

Project Title: A Multidisciplinary, Integrative Approach to Valuing Ecosystem Services from Natural Infrastructure

Institution: The Cooperative Institute for Marine Resources Studies (CIMRS) Task II: Theme: Marine Ecosystems and Habitat

Funding Requested: \$444,743

Principal Investigator: Michael A. Banks (CIMRS, Oregon State University)

Award Period: October 1, 2015 - September 30, 2018

Period of Performance: October 1, 2015 - September 30, 2018

Abstract:

The project focus is to value ecosystem services resulting from natural infrastructure investments in coastal environments. Three tracks of work are proposed to leverage existing hazard risks along the U.S. Pacific Northwest Coast as means to assign a dollar value to these ecosystem services. Three applied methodologies at the frontier of ecosystem service valuation (revealed preference hedonic modeling, a stated preference choice experiment, and dynamic bio-economic modeling) will be used to generate estimates leading to an understanding of the potential ancillary benefits related to natural infrastructure designed for coastline stabilization.

Development of these models will benefit from the collaboration of the economists, engineers, geomorphologists, and ecologists on the assembled research team and the vast resources in coastal and marine research available at Oregon State University and its affiliations with NOAA, U.S. Army Corps of Engineers, the State of Oregon, and numerous local stakeholders.

Specifically, **Track I** will establish a baseline willingness to pay (WTP) for protection services related to any type of coastal infrastructure (green or grey) improvement using housing markets to reveal consumer risk preferences. **Track II** includes the development of an extensive choice experiment survey in order to determine respondents' WTP for the ecosystem service co-benefits associated with natural infrastructure that would not be present with a similar investment in grey infrastructure. **Track III** will develop a natural infrastructure dynamic investment model (NIDIM) to determine the placement of natural infrastructure that maximizes the net present value of various ecosystem services together with mitigating the longer term risks of sea level rise, tsunami inundation, or storm-related extreme high water levels.

An advisory group is to be formed to establish and maintain the link between the research and its applicability to needs on the ground. Deliverables will include an applied NIDIM model for use by coastal managers, design and implementation of state-of-the-art valuation surveys, student training, and three annual and one final completion report, as well as peer reviewed publications and presentations at regional/national conferences.