Arranging Deckchairs on the Titanic: Environmental Positions, Posturing and Politics

presented by

David N. Griffiths

to the 2nd International Maritime Conference,
Maritime Threats and Opportunities in the 21st Century: Sustainable Economic Exploitation of Ocean Resources: Technological & Educational Needs and Solutions

National Center of Maritime Policy Research, Bahria University
Karachi, Pakistan
March 2008

Abstract

Too often, politics of denial result not only in irreversible damage to the marine environment, but also to the exacerbation of social and political problems that might otherwise have been addressed. The human species is part of the increasingly stressed marine ecosystem, not an outside manipulator. A non-political, ecosytem-based approach to marine management is imperative if the ocean, our planet's life support system, is to continue functioning. That will not be achieved overnight but there are practical and constructive steps that can be taken now to start the process. Marine Peace Parks are one of many options.

The Politics of Denial: Three Case Studies

Titanic

Just before midnight on April 14th, 1912, a magnificent passenger liner representing the very best of contemporary marine technology, praised by the media as being "unsinkable", struck an iceberg southeast of the Grand Banks of Newfoundland. The danger of ice in the area had been well known, but the owners were anxious to meet the advertised arrival time for this commercially significant maiden voyage. Besides, many of the wealthy, influential first class passengers had important appointments to keep at their New York destination.

The initial impact was barely perceptible and many first class passengers in their high, comfortable staterooms were hardly aware that it had occurred. Below decks, however, poor emigrants crowded into steerage soon understood that the ship had been fatally damaged as the water began to rise around them. In the early stage of this looming disaster, many of the affluent passengers and the crew who served them continued with their routines as if nothing was out of the ordinary. As the truth became clear, however, so did the recognition that there were insufficient lifeboats for the number of passengers on board – after all, the owners had reasoned, why incur expenses on unnecessary safety equipment for an "unsinkable" ship? On a clear, calm, starry night, within less than three hours of grazing the iceberg, the luxury liner *Titanic* had taken its final plunge to the bottom of the Atlantic Ocean, along with two-thirds of the 2,200 souls on board.

The Grand Banks Fishery

Fifty years later and not far away, the cod fishery on the Grand Banks was about to suffer its own unimaginable catastrophe. Europeans had been exploiting this seemingly inexhaustible

supply of fish for centuries – well before Columbus "discovered" the Americas. Throughout the previous hundred years, a combination of small-scale inshore fishers and seasonal foreign fleets had landed a steady average of about 20,000 tons annually. But all that changed in the late 1950s when industrial-scale bottom trawling by foreign fleets began exploiting the deeper stock. Over the next twenty years the average annual landings increased, quadrupling by the mid-1970s. Although it was obvious that this exponential increase was unsustainable, little was done. After all, entire Canadian communities depended on cod for their existence and Europe, having exhausted much of its own fish stocks, needed to sustain the livelihood of its own fishing folk. No elected politician was inclined to talk about restrictions that would put people out of work.[1]

By the mid-1970s, however, a drastic decline in landings reflected a corresponding decline in the biomass that finally forced a grudging acceptance of national and international quotas. But these were determined as much on the basis of political acceptability as on impartial scientific advice. Sustaining the human communities was considered more important than sustaining the resource upon which they depend. As the warning signs grew, Canada finally declared a 200 nautical mile Exclusive Fishing Zone in 1977, restricting foreign fishing to the two areas where the Grand Banks extend beyond 200 miles, known as the "Nose" and "Tail". Still, stock continued to decline as the politics of denial on both sides of the Atlantic prevented firm and decisive action that would also have had severe economic impact on fishing communities. At first the Exclusive Fishing Zone policy resulted in a slight recovery in landings, but that was soon followed by a catastrophic plunge in the early 1990s.

Canada declared a total moratorium on cod fishing in June 1992, nine years after scientific recommendations to do so had first been made, but foreign catching of groundfish such as turbot still continued on the Nose and Tail. European politicians argued that this was essential for the economic survival of their fishing communities, while Canadian politicians had to appease angry constituents, furious at being unemployed while foreigners continued to catch "their" fish. In 1994 Canadian politicians faced the choice between defying international law or accepting the inevitable destruction of the entire Grand Bank fishery. For political reasons that choice was simple, since robust action would at least satisfy Canadian voters that something was being done. In March 1994, an armed confrontation between Canada and Spain beyond the 200 mile limit culminated in the arrest of the Spanish fishing vessel *Estai*, but not before she had cut her net, tried to run for home and had to be stopped by shots across her bow. When Canadian authorities recovered the net, it was found to contain an illegal small mesh liner designed to trap fish well below the legal size. The Canadian Minister of Fisheries took it to New York and triumphantly displayed it as evidence of European cheating and the justification for Canada's unilateral action. But in the end, the political posturing made no difference. The fishery had taken its final plunge and in 2003 was closed indefinitely. Two decades of the politics of denial had reduced a once apparently inexhaustible resource to a biodiversity wasteland, and in the process created greater economic devastation than anyone had ever expected. Approximately 40,000 Atlantic Canadians lost their primary source of income.[2]

Five years after the indefinite closure of the fishery there is still no sign of recovery and it now appears that the damage may be irreversible. As science continues to grope toward a better understanding of the complexities of ocean ecology, it has discovered a phenomenon called fisheries-induced evolution – in other words, that excessive exploitation of fish stocks induces changes in genetic composition, and at a rate much quicker than anyone had believed previously. Unlike humans, fish grow continuously until they die, and the volume of egg production is a function of size. Smaller size means fewer eggs. It therefore appears that we have forced some species to evolve into smaller and less productive forms in order to survive. Consequently, over-fished stocks may never recover. Fisheries-induced evolution "will be difficult and slow to reverse through managerial interventions. These findings highlight serious economic and ecological implications for sustainable yield, stock stability, and recovery potential."[3]

Managerial intervention continues to be constrained by the limits of scientific understanding as well as by continuing political factors. Even well-meaning initiatives may have unintended consequences. Some years ago, the annual seal hunt off the Canadian east coast became a popular cause among animal rights activists and celebrities who often understood more about publicity than science. Who could fail to be moved by the clubbing of these attractive, cuddly-looking creatures? Successful campaigns were mounted against seal fur in Europe and North America without concern for the livelihood of the hunters and their families or the fact that, over generations, they had themselves become part of a balanced ecosystem. Seals eat cod and so, just as the cod stock was collapsing, human intervention may have contributed to tipping the precarious balance even further.[4]

No matter what political positions are maintained, advocacy campaigns conducted or arguments rage among stakeholders, the fish do not care. They are evolving to survive, unaware and unconcerned about the devastating economic impact that their problems are having on the humans on the land above them.

Intergovernmental Panel on Climate Change (IPCC)

In 2007, an Intergovernmental Panel on Climate Change (IPCC) issued a Summary for Policymakers of its Synthesis Report which, in turn, summarized three detailed volumes that constituted the Fourth Assessment Report on Climate Change. The role of the IPCC is "to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. ... The Panel does not conduct new research, monitor climate-related data or recommend policies".[5] Nonetheless, it is a highly politicized process and the final scientific outputs are reviewed on a line-by-line basis by political authorities before they can be published. This has led to a fierce debate. Some who doubt the human impact on climate change accuse the IPCC of conducting "politics posing as science", while others who are concerned about the potential hazards accuse political reviewers of watering down the objective scientific evidence.[6] And while these debates continue, weather becomes increasingly extreme and unpredictable, species continue to disappear or evolve into less productive forms, and the risk of disastrous outcome continues to be a very real possibility.

The Lessons

The lessons of *Titanic*, the Grand Banks fishery and the IPCC could equally well be drawn from any number of other examples worldwide. The hubris of humanity is such that we continue to see nature as an inanimate resource to be exploited for human benefit, rather than as a highly complex ecological system of which we humans are an integral part. We believe that we have the knowledge necessary to manipulate the environment to our advantage. We believe that we can afford to dismiss scientific evidence that challenges the economic ambitions of our burgeoning population. We are wrong.

Imagine a spaceship in which the passengers and crew are knowingly destroying the life support system. Imagine First Class passengers recognizing that they have been abusing the system but now refuse to stop because that would prejudice their comfortable lifestyle. Imagine poorer passengers arguing that they have a right to abuse it because First Class passengers got rich by doing so in the past. Imagine, in addition, rogue elements vandalizing or stealing bits and pieces of the system for personal use while the remainder of the passengers and crew refuse to cooperate in establishing some form of collective compliance and enforcement regime. We would think they were all mad, and yet that is precisely what is happening to the ocean – the life support system of Spaceship Earth. In the 15th Century CE, a German satirist called

Sebastian Brant published an allegorical book called "Ship of Fools". Five centuries later, that title might well be applied to our environmental management approach toward the planet.

An Ecosystem Approach

A useful starting point for thinking about marine and coastal zone management is to acknowledge that we humans do not need to manage Nature at all – in fact it can manage perfectly well without us.[7] What we do need to manage, however, is our own activity as it relates to the marine and coastal environments. To do that, we need to recognize that individual species of fish, animals and plants cannot be understood in isolation. Together we are all part of a complex, interdependent web of life, so a systems approach is fundamental to understanding, let alone addressing, complex situations.

An ecological system, or ecosystem, is a biological community consisting of all the organisms in a defined area, interacting with each other and their environment - humans included. The boundaries of an ecosystem can be defined in many ways, for example by primary biological characteristic (e.g., mangrove or coral reef) or by geographical boundaries (e.g., estuaries, enclosed seas or coral reefs). Indeed, for some purposes, the entire planet can be treated as "one giant ecosystem."[8] There are now 64 internationally recognized Large Marine Ecosystems (LMEs) established in the oceans of the world. These are "regions of ocean space encompassing coastal areas from river basins and estuaries to the seaward boundaries of continental shelves and the outer margins of the major current systems." They all have areas of 200,000 km^2 or greater, and are defined in terms of their distinct bathymetry, hydrography, productivity or "trophically dependent populations". Collectively they contain 95% of the world's annual marine fishery biomass yields.[9] This is an excellent starting point.

For reasons previously mentioned, we should not imagine that we can "manage" these ecosystems. As one study has pointed out, "the term ecosystem-based management is preferable to ecosystem management because it reflects the notion that the principle [sic] activity is the management of human interactions with the ecosystem rather than the ecosystem itself."[10] What, then, does this mean for maritime policymakers in Pakistan?

The Indian Ocean LME

Pakistan's Exclusive Economic Zone, Territorial Sea and coastal zone are all within an internationally recognized "Arabian Sea Large Marine Ecosystem" (LME #32). Many of it's subsystems in Pakistan's waters and coastline are ecologically fragile.[11] Nonetheless, the threats that face them are beyond either the authority or ability of Pakistan alone to address because they are trans-boundary and trans-national in nature. For example, "two thirds of world oil tanker traffic pass through the Arabian Sea and chronic sources of pollution include: tanker traffic, de-ballasting, bilge cleaning and accidental oil spills."[12] This is not a problem that Pakistan can solve unilaterally. It requires close cooperation between neighbours. Similarly, fisheries management requires multinational cooperation if Canada's experience with the Grand Banks is not to be repeated. Fish capture trends in the Arabian Sea LME are increasing and it "is one of only 6 LMEs identified in which trends are not decreasing,"[13] This should be a danger sign, and not necessarily something to celebrate, especially as the same report notes that coastal resources are being over-exploited. Meanwhile, the Food and Agriculture Organization (FAO) is warning that excessively small mesh size nets are endangering the important shrimp fishery.[14] The parallels to Canada's experience should be all too clear to Pakistan's policy makers. The good news is that it is not too late to act because, in this particular ecosystem, "a precautionary approach to management might lead to sustainability."[15]

The Arabian Sea LME is sub-divided into three distinct subsystems, each with its own unique characteristics of physical characteristics, water flow, chemical properties, dominant species

and biodiversity. One of these three is the Eastern Arabian Sea subsystem, and it is bounded by only two countries – Pakistan and India.[16] Their ocean areas and coastal zones form a single complex ecosystem. No matter what the state of political relationships between the humans living ashore, the living organisms in the water do not care.

There are a number of multilateral arrangements dealing with the marine environment in the Indian Ocean but, too often, political considerations supersede ecosystem-based thinking. The South Asian Seas Programme (SASP) of the South Asia Cooperative Environment Programme (SACEP), for example, adopted an Action Plan for the Protection and Management of the Marine and Coastal Environment of the South Asian Seas Region in 1995. Among other things, this committed the signatories, including Pakistan and India, to the "development and implementation of national and regional oil-spill contingency planning".[17] Consequently, the dramatic spill from the tanker *Tasman Spirit* off Karachi harbour in 2003 should have automatically triggered a prompt non-political response from India and an equally prompt acceptance by Pakistan. Unfortunately, that did not happen. Another regional body is the Indian Ocean Marine Cooperation Organization (IOMAC) which was established in 1990 to promote cooperation among the surrounding states, but that has not yet produced robust and actionable emergency protocols.[18] While such organizations are certainly valuable and deserve all the effort necessary to achieve their full potential, they do not replace the need for bilateral arrangements between India and Pakistan regarding the health of their shared Eastern Arabian Sea ecosystem.

Protected Areas

Establishing marine protected areas is increasingly recognized as an essential strategy for regenerating marine stocks. "No-take zones" do exist, but as of 2003 they constituted only 0.01 percent of the world's ocean.[19] While most people imagine that marine protected areas will always remain a small percentage of the total ocean space, some believe just the opposite. In the words of conservationist Callum Roberts, "I believe that we need to flip this paradigm on its head. Rather than thinking that marine reserve protection should be afforded to only a few special or out-of-the-way places, we need to view reserves as the foundation and underpinning for all other management. According to this view, reserves would cover some 30 percent of the sea, perhaps more in some places".[20]

Trans-Boundary Protected Areas

If we are going to use ecosystems instead of artificial human-drawn political boundaries as the basis for environmental management, then some protected areas are going to straddle national jurisdictions. Indeed, there are already "188 transboundary protected areas worldwide and these are such a growing phenomenon that a separate task force has been set up under the World Commission on Protected Areas to study them."[21] In the case of marine protected areas, the issue of boundaries can be more complicated than on land because "While boundaries in terrestrial ecosystems are relatively easy to define, this is less so in the case of the marine environment. Marine ecosystems are totally interconnected and their functioning depends on complex ecological processes regulated by coastal and ocean currents, hydrological regimes, and inputs from land-based activities. Vertical differences are as important as horizontal ones. There is a need to understand these highly dynamic ecosystems in order to achieve effective co-operation in setting up and running Marine Protected Areas."[22] In the case of Pakistan and India, this issue is complicated by the ongoing disagreement over Sir Creek and the seaward maritime boundary. Nonetheless, as with any challenge, where there is a will there is always a way. One possible model to consider is that of a "marine peace park".

Peace Parks

The world's first peace park was established in 1932 as a combination of two independent adjoining national parks on either side of the border between Canada and the United States. This Waterton-Glacier International Peace Park was to inspire a worldwide movement combining conservation and political confidence building. Of course, "unlike may peace parks or transboundary protected areas that have been established since 1932, Waterton-Glacer was formally created as a symbol of peace and goodwill between the two nations rather than as a mechanism for conflict resolution".[23] Nonetheless, the changed security climate since September 11, 2001, and subsequent US border security initiatives, have brought security issues to the forefront of management considerations in this previously benign environment. One of the key lessons that this illustrates is that "the resilience of a peace park regime – even one shared among peaceful countries – may be largely dependent on its ability to collaboratively engage stakeholders who have interests that may run counter to or compete with those of the peace park."[24]

The first international peace park that evolved from resolution of an armed conflict was the El Condor-Kutuku Conservation Corridor between Ecuador and Peru. Established as part of the 1995 peace treaty, it was "the first formal effort in which conservation groups were actively involved in international conflict resolution and the resultant peace treaty included explicit mention of conservation measures as part of the overall resolution of the conflict."[25] There has been one example in the maritime domain so far. The 1994 peace treaty between Israel and Jordan contained environmental provisions (Annex IV) that addressed, among other things, management and protection of the marine environment.[26] Following from the treaty, the two countries subsequently created a binational Red Sea Marine Peace Park (RSMPP) in the Gulf of Aqaba to protect and manage the fragile and ecologically significant coral reserves of both Aqaba (Jordan) and Eilat (Israel). This Peace Park "includes the Coral Reef Reserve in Eilat, a managed MACPA [Marine and Coastal Protected Area] extending along approximately 2 km of Israeli coastline, and the Aqaba Marine Park, a managed MACPA extending along approximately 7 km of Jordanian coastline. The establishment of the RSMPP called on the parties to partner in research efforts on coral reefs and marine biology, and implement comparable policies and regulations designed to protect the coral reefs (i.e., soundly managed from an ecological point of view) as a tourist attraction."[27] This was an imaginative paradigm shift in both the Israel-Jordan relationship and in marine management generally. It also sparked discussion about other places that might consider similar arrangements. These included mention of Pakistan and India as one of several potential "candidate sites for cooperative trans-boundary marine protected area research, monitoring and management programs" around the Indus River delta.[28]

Policy Implications of an Indus Delta Marine Peace Park?

A proposal for a marine peace park along the Pakistan-India maritime boundary was published in 1999 although it did not capture the attention of policy makers. Nonetheless, the idea has been discussed periodically since in various fora.[29] The idea is not as politically sensitive or difficult as it might first appear since there are already many examples of trans-boundary arrangements that simply consist of two independently created parks that adjoin each other on either side of a border. In fact, there are already two precedents within Pakistan itself: the Khunjerab National Park which is contiguous with China's Taxkorgan (Ta Shi Ku Er Gan) Nature Reserve; and the Rann of Kutch Wildlife Sanctuary which is adjacent to India's Kachchh Desert Sanctuary.[30] There has also been a proposal for a peace park in Siachen, an "ideal terrain for the instrumental use of environmental factors in peace-building."[31]

The Israel-Jordan Red Sea Marine Peace Park in the Gulf of Aqaba should suggest a powerful model for Pakistan and India. Treating the mouth of the Indus and the ocean area beyond it as

a single ecosystem would be responsible marine management and perhaps create a marine protected area that could contribute to the health of fish stocks and other marine resources. In addition, but not essential to making the concept a reality, it could also serve as a powerful catalyst for establishing habits of cooperation and information-sharing that could have value far beyond the immediate issues of the Marine Peace Park itself.

An Indus Delta Marine Peace Park need not involve any overt political policy shift to get started. All that is required is for Sindh and Gujarat to create marine parks in their own jurisdictions. The fact that these two would adjoin each other would provide sufficient ammunition to begin scientific and technical cooperation through existing channels. Establishment and announcement of a formal bilateral arrangement could be left to political expediency, but at least in the interim the challenges of the area would be managed effectively, to the mutual benefit of both parties.

Conclusion

There is no excuse for engaging in the politics of denial when it comes to the health of the marine environment. Scientific evidence is clear that sustainability of ocean resources is at risk, and there have been more than enough examples like Canada's experience on the Grand Banks to illustrate the dangers of indecisiveness. The old paradigms are no longer defensible as both science and experience have shown clearly that ecosystem-based management is the only viable policy option for responsible states. Attempting to manage individual species within artificial political jurisdictions simply does not work. The Pakistan-India maritime boundary straddles a singe, complex and economically crucial marine ecosystem. Failure to cooperate is not a responsible policy option because it benefits no one. We need to consider this planet as a treasure over which we all exercise collective stewardship, not loot for competitive plunder. As the Prophet (PBUH) observed, "The whole of this earth is a mosque", so we need to respect it accordingly.[32] It has been said that even the longest journey begins with a single step. In the case of the Eastern Arabian Sea, establishing two adjoining marine parks and protected areas along the Pakistan-India boundary would be a very good start.

Notes

1. For a good, readable description of the Northern Cod collapse see Callum Roberts, *The Unnatural History of the Sea* (Washington, Covelo, London: Island Press/Shearwater Books, 2007), especially Chapter 15, "The Downfall of King Cod", pp. 199-213.
2. For a graphic illustration of the stock collapse, see Figure 11 of World Resources Institute, *Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis* (Washington: Island Press, 2005), p. 12. Available online at: www.millenniumassessment.org/documents/document.356.aspx.pdf
3. "Evolutionary Fisheries Management" webpage of the Evolution and Ecology Program at the Institute for Applied Systems Analysis (IIASA), www.iiasa.ac.at/Research/EEP/Fisheries.html?sb=12
4. The scientific basis for this argument is a matter of debate. Compare, for example: Fisheries and Oceans Canada, *Canadian Seal Hunt: Myths and Realities* at www.dfo-mpo.gc.ca/seal-phoque/myth_e.htm; Humane Society International Canada, *Why the Canadian Government Supports the Commercial Seal Hunt* at www.hsicanada.ca/seals/canadian_govt_support_seal_hunt.html; and International Fund for Animal Welfare (IFAW), *Stop the Seal Hunt* at www.stopthesealhunt.ca.
5. Intergovernmental Panel on Climate Change (IPCC). *16 Years of Scientific Assessment in Support of the Climate Convention*, December 2004, Foreword. Available online at: www.ipcc.ch/pdf/10th-anniversary/anniversary-brochure.pdf.
6. Compare, for example, Steven F. Hayward, Kenneth P. Green, and Joel Schwartz. "Politics Posing as Science: A Preliminary Assessment of the IPCC's Latest Climate Change Report" *Environmental Policy Outlook*, No. 4, December 2007, available online at www.aei.org/publications/filter.all,pubID.27185/pub_detail.asp and David Wasdell, *Political*

Corruption of the IPCC Report? Changes in the Final Text of the "Summary for Policy Makers", online commentary at www.meridian.org.uk/Resources/Global%20Dynamics/IPCC/index.htm

7. Beautifully described by Alan Weisman in *The World Without Us* (Toronto: HarperCollins, 2007).
8. United Nations Atlas of the Oceans. *Ecosystems* at www.oceansatlas.org/servlet/CDSServlet?status=ND0yMzg1LjY4NjYzJjY9ZW4mMzM9bmV3cyYzNz1pbmZv
9. Quotations are from the University of Rhode Island Environmental Data Center, *Large Marine Ecosystems of the World* at www.edc.uri.edu/lme/intro.htm.
10. J.-Y. Pirot, P.J. Meynell and D. Elder (eds), *Ecosystem Management: Lessons from Around the World. A Guide for Development and Conservation Practitioners*. (Gland, Switzerland and Cambridge UK: International Union for Conservation of Nature and Natural Resources (IUCN), 2000). Available online at: http://www.oceansatlas.org/servlet/BinaryDownloaderServlet/24311_EcosystemManagement..pdf?filename=documents/EcosystemManagement.pdf&refID=24311
11. S.H. Niaz Rizvi, "Status of Marine Pollution in the Context of Coastal Zone Management in Pakistan" in Bilal U. Haq, Syed M. Haq, Gunnar Kullenberg and Jan H. Stel (eds), *Coastal Zone Management Imperative for Maritime Developing Nations* (Dordrecht: Kluwer Academic Publishers, 1997), p. 361.
12. Rizvi, p. 358.
13. "LME 32: Arabian Sea", 01 April 2004 on the National Oceanic and Atmospheric Administration (NOAA), *Large Marine Ecosystems Information Portal*, at http://na.nefsc.noaa.gov/lme/text/lme32.htm.
14 Food and Agricultural Organization, *Information on Fisheries Management in the Islamic Republic of Pakistan*, January 2003 online at: www.fao.org/fi/fcp/en/PAK/body.htm.
15. NOAA, "LME 32: Arabian Sea".
16. Ibid.
17. Annex II of the *Action Plan for the Protection and Management of the Marine and Coastal Environment of the South Asian Seas Region*, online at www.sacep.org/pdf/SAS%20Action%20Plan.pdf.
18. For a description of IOMAC see Romany Rasquinho, "Managing the Village Pond" in *Maritime Threats and Opportunities in the 21st Century: A Global Perspective on the Indian Ocean* Conference Proceedings, 4-6 March, 2007 (Karachi: National Centre of Maritime Policy Research, 2007). pp. 111-118.
19. Daniel Pauly and Reg Watson, "Counting the Last Fish", in *Oceans: A Scientific American Reader* (Chicago: University of Chicago Press, 2007). pp. 127-134.
20. Roberts, *Unnatural History of the Sea*, p. 371.
21. Saleem H. Ali (ed), *Peace Parks: Conservation and Conflict Resolution* (Cambridge MASS: The MIT Press, 2007), pp. 1-2.
22. Trevor Sandwith, Clare Shine, Lawrence Hamilton and David Sheppard, *Transboundary Protected Areas for Peace and Co-operation* (Gland, Switzerland and Cambridge, UK: IUCN, 2001), pp. 12-13. Available online at: www.iucn.org/dbtw-wpd/edocs/PAG-007.pdf.
23. Randy Tanner, Wayne Freidmund, Bryce Hayden and Bil Dolan, "The Waterton-Glacier International Peace Park: Conservation amid Border Security" in Ali, *Peace Parks*, p. 183.
24. Tanner, et al, in Ali, *Peace Parks*, p. 198.
25. Ali, *Peace Parks*, p.9.
26. Published in Jordan at www.kinghussein.gov.jo/peacetreaty.html
27. Michael P. Crosby, Bilal Al-Bashir, Mohammad Badran, Samir Dweiri, Reuven Ortal, Michael Ottolenghi and Avi Perevolotsky, "The Red Sea Marine Peace Park: Early Lessons Learned from a Unique Trans-boundary Cooperative Research, Monitoring and Management Program", *Proceedings of IUCN/WCPA-EA-4 Taipei Conference*, March 18-23, 2002, Taipei, Taiwan, p. 238. Available online at: www.cnps.org.tw/park-03/WPC-EA4-2002/2%20Session%20B/B01.pdf. For other descriptions see the Israeli Ministry of Foreign Affairs, *Binational Red Sea Marine Peace Park*, Israel Environment Bulletin Autumn 1997-5758, Vol. 20, No. 4, online at www.mfa.gov.il/MFA/Archive/Communiques/1997/BINATIONAL%20RED%20SEA%20MARINE%20PEACE%20PARK%20-%20Oct-97, and Ben Mieremet, *The Experience of a Lifetime: NOAA Marine Scientists Help Protect Red Sea Coral as Part of the Middle East Peace Process*, National Oceanic and Atmospheric Administration, online at: http://celebrating200years.noaa.gov/magazine/mideast_peace_park/welcome.html
28. Crosby et al, "Red Sea Marine Peace Park", p. 246.
29. Gaurav Rajen, "An Indian and Pakistani CBM: The Sir Creek Trans-Border Area", UNIDIR *Disarmament Forum, The New Security Debate*, No. 1, 1999, pp. 49-50. Available online: www.unidir.org/pdf/articles/pdf-art267.pdf.

30. Sandwith et al, *Transboundary Protected Areas*, Appendix 1, pp. 74-75.
31. Kent Biringer and Air Marshal K.C. (Nanda) Cariappa, “The Siachen Peace Park Proposal: reconfiguring the Kashmir Conflict”, in Ali, *Peace Parks*, p. 288. See also GuilianoTallone, *Siachen Peace Park: a case study for the valorisation of high mountain ecosystems*, a paper prepared for the workshop on Transboundary Protected Areas in the Governance Stream of the 5th World Parks Congress, Durban, South Africa, 12-13 September 2003 (online at www.tbpa.net/docs/WPCGovernance/GuilianoTallone.pdf). There is even a website devoted to the idea at www.uvm.edu/~envprog/k2peacepark.htm.
32. The full source of this hadith is given by Muhammad Iqbal in Note 22 to Chapter 6 of *The Reconstruction of Religious Thought in Islam*, originally published in 1930 with an additional chapter added in the 1934 edition. Reprinted in Lahore: Sang-i Mil Publications, 2004). Chapter 6, "The Principle of Movement in the Structure of Islam" reproduced at www.witness-pioneer.org/vil/Books/MI_RRTI/chapter_06.htm.