

DATA MANAGEMENT PLAN

Collaborative Research: Optimizing Recruitment in *Neocalanus* copepods through Strategic Timing of Reproduction and Growth in the Gulf of Alaska

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The P.I.s agree to support the NSF data management and data dissemination policies as described in the *NSF Award and Administration Guide* (AAG, Chapter VI.D.4) and to comply with the NSF Division of Ocean Sciences *Sample and Data Policy* (see <http://www.nsf.gov/pubs/2011/nsf11060/nsf11060.pdf>). Outlined below are the types of data and samples that will be collected and how they will be managed.

Oceanographic field data

Fieldwork for this project will take place along the Seward Line. Samples will be collected in the collaboration with the existing 17-year Seward Line monitoring program. These programs already include standard sampling protocols including station locations, instrument deployments, and sample collection and processing. The proposed project will have access to these data through data management portals such as the Alaska Ocean Observing System (AOOS; <http://www.aos.org>), which participates in the integrated Ocean Observing System (IOOS, NOAA sponsored site) and Earth Observing Laboratory (<https://www.eol.ucar.edu>), which also archives current data from monitoring along the Seward Line. Summary data graphs are also made available through the Seward Line website (www.sfos.uaf.edu).

In addition, during years 1 and 2, plankton collections will be prepared for molecular analysis through preservation in *RNAlater* and maintained live for controlled experiments to be completed at the U. Alaska Fairbanks. Additional data will be generated from these samples (survival, growth, *RNAseq*, gene sequences), which will be archived in appropriate data repositories (see below). These different datasets will be cross-linked by adding information on web addresses, citations, and providing details in “data comment” sections.

During years 2 and 3, additional field collections are planned. Field data from these trips will be archived through the same data management portals (AOOS and EOL) and cross-linked to the existing sampling programs, and to other data that will be generated.

Molecular Data

The proposed effort will generate large volumes of high throughput DNA and RNA sequencing data. Raw sequencing data (*RNASeq*), assembled data, and sequences produced through Sanger sequencing technologies will be submitted to the National Center for Biotechnology Information's (<http://www.ncbi.nlm.nih.gov/>), a public repository of genome and transcriptome data. The project will have its own Bioproject, which accommodates both raw and analyzed sequence data. Links will be provided to the collection metadata archived at AOOS and EOL, providing easy cross-referencing between data types. Data deposited at NCBI are reviewed for quality control and standard format making it easily accessible to other researchers. Thus, NCBI databases are heavily accessed by researchers for data analysis and used to answer research questions that

might have been posed by the original study that generated the resource – we expect that the *Neocalanus* data will be used by others in the biological oceanography community.

Micrographs

Images will be used to record: 1) live plankton for both scientific and outreach purposes; 2) the progression of oogenesis in *Neocalanus flemingeri* females; and 3) fluorescence microscopy to establish feeding and cell division. Some but not all of these images will be used in publications and public web pages, however, all of them will be stored in a database that is accessible to all project participants. The standards used image and confocal metadata will be adapted from the standards we have developed for electron microscope images stored and accessed through our specialized imaging software (*Podbase*).

Experimental Data

Links between the experimental data and the field and transcriptomic/genetic data will be established through publications in peer-reviewed journals, which will include detailed descriptions of experimental protocols and results as well as web links to data repositories. In addition, citations to publications resulting from the work will be listed in the databases. The original data on the experiments and protocols will be kept in laboratory notebooks that will be stored with the PIs for a minimum of five years after the completion of the project.

Dissemination of Data and Publication of Results

Dissemination of the data will occur through presentation at national and international meetings by project participants, including the P.I.s, the post-doctoral trainee and undergraduate student participants. Research results will be published in peer-reviewed journals with preference given to journals that are either open access (e.g., PLOS One), or become open access after a certain time period (e.g., Limnology and Oceanography).

Outreach Materials

The **Gulf of Alaska Large Marine Ecosystem** (LME) harbors a rich and diverse community including important fisheries. Materials generated through this project will be made available to a broad audience through U. Alaska Fairbanks (www.sfos.uaf.edu/sewardline/), Gulf Watch Alaska, North Pacific Research Board and Alaska Ocean Observing System. Materials will focus on photos, diagrams and short explanatory write-ups tailored for a general audience.