

## Thesis abstracts

As a means of disseminating information about important new wader studies well in advance of formal publication, this series features abstracts from recent wader theses (bachelors, masters and doctoral). Thesis authors are invited to submit abstracts to the Editor.

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### **Effects of urbanization on the distribution and reproductive performance of the American Oystercatcher (*Haematopus palliatus palliatus*) in coastal New Jersey**

(Ph.D. 2008, Rutgers University, New Jersey, United States)

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Urbanization and associated human disturbance can affect American oystercatcher reproductive performance in direct and indirect ways. Nest success rates could be directly affected if human disturbance disrupts normal breeding behavior or leads to increased predation rates. Indirectly, reproductive performance could be reduced if distributional patterns are altered due to coastal development or disturbance on breeding grounds. This dissertation examines the influences that urbanization and human disturbance have on American oystercatcher reproductive rates and distribution in highly urbanized coastal ecosystems in New Jersey.

Human-induced effects on oystercatcher daily nest survival rates and overall reproductive performance were analyzed across a mosaic of habitats (Chapter 1). My results showed that the principal factor negatively influencing daily survival rates of both clutches and broods was the presence of mammalian predators, not human disturbance. The nest success rate on predator-free islands (21%) was an order of magnitude greater than the rate reported on barrier islands (2%), which have high densities of predatory mammals. Thus, the direct effect of human disturbance on reproductive performance was trumped by the effect of mammalian predators.

The effect of urbanization and human disturbance on the local distribution of American oystercatchers was analyzed using species distribution modeling techniques including maximum entropy (MAXENT) modeling and classification and regression tree (CART) modeling. First, the distribution of oystercatchers in response to urbanization was analyzed using MAXENT (Chapter 2). This modeling technique provided a map of predicted habitat suitability that was used to locate oystercatcher populations. The results of validation surveys showed that the New Jersey oystercatcher population utilized alternative breeding habitats in very high concentrations. Next, the habitat suitability model was used as the starting point to develop CART models analyzing the effect of human disturbance on the local distribution on barrier beaches (Chapter 3). These models showed that high levels of human disturbance further influenced local oystercatcher distribution in New Jersey.

My dissertation shows that urbanization and associated human disturbance affect the distributional patterns of the American oystercatcher. Thus, these factors indirectly affected reproductive performance by leading to the exclusion of oystercatchers from the most highly suitable breeding habitat.

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