DATA MANAGEMENT PLAN

Data management will be coordinated by the Principal Investigators, and carried out by all project participants. The plan encompasses three areas: (1) data types and standards, (2) data access and sharing policies, and (3) data preservation and archival. We will leverages existing systems wherever possible. We will work with the Santa Barbara Coastal Long Term Ecological Research (SBC LTER) project, which has a sophisticated data management system and personnel experienced with standards and data curation. Data storage services during the course of the project will be provided by the research computing system of the Marine Science Institute at UC Santa Barbara, and long-term preservation of data products by existing national data centers and/or catalogs.

1. Data types and standards

Genetic data will be tabular with each row containing spatial and temporal identifiers for each kelp specimen genotyped and the multi locus microsatellite genotype. Spatial and temporal data on patch size, age, degree of isolation and level of homozygosity derived from Landsat and genetic analyses will combined in a tabular format as will data from experiments on inbreeding depression.

Generally we plan to publish datasets using the XML specification, Ecological Metadata Language (EML), which is adaptable for a variety of data types, and is in wide use among ecological and environmental sciences, including the LTER Network. We plan to leverage software used by SBC LTER for creating and managing datasets, as well as other tools that become available. We will make use of guidelines for metadata and data developed by SBC LTER and the LTER Network, which are designed to promote long-term usability. These include high-precision geo-referencing, the use of standard keywords, units and measurement descriptions, and the inclusion of methods and/or protocols with all datasets.

2. Data access and sharing policies:

Data collected under the project will be made available to the public through the SBC LTER data catalog (http://sbc.lternet.edu/data/) with as few restrictions as possible. As collaborators with SBC LTER, we (and users of our data) will abide by the LTER Network Data Access Policy (2005). Under these policies, we plan for publication of most data with metadata after primary publication of results, or at most two years after the completion of the study. Certain datasets may warrant proprietary restrictions, such as those associated with student dissertations that are in progress. In these cases, it is our policy to publish metadata with instructions for requesting data delivery. We are also committed to protecting the privacy and accuracy of users confidential information, according to the SBC LTER Privacy Policy.

We will adopt the data sharing policies of the SBC LTER project and apply the following conditions for use of our data:

1. The user of data agrees to contact the data owner (i.e., the project investigator responsible for data) prior to publishing. Where appropriate, users whose projects are integrally dependent on our data are encouraged to consider collaboration and/or co-authorship with the data owner.
2. The user agrees to cite our project in all publications that use our data by including the following statement in the Acknowledgments using this statement: "Data were provided by [DATA OWNER'S NAME] funded by the US National Science Foundation ([AWARD NUMBER])".
3. The user agrees to send the full citation of any publication using our data to the data owner.
4. Users are prohibited from selling or redistributing any data provided by our project.
5. Extensive efforts are made to ensure that online data (from website) are accurate and up to date, but we will not take responsibility for any errors that may exist.
6. Any violation of the terms of this agreement will result in immediate forfeiture of the data and loss of access privileges to other project data sets.

3. Data preservation and archival:

As is required, metadata and data will be contributed to one or more existing catalogs. All tabular

datasets and their metadata will be archived on the SBC LTER data server and made available through the SBC LTER data catalog. Data may additionally be archived in publishers managed databases in accordance with journal policies. These data contributions will conform with the practices of SBC LTER, the LTER Network and their information management partners, which will assure long-term preservation and access to our data.

Data will be archived with metadata, unless there are proprietary restrictions (as described above). To the extent possible, data will be archived in ASCII format, which is flexible and readable over the long term. We will archive data in tabular formats that have been proven successful when sharing data among the project collaborators