

Economic Analysis of Shorebirds and Birding in the Delaware Bay

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Abstract

Each spring the Delaware Bay is home to a natural phenomenon that combines the world's largest population of spawning horseshoe crabs and the annual migration of shorebirds from South America to their Arctic breeding grounds. The four primary species of shorebirds that visit the Bay are the red knot, ruddy turnstone, sanderling and semi-palmated plover. The Delaware Bay serves as the only major stop-over for these birds during their 10,000 mile trip. From May through mid-June, over 700,000 shorebirds will descend on the Bay, bent on doubling their body weight before their departure. The birds depend on the nutrient rich horseshoe crab eggs to provide them with enough nourishment to complete the last leg of their trip and to store enough fat reserves to carry them through the first two weeks of breeding. Out of the four species mentioned above, the red knot population has reached dangerously low population levels and scientists predict that the species may face extinction by 2010. The two main factors contributing to the species decline are a loss of habitat and the loss of horseshoe crab resources over the last 10 years.

Currently the red knot is listed as a threatened species in the state of New Jersey and is also a species of "High Concern" in the U.S. Shorebird Conservation plan. The species is not listed federally, but as recently as August of 2005, a number of environmental groups petitioned the U.S. Fish and Wildlife service for an emergency listing of the red knot. The petition was declined and the focus has shifted to proposal of a two-year moratorium on horseshoe crabbing in New Jersey. Despite a four-fold reduction in the horseshoe crab population since 1998, the red knots have shown no sign of recovery.

The objective of my research is to use stated preference techniques for the purpose of estimating the value of a total loss of the red knot population. The two types of values associated with this environmental good are use values, represented by individuals who participate in bird watching or belong to birding societies, and non-use values represented by the general population or by individuals who do not visit the Delaware Bay for the purpose of shorebird watching. The use of contingent valuation for valuing environmental goods when value cannot be inferred by markets, is a widely accepted practice in the field of economics. Contingent valuation uses surveys to discover individual's preferences and attempts to place a monetary value on those preferences for marginal changes in welfare. The estimated welfare values for people's willingness to pay to preserve the red knot and related shorebird species can be used to assist resource managers in the state of Delaware with wildlife management and open space preservation to ensure the availability of habitats for both the shorebirds and horseshoe crabs. Similar studies have shown positive willingness to pay estimates for risk reduction measures to protect endangered species and have also led to conclusions that respondents value wider concerns such as environmental issues and general moral satisfaction.