Ambiente & Sociedade
ISSN: 1414-753X
revista@nepam.unicamp.br
Associação Nacional de Pós-Graduação e Pesquisa em Ambiente e Sociedade
Brasil

DE ARAÚJO PEREIRA, MÁRCIO; SCHNEIDER, SÉRGIO; VAN DER PLOEG, JAN DOUWE; DE SOUZA, MARCELINO

THE COLLECTIVE ACTION ON GOVERNING THE COMMONS IN THE SURROUNDINGS OF PROTECTED AREAS

Ambiente & Sociedade, vol. XIX, núm. 4, octubre-diciembre, 2016, pp. 21-38
Associação Nacional de Pós-Graduação e Pesquisa em Ambiente e Sociedade
Campinas, Brasil

Available in: http://www.redalyc.org/articulo.oa?id=31749464003

THE COLLECTIVE ACTION ON GOVERNING THE COMMONS IN THE SURROUNDINGS OF PROTECTED AREAS[1]

MÁRCIO DE ARAÚJO PEREIRA[2]
SÉRGIO SCHNEIDER[3]
JAN DOUWE VAN DER PLOEG[4]
MARCELINO DE SOUZA[5]

Introduction

Protected areas are considered the first line of defence in the global effort to protect the planet's biodiversity (UNEP-WCMC, 2008), and the solution adopted by governments as a way of protection and conservation of natural resources that legally allows the maintenance, total or partial, of local biodiversity (Jenkins and Joppa, 2009). In this sense, the action of nations that recognize the Convention on Biological Diversity (convention on Biological Diversity - CBD) and the Millennium Development Goals (Millennium Development Goals - MDG) has contributed to the advancement in achieving the goal of protecting at least 10 % of each ecological region in the world (CBD, 2009). Nevertheless, many countries are far from this fulfilment (Coad et al., 2008).

In estimated numbers, considering all categories of protected areas, 12.9 percent the planet's land area is formally protected, about 6.5 billion hectares, these forty five percent (2.9 billion hectares, 5.8 percent of total) under direct protection according to the International Union for Conservation Nature (IUCN) categorization (Jenkins, Joppa, 2009). In Brazil, about 8.82 percent of the territory are legally protected by the constitution of federal conservation units, which corresponds to 75,141,143 million hectares (IBAMA, 2008) and 6.24 percent protected by state conservation units, approximately 53,171,684 million hectares (Raylands and Brandon, 2005). Adding up

1. Acknowledgments: Research supported by Government of State of Mato Grosso do Sul (Brazil), Foundation to Support the Development of Education, Science and Technology of State of Mato Grosso do Sul (FUNDECT-MS), and the Coordination for the Improvement of Higher Education Personnel (CAPES-Brazil).

2. Adjunct Professor, Postgraduate Programme in Regional Development and Productive Systems, State University of Mato Grosso do Sul – UEMS, e-mail: marcioapereira@gmail.com.

3. Associate Professor, Postgraduate Programme in Rural Development – PGDR, Federal University of Rio Grande do Sul – UFGRS, e-mail: scheneide@ufrgs.br

4. Jan Douwe Van Der Ploeg, Professor Dr. Ir. Rural Sociology Group – RSO, Wageningen University and Research Center – WUR, E-mail: JanDouwe.vanderPloeg@wur.nl.

5. Marcelino de Souza, Associate Professor, Postgraduate Programme in Rural Development – PGDR, Federal University of Rio Grande do Sul – UFGRS, e-mail: marcelino.souza@uol.com.br.

all protected areas, the percentage of protection reaches 15.06 percent of the Brazilian territory.

Some key issues stem from this scenario. Firstly, by what criteria Brazil creates its protected areas and what results emerged since the creation of *Itatiaia* National Park in 1937 (first Brazilian National Park)? Secondly, how such unilateral interference promotes distortions in rural areas and leads to conflicts in the areas expropriated for conservation? Thirdly, how institutional actors organize themselves and perform in the process of governing the common natural resources? On the one hand, there are public or private policies for environmental protection; on the other hand, there are rural development policies aiming to build new alternatives for the livelihoods of the populations residing in rural areas adjacent to the protected areas. In such context starts a "game" with a complex variety of actors operating in an arena materialized around protected areas, where are needed compromises and agreements to allow a minimal deal on the use of common-pool resources. Although, who indeed pays the bill? Who assumes the costs of maintaining and preserving natural resources and at the same time providing rural goods and services?

Renting and Ploeg (2001) has alerted about the accelerated break down of linkages among farming, local ecology and society, citing the emergence of environmental cooperatives in Dutch farming as an example of how to face and understand such problem. For the authors, these cooperatives "are innovative associations of farmers based at local or regional level, which promote and organize activities related to sustainable agriculture and rural development in their locale" (Renting and Ploeg, 2001, p3). Such topic has been also studied in the case of *Noardlike Fryske Wâlden* (Frisian North Forest), which presented an example of territorial cooperative, where can be found farm activities and protected natural spaces (Ploeg, 2008).

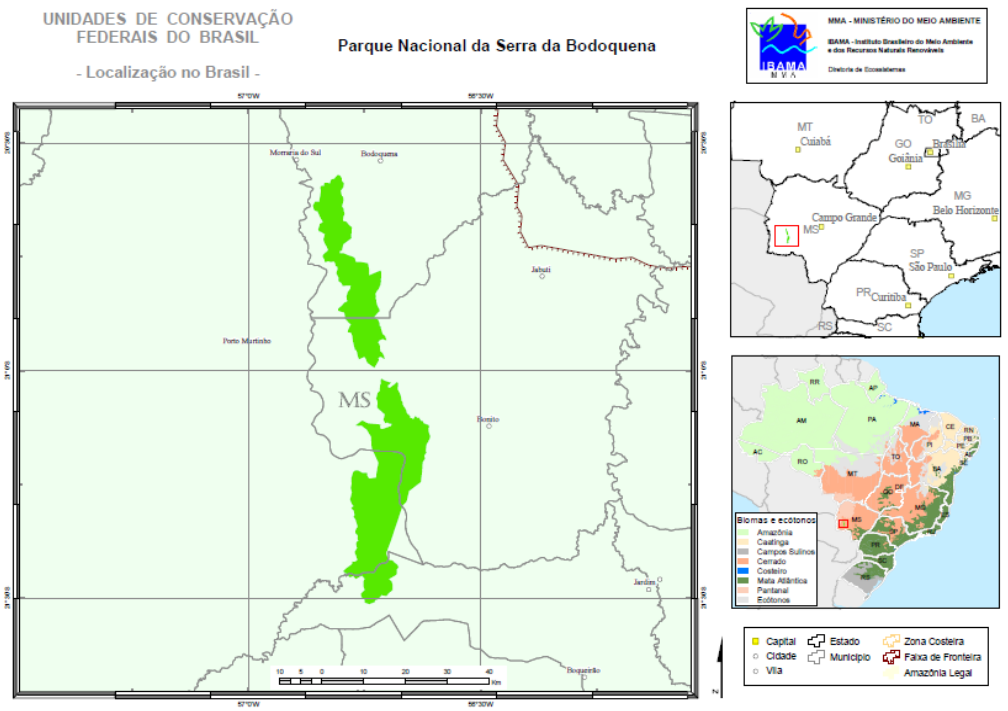
The creation of a protected area generates direct and indirect impacts on the preserved spaces, affecting cities and its rural areas. However, the creation of a protected area established by a Federal decree does not assure complete secure installation and full protection of the areas. It demands more than the establishment of procedures and laws, it also requires a policy of installing and conducting areas created in order to effectively protect the natural resources. In this context, the National Park of Serra da Bodoquena, created in 21 September 2000 (see figure 02), has been originally founded under the auspices of environmental conservatism, bringing the laws relating to environmental parks, implying immediate restrictions on farming activities or other activities that conflict with the goals of environmental protection law.

There are a range of social actors around the National Park of Serra da Bodoquena, encompassing public and private institutions, municipalities, State, Union, researchers and technicians, tourists, family farmers, all compelled to find common understandings for governing the common resources toward collective action and institutional arrangements that allow its co-existence. With so many players in action, is there a hegemonic actor or someone who determine the management of natural resources? Is there concordance among the actors? In this sense, the objective of this paper is to discuss the collective action of social actors on governing the commons in the surroundings of protected areas in Brazil as well as the institutional interfaces towards agreements, organization and adjustment to environmental regulation.

The Serra da Bodoquena National Park

The Serra da Bodoquena (Mountain Range of Bodoquena), where operates the National Park of Serra da Bodoquena, is situated about 270 miles long, extending from north to south of the city of Miranda to Paraguay. Due to its steepness, ranging from 300 to 600 m the Serra da Bodoquena is more a kind of plateau than a mountain. It is an important area where can be found rivers that feed the Pantanal as well the Guarani aquifer (Bartace, 2004). The boundaries of the Serra da Bodoquena National Park covers 76,481 hectares and two fragments divided it: one to the north, with an area of 27,793 hectares and another to the south, with 48,688 hectares as shown in Figure 1:

Figure 1. National Park of *Serra da Bodoquena*.



Source: IBAMA, 2008.

The area encompasses the municipalities of Bodoquena, Bonito, Jardim and Porto Murtinho which totals 65,954 inhabitants, having an economic matrix based on cattle rising, with over 1.5 million cattle (Porto Murtinho with 821,000 cattle), also on agriculture, especially soy, corn and cassava, and the tourism in the municipalities of Bonito, Bodoquena and Jardim. In the buffer zone (from 2km to 15km approximately) of the National Park, there are about 500 families of small, medium and large farmers; five (5) organised communities in settlements (Guaicurus, 129; Santa Lucia, 36; Sumatra,149; Campina,76; and Canaan, 178) summing up 568 families. There are also five

(5) indigenous communities of Kadiwéu and Kinikináo (Alves de Barro, Barro Preto, Campina, São João e Tomázia) located in the municipality of Porto Murtinho (229 families) (AGRAER, 2008).

Toward and understanding of the problems related to the creation and maintenance of the National Park of Serra da Bodoquena , we must first reflect on the model of economic development adopted in the region. The base of such model relies on agriculture, characterised by an intensive use of natural common resources and intense mechanisation. Such strong agriculture makes it highly competitive for purpose of reaching the international market.

In 2011 (FAMASUL , 2012), agribusiness accounted for 83 % of exports of Mato Grosso do Sul, which generated an estimated revenue of U.S. $ 3.239 Billion, with sector imports totalling U.S. $ 352.9 million, that according to the organisation provided a surplus in the trade balance Agribusiness state of $ 2.886 billion, producing an increase of 21 % over the figure for 2010. At the other extreme, as demonstrated in the study of Roel and Arruda (2003), in analysing the data of IBGE in the period 1985-1996, a total of 6,743 rural households with less than 100 hectares has disappeared in Mato Grosso do Sul, which would impact on approximately 13,000 families excluded from the production process.

The occupation history also contributes to an understanding of the land use dynamics in Sierra Bodoquena. The Spanish covered this land in the sixteenth century in order to reach the gold mines of Peru, as they believed that by navigating the Paraguay River, would reach their goals quickly. At this time were founded the Missions of Itatim (1631) in order to consolidate territorial position and allow the shipping on the region. Indigenous people of Terenas and Kadiwéu, however, formerly occupied this region. The definitive occupation came after the Paraguayan War (1864-1870), when the Brazilian government granted land by the military services in the conflict. The first famers started in cattle production and herb mate extraction (Brambilla, 2007).

Material and Methods

The investigation sought the theoretical explanation of phenomena identified in the documentary and field research based on institutional approach for the study of the self-organisation and self-governance in common-pool resources situations developed by Elinor Ostrom (1990, 2005). It had a feature of small-N case of study, proceeding an applying the framework for analysing social-ecological systems (SES), conducting also a systematic analysis of documents close to a meta-analysis. The unity of analysis is the action arena (surroundings of National Park of Serra da Bodoquena) where the participants (corporative actors: governmental and non-governmental organizations) and the action situation (social space where participants seek resolutions of their common problems), interact themselves and are affected mutually by variables that can result (or not) in collective actions and self-management.

We conduct a systematic search of the peer-reviewed and grey literature, including case studies, official documents, scientific studies and others types of researches, in the first level accessing n=1,142 documents and data from government and non-governmental

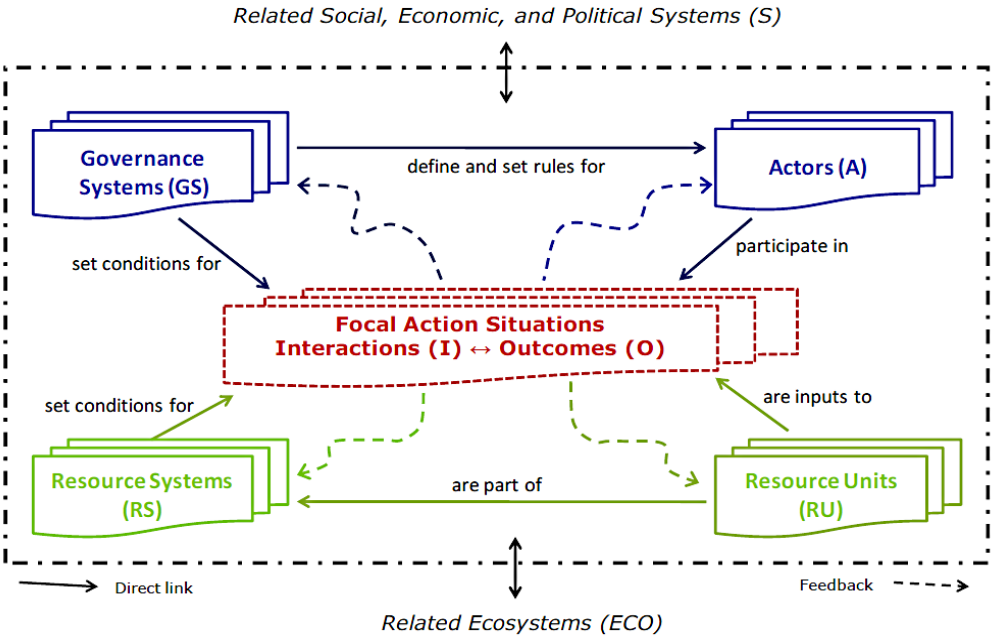
organisation (NGO), setting as search reference the term Serra da Bodoquena (key term). Out of the total number of documents accessed we selected n = 113 documents strictly related to the object of research and variables in analysis, excluding duplicated information, which formed the database for research. We defined the period of research starting from the creation of National Park of Serra da Bodoquena, September 21, 2000, and as the end date of April 30, 2012 (4,240 days). For search base we utilised the portals on the internet maintained by official government bodies and non-governmental, and in some cases, when not found digital version of document identified as relevant to the search, we requested via telephone or in loco, a version of the hard copy for scanning. We collected the copies of Federal Official Gazettes of Brazil (FOB) directly from the National Press Portal (www.portal.in.gov.br) as well as the Official Gazette of the State of Mato Grosso do Sul (MS), collected from its Press Portal (www.imprensaoficial.ms.gov.br).

For documents resulting from academic research (articles, case studies, reports) we defined as basis the results obtained in the sites, Google Academics, Periódicos Capes Portal, SciELO Scientific Electronic Library Online, Wageningen University Library. Specifically for theses and dissertations, and using the criterion of volume data, the searches focused on the portals of digital libraries of the University of São Paulo (USP), University of Campinas (UNICAMP), University of Rio de Janeiro (UFRJ), University of Brasilia (UNB) and Federal University of Rio Grande do Sul (UFRGS). By the criterion of geographic location (State of Mato Grosso do Sul), we also focused on the physical and digital collections of the Federal University of Mato Grosso do Sul (UFMS), Federal University of Grande Dourados (UFGD), State University of Mato Grosso do Sul (UEMS), Dom Bosco Catholic University (UCDB), and University for Development of the State and Pantanal Region (UNIDERP/ ANHANGUERA).

For purposes of data processing, we scanned and processed all selected documents into Portable Document Format (PDF), all organised and classified in order to facilitate the collection of information by searching for keywords, phrases, and handling in a digital base. In addition to printed documents, we included three recorded videos from the meetings of the Advisory Board of the National Park held on 23 and 24 November 2011. We standardised these in MPG (Moving Pictures Expert Group) format, summing up 59min18s: video 1 - 11min15s, video 2 - 16min14s and video 3 - 31min49s, all recorded, assigned and authorised for use by academic Professor. PhD Jose Soriano Afrânio Soares, a representative from the State University of Mato Grosso do Sul and member of Advisory Council of National Park.

We also collected data from semi-structured interviews, with open-ended and closed-ended questions, answered by the leaders of the main organisations (corporate actors) based and working on the surroundings of the National Park of Serra da Bodoquena (31 total). These questions aimed to identify quantitative and qualitative evidences relating to collective actions and self-management attributes under five categories suggested by Ostrom (2009) and reformulated by McGinnis and Ostrom (2011) for analysing social– ecological systems (Figure 1), including the adaptations of the model applied by Guttierrez, Hilborn and Defeo (2011) and published in Nature Review (Table 1).

Figure 2. Framework for the analysis of socio-ecological systems.



Source: McGinnis, Ostrom, 2011.

For the closed-ended response options in the questionnaire we employed a Likert scale for evaluation of agreement and actor's perception on certain variable (Likert, 1932), distributed in five levels and assigning the reference number (but not weight) with the possible responses (when applicable): A = 5, B = 4, C = 3, D = 2, E = 1. So the higher the perception and acceptance of that issue, the greater the reference number assigned to his response, which does not mean a better or worse response, but merely for measurement and statistical purposes.

Chart 1 - Variables

Group	Variable
1. Social, Economic and political setting	Government resources policies (S1)
2. Resources System (RS)	Sector (RS1)
	Clarity of System Boundaries (RS2)
	Size of Resource System (RS3)
	Conservation of Resource System (RS4)
3. Resource Units (RU)	Number of Units (RU1)
	Resource Unit Mobility (RU2)
4. Governance System (GS)	Governmental Organisations (GS1)
	Nongovernmental Organisations (GS2)

	Network Structure (GS4)
	Land Regularisation GS5)
	Operational Rules (GS6)
	Collective-choice Rules (GS7)
	Constitutional Rules (GS8)
	Monitoring and Sanctioning Processes (GS9)
5. Actors (A)	Number of Actor (A1)
	Norms/Social Capital (U4)
6. Interactions (I)	Information Sharing Among the Users (I1)
	Deliberation Processes (I2)
	Conflicts (I3)
	Lobbies (I4)
7. Outcomes (O)	Self-Organisation (I5) Networking Activities (I6) Self-management (O1)
	Collective Actions (02)
8. Related Ecosystems (ECO)	Pollution Patterns (ECO2)

Source: Adapted from McGinnis and Ostrom (2011).

Results

The framework for analysis is composed of eight major groups, related social, economic and political systems (S), resource systems (RS), governance systems (GS), resource units (RU), actors (A), interactions (I) and results (R) (which composes the action situations) and end the related ecosystem (ECO), deployed on twenty four variables that enable the overall reflection on the socio-ecological framework (SES).

Of the total n = 113 documents reviewed, there was a higher frequency of information, quotes and references for variables RS1 (sector), sixty-five percent, RU1 (resource units), sixty two percent, and A1 (number of actors), fifty eight percent, forming a group (> fifty percent) which concentrates most concern to researchers. A second group is formed by the variables where can be found information relating to the analyses, above ten percent and below forty percent (> ten percent < forty percent), highlighting RS2 (clarity of system boundaries), thirty nine percent; RS3 (size of resource system), twenty--eight percent. The variables related to group governance system (GS), GS1 GS2, and GS8, stood around the percentage of twenty percent, with government resource policies (S1) being cited in nineteen percent of the documents. In the third group are set variables with quotes below ten percent, highlighting the lack of information about the rules for collective choices (GS7). Table 2 and Figure 2 show the frequency of occurrence and information on documents quote the variables analysed.

Table 1 - Frequency of documents related to variables of analysis

Group	Variable	Frequency (%)
1. Social, Economic and Political Setting (S)	Government resources policies (S1)	19
2. Resource System (RS)	Sector (RS1)	65
	Clarity of System Boundaries (RS2)	39
	Size of Resource System (RS3)	28
	Conservation of Resource System (RS4)	34
3. Resource Units (RU)	Number of Units (RU1)	62
	Resource Unit Mobility (RU2)	9
4. Governance System (GS)	Governmental Organisations (GS1)	22
	Nongovernmental Organisations (GS2)	22
	Network Structure (GS4)	8
	Land Regularisation (GS5)	6
	Operational Rules (GS6)	4
	Collective-choice Rules (GS7)	0
	Constitutional Rules (GS8)	18
	Monitoring and Sanctioning Processes (GS9)	9
5. Actors (A)	Number of Actors (A1)	58
6. Interactions (I)	Information Sharing Among the Users (I1)	6
	Deliberation Processes (I2)	1
	Conflicts (I3)	4
	Lobbies (I4)	2
	Self-Organisation (I5)	4
7. Outcomes (O)	Self-management (O1)	3
	Collective Actions (02)	3
8. Related Ecosystem (ECO)	Pollution Patterns (ECO2)	4

Source: Documentary research (2012).

There has been a greater number of information relating to resource system, variable sector (RS1), i.e., pastures, waters, forests, fish, in this case on the basis of biodiversity and remains of Mata Atlântica Forest in the *Serra da Bodoquena*. These citations usually associated with tourism (present in 55 percent of the documents) demonstrate the strength of the theme in the *Serra da Bodoquena*. In the other hand, there is the lack of information about the details of the rules for collective choices (GS7), which can denote a process of incipient organization for management of common resources. Considering the analysis of data related to the variables, Table 2 shows a summary for the overall analysis of SES National Park of *Serra da Bodoquena*, offering an overview that associated with

the framework (figure 1) allows a reflection over the management of common resources according to the methodological proposal presented by McGinnis and Ostrom (2011).

Chart 2 – The SES National Park of *Serra da Bodoquen*

Social, Economic and political setting (S) S1 Government resources policies: *absent or ineffective*	
Resources System (RS)	**Governance System (GS)**
RS1 Sector: *biodiversity and remains of Mata Atlântica Forest in the Serra da Bodoquena.*	GS1 Governmental Organisations: *43* GS2 Nongovernmental Organisations: *26*
RS2 Clarity of System Boundaries: *defined, but it is not clear or is unclear for the actors.*	GS4 Network Structure: *Incipient, fragile.* GS5 Land Regularisation: 18 *percent regularised, barriers and delays.*
RS3 Size of Resource System: *76,481 ha, plus 2-3 km from* National Park of *Serra da Bodoquena, management plan not yet approved.* RS4 Conservation of Resource System: *between conserved and very conserved*	GS6 Operational Rules: *not established.* GS7 Collective-choice Rules: *diffuse autonomy* GS8 Constitutional Rules: *Fully or almost always fulfilled.*
.	GS9 Monitoring and Sanctioning Processes: *strong or very strong.*
Resources Units (RU)	**Actors (A)**
RU1 Number of Units: *04, forest and vegetation, wildlife, water (rivers) and caves.* RU2 Resources units mobility: *stationary, low mobility.*	A1 Number of actors: *31*
Action Situations: Interactions (I) □ Outcomes (O)	
I1 Information sharing among the actors: *between medium and high.*	O1 Self-management: *incipien*t, *few examples like Project Pé-da-Serra*.
I2 Deliberation process: *Consultative by the Board Council of National* Park of *Serra da Bodoquena.* I3 Conflicts among the actors: *high or very high.*	O2 Collective actions: *Twofold (environmentalists X farmers), incipient, few examples like Project Pé-da-Serra*.
I4 Lobbies: *high or very high.*	
I5 Self-organisation: *Incipient, fragile*	
Related Ecosystem ECO1 Pollution Patterns: *Continued oversight, significant risk levels.*	

Source: Adapted from McGinnis and Ostrom (2011).

The overall results has shown that social, economic and political setting concerning to the National Park of Serra da Bodoquena are composed fundamentally by few, diffuse and uncoordinated government resources policies (S1) based on restrictions to production and re-production on the surroundings of the Park (buffer zone). The policies also relies on environmental issues, but not including aspects of the livelihoods of farm families, conducting to a partial sterilisation of rural areas due to restrictions. In other hand, on the resource system (RS), characterised by biodiversity and remains of Mata

Atlântica Forest, we can identify activities such like cattle rising and rural tourism, which has been adapted to the environmental regulation and reorganising itself to conduct the activities. Nevertheless, there is still no clarity of system boundaries (RS2), especially on a clear definition of buffer zone boundaries, which means that the actors cannot identify the geographic limits and where is allowed to maintain activities or not.

The size of resource system is relatively large (RS3), generating doubts about the boundaries as well as about difficulties on self-organizing due to the costs of implementing through the whole area (76,481 ha). The conservation of resource system (RS4) is "much conserved" according by the actors as being in all interviews and data collected from official reports. These contradicts the history of occupation and academic studies which points out that the cities of Jardim and Bodoquena have already lost between forty and sixty percent of its original vegetation, while Bonito has lost between sixty and eighty percent. In this sense, the resources units (RU1), composed by forests, rivers, watersheds and caves, are well maintained and conserved (mainly stationary – RU2), which turns in a distinctive marking to be explored in accordance to environmental regulation.

The governance system (GS) comprises forty-three government organisations (GS1) and twenty-six non-government organisation (GS2), presenting an incipient and fragile network structure (GS4). Such governance system has its axis on the management of ICMBio (Chico Mendes Institute of Biodiversity and Conservation), which presides the Advisory Board of National Park of Serra da Bodoquena and leads a set of institutions to govern de commons resources inside and outside the Park (buffer zone). Nevertheless, The Federation of Agriculture and Livestock of Mato Grosso do Sul (FAMASUL) has appeared as an influential actor on the arena on promoting the interest of farmers on their points of view. These includes the request to extinction of the National Park of Serra da Bodoquena due to the restrictions imposed by governmental law, which, according to this organisation, is not running effectively and damaging the activities of the rural area. The private sector is waiting for a resolution of the conflicts among governmental and non-governmental organisations, although is possible to identify some entrepreneur initiatives on rural tourism, particularly on the cities of "Bonito" and "Bodoquena" that holds a huge territorial share of National Park of Serra da Bodoquena.

The main problem lies on land regularisation (GS5) of the areas transformed by a governmental decree in a National Park, achieving at this point only 18 percent of regularisation. It means that, in spite of a creation of the Park, there is not a clear system of properties rights enough to create defined boundaries of the system (RS2). There is also no clear network structure (GS4) even considering the existence of an Advisory Board of the Park, given that the operational rules (GS6) are in a framing stage, but the institutions involved have some autonomy to choose their rules (GS7).

Notwithstanding the fact of the land regularisation is not on adequate progress, the constitutional rules (GS8) have been strongly enforced on the surroundings of the National Park of Serra da Bodoquena" with huge sanctions to those that not enforce the environmental law (GS9). In its turn, FAMASUL has mobilised some influential actors (A) to organise itself for defending the right to produce until the fulfilment of land regularisation. The actors (Table 3) are clearly divided into two groups, those aligned

to environmental issues headed by ICMBio and a no-government organisation named Neotrópica Foundation, and those aligned to productive issue headed by FAMASUL. Even though this institution haven't any official chair on Advisory Board, his influence is evident in the actions and discourses among unions and even government organisations of the State of "Mato Grosso do Sul" in confronting the national government institutions.

Chart 3 – Actors (A1)

Actors
ICMBio - Chico Mendes Institute of Biodiversity and Conservation.
IBAMA – Brazilian Institute of Environment
IMASUL – Institute of Environment (State of Mato Grosso do Sul)
DNPM (23rd district) – National Department of Mineral Production
AGRAER/MS – Agency of Agrarian Development of the State of Mato do Grosso do Sul
INCRA – National Institute of Agrarian Reform and Colonisation
IPHAN - Institute for National Artistic and Historical Heritage
FUNDTUR/MS – Touristic Foundation of Mato Grosso do Sul
UFMS – Federal University of Mato Grosso do Sul
UEMS – University of the State of Mato Grosso do Sul
State Prosecutors - Attorney of Bonito County
Federal Prosecutors – Attorney General's Office of the State of Mato Grosso do Sul
Municipality of Bodoquena
Municipality of Bonito
AGESUL – State Agency of Enterprises Management
CRBio-01 - Regional Council of Biology – 1st Region (SP,MT,MS)
CREA/MS – Regional Council of Engineering and Agronomy
FAEMS – Federation of Business Association of Mato Grosso do Sul
ATRATUR – Association of Touristic Attraction of Bonito and Region;
AGTBMS – Association of Tour Guides
IASB – Institute of Serra da Bodoquena Rivers
Neotropica Foundation of Brazil
ECOA – Ecology and Action
CIDEMA - Inter-municipal Consortium for the Integrated Development of the Miranda and APA river basins
APAC – Association of Canaan Settlement
Rural Workers Union of Bonito
Rural Workers Union de Bodoquena
Rural Union of Bodoquena
Rural Union of Bonito;
Regional Tourism Forum Bonito-Serra da Bodoquena
Famasul - Federation of Agriculture and Livestock of Mato Grosso do Sul

Source: Field research (2012)

As there are two groups, the amount of information shared flows (I1) according to each group of interest, leading to a competition of information to be used on an intriguing deliberation process (I2) characterised by disputes on the arena where everyone is seen as adversaries. The conflicts among actors (I3), as related on interviews, reaches high levels and are either delaying the implementation of National Park of Serra da Bodoquena. In this case, there are significant lobbies (I4) trying to reject the Park and others trying to implement the protected area so that we cannot assume that exists a self-organisation (I5). The network activities (I6) summed up in agreements toward a regularisation of the Park.

These actors (A1) provide a level of information sharing (I1) from medium up to high, but with a relative isolation of the Producers Association of Settlement Canaan (APAC), even though the actor has been considered the most directly affected by the creation of National Park. The interactions occur primarily through the Advisory Board, which has a consultative role, but with actual relevance in government decisions (I2). The level of conflicts among the actors are high (I3) characterized by a dichotomy, environmentalists versus farmers, with strong external pressures (I4) of productive sectors (agriculture and tourism industry) and a nascent and fragile system of self-organization (I5).

The expected outcomes (O) of self-management (O1) divides into isolated examples, such as Project Pé-da-Serra, a successful agro-ecological activity driven by initiative of actors linked to the environment issues, such as the Neotropica Foundation. Among the collective actions (O2), highlights the actors organization for the creation of the Park, though under external pressures (I4), but getting through local mobilisation of common interest and acting voluntarily to create this consultative forum of discussions and proposals aimed at the management of common resources, these pressed by patterns of pollution in the associated ecosystem (ECO1).

Discussion

Why farmers should cooperate? What are the benefits and onus? Why cede in their objective of production due to an unstable and dilatory process of deployment of a protected area? These provocative questions lead us to a reflection about the "why's" of each position and "how's" of each stakeholder group acts according to its logic and in the interests. In this battle, the actors push the common resources from side to side without a definition of how to manage it.

Looking up through the concepts of Ostrom (1990, 2005, and 2011) the key point is to understand how these attributes interact and affect the basic calculations of costs and benefits for a particular group of actors who appropriates or uses resources. The base is to establish patterns of expected network benefits in continuing to use the old rules comparing the benefits expected to achieve with a new set of rules. Thus, each actor (appropriator) evaluate if this incentive to change, according to your logic, is positive or negative, according to the incentives they realize, and if is worth investing time and resources required for the acceptance of new institutional arrangements.

The resistance by the farmers (small, medium and large) in not accepting new institutional arrangements relies on a negative evaluation of the new scenario of costs and expected benefits. After all, why cooperate in a situation where there are potential losses in all the senses, starting from the impossibility of rural production by not receiving fair compensation for the properties transferred to the National Park of *Serra da Bodoquena*?

Both environmental groups and farmers are the appropriators in this context, each one in its level, according to their evaluating prospects about the full deployment and installation of the protected area, which has direct impact on its surroundings. If by a group of actors, the National Park of *Serra da Bodoquena* is irreversible reality, factual, legal and brings expected benefits, in the end by another group of actors it is an abstraction, unreal and reversible given its supposed illegality. There are many interests at stake on the action arena, with external pressures and influences that reveal an implicitly conflict.

Two large groups ultimately stand out, one led and influenced by the Federation of Agriculture and Livestock of the State of Mato Grosso do Sul (FAMASUL), which includes actors linked to rural activities (large, medium or small farmers) that are cohesive on defending the right of freedom of production and private property. Another group receives the influence of the Neotropical Foundation, which in turn ends up becoming an operational arm of ICMBio, leading actors linked to environmental problems, and reaffirming the implementation of the management plan, aiming to conservation e and protection of the natural common resources.

The expected mobilisation of groups of individuals in pursuit of common goals is twofold in this case, with the participants of action arena creating different goals and different collective actions according to their interests, environmental or productive, but all from a common axis, i.e. whom really determines the management of common resources. In this sense, we can say that there is a rapprochement among the actors toward their goals relating to common resources. So, they creates the foundations for setting up a new governance system, which is still in process, development and designing, even under the oppositions of farmers group, with the creation of specific institutions. As an example, the creation of the Advisory Board of National Park of *Serra da Bodoquena* already represents an innovation that integrates existing institutional matrix. However, the new governance system is not conducing to the development of cohesive collective actions for the management of common resources, nevertheless encouraging responses and mobilisation for the seeking solutions, which may not be always convergent, but provokes participants to find alternatives on how to manage and govern the common natural resources.

The government action brings more discomfort than actually collaborates with the progress of management of common resources in the surrounding the National Park of *Serra da Bodoquena*. It has generated a succession of mistakes, such as on not defining an effective procedure of regularization and compensation of the areas assigned to the park, or in not developing an integrated policy of productive alternatives in face of environmental constraints. We can be assume that changes in the institutional framework and evolution are occurring despite government action. In all ways, it has contributed to the barriers, leaving the actors on oppositions arising from lack of clarity of public institutions, which

transforms the National Park of *Serra da Bodoquena* and its surroundings in an arena action vulnerable to decisions that do not always benefit the collective management of common resources. Such management has been motivated and driven by other institutions, not governmental, in this case, rooted in cultural livelihood of farmers.

Conclusion

At this moment, the research has shown two sides playing for its interest on governing the commons resources in the National Park of *Serra da Bodoquena,* one aiming environmental issues, other aiming productive issues, and the economic perspective has gained ground on the dispute over the management. The group headed by The Federation of Agriculture and Livestock of Mato Grosso do Sul (FAMASUL) is strongly imposing its point of view and conducting the deliberation process.

The case of National Park of *Serra da Bodoquena* has another problem, as long as lasts a non-agreement on governing the commons, the costs for the community becomes higher and for the commons sometimes irreversible, resulting in a "tragedy of the Commons" due to interference of powerful groups on imposing its interests over the collective benefits. Another way, the debate is open, but until what point, what moment in time? The commons can no longer wait for ten years or more.

Despite the efforts of the environmental group and government actions towards effective implementation of National Park of *Serra da Bodoquena*, the commons remains under the control of agribusiness interest's decades after decades entrenched in the culture of the local agricultural production. Under the leadership FAMASUL, which presents a significant technical support, that has made a difference in decisions about the future of the region, this group are drawing on the gaps and loopholes left by legislative and regulatory public agencies, allowing up legal questions about the legality of the Decree of the park's creation.

This study, which is in the first stage, contributes to a comprehensive understanding of institutional problems on governing the commons. It does not cover yet all the possible variables or gives full answers relating to how to conduct the protect areas. Nevertheless, as shown on de the case of the National Park of *Serra da Bodoquena*, there is still a confrontation of productive and environmental issues, which can be solved by imperative long-term policies (ecological, economic and social) and an accordance of the actors in management and decision making on the areas.

We hope that the results and discussions contained herein concur to a better understanding of the social, political, economic and environmental context in which lies the National Park of *Serra da Bodoquena* and its surroundings. We are not aiming to defend either position, but to explain their reasons and legal positions in the face of the frailties who are impeding this National Park to become a protected area in its entirety. In this sense, we expect all its conservation areas designed properly can be regularised, a fact that will also affect its surroundings and other actors who depend of institutional clear definitions to the new system of governance for the management of common resources.

References

AGRAER. Agency of Agrarian Development of the State of Mato do Grosso do Sul. *Assentamentos de Mato Grosso do Sul*. Campo Grande/MS, 2008. Accessed July 22, 2011. http://is.gd/p731SP.

Batarce, Ana Paula, A. "Unidades de Conservação e produção do espaço. O Parque Nacional da Serra da Bodoquena". MSc. diss., Federal University of Mato Grosso do Sul, 2004.

Hardin, Garret. "The tragedy of commons". *Science*, 162 (1968): 1243 – 1248.

IBAMA. "Map of the National Park of Serra da Bodoquena". *Satellite image TM landsat bands 7-4-2, 1990 (+- 3 years*), obtained from Nasa, 2008. Accessed November 20, 2010. http://www.ibama.gov.br/

Jenkins, Clinton, and Joppa, Lucas. "Expansion of the global terrestrial protected area system". *Biological conservation*, 142 (10) (2009): 2166–2174.

McGinnis, Michael, and Ostrom. Elinor. "SES Framework: Initial Changes and Continuing Challenges". *Workshop in Political Theory and Policy analisys*, Indiana: Indiana University, 2011. Accessed December 21, 2011. http://is.gd/ilazsP.

Olson, Mancur. *The logic of collective action*. Massachusetts: Harvard University Press, 1965.

Ostrom, Elinor. *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press, 2005.

Ostrom, Elinor. *Governing the commons: the evolution for collective action*. New York: Cambridge University Press, 1990.

Ostrom, Elinor. "Background on the Institutional Analysis and Development Framework". *Policy Studies Journal*, 39 (1) (2011): 7–27.

Ploeg, Jan Douwe V.D. *The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalizatio**n.*** London: Earthscan, 2008.

Renting, Henk. and Ploeg, Jan. Douwe V. D. "Reconnecting Nature, Farming and Society: Environmental Cooperatives in the Netherlands as Institutional Arrangements for Creating Coherence." *Journal of Environmental Policy and Planning*, 3 (2011): 85–101.

Rylands, A. B.; and Brandon, K. "Brazilian protected areas". *Conservation Biology*, 19, (2) (2005): 612-618.

Submitted on: 29/04/2014
Accepted on: 09/07/2016
http://dx.doi.org/10.1590/1809-4422ASOC134199V1942016

THE COLLECTIVE ACTION ON GOVERNING THE COMMONS IN THE SURROUNDINGS OF PROTECTED AREAS

MÁRCIO DE ARAÚJO PEREIRA
SÉRGIO SCHNEIDER
JAN DOUWE VAN DER PLOEG
MARCELINO DE SOUZA

***Abstract*:** This work has as its theme the common natural resources and the management models that allow new governance systems in the rural areas in the surrounding of protected areas. In this sense, this paper aims to discuss the collective action of social actors in the management of common natural resources in the surroundings of the National Park of Serra da Bodoquena (PNSB). Based on institutional approach for the study of the self-organisation and self-governance in common-pool resources situations developed by Elinor Ostrom, the investigation sought the theoretical explanation of phenomena. The conclusions point out that the expected mobilisation of groups of individuals in the pursuit of common goals is twofold. In this case, the participants of the action arena create different goals and different collective actions according to their interests.

***Keywords*:** Commons, Socio-ecological Systems (SES), Protected Areas, Collective Action.

***Resumo*:** Este trabalho tem como tema o conjunto de recursos comuns naturais e os formatos de gestão que permitem novos sistemas de governança nos espaços rurais no entorno de áreas protegidas. Desta forma, o objetivo deste artigo é discutira a ação coletiva dos atores sociais na gestão dos recursos comuns no entorno do Parque Nacional da Serra da Bodoquena (PNSB). Por meio da abordagem institucional no estudo da auto-organização e auto governança em situações de gestão do conjunto de recursos comuns desenvolvida por Elinor Ostrom, buscou-se a fundamentação teórica para explicação dos fenômenos. Conclui-se que a esperada mobilização de grupos de indivíduos em busca de objetivos comuns encontra duas vertentes. Neste caso, com os participantes da arena criam distintos objetivos e distintas ações coletivas de acordo com seus interesses.

***Palavras-chave*:** Recursos Comuns, Sistemas Sócio-Ecológicos (SES), Áreas Protegidas, Ação Coletiva.

Resumen: Este trabajo tiene como tema el conjunto de recursos comunes naturales y los formatos de gestión que permitan nuevos sistemas de gobernanza en las zonas rurales alrededor de las áreas protegidas. Por lo tanto, el objetivo de este artículo es discutir la acción colectiva de los actores sociales en la gestión de los recursos comunes en las proximidades del *Parque Nacional da Bodoquena* (PNSB). Través enfoque institucional al estudio de la auto-organización y auto-gobierno en situaciones de gestión de los recursos comunes desarrollado por Elinor Ostrom, se apuntó el base teórica para la explicación de los fenómenos. Se desprende que la movilización prevista de grupos de personas en la búsqueda de objetivos comunes encuentra dos hebras en este caso, con participantes de la escena de acción presentando objetivos separados y las acciones de clase separados de acuerdo con sus intereses.

Palabras clave: recursos comunes, sistemas socio-ecológicos (SES), áreas protegidas, acción colectiva.