

CONSERVATION AND DISPOSSESSION IN THE PANTANAL WETLANDS OF WESTERN BRAZIL

CONSERVAÇÃO E DESPOSSEÇÃO NO PANTANAL BRASILEIRO

Ana Maria de Souza Mello BICALHO
PPGG, IGEO, Universidade Federal do Rio de Janeiro
anabicalho@igeo.ufrj.br

Scott William HOEFLE
PPGG, IGEO, Universidade Federal do Rio de Janeiro
scotthoefle@acd.ufrj.br

Resumo

A política de conservação que discrimina a população histórica do Pantanal Brasileiro é questionada com base na história ambiental radical, na ecologia política crítica global e na ontologia relacional. Baseado em trabalho de campo realizado em 2015 e em fontes secundários, este estudo analisa o conflito socioambiental envolvendo camponeses ribeirinhos ameaçados por reservas naturais públicas e privadas no alto rio Paraguai na área de fronteira entre o Brasil, a Bolívia e o Paraguai. As reservas naturais são articuladas numa poderosa rede de conservação biocêntrica que abrange o Parque Nacional do Pantanal Matogrossense e reservas particulares localizadas no sul do Estado do Mato Grosso e no norte do Estado do Mato Grosso de Sul. Os funcionários das reservas geralmente são biólogos e engenheiros ambientais que possuem ideias errôneas sobre a Natureza pristina sem a presença de população rural e sobre a produção de subsistência. Restrições sobre a posse da terra e o uso de recursos impostos pelas unidades de conservação, por sua vez, inviabilizam o modo de vida de uma população tradicional legalmente constituída. Enfrentando a injustiça ambiental, os ribeirinhos se mobilizaram num movimento de resistência e construíram alianças extra locais, com o objetivo de permanecer no lugar. Em consequência, surgiu, por um lado, uma ação judicial entre a rede de ambientalistas e, por outro lado, uma rede de ribeirinhos, indígenas, ONGs socio-ecológicas, cientistas sociais e a Defensoria Pública. Em várias decisões a Justiça decidiu a favor dos ribeirinhos. A rede composta por investidores externos visa conservação da biodiversidade, compensação ambiental e fundos verdes enquanto a rede socio-ecológica promove a conservação com uso sustentável. Em conclusão, as narrativas de economia verde e de diminuição de emissões globais através da conservação em países do Sul Global são criticadas pela injustiça social contra populações rurais pobres.

Palavras chave: Conservação biocêntrica, injustiça ambiental, Pantanal, Brasil.

Abstract

Conservation policy which discriminates against the historic population of the Brazilian Pantanal wetlands is questioned using radical environmental history, critical global political ecology and relational ontology perspectives. Based on fieldwork undertaken in 2015 and secondary sources, this study analyzes socio-environmental conflict involving riverine peasants threatened by public and private nature reserves along the upper Paraguay River at the junction of Brazil, Paraguay and Bolivia. The nature reserves are articulated in a powerful bio-centric conservation network embracing the Pantanal National Park and private reserves located in southern Mato Grosso and northern Mato Grosso do Sul states. Reserve officials are usually trained biologists and environmental engineers who hold erroneous views concerning pristine nature without the presence of rural people and idealized subsistence production. Restrictions over land ownership and resource use imposed by the conservation units are shown to threaten the livelihoods of a legally designated traditional population. Against this environmental injustice the riverine peasants mounted a resistance movement and built extra-local alliances with the objective of remaining in place. The resulting conflict with local people gave rise to a class action involving the conservationists on one side and a network of peasants, indigenes, socio-ecological NGOs, social scientists and public defenders on the other, with the courts repeatedly siding with the latter. The clash pits outside investors who seek to preserve biodiversity and to compensate environmental degradation caused elsewhere directly through setting up biocentric conservation units or indirectly via green funds while the historic population-tries to build socio-ecological livelihoods based on sustainable-use conservation. Global rhetoric of green

economy and diminishing carbon emissions through conservation measures undertaken in the Global South is shown to be woefully out of touch with local social justice for a poor rural population.

Keywords: biocentric conservation, environmental injustice, Pantanal wetlands, western Brazil.

1- Introduction

The Pantanal of western Brazil is the largest wetlands complex in the world. The biome is spectacularly beautiful and presents exuberant flora and fauna which attract foreign and domestic tourists. In recent decades the Pantanal has been the object of conservation actions undertaken by Brazilian and international GOs and NGOs. The biome is of such importance that the World Wildlife Fund considers it to be one its thirty-five global priority areas (WWF, 2016).

The permanent swamp located north and south of the Amolar Mountains straddling the Brazilian-Bolivian border has received considerable attention and was granted the status of Natural Heritage of Mankind by UNESCO in 2010 (Figure 1). However, we will show that the landscape is a relatively new landscape and not a nature area which has existed for millennia as is common in environmentalist misreading of landscapes based on a linear movement from pristine nature to anthropic degradation (cf. Fairhead and Leach, 1996). This kind of view is criticized for involving bio-centric environmental ethics which only take the good of the ecosystem into account and exclude poor rural people. We will thus demonstrate that the beauty of conservation areas set up from the 1980s onward in the area of permanent swamp occults great socio-environmental injustice toward indigenous people and hybrid peasants present in the area for hundreds of years.



Figure 1: "Pristine swamp" framed by the Serra do Amolar Mountains
Source: Field research (2015).

2- Theory and methods for researching environmental injustice

The process of creating the full preservation nature reserves in a new landscape of permanent swamp in the Pantanal will be questioned using contemporary Environmental History, Political Ecology and Relational Ontology perspectives. The concepts of *conservation refugees*, *environmental dispossession* and *environmental ethics* from Radical Environmental History and Studies are combined with the concepts of *nature enclosures*, *green washing* and *urban-rural exploitation* from Political Ecology to critically evaluate

bio-centric conservation policy. A relational approach of *hybrid society-nature*, *actor-network reassembly* and *connectivity* is also applied to propose socio-ecological land use which philosophically goes beyond rationalist concepts of essentialized nature on which bio-centric conservation is rooted.

In a global context of environmental backsliding, geopolitical wars over energy sources and territorial expansion, violent counter-imperial movements and increasing social and regional inequality after 2000 *Environmental History* took a radical turn. A new generation of historians started to castigate past iconic actors of bio-centric conservation, such as Marsh, Yellowstone and the Grand Canyon, that only took the good of the ecosystem into consideration and so justified ethnic and class cleansing of the landscape. In the hundred-year conflict between Western conservation and native peoples and poor peasants, the latter have been criminalized, dispossessed and turned into conservation refugees in order to produce pristine Nature to be visited in the comfort of a Sport Utility Vehicle or luxury mobile home by well-to-do urbanites from rich regions. Starting in colonial times and continuing into the present, bio-centric Western worldviews of an essentialized Nature without (rural) human presence have been imposed on the rest of the world in order to create distilled nature reserves free from *anthropic action*. Local populations were removed from their ancestral territories and their productive systems deformed (Adams & Mulligan, 2009; Dowie, 2009; Jacoby, 2014/2001; Griffin *et al.*, 2019).

This history of environmental injustice has its roots in a dualistic scientific worldview that arose in the late 19th Century in which researchers who study natural phenomena were epistemologically separated from those who investigate human phenomena. On the biophysical side of this divide, scientists use reductionist explanatory frameworks in which interaction between analyzed parts of one phenomenal level are thought to cause what is observed at the level immediately above it in a cascade of nested phenomenon scales (Merchant, 2005; Simmons & Cox, 1985). As a result, biophysical researchers receive little or no training in the human and agronomic sciences and this completely distorts the attitude that they bring to conservation. Biophysical scientists also tend to hold a naïve view of an idealized nature which existed before humans existed on the planet, the remnants of which must be set aside and protected. Consequently, park rangers and administrators with this worldview come to their work with a default negative attitude toward any human resident present in or near “nature areas”.

Against this view of rationalist science and bio-centric conservation, Radical Ecologists and Environmental Historians developed a holistic view of science and conservation which mobilizes disciplinary knowledge across phenomenal scales. Instead of separating nature from society, in the holistic view culture and environment are seen to be entangled entities and conservation policy needs to be decolonized. Instead of US-style national parks, European-style conservation/heritage units with sustainable human use are promoted. In the place of elitist bio-centric environmental ethics, *homo-ecocentric environmental ethnics* are advocated in order to attend to both human and ecosystem value and moral status (Merchant, 2005; Pepper, 1996; Simmons, 1994).

Contemporary *Political Ecology* also presents critical views of bio-centric conservation. Political ecologists focus on how poor vulnerable rural and urban social groups suffer disproportionate risk from environmental degradation, air pollution and global climate change at the same time that they can lose their livelihoods to make way for essentialized nature (Huber, 2017; Holifield, 2015; Peet *et al.*, 2011; Taylor, 2015). Political ecologists also increasingly criticize policies of mitigation of climate change based on carbon trade-offs because these green wash unsustainable agricultural, industrial and services activities, occult the destructive nature of capitalism and permit postindustrial and recently industrialized countries to continue polluting if they compensate this with state and private grants for conservation in poor countries Adding insult to injury, carbon colonialism places the blame for rising global emissions on deforestation in the developing countries and not on industry and post-industrial life styles, which produce most of the emissions. This in turn validates nature enclosures and green wars that are perpetrated against tribal peoples and poor peasants who resist leaving areas set aside for conservation (Bumpus & Livermore, 2011; Büscher & Fletcher, 2014, 2018; Forsythe, 2003; Hoefle, 2013; Peet *et al.*, 2011).

As most nature reserves are created in essentially rural areas, Kelly-Reif and Wing (2016) consider this to be *urban-rural exploitation*. Land is cheaper there for establishing nature areas which are thought to offset the foul air, sewage, garbage, light and general noise spewed out by megacities, industry and affluent lifestyles. Class conflict becomes even more apparent when critical views of rural and eco-tourism are included in the evaluation of environmental policies. These leisure activities are often the only public use permitted by national park administrators and the main beneficiaries are urban middle- and upper-class individuals, i.e. people with a similar social background as the park administrators, and this accentuates bias against poor rural folk (Bicalho *et al.*, 2020; Hoefle, 2016).

Finally, these two approaches can be enhanced philosophically and methodologically with 21st Century *relational perspectives* in the social sciences, which go beyond just studying conflict over natural resources and propose an integrated view of natural and social networks composed of humans, animals, plants, landscapes and objects, all of which are considered to be actors in their own right (Cresswell, 2013; Descola, 2013; Holbraad & Pederson, 2017; Latour, 2004, 2005, 2013; Whatmore, 2002).

Latour (2004, 2013) and Descola (2013) are perhaps the greatest critics of the separation of human society from biological nature, which they empirically show to exist only in modern Western science. Against this view of a single ontologically independent Nature, whose secrets are revealed by objective Western science, relationalist social scientists show that there are as many natures as there are cultures, each of which groups people and other beings in different ways. Scientific concepts of Nature and Society/Culture are considered to be incomplete ontological amalgamations that occult at least fourteen different inter-relational modes of existence identified in Western thought which span the divide between humans and non-humans. Humans have ten specific modes and share another four with non-human entities. As a result, instead of splitting up phenomena for separate study by human and biophysical scientists, who due to

different epistemologies and methodologies do not understand one another, a relational perspective proposes the holistic study of human and non-human networks.

These theoretical approaches were combined in specific methods for critically researching conservation. In interviews with riverine peasants, reserve managers, workers and representatives of governmental and non-governmental organizations, an environmental history perspective led us to ask about what kind of landscapes and livelihoods existed in the area before the nature reserves. Political ecology prompted us to see how resource use changed over time and how marginalized social groups became more vulnerable. The socio-political dimension to relational perspectives in turn induced us to try to systematically envision the conflict between the nature reserves and the local population in terms of rival actor-networks constituted by different persons, institutions and non-human actors.

Fieldwork was quantitative and qualitative in nature involving detailed questionnaires applied to riverine peasants and private reserve personnel and workers as well as participant observation of judicial proceedings which occurred at the same time in 2015. In the years since we have followed the course of legal and administrative actions by way of secondary sources. In addition to this, nature reserve documents and management plans were consulted whose green talk of social inclusion was contradicted by what was observed in the field.

Concerning the primary sources, in the fieldwork undertaken in 2015, 32 riverine peasant families of a total universe of 64 who still live in the Amolar area. The peasants were interviewed concerning their use of land and natural resources past and present, environmental ethics and perception, farming systems, labor regimes, market articulation, sources of monetary income, family structure, out-migration, access to public services and political mobilization. The manager and five employees of one of the larger of the thirteen nature reserves were interviewed concerning the same subjects for the conservation unit as a whole as well as concerning the lifepaths of each individual. Finally, with this prior knowledge in mind the research group participated in a public hearing held in the community of São Lourenço by the Federal Public Defender's Office which mediated the dispute between the reserves and the local population.

A discussion of methods does not stop at the end of the fieldwork, nor even with the consultation of the relevant literature, but also includes "writing up", i.e. preparing the material for publication. Preliminary results of the research were published right after the fieldwork in a Belgian geographical journal (Hoefle and Bicalho, 2016) and a synopsis appeared in a theoretical article published in 2020 in a Spanish geographical journal. The present chapter adopts Geertz's ethnographic strategy of delving ever deeper into a case from which interpretative insight is gained concerning larger issues that can have relevance elsewhere (2000, 40). Erickson (2001) presents a number of such cases in which great problems can be played out in even the smallest and remotest of places, which are often dismissed as being backwater and so irrelevant to global affairs. In our case we delve into the wider implications of bio-centric conservation, green accumulation and urban bias in general played out in minute riverine peasant communities of the upper Paraguay River.

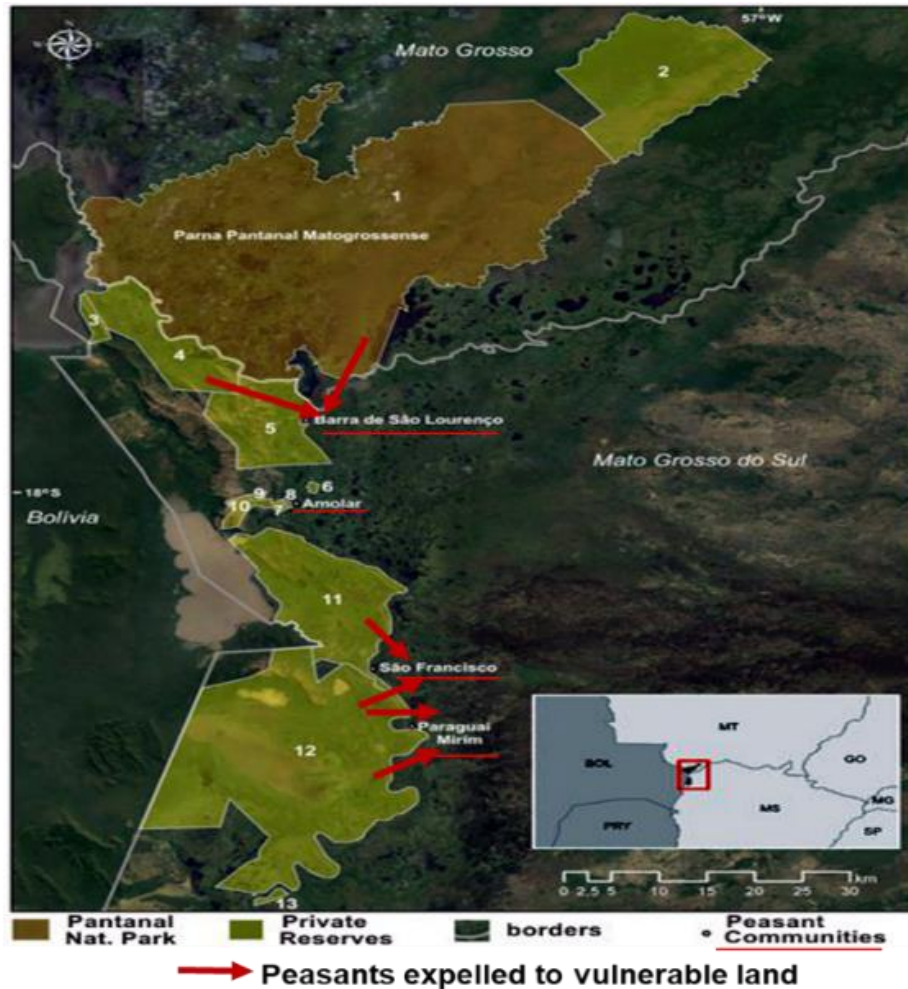
3 - Environmentalist misreading of a new Pantanal landscape

Most environmentalist histories of the study area start in 1981 when an important federal national park occupying 135,581 hectares was set up in Mato Grosso state in what had been cattle ranches in the past. Since then, enormous areas of land on the western and eastern banks of the Paraguay River on both sides of the state border with Mato Grosso do Sul were purchased by corporate and wealthy individual investors from metro areas of the industrial Southeast of Brazil. These investors took advantage of neo-liberal conservation legislation introduced in the 1990s which encouraged the private sector to establish conservation units. We will see that they took advantage of the low price of the historic ranches which had gone bankrupt after an extreme weather event in 1974. Our socio-ecological landscape history goes back to those events and includes the local indigenous and peasant population usually written out of elite environmentalist histories. The result is a less heroic evaluation of the conservation actors at work in the study area.

One of the first private reserves was owned by the MMX Mining Corporation which operated a large iron ore exaction unit further down the Paraguay River near the city of Corumbá and the reserve set up in the study area was meant to compensate environmental destruction downriver. However, the Amolar Mountains have a similar geologically formation as that of the mine so maybe compensation was not the only reason for the investment. As iron ore could be extracted at a future date and another area bought elsewhere to compensate this, the conservation unit also took advantage of green accumulation to secure an iron ore value reserve.

Further north, national and international ONGs formed a consortium to buy land adjacent to the National Park and so extend the area preserved. In the south one of the owners of the largest private Brazilian banks consolidated over 60,000 hectares of land into a reserve which served as her private ec lodge. Finally, the Institute of the Pantanal Man, a shady Corumbá-based NGO with paramilitary airs, bought land in between and later acquired the MMX reserve when the parent corporation slowly slid into bankruptcy. In recent years the IPM floated a green investment fund that sells shares to corporations and individual investors with the stated purpose of earmarking more Pantanal land for conservation. The thirteen public and private conservation reserves straddling the state line between Mato Grosso and Mato Grosso do Sul now occupy 276,087 hectares (Instituto Acaia, 2014; MMA, 2016)(Figure 2).

Steeped in a bio-centric worldview the first task undertaken by the staff of the public and private nature reserves was to remove any poor riverine peasants present within the reserves allegedly to prevent their anthropic activities from threatening local fauna and flora. The private owners also wanted to preclude the local population from claiming squatter rights. However, the case of the Paraguay River peasants is complicated by the fact that this river is located along international boundaries and so is subject to specific Federal legislation for public This means that the private reserves had no legal basis for removing the riverine peasants living along either side of the Paraguay River because the land was not theirs.



Nature Reserves	Institution	Total (ha)
1. Pantanal National Park	ICMBio GO	135,581
2. RPPN Dorochê	Eco-Trópica NGO	26,718
3. RPPN Rumo ao Oeste		990
4. RPPN Acurizal		13,665
5. RPPN Penha		13,409
6. Fazenda São Gonçalo	IMP NGO	180
7. Fazenda Santa Rosa		78
8. Sítio Serra Negra		16
9. Fazenda Vale do Paraíso	Private person	184
10. Fazenda Morro Alegre	Private person	1,351
11. RPPN Eliezer Batista	IMP & other NGOs	20,259
12. Fazenda Santa Tereza	Private person	63,291
13. Fazenda Jatobazinho	Acaia NGO	360
TOTAL	-	276,087

Figure 2: Public and private nature reserves of the upper Paraguay River.
 Adapted from: Instituto Acaia (2014, 10).

Making matters worse is the fact that in the Brazilian unified conservation system established in 2000, private nature reserves are classed as sustainable use conservation units and not full preservation units

which only permit scientific research and eco-tourism (more on this below). Furthermore, a Federal decree of 2007 protects the rights of traditional populations to remain even in full conservation units.

Cleansing the reserves of the ethnically hybrid peasants has involved means bordering on crimes against humanity, ironically citing UNESCO all along. Using classic land-grabbing tactics, known as the hated practice of *grilagem* in Brazil, goons representing the Institute of Pantanal Man violently intimidated families to abandon their homes at short notice, often within twenty-four hours, carrying whatever belongings that could fit in their canoes. The houses were then burnt down and new ones built for caretakers to live in at strategic points to prevent the local population from returning. One pregnant woman had a miscarriage caused by the stress and the physical work involved in the move. Another woman had her house burnt down when she was away for the day to bury her deceased husband in a public cemetery.

When the expelled peasants set up precarious houses on the other side of the river their fishing equipment was seized under the allegation that they sold fish and so threatened ecosystems in the reserves (more on this below). The real intention was to take their livelihood away in the hope that they would leave the region. These practices contrast sharply with the environmental administrative plans proposed when the reserves were set up in the 1990s (as well as in contemporary green investment schemes) which speak glowing of sustainable actions that are meant to benefit the local population. Alternatively, the reserves blatantly claimed that no tradition population was present in the proposed reserves when in fact there was.

4 - Rereading the Pantanal landscape with critical environmental history, political ecology and relational ontology perspectives.

Instead of deductively (or intentionally) misreading the study area as a pristine swamp that has existed from time immemorial, research methods based on phenomenological and relationist precepts involved reconstructing past landscapes through interaction between researcher and researched (see Hoefle, 2022, for more on the philosophical implications of such methods). This kind of field research yields a much more complex recent history as seen from the perspective of the local population, that can be divided into three periods: 1) before the flood of 1974, 2) the heyday of the alligator skin trade after that event and up to the repression of this activity in the late 1980s and 3) resistance to the nature reserves up to the present date.

Before a severe weather event of prolonged torrential rainfall in 1974, large cattle ranches and even roads were present along the Paraguay River in what is called “low Pantanal”, a habitat of seasonally inundated prairie. The ranch owners were descendants of settlers of the Pantanal who arrived in the area after the Paraguay War (1864-1870) in which Brazil gained territory from Paraguay and gained more after the War of the Pacific (1879-1883) when Brazil agreed to provide Bolivia with passage of goods to the Atlantic Ocean via the Paraguay River and by rail across Brazil after it lost its Pacific coast to Chile. Over generations the size of the land grants fell due to inheritance in families which often had more than ten children. A hybrid peasantry constituted of Amerindian, Brazilian, Bolivian and Paraguayan ancestry also

arose in this border area. Peasants were highly mobile and alternated as internal peasants who were ranch hands and as independent peasants who moved up and down the rivers according to annual variation in fishing conditions and channel movements.

This situation was radically transformed by the 1974 floods which caused a surge in sedimentation provoked by intense erosion that turned the mouth of the tributaries into one of the largest fluvial fans in the world and partially blocked the Paraguay River (Galdino et al., 2006). The water level suddenly rose and never receded again. The Paraguay River above the city of Corumbá became so meandering that when one travels up river the glow of this city at night is still visible after six hours of travel in the meanders. A highway used to exist along the eastern side of the Paraguay which connected Corumbá directly with the state capital of Mato Grosso. One man pointed to a point nearby his house where a ferry used to operate along the highway at a crossing of the Paraguai-mirim tributary. After the 1974 flood the area turned into a particularly low-lying swamp where houses of the community with the same name are built on stilts.

The impact on ranching and employment was immediate. In the words of one old ranch hand, “The ranch owner went to bed rich and woke up poor. He lost 20,000 head of cattle overnight”. The scale of the crisis overwhelmed local transport facilities and cattle perished before the animals could be evacuated. Ranches went bankrupt and sacked their workers. On this particular ranch with an area of approximately 40,000 hectares only a small knoll exists above water today. The new owner is a doctor from metro São Paulo who maintains a house on the knoll which serves as his base for seasonal sport fishing. There is only one employee, a caretaker. The old ranch hand interviewed had four brothers who used to work on the ranch, which before 1974 employed more than twenty workers.

Crop and pasture land were lost when the seasonal prairie disappeared. Independent peasants and internal peasants on the ranches lost their agricultural activities which consisted of planting small areas of manioc, maize and bananas and it became more difficult to raise pigs and chickens. Aquatic fauna and flora replaced the terrestrial species. Fish, water birds and alligators became abundant and small to medium-sized mammals, such as deer, tapirs, peccaries and armadillos, disappeared. This had been the food of apex predators such as jaguars which partially adapted to the changed situation by attacking livestock. Pigs, sheep and chickens are particularly vulnerable to being attacked by alligators and jaguars but cattle can also be taken. Given the increase in the number of alligators, it is no wonder that the hunting alligators for skins became an alternative source of income for impoverished out-of-work peasants at the time. The now almost deserted hamlet of Amolar was the main entrepôts for buying alligator skins in the 1970s and 1980s until the trade was suppressed by a federal police operation. Ironically, the operation was commanded by the man who later became the leader of the IPM NGO cited above and so marked the beginning of his violent relationship with the riverine peasants.

Without pasture, nearly all of the historic ranches ceased activities so that livestock was drastically reduced and this made the work of the few ranchers who remained even more difficult. One such ranch still exists about an hour’s journey in a small boat up a clogged tributary. The fate of its owner illustrates the

post-1974 crisis in ranching. His quality of life today is a shadow of the past. The man owns 6,000 hectares which were inherited from his parents. Over time the original land grant of 100,000 hectares that his great grandparents received was successively subdivided. When the man was studying to become an engineer at a university located on the east coast of Brazil his father died suddenly and he had to abandon his studies and assume control of the ranch.

This was an unfortunate life path decision because shortly afterward the climatic event of the 1974 flooded most of his land and that of neighbouring ranches. The latter were abandoned by their owners but the man insisted on staying. He was able to maintain about 200 hectares of pasture using sandbags to keep out water. However, the changed natural landscape from seasonally flooded prairie to permanently flooded swamp made predator attacks on his cattle and small animals more frequent. As his neighbours and workers left the only remaining farm animals in the vicinity were his and the attacks became even worse. In the rancher's own words, "With no neighbors around, my cattle became a magnet for jaguars".

Of a herd of 120 head of cattle in 2014 the man lost 16 to predators and of 80 sheep he lost 30. His work force fell over time and he let go his last worker in 2013 so that he now works the land alone. In 2014 the rancher earned US\$11,368 selling 25 immature steers, US\$3,947 selling sheep and another US\$1,628 from selling watermelons grown on a hectare of crop land. Small animals and watermelons are sold to the local riverine fisher-farmers, who are not exactly affluent consumers. The income earned by the rancher is considerably higher than that earned by the latter but is a fraction of what he earned in the past.

As the value of the abandoned ranches plummeted they were purchased by wealthy outsiders who are liberal professionals or work in the financial sector and use the land for recreational purposes. By declaring most of the land to be private nature reserves they are exempted from paying rural land taxes. One large ranch with 23,000 hectares was bought by a woman from the São Paulo metro area in 2005. In succeeding years, she purchased three neighbouring ranches and today has 63,291 hectares. About 1.3% of the area is utilized for 800 hectares of planted pasture and another 18 hectares in farm structures surrounded by grass. The pasture is located on high land in the Amolar hills, which occupies 31% of the ranch. By Pantanal standards this is an exceptionally large proportion of ranch land that is not seasonally flooded. This area is composed of rock outcroppings and forest, part of which was cleared by a past owner to plant pasture. Another 9,000 hectares of pasture become available during the dry season when the annual flood water recedes in high Pantanal (9%) and low Pantanal (37%) lands. Permanent rivers and lakes without economic use make up the rest of the property.

The planted pasture is leased to the owner's nephew and the rent pays the maintenance expenses of the property. Through the sale of immature and nearly mature steers the nephew earned a gross income of nearly US\$300,000 in 2014 which shows the potential for cattle raising in the Pantanal when it is not permanently flooded. However, his aunt only uses the property for recreation purposes. On weekends and during her vacation she flies in on her private airplane decorated with jaguar spots and lands on her private air strip.

Employees grow organic vegetables for the owner, take care of her hobby horses and the grounds in general. A manager was brought in to look after the place. He had prior experience in managing commodity farms and ranches in the plateau zone of Mato Grosso do Sul that is located outside the Pantanal. He earned US\$14,967 in 2015 and another eight permanent employees earned the minimum wage of US\$3,609 a year. They are also outsiders who were recruited in Corumbá or from elsewhere in the state.

5 - Do peasant livelihoods or sport fishers represent a threat to nature reserves?

Conservation officials are trained biologists who hold the erroneous view that peasants deplete stocks because they sell fish and forbid their presence in the park and only tolerate their presence in buffer area if fishing is limited to “subsistence needs”. In fact, our research showed that almost all peasants fish on a quasi-subsistence basis which includes selling between 10% and 25% of fish caught in order to meet basic needs which they do not produce themselves. Of the interviewed peasants, 73% do not sell fish and only 35% of the total of fish caught by all of the peasants is sold. Produce from all other cropping and raising pigs and chickens is almost exclusively for self-provisioning.

Not only is a small proportion of fish sold but also few fish are caught in absolute terms, which is to say that their scale of capture is modest. A comparatively small number of fisher families, 111 north and south of Corumbá according to ECOA (2014-15), caught an average of 842 kilos each in 2014 according to our investigation, for a total of 93,462 kilos that year. Against this, a large number of sports fishermen, 52,045 hailed out of the port of Corumbá in 2015 (Prefeitura de Corumbá, 2015), caught approximately 25 kilos apiece per trip (Moraes and Seidl, 2000), summing over 1.3 million kilos of prime fish that year. Sports fishers eat some of the fish caught while on their stay, some fish are released during three months of the year when fish are spawning and the rest caught used to be taken home in Styrofoam coolers and eaten throughout the year. Bending to the pressure of peasant and commercial fishers of the state a law was passed in 2019 limiting what could be taken home to one prime fish and four piranhas. If a tourist wants to take more fish home this has to be purchased from local fishers.

In 2015 the municipal government of Corumbá reported that the sports fishing sector benefited about 990 workers based in town (Prefeitura de Corumbá, 2015), which is welcome in a city with chronic unemployment, but does not directly benefit riverine peasants. The latter do benefit from selling bait-fish and bait-crabs to passing sport fishing tour boats as well as some fish, honey, charcoal, chicken and pork. Nearly two-thirds of the interviewed families earned income from selling bait and 20% of the fishers who do not sell fish commercially sell bait (Table 1). Even if the income earned by those who sell fish is higher than that from selling bait, the fact remains that only a minority of peasants sell fish which proves the falsity of the allegation that they threaten fish in the nature reserves.

Quite the contrary is the case: before a 2019 law enacted in Mato Grosso do Sul went into effect the sport fishing sector had an enormous impact on much-prized fish stocks and the peasants complained bitterly about this. In 2022 the Ministry of the Environment entered the giant spotted catfish

(*Pseudoplatystoma corruscans*) on to the list of threatened species in Brazil. We are dealing with a small impoverished population whose main source of income is government transfer payments in the form of pensions and family support. If any negative impact exists it is that of capturing small bait fish and crabs for the tourist sector because this can affect the local food chain and interfere with the reproduction of larger fish.

Table 1: Variation in source of income of peasant families of the upper Paraguay River, 2014 (US\$*).

Source of Income	Peasants (n)	Peasants who sell produce (n)	Variation of income received	Average income received by peasants who sell
crops	15	1	0-75	75
small animals	14	2	0-898	614
cattle	3	2	0-3,008	1,992
fish	26	7	0-4,211	2,026
bait	17	17	0-2,105	1,310
ranch hand	2	2	241-3,812	2,026
crafts	1	1	150	150
non-rural job	2	-	0-3,519	3,075
pensions	9	-	0-7,030	4,400
other transfer payments	9	-	0-1,746	526
Total	26	23	381-10,691	3,835

Source: Field research (2015). * US\$1.00=R\$2.66 (2014). Annual minimum wage=US\$3,266.

A study of sports fishing showed that the tourists are 99% male and are liberal professionals and merchants who come from the South and South-east of Brazil (Moraes and Seidl, 2000). These men book a cruise on a fishing boat where they take meals and spend the night in air-conditioned cabins, which is the only way to avoid mosquitoes and other biting insects which come out in swarms after dark. They pass their days fishing in small aluminium boats, which the larger tour boat brings along in tow (Figure 3). The large boat anchors along the margin of the main river and the little boats enter the shallow waters of the nature reserves. The anglers are covered from head to foot in protective gear to avoid insect bites and spend the day drinking large amounts of beer. The drinking continues into the night in a mosquito-proof dining room below deck or in a screened-in observatory deck on the stern where they tell tall tales of the big fish that got away.

Local fishers complain about sports fishers entering areas off limits to them. This may occur because the park officials do not have the means to control entry in such a large area but may also be due to the wildly over optimistic view held by park officials of the value of eco-tourism (see Hoefle, 2016 for a critique of rural and eco-tourism in the Amazon, in a similar Brazilian wetland setting located in a remote region).



Figure 3: A fishing cruise boat and peasants foraging for bait.
Source: Field research (2015), ECOA (2014).

6 - Resisting nature enclosures and building sustainable peasant livelihoods

Suffering a process of nature enclosure first the peasants were removed from the west bank of the Paraguay River and forced to live in squalid conditions on the east bank of the river (Figure 4). Then, land owners on that side of the river tried to remove them from there. This provoked a class-action law suit pitting two rival actor-networks against one another, one involving bio-centric public- and private-conservation units and another socio-ecological network which defended the rights of local peasant fishers (Figure 5).



Legend of the figure: high water mark.

Figure 4: Normal peasant homestead situated above the annual flood and two sub-standard houses of removed peasants living in vulnerable low-lying areas.

Source: Field research (2015).

The dubious legality of the attempt to evict the peasants from areas of federal public domain became the basis for the class-action of the riverine peasants against the reserve owners. They received legal assistance from the socially-conscious environmentalist NGO Ecologia e Ação (ECO) and the sympathetic federal public defender's office of Corumbá. Events came to a head in May, 2015 when a Citizenship Expedition was mounted by the courts in which public hearings were held in the riverine communities along the Paraguay River, culminating in the final large hearing in Barra do São Lourenço community, located on the state divide between Mato Grosso and Mato Grosso do Sul. A Navy frigate transported participants representing the public defender's office, the courts, the Federal University of Mato Grosso do Sul and members of the press, one of whom represented the BBC. Erickson's (2001) *Little Places, Large Issues* comes to mind.

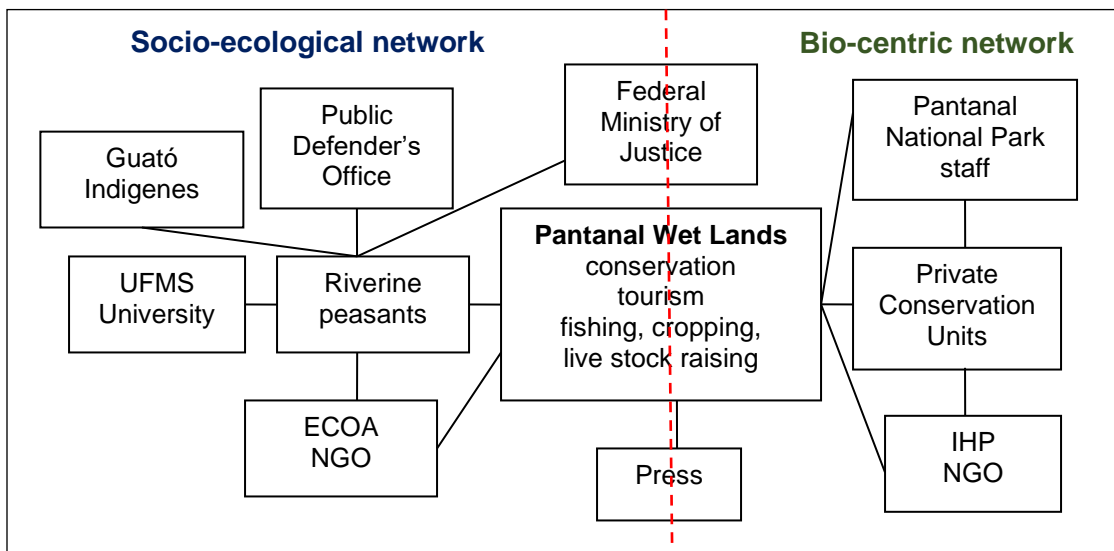


Figure 5: Rival actor-networks in the Paraguay River conservation-fisher dispute.
Source: Field research, 2015.

On one side, the private reserves were represented by the head of the Institute of Pantanal Man (Figure 6). This NGO was established in Corumbá in 2002 and its stated purpose is preserving the Pantanal biome and local culture (IHP, 2016). As we saw above, the NGO head is a retired police coronal who had been the scourge of illegal alligator hunting in the 1980s. The problem is the bio-centric emphasis of the NGO and the man's ideas concerning local culture which exclude the rural poor and pointedly women (OECA, 2008). He appeared at the public hearing dressed in a camouflage military uniform, which he probably thought would intimidate the fishers.

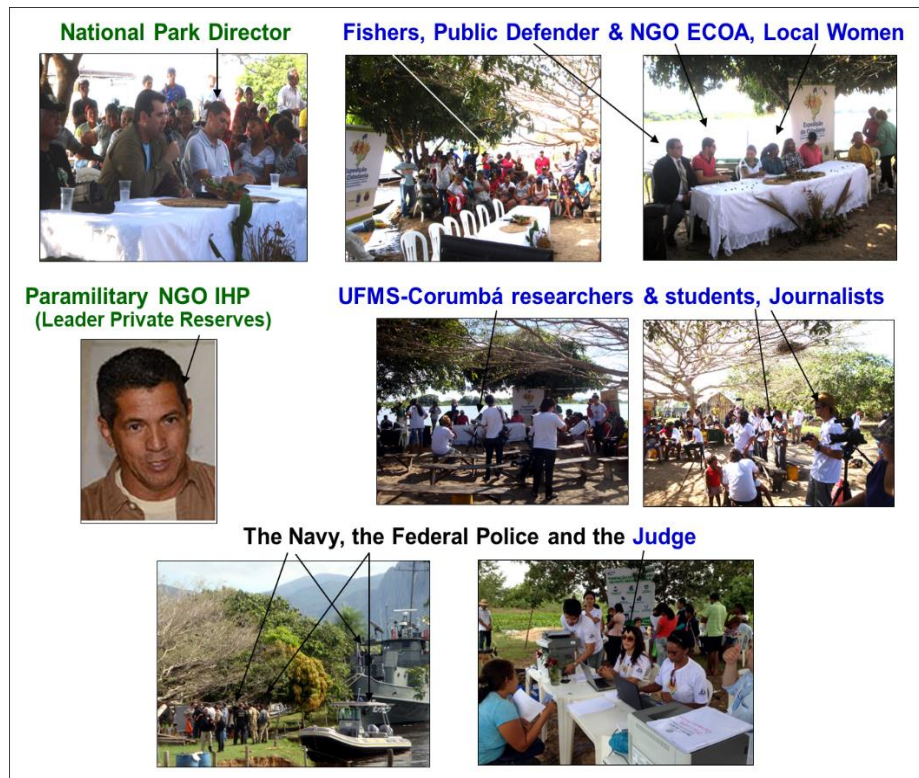


Figure 6: The social actors in the flesh.
Source: Field research (2015), IHP (2016).

The Pantanal National Park was also aligned with this side in the hearing because its representative considered the riverine population to be a menace. The Barra do São Lourenço community in particular was criticized for using its location at the junction of the Paraguay and São Lourenço Rivers to fish in the buffer areas of the National Park. The director of the Park displayed a bio-centric attitude categorically stating that only those who fish strictly for “subsistence” should be permitted in the areas and not those who sell fish. As a biologist the man never received adequate training in the human sciences and is thus ignorant of peasant social reproduction, which involves much more than mere biological subsistence and includes income earned to buy basic necessities not produced locally as well as for other social and ceremonial funds (cf. Wolf, 1966, 6-9). Like the administrators of the private reserves, the director of the National Park had no empirical proof to back his claims against the peasants and our investigation proved him wrong on this count as well as that concerning the impact of sports fishing. In other words, the director based his view deductively in a default faith that nature reserve officials everywhere have in eco-tourism as well as urban-class bias against poor rural folk.

The NGO ECOA took the side of the local riverine population and has a history of working with the peasants in sustainable fishing practice and community development (ECOIA, 2016). A number of university professors and their students from the Corumbá campus of the Federal University of Mato Grosso do Sul

were also present at the meeting to lend their support to the local population and they along with members of the press outnumbered the local people at the meeting. The judge even took advantage of our presence as researchers from one of the most respected Brazilian universities to validate what would be her decision in favor of the peasants.

After hours of preparation the judge officially opened the hearing by removing her shoes, standing up with her bare feet on the dusty ground and giving a speech clearly in favor of the local people. The latter were portrayed as descendants of Amerindians, Brazilians, Bolivians and Paraguayans, who have suffered centuries of discrimination. Dismissing any pretense of impartiality, she signaled that the outcome against eviction was a foregone conclusion. Then each group present gave testimony and the clinching arguments were made by the ethnically hybrid Quató indigene “chief” and his Afro-Brazilian wife when they played the traditional ethnic minority card in the name of land rights. In their testimony the two argued that because there is Amerindians ancestry in the local population, the latter should have the same rights to a territory which the Guató do in their indigenous lands located further upriver.

While the concept of “traditional” is academically problematic, it is still a useful legal device for the rural poor to resist environmental dispossession in Brazil. “Traditional peoples and communities” are legally defined in Brazil as: “culturally differentiated groups ... that have their own forms of social organization and who occupy and utilize territories and natural resources for their cultural, social, religious, ancestral and economic reproduction by employing knowledge and practices that are transmitted through tradition (Federal Decree no. 6,040 of 7/2/2007, Article 3, Clause I, translated here). The decree also prohibits the removal of this population from conservation units, even those which do not normally permit a resident population. Innocent, or willful, ignorance of the law is not an excuse for illegal acts against the local population.

The public audience marked the highpoint of the peasant resistance movement, which generated a series of administrative and judicial conquests. Even, before the meeting, starting in 2010 and onward, the Federal Service for Administating Public Lands granted each community the right to remain where it was situated in areas of public domain. However, these are minute areas summing a total of less than eight hectares of land against the hundreds of thousands of hectares of nature reserve land. In 2013 they were granted the right to go back to refuges used in the past when unusually high floods occur. These are located on patches of more elevated land now situated in the nature reserves that had been declared off limits to them. The peasants also regained access to some traditional fishing grounds from which they had been excluded.

Finally, in 2013 the peasants formally petitioned for the creation of a Sustainable Use Conservation Reserve which would give them greater say in how resources are used than the present set up does. This kind of reserve is common among similar kinds of riverine peasants in the Amazon. However, after 2016 their request was ignored by successive federal administrations which became increasingly hostile to both ethnic policy toward minorities and nature reserves. At the end of 2022 a more environmentally and

ethnically friendly center-left administration was elected and the peasants may still get their SUCR. However, the consortium of nature reserves involves very powerful national and regional economic and political elites who continue to appeal in court all of the decisions favoring the peasants right up to today. They may yet get their way.

7 - Conclusions

Due to the outmoded bio-centric outlook of their staff private and public nature reserves of the Pantanal were found to be inflexible and to maintain no beneficial relationships with the local population despite Brazilian safeguards for sustainable use of historical landscapes by legally constituted traditional populations. Particularly worrying is the insistence that eco-tourism is the only activity that should be permitted within conservation units. Wilson (2002, 180-181) passes on the view of Conservation International that this transnational NGO earns more income in its extensive holdings in the Pantanal from eco-tourism than neighboring ranches earn from cattle. This is a disingenuous claim. The ranches nearby were flooded in 1974 and went bankrupt. We showed here that sport angling as practiced up to 2019 seriously depleted fish stocks in the Pantanal, it only benefited urban individuals from other regions and it aggregated little value for local livelihoods. At the same time, due to the fact that reserve staff has received little or no training in the human sciences, the peasants are unjustly accused of practicing commercial fishing because they sell some fish thus displaying complete ignorance of variation in articulation to markets and of the general process of peasant social reproduction.

Therefore, steps toward overcoming environmental injustice identified in the research should involve promoting socio-ecological conservation and local development by:

1) Promoting wider socio-ecological networks connecting local actors to regional and national GOs and NGOs in order to protect their legal rights;

2) Adopting a trans-disciplinary approach to conservation and sustainable development which unites specialized knowledge from the natural and the human sciences in consonance with detailed local knowledge;

3) Training conservation staff in both the natural and human sciences in order to learn how to deal with people, to comprehend traditional livelihoods and to understand that social reproduction is much more than biological subsistence, and

4) Implementing socio-ecological development that goes beyond mere preservation of “natural” species by also promoting viable economic activities that improve local livelihoods and promote social equity.

8 - References

ADAMS, W. M. & MULLIGAN, M. (2003). *Decolonizing nature: strategies for conservation in a post-colonial era*. London: Earthscan.

BICALHO, A. M. & HOEFLE, S. W. (2015). Conservation units, environmental services and frontier peasants in the central Amazon. In D.C. Wood (Ed.), *Climate change, culture, and economics*. Bradford: Emerald Scientific, pp. 67-105.

BICALHO, A. M., HOEFLE, S. W. & ARAUJO, A. P. (2020). Ribeirinhos em resistência à gestão biocêntrica de unidades de conservação pública e privada no Pantanal. *Espaço Aberto*, 10 (2), 205 - 235.

BUMPUS, A. G. & LIVERMAN, D. M. (2011). Carbon colonialism?. In R. Peet, P. Robbins & M. J. Watts (Orgs.), *Global political ecology*. Milton Park: Routledge, pp. 203 - 224.

BÜSCHER, B. & FLETCHER, R. (2014). Accumulation by conservation. *New Political Economy*, 20 (2), 273-298.

BÜSCHER, B. & FLETCHER, R. (2018). Under pressure: conceptualising political ecologies of green wars. *Conservation and Society*, 16 (2), 105 -113.

CRESSWELL, T. (2013). *Geographical thought*. Chichester: Wiley Blackwell.

DESCOLA, Ph. (2013/2005). *Beyond nature and culture*. Chicago: Chicago Univ. Press.

DOWIE, M. (2009). *Conservation refugees*. Cambridge: MIT Press.

EOA (Ecologia e Ação). (2014a). Comunidades tradicionais: Paraguai Mirim e São Francisco. Disponível em: <http://riosvivos.org.br/comunidades/comunidades-tradicionais-comunidades/paraguai-mirim-e-sao-francisc>. [Accessed in 25 February 2016].

EOA (Ecologia e Ação). (2016a). Comunidades tradicionais: Barra de São Lourenço. Disponível em: <http://riosvivos.org.br/comunidades/comunidades-tradicionais-comunidades/barra-do-sao-lourenco>. [Accessed in 25 February, 2016].

EOA (Ecologia e Ação). (2016b) Comunidades tradicionais: Serra do Amolar. (2015). Disponível em: <http://riosvivos.org.br/comunidades/comunidades-tradicionais-comunidades/serra-do-amolar>. [Accessed: 25 February, 2016].

ERICKSON, T. (2001). *Little places, large issues*. London: Pluto Press.

FAIRHEAD, J. & LEACH, M. (1996). *Misreading the African landscape*. Cambridge: Cambridge Univ. Press.

FORSYTH, T. (2003). *Critical political ecology*. Milton Park: Routledge.

GALDINO, S., VIEIRA, L. M., PELLEGRIN, L. A. (Orgs.). (2006). *Impactos ambientais e socioeconômicos na bacia do rio Taquari – Pantanal*. Corumbá: EMBRAPA Pantanal, 2006.

GEERTZ, C. (2000/1973). *The interpretation of cultures*. 2nd edition. New York: Basic Books.

GRIFFIN, C., JONES, R., & ROBERTSON, I. (Eds.). (2019). *Moral ecologies*. Cham: Palgrave-Macmillian-Springer.

HOEFLE, S. (2013). Beyond carbon colonialism. *Critique of Anthropology*, (33), 193 - 213.

HOEFLE, S. (2016). Multi-functionality, juxtaposition and conflict in the Central Amazon. *Journal of Rural Studies*, 44, 24 - 36.

HOEFLE, S. (2019). Ghosts in the forest. In C. Griffon, R. Jones & I. Robertson (Eds.). *Moral ecologies*. Cham: Palgrave-Macmillan-Springer, pp 99-125.

HOEFLE, S. (2020). Conservation refugees and environmental dispossession in 21st century critical geography. *Boletín de la Asociación de Geógrafos Españoles*, 84 (2895), 1 - 33.

HOEFLE, S. (2022). Objectivities and subjectivities in geographical research: a philosophical inquiry into methods. *Treballs de la Societat Catalana de Geografia*, 93, 51-82.

HOEFLE, S. & BICALHO, A.M.S.M. (2016). Nature enclosures: historic peasants versus public and private conservation units of the Paraguay River in the Pantanal wetlands of western Brazil. *BelGeo*, 2016 (4), 1-18.

HOLBRAAD, M & PEDERSEN, M. A. (2017). *The ontological turn: an anthropological exposition*. Cambridge: Cambridge Univ. Press.

HOLIFIELD, R. (2015). Environmental justice and political ecology. In T. Perreault, G. Bridge, G. & J. McCarthy (Eds.), *Routledge handbook of political ecology*. Milton Park: Routledge, pp. 585-597.

HUBER, M.T. (2017). Industrializing political ecology. *Annals of the American Association of Geographers*, 107, 151-166.

IHP (Instituto Homem Pantaneiro). (2016). Histórico. Acessível em: http://www.institutohomem-pantaneiro.org.br/?conteudo=canal&canal_id=9. [Accessed: 4 May, 2016].

INSTITUTO ACAIA. (2014). Serra do Amolar. Acessível em: http://acaia.org.br/wp-content/uploads/2007/07/RPCSA_2014_Apres_v2.pdf. [Accessed: 4 November, 2019].

JACOBY, K. (2014/2001). *Crimes against nature*. Berkeley: Univ. of California Press.

KELLY-REIF, K. & WING, S. (2016). Urban-rural exploitation: an underappreciated dimension of environmental injustice. *Journal of Rural Studies*, 47, 350-358.

LATOUR, B. (2004). *Politics of nature*. Cambridge: Harvard Univ. Press.

LATOUR, B. (2005). *Reassembling the social*. Oxford: Oxford Univ. Press.

LATOUR, B. (2013). *An Inquiry into modes of existence*. Cambridge: Harvard Univ. Press.

LEACH, M. & MEARNS, R. (Eds.). (1996). *The Lie of the Land*. London: IAI.

MERCHANT, C. (2005). *Radical ecology*. 2nd edition. London: Routledge.

MMA/ICMBio (Instituto Chico Mendes de Conservação da Biodiversidade). (2010). *Patrimônio natural da humanidade, Pantanal guarda biodiversidade única*. Disponível em: www.mma.gov.br/informma/item/6622-patrimonio-natural-da-humanidade-pantanal-guarda-biodiversidade-unica. Accessed: 26 February, 2016.

MORAES, A. & SEIDL, A. (2000). *Perfil dos pescadores esportivos do sul do Pantanal*. Corumbá, EMBRAPA.

OECO (2008), *Herdeiros da guerrilha pantaneira*. Disponível em www.oeco.org.br/reportagens/20205-herdeiros-daguerrilha-pantaneira. [Accessed: 25 February, 2016].

PEET, R., ROBBINS, P. & WATTS, M.J. (Eds.). (2011). *Global political ecology*. London: Routledge.

PEPPER, D. (1996). *Modern environmentalism*. London: Routledge.

PREFEITURA MUNICIPAL DE CORUMBÁ. (2015). *Balanço da temporada de pesca esportiva mostra crescimento no turismo corumbaense*. *InformeMS*, pp. 1 - 3. Disponível em: <http://informems.com/Posts/view/2059#!>. [Accessed: 4 April, 2016].

RICKARD, T. J. (2007). Rural sustainability issues for national parks. In T. Sorensen (Ed.), *Progress in sustainable rural development*. Cairns: IGU-CSRS, pp. 191-198.

SIMMONS, I. & COX, N. (1985). Holistic and reductionist approaches to geography. In R. JOHNSTON (Ed.). *The future of geography*. London: Methuen, pp. 43-58.

TAYLOR, M. (2015). *The political ecology of climatic change adaptation*. London: Routledge/Earthscan.

WHATMORE, S. (2003). *Hybrid geographies*. London: Sage.

WILSON, E.O. (2002). *The future of life*. New York: Vintage.

WILSON, G. & BURTON, R. J. F. (2015). "Neo-productivist" agriculture. *Journal of Rural Studies*, 38, 52-64.

WOLF, E. R. (1966) *Peasants*. Englewood Cliffs: Prentice Hall.

WWF (World Wildlife Fund). (2016). Áreas prioritárias para conservação da biodiversidade no cerrado e pantanal. Disponível em: www.wwf.org.br/natureza_brasileira/reducao_de_impactos2/lep/lep_pub/?50162/reas-Prioritrias-para-conservao-da-biodiversidade-no-Cerrado-e-Pantanal. [Accessed: 25 February, 2016].

9 – Acknowledgements

Research financed by a number of projects from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq – Brazil). The authors also express their gratitude for the help given in the fieldwork by researchers from the Corumbá and Campo Grande campuses of the Federal University of Mato Grosso do Sul.