**POSSIBILITIES OF JOINT MANAGEMENT OF THE SEAFLOWER BIOSPHERE RESERVE IN THE COLOMBIAN-NICARAGUAN MARITIME BORDER[[1]](#footnote-1)**

**POSIBILIDADES DE MANEJO CONJUNTO DE LA RESERVA DE BIÓSFERA SEAFLOWER EN LA FRONTERA MARÍTIMA COLOMBO-NICARAGÜENSE**

**ABSTRACT**

The article develops a proposal for cross-border integration in border maritime area between Colombia and Nicaragua from a joint management perspective of the Seaflower Biosphere Reserve. Ostrom’s Theories of Commons and International Regimes are complementarily used as a framework for addressing conflicts over resources in a litigation and territorial indeterminacy stage. The institutional framework of Transboundary Biosphere Reserves of UNESCO is also discussed, along with some developing global experiences. Finally, a multidisciplinary characterization of the social and environmental value of the Seaflower Reserve and its transboundary nature, is elaborated to demonstrate that the situation of conflict and indeterminacy in the area, puts its normal development and protection at risk, so that Local actors involved have a fundamental role in joint management initiatives led by the States.

**Key Words:** Biosphere Reserves, Caribbean Sea, cross-border integration, Colombia, Nicaragua.

**RESUMEN**

El artículo explora las posibilidades de una integración transfronteriza en el espacio marítimo limítrofe entre Colombia y Nicaragua a partir del manejo conjunto de la Reserva de Biósfera Seaflower. Se utilizan las teorías de los Bienes Comunes de Ostrom y los Regímenes Internacionales como marco para el abordaje de conflictos por recursos en un escenario de litigio e indeterminación territorial, y se analiza el marco institucional de las Reservas de Biósfera Transfronterizas de la UNESCO, junto con algunas experiencias mundiales en desarrollo. Finalmente, una caracterización multidisciplinar del valor social y ambiental de la Reserva de Biósfera Seaflower y de su naturaleza transfronteriza es elaborada, para demostrar que la situación de conflicto e indeterminación en la zona, pone en riesgo su normal desarrollo y protección, por lo que los actores locales implicados tienen un rol fundamental en las iniciativas de manejo conjunto lideradas por los Estados.

**Palabras clave**: Reservas de la Biósfera, Mar Caribe, integración transfronteriza, Colombia, Nicaragua.

**POSSIBILIDADES DE MANIPULAÇÃO CONJUNTA DA RESERVA DA BIOSFERA SEAFLOWER NA FRONTEIRA MARÍTIMA DA COLÔMBIA E NICARÁGUA.**

**RESUMO**

O artigo explora as possibilidades de uma integração transfronteiriça no espaço marítimo fronteiriço entre a Colômbia e Nicarágua com base na gestão conjunta da Reserva da Biosfera de Seaflower. Se utilizam as teorias de os Bens Comuns de Ostrom e os Regimes Internacionais como ponto de referência para lidar com conflitos de recursos num cenário de litígios e indeterminação territorial,  além a estrutura institucional das Reservas da Biosfera Transfronteiriça da UNESCO é analisada, juntamente com algumas experiências globais em desenvolvimento. Finalmente, é elaborada uma caracterização multidisciplinar do valor social e ambiental da Reserva da Biosfera de Seaflower e sua natureza transfronteiriça, para demonstrar que a situação de conflito e indeterminação na área põe em risco seu desenvolvimento normal e sua proteção, de modo que os atores locais envolvidos têm um papel fundamental nas iniciativas de gestão conjunta lideradas pelos Estados.

**Palavras-chave**: Reservas da Biosfera, mar do Caribe, integração transfronteiriça, Colômbia, Nicarágua.

**INTRODUCTION**

In 2000, the Archipelago of San Andrés, Providencia and Santa Catalina department was pronounced as the Seaflower Biosphere Reserve by the UNESCO, along with the pronouncement of being a Marine Protected Area (MPA) with an approximate area of 65000 kmts2 (77739 sq. yd.). In this area an extensive environmental complex has been consolidated linked to a wide variety of endemic species, mangroves, coral reefs, marine vegetation, among others, which are highly important not just for the ecological stability of the region, but also for humankind.

Since 2001, Colombia and Nicaragua started a lengthy dispute regarding the definition of their true boundaries over the aforementioned area, generating legal and political conflicts that have called into question the sovereignty over such maritime and insular space which have had different determinations by diverse international tribunals[[2]](#footnote-2). Beyond summarizing this whole litigation, it is more worth to pay attention to the last judicial decision pronounced by the International Court of Justice, which dismissed the 82nd meridian west as maritime border between both states and rearranged the whole Caribbean Sea area, with concrete effects not only on political terms, but with environmental repercussions related to the aforementioned Biosphere Reserve.

An UNESCO delegate, in 2013, stated for a Nicaraguan journal as “unbelievable” the fact that the area of the marine reserve had been politically divided into two states and asserted that such area should be managed by the two countries, each on its corresponding portion (*Nicaragua y Colombia deberán compartir reserva Seaflower*, 2013). Such is not a petty statement, since the importance of the Reserve is not just connected to state responsibilities, but also to the uses and ways of appropriation that local dwellers perform over it.

All things considered, it is worth to ask oneself: what is the most suitable way to achieve a joint management of the Seaflower Biosphere Reserve? Naturally, there is a wide spectrum of alternatives that could be taken into account but, aiming at not only recognizing the conflict from the Nation-Sate perspective but also the relevant part played by locals, an attempt to present a proposal that leads to a safe harbor the indeterminacy controversy, regarding the boundaries between Colombia and Nicaragua, generated by their rearrangement on the part of the ICJ will be made.

This article intents to demonstrate that the border dispute between Colombia and Nicaragua over the territorial and maritime rights in the Caribbean has created a scenario of conflict and indeterminacy in the area, which puts at risk the protection and normal development of the Seaflower Biosphere Reserve. Such reserve contains invaluable resources, habitats, and environmental corridors that fit within the wide context of the Greater Caribbean, trespassing the territorial boundaries between both countries, which demands a joint management of the Reserve that grants the proper use of the common goods there shared. There is also an international framework supported by the UNESCO and oriented towards the consolidation of Transboundary Biosphere Reserves, which could be put into practice for the scenario here presented.

On the other hand, it is expected to emphasize the acknowledgment of the local capacities, assuming that these people are the ones that coexist with the territory, exchange among each other, are familiar with its dynamics and have a conception of appropriation of it. Equally, the environmental importance of the territory to be studied will be taken into account and the generation of a negative impact on the balance on the Reserve area will be avoided considering its lack of established policies and concrete uses. Lastly, it will be highlighted that this dilemma goes beyond a sovereignty matter and is more related to the establishment of cooperation and integration mechanisms among states.

In order to do that, a bridge will be extended between the “common goods” theory by Elinor Ostrom (2000) and the theory of international regimes from its most neoliberal perspective, searching for a way out of some of the problems that lay under this case. The first of them being the indeterminacy of the common good in terms of its extension as a unit, its uses and the regulations for its protection. The second, the defining of its management must be bound more to cooperation than conflict, allowing a higher degree of awareness of future profits from a good joint territory management in contrast with the relative profits resulting from a unilateral proceeding on the part of the states involved. Such cooperation among states for the consolidation of regulations, both formal and informal, must be oriented, nevertheless, by the local people, who are the ones that have the knowledge on the uses and cares to be taken in an area of global interest but with local influence.

This is done hoping to understand that the most plausible alternative for the protection of an environmental area, such as the Seaflower Biosphere Reserve, in a scenario of indeterminacy and conflict, is the generation of formal and not-formal institutional mechanisms built upon the basis of local population that respond to a sociocultural affinity and coexist in a propitious environment for the achievement of “bottom-up” integration and cooperation mechanisms, being the states agents and guarantors of such agreements, better than being those who define and execute the forms of territory management.

**THE “COMMON GOODS” FRAMEWORK AND THE DEMAND FOR THE CONSOLIDATION OF INTERNATIONAL REGIMES.**

For this research, the theoretical development on “commons” carried out by Elinor Ostrom (2000) in *“El Gobierno de los Bienes Comunes”* (Governing the Commons) has been taken into account, because of its clear understanding of common-pool resources (CPR), and a dialogue between such theory and the theories on International Regimes in the light of International Relations has been set up to bring the former out of its merely local analysis, and placing it into a field of comprehension for a transboundary scenario where there is a local perspective and also a regional articulation.

**The Management of Common in Ostrom’s Theory**

Ostrom, in an attempt to resolve the problems related to collective action regarding the use of CPR, consolidates an alternative theoretical framework in contrast to the two traditional ways in which such management has been conceived. The approaches on collective action related to CPR has led to the already known “tragedy of the commons” (Hardin, 1968) as an inevitable result of individually rational strategies searching for a maximization of a scarce resource, producing short-run crowding effects and overuse.

But before taking a look at how the author solves such “tragedy”, it is essential to clarify some key concepts. First, CPRs must be comprehended as “a natural (…) resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use” (Ostrom, 2000, p. 66). This concept has two edges: the first one is *Resource System,* which refers to the physical arrangement of space and its repertory, the latter being understood as structure capacity and potential stock existing on it. The second one is *Resource Unit*, which refers to the use and potential amount of appropriation in the aforementioned system, i.e., the actual quantity of subtractable units.

The agents that interact with the CPRs are *appropriators* and *providers*. For the purpose of this paper, it turns out to be more interesting to focus on the former, that is, those who use the CPRs and appropriate the Resource Units, and also understand the functioning of the Resource System. With these elements, the CPRs face a predicament related to crowding effects and overuse performed by appropriators, in a scenario of legal uncertainty regarding agreements on the System’s management (Ostrom, 2000, p.69).

The two problems presented are the consequence of individual actions on the part of the appropriators who are not aware of the interdependency situation they are involved in, since the Resource System inevitably binds them together and excessive appropriation has a direct impact among all of them, one way or another[[3]](#footnote-3). The total benefits appropriators obtain when acting independently are usually less than could have been achieved had they coordinated their strategies in some manner (Ostrom, 2000, p. 77). This considered, it could understood that a collapse of resources in a socio-ecological system is the result of isolated appropriation practices, and the failure in the establishment of regulations and management rules for it (Ostrom, 2009).

Because of this, it is pivotal to comprehend that cooperation is desirable for: 1) achieving higher benefits in comparison to those obtained from non-cooperative individual acting and 2) sustaining the Resource System, which would allow the replenishment of Resource Units in the long term, avoiding overconsumption.

Following what has been said, Ostrom brings about a debate on the traditional conceptions of collective action based on rational strategies, which lead in the aforementioned “tragedy of the commons”. The solutions presented to solve such problem have been established by state mechanisms of control and coercion or through private-property institutions[[4]](#footnote-4). On this matter, Ostrom (2000, p. 35) states that “it has been assumed that the individuals have been caught in a grim trap. The resulting policy recommendations have had an equally grim character”, understanding that both solutions turn out to be insufficient and do not necessarily lead to cooperation due to the costs implied in building a State information, control and sanction system and the difficulty in defining the limits of property and the incapacity of distributing the resource in a fair and appropriate manner.

For this reason, Ostrom (2000) recommends to “stop viewing users of natural resources as prisoners”, for which the capacity of the participants in defining parameters of action and management of the CPRs must be increased, seeking to achieve different outcomes to the underlying “tragedies” of rational acting or external ways of coordinating collective action.

It must not be overseen that this paper will be focused on an indefinite CPR, since its jurisdiction, in terms of sovereignty, is not defined and the conflict between the involved states for its limits generates a high degree of uncertainty, an overlapping of regulations that may provoke conflict in its uses, putting the CPR itself at risk. The actors are, to a certain degree, “prisoners” of such uncertainty and the establishment of agreements beyond that frontier that respond to their interests, uses, and ways of organization is a stake for taking them out of that prison.

In order to do that, the author recognizes that ways of cooperation are produced within the communities that coexist with the CPR and around it. Differently from the two traditional models, in this particular case an external contract is not imposed, but instead it is born in the core of the individuals, and the (possible) action of an exogenous agent would be more related to the regulation and monitoring of such contract (either a formal or informal one).

But why is this the most suitable way? For Ostrom (2000, p. 46) the individuals are those who have the information “at hand”, due to their familiarity and proximity to the CPR, in regards to its uses and the characterization of the actors, with which a more efficient use of the resource would be possible, keeping its balance as a system.

The required conditions to achieve these self-organized ways are the construction of self-imposed demands, the consolidation of diverse mechanisms of action and conflict resolution, common rights and cooperation, along with solidarity. On top of this, clear and pertinent regulations must be enacted in relationship to appropriation, ways of use, cooperation, restrictions, providing, supplying, and distribution of the CPR (Añaños, 2014, p. 160-161).

Finally, all of this leads into a common good that responds, according to Añaños (2014) to,

*the existence of an autonomous regulation regime, which is a complex social process with its own demands and diverse forms that depend, mostly, on the nature of the resource, but also on the constitution of the community of the users and their institutions, which result in common rights of their users in a relationship of cooperation and solidarity, since there are no common goods without a previous agreement among users or owners in which they regulate their acquisition, use and distribution for the benefit of each and every one of them” (p.160).*

But since Ostrom’s interest is related to local character goods, a dialogue must be set up with certain aspects related to international relations, for which the theory of international regimes must be included, along with the consolidation of international (or transboundary) institutions that reduce conflict and foster cooperation.

***Inclusion of International Regimes***

First thing to be understood is the nature of international regimes, which are defined by Krasner as “a set of principles, norms, rules, and decision-making procedures that govern state behavior in specific issue areas of international relations” (in Hasenclever, Mayer y Rittberger, 1999, p. 499), that explain the possible cooperation between states in the sphere of world-wide politics.

The aforesaid regimes can be translated into institutional mechanisms, either formal ones or informal ones, in the same sense as Ostrom conceives them and with these it is intended to establish behavior patterns, shape expectations, provide information, have an influence on the incentives and costs (Keohane, 1993). In essence, we are not talking about established organisms with concrete norms, but of the possible agreements between states that do not generate institutionality, or implicit international action conventions[[5]](#footnote-5).

The study of international regimes in its traditional acceptation has been carried out in the classic schools of International Relations. It is of interest to this paper the neoliberal vision of these, since they respond to what had been proposed by Ostrom but in a perspective projected onto the international field. Here, the perception of cooperation over conflict or maximization is related to the capacity of states to achieve a mutual benefit reducing informational and power asymmetries. This is not an altruist way of seeing things, in fact, it comes from classic rationalism of maximization (as in Ostrom), but it is understood that cooperation could lead to more beneficial suboptimal results than from unilateral action (Hasenclever, et al., 1999) (Keohane, 1993).

But this highly state-centered perspective requires to be questioned for it to be considered in this research proposal. The study of regimes was born amidst the debates in the seventies, in the middle of the reconfiguration of the international system and the Cold War with a greater presence of the Nation-Sate. But is scope of analysis focused on the states must be reevaluated. Strange (2009), among the five critiques he does on the theory of regimes, succeeds in demonstrating that several of the regime transactions are biased by interests within the Nation-States and that pressure groups have an influence on their consolidation. It is not the states that control what regimes and institutions are to become; there are other levels where negotiation is possible and other dynamics may take place out of reach for state control.

Because of this, authors such as Grasa (2001) and Peña Medina (2011) aim at making a conceptual contribution from other levels and “minor” agendas that imply a transboundary view of international regimes.

The former broadens the construction of regimes by including “international actors or actors with international vocation” which “have a crucial influence in elaboration processes, and thus in the defining characteristics and instruments of several environmental policies of internal sphere” (Grasa, 2001, p. 114). This statement supposes that regimes have a transnational vision, too, related to the emergence of a civil society and non-state actors, which explains the *linkage* between different International System actors when striving to understand the regimes. Therefore, these regimes are not conceived in a “top-down” manner, but instead they are overlapped in a series of necessities and pressures from actors with their own agendas and who discuss their demands internally.

That being said, the second author starts to conceive the borders as a relational space, in the sense of David Harvey’s words, to prove that any regime referring to transboundary planning must be supported on communication between border actors and the creation of networks, assuming that viewing borders from this perspective shatters hierarchies and extends spaces for debating and decision-making (Peña Medina, 2011). With this “the necessity of creating a regime to avoid the tragedy of the commons is quite evident. The establishment of collective decision-making mechanisms to manage common natural resources is a transversal or general dilemma in all borders” (Peña Medina, 2011, p. 121-122) and for the purpose of this paper we deal with a resource of vital importance that has been left in a state of border indeterminacy that clearly requires an institutionality regime approach that go beyond mere interstate coordination.

**TRANSBOUNDARY BIOSPHERE RESERVES (TBRs) IN THE INTERNATIONAL SETTING**

Among the programs developed by the UNESCO, as a response to the great amount of agreements, summits, and treaties related to environmental preservation, there is one called Man and the Biosphere Program (MAB). In the seventies, the UNESCO found a replacement for the almost extinguished International Biological Programme (IBP), which set as target being “an interdisciplinary research program that emphasizes the ecological approach in the study of man-environment relationships” (UNESCO 1972 in Valencia, 1987).

It is the UNESCO who determines which areas are to be pronounced as biosphere reserves and these, in due time, become articulated in the World Network of Biosphere Reserves (WNBR), which is composed of a structure of regionals and sub-regional networks (Pool Stanvliet, 2013, p. 1). For those areas declared as Reserves a set of guidelines and goals has been created, set that has been formalized in the Seville Strategy (1995) and its Statutory Framework, complemented by several declarations and the Madrid Action Plan (MAP).

The three mains functions of a reserve are related to conservation, sustainable development and logistic support (research, education) (Pool Stanvliet, 2013, p. 1) and moving towards the objectives of the Seville Strategy, it is noticeable how this Reserve program is articulated with the international environmental regimes such as the Rio Summits, the Agenda 21 and the agreements on biological diversity and sustainable environment.

Such Strategy also has, among its principles, a wide interest for participation on the part of local inhabitants in defining the reserve area, as can be contemplated when it is stated that is must be allowed for “local communities to fully participate in the conservation and sustainable use of resources”, besides asserting that such communities must seek “a sustainable balance between demands, sometimes in conflict, conservation of biological diversity, to foster economic development and preserve the **cultural values** related to that specific reserve area” (Resolution 28 c/2.4, 1995, without bolds in the original document). This is of vital importance because it extend the conception of the reserves, considering those who inhabit them and use them as well.

In addition to this, the guidelines 8 and 9 from the Strategy are meant to bestow an empowering role to those who inhabit the reserve, stating that

*Management for each reserve must be fostered essentially as a “pact” between the local community and society altogether. Management must be broader, more evolutionary and adaptive. This approach will allow to ensure better conditions for the reserve and its inhabitants to respond to the external pressures of political, economic and social nature and assemble all interested sectors in a common task that allows for a promotion of biosphere reserves on local settings and in the networks. Information must circulate freely among all the involved parties” (Resolution 28 c/2.4, 1995).*

Reserves are known to be “areas of terrestrial or coastal and marine ecosystems, or a combination of such in the international setting” (Resolution 28 c/2.4, 1995) and for such acknowledgment to be possible, the area must fulfill certain requirement, those being: 1) one or more core areas, 2) a buffer zone, 3) an outer transition area (or cooperation area)[[6]](#footnote-6).

All of this has been established in the Statutory Framework where, in addition, it is required that there is clarity concerning aspects related to the organizational procedures for participation of all involved actors, a management scheme, accuracy in research programs and continuing training. The designation is provided by the International Coordinating Council (ICC) when requested by the interested country and this very same council will carry out a periodical evaluation every ten years.

In the strategy different objectives are defined and some indicators/recommendations are provided for the proper operation of the reserves. In Table 1 some of the indicators relevant to this paper are listed, showing the actual possibility of a high local population participation, also rendering account of the importance of achieving a transboundary projection of reserves. Given the fact that there is not necessarily a strict correspondence between political borders and environmental ones, the UNESCO has also referred to Transboundary Biosphere Reserves (TBRs).

**Table 1**

***Seville +5 and the Recommendations for Transboundary Settings***

In a document from November 2000, some recommendations are established for the proper operation of Biosphere Reserves that extend beyond national borders. There, it is said that a TBR is “the official acknowledgment in the international field of a political willingness to cooperate in the conservation and sustainable use by means of a common management of a shared ecosystem” (UNESCO, 2000), thus being areas in which a certain degree of flexibility in their configuration must exist.

Therefore, a set of recommendations is provided for these specific circumstances, which can be found in Table 2, classified either for the establishment, the operation or the institutional mechanisms. In these, the necessity for a political willingness on the part of the national authorities in the countries is highlighted, as well as the clear identification of the actors, clear and coordinated courses of action, and well defined coordination that allows to lead to safe harbor the consolidation of a transboundary reserve.

There is a great comprehension of the importance of coordination in areas divided by national borders that, at the same time, share an environmental unit. When the aforementioned recommendation are read it comes to the forefront the importance attributed to the cooperation exercises, joint planning, information for both parts and common goals. Nevertheless, it is noticeable that a great relevance to more institutionalized governmental agencies is given.

**Table 2**

Within the management indicators, recommendations for avoiding free-riding are precise, the search for common policies for maintenance and restoration, too, and the same goes for the consolidation of incentives for the achievement of viable alternatives. In addition to this, the necessity for participation of local communities and their means of association that adjust with the institutional agreement are evident, without leaving aside the fostering of exchanges and promotion of cultural occurrences that strengthen and preserve cultural and historic heritage.

With all of this, it is notorious that there is a wide interest for avoiding overuse or improper use of natural resources in areas of ecological and environmental balance. It has been explained how the Seaflower Biosphere Reserve case is in a situation of indeterminacy because of poorly defined borders and a growing tension regarding the use of maritime space by the two countries who now share the sovereignty of the reserve and, because of that, it is pivotal to find coordination mechanisms, joint work and fluent information; however, the conflict at state-level extend an invitation to contemplate from another perspective the ways of consolidating a TBR in an area where the socio-cultural basis and knowledge and coexisting with the area itself are advantages to be exploited in the search for agreements on a local level. It is worth reviewing two cases of already consolidated reserves where it can be seen how the operation runs and what lessons can be learned from them.

**THE INTERCONTINENTAL BIOSPHERE RESERVE OF THE MEDITERRANEAN AND TRIFINIO-FRATERNIDAD: A GLANCE AT TWO TRANSBOUNDARY BIOSPHERE RESERVES**

Proposing the consolidation of a Transboundary Biosphere Reserve implies reviewing the existing ones, with the objective of looking at their own operational dynamics which will contribute to the creation of a TBR in the Greater Caribbean. Two reserves have been taken as references: the Intercontinental Biosphere Reserve of the Mediterranean (IBRM) between Spain and Morocco and the Trifinio-Fraternidad Biosphere Reserve between Guatemala, Honduras and El Salvador. The former was selected because of the existing similarities with the presented case in this paper, that is, a bordering dispute, an undefined maritime area and conflicts between both States. The latter was taken into account because of the particular circumstances of the Latin-American context and more specifically Central-American, which is related to a highly sovereigntist conception of borders. In both cases special attention will be drawn to the institutional arrangements for such BRs, as well as to the resources at stake and the participation of local actors in it.

On the one hand there is, in the Strait of Gibraltar region, an ecological area separated by the Mediterranean Sea which is shared by the southern Spain and northern Morocco. It is here where the Biosphere Reserve is located, being also exposed to diverse types of conflicts but, at the same time, it has become a great contribution to the ecological preservation and the reduction of political unrest.

**Figure 1. The Intercontinental Biosphere Reserve of The Mediterranean**

In this area “tensions derived from territorial issues manifest over the Spanish cities and emplacements of northern Africa, but also and as a consequence of what has just been said, the absence of delimitation for maritime areas” (Verdú Baeza, 2012, p. 398), associated to Moroccan claims over Ceuta and Melilla settlements, the adjacent crags to such places, the Canary Islands, migratory issues, the definition of fishing practices and other security-related elements that have lead the bilateral relationship to flow from cooperation to conflict (Iglesias, 2010, p. 20).

One of the most critical peaks occurred in the 2001-2003 period, in which the occupation of the Perejil Island by Moroccans took place, in the middle of a tainted environment regarding many subjects of interest for both States and for which no dialogue was promoted, leading to an almost diplomatic rupture between those States, situation that was repaired thanks to the participation of Collin Powell, the United States Secretary of State (De Larramendi, 2003).

Verdú Baeza (2012) states that, it is in this context between both States that,

*In recent years, a transboundary cooperation mechanism has emerged, extremely original and innovative around the environment, which will become a revitalizing element for relations between Andalusia and northern Morocco, an element devoted not only to a number of actions aiming at the conservation of the rich and valuable ecosystems in the area, but also to the revitalization of local economies on the basis of a sustainable development model (p. 399).*

On the other hand, one of the Latin-American cases that has been pronounced as one of the most successful experiences in terms of transboundary cooperation is the Trifinio Plan (Hirezi, 2012) (Conato, 2009), in which the Transboundary Trifinio-Fraternidad Biosphere Reserve is also located.

**Figure 2. The Biosphere Reserve of The Trifinio - Fraternidad**

Designated by means of a treaty, signed in due time by Honduras, Guatemala and El Salvador, it is an area of 7241 km2 (2795.766 mi2) shared by the aforementioned countries from which Guatemala and Honduras possess the bigger parts of it, whereas El Salvador possesses only 15% of the reserve (Conato, 2009, p. 133). In Trifinio there are 45 municipalities from the three countries that share the transboundary area, where the cross-border hybridization phenomenon is very strong, linked to the history of the “Mayan Chortí” settlement, besides a high dependence on the existing resources in the area, water-related ones, more specifically (Artiga, n.d.) (Task Team on South-South Cooperation, 2011).

In Table 3 a comparative exercise is carried out between both experiences, where the already mentioned elements are assembled. In a brief manner, variable by variable, the most outstanding aspects from both experiences that serve to the purpose of the proposal to be devised in here will be presented as follows.

In the resource context, human and cultural resources have been considered in the configuration of the area; the human-environment relationship is pivotal in order to understand the complexity of such territories. In relation to institutional arrangements, it is worth clarifying that a constitutive treaty allows for defining in a clear way the required institutional arrangement that obliges the States, taking into account that its conception must be less centralized and provide a higher decision-making power to local actors because a vertical organizational structure might take legitimacy away when materializing the process. Finally, in regards to the participation of social actors, the construction of TBR must be connected to the demands of such actors, their role must be active, included in decision-making, structuring and action dynamics, an issue that is theoretically present in both cases, but never gets to be crystallized in a proper manner because of the already mentioned verticality the process has and its excessive technical-bureaucratic institutional arrangement.

Although the two experiences are dissimilar because of their context (the European integrationist framework vs. the sovereigntist Latin-American one), both have focal points and complementarities that serve to the purpose of formulating a TBR in the Seaflower Reserve between Colombia and Nicaragua.

**Table 3**

**SHARING THE SEAFLOWER RESERVE: CONSOLIDATION OF A TRANSBOUNDARY BIOSPHERE RESERVE PROPOSAL**

Two transboundary-reserve study cases have been viewed in three different terms: their resources, their institutional arrangements and the inclusion of their local actors in its configuration. For the materialization of this proposal, thought as an alternative for the Colombo-Nicaraguan territorial conflict, based upon the rapprochement of local communities where these define management, conservation and resource-utilization dynamics, those very same terms will be revised in the context of the Seaflower Reserve. In this way, the existing resources and problems to be solved regarding to those prone to be appropriated (resource systems and resource units) and the existing institutional arrangements for the maintenance of the Reserve between Colombia and Nicaragua will be revised, in order to identify the possible institutional linkages and the articulating capacity of local actors that prevent the appearance of possible free-riders, by means of formal and non-formal institutions and incentivizing and sanctioning systems that watch over the conservation of resources avoiding overuse and over-exploitation (and also the possible improper or illegal use of the area). It is also expected to delimit which should be the actors in the center of the definition of such institutional arrangements, with which not only the political and institutional broadening of the actual environmental unit of the Reserve would be accomplished, but also an answer to the interstate territorial conflict would be provided from the existing bonds between the Archipelago inhabitants and those of the Nicaraguan Caribbean coast.

***The Resource Systems***

As mentioned in the beginning, CPRs configure a *Resource System* and *Resource Units* are appropriated from it by appropriators. Thus, in order to understand the Seaflower Reserve, its Resource System must be broadly characterized. In the *“Atlas de la Reserva de Biosfera Seaflower”* (CORALINA-INVEMAR, 2012) the biological, geophysical, cultural and institutional lattice is presented in a general way, along with many important characteristics for global and regional biosphere.

Such atlas summarizes the Reserve as follows

*The Seaflower Biosphere Reserve comprises the whole extension of the Archipelago. Within its limits the MPA Seaflower can be found, composed of three sections: the largest one, located to the north (37.522 km2), which includes the Quitasueño, Serrana and Roncador atolls, besides multiple deep banks that do not get to emerge; a central section (12.716 km2) that includes the Old Providence y Santa Catalina and the Julio bank atolls and the third section in the southern part (14.780 km2) that includes the San Andrés, East-South-East or Bolivar and South-West-South or Albuquerque and other banks such as Far, Martínez and 82nd Meridian. Although the sections share similar environments dominated by corals, transparent waters and oceanic characteristics, they differ in their particularities and dynamics, which make it necessary to generate specific management actions for each section. A general diagnosis of the spatial vision of the San Andrés, Providencia and Santa Catalina archipelago that showed that the banks most subjected to fishing exploitation are located specially in the northern section or in the furthest ends of the central and southern sections, highlights that territorial considerations define the necessity for controlling distant areas for which significant infrastructure and budget will be required, as well as a setting where controlling and supervising actions are directly influenced by political decisions and by the territorial discrepancy that persists with Nicaragua in regards to the marine and submarine limits (CORALINA-INVEMAR, 2012).*

Within the defined area, one of the highest rates of biodiversity in the Caribbean Sea can be traced, besides important ecosystems such as coral reefs, seagrass beds and mangroves, thus being an area where conservation of other marine resources can be done (Colombian Commission for the Ocean, 2015, p. 20).

In relation to vascular vegetation, there are four landscape units: sandy coastline, rocky coastline, mangroves and a transition area between mangroves and land vegetation where different species reproduce and survive (Murcia, 2012, p. 88). Among resources there is also the black land crab, considered as natural heritage of the Reserve and is distributed around the three biggest islands in the archipelago, although not uniformly, being also threatened by deforestation, fires, capture and depredation produced by introduced species called *“María Mulata”* and *“Lobo Pollero”* (Llanos and Taylor, 2012, p. 93-95).

In the field of bird life, according to Lasso and García (2012, p. 96-101) the presence of approximately 612 individuals belonging to 44 different species has been identified, which are classified within 16 families, out of which 44% correspond to resident species, 50% to migratory species and 5% to endemic species in San Andrés Island, which are located mainly in the mangroves. The authors also identified 531 birds corresponding to 35 species that are part of 15 families in Providencia and Santa Catalina; besides some other 9 species belonging to 3 families in the minor cays.

In the configuration of the marine resources, San Andrés Island possesses a reef complex of 97.5 km2 and a coralline extension beyond 44 km2. There, communities of stony corals, reef fish, mobile invertebrates, sponges, macroalgae and octocorallia can be found. In Providencia and Santa Catalina there is a vast coral barrier where the same communities as in San Andrés Island can be found (Abril-Howard and Bolaños, 2012, p. 131-136).

In addition to this, in a study of the phanerogams, Gómez and Bolaños (2012) found that in the archipelago there are more than 2000 hectares of seagrasses, which are represented by four species, vital for the fauna and flora of the region, where a high level of connectivity is evident, to which the authors give high importance because

*With the ecological connectivity between mangroves, seagrasses and coral reefs, the reduction of the vegetated area coverage or of any other ecosystem may cause alterations to the natural dynamics, with consequences still unknown, but suspected to be severe because of their role as refuge for larvae and juveniles from multiple marine species of commercial and ecological importance, as well as alterations in erosion/accretion processes in the coastal area* (p. 139-143).

In respect to mangrove forests, these are located in the major islands, where they occupy almost 207 hectares divided in basin mangrove forests and fringe mangrove forests, now, of course, all of them with a high degree of maturation, making a total of 19 units between mangrove forests and patches, which have a high level of productivity in leave, branch, flower and fruit production (Machacón, Lasso and Ward, 2012, p. 144-152).

All of these elements are part of the Resource System in the Seaflower Reserve, as well as the fishing system and the non-renewable resources in there. Since these have a high interest in the economy of the inhabitants, it is there where the analysis of resource units will be focused and for which the proposal that inspires this paper will be consolidated, moving towards the configuration of a TBR in the Greater Caribbean region.

***Ichthyic Resources and Fishing in Seaflower***

The work by Bolaños et al. (2015) presented a list of 653 species of know fish, from which 487 species are in Providencia, an approximate number of 336-427 in the southern islands, San Andrés and the northern islands, besides 210 species in minor islands, although Prada’s annotation (2012) must be considered, which states that

*There are signs of a minor recovery in abundance of fish and species diversity, perhaps as a result of the new conservation measurements taken by the Seaflower MPA, including a higher control of illegal fishing, which are still to be strengthened to determine with certainty this apparent recovery (p. 113).*

Within the resource units that are significant because of the interest they rise for commerce, appropriation and consumption, we find the Caribbean spiny lobster, the queen conch and a variety of serranid fish. In different works (Bent Hooker et al. 2011) (Castro et al., 2008) (Castro et al., 2007) not only the importance of such specimens for local economies is shown, but also the impact generated when not following the regulations related to the appropiation of these resources in terms of overfishing and draining, being the capture of young specimens, capture of females, illegal fishing in closed season periods examples of it, among others.

In the case of the Queen Conch, the importance resulting from the accomplishment of agreements with other countries for the control of illegal fishing has been manifested, since it is one of the most spread resources in the Caribbean. Besides, the concern for intrusions in the reserve area to carry out unsupervised fishing activities has been shown. Because of this, from the *“Corporación para el Desarrollo Sostenible del Archipiélago de San Andrés, Providencia y Santa Catalina CORALINA”*, the corresponding studies to the characterization of illegal or not-regulated fishing have been carried out and the fishermen from the archipelago have been included in order to develop a maintenance and control strategy of the resource (Prada et al., 2010).

With these resources at stake and in an uncertain scenario in terms of maritime delimitation, the threat is higher, since control functions over the reserve area are overlapped, leading to several disputes with detentions on each side and threats to non-industrial and industrial fishing boats from authorities of both countries[[7]](#footnote-7), which proves the importance of achieving transboundary agreements that lead to cooperation for safe fishing practices and avoiding predation of the resources already listed as vital in the fishing expeditions in waters within the Reserve.

***The Institutional Agreement in Seaflower***

With the purpose of achieving these cooperation practices, it must be understood what the institutional configuration of the institution in charge of the Reserve management is like, which will help delimitating the people watching over the resources. CORALINA was born with the Law 99 in 1993 and it is the one that manages the Seaflower Reserve.

The Corporation has among its action programs the following aspects, as shown by Taylor et al. (2012, p. 22)

1. Integrated management of the water resource
2. Protection and management of biodiversity
3. Management and protection of soil and subsoil
4. Improvement of employment and green markets
5. Institutional development
6. Environmental education

These items show that there is a holistic view of management for the reserve in its biophysical, socio-environmental and socio-economical aspects.

It is of special interest for the analysis the Agreement 001 from 2011, which establishes the Corporation’s Statutes. On one side, the jurisdiction bestowed on it, which comprises the whole archipelago with its territorial sea and the economic area for exclusive exploitation that comes along the land portions of the archipelago must be highlighted. On the other side, it is vital to emphasize the institutional arrangement that derives from the Agreement, which defines the three management and administration bodies, those being the Corporate Assembly, Board of Directors and the Chief Executive Officer (CEO).

Legal representatives of the territorial entities that compose the attributed jurisdiction to the Corporation are part of the first body, and among their most important functions the election of the members of the Board of Directors is one of them. The aforementioned Board is very much heterogeneous, since it comprises: the *Gobernador del Departamento* (Department Governor); a *Representante de Presidencia de la República* (a Representative of the Presidency of the Republic); a *Delegado del Ministerio de Medio Ambiente* (a delegate from the Ministry of Environment); the *Secretario Departamental de Fomento Agropecuario y Pesquero* (the Departmental Secretary for Agricultural and Fishing Development); a NGO representative; the *Director de Planeación Departamental* (the Departmental Planning Director); the CEO of INVEMAR; the CEO of DIMAR, a *Representante de los gremios económicos del archipiélago* (an Archipelago Economic Labor Union Representative); a Representative of the native community, a Representative of the native community of San Andrés, a Representative of the native community of Providencia and a *Representante de los gremios de la producción artesanal, agropecuaria y pesquera del archipiélago* (a Representative of the Traditional, Agricultural and Fishing Production Labor Union of the archipelago)[[8]](#footnote-8). It is worth highlighting the role communities have and the fact that local institutions have a strong participation within the Board of Directors, with which can be said that the presence of the directly implicated actors is wide.

Lastly, the CEO, designated by the Board although autonomous in its proceedings and not being subsidiary to it, is the legal representative of the Corporation, will present plans and programs to the Board, prepare reports for it and for the Ministry of Environment; summon meetings and make sure the decisions and agreements of the other two institutions are carried out.

As noticed, CORALINA is an institution of local roots, with national participation but mainly composed of the local actors, which permits to accomplish the objectives of Biosphere Reserves, in regards to the inclusion local communities in the definition and discussion of policies for sustainable development without having a negative impact on their interests. This is significant in a possible scenario for the consolidation of a TBR as a form of inclusion of the interests of the directly implicated actors, for the achievement of the creation of formal and non-formal institutions that allow the conservation of the maritime area in the Greater Caribbean.

But what institutional organism are there in Nicaragua on this matter? This Central-American country has a Biosphere Reserve in its territory, called Bosawas, due to its having three rivers: the Bocay, the Saslaya and the Waspuk. Instead of a characterization of the resources, it is more worth focusing on the institutional arrangement that allows to find the possible focal points in regards to the institutionality of the Seaflower.

The institutional organization of this Reserve is manifested in the Law 407 from 2001, in which the Bosawas Reserve is declared as such and defined, and it is articulated through the National Commission of the Bosawas Biosphere Reserve, which is presented as a mandatory consultative body, composed by the *Ministro de Ambiente de los Recursos Naturales* *(MARENA)* (the Secretary of Environment and Natural Resources), who presides over the Commission; the *Ministro de Agropecuario o Forestal* (the Agricultural and Forest Secretary) or its delegate; the *Director de la Oficina de Titulación Rural (OTR)* (Director of the Rural Titling Office) or its delegate; the *Director del Instituto Nacional Forestal* (INAFOR) (the Director of the National Forestry Institute) or its delegate; the *Presidente del Consejo Regional Autónomo del Atlántico Norte* (the President of the Northern Atlantic Autonomous Regional Council) or its delegate; the Mayors of Wiwilí de Jinotega, Nueva Segovia, Cuá-Bocay, Waslala, Siuna, Bonanza and Waspán, along with a representative from each of the Mískitu Indian Tasbaika Kum, Mayangna Sauni Bu, Kipla Saait Tasbaika, Mayangnaa Sauni As, Sikilta and LiLamni Tasbaika Kum communities.

Within the National Commission, functions related to proposing policies, to financial and technical management, and carrying out the coordination and surveillance were established, the latter performed by both the Commission and the *Secretaría Técnica de Bosawas* (Bosawas Technical Secretary). This institution, whose director is designated by the *MARENA*, will be in charge of the organization and management of the Reserve based on what has been approved by the National Commission, in addition to proposing and participating in the elaboration of policies, supporting the elaboration, proposal and surveillance of the regulations that affect the reserve.

It can be asserted that there is a participatory level for local actors, although not as strong as it is in the Seaflower case, because there is not such a vast representation of different social sectors, like the economic trades, for example. Nevertheless, it can be seen as a not-so-complex institution, with only two authorities that maintain a direct dialogue, which allows for a better management of administration and execution of actions.

***Participation of Local Actors***

In the Seaflower case, a positive scenario for the participation of local actors in terms of governmental institutions, unions, and the native community for the consolidation of policies and the making of technical decisions is presented. In many of the already mentioned fishing studies, the importance surrounding the knowledge of fishermen in the definition of actions related to closed fishing seasons or their opening, the amount of the resource that can be appropriated acquired through surveys that match technical studies, help to achieve a wide perspective on the management of ichthyic resources. Of course, there is also a participation exercise in other levels, such as environmental management in the Islands, the care given to the whole resource system, but to the purpose of this paper, the management of fishing and the participation of fishermen is perceived as vital, not only because it is one of the biggest problems in the indefinite maritime space between Colombia and Nicaragua, but also because it could be the potential element that fosters the achievement of a TBR between both countries.

**CONCLUSIONS: ASPECTS THAT MAY FOSTER THE ACCOPLISHMENT OF A TRANSBOUNDARY BIOSPHERE RESERVE**

The current circumstance in which the Seaflower Biosphere reserve is involved has already been presented in terms of its territorial indeterminacy and the tension generated by the determination of the ICJ in 2012 on the dispute between Colombia and Nicaragua.

The alternative here proposed comes from the idea that there are international regimes, i.e. a set of principles, norms and regulations that could level out the path to suppress the aforementioned tension and constitute an alternative to approach the Common Goods that involve local actors and population of the area.

One first international regime is related to the interest connected to the environmental conservation actions, those connected in due time to the recent Paris Agreement on the environment and the already mentioned framework from the UNESCO on Transboundary Biosphere Reserves for the conservation of the environment. In addition to that, there is the regime on peaceful settlement of disputes, which has led States to resolve their disagreements through peaceful means and in accordance with the International Law.

Since these frameworks delimit decision-making, they must be the foundation the take into a new transboundary scenario the resolution of the aforesaid indeterminacy. Because of this, the TBR mechanism could lead to: 1.) redefining the cultural bonds among populations caught in the middle of the dispute; 2.) having these populations, due to their international vocation resulting from their constant exchanges and agreements with their border equals, accomplish the configuration of a scenario of cooperation and relief of conflict and uncertainty; 3.) conceiving such scenario as a framework that delimits the behavior patterns of the States involved in the conflict, configures new expectations on cooperation and acknowledgment of the potential of joint actions and recognizes the incentive and cost mechanisms produced by local actors, supporting them through its institutional structures. Comprehension of this scenario on the part of the States would lead to relief the indeterminacy and conflict situations, as well as to identify absolute benefits that might be considered as desirable, but that require a more integrationist view on the conflict instead of a sovereigntist one. But the accomplished institutional agreements must emerge from within the local actors, the affected populations by the indeterminacy produced by the interstate discord. To do so, it must be recognized by the two parties that rational actions may lead to undesired results, since they may become into a negative impact on the resource system and its resource units. The understanding of the existent interdependence in the management of Seaflower could would lead to attaining the creation of formal and non-formal institutions with their corresponding incentive and punishment system which must be consolidated through current local-level institutions and coordinating actions from whom utilize the resources.

One first action would be aimed at having organizations such as CORALINA in Colombia and MARENA in Nicaragua achieve a cooperation agreement, as institutions in charge of the administration of the Reserve, building strategies to intervene in Seaflower. These institutions must be in charge of building the bridge between local communities to create a commission for fishing in the Reserve, for example, where Raizal communities from the San Andrés, Providencia and Santa Catalina Archipelago and Creoles both from the Atlantic region and the south of Nicaragua become participant. In such commission closed fishing seasons may be established, the open seasons, too, the maintenance of the resource and fishing methods, among other things, and it would be inhabitants who define its operability.

Local governments would support the legal and political framework that could support such institutions and formalize the established agreements of the commission and environmental institutions, having, of course, a guarantee of autonomy in the decision-making process and in the line-up of those who will take part of such process.

The States would have to play a supporting role, providing financial assistance, coercive, too (when required), and coordinating actions when involved parties need and intervention and, besides, being the promoters of acknowledgment for Seaflower as a TBR at the UNESCO. In addition to this, the legal framework would serve as a basis for consolidating binational treaties that ensure the resolution of conflicts related to the management of the reserve.

The institutions for the joint management of the reserve, from a TBR perspective, must take into account the risks that may arise and the threats on the ecosystem. There are linked to the identification of *free-riders* and free-riding situations that could take place and that must be minimized through the established incentives and punishments.

Identifiable free-riders are, of course, industrial fishermen that may unrecognize the institutions created by the local actors and that could overuse and over-exploit resources. Other types of free-riders are groups that carry out drug trafficking activities, because they can destroy the essence of the achieved institutional agreements on top of putting pressure on the conflict between populations, local actors and the States. Free-riding situations can be identified as fishing activities in closed fishing seasons, or excessive traditional fishing, as well as excessive attribution of rights from what is defined within the institutions.

Finally, an institutional agreement crystalized from the local-sphere would relief the state interests surrounding oil exploitation, plans related to the construction of canals for high draft vessels and other plans of national interest that would go against the conservation of Seaflower.

All of this could help to eradicate the territorial indeterminacy between States, leading a possible signature of a treaty between both parties that, as noticeable in the Trifinio case, might lead to a stable and long-lasting conservation area. The signature for such a treaty is a desirable scenario for the involved populations and local actors, for the conservation of the resource and, mainly, for the acknowledgment of the transboundary area of the Greater Caribbean where a common history, a common identity, a common language and a willingness and vocation for joint work exist, which should not be overlooked by the States from their power centers.

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1. \* This research paper is the result of the project “Vicinity and Border Integration between Colombia and the Countries of the Greater Caribbean” (La vecindad y la integración fronteriza entre Colombia y los países del Gran Caribe) proposed by the research group *“Nación, Región y Relaciones Internacionales de Colombia y el Caribe”,* funded by the research area of *Universidad Nacional de Colombia,* Caribe branch. [↑](#footnote-ref-1)
2. On December 6th 2001, Nicaragua commenced a lawsuit before the International Court of Justice (ICJ) against Colombia over the sovereignty on the territory and the maritime delimitation in the Caribbean Sea. On December 13th 2007, the ICJ in its first determination pronounced itself as competent for settling the dispute between Colombia and Nicaragua acknowledging the former its sovereignty over the San Andrés, Providencia and Santa Catalina islands, but claiming that it was still necessary to define the maritime border and the appropriation of the cays and other land formations, reason why, subsequently, in the determination taken on November 12th 2012, the ICJ defines the new maritime borders granting Nicaragua a significant portion (nearly 40%) of the territorial sea that had been previously managed by Colombia, also bestowing the sovereignty over the adjacent cays to Nicaragua. Later, on September 16th 2013 Nicaragua brings a lawsuit against Colombia once more for having the latter unfulfilled to apply the determination of the ICJ and demands an Extended Continental Shelf. On March 17th 2016 the ICJ declares itself as competent to solve Nicaragua’s claims, which supposes a future sentence for Colombia, most likely unfavorable to its maritime and territorial interests. [↑](#footnote-ref-2)
3. Attention to what is called the “Prisoner’s Dilemma” can be drawn, where one’s cooperation or desertion has an effect on the other and where such agents act individually, thinking solely on their own benefit, despite the existing interdependency among them. [↑](#footnote-ref-3)
4. In the former, it is said that control over the resource must be established by an authority that achieves to enact a sanctioning system, and determines a set of norms that avoids overuse and free-riding of the resource. The latter establishes the configuration of property systems with which indiscriminate access to the resource is avoided and the areas where individuals can exploit it are limited. [↑](#footnote-ref-4)
5. In the international system there is a wide variety of regimes that configure or not institutions, and one of them is the environment-related one which, for the interest of this paper, is relevant. All the regimes surrounding the climate change and reduction of greenhouse gas emission issues, beyond their efficacy, have been related to a series of principles established at the different Rio Summits, the Kyoto Protocols, and the more recent Paris Agreement on the matter. Although they are not conceived as institutions, the Sustainable Development Goals constitute a good way of exemplifying an international regime, as a set of guidelines and a search for results on the part of the States when facing a global problem altogether. [↑](#footnote-ref-5)
6. These could be defined, according to the Seville Strategy (Resolution 28 c/2.4 1995), as: Core areas: a legally constituted core area or areas devoted to long-term protection, where biological diversity is preserved, and little disturbing activities are performed; buffer zone: clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place, such as environmental education, recreation, tourism, research; outer transition area: where sustainable resource management practices are promoted and developed, with a joint management for sustainable development on the part of those actors involved. [↑](#footnote-ref-6)
7. In Chacón Herrera (2016) some of the conflicts generated because of fishing practices are listed, the most recent one being the rescue of a Nicaraguan fishing vessel in the Serrana cay. Those that took place in Serranilla involving a Colombian vessel and a Nicaraguan one are listed, too. [↑](#footnote-ref-7)
8. The names of some Colombian political posts and institutions have been kept in Spanish and an approximate translation to English has been provided in parenthesis to allow understanding. Same thing will be done with Nicaraguan political posts. [↑](#footnote-ref-8)