

GUIDING DESIGN FOR SEA-LEVEL RISE: AN ITERATIVE METHODS FRAMEWORK

SAMORAY, CHRISTOPHER

University of Maryland, csamoray@unc.edu

ELLIS, CHRISTOPHER

University of Maryland, cdellis@umd.edu

1 ABSTRACT

Climate change poses immediate challenges for human populations worldwide. Coastal areas in particular face sea-level rise and storm surge issues. Several artificial designs, including seawalls and surge barriers, have been used to manage the effects of sea-level rise, but these options often require ongoing upkeep and fail to offer long-term solutions. Nature-based solutions offer an alternative for coastal resilience and adaptation strategies relevant to both urban areas and other coastal areas such as national parks. Identifying design procedures for nature-based design could promote successful implementation and long-term sustainability. Based on existing literature, a set of design criteria is formed to guide the implementation of nature-based design in response to projected sea-level rise in the context of East Potomac Park in Washington, D.C., but endeavors to be widely applicable to other coastal areas facing sea-level rise and storm surge. The design criteria address socio-ecological factors of landscape, planning and design for adaptation and resilience, communicating climate change, and design performance evaluation. The goal is to provide an iterative methods framework, composed of the design criteria, for climate change design projects and to connect research with practice by creating a design-science feedback loop. The framework provides a platform for innovative solutions in climate change design and furthers dialogue on nature-based design.

1.1 Keywords:

Climate change, sea-level rise, coastal resilience, nature-based design, national parks

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