Global Alliance of CPR Surveys (GACS) – report of activities.

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GACS was initiated in September 2011 with the primary goal of understanding changes in plankton biodiversity at ocean basin scales through a global alliance of CPR surveys. By “understand” we mean characterise, analyse and interpret. GACS has a number of initial specific aims which include:

- development of a global CPR database
- to set up and maintain a website for publicity and data access
- production of a regular Ecological Status Report for global plankton biodiversity
- ensuring common standards and methodologies are maintained
- to facilitate new surveys and develop capacity building procedures
- to facilitate secondments of CPR scientists between GACS institutions
- providing an interface for plankton biodiversity with other global ocean observation programmes

A Board of Governance was established comprising the heads of each regional survey. Dr Graham Hosie (Australia, SCAR Southern Ocean CPR Survey) is the Chair and Dr Sonia Batten (Canada, SAHFOS North Pacific CPR Survey) is vice-Chair. Two working groups were also formed to help address the above objectives, these being Standards and Methodology (WGSM) and Database (DWG). The Board meets annually in September and the meetings are open to observers/representatives from IOC, POGO, SCAR, SCOR, and OBIS, as well as representatives from developing CPR Surveys.

Database
The various regional CPR datasets have been brought together into a single global database as scheduled. The global CPR database is the heart of the GACS initiative. SAHFOS hosts the GACS database and provides considerable support in maintaining it. The database holds approximately 350,000 records from the North Sea, North Atlantic, Norwegian/Greenland/Barents seas, Gulf of Mexico, western Mediterranean, North Pacific, Southern Ocean/Antarctic, South Africa waters, Gulf of Guinea, Australian and New Zealand waters, see figure below. The data are now being analysed collectively to look for regional and global differences, similarities and changes in plankton biogeographic and temporal patterns. These results will be included in the next annual GACS Global Marine Ecological Status Report. Various data products will be made visible through the GACS website, including static maps of data coverage and intensity of sampling, gridded mean abundances of plankton, Average Copepod Community Size (ACCS) and metadata records.

Website
The GACS website is established at www.globalcpr.org) and expected to be updated in the next few weeks with the new data products.

Status Report
The first Global Marine Ecological Status Report has now been distributed and is available online at http://www.sahfos.ac.uk/research/publications/ecological-status-report.aspx. The second report is scheduled for March 2014 and will include results of the ACCS analyses mentioned above as well as changes observed in other data such as mean abundances.

Common standards and methods
The CPR is unique in being a standardised instrument that has changed very little since Sir Alister Hardy’s design in 1931. The CPR also has recognised standards in usage, sample processing and a growing list of analytical methods for studying changes in plankton biodiversity, abundance and development in relation to time and geography. The Working Group on Standards and Methodology has focussed that these standards and methods are properly documented. This has involved working
with the Database WG to develop an agreed set of data protocols and collating a set of frequently asked questions to develop a “Start up kit” for those wanting to start a new survey.

New surveys, capacity building and secondments
New surveys have been established by France in the southern Indian Ocean around the around the Kerguelen and Crozet archipelagos, and Cyprus is establishing a regular run between Cyprus and Israel. India is scheduled a test run in January 2014 from Goa on the west coast of India to Chennai on the east coast. India has a particular interest in establishing routine surveys in the Arabian Sea and Bay of Bengal. Australia completed a pilot tow between Brisbane and Fiji to support the Pacific Islands Global Ocean Observing System (PI-GOOS). New Zealand completed an opportunistic set of 10 tows across the South Pacific between Wellington and Valparaiso. This is currently the longest CPR run. A number of existing surveys have expanded. The South African CPR Survey which primarily focusses on the Benguela Current has conducted several CPR tows east of South Africa to Madagascar and of South Africa to the Antarctic Sea-Ice Zone. The latter tows contribute to the Southern Ocean CPR Survey. South Korea, India and China are also interested in participating in the Southern Ocean Survey. South Korea plans to focus primarily on the Pacific sector, while India and China would focus on the Indian sector.

Various capacity building procedures have been implemented to facilitate the new surveys. This includes developing an exchange programme of staff between CPR laboratories, holding training workshops and developing a “Start-up Kit”. The latter will provide the basic information (FAQs) required for those wanting to develop a new survey, information on how the CPR works, designing and establishing CPR routes, at sea methodology, laboratory procedures, taxonomic tools, data storage and analysis.

Training and standardisation workshops have been conducted at SAHFOS Plymouth, at the Southern Ocean CPR laboratories of the Australian Antarctic Division (AAD), National Institute of Polar Research (NIPR) Japan and the National Institute of Water and Atmospheric Research (NIWA) New Zealand. Future training workshops are set for Cape Town, thanks to a POGO-SCOR Visiting Professorship and a SCAR Visiting Professorship.

Interfacing with other programmes
GACS maintains active contact with and where possible attends meetings of a number of agencies/stakeholders, e.g. POGO, PICES, SCAR, OBIS, IOC-GOOS, CCAMLR. The POGO Secretariat keeps an active interest in GACS activities and participation in board meetings. GACS has become affiliated programme of SCOR and also the SCOR-SCAR sponsored SOOS programme. GACS is currently involved in an exercise to provide data and advice on changes in zooplankton abundance and copepod composition (ACCS values) for the zooplankton component of the GEF-Transboundary Water Assessment Programme.

Future activities
GACS will focus over the next year in analysing the combined dataset for identifying trends and changes key plankton groups, e.g. copepods and calcifying organisms, enhancing the data products, improving data exchange, conducting capacity building workshops and training sessions, encouraging new surveys and publication of the next status report. GACS’ initial funding contract will end in June 2014. This will mark the end of the establishment period of GACS. At the September 2014 GACS meeting, the specific objectives will be reviewed and if require revised and/or new objectives will be developed. We will be seeking the involvement of SCOR and other stakeholders in the review/development of the objectives in order that we address stakeholder requirements.
Coverage of current CPR data held in the GACS Global Database.