Addressing climate change and development pressures in an urban estuary through habitat restoration planning

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# Abstract

Native habitats in Florida face dual pressures at the land-sea interface from urban development and sea-level rise associated with climate change. To address these pressures, restoration practitioners require robust tools that identify reasonable goals given historical land use trends, current status of the habitat mosaic, and anticipated future impacts from coastal stressors. A target-setting approach for native habitats was created for the Tampa Bay watershed that identifies current restoration opportunities and establishes short (2030) and long-term (2050) goals. The approach was informed through a three-decade habitat change analysis and over forty years of habitat restoration experience in the region. Restoration goals were defined based on what is possible today and the projected needs for the future, rather than attempting to replicate past ecological conditions. The new paradigm also accounts for the expected impacts of sea-level rise, climate change, and watershed development - stressors which are pervasive in Florida. The resulting habitat goals are spatially explicit with maps that identify remaining restoration and conservation opportunities, while also providing an approach for the entire watershed that targets subtidal, intertidal, and coastal uplands. This approach represents a general framework for addressing competing interests in planning that could be applied in other coastal settings where sustainable urbanization practices are desired to co-exist with natural environments. Methods for repeatable analyses are also available using an open source workflow to update progress over time and for adoption by others.