BOOK OF ABSTRACT

1. SESSION DESCRIPTION

ID: T2

Title of session:

Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Hosts:

	Title	Name	Organisation	E-mail
Host:	Ms.	Elaine Aparecida Rodrigues	Instituto Florestal	elainearodrigues@gmail.com
Co-host (s):		Rodrigo Antonio Braga Moraes Victor	Fundação Florestal	rabmvictor@yahoo.com.br

Abstract:

Protected areas are widely acknowledged as a vital strategy to nature conservation. They have increased from 3% of the earth's surface in the 1960s to about 15% in 2016, with more than 217 thousand protected areas around the world. Natural spaces under special protection contribute not only to biodiversity conservation but also to human well-being, through services provided by the ecosystems they shelter. This proposed session aims to identify, systematize and communicate the social, cultural and economic benefits of the goods and services provided by protected areas in Latin America and the Caribbean. By gathering and communicating the available data from existing research and policies on the contribution of protected areas to human well-being, we expect to improve the political environment that could enable the increase in funding and the development of further public policies for the strengthening of protected areas networks.

Goals and objectives of the session:

Identify, systematize and communicate information on the environmental, social and economic benefits that protected areas in Latin America and the Caribbean provide, including the following themes:

- The contribution of the protected areas to ecosystem services and human well-being;
- Valuation of ecosystem services in protected areas;
- Public policies arising from ecosystem services assessment in protected areas;
- Ecosystem services in urban and peri-urban protected areas.
- Ecosystem services and human well-being in areas under international recognition like Biosphere Reserves and World Heritage Sites

Planned output / Deliverables:

- Documents: abstracts submitted and the presentations;

- Briefing Note: Analytical summary of abstracts and submissions received during the session;
- Conference Proceedings containing methodology and results.

Voluntary contributions accepted:

Yes

Related to ESP Working Group/National Network:

Thematic Working Groups- TWG 2 - Biodiversity & Ecosystem services

II. SESSION PROGRAM

Date of session: Wednesday, 24 October 2018
Time of session: 10:30-15:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
10:30-10:45	Elaine Rodrigo	Rodrigues Victor	Instituto Florestal Fundação Florestal	Session Introduction
10:45-11:00	Ariane	Rodrigues	Universidade de Brasília	Cerrado National Parks: Water Supply Services and Environmental Risks

Time	First name	Surname	Organization	Title of presentation
11:00-11:15	Rodrigo	Victor	Fundação Florestal	The contribution of the protected areas to hydric services in São Paulo State
11:15-11:30	Elza Ribeiro	Santos Neta	UEMA	A preservação da biodiversidade da zona ripária no ecótono Floresta Amazônica e Cerrado em Imperatriz - MA.
11:30-11:45	Anderson Oliveira	Latini	Universidade Federal de São João del-Rei	Landscape's effects on insect scavenging ecosystem service
11:45-12:00	Diana	Castaño	Universidad Nacional de Colombia	Evaluation of ecosystem services associated to the mangrove ecosystem in forests with a contrasting water regime in an oceanic island of the Colombian Marine Biosphere Reserve - SEAFLOWER
12:00-13:30		LUNCH BREAK		
13:30-13:45	Julián Prato	Valderrama.	Universidad Nacional de Colombia	Economic valuation approach of Seaflower, the Colombian marine biosphere Reserve.

Time	First name	Surname	Organization	Title of presentation
13:45-14:00	Ana Carolina E.	Dias	University of Waterloo	Linking cultural ecosystem services and wellbeing to improve the governance of marine protected areas
14:00-14:15	María José Brain	Acuña	Centro de Investigación Dinámica de Ecosistemas Marinos de Altas Latitudes (IDEAL)	Who are the real beneficiaries of marine conservation? A case in Chilean Patagonia.
14:15-14:30	Bely	Pires	Cantareira College; Roda d'Água Gestão Socioambiental Consulting	The sustainable tourism cultural ecosystem service in São Paulo Green Belt Biosphere Reserve – Brazil and its impacts on human well-being

Time	First name	Surname	Organization	Title of presentation
14:30-14:45	Claudia	Alvarez Cortés	Semillas de Agua y Universidad Distrital	El difícil camino de la paz y la sostenibilidad. Un análisis del sistema socio ecológico del Cañón de Las Hermosas, Colombia.
14:45-15:30			COFFEE BREAK	
15:30-15:45	Mary Luz Moreno	Diaz	Universidad Nacional (UNA)	Valoración Económica de los Servicios Ecosistémicos generados por los Parques Nacionales y Reservas Biológicas, en Costa Rica. Herramienta para la gestion
15:45-16:00	Cristina Isabel Clavijo	Duarte	Universidad del Magdalena	Identificación de servicios ecosistémicos basados en el análisis de escenarios de futuro de la ecorregión Ciénaga Grande de Santa Marta, Colombia.
16:00-16:15	Mauricio	Galeana Pizaña	Centro de Investigación en Ciencias de Información Geoespacial	Analysis of environmental policy instruments and their effects of expansion of agricultural systems containment in the Sierra Madre de Chiapas, Mexico
16:15-16:30	Elaine Aparecida	Rodrigues	Instituto Florestal/Instituto de Pesquisas Energéticas e Nucleares	Áreas protegidas no Sistema Ambiental Paulista: Situação atual e vulnerabilidade das florestas públicas
16:30-16:45	Beatriz Lima R	Carneiro	Universidade Federal do Rio de Janeiro	Priority areas for conservation in Brazil: low implementation and mismatch with priorities for ecosystem-based adaptation to climate change
16:45-17:00	Katia	Mazzei	Instituto Florestal/Instituto de Pesquisas Energéticas e Nucleares	Effectiveness and improvement of environmental protection policies for the Serra do Itapeti, São Paulo, Brazil
17:00-17:30				Questions and recommendations

III. ABSTRACTS

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

1. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Who are the real beneficiaries of marine conservation? A case in Chilean Patagonia

First authors(s): María José Brain, Laura Nahuelhual

Other author(s): Stefan Gelcich

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Recent ecosystem services (ESs) assessments reveal the role of social inequality in the distribution of benefits derived from conservation. One example is the creation of marine protected areas, arena in which Chile aims to be a world leader. Taking the Multiple-Use Marine Protected Area (MUMPA) Seno Almirantazgo in the Chilean Patagonia, this study aims to identify the distribution patterns of benefits of the MUMPA and analyze the access barriers that determine them. Information was collected through a qualitative-quantitative interview that was applied to local and regional stakeholders, potential ESs users, as well as actors from NGOs and State representatives. The interview included the identification of ESs and benefits, the actors' dependence on the benefits generated by the protected area and the possible adverse effects of its implementation. Preliminary results indicate that the MUMPA provides a variety of ESs among which the provision of food from benthic fisheries and recreational opportunities are identified as priorities by all interviewees. Indirect local benefits are associated with employment, while direct benefits via consumption (e.g., fish) or enjoyment (e.g., recreation opportunities) are captured by distant (foreign) beneficiaries. The most common barrier for capturing the benefits of provisioning services is the restriction to benthic resources extraction imposed by the creation of the protected area, while in the case of cultural ESs, the most frequent barrier is financial, since capturing recreational benefits implies engaging in costly cruises and trips. Local expectations show a potential conflict of interest between fishing and restrictive conservation actions. Results suggest ESs provided by the

MUMPA and their benefits are subject to an "elite capture" given the skills, level of technology and social-economic conditions of the potential beneficiaries.

Keywords: elite capture, marine protected area, benefits, social actors, human well-being

2. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

El difícil camino de la paz y la sostenibilidad. Un análisis del sistema socio ecológico del Cañón de Las Hermosas, Colombia

First authors(s): Claudia Alvarez Cortes

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La investigación que se presenta se enmarca en el análisis del sistema socio ecológico basado en el enfoque de IPBES, para la comprensión de las relaciones que se dan entre diferentes actores sociales y ecosistemas de montaña a escala local en el cañón de Las Hermosas, ubicado al sur del departamento del Tolima, en los Andes de Colombia. Sus habitantes se benefician de los servicios ecosistémicos provenientes de la cuenca hidrográfica del río Amoyá cuyo territorio fue escenario de guerra durante 50 años y en donde 41.000 ha se encuentran bajo la figura de área protegida del Parque Nacional Natural Las Hermosas, mientras más de 100.000 ha están siendo gestionadas por campesinos, cabildos indígenas, organizaciones de productores y empresas en predios privados, donde se cultivan alimentos en sistemas de producción campesina. Alrededor de 1300 productores cafeteros viven de la comercialización regional de cerca de 11 millones de kilos del grano al año cultivados en 7000 ha, además del aporte hídrico de la cuenca a la provisión de agua para el acueducto municipal que abastece a más de 20 mil habitantes, y la generación de energía eléctrica que ofrece, valorada entre USD$23 y USD$66 millones de dólares. La metodología abordó elementos históricos de transformación del suelo desde cultivos de uso ilícito a la reconversión productiva, la participación de campesinos en la identificación y valoración de los beneficios de la naturaleza a través de la fotografía y la creación de escenarios de gestión en el postconflicto. La comprensión de la interacción entre personas y naturaleza, permitió identificar la contribución

de las cuencas andinas en el sostenimiento social, económico y ambiental de esta región y los impulsores de cambio que influyen en la degradación de la alta montaña.

Keywords: Andes, Parque Nacional, postconflicto, IPBES

3. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

The contribution of the protected areas to hydric services in São Paulo State

First authors(s): Rodrigo Victor, Karina Bernardo

Other author(s): Claudette Marta Hahn, Alexandre Marques Oliveira, Diego Hernandes Rodrigues Laranja, Isaias José de Oliveira, Luís Fernando Feijó, Gustavo Casoni da Rocha, Elaine Aparecida Rodrigues, Angélica Maria Fernandes Barradas, Edgar Fernando de Luca, Jorge Luiz Vargas Iembo

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Native vegetation in protected areas provides at least three hydric services for human water consumption: i) quantity, by ensuring hydric affluence (STROBEL, 2007), ii) quality, due to reduced need of water treatment (REIS, 2004), iii) and reservation, that enables water supply and water flow regulation. These services directly reflect on human well-being, especially in metropolitan areas. It is estimated that 29 protected areas and their buffer zones in the State of São Paulo contribute with 56% of the total water volume granted for public consumption. Breaking out this figure, 7% are from strictly protected areas, 24% from sustainable use areas and 25% from their respective buffer zones. Within this context, all surface water collection in the Cantareira System, which supplies water for 8,8 million people in São Paulo Metro Area, are located in protected areas. These figures are source of reflections about the role of protected areas in ensuring water provision and the urgency for sound management and safeguarding measures aimed at them, especially as we face growing water shortage scenarios. While the National Protected Areas System (law 9.985/2000) determines remuneration to areas supplying water by those companies benefiting from the ecosystem services provided by them, to this date this instrument still lacks regulation.

Keywords: Protected Areas, Hydrics Services, Managing Freshwater, water supply

4. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Priority areas for conservation in Brazil: low implementation and mismatch with priorities for ecosystem-based adaptation to climate change

First authors(s): Beatriz Lima R Carneiro

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In order to organize and integrate resources/capacities in the management of the country's continental territory, the Brazilian government has published a National Protected Areas Strategic Plan (PNAP), in which the creation of protected areas (PAs) is recognized as one of the main instruments to preserve biological and sociocultural diversity. Moreover, according to Brazilian legislation, the establishment of PAs should be based on a prioritization of areas (recommended by specialists), first published in 2003 as a map, and reviewed in 2007, when a list was made available. Here we 1) surveyed which PAs were implemented in Brazil since priorities were set in 2007; and 2) compared the official list with a recent publication by our group that selected 398 municipalities as priorities to deploy ecosystem-based adaptation to climate change (EbA) actions, based on poverty income, vulnerability to climate change, and natural vegetation cover (we called these "EbA"). The official priority list indicated 1011 priority municipalities for creation of PAs in 2007. Out of those, 201 municipalities (19.8%) have new PAs (a total of 383) created since 2007. However, other 361 PAs were created in places that were not officially prioritized. Furthermore, only 100 municipalities (10.0% of the 1011 official priorities) coincide with the EbA priority municipalities. Our conclusions are that: 1) despite resource investment in priority setting exercises, a decade has passed and creation of PAs took place in less than a quarter of the priority municipalities, and 48.5% of all PAs created were located outside priority sites; and that 2) the current official list of priority municipalities for creation of PAs account very little for the potential relevance of such sites for climate change adaptation. As a new official priority setting exercise is underway, it remains to be seen whether these two existing patterns will be reverted.

Keywords: Protected Areas, Climate Change, Brazil, Conservation, Ecosystem-based Adaptation

5. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

EVALUATION OF ECOSYSTEM SERVICES ASSOCIATED TO THE MANGROVE ECOSYSTEM IN FORESTS WITH A CONTRASTING WATER REGIME IN AN OCEANIC ISLAND OF THE COLOMBIAN MARINE BIOSPHERE RESERVE - SEAFLOWER

First authors(s): Diana Castaño Giraldo

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Mangrove ecosystems are recognized for the variety of ecosystem services-ES that they provide. The island of San Andrés in the Biosphere Reserve-BR Seaflower has mangroves considered special for developing in karst environments of oceanic islands, including different types fringe (Old Point) and the poorly studied inland mangroves (Smith Channel and Sound Bay) that being or not directly connected to the sea, can provide different types of ES. The particular ecological role of the different types of mangroves is a biological criterion for their management and understanding of their relevance for wellbeing and biodiversity. In the research, baseline information on each mangrove was obtained and reviewed, then through field checklists filled out by 19 experts, ES of the mangroves (fringe and inland) were identified. The ES of fish habitat was also evaluated by means of visual censuses in three stations with similar conditions of depth and benthic cover adjacent to each type of mangrove to evaluate if there were differences in the abundance and diversity of herbivorous fish related to the type of nearby mangrove. We identified 21 ES, 16 for inland mangroves and 21 for fringe mangroves, we found greater abundance and diversity of mainly juvenile herbivorous fish for the Old Point area compared to the other two. This highlights the habitat function of the fringe mangroves, stimulating their conservation as a strategy to maintain the biodiversity of herbivorous fish, important also for the conservation of coral reefs, generating management tools for interinstitutional decision makers.

Keywords: Mangroves, Ecosystem Services, diversity of herbivorous fish, Coastal-Marine Ecosystems, Seaflower.

6. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Valoración Económica de los Servicios Ecosistémicos generados por los Parques Nacionales y Reservas Biológicas, en Costa Rica. Herramienta para la gestión

First authors(s): Mary Luz Moreno Diaz

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Los Parques Nacionales y Reservas Biológicas (PNRB), poseen un gran valor, ya que constituyen la mayor parte de las Áreas Silvestres Protegidas (ASP) en Costa Rica. Es importante rescatar la manera de cómo interactúa la conservación y el desarrollo a nivel local, regional, nacional e internacional, ya que a nivel socioeconómico estas generan beneficios adicionales a la conservación de los recursos naturales y ambientales, tanto contribuciones cualitativas como cuantitativas, las cuales son aprovechados por diversas figuras sociales. El presente estudio realiza una revisión de los principales beneficios que puede llegar a brindar los parques nacionales y reservas biológicas en el 2016 en Costa Rica y sobre quienes recaen.

La metodología empleada en el estudio combina el análisis de clúster con una dinámica de cadena de valor agregado. Debido a que los PNRB forman la base material que sustenta la existencia y reproducción de diversas actividades, que dependen directa e indirectamente de su conservación, se encontraron varios aportes: Ocio y vivencia espiritual, Investigación y Educación, Actividades Económicas y Gestión. La mayor cantidad de contribuciones las obtienen las actividades turísticas que se desarrollan en estas ASP, seguido por los aportes generados por la protección del recurso hidrico para generación de electricidad. Sin embargo, los recursos económicos generados hacia la gestión de estas áreas son muy bajos. Se concluyó que, con miras a mejorar el futuro desarrollo local, regional y nacional, se deben generar lineamientos que permitan que aquellos que se benefician de la existencia de estas areas

aportar con su gestión. Ademas de incorporar activamente a las comunidaes locales y regionales para insertarlas activamente en los clústers identificados alrededor de los PNRB

Keywords: Parques nacionales, Valoración Económica, Clusters, Cadenas de valor

7. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Identificación de servicios ecosistémicos basados en el análisis de escenarios de futuro de la ecorregión Ciénaga Grande de Santa Marta, Colombia

First authors(s): Cristina Isabel Clavijo Duarte, Sandra Patricia Vilardy Quiroga

Other author(s): Darlin Patricia Botto Barios

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La ecorregión Ciénaga Grande de Santa Marta un sistema de humedales costeros, ubicado en el Caribe colombiano en la desembocadura del rio Magdalena, es Reserva del Hombre y la Biosfera (MAB - UNESCO) y humedal de importancia internacional RAMSAR, actualmente en el Registro de Montreux. Procesos antrópicos han generado desde hace seis décadas el deterioro de sus ecosistemas y la disminución en el suministro de servicios ecosistémicos. Existen dificultades en la gestión articulada del territorio, por lo que el Ministerio de Ambiente y Desarrollo Sostenible y la Universidad del Magdalena desarrollaron el proyecto "Los Diálogos de la Ciénaga" con el objetivo de identificar elementos para construir una visión compartida que contribuya a la planeación y recuperación de la Ciénaga Grande, utilizando la metodología de escenarios de futuro. El objetivo de este trabajo fue identificar y analiza las tendencias de cambio de los servicios ecosistémicos relacionados en la construcción de escenarios de futuro por diferentes actores de la Ciénaga Grande de Santa Marta. Para esto se realizaron nueve talleres con la participación de diez tipos de actores claves, en los que se construyeron dos escenarios de futuro (tendencial y deseado) con el fin de identificar los servicios, impulsores de cambio y analizar las implicaciones sobre el bienestar de los pobladores. Se identificaron 32 servicios ecosistémicos, en el escenario tendencial se observan consensos sobre la disminución en el suministro de agua para consumo, la regulación hidrológica, mantenimiento

de hábitat, pesca, alimento y el sentido de pertenencia con graves afectaciones sobre el bienestar de los pobladores. En contraste, en el escenario deseado todos los servicios identificados registran una tendencia al aumento y una mejora en las condiciones de bienestar y calidad de vida. Los resultados serán utilizados como insumos para la reformulación del plan de manejo de la Ciénaga Grande de Santa Marta.

Keywords: Humedales, Servicios ecosistémicos, Escenarios de futuro, Bienestar humano, Ciénaga Grande de Santa Marta.

8. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Analysis of environmental policy instruments and their effects of expansion of agricultural systems containment in the Sierra Madre de Chiapas, Mexico

First authors(s): José Mauricio Galeana Pizaña, Juan Manuel Núñez Hernández

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The urgent need to address food security in less industrialized countries has led to policies and instruments that may undermine another urgent need, which is to preserve ecosystem services. The demand for food and prime materials is the main driver of land use changes in the world, and has led to the loss of forest to agriculture. In order to attend these processes, environmental policy instruments are created thought as mechanisms that enable ecosystem services conservation. With the purpose of implement territorial management strategies, prospective spatial models of land use change and participatory geographic information systems are necessary to evaluate effect of environmental policy instruments in ecosystem services stocks. The present study explores the influence of Natural Protected Areas, Payment for Environmental Services, Maize Criollo Conservation Program and Areas Voluntarily Destined for Conservation as conservation strategies in Sierra Madre Chiapas, Mexico. Prospective scenarios of spatio-temporal patterns under the assumption of presence and absence of environmental instruments were generated for 2029 year, based on land use

change analysis (1993–2011), through application of multilayer neural networks and Markov chains. Prospective scenarios were calibrated through social and physical drivers of change and a knowledge participatory spatial layer obtained for an expert workshop. Prospective scenarios show that environmental instruments mitigate expansion of the productive systems in Protected Natural Areas of Sierra Madre de Chiapas and surrounding areas. Prospective modeling approach makes possible analysis of different formulations of public policy associated with land use changes trends, moreover, an evaluation and sensitivity tool of drivers of change. The results of prospective scenarios can be used for public policies territorially differentiated implementation and, as a coupled action between socioeconomic and environmental targets with information and knowledge generation about costs, benefits, and synergies of alternatives policies forms of manage of ecosystem services.

Keywords: Ecosystem services, environmental policy instruments, prospective modelling, land use changes, México.

9. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Landscape's effects on insect scavenging ecosystem serviceLandscape's effects on insect scavenging ecosystem service

First authors(s): Anderson LATINI
Other author(s): Ana Luisa Gangana Castro, Marcos Antonio Matiello Fadini
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Besides landscapes are endowed with typical biodiversity, the human activities cause fragmentation and fosters a conflict between development and environmental conservation. Here, we investigated the effects of different landscapes on the insect scavenging, a critical ecosystem service (ES) and assessed the provision of such ES testing hypothesis that it differs among landscapes. In the Quadrilátero Ferrífero region (Minas Gerais, Brazil) we studied woody larger areas in Semidecidual Atlantic Forest domain (SAF: Manancial da Mutuca Special Protection Area and the Serra do Rola Moça State Park), low Rupestrian Field physiognomy from Cerrado domain (RFC: Parque Municipal Serra do Curral and Área de Proteção Especial Manancial da Mutuca) and altered by prior mining activities (AMA: Parque Municipal Fort

Lauderdale). At each landscape, we exposed 20 baits with 30 dehydrated individuals of Tenebrio molitor L. larvae (Coleoptera: Tenebrionidae) to measure the removal degree. Ten baits were placed in isolation via metal cages (16 cm x 17 cm) with 1 cm mesh size (restricted access bait - RAB) since they had not accessed of vertebrate organisms and permitted to measure scavenging by invertebrate organisms. The other ten were not isolated in cages (unrestricted access bait - UAB) and thereby reflected the scavenging did by invertebrates and vertebrates together. Using a Repeated Measure ANOVA, we found significative interaction among exposure time, landscape, and type of bait affecting scavenging ($F(8,340)=3.500$, $p<0.001$): the removal was more significant at disturbed areas, did mainly by invertebrates and increased with exposure time. Probably these results are due to the higher attractiveness of these larvae in an environment with fewer food resources as the altered, but also, due to the probable action of organisms from neighbor conserved environments on disturbed one. Results may indicate too positive effects of these natural areas on Human activities, e.g., removing pests in crops areas.

Keywords: Natural processes, insects' removal, predation, natural habitats

10. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

A PRESERVAÇÃO DA BIODIVERSIDADE DA ZONA RIPÁRIA NO ECÓTONO FLORESTA AMAZÔNICA E CERRADO EM IMPERATRIZ - MA

First authors(s): Elza Ribeiro dos Santos Neta
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As zonas ripárias fazem parte das áreas de preservação ambiental. Estas áreas englobam várias especificidades de preservação, dentre elas destaca-se as áreas de preservação permanente (APP), as matas ciliares estão englobadas neste grupo e exercem papel fundamental na preservação de uma determinada bacia hidrográfica, além da vegetação ciliar, o solo e o rio influenciam no fluxo dinâmico de uma bacia hidrográfica, estes elementos formam a zona ripária que vai do alcance da inundação até o topo da copa das árvores. O

objetivo geral do trabalho é conhecer como a biodiversidade vem sendo alterada na zona ripária presente na área de transição de biomas em Imperatriz – MA. A largura do canal fluvial deste rio no trecho citado é acima de 600 metros, ficando delimitados 500 metros a área de APP segundo o Novo Código Florestal. Os procedimentos metodológicos adotados foram revisão bibliográfica e pesquisa de campo. Para um diagnóstico físico da área de estudo foram elaborados mapas temáticos, tais como: delimitação da área de estudo, área de APP, uso e ocupação do solo, além destes, foram elaborados mapas com escala temporal de 2000, 2010 e 2017 a fim de representar mudanças na paisagem nesse período, para desenvolver tais mapas foram utilizados os softwares QGIS 10 e ArcMap 1.0, por meio desses mapas foi possível fazer um comparativo quanto a preservação e perda de biodiversidade da zona ripária no Rio Tocantins no trecho estudado. Com a pesquisa foi possível observar que embora as zonas ripárias apresentem relevância nos fluxos hidrológicos e pedológicos, a sua retirada vem ocorrendo de forma indiscriminada, surgindo conflitos oriundos da ocupação indevida dessas áreas interferindo diretamente nos processos hidrogeomorfológicos da bacia de drenagem, alterando de forma dinâmica a paisagem ribeirinha e conseqüentemente afetando diretamente a biodiversidade da área.

Keywords: Zona Ripária. Rio Tocantins. Biodiversidade. Ecótono.

11. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

The sustainable tourism cultural ecosystem service in São Paulo Green Belt Biosphere Reserve – Brazil and its impacts on human well-being

First authors(s): Bely Pires

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With the ecosystem approach it is possible to reflect on sustainable tourism as a cultural ecosystem service provided by conserved areas where activities such as ecotourism, rural

tourism and adventure tourism are developed. In this perspective, the natural areas of the São Paulo Green Belt Biosphere Reserve GBBR (Brazil) show its importance in concentrating the origin of the majority of conservation units visitors in the state of São Paulo-Brazil (51.9%) and who are interested in leisure in these areas (73.1%). In the 78 municipalities covered by GBBR there are significant natural attractions (ecosystem service providers) due to conservation units and rural properties distributed by the Green Belt. Also noteworthy are sustainable tourism programs, such as Trilhas de São Paulo Program (São Paulo Trails Program) of the State Environment Secretariat, which has nine of forty trails presented in GBBR territory. This text is dedicated to an itinerary that initially aims to reflect on the dimension assumed by leisure in contemporary societies and its cultural and educational potential through tourism. In the sequence, it works as the sustainable tourism can express itself in different modalities to make possible the cultural, educative and economic potentialities to then expose data on tourism in the GBBR, dimensioning the aptitude of this territory for such modalities of sustainable tourism and its relation with human well-being elements (basic material for good life, security, health, good social relations, freedom of choice and action) and reflecting on how this has been worked out in reality. At the end of the article, an analysis of the threats and pressures that reduce the potential of GBBR for sustainable tourism, as well as this could set responses to a negative panorama.

Keywords: Cultural ecosystem service, tourism ecosystem service, sustainable tourism, tourism and human well-being

12. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Cerrado National Parks: Water Supply Services and Environmental Risks

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The Cerrado is one of the world hotspots of biodiversity, but little attention has been directed to the biome conservation. Deforestation advances into native Cerrado remnants and strictly protected areas (PAs) only represent 3% of the biome. A better understanding of the ecosystem services provided by PAs has the potential to highlight benefits in expanding and improving the current conservation network. Here, we evaluated the role of PAs as sources of water supply and as ecosystems that receive water discharges from adjacent areas, thus submitted to environmental risk from disturbances carried by these water flows. The analysis was applied to the 13 Cerrado National Parks, considering 10km buffer zones. We first delineated a stream network from ALOS digital surface model to identify flow direction and areas that are water providers or recipients. We then estimated environmental risk from the following indicators: average soil sand content (available in the SoilGrids platform), drainage direction and density, and land use in the buffer zone (data from the TerraClass Cerrado project led by the Brazilian Ministry of Environment). The results revealed that the evaluated National Parks provide important water supply services: five parks are exclusively water providers, three parks receive a small proportion of water discharge (5–9%), and the remaining parks have more than 25% of their water streams coming from upstream areas. Agricultural and urban land uses represent 26% of the total buffer zones, ranging from 9% to 61% among the studied areas. Three groups of parks should be targeted for priority environmental risk management because of their high sand content, high levels of land use, and high discharge density from upstream. Although our research focused on Cerrado National Parks, these areas are representative of tropical ecosystems with relevant species richness and high land use pressure.

Keywords: savanna, water supply, ecosystem services, vulnerability

13. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Áreas protegidas no Sistema Ambiental Paulista: Situação atual e vulnerabilidade das florestas públicas

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O Sistema Estadual de Florestas (SIEFLOR) paulista integra o Sistema Nacional de Unidades de Conservação (SNUC), ao abrigar florestas públicas com diferentes categorias e manejo. Destacam-se as chamadas fazendas de experimentação, desapropriados entre 1920 e 1970 para expansão do serviço florestal e pesquisa científica. Face às recentes iniciativas para sua alienação/concessão, a partir da revisão do referencial teórico, documental e legal incidente, foi analisada a proteção jurídica destas florestas. Das 34 áreas com proposituras de alienação e/ou concessão, foi identificada natureza fática de manejo e atributos ambientais compatíveis com o Sistema Nacional de Unidades de Conservação para 30 áreas, totalizando 33.579 ha. Nesta perspectiva, seu reconhecimento como unidades de conservação (UC) representa acréscimo de 17% no número de UC estaduais; aumento de 930% do número de florestas estaduais nos biomas Cerrado e Mata Atlântica do Interior e 470% ampliação de área protegida como UC nestas fitofisionomias. Ainda que juridicamente a tese de que estas áreas se configuram como como unidades de conservação tenha sido comprovada, quer por normativas genéricas, quer por disciplinamentos específicos, o não reconhecimento de seu regime jurídico protetivo representa vulnerabilidade às iniciativas de alienação destes espaços, com risco iminente de perdas irreparáveis à biodiversidade e aos serviços ecossistêmicos prestados por essas florestas públicas.

Keywords: Espaços territoriais especialmente protegidos, unidades de conservação,

14. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Effectiveness and improvement of environmental protection policies for the Serra do Itapeti, São Paulo, Brazil

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Seeking to establish the bases for an integrated planning of urban and peri-urban ecosystems, in 1994 the Green Belt of São Paulo was declared as a Biosphere Reserve under the MAB Program - The Man and the Biosphere - by UNESCO. The area covered by the Biosphere Reserve

of the Green Belt of São Paulo (BRGB) hosts a remarkable biodiversity and offers a wide range of vital ecosystem services for 78 cities that compose the region and also promote the wellbeing for over 24 million people. The Itapeti ridge stands out in BRGB by integrating the complex and the vast urban and peri-urban space, with important remnant of the Atlantic forest in the northwest of the Metropolitan Region of São Paulo. Since 1950, public policies have been applied to wildlife, flora and water resources protection through local, state and federal regulations in the area. Based on the analysis of the current legislation, the mapping of land use and coverage in the Itapeti ridge and comparing maps of vegetation categories in periods of about 30 years, we evaluate the effectiveness of the management and territorial planning for the protection of ecosystems and their services in the area. The comparative study of vegetation categories of the Serra do Itapeti for two periods (1982 and 2010) allowed us to evaluate the effectiveness of the Law on land use planning in the study area in 1985: there was a decline in anthropic use (from 18% to 8% of the area) and the most conserved areas of vegetation (forest of first category and capoeirões) ranged from 42% to 61%. Thus, this work shows that the regional planning guidelines safeguarded and promoted the recovery of ecosystems that have achieved to protect and emphasize that the institutionalization of more specific actors of environmental protection in the Itapeti ridges provide not only additional legal protection, but also formal tools for the integrated management of the region.

Keywords: Land use change, environmental protection, public policy, recovery of degraded areas

15. Type of submission: ***Abstract***

T. Thematic Working Group sessions: T2 Ecosystem services and human well-being in Latin America and the Caribbean protected areas

Economic valuation approach of Seaflower, the Colombian marine biosphere Reserve

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The San Andres, Old Providence and Santa Catalina Archipelago located at the southwestern Caribbean, is the biggest department in Colombia, covering around 180,000 km2 of marine area. This insular state, has around 105,832 ha of coral reefs that account for the 78% of country´s corals. Because it natural capital richness and marine ecosystem diversity, it was declared as the "Seaflower" Biosphere Reserve by the UNESCO in 2000, that as a marine reserve, covers approximately 10% of the Caribbean sea. The emerged territory means 1% of the reserve extension, and has the higest population density of the country (2.529 ihab/km2), showing high dependence of its population from sea ecosystems. An economic valuation study was performed by two governmental institutions, the Colombian Ocean Commission, and Coralina, in order to include Seaflower ES benefits into national planning an accounting programs. To achieve that, we assessed benefits that Seaflower offers, from an institutional (using sectorial statistics and national accounts), ecosystemic (using TEV and benefit transfer methods for coral reefs, sea grasses, mangroves and open ocean) and potential (theoretical potential uses) approaches. Institutional data shows that Seaflower is producing near to USD $ 271 million/year, where tourism, due to Seaflower´s natural beauty, is one of the main drivers of the local economy. On the other hand, through the ecosystemic approach it was estimated that Seaflower´s marine ecosystems offers close to USD $267,338 million/year. Differences between institutional and ecosystemic approaches, shows that Seaflower´s importance for wellbeing and sectorial economic growth, should be taken by decision makers with more relevance that pure economic measures as GDP suggest. The ecosystemic approach suggest that Seaflower´s marine ecosystems, provide considerable contributions for Colombia, giving strong arguments to encourage and engage decision makers to protect, manage and invest on conservation and sustainable use of Seaflower, the Colombian biosphere Reserve.

Keywords: Colombian Caribbean, economic valuation, Seaflower Biosphere Reserve, marine ecosystem services, sectorial development.