

AN OPTIMAL SOLUTION FOR THE VALUATION OF SEAGRASS ECOSYSTEMS
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Resumo:

Seagrasses are primary producers who generally inhabit estuarine and marine environments in relatively shallow waters near the coastline. Seagrass ecosystems have been well-documented as nurseries for many marine animals, some of which are of significant commercial importance. The shallow nature of this habitat and its proximity to human habitat has opened this system to extraordinary levels of anthropogenic impact. Conventional methods of assessing this impact have relied on the 'existence' value of seagrasses (WTP), and estimates on the cost of restoration and prevention. Neither approach explicitly incorporates ecological parameters and their relationship both with the species that reside in these systems, and their market value. We use optimal control theory to determine levels of sustainable harvest for pink shrimp (*Farfantepenaeus duorarum*) that is harvested in the Gulf of Mexico, but whose earlier life stages occur in Biscayne Bay, Florida. We calculate these values based on the implicit assumption that habitat quality is the strongest determinant of stock size, and consequently the economic value of these systems can be calculated by quantifying the rate at which they can house residents.