Economics of Protected Resources Research & Management

NOAA FISHERIES

Economic value of marine protected species

Protecting a species through laws and policies implies that society considers these species to be valuable. Economics can be used to assess the value (in dollar terms) that people have for preserving a species for future generations regardless of whether they ever view the species or not. These methods are known as non-market valuation.

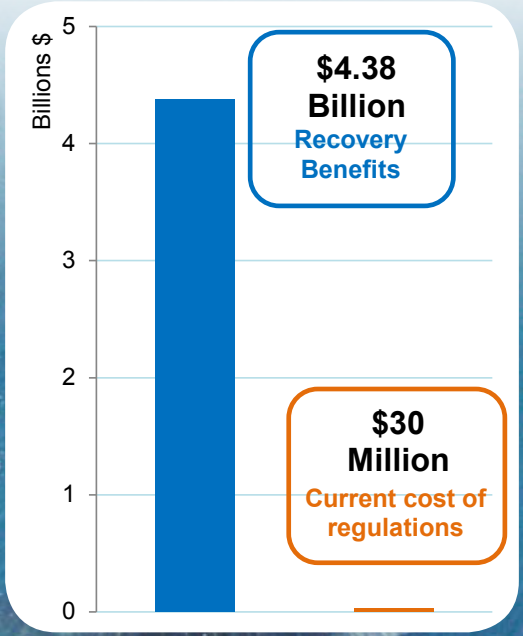
NOAA Fisheries economists recently conducted a study to measure the value the nation has for recovering eight marine species that are listed as threatened or endangered under the Endangered Species Act. Results show that society places a high value on recovering these species - $13 billion for just three species (leatherback sea turtle, North Pacific right whale and North Atlantic right whale). This suggests that the benefits from recovering these species far outweigh the costs of current conservation measures aimed at reducing their risk of extinction and also justifies increased science funding to preserve these species.

$13 Billion
Value society gains
from recovering threatened and endangered marine species.

Costs and benefits of regulations

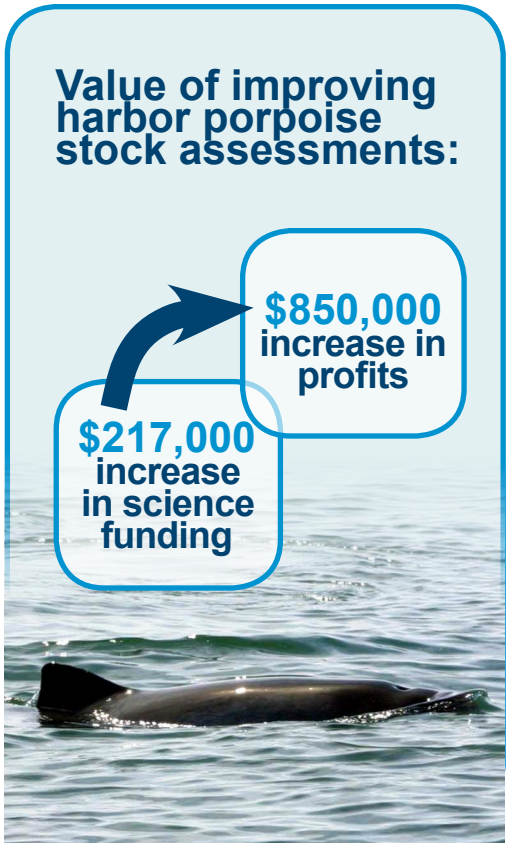
NOAA Fisheries estimates that Americans are willing to pay $4.38 billion annually for the recovery of the endangered North Atlantic right whale. In addition, this species helps support the whale watching industry that generated an estimated $2.3 billion in sales in this industry and across the broader economy in 2008. In comparison, the recovery plans for this species required restriction on the fishing and shipping industry at an annual cost of $30.2 million.

North Atlantic Right Whale



Protected species research conducted by NOAA Fisheries economists can describe cost-benefit trade-offs of proposed management strategies designed to protect species under the Marine Mammal Protection Act and the Endangered Species Act.

Alternatively, a cost-effectiveness analysis can be used to compare conservation strategies to prioritize investments by assessing the ratio between costs and biological impacts. These studies can lead to real-life results.



Economic value of scientific information

Because the risk of being wrong could result in extinction, protected species management must be risk averse. Thus, scientific information with a high degree of uncertainty results in stricter management measures.

All survey information includes some amount of statistical error and uncertainty. We know that the more data we collect, the more precise our estimate will be, and the more confident we can be in setting regulations that balance fishing activity and species protection.

A recent NOAA Fisheries study found that a modest annual increase of $217,000 for data collection could improve the precision of the Northwest Atlantic harbor porpoise stock assessment such that profits to commercial fishermen would increase by $850,000 per year.

	Column A Fleet Economic Profits	**Column B** Cost to improve precision	**Net Benefits** Column A less Column B
Option 1: Low Precision	$1,914,000	$221,000	$1,693,000
Option 2: High Precision	$2,764,000	$438,000	$2,326,000
Difference between options	$850,000	$217,000	$633,000

Cost-effectiveness of conservation strategies

Successful recovery of endangered species may require a multi-pronged approach that includes both reducing the human induced mortality AND increasing the survival rates of the species. Studies conducted by NOAA Fisheries economists demonstrated that it is relatively inexpensive to increase the nesting beach hatchling survival of Pacific leatherback sea turtles. The table below provides a cost comparison between protecting one adult equivalent sea turtle by reducing fishery interactions and achieving the same level of protection (one adult equivalent sea turtle) by increasing nesting beach survival rates. In the long run, recovery of threatened and endangered species will result in less restrictive regulations on fisheries.

	Cost to Reduce Fishery Interaction by 1 Adult Equivalent Sea Turtle	Cost to Increase Hatchling Survival by 1 Adult Equivalent Sea Turtle	Return on Investment: Increase Hatchling Survival:Reduce Fishery Interaction
California drift gillnet	$205,396	$1,558	$132:$1
Hawaii longline	$28,054	$1,558	$18:$1

For more information on this program or additional information on these studies cited here, visit:
www.st.nmfs.noaa.gov/economic/protected.species