Data Management Plan

This Data Management Plan was prepared in accordance with NSF policy on the dissemination and sharing of research results and expands on text provided in the proposal. We will work with the Biological-Chemical Oceanography Data Management Office (BCO-DMO) staff to manage the data, and will contribute the data collected during this project to the BCO-DMO system.

1. Data and Metadata Format: Observations from larval rearing and settlement experiments will consist of counts of larvae and phytoplankton (food), counts of juveniles, and scoring of morphological characters in both larvae and juveniles, as well as time to settlement and settlement rates with natural and chemical inducers. Observational data will be summarized in spreadsheet form and annotated with date, time, location, sample number and experimental conditions. Written notes from experiments will be photographed or scanned to provide a digital archive of the project. Photo-micrographs also will be taken of larvae and juveniles to document variation in morphological characters across critical stages of development. Images will be stored in standard formats (e.g., JPEG, TIFF) and labeled with date, species and sample number to correspond with notes and metadata. Interactive educational activities to be included in the VirtualUrchin project (http://virtualurchin.stanford.edu) will be produced in Flash and non-Flash (HTML5) formats. Specifically, our code is written in the following formats: HTML, Flash Action Script 3, XML, javascript and jquery.

2. Data Storage and Archiving: Finalized spreadsheets and image files will be archived on a secure FTP data server housed at the Romberg Tiburon Center at San Francisco State University and backed up daily on a mirrored hard drive in a separate building. Provisional data backups will be stored on external hard drives and laptops at each of the three institutions involved in the project. For interactive educational activities, code as well as the public executables are stored on the Stanford AFS (Andrew File System) secure FTP server, which is backed up daily. We also collect analytics data on VirtualUrchin site usage (e.g., country/state of users, number of users per day, time spent on the site, etc.) through Google Analytics.

3. Data Dissemination: Requests for observational data may be made directly to the PIs. Within six months of receiving funding we will establish a project website to summarize activities and findings, and facilitate external inquiries from other scientists and the general public. We will make available the project website and its contents during conference presentations and in any media interviews that result from the project. We will also continue to highlight the VirtualUrchin website during conferences and educational workshops, and when interacting with user groups during the early stages of our project we will forecast the creation of our new interactive educational activity.

4. Policies for Data Access: All published and in-press data will be made available upon request and provisional data will be summarized and interpreted as it becomes available. All VirtualUrchin executables are freely accessible to anyone with an internet connection; the source code files are provided upon request. If the VirtualUrchin website analytics data are of interest to anyone, we would happily share them upon request.

5. Roles and Responsibilities: Data compliance activities will be summarized and documented

in annual reports submitted by the lead PI. Gaylord will oversee data management and Ferner will supervise data archiving and indexing on the secure FTP server at San Francisco State University. The access and storage policies described above will apply to all files designed in the course of the proposed project regardless of unanticipated changes in personnel. In the event that a key project participant departs from the project, their responsibility for data management and reporting will be transferred to other project members.