

# The proportion of birds

A war of figures is raging between sustainable fishing and overfishing. What is the acceptable harvesting threshold to ensure the renewal of fish stocks and the conservation of the ecosystem? This is a key issue.



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Anchovy fishing and seabirds, north of Lima, Peru.

The research published in 2011 in *Science* magazine did not cost much. All it took was two meetings. It all started with a discussion between two scientists. One of them, from South Africa, was convinced that the overfishing of anchovy and sardine stocks had an impact on the breeding success of sea birds. This theory was supported by his data but said data was very localised, so it was not enough to convince local authorities to change the harvest rate. The other one, an IRD researcher, had an idea. Why not gather all worldwide data on the monitoring of sea bird populations and the monitoring of fish caught, and find out whether there is a link between the two?

The researcher tapped into his network and all those likely to be in possession of long-term observations – 20 to 40 years – of the survival or breeding success of sea birds in correlation with fishing data. As these experts were reluctant to share their data, a pragmatic solution was found. The idea was to organise a meeting during which everyone would bring and temporarily share their own data to verify whether or not there was an effect. The strategy worked and scientists discovered the existence of a fish harvest threshold above which the breeding success of sea birds is affected due to lack of food. This effect was analysed in detail during another meeting.

By comparing data from seven marine ecosystems in the Arctic, Antarctic, Pacific and Atlantic, covering fourteen species of coastal birds and 483 cumulated years of observation, researchers found that the abundance of forage species (sardine, anchovy, herring, krill, etc.) cannot be less than one third of the maximum abundance observed in the long term, otherwise the breeding success of birds starts declining. Since then, this threshold has been integrated into the various fisheries management policies across the world. The sharing of international data provided an opportunity to review the optimal harvest rate for pelagic fish such as sardines and anchovies.

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Atlantic puffin, Farne Island, UK.

... Data pooling on an international scale has made it possible to estimate optimal fishing quotas for sardines and anchovies ...

# BIODIVERSITY IN THE GLOBAL SOUTH

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