

# Indicators of fish population responses to avian predation with focus on double-crested cormorants

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## Description

Too often, Washington leaders focus on the short-term impact of possible policy actions at the expense of long-term environmental and economic benefits. Congress' continued efforts to weaken it are a good example of this. Today, 39 of America's most important commercial and recreational marine fish populations are affected by overfishing, with 43 depleted to unhealthy levels. Most anglers, myself included, want to catch as many fish as possible, but continuing normal operations and delaying recovery efforts will do even more harm to depleted fish populations and the people who depend on them. In other words, fishermen will be affected in the short term by reduced fishing limits, but the long-term benefits that fishermen will derive from a rebuilt population far outweigh these temporary impacts. As research shows, healthy fish populations actually create jobs, support coastal economies, help repair damaged marine ecosystems, and encourage anglers like me to eat fish more often for dinner. Native fish are fish species that historically occurred in rivers, streams, or lakes and were not introduced into those waters by humans. Native fish are important to aquatic ecosystems. Healthy fish populations tend to mean healthier aquatic environments. Conserving native fish is part of a larger movement to conserve the planet's biodiversity. Increased biodiversity leads to better ecosystem services. Fish provide many services to humans and ecosystems. They serve as a food source, support the economy, and contribute to the diversity of water systems. Some native fish may not be economically important, but protecting these native species is still important. Like humpback whales, many native fish can only exist in their one environment. That is, some species are found only in one place on earth. Conserving native fish helps create unique and vibrant ecosystems. Identification of native fish is entirely location dependent. What is specific to one region may not be specific to another region. When you go fishing, knowing which species are native will help you practice catch and release. Ask for species endemic to

the park or visit NPS Species. The 'simple' fishing model described here is one in which only catch and effort data need to be fitted. In the model described, the biomass yield curve is considered equivalent to the population growth curve. The Fox model is more realistic with respect to fish populations than the Schaefer model and removes the constraint of symmetric yield curves. The Pella-Tomlinson model is the general model and the others are included as special cases. Tests using data from laboratory populations of guppies support the validity of the Fox and Pella-Tomlinson models. The Fox model is the easier of the two to set up and has proven suitable for many commercial fisheries. Advantages of models include minimal base data requirements and relatively easy customization. Limitations include lack of provision for reproductive delays and wasting biological information beyond catch and effort. Well, aquaculture is basically a form of farming, another name for aquaculture is aquaculture. Aquaculture is the process of raising fish in closed areas for use in fishing. This type of farm can be built on land or in natural bodies of water. An example is the front of the sea coast. A fish farm allows you to grow a variety of fish, shellfish, and aquatic plants.

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## Conflict of Interest

The author declares there is no conflict of interest in publishing this article.

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