

Best Poster – Pre-doctoral Student: Karen Backe

Title:

Effects of sea level rise and storm surge on Pacific harbor seal habitat: A comparison of haul-out changes at the Russian and Eel River Estuaries

Authors:

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Abstract:

Novel modeling techniques are emerging to integrate environmental data and species observation records in ways that permit fine-scale projections of species response to climate change. Observed increases in storm surge and sea level, attributed to global climate change, are impacting critical habitat for a myriad of species, including Pacific harbor seals. Harbor seals are easily observed on land, and have very specific habitat requirements that make them useful conditional indicators of the status of the larger coastal marine ecosystem, and the intrinsic associated ecosystem benefits and services to coastal communities. Agent-based models are capable of working with spatially explicit data to understand local phenomena, such as changes in flow regimes and the accompanying impacts on harbor seal habitat. A remarkable citizen science effort has taken place at the mouth of the Russian River, on the Northern California coast, creating a decades-long record of harbor seal habitat use. We are utilizing this harbor seal haul-out record, and accompanying environmental data from several sources, as well as USGS topographic, bathymetric, and flow data to project harbor seal habitat under a series of likely sea level rise and storm surge scenarios. We are answering two specific questions: 1) How will harbor seal habitat physically change due to the sea level rise and storm surge scenarios projected for the coast of California under climate change scenarios? and 2) How will the predicted changes alter harbor seal habitat availability and predicted habitat quality? We expect the results of this research to reveal likely impacts of scenarios to the Russian River haul-out, and where potential new habitat may be found.