

Closing 20% of the Ocean: Pro-Reserve Target Is Finding Way into Policies

The political target of setting aside 20% of ocean habitats as no-take zones by the year 2020, or earlier, has recently found its way into several MPA-related policies in the Western Hemisphere. Since January, government organizations in the Galápagos Islands ([MPA News 1:7](#)) and the US ([1:6](#)) have adopted a 20% closure figure as a target for protecting their coastal waters and coral reefs, respectively. A science panel advising the Bahamian government on its upcoming national reserve system recommended that the eventual network close at least 20% of the Bahamas' shelf edge ([1:5](#)). The target has appeared, too, in discussions on California's MPA system ([1:3](#)) and in a recommendation offered by several scientists and NGOs for the protection of US marine waters ([1:6](#)).

The 20% closure figure has clearly emerged as a tool in MPA negotiations and policymaking, at least in the Americas. Where did this target come from, and when is it useful?

Origin of 20%

The 20% figure has appeared in a handful of academic papers, beginning in the mid-1990s. Fisheries biologist Jim Bohnsack of the US National Oceanic and Atmospheric Administration wrote in 1994 and 1996 that various independent lines of argument converged on the need to close roughly 20% of the marine environment to rejuvenate fish stocks. Other scientists have since elaborated on those arguments (see box, "Scientific basis for 20% closure figure," at article's end). A 1999 report, *Sustaining Marine Fisheries*, by the (US) National Research Council adopted the 20% figure, suggesting that current understanding of marine ecosystems and populations provided "a rationale for adopting a marine reserve program of this magnitude."

The target has often been cited as a precautionary measure. The US Coral Reef Task Force, which called for setting aside 20% of US coral reefs by 2010, said the figure provided a worthwhile reference point when "insufficient information is available to determine necessary no-take area size based on species life histories, use of habitat, and community function." By reason, if there were perfect knowledge of marine ecosystems, no-take zones could be sized according to the specific needs of target species and the health of communities. Some closed areas would be smaller than 20%; others would be larger.

The percentage of ocean that should be set aside to protect fish stocks has long been debated in MPA science. Marine biologist Bill Ballantine of the University of Auckland's Leigh Marine Laboratory (New Zealand) has recommended that a figure of 10% should be the lowest moral obligation for the protection of his country's seas (see box, "Web site with argument for protecting 10% of seas," at article's end); managers in the Bahamas cited Ballantine and his work as their original inspiration for establishing reserves. Other scientists, including Sylvie Guénette of the University of British Columbia (Canada), have argued for reserves totaling 80% of certain stocks' habitat, in situations where those reserves are unaccompanied by fisheries management regimes for the remaining habitat.

Published proponents of the 20% closure figure -- including Bohnsack, zoologist Jane Lubchenco of Oregon State University (US), and senior scientist Gary Davis of Channel Islands National Park (California, US) -- have helped spread the word to various workgroups of which they've been part, as well as to other countries. Bohnsack was active on the US Coral Reef Task Force; Lubchenco helped write the National Research Council report on sustainable fisheries; and Davis assisted the Galápagos Islands reserve-planning effort.

The 20% target has not yet spread to other areas of the world, where closures have more typically reflected particular political and environmental situations. Major reserve-planning efforts in Australia, for example, have not followed any one strategy for establishing closures. Although the Australian government announced plans last year to close nearly a third of the upcoming Macquarie Island Marine Park to fishing ([1:1](#)), an advisory council to the state of Victoria recommended a closure of 6% of that

state's waters (1:4). In planning for the Lord Howe Island Marine Park (1:7), the Australian government has refrained from suggesting that any percentage of the MPA will be set aside as no-take, and is waiting instead to discuss management options with local stakeholders.

Usefulness in negotiations

When is it appropriate to pursue a closure target in negotiations for protected areas? According to the (US) National Research Council's report on sustainable fisheries, "Without a clear goal, it is impossible to generate the debate that expansion of MPAs requires or to begin designing and implementing protected areas before environmental damage makes that impossible."

The precautionary nature of such a target can be useful in resource planning, but it can also pose challenges to negotiations, particularly when stakeholders wary of no-take zones are involved. Last year, in negotiations on networking California's MPA system, representatives of fishing organizations opposed the setting of any percentage goals for the establishment of no-take zones. The negotiations' resulting legislation called simply for an "improved" no-take reserve component. Although fishermen admitted that this language would most likely still entail an increase in closed areas, they were satisfied that they had fended off the preconception that a certain percentage of waters had to be set aside. Environmentalists supported the fishermen on this point in order to achieve broad buy-in on the overall plan.

Stakeholder buy-in is crucial for consensus-based negotiations on marine reserves, according to Mike Eng, who has facilitated reserve-planning negotiations in the Florida Keys (1:1) and, currently, the Channel Islands in California. Eng feels that positional approaches, such as percentage targets, can tend to sidetrack negotiation participants away from addressing their potential common goals. As such, this positioning can be an obstacle to reaching a consensus-based agreement and can undermine community commitment to any solutions developed.

"There needs to be support from the community in order to ensure compliance with, and success of, the reserve," said Eng. He suggests using an interest-based approach, in which stakeholders work together to address commonly identified goals related to an MPA, such as healthy fish stocks, continued fishing, biodiversity protection, etc. By pursuing common goals, he said, stakeholders can find higher-quality solutions that can better address stakeholders' interests and protect the marine environment.

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Scientific basis for 20% closure figure

In a draft of their forthcoming book, *Fully-Protected Marine Reserves: A Guide*, Callum Roberts and Julie Hawkins of the University of York (UK) detail the scientific arguments for setting aside 20% of the ocean as no-take zones. The following list summarizes these arguments:

Risk minimization: Calculations by some fisheries biologists have suggested that, on average, it is necessary to retain at least 20% of the level of an unexploited stock to keep fish stocks sustainable. That is, protecting a large proportion of the sea -- 20% or more -- will reduce risks of stock over-exploitation.

Catch enhancement: In examining reserves' effect on enhancing fish catches outside reserve limits, several modeling studies have concluded that protecting between 20% and 40% of fishing grounds will maximize catches. The models suggest that catches improve proportionately with the size of area protected, although a point will be reached at which the disadvantage of having an insufficiently large fishing area balances the advantage of protection.

Connectivity: As more of the sea is closed to fishing, the connectivity among reserves increases, thereby enabling greater interaction among protected stocks. The greatest gains in connectivity are made at the low end of the spectrum of protection, from 0%-30% of the sea.

Roberts and Hawkins write, "The main reasons for conservationists and scientists backing a target of 20% closure are: (1) this figure can be justified on the basis of the best biological information currently available; (2) such closures are expected to provide significant economic benefits to fisheries; and (3) it is a realistic figure to implement. However, we shouldn't look upon 20% as a fixed goal, but rather as an average, with some areas and habitats needing less protection and others needing more."

The book by Roberts and Hawkins is due to be published this year by the World Wildlife Fund and the University of York (UK).

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Web site with argument for protecting 10% of seas

Bill Ballantine of the University of Auckland's Leigh Marine Laboratory suggests that the idea of setting aside 10% of New Zealand's marine environment provides a conservative, traditional, and easily remembered goal. To read his essay on this subject, "Why 10%?", go to:

<http://www.hmu.auckland.ac.nz:8001/sanctuary/index.html>

For an online library of more of Ballantine's publications, go to

<http://www.marine-reserves.org.nz>

Your opinion on percentage targets?

MPA News would like to hear from readers with opinions on the 20% closure figure or other percentage closure targets. Pending space, we will print selected responses in coming issues. Please e-mail us, at mpanews@u.washington.edu.

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