

## New Atlas of World's Coral Reefs Sheds Light on Status of MPAs

A new atlas prepared by the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC) provides what it describes as the first detailed accounting of the state of coral reefs around the world. The glossy, 424-page *World Atlas of Coral Reefs* offers full-page maps depicting reefs and associated MPAs, and assesses the threats facing both.

The atlas divides its subject into three broad geographic realms: the Atlantic and Eastern Pacific; the wider Indian Ocean and Southeast Asia; and the Pacific. These are then subdivided into regional chapters, then smaller sections. Each section covers a range of issues, including the physical geography of each region or country and the structure and biodiversity of the reefs.

The book should be useful to practitioners of coral reef MPAs interested in comparing their sites to others around the world, in terms of biodiversity, threats, and protection efforts. "The atlas gives a flavor of the global network of protection for coral reefs, and of the gaps in this network," said lead author Mark Spalding, senior program officer for UNEP-WCMC's Marine and Coastal Programme. "There are some great stories arising from different management approaches around the world, and there may be opportunities to apply lessons learned in one country to those in another." (Spalding's co-authors were Corinna Ravillious and Edmund Green, both of UNEP-WCMC.)

### Challenge of mapping reefs

The first major global treatise prepared specifically on coral reefs, including a map of coral reef distribution, was produced by Charles Darwin in 1842. Aside from a somewhat more detailed map by the French scientist Joubin in 1912, most coral reef mapping has since occurred at the local level, although at ever higher resolutions and with greater technological capability.

The new atlas has incorporated remote sensing data -- including from satellite sensors and aerial photography -- with existing base maps and some ground-truthing to produce maps with scales as fine as 1:250,000. In other words, 1 millimeter on the map represents 0.25 kilometer on the ground. The maps are contained in a GIS database maintained at UNEP-WCMC. (A full electronic version of the atlas will not be available online, says Spalding. He is hopeful, however, that UNEP-WCMC will soon post on its website much of the atlas's underlying map and statistical data.)

"One real challenge was to make sure we captured the remote, isolated and little-known reefs and islands," said Spalding. "Amazing though it may seem in the modern world, there are still a few places that are really unknown. In quite a few places in the Pacific, the best [general] maps were actually drawn up by Captain Cook and others in the 19th century. There are probably still reefs out there that have never been mapped, or even seen." The authors relied on networks of scientists and managers to track down details on little-known reefs, including on their structure and biodiversity.

The book provides a new estimate of the total area of coral reefs worldwide: 284,300 sq. km, or about half the size of Madagascar. Of that, the book calculates the percentage of each country's reefs perceived to be "at risk" -- that is, experiencing a medium to high level of threat from fishing, pollution, or sedimentation. Some countries' reefs are listed as being 100% at risk, although the authors point out that these percentages are meant to measure potential threat rather than actual reef state. "In a number of countries, threatened reefs remain in good condition," write the authors.

### Coral reef MPAs

Of interest to MPA practitioners is the book's mapping of more than 660 MPAs that incorporate coral reefs. Taken from the UNEP-WCMC database of protected areas (see box at end of article), the MPAs are described by name and IUCN management category, providing an indication of the legal regime intended to protect the site ([MPA News 1:4](#)), although not always an indication of the site's effectiveness.

"Unfortunately, many protected areas exist on paper only -- they are poorly managed and have little or no support or enforcement," write the authors. "Equally worrying is that in almost every single case, protected areas are aimed solely at

controlling the direct impacts of humans on coral reefs. Fishing and tourist activities may be controlled, but the more remote sources of threats to reefs, notably pollution and sedimentation from adjacent land, continue unabated. Without a more concerted effort to control all of the impacts of humans on coral reefs, even the best managed marine protected areas may be managed in vain."

Akin to the challenge faced by producers of other visual inventories of MPAs, the atlas authors were unable to find exact boundary details for many MPAs. As a result, they write, it is not yet possible to calculate accurately the proportion of the world's coral reefs that are protected.

The atlas costs US \$45, and may be ordered directly from the publisher (University of California Press) at <http://www.ucpress.edu/books/pages/9635.html>. For a very limited time, there will be copies made available free of charge to organizations in developing nations -- namely conservation programs and libraries. If your organization is eligible, contact Mark Spalding (contact information below) by September 28, 2001.

**For more information**

Mark Spalding, UNEP-WCMC, 219 Huntingdon Road, Cambridge, CB3 0DL, UK. Tel: +44 1223 277314; E-mail: [mark.spalding@unep-wcmc.org](mailto:mark.spalding@unep-wcmc.org).

**Box: UNEP-WCMC protected areas database is partially online**

The UNEP-WCMC protected areas database has been in development since the early 1980s. An online prototype of the database, containing an incomplete register of the database's information, is at [http://www.unep-wcmc.org/protected\\_areas/data/nat2.htm](http://www.unep-wcmc.org/protected_areas/data/nat2.htm). Access to the complete database may be conducted through the publication United Nations List of National Parks and Protected Areas, or through direct inquiries to UNEP-WCMC.

**For more information**

Protected Areas Programme, UNEP-WCMC, 219 Huntingdon Road, Cambridge, CB3 0DL, UK. Tel: +44 1223 277722; E-mail: [info@unep-wcmc.org](mailto:info@unep-wcmc.org).

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