DATA MANAGEMENT PLAN

1. Types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project

Biological samples including crabs and other invertebrates will be collected. We will follow protocols for collecting, preserving and archiving field collected samples that have already been used by project investigators at this and similar sites. Protocols are also in place for laboratory chemical analysis. PIs will also maintain all laboratory safety certifications, DSMS, and training records as required. In each case, the analytical instruments record results and analytical conditions in computer files, which are exported into Excel files. Hard copies of these files will also be produced.

2. The standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies)

Datasets collected will include a consistent set of metadata to be agreed upon and finalized at the beginning of the project. Minimally each dataset will include a title, description, location (latitude & longitude via GPS), date, time (UTC), contact information, name of person generating dataset, standards used for measurements, instrument manufacturer model and serial numbers, calibration information, analytical methods used, data processing information, sampling procedures, literature citations for methods, word explanation of terms in every formula and data descriptor including units (e.g., column and row headings in spreadsheets). Primary data will be entered into a standardized digital format to be agreed upon by the PIs. Original raw data files from instruments will be archived. A hierarchical structure of primary datasets within workbooks within folders will be standardized by PIs. Primary data will be converted for archiving (e.g., Excel spreadsheets will be converted to comma delimited files for final archiving). Project staff will oversee the maintenance of usage and service logs and calibration certifications for all instruments in the field and lab and as scanned copies (calibration certifications) on lab computers. This group will also review all standards and standard curves for quality control.

3. Policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;

The primary responsibility for data management will be assumed by the P.I. Grosholz. Although the project will not have a dedicated data manager, the Junior Specialist will share the immediate day to day responsibilities associated with data management and will meet regularly with the principal investigator and other project personnel are provide and update on data management issues. IT staff on the UC Davis campus and the UC Davis Bodega Marine Laboratory will generally be responsible for centralized information and technology management, which will provide reviews of data status, backup facilities for data security, and archival facilities for use of data within the site and for public sharing. Following department and university policies and recommendations, data are backed up regularly and secured at an off-site location. The project

PIs will map out portions of the project for each to focus on for the purposes of publishing the data in first-author papers. There are no copyright, licensing, or commercialization issues related to the data to be obtained during this project.

4. Policies and provisions for re-use, re-distribution, and the production of derivatives; and
Project personnel will track requests for data and direct those requests to the appropriate data repository. Although many data products will available from Grosholz personal project website including project metadata, data summaries, analysis and synthesis results, simulation model output and other types of secondary data, all project data will be available through the BCO-DMO portal during and after the project period. Data which meet minimum standards for completeness, longevity, and value will be added and updated as quickly as quality control procedures allow. Biological, physical and chemical data will be archived as appropriate with the National Oceanographic Data Center (http://www.nodc.noaa.gov/) and the Ocean Biogeographic Information System (OBIS) (http://www.iobis.org/).

5. Plans for archiving data, samples, and other research products, and for preservation of access to them.
All invertebrate samples will be fixed in formalin and transferred to alcohol for long-term storage. All specimens for individual species will be vouchered and sample containers labeled inside and out with information on sites, dates, habitat using a continuous numbering system. Any samples involving plants, sediments, seston, etc. subject to other analysis will be archived similarly. Any photographic data will be stored digitally and data will be maintained and archived as described above. Data and information management at Bodega Marine Laboratory and UC Davis includes a comprehensive system that has been developed to meet the needs of both research and teaching. Assuring the availability of project data for the scientific and management communities is fundamental goal of this project and will be facilitated by the IT staff and facilities of the Bodega Marine Laboratory and the UC Davis Campus.