

Benefits to Commercial fishery from Controlling an Invasive Species via Monetary Incentives: Louisiana Case Study

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Nutria (*Myocastor coypus*) is an invasive species that was introduced into Louisiana in the mid 1930's in attempts to stimulate local fur farming and trapping economies. For decades, pelt prices were high enough to generate harvest pressures that kept nutria populations at or below their environmental carrying capacity. By the beginning of 1980s, however, nutria pelt prices had dropped sharply, leading to a decline in annual harvests. With diminished harvest pressure and few natural predators, nutria population rapidly expanded to the point where they began to cause significant wetland damages in coastal Louisiana. Since Louisiana's commercial and recreational fisheries are highly dependent on healthy wetlands, degradation of these wetlands as a result of nutria "eatouts" implies a concomitant loss in the benefits derived from fishing activities. In an effort to slow wetland losses caused by nutria herbivory, Louisiana instituted a \$4.00 bounty per harvested nutria tail with the goal of increasing nutria harvests to approximately 400,000 animals per year.

The objective of this paper is two-fold. First, we investigate the role of bounties in the control of nutria populations and wetland losses in Louisiana. Secondly, we estimate the benefits to consumers and the commercial fishing industry that could occur under various bounty levels. A bioeconomic model of nutria harvesting in Louisiana from 1960 to 2003 was used to estimate the expected harvests associated with different levels of bounty incentives. Then, these predicted values were employed in a Nutria-Marsh-Loss Model (Carter *et al.* 1999) to simulate the number of wetland acreages that might be saved under various bounty scenarios. Finally, we used the per acre commercial fishing value of Louisiana wetlands reported in Farber's (1996) study to estimate the consumer and fishing industry benefits associated with various bounty levels. Results indicate that harvest responds positively to the bounty price, total wetland acreage, and low opportunity costs to the trappers. Simulation results suggest that the commercial benefits of preserving wetlands by using bounties exceed the costs of implementing the bounty programs by a large margin. Increasing bounty levels above \$10, however, is not desirable as marsh area will have reached a stable equilibrium.