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Title: The Bioeconomics of Resource Rehabilitation: A Commercial-sport Analysis for a Great Lakes Fishery

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Abstract:

This paper develops a fishery model that simulates fish population fluctuations and harvest shifts between commercial and sport user groups. This model is used to assess the bioeconomic impact of an ongoing rehabilitation plan initiated in 1983 by the Wisconsin Department of Natural Resources (WDNR) for the yellow perch fishery in Green Bay, Lake Michigan for both user groups and explores the efficient allocation of catch between these two fishers. The paper is divided into four additional sections after the introduction:

- An overview of the Green Bay yellow perch fishery.
- Detailed description of the bioeconomic model to illustrate realism of the model.
- Assessment of the economic gains induced by the rehabilitation plan and possible allocations of catch
- Major findings and future research summary.

The study shows that the WDNR plan succeeds in stock size and older fish number increases.

The average overall economic and biological gains from the rehabilitation policy are positive for various discount rates, time horizons, and sport effort specifications. This economic gain is because sport harvest increases greatly, but the commercial harvest suffers in all scenarios as a result of restrictions specified in the plan. If the sport harvest effort is standard or high, the optimal allocation between harvests may be 100% sport and 0% commercial due to the severe divergence of impacts as a result of this plan. However, if a low sport harvest effort is considered, the optimal catch is estimated at 54% sport and 46% commercial.