ABSTRACT FORM (for new projects only)

Project Title: 901107 SCPI (Self-Contained Plankton Imager)

PI	Project Manager	Lead Scientist	Lead Engineer
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Project Description:
The long-term goal of the SCPI camera project is to bring plankton sensing to a broad range of researchers and ultimately to create technology suitable for use in a widely distributed zooplankton-sensing network. Toward that end, in 2012, the team will have successfully built a modular prototype, which allows SCPI to be easily deployed on a number of platforms and in numerous configurations. This prototype contained only the base functionality in order to test the concept of a self-contained imaging system. This project continues to be distinct from other imaging projects, both inside and outside MBARI, because of it goals of making an easily accessible system, rather than an large and complex one-off device.

In 2013, we plan to perform extensive field testing of the prototype in Monterey Bay. Among the tests performed, we will be confirming the underwater imaging quality under different lighting conditions. It is actually more difficult to image plankton in shallow waters in daytime; the contrast necessary to illuminate transparent species is easier to achieve with structured lighting during darkness.

In order to expand the operational reach of SCPI, deeper-rated housings will also be investigated. Optional features such as external event triggering and remote serial communication will be implemented. One possible future addition is remote communication via networking. A networking option would allow remote downloading of images for hard-to-access SCPI units, as well as a web-based coastal monitoring system — critical to the conservation goals of many institutions and agencies, and a core element of our strategic plan.

By the end of the 2013 we intend to build two upgraded, operational SCPIs: one for the Ken Smith lab and one for the Steve Haddock lab. The Smith lab will deploy theirs on the LST/Vertical Profiler and will utilize an optical setup optimized for small close-up targets. It will also be optimized for minimal weight and low power consumption. The Haddock lab will deploy their SCPI in a multitude of locations. One such deployment would leverage ongoing monitoring efforts of the Santa Cruz Ocean Observing Platform (SCOOP), sponsored by CenCOOS and located at the Santa Cruz Wharf. A time-series of images will provide a much-needed dimension to complement the stream of data that is already collected at the site.