

# MPA Perspective Conserving Ecological Integrity of Marine Reserves: "No-Take" Is Not Necessarily "Fully Protected"

**Editor's note:** William Alevizon, author of the following perspective piece, is a senior marine ecologist with the marine conservation program of the Wildlife Conservation Society, a US-based NGO. A specialist in population and community ecology of reef fishes, Alevizon has conducted ecological investigations of Caribbean and Florida reef habitats and fisheries since 1973, and has authored or co-authored numerous scientific papers and technical reports. He has participated in MPA planning efforts in several Caribbean nations, including Antigua, the Dominican Republic, Honduras, and Nicaragua. For the past two years, Alevizon has worked closely with the Bahamas Department of Fisheries to develop a planning framework for the nation's proposed marine reserve network and conduct preliminary site surveys of prospective reserve sites.

A list of the literature cited in this piece is available [online](#).

**By William Alevizon, Wildlife Conservation Society**

A troubling trend has emerged in recent years among many MPA scientists, planners, and advocates: namely, the interchanging use of the terms "fully protected" and "no-take". Such usage suggests that extractive use per se is the only resource-use issue relevant to the protection of marine resources within marine reserves. The logical outcome of such a paradigm is that managers/planners are led to believe that simply making these areas off-limits to fishing might adequately protect the ecological integrity of such areas.

Such a view, however, is inconsistent with best-available science and common sense. Today, many biologists concur that on a worldwide basis, the greatest threat to wildlife, biodiversity, and ecosystem health is the widespread degradation, loss and fragmentation of natural habitats (Ehrlich and Wilson 1991; Soule 1991). While "extractive use" may frequently contribute to habitat degradation in marine ecosystems, it is far from the only factor or form of resource use so involved.

It has been well documented, for example, that unregulated numbers and/or activities of recreational divers and snorkelers can cause substantial damage to sensitive marine habitats. Such problems become evident even at levels of diving intensity far less than those presently experienced at many popular dive sites (CIDE 1997). Coral reefs are particularly sensitive to diver damage, with documented impacts typically including reduction of live coral cover, reduced abundance and diversity of corals and other benthic invertebrates, and increased turbidity and sedimentation at reef sites (Hawkins and Roberts 1992, 1993; Chiappone and Sullivan 1996; Harriot et al. 1997; CIDE 1997; Roberts and Hawkins 2000; Jensen 2001). Problematic impacts from unregulated recreational diving have also been documented on temperate rocky-reef habitats in both the Mediterranean (Zabala 1997; Badalamente et al. 2000) and in California kelp forests (Schaeffer et al. 1999).

Similarly, feeding and other forms of harassment of marine wildlife have been shown to cause ecological disruption in the forms of altered behaviors and/or unnatural distribution/abundance patterns in sharks (Burgess 1998), reef fishes (Perrine 1989; Quinn and Kojis 1990; Cole 1994; Hawaii DLNR 1993, 1999) and marine mammals (NOAA 1994). Marine mammals have been most thoroughly studied with regard to the impacts of inappropriate human interactions (feeding, touching, etc.). Here, the problems documented were of sufficient concern (NOAA 1994) that such activities are now classified a form of "take" and prohibited under provisions of the U.S. Marine Mammal Protection Act.

Despite such well-documented problems, the referenced activities remain unregulated at most so-called "fully protected" marine reserves. While the long-term impacts of chronic overfishing on reef communities are not to be taken lightly, neither should substantive documented "non-consumptive" impacts. In fact, given the problems documented from the referred activities within some established marine reserves, one could argue credibly that the latter should be of at least equal concern as the former in the development of management schemes designed to "fully protect" the long-term ecological integrity (or fisheries) of

sensitive tropical and temperate reef habitats.

Roberts and Hawkins (2000) pointed out the need to regulate diving intensity on coral reefs, suggesting that a sizable portion (10-20%) of reef areas in "fully protected" marine reserves be completely closed to scuba diving. Badalamente et al. (2000) reported that newly established marine reserves in the Mediterranean quickly became magnets for increased dive tourism, and the resulting impacts on benthic communities and disturbance of reef fish assemblages (through rampant fish feeding) forced authorities to either ban divers completely, or strictly regulate their numbers in some areas. A focused study of the impacts of recreational diving impacts on kelp forests of central California (Schaeffer and Foster 1998) led authors to conclude that, "Marine reserves not based upon empirical data and allowing unmonitored levels of diving can be counterproductive to the conservation ideals they are supposedly based upon." Davis and Tisdell (1995) reached a similar conclusion: "The environment of heavily used dive sites...may be impacted by SCUBA diving and these impacts may conflict with conservation goals."

These lessons and admonitions should not remain unheeded. In an era of ecosystem-level approaches to conservation and management, it must be acknowledged that extractive use is but one of any number of ways in which the ecological integrity of marine ecosystems may be compromised by human impacts. Even when fisheries protection/restoration is the primary goal in establishing a marine reserve, it should be recognized that protecting the integrity of supporting habitats and biological assemblages is as necessary to that goal as the regulation of extractive use. Full protection for MPAs designed to conserve biodiversity, protect wildlife, and/or maintain natural ecosystem attributes must go beyond the simple concept of no-take. Regulatory schemes designed to provide "full protection" for sensitive marine ecosystems should invoke the precautionary principle as the management standard, and thereby encompass, to the degree practical, protections from the full spectrum of all known and readily controlled negative human impacts.

**For more information:**

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