

Fig. 1 School of *Scarus coelestinus* swimming above fringing reefs of the Abrolhos archipelago, Brazil

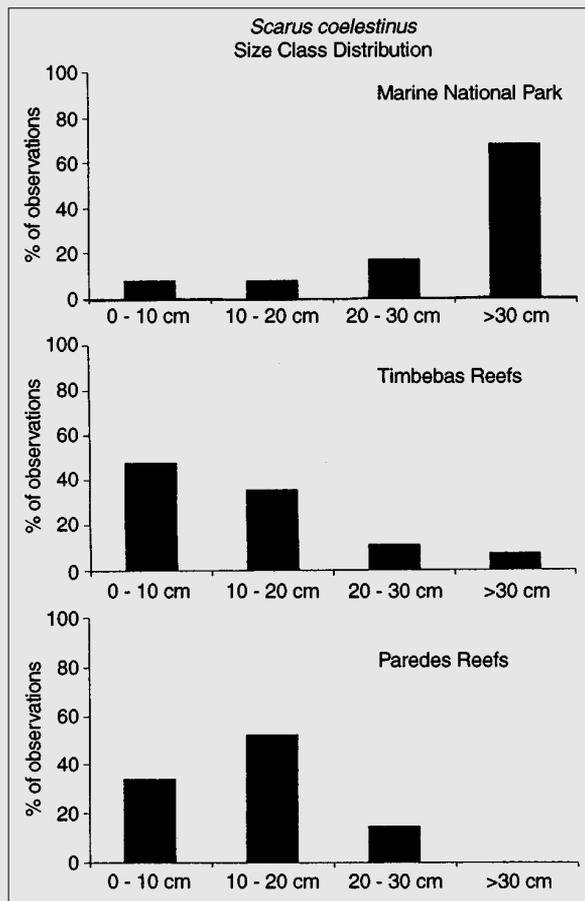


Fig. 2 Size class distribution of *Scarus coelestinus* among the monitored reefs within the National Park and near the coast

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The Unique Abrolhos Reef Formation (Brazil): need for specific management strategies

The Abrolhos reef complex (60,000 km²) includes the southern-most coral reefs in the Atlantic Ocean (17° 20'S, 39° 00' W). They exhibit several different morphologies based on a unique reef growth form called "Chapeirao": a mushroom-like pinnacle that grows to over 20 m high. The Abrolhos region is economically viable for fisheries and ecotourism. Since 1983, parts of the complex have been protected by the establishment of the Abrolhos National Marine Park, which includes one coastal reef, the offshore reefs of Parcel dos Abrolhos, and the fringing reefs that border the islands of the archipelago (910 km²). However, only the latter two areas have been effectively policed.

With the exception of the corals (Leão 1996), little is known about the species diversity, reef growth or trophic function of these ecosystems. Anthropogenic impacts directly related to coastal zone development such as overexploitation, habitat destruction and water pollution have already been detected in the Abrolhos region. As a result of overfishing, the abundance and size of top predators and larger species has decreased, and the largest and most abundant herbivore, the parrotfish *Scarus coelestinus* (Fig. 1), has become the main target for spearfishers and other fishermen. This indication, plus the first observations of macroalgal blooms in some of the more disturbed coastal reefs has led to the initiation of research supported by the World Wildlife Fund to measure the effects of overfishing on the benthic communities of the Abrolhos. The abundance and size of predatory and herbivorous fish, and the benthic community structure are being monitored at two coastal reefs (Paredes and Timbebas) that experience overfishing, and at two offshore reefs within the National Park.

Preliminary results show that the abundance and size of most large predators and herbivorous fish are significantly higher inside the protected areas than elsewhere (Fig. 2). Despite the evidence of overfishing, it is not yet known to what extent reductions in herbivore numbers and inputs of nutrients in runoff contribute to macroalgal growth and abundance. Future research will focus on this issue in order to support management strategy for the Abrolhos reefs. The results will be incorporated into programmes of environmental education designed to increase awareness of the importance and need for protection of herbivorous fish both inside and outside protected areas. Such conservation measures will only be feasible if the protected areas export enough adults and recruits to re-colonize and support fishing in unprotected areas (Bohnsack 1993).

The preservation of biodiversity, and sustainable use of the unique coral reefs of the Abrolhos depend upon local-specific, conservation management techniques, supported by knowledge of ecosystem function and research results that influence regulatory agencies and attract further funding.

References

- Leão ZMAN (1996) The coral reefs of Bahia: morphology, distribution and the major environmental impacts. *An Acad Brasil Ci* 68(3): 439-452
- Bohnsack JA (1993) Marine reserves: they enhance fisheries, reduce conflicts, and protect resources. *Oceanus* 36(3): 63-71