

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/235267091>

Transboundary MPAs: A challenge for the twenty-first century

Article in *Management of Environmental Quality An International Journal* · June 2012

DOI: 10.1108/14777831211232191

CITATIONS

2

READS

51

4 authors, including:



Catarina Grilo

Fundação Calouste Gulbenkian

13 PUBLICATIONS 54 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



RIAValue, Valuation of the ecosystem services delivered by Ria Formosa lagoon [View project](#)



PhD thesis [View project](#)

All content following this page was uploaded by [Catarina Grilo](#) on 08 April 2016.

The user has requested enhancement of the downloaded file. All in-text references [underlined in blue](#) are added to the original document and are linked to publications on ResearchGate, letting you access and read them immediately.



Management of Environmental Quality: An International Journal

Emerald Article: Transboundary MPAs: a challenge for the twenty-first century

José Ângelo Guerreiro da Silva, Raquel Curto Fernandes e Castro Ribeiro,
Ana de Carvalho Cameira Mocinho Viras, Catarina Bentes Silva Grilo

Article information:

To cite this document:

José Ângelo Guerreiro da Silva, Raquel Curto Fernandes e Castro Ribeiro, Ana de Carvalho Cameira Mocinho Viras, Catarina Bentes Silva Grilo, (2012), "Transboundary MPAs: a challenge for the twenty-first century", *Management of Environmental Quality: An International Journal*, Vol. 23 Iss: 4 pp. 328 - 346

Permanent link to this document:

<http://dx.doi.org/10.1108/14777831211232191>

Downloaded on: 11-06-2012

References: This document contains references to 54 other documents

To copy this document: permissions@emeraldinsight.com

Access to this document was granted through an Emerald subscription provided by Emerald Author Access

For Authors:

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service.

Information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

With over forty years' experience, Emerald Group Publishing is a leading independent publisher of global research with impact in business, society, public policy and education. In total, Emerald publishes over 275 journals and more than 130 book series, as well as an extensive range of online products and services. Emerald is both COUNTER 3 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.



Transboundary MPAs: a challenge for the twenty-first century

José Ângelo Guerreiro da Silva

Instituto de Oceanografia, Universidade de Lisboa, Lisbon, Portugal

Raquel Curto Fernandes e Castro Ribeiro and

Ana de Carvalho Cameira Mocinho Viras

EGA – Environmental Governance Advisors, Lda, Lisbon, Portugal, and

Catarina Bentes Silva Grilo

Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal

Abstract

Purpose – The Convention on Biological Diversity (CBD), set specific targets for halting biodiversity loss, including the need to establish 10 per cent of coastal/marine areas conserved through, among other things, well-connected systems of protected areas by 2020. The reality is that whereas nearly 15 per cent of land is protected, just over 1 per cent of marine space is similarly protected. The challenge is to reach “a global representative system” of Marine Protected Areas (MPAs), recognizing that countries need to establish cooperative mechanisms at ecoregion level. The purpose of this paper is to address the options and trends for countries to develop transboundary cooperation through MPAs.

Design/methodology/approach – The authors address several case studies, focusing on political, governance and financing frameworks.

Findings – The main findings revealed that countries use MoU, MoA or Joint Declaration supported on international conventions as the WHC, Ramsar Convention and CMS. Governance models seem to include political/management/technical levels, with political decisions translated into action plans carried out by joint committees, supported by national institutions and scientific/technical boards. Also the involvement of civil society in management is a growing driving force. Financing transboundary MPAs is going through an evolutionary process, from an exclusive binomial national budgets/UNEP-GEF to a wider financial net through ecotourism income and private donors.

Originality/value – The different solutions found point out myriad possibilities where transboundary cooperation is envisaged. States can benefit from the experiences already acquired to jointly achieve the target of protecting 10 per cent of the marine environment by 2020.

Keywords Ecology, Conservation areas, Seas, Oceans, International cooperation, Transboundary marine protected areas, Transboundary cooperation

Paper type Research paper

1. Introduction

Marine protected areas (MPAs) were globally elected as important area-based tools for tackling declining marine biodiversity (Agardy, 1997; Belfiore *et al.*, 2004; Kelleher, 1999) and ensuring viable fisheries (Boersma and Parrish, 1999; Kelleher, 1999; FAO, 2007). Following the 1992 Convention on Biological Diversity (CBD), specific targets were assumed and revised in CBD's Conference of the Parties 10, which determined that “10 per cent of coastal and marine areas [...] are conserved through [among other] [...] well connected systems of protected areas” by 2020 (CBD, 2010a). Global support for the creation of MPAs has made its way since the 1960s: the first and second world conferences on National Parks (Seattle, USA, 1962; Grand Teton National Park, USA, 1972) called for the establishment of marine parks and reserves and the conservation of



samples of marine ecosystems (International Union for Conservation of Nature (IUCN), 1975). The Jakarta Mandate (CBD, 1995) has been considered worldwide one of the main pillars to support an increase in MPA coverage, encouraging parties to use integrated coastal and marine management frameworks as a tool to promote marine and coastal biodiversity. World Summit on Sustainable Development (WSSD) reinforced the need for the establishment of representative networks of MPAs by 2012 (United Nations (UN), 2002).

Accordingly MPAs have been designated around the world, particularly since the last decade of past century, as portions of the marine environment primarily delimited for marine biodiversity conservation, but also as tools for fisheries enhancement (Boersma and Parrish, 1999). MPAs showed to be particularly effective fisheries management tools when compared with catch limits measures, particularly in places where there are multiple landing sites (Gell and Roberts, 2003; Hilborn *et al.*, 2004; Williams, 1998). MPAs also showed to contribute to the increase catches and improved recruitment outside their limits (Crowder *et al.*, 2000; Roberts *et al.*, 2001; Gell and Roberts, 2003; Russ *et al.*, 2004). More lately MPAs arise as a mean to promote ecotourism thus creating alternative sources of income for fishers and coastal collectors affected by restrictions on their fishing activities (Russ and Alcala, 1999; White *et al.*, 2002).

Despite these evidences and “declarations of intentions”, reality is that whereas nearly 15 per cent of land is protected in some way, just over 1 per cent of marine space is similarly protected (CBD, 2010b; Toropova *et al.*, 2010). Reasons for this are yet to be clearly outlined but, besides the technical complexity of making a MPA, the costs to make it effective and conflicts with stakeholders are among the most commonly pointed factors slowing or impeaching the process. On the other hand the trends of evolution of the traditional uses of the sea in the industrial society – centred on the trilogy natural resources exploitation (fishing/oil), shipping/commerce and leisure – have expanded lately in a so-called marine economic hypercluster with obvious consequences on marine governance. The integration of such myriad of human activities reflects into MPAs planning at a geographical scale ever seen before thus calling for large-scale conservation planning in the marine environment (Zimmerer, 2006; Spalding *et al.*, 2007). These approaches lead to the need to constitute networks composed by several individual conservation units linked by dispersal corridors (Lubchenco *et al.*, 2003; Francis, 2008). The IUCN proposes the expansion of marine environmental protection to be partially achieved through the creation of networks of MPAs (IUCN-WCPA, 2008).

Despite whatever model is chosen, large individual MPAs encompassing the geographical scale or networks of individual conservation MPAs units, the challenge is mostly posed at a transnational scale. IUCN recognized that countries need to establish cooperative mechanisms to protect and maintain biodiversity internationally and other international organizations as World Wildlife Fund (WWF) states that, at a minimum, the road to a “global representative system” of PAs depends on international cooperation at the level of the ecoregion. Accordingly states face three major challenges:

- (1) How to accommodate the myriad of activities/stakeholders in governance models of MPAs?
- (2) How to cooperate with neighbour countries in order to achieve an ecoregional model of governance of MPAs?

- (3) How to make effective the management of such large networks assuring the necessary financial support?

This paper addresses the options and trends for countries to develop transboundary MPAs (TBMPAs), in order to achieve the ecoregion level goal. Several case studies in different continents based on bilateral and multilateral governance approaches are addressed as well as models of management and financing assessed.

2. Analytical framework

The identification of trends and patterns in cooperation between neighbouring countries involved in transboundary marine conservation requires a common analytical framework. Here, we describe the three key features that support our description and analysis of case studies.

2.1 Political approach

The establishment of a TBMPA goes a long walk until it becomes reality. States show their agreement to cooperate in several ways, from a simple joint declaration (JD) to a formal treaty, also political and technical governance structures and bilateral instruments are not created independently from each other. We examined the creation of structures and instruments, as well as mechanisms by which states declare their will to cooperate.

International instruments are often invoked as a source of obligation of states to protect their marine environment (e.g. [Grant, 2005](#); [Guerreiro *et al.*, 2011](#)). Particular elements of various instruments support the implementation of marine conservation measures such as MPAs and others contain specific measures for potential assistance in MPAs' management. By identifying the international instruments in each of the cases, we try to understand the role they played in promoting the implementation of conservation measures, in particular the creation of MPAs.

References to relevant international instruments are usually patent in bilateral (or multilateral, if more than two countries are involved) instruments that give political backing to cooperation in marine conservation. The existence of such instruments is considered a strong sign of political support, but it may not be a necessary condition for cooperation. The subsequent content analysis of those instruments may reveal important aspects of bilateral/multilateral cooperation that are key to the success of marine conservation initiatives.

2.2 Governance

In addition to tailor-made instruments giving political support to cooperation, countries may also create specific governance structures to facilitate communication and create synergies in dealing with technical issues. Here, we examined the political, technical or dual nature of such governance structures, and how they relate to existing bilateral instruments.

2.3 Financing

One of the major issues regarding the ecosystem/ecoregion level is the cost involved to assure an effective management of increasingly larger marine regions. More than the national budgets, states, particularly those of the developing countries, appeal to the international community to help support the costs of making effective those MPAs. We try to assess which are the most important institutions financing these initiatives and also other major sources of incomes.

Lastly, we assess the state and model of implementation of each initiative, and, to the extent possible, try to establish common patterns and trends of evolution in the way to approach the making of TBMPA.

3. Case studies

Transboundary environmental conservation cooperation is a growing trend. A global survey of such cooperation indicates the existence of 188 transboundary cooperative arrangements, involving 818 PAs in 112 states (Mittermeier *et al.*, 2005). In contrast, there are relatively few cases of transboundary marine environmental conservation. Some are analysed below.

3.1 *Turtle Islands Heritage Protected Area (TIHPA)*

The TIHPA, comprising nine islands, six in the Philippines and three in Malaysia represents a first formal TBMPA jointly established, administrated and managed. TIHPA is also notable for being created despite the conflict over the delimitation of a maritime border between Malaysia and Philippines (Guerreiro *et al.*, 2010). It was created for the main goal of protecting a group of migratory species (marine turtles), supporting its implementation on the CMS[1]. Notwithstanding, the extensive coverage shall protect not only these turtles, but also coral reefs, seagrass beds and other marine ecosystems, the islands and their inhabitants, encompassing an ecosystem approach. It took 20 years from the idea of a TBMPA to the actual agreement between the governments involved. Meanwhile, institutional arrangements were made, including the establishment of work groups, regional and international institutions' support and guidelines development (Figure 1). The establishment of TIHPA[2] occurred in 1996, with the signature of a memorandum of agreement (MoA) between the Governments of the Republic of the Philippines and Malaysia. Accordingly, each contracting party should designate an appropriate implementing agency to enforce, implement and monitor the policies, rules, laws and regulations formulated for TIHPA's management and protection (TIHPA MoA, 1996). An ecotourism programme is pointed out by both governments as a priority.

In 2006, the Philippines' islands were included in the United Nations Educational, Scientific and Cultural Organization's (UNESCO) tentative list (under the Convention Concerning the Protection of World Cultural and Natural Heritage – WHC) (UNESCO World Heritage Centre webpage). On the other hand, Malaysia has not, at the time, present similar proposal. Both countries are members of the 1994 Revised Action Plan for the Protection and Development of the Marine Environment and Coastal Areas of the East Asian Seas, an initiative for cooperation between participating countries (Grilo, 2010).

WWF helped the establishment of this PA and continues its work with local communities (World Wildlife Fund webpage).

3.2 *Wadden Sea*

The Wadden Sea is an important tidal wetland, extending along the North Sea coast of the Netherlands, Germany and Denmark. At the moment, Wadden Sea is jointly protected through political agreements involving the three countries. It does not represent an established PA, but instead, an almost covered area of nature reserves and natural parks, along with major parts of it representing an International Maritime Organization's (IMO) Particularly Sensitive Sea Area (PSSA) since 2001[3]. The PAs helped to shape a legal conservation area (almost two-third of the Wadden Sea) and a

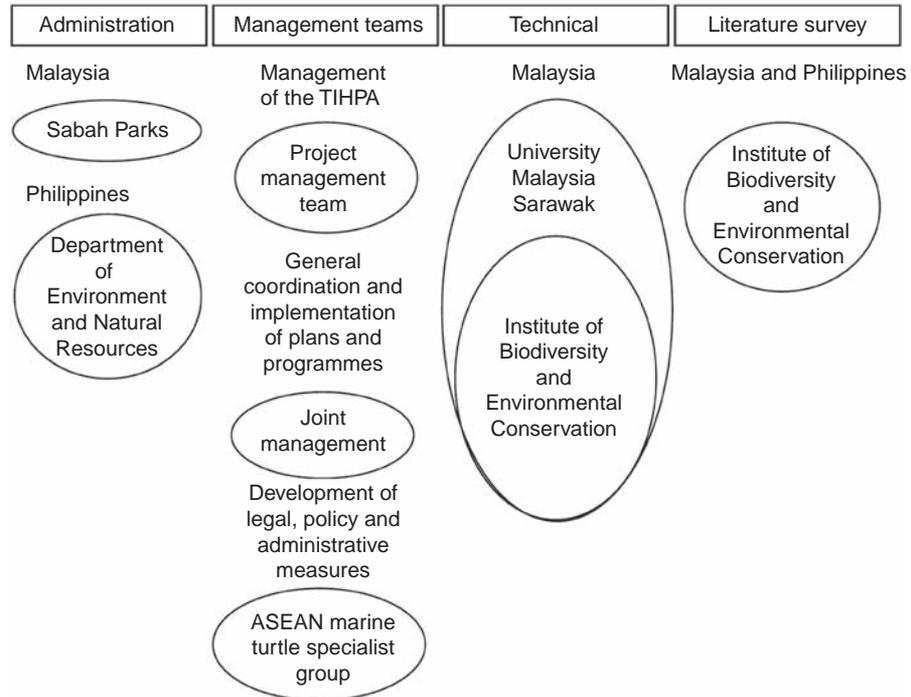


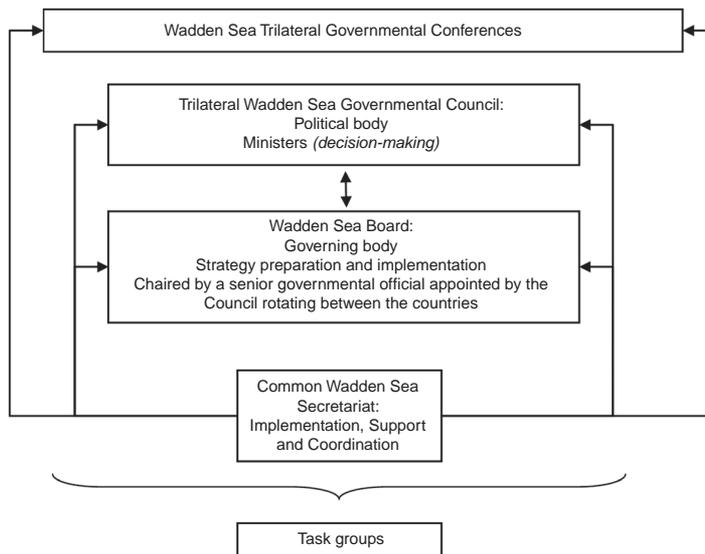
Figure 1.
Institutions involved in
TIHPA management

Note: ASEAN, Association of South East Asian Nations

larger area, the Wadden Sea Cooperation and Management Area, enabling countries to address all issues pertaining the Wadden Sea. Since 1978 Trilateral Governmental Conferences have taken place every three or four years, setting the teams that will carry out the trilateral cooperation, with a common plan for the management of the Wadden Sea.

Main highlights were the adoption of a JD (1982) and the Trilateral Wadden Sea Plan (1997) and in 2010 the adaptation of the Revised Wadden Sea Plan (2010), the Revised JD (2010) and a new governance structure which replaced the existing one (Figure 2). Since 1982 several aspects were adopted, namely the Agreement on the Protection of Seals, common management principles and objectives for human use and common ecological targets (Common Wadden Sea Secretariat webpage).

The Wadden Sea initiative has been carried forward by a variety of international and regional instruments (OSPAR Convention[4], Helsinki Convention[5], Natura 2000 Network[6] and European Union (EU) Common Fisheries Policy). Since 2009, the Wadden Sea (only Dutch and German areas) is included in the UNESCO's list of World Heritage sites (UNESCO World Heritage Centre webpage). National Park "S-H Wadden Sea", in Germany, is an OSPAR MPA, as well as a Ramsar site and part of Natura 2000 Network. National Park "Lower Saxony Wadden Sea", also in Germany, is an OSPAR MPA (OSPAR Commission webpage). Wadden Sea is thus a good "case study" for multinational nature marine protection, based on international instruments and national PAs, anchored on a trilateral cooperation.



Source: Common Wadden Sea Secretariat webpage

Figure 2.
Trilateral cooperation
governance structure

3.3 Mesoamerican Barrier Reef System (MBRS)

The MBRS Project had its official launching in Belize in 2001 and is specifically devoted to TBMPAs, involving four countries of Central America: Mexico, Belize, Guatemala and Honduras. The main motivation for protecting the region is the existence of the largest coral reef system in the western hemisphere (second longest in the world), which faces multiple threats (overfishing, industrial shipping, agriculture, uncontrolled mass tourism, coastal and watershed development with improper urban sewage, garbage disposal and climate change). The MBRS region includes over 60 officially declared MPAs, although many of those exist only on paper, lacking effective management (Mittermeier *et al.*, 2005). A total of 15 were chosen to be the focus, once they are located in or near transboundary sites, and represent TBMPAs of importance to multinational stakeholders. The recognition of the Belize Barrier Reef Reserve System and the Sian Ka'an Biosphere Reserve, in Mexico, as World Heritage sites, both in MBRS, constitutes an example of an international instrument reinforcing.

The process of establishing the MBRS project started with the Tulum Declaration in 1997, a JD that called on the MBRS's four states and its partners in the region to join in developing an action plan for its conservation and sustainable use. All states also signed, in 2004, the Declaration of Chetumal, for sustainable fisheries, which determined, among others, the harmonization of fisheries' activities between them (Declaración de Chetumal, 2004). These four countries were already signatories of the main international conventions on the environment, as well as of several regional conventions[7]. The Central American Commission on Environment and Development, comprised by the Ministers of the Environment of the seven Central American countries and Mexico (as an observer), requested support from the Global Environment Facility (GEF) through the World Bank, for the design and implementation of an action

plan for MBRS's management, which resulted in the formulation of the Project for the Conservation and Sustainable Use of the MBRS in 1998 (Figure 3).

The MBRS Project has promoted the creation of Transboundary Park Commissions for the management of shared marine and coastal resources: Transboundary Park Commission of the Northern Zone (BEMAMCCOR) Mexico-Belize and Transboundary Park Commission of the Southern Zone (TRIGOH) Belize-Guatemala-Honduras. These are a forum for consultation and coordination and they have provided a series of guidelines and measures for an efficient management of the MBRS. Project's action developed into four components: MPAs, Regional Environmental Information System, Promoting Sustainable Use of the MBRS and Public Awareness and Environmental Education. Project's activities were implemented by national experts, government agencies, non-governmental organizations (NGOs), supporting agencies, among others (GEF, 2007).

A project's evaluation made in 2007 identified main outputs and outcomes. For MPAs' component, main outputs include management/operational plans for 15 target areas and system for MPAs' effectiveness measurement. On the other hand, main outcomes include enhancement of marine conservation capacity; improvement of NGO capacity; and regional cooperation between PAs (GEF, 2007).

3.4 Eastern Tropical Pacific Seascape (ETPS)

The ETPS presents a high degree of ecological interconnection (as well as in fisheries and trade), which justifies a common project for its protection against over-fishing, by-catch, illegal fishing and pollution. Planning for the ETPS started in 2000, when a team involving Conservation International (CI), United National Environment Programme (UNEP) and IUCN was approached by the government of Ecuador to consider innovative methods for protecting the Eastern Tropical Pacific. The importance of this region was further recognized at the WSSD, when CI, IUCN and UNEP convened an ETPS panel featuring the presidents of Ecuador and Costa Rica, the vice president of Panama and the vice minister of environment of Colombia. At the end of the meeting, the seascape initiative was launched with government backing at the highest levels. In 2004, the four countries signed the "San Jose Declaration", a cooperative agreement to manage the ETPS that formally established the Marine Conservation Corridor of the

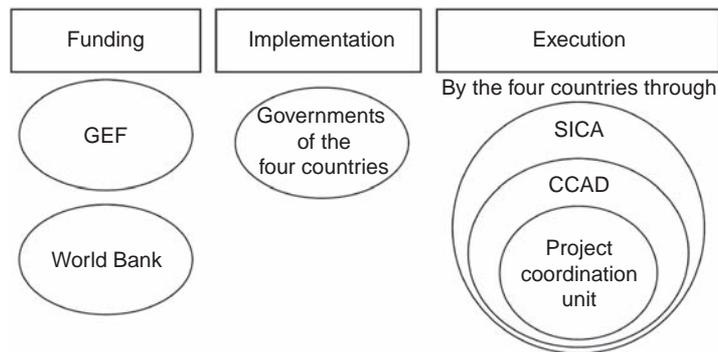


Figure 3.
Institutions involved in MBRS Project

Note: SICA, System for Central American Integration

Eastern Tropical Pacific between the islands of Cocos, Galapagos, Malpelo and Coiba (UNESCO World Heritage Centre webpage). At the beginning of 2005, the United National Foundation (UNF), the Global Conservation Fund (GCF) and UNESCO jointly funded the ETPS Project which is being led by UNESCO's World Heritage Centre, with collaboration from the governments of the four countries, the UNF, CI and GCF.

The ETPS features several flagship MPAs, including Ecuador's Galapagos Islands, Colombia's Gorgona National Park and Malpelo Island Flora and Fauna Sanctuary, Panama's Coiba Island, and Costa Rica's Cocos Island National Park and Marine Reserve (Mittermeier *et al.*, 2005). Linking these five existing PAs is the main goal of the project, which further comprises a proposal for the creation of World Heritage sites as the basis of serial/transboundary nomination strategies, a unique approach in the WHC framework. The region currently has four World Heritage sites already listed.

3.5 Pelagos Sanctuary for Mediterranean marine mammals

This is the first high-seas MPA in the world. It was established through the efforts of France, Italy and Monaco, but was originally launched in 1989 by Europe Conservation and the Tethys Institute[8], after a serious by-catch situation of pelagic cetaceans. In 1990, the Pelagos Project envisaged the creation of a Biosphere Reserve in the Corsican-Ligurian Basin. It was in 1992 that an informal consensus was made between delegations of France, Italy and Monaco, WWF, Europe Conservation, Greenpeace and Réserve Internationale Maritime de Méditerranée Occidentale (Rimmo)[9] and in 1993 the governments of the three countries signed a JD of intent for establishing a marine mammal sanctuary. Finally, in 1999, they signed an agreement on the creation of the international sanctuary, appealing for international instruments such as UNCLOS[10], CMS or Barcelona Convention[11] (Pelagos Sanctuary Agreement, 1999). The agreement was ratified and executed in 2001 and came into effect in 2002; a management plan was approved in 2004 (Giuseppe Notarbartolo di Sciarra's Marine Conservation Blog and website).

The parties established a marine sanctuary with maritime internal waters, territorial sea and high seas, including 53 per cent of marine areas beyond national jurisdictions. This was possible for two reasons: first, the MPA in the high seas only exists because none of the Mediterranean coastal states had declared exclusive economic zones, so their national jurisdiction extends only up to 12 nautical miles; second, the Pelagos Sanctuary constitutes a Specially Protected Area of Mediterranean Importance (SPAMI), and contracting parties to the Barcelona Convention are encouraged to bear regulations of SPAMIs, making it possible to extend the sanctuary into areas beyond national jurisdiction (Kimball, 2005). This means that the three countries have the right to enforce the sanctuary's regulations on the high seas.

The sanctuary's management structure includes only an agreement's Secretariat which is unable to function as a surrogate management body, urging for a capable management structure (di Sciarra, 2009).

3.6 North America Marine Protected Areas Network (NAMPAN)

NAMPAN is a trilateral project – USA, Canada and Mexico – involving a vast group of stakeholders and areas. In fact, these countries have been partners before NAMPAN project, namely in terms of trade and environmental issues. This established cooperation led to the establishment of the NAMPAN (Figure 4), which was first

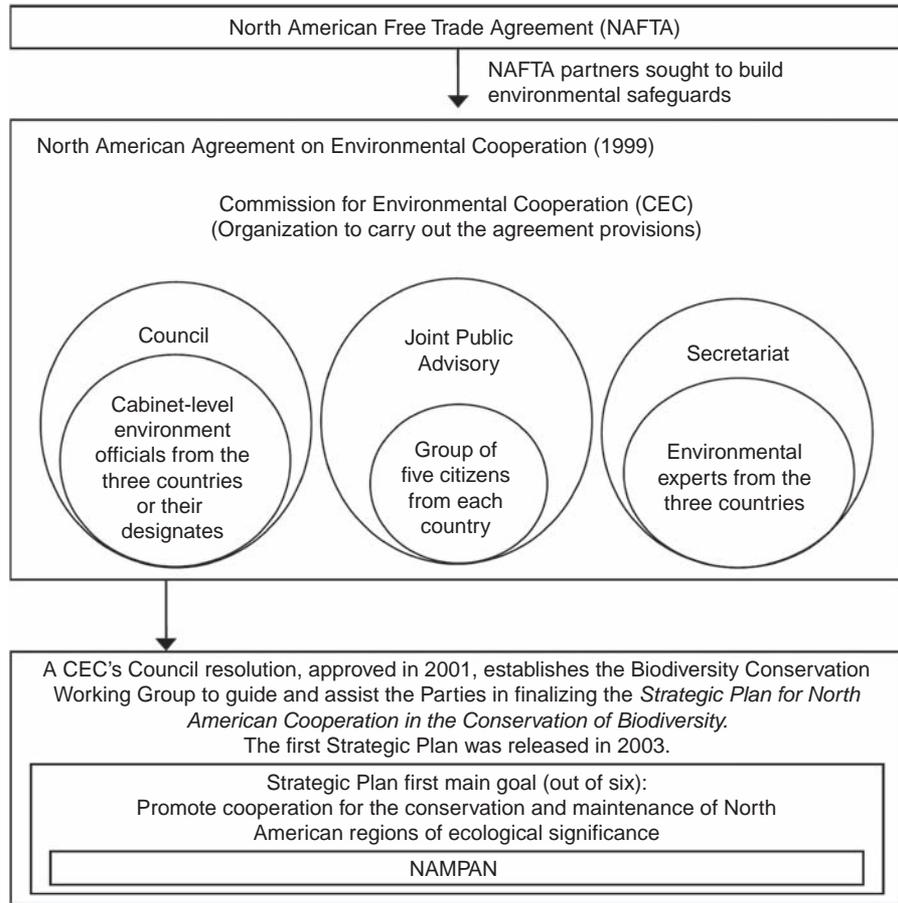


Figure 4. Institutions and instruments that led to the establishment of the NAMPAN project

Sources: Strategic Plan for North American Cooperation in the Conservation of Biodiversity (CEC, 2003) and Commission of Environmental Programme webpage

idealized in a trinational workshop of 1999. The three countries work to establish NAMPAN with the support of the biodiversity programme of the Commission for Environmental Cooperation (CEC)[12], established by them under the North American Agreement on Environmental Cooperation (NAAEC). This agreement complements the environmental provisions of the North American Free Trade Agreement (NAFTA). The goal of NAMPAN is to work with a trinational, multisectoral group of stakeholders in establishing an effective system of North American MPA networks for the protection of marine biodiversity. Currently, the project addresses targets from the Strategic Plan for North American Cooperation in the Conservation of Biodiversity (CEC, 2003), coordinated by CEC. To be part of the NAMPAN, MPAs need to contain biodiversity shared by all states, institutional capacity and infrastructure, a high chance of success, visibility and public support, be able to share information, engage local communities, be subject to joint efforts and be under threats that can be found within North America.

The CEC convened, through a series of workshops, MPAs' managers and a wide array of experts from the three countries to agree upon indicators and protocols to assess the status/condition of critical marine ecosystems in the "Baja to Bering Sea" (B2B) area, setting an ecological scorecard that could support effective management at the site level. As next steps, the NAMPAN group recommends expanding the scorecarding process beyond the B2B. To assist in this process, a protocol that describes how to prepare a scorecard is being developed (CEC Knowledge Network webpage).

3.7 Ponta do Ouro-Kosi Bay Marine and Coastal Transfrontier Conservation and Resource Area (POKBA)

Mozambique and South Africa[13] have long established Inhaca Island Natural Reserve (IINR) and Isimangaliso Wetland Park (IWP, aggregating 13 PAs[14]), respectively. In 2000, both countries signed the Lubombo POKBA Protocol, compromising for a TBMPA implementation (Lubombo Protocol, 2000). It is one of the five protocols under the General Trans-frontier Conservation and Resource Area Protocol signed in 2000 between Mozambique, South Africa and the Kingdom of Swaziland (TFCA Protocol, 2000). This protocol defines "Trans-Frontier Conservation and Resource Area – TFCA" as a "specific geographical area divided by one or more international political borders, which is identified by two or more of the Parties to be subject of TFCA management". A TFCA Commission is established, integrating representatives of each party, to achieve the TFCA objectives.

The referred cooperation among Mozambique and South Africa was strengthened by their ratification to Nairobi Convention[15] (Mozambique in 1999, South Africa in 2003), which provides a mechanism for regional cooperation (United Nations Environment Programme webpage).

In 2009, the Government of Mozambique has proclaimed the Ponta do Ouro Partial Marine Reserve (POPMPR), including Inhaca and Portuguese Islands and Maputo Special Reserve. POPMPR was already submitted to UNESCO to become a World Heritage site, following the steps taken on the IWP, already a World Heritage site since 1999 (UNESCO World Heritage Centre webpage). In the same year, a TBMPA was declared under the Lubombo Protocol, linking POPMPR to IWP and integrating national protected PAs in both sides of the border (Guerreiro *et al.*, 2011). Kosi Bay is also a Ramsar[16] site since 1991 (Ramsar Convention webpage).

3.8 The South China Sea Project (SCSP)

The SCSP emerged from a UNEP/GEF project entitled "Reversing environmental degradation trends in the South China Sea and Gulf of Thailand". Its implementation started in 2002 and was completed in 2008, although a five-year implementation phase occurred since 1996 (Tuan and Pernetta, 2010).

Six areas of transboundary environmental concerns were identified:

- (1) over-exploitation of fisheries;
- (2) land-based pollution;
- (3) degradation of mangroves;
- (4) degradation of coral reefs;
- (5) degradation of seagrass; and
- (6) degradation of wetlands.

There were seven participating countries: Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam. It was designed to be implemented over a period of five years and involved the signing of memoranda of understanding (MoUs) between UNEP as the GEF implementing agency and seven focal environment ministries and 31 specialised executing agencies in the participating countries, each responsible for one environmental area of concern. These comprised 14 government departments, 11 research institutions, five universities and one NGO (Tuan and Pernetta, 2010).

The project does not establish formal MPAs, but a group of demonstration sites in every coastal habitats was developed to encourage cooperation at local level. In particular, the project defines, among others, “fisheries *refugia* sites”, similar to non-take areas (South China Sea Project webpage).

The following scheme in Figure 5 represents the complex management structure of the SCSP.

Some particular aspects must be highlighted (Tuan and Pernetta, 2010):

- much of the co-financing came from provincial and municipal governments rather than from central governments;
- the active participation of local government in the activities at these sites was encouraged by the organization of “round tables” and visit/study tours; and
- all activities at the national level were implemented without participation of international experts or consultants from outside the region.

A Strategic Action Programme (SAP) includes a programme of actions, approved by all countries. Its development was based on prior national reports developed by national committees, gathered in a transboundary diagnostic analysis which then allowed the development of the SAP. Sub-regional/Bilateral Agreements and National Action Plans are also part of the SAP’s recommended framework. The majority of the members are now in favour of preparing a SAP Implementation Project to be funded by the GEF (Tuan and Pernetta, 2010).

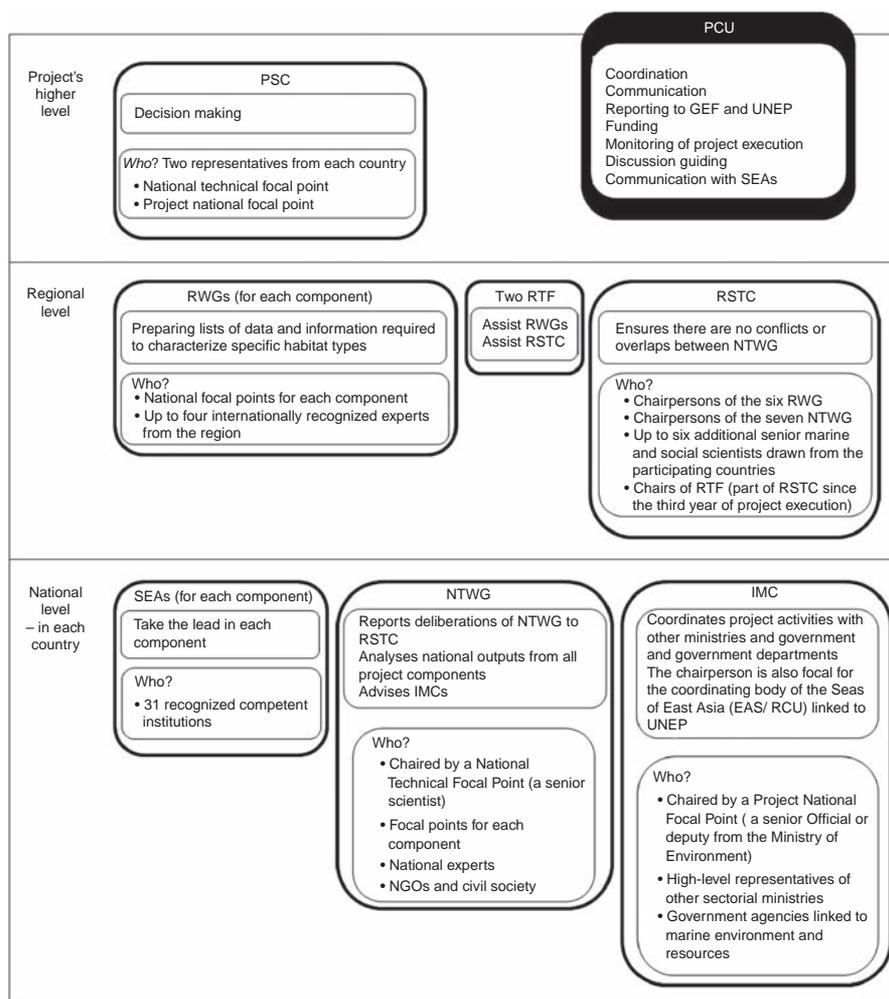
3.9 *The coral triangle initiative (CTI) on coral reefs, fisheries and food security*

CTI has developed from an intergovernmental agreement between the countries in the Coral Triangle, including the seas of Indonesia, Malaysia, the Philippines, Timor Leste, Papua New Guinea and the Solomon Islands. CTI main goal is to protect the value of this region and to pursue a more sustainable trajectory of marine resource use. The six countries agreed to pursue the CTI in 2007, and develop a joint Regional Plan of Action (RPA), to be developed by a CTI Coordination Committee (CCC – a technical working group with representatives from each country). The funding was established in 2007/2008 coming from WWF, The Nature Conservancy (TNC), CI, GEF and US government. In 2009, the six heads of state signed the CTI Declaration and adopted the RPA (Fidelman *et al.*, 2012).

CTI’s governance structure aggregates political reunions through senior official meetings, ministerial meetings and the CTI CCC (Coral Triangle Initiative Secretariat webpage).

The RPA is a legally non-binding document setting out five core goals of the CTI over the next ten years (Fidelman *et al.*, 2012):

- designation of priority seascapes;
- establishment of networks of MPAs;



Sources: PSC, Project Steering Committee; PCU, Project Coordinating Unit; SEAs, Specialised Executing Agencies; RWGs, Regional Working Groups; RTF, Regional Task Forces; RSTC, Regional Scientific and Technical Committee; NTWG, National Technical Working Group; IMC, Inter-Ministry Committee

Figure 5.
Management structure
in the SCSP

- protection of threatened species;
- implementation of an ecosystem approach to fisheries management; and
- coordination of climate adaptation action.

However, there are complex contextual issues to address, for instance different geographical scale, political, economic and cultural contexts, and proportions of national waters included in CTI. These issues raise questions about the proportional rights and responsibilities of CTI members, the collective and individual capacity to

monitor and regulate resource use in a large geographical scale, and the ability to build trust and norms of reciprocity among them (Fidelman *et al.*, 2012).

4. Discussion

4.1 Political approach

TBMPAs are a recent phenomenon clearly arising after the Jakarta Mandate. Most of the case studies point out for a “scientific/ecosystem-based approach” as starting point which facilitates and supports political initiatives.

From the political point of view, states tend to assume their political will with a common starting point: a MoU/MoA as is the case of TIHPA or more recently the SCSP; and a JD as is the case of the Wadden Sea or MBRS.

Nevertheless, states anchor these decisions on international instruments; and bilateral, multilateral or regional instruments. Clearly the CBD is a “chapeau” to most of PAs around the world, and Jakarta Mandate (CBD, 1995) in particular to MPAs. However, on a more concrete term, states consider areas under the status of: WHC (e.g. MBRS, ETPS, POKBA); Ramsar Convention (e.g. Kosi Bay) and PSSAs under IMO (e.g. Wadden Sea) or MARPOL Special Areas (Mediterranean Sea, including Pelagos Sanctuary; North Sea, including the Wadden Sea (International Maritime Organization webpage)). Whenever the goal is to protect migratory species the anchor is the CMS (e.g. TIHPA, POKBA and Pelagos Sanctuary). International instruments thus supply the international context and specific binding measures, but also international protection status.

On another level, political commitment is also anchored in regional instruments. In east Africa the major anchor is the Nairobi Convention, particularly the Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, which has been the keystone concerning MPAs. Also the Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region provides guidelines to bilateral or multilateral agreements concerning contingency plans to MPAs or MPAs’ networks and also for communication between authorities and governing bodies.

As far as EU is concerned (e.g. Wadden Sea), Natura 2000 Network is the supporting commitment providing the ground for transnational conservation mechanisms, but also, for North Atlantic countries, OSPAR Convention has become, more than a pollution prevention instrument, a real instrument promoting MPAs networks now reaching 159 MPAs even outside national jurisdiction (OSPAR Commission, 2010).

Other solutions, as in the case of the NAMPAN, not only appeal for the regional commitments on environmental cooperation (NAAEC) but are also based in a wider political picture as NAFTA.

Intergovernmental agreements between countries can further evolve to a wider range, as is the case of CTL.

Finally, some examples foresee a periodical political assessment mechanism at the ministerial level (e.g. Wadden Sea’s Trilateral Governmental Conferences).

4.2 Governance

Besides above-mentioned agreements, governing structure and bodies and an action plan must be addressed.

In fact, the most difficult question is how to implement TBMPAs? For instance, what are the common bodies created in institutional arrangements when setting TBMPAs? As have been seen, particularly in NAMPAN and MBRS, the existence of coordinating bodies is fundamental to a successful transboundary cooperation.

For management purposes, joint teams/committees are recommended. Depending on the level of compromise between the states in protecting a marine area, some kind of arrangement must be settled to link the responsible state agencies. For instance, MBRS project stands for a two transboundary commissions approach rather than a multilateral approach. On the other hand, Wadden Sea is a well-known and successful example of trilateral institutional cooperation.

The fact is that not always the state of political relationship among states is the same when multilateral cooperation is called and thus a multiple solution may be the right solution. This is the case of the borders Mozambique/Tanzania and Mozambique/South Africa (Guerreiro *et al.*, 2011); actually, while in the south border the cooperation between Mozambique and South Africa lies on the Lubombo Protocol, no such level of agreement exists on the north border between Mozambique and Tanzania.

In general, the governing structure is mainly constituted by national agencies which have both the responsibility to implement the necessary actions in each country as well as integrate a bilateral or multilateral joint management committee. Practical mechanisms, as in international instruments, often call for a designated focal point. Nevertheless a gradient can be found on the degree of “joint management” depending mainly on how “mature” the joint management experience is. Examples range from the more “experienced” TIHPA, Wadden Sea and MBRS to the “newcomer” SCSP, clearly showing the more complex governance model. One principle is, however, acquired from mainly three of the examples – TIHPA, Wadden Sea and SCSP – which is the separation of the scientific and technical level from the policy and decision-making allowing for a better integration of scientific and technical data into the decision-making process.

Another trend clearly reflects the spirit of Rio Conference distinguishing these “post Jakarta areas”, from those of the previous decades: the participation of civil society in the management process, shifting from the top-down governing model to a more participative model. Local communities are being more involved in the management process (e.g. NAMPAN and SCSP). Continuing the cooperative perspective, national, regional or even international organizations (NGOs, universities, etc.) showed to be of great assistance in technical studies, management-option decisions, institutional contacts and arrangements. Therefore, they shall be involved from the start, as happened in Pelagos Sanctuary.

Difficulties, however, arise when establishing the governance model and the action plan, being the most common: discrepancies on the level of effectiveness of MPAs in each country; type and mandate of the leading agency in each country, several times not matching and demanding the participation of more than one agency in each country, thus increasing the complexity of the governance model; and different legal frameworks, which most of the time reflect on the legal restrictions carrying potential conflicts with stakeholders from both sides of a border and introducing the stigma “If they can do it, why can’t we?”.

In terms of legal issues, some questions arose from the case studies. For instance, does the pre-establishment of a conservation status to a certain area, in each side of the border, facilitate future cooperation between countries? Is it beneficial to have the same legal status for PAs in the partner countries? And what about common regulations for fisheries, like in MBRS? And lastly, are there MPA legal categories in the conservational laws of the states and are they needed for effective cooperation? In the case of the Wadden Sea, the non-existence of such categories did not impeach a strong cooperation scheme. Moreover the inexistence of a defined maritime border between Mozambique and South Africa, or between Malaysia and Philippines, did not impeach the two countries to move forward on a transboundary initiative.

4.3 Financing

Usually the main obstacle to TBMPAs' implementation is the lack of financial resources often leading to "lots of plan, little action". Case studies revealed that, besides the national budgets, the role of international funding makes all the difference. UNEP/GEF arise as the leading sources of funding (e.g. SCSP, CTI); NGOs are also co-financing the initiatives, particularly WWF (e.g. TIHPA, CTI) and TNC (e.g. CTI).

Besides the traditional sources of income (e.g. national and regional budgets, taxes and licensing), another growing source of financing is the revenues from ecotourism and nature tourism. Tourism associated with MPAs presents a strong trend and most projects for transboundary cooperation are considering it and even expecting socio-economic benefits from it, as is the case of TIHPA or MBRS. Private donors are also making their way, not only at an individual level as a result of public awareness campaigns, but also from private corporations embracing a "new environmental corporate governance model", particularly those aiming to show a public attitude of commitment with conservation policies.

One of the tricky issues considering the financial support for TBMPA is the balanced distribution of costs and revenues among countries, which shows to be a complicated algorithm taking into account the areas involved and jurisdiction, level of development of each country involved, local communities' sources of income, etc. The fair distribution of benefits and the equitable use of resources is a crucial principle in MPAs for their sustainability and of particular relevance in developing countries.

5. Conclusion

TBMPAs showed to increase since the Jakarta Mandate addressing the challenge of conservation at the ecoregion and ecosystem level. Countries seem clearly to follow a successful strategy to use international conventions and regional instruments to support deeper and wider cooperation than simple bilateral agreements. At the regional level, transboundary cooperation anchors on multilateral agreements being specific for nature conservation or using specific provisions of wider agreements. Rather than strong binding agreements, states followed the route of establishing MoU or MoA, followed by action plans.

Governance models seem to include political/management/technical levels, where political decisions are translated into an action plan carried out by joint committees, supported by national institutions and scientific/technical boards. Actually the functioning of this scheme, with regular assessment of the achievements and failures, invokes a sort of Deming Cycle of permanent improvement through a Plan-Do-Check-Act approach. Together with this "new vague of MPAs" post Rio, public participation from academics and NGOs to local populations is a growing driving force, thus trying to avoid a top-down approach often resulting in conflicts with local populations and stakeholders.

Difficulties arise from different legal and institutional frameworks, although several examples showed that, rather than an attempt to "harmonize" those aspects, efforts are conducted to common management goals through the appropriate institutions and legal mechanisms in each country. Case studies showed that solutions depend on the level of commitment among states, although, as stated by [Guerreiro *et al.* \(2011\)](#), an evolutionary approach of permanent improvement is the most common situation.

The financing challenge TBMPAs face shows to be in an evolutionary process. From an exclusive binomial national budgets/UNEP-GEF, evolution is leading to a wider supportive financial net, constituted by nature economic valorization (e.g. ecotourism), NGOs and co-funding by private corporations.

Reality shows that TBMPAs are probably one of the few mechanisms to address marine conservation at the ecoregion/ecosystem level. The challenge is to develop a range of solutions that, although following a similar approach, allows developing a range of bilateral and multilateral solutions under the same global and regional framework.

Notes

1. Conservation of migratory species of wild animals.
2. The all process started after a first idea of an international marine sanctuary in 1976 by Dr Wayne King, individual reflexions in each state for establishing a marine turtle sanctuary and 1993s starting discussion on bilateral cooperation.
3. The Wadden Sea nature reserves and national parks could be denominated as MPAs, since the areas covered are to large extent marine areas, but there are no marine protected area legal categories in any of the conservation laws of the three countries.
4. Convention for the Protection of the marine Environment of the North-East Atlantic.
5. Convention on the Protection of the Marine Environment of the Baltic Sea Area.
6. Based on Birds Directive – Directive 79/409/EEC as amended by Directive 2009/147/EC and Habitats Directive – Council Directive 92/43/EEC.
7. 1991 Tuxtla Mechanism – presidential agreement between Central America and Mexico concerning projects supported by international cooperation; 1992 Convention for the Conservation of Biodiversity and the Protection of Priority Wild Areas in Central America, concerning protected boundary areas; and 1995 Mesoamerican biological corridor.
8. European non-profit organizations for the conservation of natural resources.
9. Rimmo is an association created in 1992 for the protection of all marine populations from the Mediterranean basin.
10. United Nations Convention on the Law of the Sea.
11. Convention for the Protection of the Mediterranean Sea against Pollution.
12. The CEC is an international organization established by the three governments under the North American Agreement on Environmental Cooperation. It was established to address regional environmental concerns, help prevent potential trade and environmental conflicts, and to promote the effective enforcement of environmental law.
13. These two countries lack a defined maritime boundary.
14. Formerly Greater St. Lucia Wetland Park.
15. Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean.
16. Under the Ramsar Convention – Convention on Wetlands of International Importance especially as Waterfowl Habitat.

References

- Agardy, T. (1997), *Marine Protected Areas and Ocean Conservation*, RG Landes Company, Austin, TX.
- Belfiore, S., Cicin-Sain, B. and Ehler, C.N. (Ed.) (2004), *Incorporating Marine Protected Areas into Integrated Coastal and Ocean Management: Principles and Guidelines*, IUCN, Gland and Cambridge, MA.
- Boersma, P.D. and Parrish, J.K. (1999), "Limiting abuse: marine protected areas, a limited solution", *Ecological Economics*, Vol. 31 No. 2, pp. 287-304.

- Commission for Environmental Cooperation (CEC) (2003), *Strategic Plan for North American Cooperation in the Conservation of Biodiversity*, CEC, Montreal, QC.
- Convention on Biological Diversity (CBD) (1995), *COP 2 Decision II/10. Conservation and Sustainable Use of Marine and Coastal Biological Diversity*, CBD, Jakarta.
- Convention on Biological Diversity (CBD) (2010a), *COP 10 Decision X/2. Strategic Plan for Biodiversity 2011-2020*, CBD, Nagoya.
- Convention on Biological Diversity (CBD) (2010b), *COP 10 Decision X/29. Marine and Coastal Biodiversity*, CBD, Nagoya.
- Crowder, L.B., Lyman, S.J., Figueira, W.F. and Priddy, J. (2000), "Source-sink population dynamics and the problem of siting marine reserves", *Bulletin of Marine Science*, Vol. 66 No. 3, pp. 799-820.
- Declaración de Chetumal (2004), "Proyecto para la conservación y uso sostenible del Sistema Arrecifal Mesoamericano (SAM): Resultados del Primer Congreso Mesoamericano de Pescadores", Declaración de Chetumal, Chetumal.
- di Sciara, G.N. (2009), "The Pelagos Sanctuary hanging in the balance: will it be a beacon for Mediterranean protection or a failed park?", The First International Conference on Marine Mammals Protected Areas, 30 March-3 April, Maui, HI.
- FAO (2007), *Report and Documentation of the Expert Workshop on Marine Protected Areas and Fisheries Management: Review of Issues and Considerations*, Food and Agriculture Organization, Rome.
- Fidelman, P., Evans, L., Fabinyi, M., Foale, S., Cinner, J. and Rosen, F. (2012), "Governing large-scale marine commons: contextual challenges in the coral triangle", *Marine Policy*, Vol. 36 No. 1, pp. 42-53.
- Francis, G. (2008), "Evolution of contexts for protected area governance", in Hanna, K.S., Clark, D.A. and Slocombe, D.S. (Eds), *Transforming Parks and Protected Areas: Policy and Governance in a Changing World*, Routledge, New York, NY and London, pp. 15-38.
- Gell, F.R. and Roberts, C.M. (2003), "Benefits beyond boundaries: the fishery effects of marine reserves", *Trends in Ecology and Evolution*, Vol. 18 No. 9, pp. 448-55.
- Global Environment Facility (GEF) (2007), *Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS) Project: Terminal Evaluation*, GEF, Washington, DC.
- Grant, S.M. (2005), "The applicability of international conservation instruments to the establishment of marine protected areas in Antarctica", *Ocean & Coastal Management*, Vol. 48 Nos 9-10, pp. 782-812.
- Grilo, C. (2010), "The impact of maritime boundaries on cooperation in the creation of transboundary marine protected areas: insights from three cases", *Ocean Yearbook*, Vol. 24, pp. 115-50.
- Guerreiro, J., Chircop, A., Dzidzornu, D., Grilo, C., Ribeiro, R., Elst, R. and Viras, A. (2011), "The role of international environmental instruments in enhancing transboundary marine protected areas: an approach in East Africa", *Marine Policy*, Vol. 35 No. 2, pp. 95-104.
- Guerreiro, J., Chircop, A., Grilo, C., Viras, A., Ribeiro, R. and Elst, R. (2010), "Establishing a transboundary network of marine protected areas: diplomatic and management options for the east African context", *Marine Policy*, Vol. 34 No. 5, pp. 896-910.
- Hilborn, R., Stokes, K., Maguire, J.-J., Smith, T., Botsford, L.W., Mangel, M., Orensanz, J., Parma, A.M., Rice, J., Bell, J., Cochrane, K.L., Garcia, S., Hall, S.J., Kirkwood, G.P., Sainsbury, K., Stefansson, G. and Walters, C. (2004), "When can marine reserves improve fisheries management?", *Ocean & Coastal Management*, Vol. 47 Nos 3-4, pp. 197-205.
- International Union for Conservation of Nature (IUCN) (1975), *An International Conference on Marine Parks and Reserves*, IUCN, Tokyo.
- IUCN-WCPA (2008), *Establishing Marine Protected Area Networks – Making it Happen*, IUCN-WCPA, National Oceanic and Atmospheric Administration and The Nature Conservancy, Washington, DC.

- Kelleher, G. (1999), *Guidelines for Marine Protected Areas*, World Commission on Protected Areas, Gland and Cambridge, MA.
- Kimball, L.A. (2005), *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction and Options for Cooperation for the Establishment of Marine Protected Areas (MPAs) in Marine Areas Beyond the Limits of National Jurisdiction*, Secretariat of the Convention on Biological Diversity, Montreal, QC.
- Lubchenco, J., Palumbi, S.R., Gaines, S.D. and Andelman, S. (2003), “Plugging a hole in the ocean: the emerging science of marine reserves”, *Ecological Applications*, Vol. 13 No. 1, pp. 3-7.
- Lubombo Protocol (2000), “Lubombo Ponta do Ouro – Kosi Bay Marine and Coastal Transfrontier Conservation and Resource Area”, Lubombo Protocol.
- Mittermeier, R.A., Kormos, C.F., Mittermeier, C.G., Robles, G.P., Sandwith, T. and Besançon, C. (2005), *Transboundary Conservation: A New Vision for Protected Areas*, Cemex, Arlington, TX.
- OSPAR Commission (2010), *2009/2010 Status Report on the OSPAR Network of Marine Protected Areas*, OSPAR Commission, London.
- Pelagos Sanctuary Agreement (1999), “Agreement on the Creation of a Mediterranean Sanctuary for Marine Mammals”, Pelagos Sanctuary Agreement, Rome.
- Roberts, C.M., Bohnsack, J.A., Gell, F., Hawkins, J.P. and Goodridge, R. (2001), “Effects of marine reserves on adjacent fisheries”, *Science*, Vol. 294 No. 5548, pp. 1920-3.
- Russ, G.R. and Alcala, A.C. (1999), “Management histories of Sumilon and Apo Marine Reserves, Philippines, and their influence on national marine resource policy”, *Coral Reefs*, Vol. 18 No. 4, pp. 307-19.
- Russ, G.R., Alcala, A.C., Maypa, A.P., Calumpong, H.P. and White, A.T. (2004), “Marine reserve benefits local fisheries”, *Ecological Applications*, Vol. 14 No. 2, pp. 597-606.
- Spalding, M.D., Fox, H.E., Allen, G.R., Davidson, N., Ferdana, Z.A., Finlayson, M., Halpern, B.S., Jorge, M.A., Lombana, A., Lourie, S.A., Martin, K.D., McManus, E., Molnar, J., Recchia, C.A. and Robertson, J. (2007), “Marine ecoregions of the world: a bioregionalization of coastal and shelf areas”, *BioScience*, Vol. 57 No. 7, pp. 573-83.
- TFCA Protocol (2000), “General Trans-Frontier Conservation and Resource Area Protocol”, TFCA Protocol, Durban.
- TIHPA MoA (1996), “Memorandum of Agreement Between the Government of the Republic of the Philippines and the Government of Malaysia on the Establishment of the Turtle Island Heritage Protected Area”, TIHPA MoA, Manila.
- Toropova, C., Meliane, I., Laffoley, D., Matthews, E. and Spalding, M. (2010), *Global Ocean Protection: Present Status and Future Possibilities*, Agence des Aires Marines Protégées/IUCN-WCPA/UNEP-WCMC/TNC/UNU, Brest/Gland, Washington, DC and New York, NY/Cambridge/Arlington/TX/Tokyo.
- Tuan, V.S. and Pernetta, J. (2010), “The UNEP/GEF South China Sea Project: lessons learnt in regional cooperation”, *Ocean & Coastal Management*, Vol. 53 No. 9, pp. 589-96.
- United Nations (UN) (2002), *Report of the World Summit on Sustainable Development*, UN, New York, NY.
- White, A.T., Courtney, C.A. and Salamanca, A. (2002), “Experience with marine protected area planning and management in the Philippines”, *Coastal Management*, Vol. 30 No. 1, pp. 1-26.
- Williams, M.J. (1998), “Fisheries and marine protected areas”, *Parks*, Vol. 8 No. 2, pp. 47-53.
- Zimmerer, K.S. (2006), “Geographical perspectives on globalization and environmental issues: the inner-connections of conservation, agriculture, and livelihoods”, in Zimmerer, K.S. (Ed.), *Globalization and New Geographies of Conservation*, The University of Chicago Press, Chicago, IL, pp. 1-43.

Web references

CEC Knowledge Network webpage: www2.cec.org/nampan/
Commission for Environmental Cooperation webpage: www.cec.org/
Common Wadden Sea Secretariat webpage: www.waddensea-secretariat.org/
Coral Triangle Initiative Secretariat webpage: www.cti-secretariat.net/
Giuseppe Notarbartolo di Sciarà's Marine Conservation Blog and Website: www.disciara.net
International Maritime Organization webpage: www.imo.org
OSPAR Commission webpage: www.ospar.org/
Ramsar Convention webpage: www.ramsar.org
South China Sea Project webpage: <http://refugia.unepscs.org/>
UNESCO World Heritage Centre webpage: <http://whc.unesco.org>
United Nations Environment Programme webpage: www.unep.org
World Wildlife Fund webpage: www.worldwildlife.org/home-full.html

Further reading

Meliane, I., White, A., Smith, S., Crain, C.M. and Beck, M. (2010), "Moving forward towards networks and broader spatial management", in Toropova, C., Meliane, I., Laffoley, D., Matthews, E. and Spalding, M. (Eds), *Global Ocean Protection: Present Status and Future Possibilities*, Agence des Aires Marines Protégées and IUCN WCPA and UNEP-WCMC and TNC and UNU and WCS, Brest and Gland and Washington, DC and New York, NY and Cambridge and Arlington, TX and Tokyo, pp. 69-82.

About the authors

José Ângelo Guerreiro da Silva has a PhD in Biosystematics from the Faculdade de Ciências da Universidade de Lisboa. Currently, he is Auxiliar Professor in the same institution. He was General Coordinator of the PUMPSEA Community Project and Governance Leader of the TRANSMAP Community Project. His main research areas include marine and ocean governance, environmental policy and management, environmental conservation and marine biology. José Ângelo Guerreiro da Silva is the corresponding author and can be contacted at: jasilva@fc.ul.pt

Raquel Curto Fernandes e Castro Ribeiro has a Post-Graduate qualification in Land and Environmental Planning from the Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa. At EGA, she has been developing activities in land planning and environmental assessment and has been a researcher in the TRANSMAP Community Project.

Ana de Carvalho Cameira Mocinho Viras has a Master's degree in Environmental Management from the Faculdade de Ciências da Universidade de Lisboa. Currently she is attending post-graduation studies in Integrated Management Systems at SGS. At EGA, she has been developing activities in governance and environmental assessment and she has been a researcher in the PUMPSEA Community Project.

Catarina Bentes Silva Grilo is a Doctoral student at the Faculdade de Ciências da Universidade de Lisboa. Her thesis addresses governance issues related to transboundary marine protected areas in East Africa. Her current research is focused on the human dimensions of marine conservation and of fisheries management.

To purchase reprints of this article please e-mail: reprints@emeraldinsight.com
Or visit our web site for further details: www.emeraldinsight.com/reprints