

Draft Plan Calls for One Third of Great Barrier Reef Marine Park To Be No-Take

Commercial and recreational fishing should be banned in nearly one third of the Great Barrier Reef Marine Park to protect the range of reef and non-reef species and communities, according to a draft zoning plan released by the Australian Government on June 2. The plan, now out for public comment, would designate 111,700 km² of the 350,000-km² marine park as off-limits to fishing, effectively creating the world's largest network of no-take marine reserves.

Presently, no-take zones — called “green zones” in the draft plan — account for just 16,000 km², or 4.6%, of the marine park. The marine park as a whole, including fished and no-take zones, is considered to be the largest marine protected area in the world.


“The Great Barrier Reef is suffering very considerable pressures at the moment from increasing usage by tourists, by fishers, and by the local communities,” said David Kemp, Australia’s environment minister, announcing the plan. “It is very important that we give the reef proper protection for the future.” He said the network of no-take zones, designed to protect representative samples of each of the park’s 70 bioregions, would help boost declining fish stocks by protecting crucial breeding grounds. Under the plan, at least one fifth of each bioregion would be covered by multiple green zones where human activity would be limited to research and non-extractive uses, including diving.

Public comments on the draft zoning plan must be received no later than August 4, 2003, by the Great Barrier Reef Marine Park Authority (GBRMPA). Following a review of the submissions, GBRMPA will submit a revised zoning plan to the environment minister, who will then introduce enabling legislation to the Australian Parliament. Parliament must approve the legislation for this re-zoning to occur.

Immediate reaction to the draft zoning plan was mixed among stakeholders, with commercial and recreational fishermen voicing negative reviews. (Because the draft plan was released as MPA News approached deadline, the newsletter did not have time to interview individuals for their responses to the proposal. MPA News will provide additional coverage in its July 2003 issue.)

Leaders of fishing organizations, including the Queensland Seafood Industry Association and Sunfish Queensland, told local Australian media the re-zoning would threaten commercial operators and close off several of the best recreational fishing sites. Some conservation organizations, saying they had hoped for larger areas to be set aside as no-take, voiced qualified support for the draft plan. They called for additional measures to be adopted by government to deal with other threats to the reef, like agricultural runoff and climate change.

GBRMPA officials believe they will be able to meet their enforcement responsibilities in the expanded system of no-take zones within budget. The park authority has been aggressive in pursuing and prosecuting illegal fishing incidents in recent years. A partial list of fines assessed this year to individuals caught fishing in the park’s green zones is available online at http://www.gbrmpa.gov.au/corp_site/info_services/media/recent_releases.html.

The maximum fine for using or entering a no-take zone of the Great Barrier Reef Marine Park for the purpose of fishing is AU\$220,000 (US\$147,000) for individuals and AU\$1.1 million (US\$733,000) for companies (MPA News 4:4). In 2002, the highest fine handed down for illegal fishing activity in the marine park was AU\$27,500 (US\$18,300). 

For more information

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Draft zoning plan is online

The draft zoning plan, based on years of public consultation with stakeholders and scientists through GBRMPA’s Representative Areas Program, is available online at <http://www.reefed.edu.au/rap/index.html>. The website features detailed maps showing the proposed no-take zones by region, explanations of the scientific basis for re-zoning, and a submission form for comments.

Table of Contents

Draft Plan Calls for One Third of Great Barrier Reef Marine Park To Be No-Take	1
“Naturalness” and MPAs: Scientists Discuss Protection for Last Undisturbed Ocean Sites	2
MPA Perspective: The Art of Communicating MPA Science	4
Notes & News	5
Conference Calendar ...	6

“Naturalness” and MPAs: Scientists Discuss Protection for Last Undisturbed Ocean Sites

When deciding where to site new marine protected areas, planners often consider the “naturalness” of a location — its relative lack of disturbance or degradation by humans. Reasons for using this criterion vary from economic to scientific, and from ecological to philosophical. In each case, the goal of these planners is to protect relatively pristine sites before significant human-induced change occurs.

But how much of the ocean still exists in a truly “natural” state? And how can resource managers protect pristine areas before human disturbance happens? This month, MPA News briefly examines the criterion of naturalness and the potential role of MPAs in protecting remaining undegraded sites.

Definitions for naturalness

“Extent to which the area has been protected from, or has not been subject to, human-induced change.”
Kelleher (1999).

Guidelines for Marine Protected Areas.

“The lack of disturbance or degradation.”
Salm, Clark, and Siirila (2000). *Marine and Coastal Protected Areas: A Guide for Planners and Managers, Third Edition.*

“No/negligible exploitation/activity in or close to the area having adverse effects on the marine biological values.”
Nordic Ministers Council (1995).

Exploitation of natural ecosystems

Naturalness carries benefits. Relatively undisturbed marine sites may hold more economic value for fisheries or tourism than severely degraded sites, and may contribute more biological productivity to surrounding ecosystems (although some exceptions exist). Researchers often seek naturalness for their control sites, with which they can compare more-disturbed systems. Conservationists, particularly in western cultures, may want to capture naturalness for ideological reasons, including the belief that parts of the ocean should be allowed to exist outside of direct human consumption.

For the above reasons, one can open most any text on the planning of MPAs and see naturalness listed as a criterion for consideration. Although experts’ definitions for naturalness in the marine environment differ somewhat from one another (see box, left), each is usually worded to account for some level of human disturbance. Naturalness is principally a relative concept: Site A is more natural (less degraded) than Site B, although neither site exists exactly as it might have if humans were not around. In light of the presence of human-produced, water-borne pollutants throughout the world’s oceans, the growing impact of human-induced climate change, and large-scale fishing and whaling in the past century, the argument can be made that no marine ecosystem remains absolutely untouched by mankind.

The deep sea is where perhaps the least disturbed ocean ecosystems still exist. Distance from shore affords protection from land-based impacts such as the runoff of sediment and pollution, and great depths have made it difficult and expensive for extractive industry to capture seabed resources, such as fish or minerals. Nonetheless, the deep sea’s inaccessibility to industry is continually challenged by human inventiveness.

Technological developments in the commercial fishing industry, for example, have allowed fishermen to locate and harvest catches in deeper and deeper waters. Trawlers in some fisheries operate at depths of 2 km. Notably, the decline of fisheries in shallower coastal waters has often spurred governments to promote deepwater fisheries as a way to sustain landings.

Once exploitation of a relatively pristine ecosystem begins, the impacts can be swift and significant. In the May 15, 2003, issue of the journal *Nature*, Ransom Myers of Dalhousie University (Canada) and Boris Worm of the University of Kiel (Germany) wrote that industrialized fisheries typically reduce the community biomass of exploited ecosystems by 80% within 15 years of beginning exploitation. Their analysis was based on communities of large predatory fishes in four continental shelf and nine oceanic — deepwater — systems. (Their peer-reviewed paper is available online in PDF format at http://fish.dal.ca/~myers/papers/Papers-recent/nature01610_r.pdf.)

“Management schemes are usually implemented well after industrialized fishing has begun, and only serve to stabilize fish biomass at low levels,” wrote Myers and Worm. “[O]n seamounts and on continental slopes, where virgin communities are fished, similar dynamics of extremely high catch rates are observed, which decline rapidly in the first 3-5 years of exploitation. We suggest that this pattern is not unique to these communities, but simply a universal feature of the early exploitation of ecosystems.”

In an interview with MPA News, Worm said it was necessary for managers to be more proactive in protecting natural areas. “It is paramount to avoid making the same mistakes in the deep sea — or on continental slopes, seamounts, or any other previously unfished spots — that we have made elsewhere,” he said. “On land, we are very proactive in protecting the last wildernesses from human impacts. We need to apply the same thinking to the ocean to safeguard what little is left.”

In Victoria, British Columbia (Canada), at a meeting last month of the Science and Management of Protected Areas Association, Daniel Pauly of the University of British Columbia said that for fisheries to be sustainable, managers needed to return to a concept that had previously protected fish stocks from human inventiveness. He called the concept “natural protected areas”: areas that humans could not, or did not, know how to fish yet. “Fisheries used to be seen as sustainable because there were limits to our ability — technologically or knowledge-wise — to get at the fish,” he said. “No-take areas are simply a return to that concept of

limitation.” Without no-take areas, he said, human inventiveness in fisheries could not be managed effectively over the long term.

Pauly, who has published widely on the global state of fisheries, is skeptical that resource managers will achieve the proactiveness necessary to protect most of the still-existing natural protected areas before exploitation occurs. Although seafloor ecosystems deeper than 3000 meters may remain safe, he said, many pelagic fishes over the deepest sea are overfished, as are most shelves. “Hence, most governments can now only re-establish ‘protected areas,’” he said. He estimated that unique ecosystems off the British Columbia coast — including deepwater sponge reefs — would be destroyed by fishing activity “within a decade or so” if protective measures were not taken soon.

Finding the natural areas

Glen Jamieson, a scientist with Canada’s Department of Fisheries and Oceans (DFO), has studied those sponge reefs and is working to preserve them. The reefs that have been located so far, at a depth of 200 meters, are already protected by trawl closures, instituted last year (MPA News 4:3), and DFO is considering them as candidates for broader protection measures under the nation’s Oceans Act. Discovered just over 10 years ago, they are the only known examples of living Hexactinellid sponge reefs in the world.

Jamieson says there is much that remains unknown about these sponge reefs and other unique assemblages of living resources in Canada’s Pacific waters, including deepwater corals. “All the probable areas where the sponge reefs may occur have yet to be fully surveyed and mapped,” he said. “As for corals, we have not yet determined all the large coral species likely present in these waters. There are older anecdotal reports from fishers of corals as bycatch, but areas where corals occur, or may occur, again have not been surveyed scientifically.”

In light of the delicateness of these structures, their age, and the likelihood that they could be degraded by certain fishing gears if not protected, Jamieson said he would like to see DFO more actively seek out these sites and protect them before significant extraction occurs there. First, he said, DFO needs to identify areas where corals or sponges occur in quantity, based on logbook bycatch records or research-survey sampling. “Then we could identify the particular oceanographic and substrate features associated with these areas to determine the optimal habitat conditions for these species,” he said. Based on this knowledge, researchers could identify high-priority areas for surveys. To date, he said, such research has not received the priority and funding necessary to perform it.


“There is some urgency to this issue,” said Jamieson. “Corals and sponges may ultimately recover on

damaged habitat, but this may take centuries. In the meantime, ecosystem function may be lost.”

On the Atlantic coast of Canada, Derek Fenton of DFO has looked at naturalness as one consideration in protection strategies. Last year, as part of an initiative to inventory and map various marine activities in support of integrated management efforts, Fenton examined spatial trends in fishing offshore of Nova Scotia. Applying aggregated logbook data from the past decade to a grid, he mapped the presence or absence of all types of fishing and the level of activity. Although finding non-fished areas was not an explicit intent of the exercise, he took notice of such sites, which appeared as white spaces on his maps.

“Most of the offshore is fished to some extent by either groundfish, invertebrate, or pelagic fisheries,” he said. “However, many deepwater areas and several areas on the eastern portion of the Scotian Shelf had a number of large white spaces.” In fact, several areas of up to 1000 km² showed little or no fishing activity of any type. Although the low activity in most of the areas can be explained by the presence of fishery closures or physical inaccessibility to some forms of bottomfishing (i.e., deep holes and complex topography), the low rates of activity in other areas needs further investigation, he said. Some of the sites may simply not be traditional fishing grounds, or have a low abundance of target species. Overlaying these maps with ones showing other resource uses, he found that some of the non-fished areas also displayed little presence of other human uses, such as petroleum production, which is increasing in many areas of the Scotian Shelf.

Such areas where little or no human activity is occurring could provide resource managers an opportunity to protect these parts of the ocean without inflaming public opinion or opposition. This is the “low-hanging fruit” concept of resource conservation: start by protecting the easiest sites first. (Fenton stressed that the mapping conducted on fishing activity was very preliminary and not indicative of any plans by DFO to seek MPAs in the low-activity areas he found.)

Fenton recognizes that just because there is no activity at a site does not mean that it warrants designation as a protected area: there may be nothing there “worth protecting” in some people’s view. Furthermore, any candidate site would still need to meet the purposes for protection outlined in appropriate legislation, he said. Nonetheless, these relatively natural sites may hold interest to the scientific community as reference areas. In the future, Fenton would like to refine the identification of these low-activity areas and explore their role in conservation planning. 

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Editor's note:

Claire Braund, author of this perspective piece, is a director of The Regional Institute, a non-profit organization in New South Wales (Australia) that works to improve public access to research and educational information.

Two years ago, when the New South Wales Government set up public consultation processes to plan a new marine park in state waters and zone three existing ones, it hired Braund to coordinate public awareness and media campaigns in support of those processes. Her piece describes strategies she employed to communicate scientific knowledge on MPAs to the public. Updates on the marine parks mentioned in this piece are available online at <http://www.mpa.nsw.gov.au>.

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MPA Perspective: The Art of Communicating MPA Science

By Claire Braund, The Regional Institute, New South Wales, Australia

The role of marine protected areas as a resource management tool is gaining acceptance with governments in Australia. But the concept of MPAs has met resistance from some community stakeholders. Experience in New South Wales (NSW) suggests there is a gap in understanding between the scientific community and the general public about the status of marine resources, particularly if protection of these resources requires sacrifices by stakeholders. Such a gap can make it difficult for scientists and government to engage stakeholders in informed discussions about the importance and long-term benefits of marine protection.

In 2001 and 2002, the NSW Government released draft proposals for a new marine park of 230 km² at Cape Byron; zoning plans for the 480-km² Lord Howe Island Marine Park and the 220-km² Jervis Bay Marine Park; and re-zoning of the 710-km² Solitary Islands Marine Park. Each would involve some restrictions on human activity, including fishing.


With the exception of Lord Howe Island, the proposals attracted considerable media and public attention. However, little groundwork had been done by the government to introduce stakeholders to the concept or benefits of a marine park in their area. Consequently, there was a high level of misinformation about the proposals in the affected communities. Public perception was heavily influenced by articles and letters to the editor in the local media, often opposed to the park proposals. Recreational fishing groups campaigned strongly to prevent an increase in no-take zones, particularly in key fishing grounds. Tourism and business groups fought to retain the status quo, fearful of the impact of change on the local economy.

In general, only cursory community attention was being paid to factual information, such as on the status of marine resources. Adding to this problem was the fact that scientific research can take time to understand and explain, and is often not "black and white". This presented a challenge for scientists active in the planning efforts: scientists often find it easier to communicate findings with their peers rather than working to inform the understanding and opinions of the public.

Prior to the release of the proposals, the government contracted with me to prepare plans to communicate the scientific basis for protection. These plans identified the key stakeholder groups and analyzed issues affecting them. From this, a series of communication tools were developed and the following strategies were prepared:

- Emphasis was placed on being proactive, rather than reactive, in communicating with the media. Establishing myself as the first point of contact for all media inquiries limited the spread of rumors and conspiracy theories. Once requests for interviews had been made, I prepared crib sheets for the spokespeople (usually park managers) and set up interviews. In addition, there was a coordinated government effort to respond to media stories via letters to the editor, articles in fishing magazines, and other publications. Interviews with community opinion leaders were organized to ensure third-party endorsements for the proposals.
- Research papers on MPAs in Australia and around the world were collated and circulated to the media and community to assist in increasing public understanding of the marine environment and why it should be protected.
- To support the written research information, a weekly, 20-part, state-wide radio series was coordinated with the Australian Broadcasting Commission (ABC), featuring marine scientists, fish biologists, and others talking about marine habitats and fish life. Listeners were able to gain a general understanding of marine issues, as well as how the listeners themselves impacted and were affected by the marine environment.
- As a follow-up to the radio series, transcripts of the interviews are now being prepared for publication on the internet. In this way, the lessons and experiences will be disseminated freely to the community and to those who are addressing these issues in the future.

These strategies helped focus community discussions on the scientific arguments in favor of resource protection, while defusing the problems of misinformation and misunderstanding. From those discussions, the government was able to incorporate reasonable public concerns in its planning. In the case of one marine park, for example, the government revised the proposed zoning and placed the draft plans out for public comment a second time.

Scientists have a key role to play in engaging the community to develop an understanding about the marine environment. Effectively informing stakeholders requires a sustained education campaign and new and innovative approaches. The scientific community needs to be proactive in using all media to ensure the general public has access to credible and factual information if the marine environment is to be valued and willingly protected. 

Notes & News

Volunteer ranger killed in Philippines

Sixto Atienza, 44-year-old director of a team of volunteer rangers who enforced fisheries regulations and MPAs in Balayan Bay, Philippines, was shot and killed by an unknown assailant on May 3. In his two years as leader of the Calatagan Bantay Dagat (a group of fishermen who patrol the bay and wield enforcement powers), Atienza had overseen the arrest of more than 120 illegal fishers and the confiscation of 26 boats. There is speculation that his murder, carried out in public immediately after he had given a speech at a festival, was intended as retribution for his team's enforcement activities. A newspaper profile of Atienza, with details on his death, is available online at http://www.inq7.net/mag/2003/may/25/text/mag_4-1-p.htm. A second article is at http://www.abs-cbnnews.com/abs_news_body.asp?section=Provincial&OID=24836.

For information on how to send condolences or donations to Atienza's family or the Bantay Dagat, e-mail Charisse Katigbak of the Environmental Fund for Legal Assistance, WWF-Philippines, at ckatigbak@wwf.org.ph. MPA News reported last month that IUCN and the International Ranger Federation have co-launched an initiative to address physical threats and violence faced by rangers in protected areas, including through government provision of better training and equipment (MPA News 4:10).

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Papers available from Caribbean MPA symposium

Papers presented at the November 2001 symposium *Caribbean Marine Protected Areas: Practical Approaches to Achieve Economic and Conservation Goals* have been compiled in the March 2003 issue of *Gulf and Caribbean Research* journal. For a list of the 17 papers included in the peer-reviewed publication, as well as information on ordering, go to http://www.gcfi.org/CARIBBEAN_MPA_PUBLICATION_NOW_AVAILABLE.htm. The symposium occurred in conjunction with the 54th annual conference of the Gulf and Caribbean Fisheries Institute (GCFI), held in the Turks and Caicos Islands.

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Proceedings available from World Heritage Marine Biodiversity workshop

In early 2002, 62 scientists from around the world gathered in Hanoi, Viet Nam, to develop a global list of coastal, marine, and small island ecosystems for potential nomination as World Heritage sites under UNESCO. Convened by the UNESCO World Heritage Centre in collaboration with IUCN and the US National Oceanic and Atmospheric Administration, the workshop identified a representative set of priority areas important for their biodiversity value, with

emphasis placed on interconnectedness within the areas. Proceedings from the meeting, including the list of suggested sites, are available online in PDF format at http://whc.unesco.org/series/papers_04.pdf.

Currently, of the 730 cultural and natural sites included on UNESCO's World Heritage List, fewer than 10 sites are recognized entirely for their marine biodiversity value. The main goal of the Hanoi workshop was to remedy such under-representation, particularly in tropical countries.

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New national park reserve in Canada includes marine component

On May 9, the federal government of Canada and provincial government of British Columbia signed an agreement to establish Canada's 40th national park, an area encompassing 26 km² in the Gulf Islands between the cities of Vancouver and Victoria, British Columbia. Spread out over 15 islands and numerous smaller islets, the Gulf Islands National Park Reserve extends to 25 meters seaward of high tide. The agreement will also enable Parks Canada, the national parks agency, to obtain interim management authority over certain non-fishing marine activities out an additional 175 meters from the park reserve boundary, following the completion of consultations now underway.

The Gulf Islands National Park Reserve is the first new national park established under the Canadian government's action plan to create 10 new national parks and five national marine conservation areas (NMCAs) in the next five years (MPA News 4:4). One of the proposed NMCAs under the action plan is in the southern Strait of Georgia that surrounds the Gulf Islands, where a feasibility study to determine whether an NMCA should be established will be the next step. For more information: Doug Yurick, Chief, Marine Program Coordination, Parks Canada, 25 Eddy Street, 4th Floor, Gatineau, Quebec K1A 0M5, Canada. Tel: +1 819 997 4910; E-mail: doug.yurick@pc.gc.ca.

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Report rates fishing-gear types by damage caused to environment

A new report ranks the environmental harm caused by 10 widely used fishing-gear types in the US, based on a survey of marine professionals, including fishermen. Focusing on the collateral impacts (i.e., habitat damage and bycatch) of the gears, the survey participants rated bottom trawls, dredges, bottom gillnets, and midwater gillnets as being the most ecologically severe.

To first determine the impacts of each gear type, researchers Lance Morgan of the Marine Conservation

continued on next page

Clarification: The article on private-sector ownership of MPAs in last month's issue (MPA News 4:10) reported that the National Trust, an NGO in the UK, had raised more than £36 million (US\$58 million) to purchase UK coastal lands. In fact, the Trust's Neptune Coastline Campaign has raised more than £45 million (US\$74 million).

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Biology Institute (an NGO) and Ratana Chuenpagdee of the Virginia Institute of Marine Science convened an expert panel of scientists, regulators, and fishermen. The panel's findings were summarized in a survey that was distributed to a second group of fishery experts, who were asked to consider the suite of collateral impacts of various gears in paired comparisons, choosing which set of impacts they considered to be more severe.

Morgan and Chuenpagdee recommend that fisheries managers and fishermen pursue a range of strategies to

decrease gear impacts, including the expanded adoption of area-based restrictions on certain gear types. Funded by the Pew Charitable Trusts, a US-based foundation, the 42-page report *Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in US Waters* is available online in PDF format at http://www.mcabi.org/ShiftingGears/SG_download.htm. For more information: Lance Morgan, Marine Conservation Biology Institute, 15805 NE 47th Court, Redmond, WA 98052, USA. Tel: +1 425 883 8914; E-mail: lance@mcabi.org.

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Conference Calendar

June 30 - July 6, 2003 — **32nd Annual Conference of the Australian Society for Fish Biology**. Wellington, New Zealand. Conference theme is "Invasive Species". Web: www.asfb.org.au/

July 13-17, 2003 — **Coastal Zone 2003: Coastal Zone Management through Time**. Baltimore, Maryland, USA. Biennial symposium is the largest international gathering of ocean and coastal management professionals. Web: www.csc.noaa.gov/cz2003/

July 14-18, 2003 — **31st Scientific Meeting of the Association of Marine Laboratories of the Caribbean**. Port of Spain, Trinidad. Themes of the meeting will include "Biodiversity, MPAs, and Conservation"; "Pollution and Anthropogenic Issues"; and "Fisheries and Aquaculture". Web: amlc.uvi.edu/meeting2003.htm

July 16-18, 2003 — **International Conference on the Impact of Global Environmental Problems on Continental and Coastal Marine Waters**. Geneva, Switzerland. Including discussions of the impact of global climate change and invasive species on aquatic ecosystems. Web: www.unige.ch/sciences/ncar/

August 10-14, 2003 — **American Fisheries Society 2003 Annual Conference**. Quebec City, Quebec, Canada. 133rd annual meeting of AFS will include symposium on using aquatic protected areas as fisheries management tools. Web: www.fisheries.org/apa_symposium/homepage.htm

August 20-23, 2003 — **27th Annual Larval Fish Conference**. Santa Cruz, California, USA. Examining dispersal, settlement, recruitment, and other larval processes. Web: www.lfc2003.com/

September 4-6, 2003 — **People and the Seas II - Conflicts, Threats and Opportunities**. Amsterdam, Netherlands. Highlighting problems of resource erosion and livelihood insecurity in maritime areas globally and the emerging attempts to mitigate these problems. Web: www.marecentre.nl/people_and_the_sea_2/index.html

September 8-17, 2003 — **Fifth World Parks Congress: Benefits Beyond Boundaries**. Durban, South Africa. This congress occurs once each decade; sponsored by IUCN (World Conservation Union). Web: iucn.org/themes/wcpa/wcpa2003/index.htm

September 9-12, 2003 — **Second International Symposium on Deep Sea Corals**. Erlangen, Germany. Examining the ecology and protection of deepwater coral ecosystems. Web (in PDF format): www.geol.uni-erlangen.de/pall/pdf/isdsc.pdf

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