The Role of
Transboundary Natural Resource Management In
Peace Building Across International Borders

Amanda M. Roberts

Abstract

Theories of resource induced conflict and positive peace are used to analyze the effectiveness of Transboundary Natural Resource Management (TBNRM) as a tool for increasing cooperation across international boundaries, the Sangha River Trinational Area Protected Areas Complex in Central Africa and the "W" Park Complex in West Africa. Results indicate that the potential for resource induced competition and violence, as well as the threat of a disruption in cooperation, remain high in parks with less coordination. Conversely, increased cooperation can lessen the impact of conflict on natural resource management across boundaries but may be less effective in building lasting peace. The results of this study show the importance of strengthening the institutional capacities of governments in countries that face a high risk on environmentally induced conflicts. They also suggest the potential of TBNRM playing a larger role in conservation and peace, both between and within countries.

Introduction

There has been great deal of research regarding the effectiveness of Transboundary Natural Resource Management (TBNRM) on wildlife and biodiversity, but little importance has been given to TBNRM and its effects on cooperation and peace. This paper explores the efficacy of TBNRM as a tool for peace building through coordination of activities and cooperation between governments in West and Central Africa and to understand in what circumstances TBNRM can be an effective tool for peace building, why it has not been successful in some areas, as well as making suggestions as to how its efficiency can be improved.

The paper will first discuss the backgrounds and processes of collaboration at two TBNRM areas, the Sangha River Trinational Area Protected Areas Complex in Central Africa and the “W” Park Complex in West Africa. Levels of coordination and cooperation among the countries joined by there complexes will be analyzed and used as an indicator for peace.

Background

Forty-nine of countries in Africa are described as the world’s least developed countries (LDCs)[1]. Population growth is extremely high in this region; current estimates predict the population of West Africa alone will double within the next thirty years[2]. This increase has vital implications for greater resource pressure and use, which may in turn cause overexploitation, degradation, and conflict over the availability of resources. These factors can have an even

[1] Ben-Ari, 2002.

greater impact on the development of a country and may produce a negative feedback loop. In light of these issues, the regions of West and Central Africa are prime locations to study the correlation between resource scarcity and violence, as well as methods of peace building devised to lessen the impacts of resource scarcity on the human population.

TBNRM has a number of stated objectives, including resource management, biodiversity conservation, promotion of regional economic development, regional and transborder cooperation, and peace building between states and local communities.[3] One indicator of peace may be the level of cooperation that exists between countries, or positive peace; TBNRM might be an effective tool for controlling environmental scarcity and mitigating violent conflict through the cooperation between states. This cooperation can create a positive feedback loop, which promotes peace, in turn leading to more cooperation while improving conservation in transboundary zones.

Within the past decade there has been a dramatic increase in the number of TBNRM areas, especially on the continent of Africa. In the world there are currently 169 adjacent protected area complexes involving 113 countries, which include 667 individual protected areas. In Africa there are 35 complexes in 34 countries, which include 148 protected areas.[4] A great deal of research has been conducted on the successes and failures of TBNRM in conservation and resource management (e.g. Kameri-Mbote et al., 2001; Lycklama à Nijeholt et al., 2001; and Magha et al., 2001). It is still largely unclear however, whether the stated objectives of regional economic development and from that, peace have seen a comparable increase relative to the number of complexes, particularly in West and Central Africa. Studies of TBNRM in Africa have been divided into regional studies, which are used to provide an overview of the natural resources shared between countries and the roles of various bodies responsible for the management of TBNRM.

Opportunities for cooperation and peace building exist within the framework of TBNRM, nevertheless; the function of these programs in peace building across international borders has yet to be analyzed in any research.[5] This type of inquiry is essential in understanding the effects of TBNRM on regional cooperation, especially in areas of high resource competition.

---

[2] Lycklama à Nijeholt et al. 2001.
[3] van der Linde et al. 2001.
[4] van der Linde, 2001.
[5] van der Linde, 2001.

Review of the Literature

Literature on the theme of TBNRM can be divided into two topics. The first deals with theories that link resource degradation and conflict and the effects of conflict on the environment, the second area focuses on TBNRM initiatives and other cross-border resource management.

Thomas Homer-Dixon, one of the foremost scholars researching the relationship between environmental scarcity and violent conflict, examines the connection between conflict and environmental change in his 1991 article "On the Threshold: Environmental Changes as Causes of Acute Conflict". His findings indicate that environmental degradation and depletion of natural resources will contribute significantly to social turmoil in the future, one such finding shows that armed conflicts are "mainly located among the poorest countries."[6] Dixon proposes that poorer countries are more susceptible to this condition, and therefore are more likely to be afflicted by environmentally induced conflicts then richer, more developed countries. He also analyzes the effectiveness of free-market mechanisms to minimize the impacts of environmental degradation on developing countries, however, he argues that as population growth and environmental damage continue "policymakers will have less and less capacity to intervene in order to keep this damage from producing serious social disruption, including conflict."[7]

Indra de Soysa analyzes two separate theories linking the environment and conflict. He studies how resource depravation can lead to inter-state and intra-state conflicts, as well as how an abundance of resources (exported as primary commodities) can lead to these same types of conflicts. Both examples show cause for proper resource management and conservation.

Wildlife management in areas of highly unsustainable consumption, such as the "privatization of tenure" and the "reinstatement of traditional control systems" has excluded users from resources. These changes in land ownership have forced many user groups to less productive land more prone to environmental degradation. According to Brown, et. al (1999) there are two major types of biodiversity degradation, the conversion of habitats to other uses and "unsustainable off-take" such as bushmeat hunting. Unsustainable off-take poses the greatest threat in equatorial Africa. They propose that effective management in this area is

[6] de Soysa 2002.
[7] Homer-Dixon 1991, 2.

difficult to obtain due to the complex political situation and the unique features of the wildlife. They believe new forms of ownership and rights based management are promising solutions to the problem.

Bishop and Garnett (2000) discuss the impact of civil conflict on the environment, and more specifically the Upper Guinea forests in West Africa. They theorize that the populations of people displaced due to ongoing civil conflict in West Africa are playing a major role in deforestation and environmental damage. This damage, however, can be mitigated by the role of governmental institutions, IGOs and NGOs. The majority of funding in post-conflict zones goes to human life and welfare, leaving environmental concerns to be dealt with after the period of emergency. Both relief and development agencies typically reason environmental work only to be possible in times of peace. The authors believe that there is a strong relationship between human welfare and the environment, and improvement in the environment through sustainable development will promote long-term peace and stability. TBNRM can play a role in both environmental protection and the mitigation of conflict.

Methods

In order to assess the efficacy of TBNRM on peace building and cooperation across the international borders of the selected areas, the Sangha River Trinational Area Protected Areas Complex and the "W" Park Complex, the number of cooperative agreements signed between the different countries was first determined. The committees responsible for the oversight of these agreements and the management of the complexes were analyzed for their level of coordination using the scale found in Table II. According to Sandwith et al. (2001), coordination must reach a level of at least 1 in order for them to be recognized as a TBPA. This same reasoning was used and expanded to the formal recognition of TBNRM areas as well. Using the levels of coordination to explain how much cooperation between borders is occurring was then used as in indicator for peace building among countries.

Study Areas

Sangha River Trinational Area Protected Areas Complex

A brief history and overview

The Sangha River Trinational Area Protected Areas Complex initiative is located in the Northwest Congolian Moist Lowland Forest eco-region. It is made up of four conservation projects spanning three countries: the Dzanga-Ndoki National Park and Dzanga-Sangha Dense Forest Special Reserve (created 1990), Central African Republic (CAR), the Nouabalé-Ndoki National Park (created 1993), Republic of Congo, the Lobéké National Park (created 2001), Republic of Cameroon, and the "Zone Périphérique" (buffer zone of Nouabalé-Ndoki), Republic of Congo.[8] (See figure 1.0)

The borders of these three countries have remained relatively unchanged since they were established by colonial powers. Families, kin-groups, and tribes, which have been moving around both Central and West Africa in search of resources from the time before colonial borders were established, all lay claim to traditional territories. The entire region has been characterized by the usage and competition over resources by various human populations, often with different approaches to resource use and management.[9] Artificially imposed national borders disrupt the historical land use patters and activities.

"These [borders] seldom reflect present political or land-use zoning boundaries; as a result, locally meaningful landscapes often conflict with those maintained by international agreements or national land-use zoning policies."[10] Traditions such as respect for natural resource use and conflict resolution approaches have been replaced with poor governmental control mechanisms, enforcement agencies and private enterprise, which have a tendency to be disadvantageous to environmental conservation.[11]

The process of collaboration for the Sangha River Trinational initiative can be separated into five phases. Phase one began as early as the late 1980s with the proposal of the concept for a trinational collaborative project submitted to the CAR government and donor agencies on behalf of scientists and international conservation agencies. "This interest ultimately lead to the creation of the three protected areas between 1990 and 2001."[12] Phase two encompasses the years between 1995 and 1999. The MacArthur Foundation awarded a grant to the WWF and the WCS in 1995 to "foster trinational collaboration."[13] This resulted in a number of meetings and

[8] Steel and Curran 2001.
[9] Steel and Curran 2001.
[10] Wilkie et al. 2001, III(6)
[11] Steel and Curran 2001.
[12] Steel and Curran 2001, III(1).
[13] Steel and Curran 2001, I(2).

site exchanges (between the three countries protected areas) from 1996-2001. In 1997 Yale University created the Sangha River Network, which developed from the informal movements of researchers and protected area managers from site to site. Phase three began in December 1999 at the third trinational meeting, the development and implementation of a work-plan was a highlight of this meeting, as well as the incorporation of trinational antipoaching patrols on the Sangha River and the signing of the Yaoundé Declaration. Phase four is currently in progress and includes plans for field activities, the formalization of institutional frameworks, and the attainment of funding.

Analysis of cooperation

Two formal cooperative agreements have been signed between the Central African Republic, the Republic of the Congo and Cameroon. Along with these three countries other Central African heads of state signed the Yaoundé Declaration on March 1999, including Equatorial Guinea, Gabon and Chad. The Sangha River Trinational Agreement was signed in December of the following year.

Within the time period of 1997 to 2001, between two and six meetings have occurred annually. During 1997 there were three meetings held, the first "bi-national" meeting between the protected area managers of the Congo and CAR, the Trinational Sangha River Conference, and the second trinational meeting of protected area managers.[14] In 1999 there were two national meetings, one between the Central African Heads of State and the third trinational meeting. In 2000 the fourth trinational meeting took place as well as a meeting in March between legal experts and protected area administrators, an organizational meeting in September, the first annual "Prefets' (Governors)"[15] meeting in October, a meeting of regional experts in November, and the meeting to sign the Cooperative Agreement in December. Up to the point when Steel and Curran published there report "*Beyond Boundaries: Transboundary Resource Management in the Sangha River Trinational Initiative"* in 2001, two meetings had taken place, the fifth trinational meeting and the first meeting of the Sangha River Trinational Wardens. According to the scale in Table II this would place the Sangha River Trinational Area Protected Areas Complex somewhere between a level two and a level four.

[14] Steel and Curran, 2001.
[15] Steel and Curran, 2001, III (4)

Further inquiry into the levels of cooperation show that the parks cooperate in at lest three different activities, monthly antipoaching patrols, an "Ecoguard" training session, and a Trinational Cyber Tracker training session, both held in 2001. Ecological monitoring and research cooperation will increase because of these training sessions. Communication between sites also continues to improve with the "instillation of HF radios, weekly radio communication and regular exchange of information"[16] between trinational project sites.

Taking into account the number of activities in which cooperation occurs between parks, communication between parks, the number of meeting held, and the number of cooperative agreements signed between the governments of all three countries, the level of cooperation will be ranked at a Level 4, Coordination of Planning. Because the Parks have not yet reached all of their intended goals and coordination has not taken place on at least six activities, the park can not be rated at the highest level of Five, this however, does not appear to be an unreachable goal.

"W" Park Complex

A brief history and overview

The "W" Park Complex is made up of the National Park of Pendjari and Djona game reserve in Benin, Arly Park (the wildlife reserves of Singou and Pama) in Burkina Faso, and Tamou and Dosso wildlife reserves and the "W" Park in Niger. Officially the park is termed the "WAP" park complex and includes the "W" Park, Arly Park, and the Pendjari Park. For the purpose of this study however the entire regional park system will be included and referred to as the "W" Park Complex. This is one of the largest complexes in Africa, covering 5 million hectares in total. One "single decision-making body"[17] in the Colonial era, up until the time of the countries independence, originally managed the park. From the 1960's to the 1980's (depending on the county's date of independence) each country managed the parks autonomously. In 1984, a process of collaboration was initiated by the signing of a regional agreement to prohibit poaching. The initial intention of regional cooperation between the three countries was to

[16] Steel and Curran, 2001, III (6).
[17] Magha, et al., 2001, I (1).

> "Slow down the loss of biological diversity, through the instillation of an effective and sustainable system of transboundary management of ecosystems and natural resources…"[18]

The only means to effectively manage and control poaching, the degradation of natural resources, and manage natural resources that crossed international borders was a system of regional cooperation.

Historically speaking, four different communities have inhabited the park, the Gourmantché, Djerma, and Dendi cultivators, and the Peulhs pastoralists. These four communities have had very different means of managing natural resources and can benefit from a regional mutual system of resource management to reduce conflict. More recently settlements around the periphery of the park have grown considerably. This has created conflict between sedentary landowners and itinerant pastoralists, as well as an increase of pressures on the natural resources in and around the park.[19]

The initial antipoaching agreement was signed between Benin and Burkina Faso on July 12, 1984, Niger did not sign on until 1986. The first year of regional cooperation was extremely weak. In 1987 the European Communities Commission decided to initiate a development project for contiguous area and environmental management. This project went through a number of changes between the years of its inception until 1993. The financial proposal for the project was not completed until 1997, after which the Ministers of the Environment from each country involved participated in a meeting to decide their individual responsibilities. In 1999 Convention No. 6135/REG was signed starting the project, which was officially launched in April of 2000, sixteen years after the first agreement was signed.

Analysis of cooperation

Two cooperative agreements were signed between Benin, Burkina Faso and Niger, the antipoaching agreement of 1984 and Convention No. 6135/REG. Other projects include the regional conservation program for contiguous protected areas in the "W" park and the regional

[18] Magha, et al., 2001, I (2).
[19] Magha et al., 2001.

project for conservation of biodiversity in the WAP complex, financed and coordinated by the European Union and the IUCN, respectively.

The antipoaching agreement calls for the harmonization of policies among all parks in the complex, and joint operations along with the creation of one, inter-state committee. Regional conservation programs also aim to implement regional coordination, synchronization of policies and decentralization of conservation efforts. These goals have, as of yet, not been implemented. Efforts have been neither regular nor effective and each country has adopted its own management policies. Because there are no coordinated activities among the countries and little to no regular communication, the level of cooperation will be ranked at the level 0-1.

Conclusions

Effectiveness of park complex cooperation depends largely on the strength of each individual country's institutional capacities. There are a number of constraints to TBNRM in West and Central Africa, as described by David Wilkie, et. al. (2001). These include, but are not limited to:

-Lack of communication technologies that are affordable.
-Insecure and unclear land tenure policies.
-Lack of trust and respect for governmental authorities.
-Weak management capacities within each country.
-Lack of finances, personnel, and resources to effectively manage parks (such as vehicles, and supplies).
-Lack of recognition for TBRNM in national environmental policies.
-Lack of a development plan which takes into account the possible problems with neighboring countries.

These limitations not only affect countries abilities to manage natural resources, but their abilities to promote coordination and cooperation. These constraints, as well as the success and failures of resource and wildlife management, and conservation through TBNRM in the Sangha River Trinational Area Protected Areas Complex and the "W" Park Complex have, to a large extent, been previously analyzed. The lack of coordination between states can cause an increase in the pressures on biodiversity and may also have implications for peace building. The losses of financial resources, possible social inter-state and intra-state conflicts, and land degradation or desertification are just some of the possible consequences resulting from poor coordination.

One major inhibition on the part of the states to become actively involved in TBNRM is that it assumes that states

> "Gradually let go of a share of their power, to the benefit of other local actors (populations, civilian society, the private sector) and in favor of a supranational institution coordinating and integrating…"[20]

In West and Central Africa, where the rule of law is often weak, national and international agreements will rarely be enforced. Differing policies and laws among countries can only compound this problem, thus the harmonization of resource management across borders is imperative, as well as putting the control in the hands of park managers and local level actors.

The relative success of the Sangha River Trinational Area Protected Area Complex over the "W" Park Complex may be the greater involvement of governmental officials, park managers and park employees. The Sangha River initiative grew from a slow process, building incrementally over time with the cooperation of all parties involved, meeting and planning. The "W" Park initiative was largely planned by outside agencies and only involved governments in the final stages of implementation. The possibilities for creating a more lasting peace will come from initiatives that build cooperation from the bottom up.

Recently, more co-management models have been introduced to TBNRM areas throughout the world. These models place more emphasis on putting much of the decision making into the hands of local communities. A recent meeting of the ICUN World Parks Congress took place in Durban, South Africa, in September of 2003, to discuss governance issues for protected areas in the 21st century. Topics included: decentralization; involvement of local communities, NGOs and private organizations; new technologies; and strengthening the long-term stability of PA management.[21]

A major part of TBNRM initiatives, lacking from both the Sangha River and "W" Complex, are a set of policies relating to transboundary conservation in times of conflict. Conflict can often have very negative impacts on protected areas including the influx of internally displaced peoples and refugees into park boundaries, a lack of enforcement of rules and regulations pertaining to resource use, increased bushmeat hunting, etc. Conflict between states within the boundaries of the park complex can also result in the total disruption

[20] Magha, et. al, 2001, V (3).
[21] ICUN, 2003.

management. Including a set policies and principals in times of conflict can greatly mitigate its effects on the complex as a whole.

According to John Gaultung's definition of positive peace, TBNRM is an effective tool for building cooperation between states, through the act of working towards a common goal of resource conservation together. TBNRM initiatives that reach a level of cooperation of five (Table II) have a greater chance of successfully protecting resources and biodiversity due to their greater level of coordination. This can then translate into a lesser chance for conflict over resources such as water between states. By protecting resources and using them in a sustainable manner today, there is a greater chance that they will still be there for the benefit of future generations. Whether or not TBNRM can be effective in creating a lasting peace or the prevention of conflict is still unknown.

Future Research

A great deal of research is still needed in the field of TBNRM. Detailed investigation of local level conflicts in and around park complex will benefit greater analysis of the efficacy of TBNRM in mitigating conflict. Research should also include a study of inter-state conflict between different human groups using and protecting the park complex. TBNRM can have an impact on numerous aspects of cooperation, peace building, conservation and resource management, and therefore holds the potential for a great amount of future research.

References

Ben-Ari, Nirit. 2002. "Poverty is Worsening in African LCD's." Africa Recovery 16 (September 2002): 9.

Bishop, Timothy and Tommy Garnett. 2000. Civil Conflict and the Environment in the Upper Guinean Forests of West Africa. Biodiversity Support Program, U.S. Agency for International Development. Washington, D.C.

Brown, David, Stephen Cobb, and Amar Inamdar. 1999. What's Special About Wildlife Management in Forests? Concepts and Models of Rights-based Management, With Recent Evidence From West-Central Africa. *ODI Natural Resource Perspectives* No.44. London: Overseas Development Institute.

Homer-Dixon, Thomas F. 1999. *Environment, Scarcity, and Violence*. Princeton, NJ: Princeton University Press.

ICUN. *New Ways of Working Together: Governance Workshop Stream*. 5th World Parks Conference, 2003.

Kameri-Mbote, Patricia, and Jeremy Lind. 2001. *Imporving Tools and Techniques for Crisis Management: The Ecological Sources of Conflict: Experiences From Eastern Africa*. (Working Paper)

Lycklama à Nijeholt, R., S. de Bie, and C. Geerling. 2001. Beyond Boundaries: Regional Overview of Transboundary Natural Resource Management in West Africa. In Biodiversity Support Program, *Beyond Boundaries: Transboundary Natural Resource Management in West Africa*. Washington, D.C., U.S.A.: Biodiversity Support Program.

Magha, M. I., J-B. Kambou, and J. Koudenoukpo. 2001. Beyond Boundaries: Transboundary Natural Resource Management in "W" Park. In Biodiversity Support Program, *Beyond Boundaries: Transboundary Natural Resource Management in West Africa*. Washington, D.C., U.S.A.: Biodiversity Support Program.

Morales, Ximena Vengoechea. Towards a Positive Concept of Peace. The Richardson Institute. Http://www.copri.dk/copri/ipra/conf-papers/morales.doc.

Rodgers, A., J. Mugabe, and C. Mathenge. 2001. Beyond Boundaries: Regional Overview of Transboundary Natural Resource Management in Eastern Africa. In Biodiversity Support Program, *Beyond Boundaries: Transboundary Natural Resource Management in Eastern* Africa. Washington, D.C., U.S.A.: Biodiversity Support Program.

Sandwith, T., Shine, C., Hamilton, L. and Sheppard, D. (2001). *Transboundary*

Protected Areas for Peace and Co-operation. IUCN, Gland, Switzerland and Cambridge, UK. xi + 111pp.

Steel, L., and B. Curran (with contributions from Henk Hoefsloot. 2001. Beyond Boundaries: Transbounday Natural Resource Management in the Sangha River Trinational Initiative. In Biodiversity Support Program, *Beyond Boundaries: Transboundary Natural Resource Management in Central Afric*a. Washington, D.C., U.S.A.: Biodiversity Support Program.

van der Linde, H., J. Oglethorpe, T. Sandwith, D. Snelson, and Y. Tessema (with contributions from Anada Tiéga and Thomas Price). 2001. *Beyond Boundaries: Transboundary Natural Resource Management in Sub-Saharan Africa*. Washington, D.C., U.S.A.: Biodiversity Support Program.

Wilkie, D. S., E. Hakizumwami, N. Gami, and B. Difara. 2001. Beyond Boundaries: Regional Overview of Transboundary Natural Resource Management in Central Africa. In Biodiversity Support Program, *Beyond Boundaries: Transboundary Natural Resource Management in Central Africa.* Washington, D.C., U.S.A.: Biodiversity Support Program.

Annex 1.0

Committees responsible for the oversight of the Sangha River Trinational initiative

(Information taken from Steel and Curran, 2001)

Committee	Members	Meeting	Responsibilities
Trinational supervisory and arbitration committee	Ministers of Forestry in the three countries, the executive secretary of the Organization for the Conservation of Wild Fauna in Central Africa (OCFSA—Organisation pour la Conservation de la Faune Sauvage en Afrique Centrale)	Every 1-2 years	General oversight of the Sangha River Trinational initiative. The role of this committee is likely to grow to encompass the monitoring of all activities originating from the Yaoundé Declaration with the Sangh River Trinational initiative being but one of its dossiers.
Trinational Scientific Committee	Considered a consultative body to the Sangha River Trinational initiative	Ad Hoc basis	*
Trinational Monitoring Committee	Regional governors (Préfets), judges, legal authorities, representatives of military forces, Ministry of Forests and Wildlife regional administrators, funding agency representatives, protected area wardens, project directors	Once a year	To resolve conflicts, monitor and approve activity plans and annual reports, monitor the Planning and Execution Committee, and ensure the support of the various administrative services directly or indirectly involved in the Sangha River Trinational initiative
Trinational Planning and Execution Committee	Wardens, project directors, representatives of technical and financial support organizations	Twice a year	To prepare work plans and budgets, ensure the coordinated execution of the activities outlined in the workplan, disseminate information to concerned parties, and prepare annual reports.

Table I.

Transboundary Natural Resource Management (TBNRM): Any process of collaboration across boundaries that increases the effectiveness of attaining natural resource management of biodiversity conservation goal(s) (van der Linde *et al.,* 2001).

Protected Area: An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity3, and of natural and associated cultural resources, and managed through legal or other effective means (IUCN, 1994a).

Transboundary Protected Area (TBPA): An area of land and/or sea that straddles one or more Boundaries between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed co-operatively through legal or other effective means (Sandwith *et al.*, 2001).

Parks for Peace: Parks for Peace are transboundary protected areas that are formally dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and to the promotion of peace and co-operation (Sandwith *et al.*, 2001).

Table II. Levels of Cooperation Between Internationally Adjacent Protected Areas
(Adapted from Sandwith et al. 2001)

Levels of co-operation	Characteristics
Level 0: No Cooperation	·No communication between staff from two protected areas (PAs) ·No sharing of information or co-operation on any specific issues
Level 1: Communication	•Some two-way communication between PAs · Meetings/communication takes place at least once a year · Some sharing of information · Notification of actions which may affect the other PA sometimes takes place
Level 2: Consultation	· Communication more frequent (at least three times a year) · Co-operation occurs on at least two different activities · Two sides occasionally share information ·Notification of actions affecting the adjoining PA occurs occasionally
Level 3: Collaboration	· Communication is frequent (at least every two months) · Meetings occur at least three times a year · PAs actively co-operate on at least four activities, sometimes coordinating their planning and consulting with other PA before taking action
Level 4: Coordination of planning	· PAs communicate often and coordinate actions in some areas, especially planning · PAs work together on at least five activities, holding regular meetings and notifying each other in case of emergency ·PAs usually coordinate their planning, often treating the whole area as a single ecological unit
Level 5: Full co-operation	· Planning for both PAs is fully integrated, and if appropriate, ecosystem-based, with implied joint decision-making and common goals · Joint planning occurs, and, if the two share an ecosystem, this planning usually treats the two PAs as a whole ·Joint management frequently occurs, with co-operation on at least six activities · A joint committee exists for advising on transboundary co-operation