, and a global CPR methods paper. To facilitate our science, and after many years of work, there is now a global CPR database, with all data from CPR surveys globally. All data are stored in a common format, with the latest taxonomic identifiers. We also have a set of guidelines in place for its use.

In terms of engagement, the GACS community has been endorsed by GEOBON (Group on Earth Observations Biodiversity Observation Network). GACS has been engaging with SOOPIP

(SOOP Implementation Panel). GACS will also contribute manuals of our methods to an Ocean Best Practices website. Strong engagement with the POGO continues. Given the COVID crisis, there is unlikely to be an in-person GACS meeting this year, but we are exploring options for a virtual meeting.