Estimating the Demand for Recreational Shorebird Watching in the Delaware Bay: Sampling and Survey Design

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Abstract:

From mid-April to mid-June, the Delaware Bay is considered to be the second largest stopover point for migrating shorebirds in the entire world. Many of the birds have traveled hundreds and even thousands of miles non-stop, instinctively following the spring season northward from the southern tip of South America. They rely on the Delaware Bay to provide them with safe shelter and enough nourishment in the form of horseshoe crab eggs to fuel the last leg of the journey to their Arctic breeding grounds. One of the birds in particular, the red knot, will travel nearly 20,000 miles round trip to nest and raise their young. Only one other species of birds is known to travel farther, making the red knot's journey one of the most amazing animal journeys known to science. But as a result of increased development along the coast and the high demand for the birds' primary source of food, the horseshoe crab, there has been a serious decline in many of the shorebird populations over the last two decades.

The uniqueness of this event coupled with the chance that there may be fewer birds visiting the Bay each year attracts thousands of visitors to the Delaware coast that want to catch a glimpse of the shorebird phenomenon. Individuals who visit the Delaware Bay for the purpose of shorebird watching may include those that are considered to be avid birders all the way to the novice who have no birding experience outside of what they see in their back yard. There are also over twenty different sites that have been identified as shorebird viewing areas along the Delaware coast, all of which are open and available during the shorebird stopover. Little to nothing is known about how often these sites are visited and by how many people, the demographics of the bird watching population or the total expenditures associated with shorebird watching in Delaware. The primary purpose of this research project is to design and estimate an economic model of shorebird watching in the Delaware Bay using the travel cost random utility model and to build an economic/demographic data set of the shorebird watching population.

Preliminary research has shown that there are four to five primary sites that are visited more frequently than the others and that most of the visitation occurs after the first full moon in May and continues throughout the beginning of June. This deviates from the traditional multiple site recreational demand model, where individuals choose from a set of sites based on the individual characteristics of each site. It also creates somewhat of a challenge when deciding how to accurately and randomly sample the target population in order to minimize econometric problems in the output. The ideal method of sampling this population is by way of onsite intercept sampling due to the low participation in shorebird watching from the general public. This also leads to unique challenges in the design and implementation of the survey that need to be considered as well. The main purpose of this presentation is to address both the sampling strategy and the survey design of the research project in further detail.