PMG meeting – 2 pm (Stanley, Falkland Islands) - 16/06/2023

Attending: Jesse van der Grient, Al Baylis, Paul Brewin, Michael Harte, Will White, Simon Morley

Agenda

A general update was given on the progress the project has made against the 5 working packages. Generally, working package 1 has been done (although ongoing things like PMG meetings and DPLUS reports will of course be kept up). Work package 2 has seen a lot of progress with all desk-based tasks done. The zooplankton surveys are continuing to support a PhD thesis, and the Loligo survey is planned to occur in the next few weeks. Work package 3 is ongoing as the squid respiration experiments will be rerun, but the first results of the change in rate experiments are in. work package 4 has seen progress with the workshop done, and the Ecopath model done. The building of the model is not finished as Ecopath now needs to be turned into Ecopath with Ecosim and calibrated before future scenarios can be evaluated. The rest of the project is either starting in July/August or is set to occur in early 2024.

1. Zooplankton and squid survey update

7 surveys so far have been conducted, totalling 126 samples. These samples are split in ethanol and formalin for genetic analyses and morphological identification. PhD student Rhian Taylor continues working on identifying zooplankton, taking size measurements of lobster krill and the amphipod *Themisto gaudichaudii* to learn more about their recruitment periods, taking photos of fish larvae which will be identified with barcoding, and preparing samples for metabarcoding. In addition, we have a FICS student helping Rhian with sorting through copepods. The material collected is offering other opportunities and Jesse has submitted to small grant proposals to support isotope work (to the Shackleton Fund) and genetic analyses of gelatinous zooplankton (to the John Cheek Fund).

We are lucky to have Megan Shapiro stepping in to help with the squid egg mass survey in Berkeley Sound. She is an ocean technician, and a specialist with cameras, thus her help will be superb for the drop camera survey. We have collected side-scan data for an area in Berkeley Sound to identify rocky areas which will be targeted in the survey. A stratified sampling design is aimed for, but we are still working out some of the details.

2. Physiology update

An update on the progress of experiments was given. The ASC cohort has been laying eggs and egg masses will be collected soon to start another respiration experiment. The SSC cohort will be tested in the Spring. There is data for 7 species of invertebrates in the rates of change experiment where the water was warmed at different rates. These data need to be further inspected for quality control, but potentially may form the basis of the first report and paper. In addition, the diving PAM has arrived and Jesse has collected the first field measurements of photosynthetic rates of kelp. Further, she is investigating whether kelp can stay happy in the tanks to determine whether she can run experiments on them, too.

Gareth Price his amazing results on his poster (85%) was mentioned. Gareth helped the project in December and collected some of the degree by day and degree by hour experimental data.

3. Workshop report

A quick summary of the workshop report was given and the continued engagement of the workshop participants was highlighted. They are helping Jesse with the Falkland model by providing advice.

4. Ecosystem model update

The Ecopath model has been reinformed using historical biomass data to allow for calibration. It is balanced and showing some interesting structures such as large biomass (expected – model calibrated) for gelatinous zooplankton and mesopelagic fishes. Time series data have been collected to start calibration.

5. Next steps

More zooplankton surveys are planned for and Jesse will collect the material for Rhian while she is away for several months to Aberdeen (to start her barcoding work). The squid egg mass survey will be performed and analyses are expected to finish within this quarter.

The ASC cohort experiment will be run, and photosynthetic rates will be collected. The hope is that these rates can be collected during a meaningful experiment, too. Potentially, if the rates of change data is reasonably and reliable, we will start the analyses of this paper.

The Ecopath model will be calibrated, turning it into an Ecopath with Ecosim model. Upon calibration, some climate change scenarios will be run to understand the effects on fisheries. The aim is to write these results up in this quarter.

The ecosystem-based approach to fisheries management and climate change adaption for small island nations (particularly overseas territories) will be started this quarter.

6. AOB