The birds' share

Between sustainable fishing and overfishing, it is a matter of numbers. What is the acceptable catch limit to allow the renewal of fish stocks and the maintenance of the rest of the ecosystem, particularly seabird populations? That is the question.

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Anchovy fishermen hauling in their nets north of Lima, Peru.

How does overfishing of anchovy and sardine stocks impact the reproductive success of seabirds? This question has long remained without a satisfactory answer. The data available only demonstrated this impact in a very localised way and was not enough to convince local authorities to reduce catch limits.

To overcome this difficulty, an international scientific network has pooled global data from 20 to 40 years of monitoring seabirds and caught fish, and analysed correlations between fluctuations in the sizes of these two populations. The results clearly demonstrate that there is a catch threshold above which the reproductive success of seabirds is affected. In addition, by comparing data from seven marine ecosystems in the Arctic, Antarctic, Pacific and Atlantic, covering 14 bird species and 483 years of cumulative observations, scientists found that the reproductive success of birds declines when the abundance of forage fish is below a certain threshold (one third of maximum abundance observed over the long term). Sardine and anchovy fisheries should therefore limit their catches and not fish around nesting areas.

The correlation established provides a reliable indicator for fisheries management. This threshold has since been incorporated into various

"In South Africa, ecosystem-based fisheries management has resulted in 'a third for the birds'. A recent study has catapulted global thinking in this area, and made it possible to propose meaningful, science-based catch limits for forage fish. This will protect predators and the overall functioning of the ecosystem. In a fisheries management structure that has long been protected by single-species approaches which have become restrictive and overcomplicated, this work has provided a basis for a refreshing, more holistic way of thinking at the ecosystem level."

Lynne Shannon, Marine and Antarctic Research Centre for Innovation and Sustainability, University of Cape Town, South Africa

••• Sharing international data has made it possible to review the optimum catch level for sardines and anchovies •••

© R. Le Valley

An Atlantic puffin with anchovies in its beak, Isle of May, Canada.

fisheries management policies around the world (South Africa, Australia, New Zealand, United States), enabling the implementation of an ecosystem-based approach to fisheries and helping reconcile the exploitation of marine resources with the protection of marine biodiversity.

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