

# News Release

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***A new study in Science magazine highlights shows how much food we need to leave in the ocean to conserve marine birds.***

**GLOBAL SEABIRD RESPONSE TO FORAGE FISH DEPLETION – ONE-THIRD FOR THE BIRDS, BY PHILIPPE CURY ET AL. SCIENCE, 23 DECEMBER 2011.**

**Petaluma, California, USA** – An international group of scientists has shown that seabirds begin to suffer when the food available for them in the ocean declines below a critical level. This level is approximately one-third of the maximum amount of food available. They have shown that this critical level is about the same for seabirds wherever they happen to be in the world. Their study – the most comprehensive ever undertaken - covers seabirds from the Arctic to the Antarctic and from the Pacific to the Atlantic. The study focused on seabirds that feed mainly on small fish such as sardines, anchovies and sandeels. These are often key species in marine ecosystems that are often also exploited by humans, resulting in competition between fisheries and seabirds. In the Antarctic and elsewhere, such as the California Current, this group included krill, which are like small shrimp-like organisms that have a key role in marine food chains.

The researchers used data collected from 14 species including murrelets, gannets, jaegers, terns, puffins, penguins and a species of gull from seven ecosystems worldwide. The success of these species at producing offspring was measured over periods of 15 to 47 years and the team related this measurement to the abundance of their main fish food in the region around their breeding colonies. The study gathered 438 years of observations, which constitutes one of the most comprehensive global databases ever assembled for predators and their prey. Wherever they occurred in the world, the effect of low fish abundance was similar. When the amount of fish in the sea was greater than one-third of the maximum ever recorded, the number of chicks produced was generally unaffected by changes in food availability. However, if the fish abundance fell below this one-third threshold then the success at producing chicks declined and in some cases resulted in breeding failure.

The leader of the team, Dr. Philippe Cury of the French Research Institute for Development (IRD), said, “We were amazed by the consistency of the relationship around the globe. This suggests that we have found an important benchmark that could be

used as a guide to limit the amount of fish taken from the sea in order to maintain seabird populations in the long term.”

The team was stimulated to undertake this study due to concerns about what effects fishing may be having upon some of these important species in marine ecosystems. Dr. Ian Boyd of the Scottish Ocean Institute, University of St Andrews, said, “When combined with the effects of climate change, we need to develop better methods of setting limits of exploitation of important marine species. This means being able to establish general guidelines that, if exceeded, will cause changes to other important components in the ecosystems.”

Seabirds are excellent indicators of the health of marine ecosystems, so it is sensible to use them in this context.

Dr. William J. Sydeman of the Farallon Institute for Advanced Ecosystem Research said, “To conserve and manage fisheries to the benefit of both humans and wildlife, we need to better understand the needs of ecologically-dependent predators, including birds, mammals, and predatory fish. ‘Set asides’ for forage fish, squid, and zooplankton like krill are one way to ensure that the ecosystem will continue to be healthy enough to support wildlife as well as productive fisheries. This is not really a difficult concept – forage fish are valuable left in the sea to support fish and other wildlife. What is difficult is estimating the cutoff. Our study provides one of the clearest thresholds to date below which seabirds would suffer through chronic food resource depletion.”

The team acknowledges that there is more to be done to understand whether what they have found applies more widely, but they think that the rule-of-thumb “one-third for the birds” will be useful as part of wider approaches to making sure that we sustain our marine ecosystems.

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## **Contacts**

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## **Additional Information**

The *Farallon Institute for Advanced Ecosystem Research* is a non-profit scientific organization dedicated to the understanding and preservation of healthy marine ecosystems. Its research is designed to provide the scientific basis for ecosystem-based management practices and policy reforms consistent with a productive marine world. The *Farallon Institute* emphasizes long-term, multi-species, multi-disciplinary research into the interdependent aspects of the marine environment, including the effects of natural and human-based climate change, and the broad implications and influences of ocean currents, weather patterns, fishing practices and coastal development on marine food webs and ecosystem processes.