

## Data Management Plan

The results of the proposed research will be disseminated via publication in peer-reviewed journals, presentations at scientific meetings, press interviews, and public presentations. Once data are published by the PIs (or within 2 years of the completion of the project) data will be made broadly available via the appropriate mechanisms detailed below for each type of data we plan to collect. The PIs will work with Biological and Chemical Oceanography –Data Management Office (BCO-DMO) staff to manage and archive the data with appropriate standards.

**Physiological and ecosystem function data** will be retained in perpetuity on the Bodega Marine Laboratory's server (which has archived data from a prior NSF grant to Dethier and Williams) as well as in the original notebooks residing in Williams' laboratory. Daily computer backups are made by the IT unit of Bodega Marine Laboratory.

**Genetic data** on the gene and genotype frequencies from 500 *Zostera* individuals is the main data of this type. We will use microsatellite markers to provide this genetic information. We will submit all primer sequences used in these studies to GenBank ([www.ncbi.nlm.nih.gov/Genbank/](http://www.ncbi.nlm.nih.gov/Genbank/)), along with each unique microsatellite repeat motif at each locus. Methods for developing and applying these microsatellite markers will be posted to the PI's website ([www-eve.ucdavis.edu/grosberg/](http://www-eve.ucdavis.edu/grosberg/)), along with references to, and applications of, the statistical methods used to estimate relatedness among individuals. Population-specific allelic and genotypic frequencies will also be posted to the PI's website in Excel format, along with metadata that completely describe sampling methods and organization of the database. Full data will be supplied to the Biological and Chemical Oceanography Data Management Office (BCO-DMO) facility when they are finalized. Voucher herbarium specimens will be kept of the plants genotyped and not sampled destructively in experiments and archived in the BML herbarium.

***Standards to be used for data and metadata format and content:*** Datasets collected will include a consistent set of metadata to be agreed upon and finalized at the first PI meeting in year 1. Minimally each dataset will include a title, description, location (latitude & longitude via GPS), date, time (UTC), PI name and contact information and co-PIs. Each data set will also include, as appropriate, standards used for measurements, instrumentation used, calibration information, analytical methods used, data processing information, sampling procedures, and access restrictions. Data will be entered into a standardized digital format to be agreed upon by the PIs and in consultation with BCO-DMO staff (most likely Excel spreadsheets and then converted into comma delimited files for submission to BCO-DMO for final archiving). For example, currently our metadata summary resides as a separate data sheet for each dated entry to the data workbook, with the responsible party and explanation. Primary metadata for each experiment will include, for each experiment or data sheet in the workbook, a log of comments and explanation of the instruments, operator, formulas, and units. Any changes made to the log must be saved as a separate sheet with date. A standard file-naming procedure incorporating date as a file extension will be used.

***Policies for access and sharing; policies and provisions for re-use, re-distribution, and the production of derivatives; plans for archiving data and for preservation of access to them:*** **Project Participants:** All data collected will be backed up and made available to all co-PIs and research technicians (and additional project staff as appropriate) via shared, limited access *Dropbox* ([www.dropbox.com](http://www.dropbox.com)) folders after initial quality control and assurance processing by individual investigators. The primary responsibility for

uploading data in a timely fashion will reside with the PIs, Jr Specialist, and postdoc supported by this project. **Broader Scientific Community:** When the project is complete full data will be posted to a public access scientific database via the BCO-DMO within two years of collection, as required by NSF, as appropriate. We will consult with BCO-DMO staff to identify appropriate data for submission, and appropriate standards. Otherwise metadata will be posted and data will be maintained by PIs and made available by request.