

# Agrarian Reform and the Environment: Fostering Ecological Citizenship in Mato Grosso, Brazil

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**ABSTRACT** The role of ecological land reform in fostering ecological citizenship and community environmental-resource-management in Brazil is examined through a case study of settlement practices of Brazil's Landless Workers' Movement between 2000 and 2005. The case study explores the opportunities that ecologically oriented land reform may provide for the exercise of ecological citizenship and the production of more sustainable socio-environmental outcomes. Settlers engaged in individual and collective action on the use and protection of their ecological resources in making a transition to agro-ecological production, and in the protection of community forest and river reserves within the settlement.

**RÉSUMÉ** À l'aide d'une étude de cas sur les pratiques de colonisation du Mouvement des paysans sans terre du Brésil de 2000 à 2005, l'article examine le rôle que joue la réforme agraire écologique pour favoriser l'écocitoyenneté et une gestion communautaire écologique des ressources. L'étude de cas explore les occasions que peut offrir une réforme agraire axée sur l'écologie pour l'exercice de l'écocitoyenneté et l'obtention de résultats sociaux et environnementaux plus durables. Les paysans ont entrepris des actions individuelles et collectives pour utiliser et protéger leurs ressources écologiques en adoptant une production agro-écologique, et en assurant la protection de la forêt communautaire et des réserves hydrographiques à l'intérieur de la colonie.

In 2003, the newly elected Brazilian government developed a National Plan for Agrarian Reform, arguing in it not only that Brazil's unequal land distribution had inhibited development, but also that land reform was necessary for the "extension of democratic citizenship to the rural population" (MDA 2003). Individual states subsequently created their own regional plans to implement the national mandate.

The plan developed by the centre-west state of Mato Grosso—Brazil's largest producer of soybean, cotton, and cattle from 2004 to 2007—sought to address the region's record deforestation levels by combining social, ecological, and economic goals in an alternative form of ecological agrarian reform (MDA-INCRA 2004). Previous government-sponsored land-distribution in Brazil has been fairly insensitive to environmental concerns at the policy level. Primarily implemented in the context of colonization at the agricultural frontier, historical land-reform measures have contributed to a widely held perception—in Brazil and abroad—that land distribution is associated with deforestation and environmental degradation (see Thiesenhusen 1989, 1991).

Between 1942 and 2004, almost 800,000 families were settled on a combination of expropriated and frontier government lands across Brazil, with almost 60% of the settled area located in the Amazon region (NERA 2006; Pereira 2003). While Fearnside (2005) estimates that cumulative Amazonian deforestation had reached 16% of the originally forested Amazônia Legal (Legal Amazon) region by 2003, he attributes 70% of this deforestation to logging and large and medium ranches, while only 30% is attributed to smallholder colonization programs. In response to continued demands for alternative models of land redistribution by social movements such as Brazil's *Movimento dos Trabalhadores Rurais Sem Terra* (Landless Workers' Movement, or MST), new policies aim for an ecological land reform that focuses on environmental and social restoration through the promotion of land expropriation and redistribution near urban centres and previously cultivated land, rather than expansion at the forest frontier.

The link between control over land and the exercise of citizenship rights is well established in Brazil (Bruno 1997, 2003; da Costa 2000; Leal 1949; Reis 2000). The idea of a particularly "ecological" sort of citizenship, however, is of relatively recent concern in Brazil (Vieira and Bredariol 1998) and in the social sciences (Barr 2003; Bell 2005; Dobson 2003, 2006; Dryzek 1996; Foster 2002; Hayward 2006; Lafferty and Meadowcroft 1996; Luque 2005; MacGregor and Szerszynski 2003; Mitchell 2006). One line of inquiry present in treatments of ecological citizenship is instrumental or administrative, analyzing the role of education in encouraging citizens to act in an environmentally sustainable manner (Hawthorne and Alabaster 1999; Horton 2006). Another research area associated with the environmental justice literature addresses the relationship between citizenship rights and social exclusion, inequality, and the distribution of both environmental goods and environmental problems (Faber 1998; Low 1999; Shrader-Frechette 2002). Both administrative and justice-based concerns about citizenship, conservation, and environment management often identify the need for greater participation by local peoples and those affected by natural resource decisions (Beierle and Cayford 2002; Brechin et al. 2002; Dryzek 1996; Wilshusen et al. 2002).

But legislating participation—through decentralization, devolution, or implementing community-based natural-resource-management programs—is not a straightforward task. Changing dominant environmental-management structures that may be founded upon the unequal distribution of ecological space and management rights is a challenging development issue worthy of theoretical and empirical inquiry. Ecological citizenship is conceptualized here as the discursive and active practice of relating the daily concerns of individual or family survival to that of the surrounding community and environmental space. Debates in the literature on ecological citizenship centre upon the relationship of specifically environmental concerns to conventional notions of citizenship, including liberal conceptions that emphasize rights (e.g., the right to a clean and healthy environment), and civic-republican traditions that focus on responsibilities (e.g., the responsibility to do one's part for sustainability by recycling or driving a hybrid car) (Acselrad 1992; Dobson 2003; MacGregor and Szerszynski 2003; Szerszynski 2003). Thus, as both a "status" and a "practice" (Hayward 2006), the concept of ecological citizenship is exemplified by environmental discourse and everyday actions that may contribute to environmental sustainability and environmental justice.

Factors facilitating the exercise of ecological citizenship include knowledge and values (Luque 2005); situational factors including demographic characteristics, access to information and services, and historical experiences (Barr 2003); and individual awareness and concern (Hawthorne and Alabaster 1999). Little discussed in the literature on ecological citizenship, however, is the relationship of access to the territorial "space" of citizenship to the exercise of environmentally responsible behaviour. While the debate about individual vs. collective property rights and environmental action is well developed in the extensive literature on the tragedy of the commons, the issue here is not what "kind" of property rights are achieved through agrarian reform, but rather the initial barrier of access to any land at all.

Alternative models of agrarian reform in Brazil, as promoted by the MST and recently enacted in the state of Mato Grosso, provide a strategic opportunity for the exercise of ecological citizenship through the redistribution of environmental rights and responsibilities related to land-use management. While Brazil has dozens of social movements and organizations advocating a variety of philosophies of agrarian reform, this paper is limited to analyzing the evolving ecological philosophy and practice of the MST.<sup>1</sup> This paper offers an empirical analysis of the emerging discourse and practice of ecological citizenship as exemplified in the construction of a grassroots land-reform settlement in Mato Grosso, Brazil. In what follows, I provide an ethnographic case study that critically examines how the practice of ecological citizenship emerges and evolves through changes in socio-environmental values, agricultural production systems, and the conservation of collective ecological reserve areas. This study seeks to move beyond what has primarily been a theoretical discussion about rights and responsibilities associated with a particularly "environmental" sort of citizenship. My goal is to provide an analysis of the practical environmental and social outcomes related to citizenship following a redistribution of land-use rights.

Between 2002 and 2004, I conducted 21 months of fieldwork in Brazil as part of a qualitative research study comparing organizational practices and agro-ecological outcomes in 14 land-reform settlements in the state of Mato Grosso. The settlements were organized by several institutional actors including municipal governments, federal colonization settlements, Rural Workers' Unions (STRs), and the MST. Using an extended case methodology (Burawoy 1998, 2000), I spent six months in the MST-organized Antonio Conselheiro settlement in the municipality of Tangará da Serra. As the largest of the 14 study settlements, with 980 families settled on 38,000 hectares, Antonio Conselheiro exhibited an alternative model of ecological land-reform compared to the government and union-organized settlements in the regions. These differences stemmed from its spatial location (an expropriated ranch near an urban centre in the southern region of Mato Grosso), its internal spatial configuration, its organizing principles based on agro-ecological production, and the designation of ecological reserve

1. The Brazilian Pastoral Land Commission documented 57 distinct land-related social movement organizations in Brazil in 2004. For comprehensive treatments of the history and trajectory of the MST, see Branford and Rocha (2002) and Fernandes (2000). See also the Landless Workers Movement website at [www.mst.org.br](http://www.mst.org.br).

areas within the settlement. The fieldwork involved an evaluation of the relationship between movement ideology and the daily practice and discourse of the settlers as relating to environmental management. The data in this article are based on a document analysis of MST educational and workshop materials related to the environment produced since the early 1990s, interviews with national and regional movement leaders, and data from over 100 semi-structured farmer interviews within the Antonio Conselheiro settlement.

## Ecological Land Reform in Brazil

Since 1995, successive Brazilian governments have implemented plans for agrarian reform that consider ways to integrate local food-production and environmental-management needs. Evaluations of resulting experiences have shown that there are extreme variations between regions and individual settlements regarding environmental and social outcomes. For example, van de Steeg et al. (2006) have demonstrated a significant regional variation for environmental quality (measured as a composite of legal reserve preservation, deforestation, soil degradation, and environment restoration) in settlements implemented between 1985 and 2001. The highest indices of degradation were found in the northern Amazonian states and the lowest in traditionally settled areas of the south and centre-west. Regardless of the region considered, Sparovek (2003) and Leite et al. (2004) argue that—given the appropriate infrastructure, organizational leadership, and spatial considerations (locating settlements near urban centres rather than in isolated frontier regions)—settled farmers can expect monthly incomes and standards of living higher than the regional average. Growing evidence beyond Brazil also suggests that environmental objectives can be incorporated into land-reform programs that provide livelihood and other social opportunities for landless workers, while adjusting historically unequal land-tenure patterns in the countryside (Adger 1997; Brown and Rosendo 2000; Geisler 2001; Geisler and Letsoalo 2000; Geisler and Silberling 1992; Otero 1989).

I use the term *ecological land reform* here to describe a redistribution of property-use rights that incorporates social and environmental goals into community settlement planning. By redistributing access to the use of environmental space, the reworking of society and nature through land-reform resettlement produces a new ecological footprint, representing a transformed version “of a human community’s metabolic relationship with the goods and services provided by its natural environment” (Dobson 2003, 100). Dobson argues that the ecological footprint is also the “citizenship space of ecological politics” (2003, 5). Thus, in his view, spaces of change and contention around environmental issues are not solely symbolic on the one hand or territorial/physical on the other, but are social spaces bounded by a set of relationships between actors, who affect and are affected by one another’s decisions about how to live in the same ecological space. This notion describes the architecture of agrarian-reform settlement spaces in which the discourse and actions related to ecological citizenship are reproduced.

## The MST and Ecological Citizenship

Since its formation in 1984, over 350,000 landless families associated with the MST have acquired land. In this process, members of the MST have occupied the political and discursive space of environmental issues as diverse as the debate about the legalization of transgenic seeds, the protection of water resources, and constitutional reform. The MST argues that land-reform settlements, as emergent political, social, and ecological spaces, "represent the rebirth of human life and nature" (MST 2002), and that the "intelligence, labor and organization of human beings can protect and preserve all forms of life" (MST 2000). As part of its larger objective of social transformation, the right and responsibility to participate in the management of local natural resources are central to the organization of settlements initiated by the MST.

The MST has not always expressed itself as an environmental movement. According to an interview with the national coordinator of the Sector of Production, Cooperation, and Environment, the MST emerged in the 1980s with one primary goal: gaining access to land for the growing number of landless and land-poor in Brazil, estimated to be over 10 million by the early 1980s. During its first decade, however, the movement realized that solely acquiring land for its members was not sufficient to ensure social or environmental sustainability. One MST leader explained,

We had to have other complementary policies. In the early 1990s, we began a series of debates and political reflections about how to organize the settlements ... and the principal focus during that period was centred on the organization of production.<sup>2</sup>

The MST sought to reorganize agricultural production in accordance with its critique of the dominant agricultural model based on Green Revolution technology and the need to find alternative strategies for the survival of small-scale agriculture. Another member of the Production, Cooperative, and Environment Sector remembered,

This was an incipient discussion during the crisis in the early 1980s. It was difficult because the North American Green Revolution model was a hot topic here, and [our critique] didn't have much space in society. But our critique began to gain greater force beginning in the 1990s. Various problems associated with conventional agriculture began to appear, for example with heavy mechanization. With the excess of agricultural mechanization came a technique of clearing the soil, and a cultivation model which led to heavy losses in the quality of Brazilian soil. Besides that, there were the innumerable discoveries about health and environmental problems associated with that model of agriculture; the agro-chemicals, the insecticides, the herbicides. So, from early on we came out searching for a new model of agriculture.<sup>3</sup>

2. Interview no. 4, MST National Coordination, Sector for Production, Cooperation, and Environment, São Paulo, November 17, 2003.

3. Interview no. 5, MST National Coordination, Sector for Production, Cooperation, and Environment, Brasilia, November 19, 2003.

By the late 1990s, the MST began to take a more explicit stance on the environment, especially on the advance of the conventional agricultural model at the agricultural frontier and its implications for human and environmental health. In addition, the model of agricultural modernization did not fit with the reorganization of production sought by MST members, who developed new strategies of co-operation to facilitate production and to foster a sense of community in the new land-reform settlements. As one MST leader explained,

This reflection about environmental problems is related to our experiences of cooperation, with our experiences with settlements, and how they began to have difficulties. (Interview no. 4)

The Sector of Production was renamed the Sector of Production, Cooperation, and Environment, and at its Fourth National Congress in 2000, the MST published its *Commitment to Land and Life* as an organizational statement about the movement's "philosophical relation with nature" (Table 1). This description of the environmental responsibilities of each member of the movement is clearly linked to the notion of environmental rights. As Brazilian citizens, according to the 1988 constitution, members of society have a fundamental right to land as a means of subsistence, and land must fulfill its social function to society through legally defined productive and environmentally sustainable use. Underutilized or environmentally degraded land is thus subject to expropriation for agrarian reform.<sup>4</sup> According to movement leaders, the *Commitment to Land and Life* provides a "compass" for the organization, used to "carry out reflection with the settlers and in the areas where we begin grassroots organizing" (Interview no. 4).

These principles have since figured prominently in MST pamphlets, posters, post-cards, discourse in schools, and political education workshops and courses. Many interviewed families displayed a copy in their homes. The MST now incorporates environmental education into organizing and recruiting for the movement, as well as in seminars, workshops, and settlement schools. This socio-environmental philosophy has been institutionalized into an environmental education program financed by Brazil's secretary for environment, which provides curriculum for MST leaders, teachers, and youth.

An MST-sponsored workshop for lawyers in 2000, on the relationship between the right to agrarian reform and the right to an "ecologically balanced environment," summarizes the MST philosophy of the links between social rights, citizenship, and environmental action. As stated during the workshop,

The principle that informs these rights is the right to life. It is impossible to guarantee the right to life to populations that lack access to land

4. See 1988 constitution, chap. 1, s. 13, art. 185. Land reform beneficiaries in Brazil are awarded use rights to land owned (or expropriated) by the federal government rather than a land title. Legislation has established a lengthy process for transferring land titles to individuals that requires settlement "completion" and a period of continuous occupation for over ten years, but has rarely been implemented.

without guaranteeing the environmental integrity of property and surroundings. The right to life of landless populations, with health, dignity, equality, depends on the access to healthy land. And healthy land depends on environmental factors. The argument is that we can't defend a right to agrarian reform, without calling for respect for the environment, and we can't call for the defense and protection of the environment without considering the agrarian and social aspects relative to land use. (Furriela 2000)

Actions such as this workshop have the dual effect of promoting the development of legal norms while simultaneously fomenting public dialogue about the relationship between sustainable land use, environmental protection, and agrarian reform. A national coordinator of the MST's Production, Cooperation, and Environment Sector explains that, by the end of the 1990s, the movement was operating on the basis of two main concerns about its environmental practice: a pragmatic concern with the model of production and an ideological concern "entering the dimension of values."

**Table 1. MST Commitments to the Earth and to life**

<p><b>Our Commitment to the Land*</b></p> <p>Human beings are precious, for their intelligence, work and organization can protect and preserve all forms of life.</p> <ol style="list-style-type: none"> <li>1. Love and care for the Earth and all natural beings.</li> <li>2. Always work to improve our understanding of nature and agriculture.</li> <li>3. Produce food to eliminate hunger. Avoid monoculture and pesticides.</li> <li>4. Preserve the existing forest and reforest new areas.</li> <li>5. Take care of the springs, rivers, dams and lakes. Fight against the privatization of water.</li> <li>6. Beautify the settlements and communities, planting flowers, medicinal herbs, greens, trees...</li> <li>7. Take care of trash and oppose any practice that contaminates or harms the environment.</li> <li>8. Practice solidarity and revolt against any injustice, aggression or exploration practiced against a person, the community or nature.</li> <li>9. Fight against latifundia [estates] for all that possess land, bread, studies and freedom.</li> <li>10. Never sell conquered land. Land is the ultimate commodity for future generations.</li> </ol>
<p>*Translated from a poster that hangs in many MST offices, settlements and encampments throughout Brazil.</p> <p>Source: MST. Brazil's Landless Workers' Movement: Our Commitment to the Land. <a href="http://www.mstbrazil.org/?q=node/95">http://www.mstbrazil.org/?q=node/95</a>.</p>

In 1998 and 1999, we began to discuss much more this theme of values and the relation between humans and nature. So, the environmental dimension [of our movement] began to gain much more maturity with these two feet: one foot that was more economic, more pragmatic, that has to do with the technological matrix, and the other in the dimension of the ideological sphere, working on this spirit that the farmer is the guardian of nature and of natural resources that here, in Brazil, are fantastic, whether it be water, wild animals, the relation with the forest, the soils, and fundamentally, with seeds. (Interview no. 4)

Building on the practice and experience of settlement and interaction with the environment, these two reflections—pragmatic and ideological—came together in the MST development of new models of settlement, which attempt to reshape the relations between humans and nature.

## Antonio Conselheiro Settlement

The case study of the Antonio Conselheiro settlement in the state of Mato Grosso explores the constitution of ecological citizenship by examining the relationship between MST members' socio-environmental discourse and environmental practice. It also examines the social and environmental implications of ecological land reform. Mato Grosso exhibits the most extreme land concentration figures in Brazil. According to Brazil's 1996 Agricultural Census, in 1995 60% of farmers (those with under 100 hectares) controlled only 3% of agricultural land in Mato Grosso, while those with more than 1,000 hectares (10% of establishments) controlled 82% of the land area (IBGE 1996). Responding to demand from small farmers displaced by the expansion of soybean and other agro-industrial enterprises, the MST began organizing in Mato Grosso in 1995. Its first land-reform settlements were implemented in 1998, reflecting the newly articulated socio-ecological perspective of the movement. Mato Grosso is a large state (903,357 km<sup>2</sup>) covering several ecological zones, including Amazonian forest in the northwest region, savannah or Cerrado in the central region, and the Pantanal wetlands in the southern part of the state. The MST has not developed settlement or organizing activities in either the Amazonian or Pantanal regions of Mato Grosso, concentrating efforts on resettling the agricultural regions located within a few hundred kilometres of the capital city, Cuiabá (figure 1).

Covering 35,000 hectares in the central municipality of Tangará da Serra, Mato Grosso, the Antonio Conselheiro settlement was allocated to the MST in 1998. The settlement is located 240 km from the capital, Cuiabá, in a transitional ecological zone between the Amazon and Cerrado biomes, settled by migrants from southern Brazil since the 1950s. The region's economy has been characterized by large-scale cattle ranching, sugar cane farming, and more recently, soybean production. The Antonio Conselheiro settlement members are primarily migrants from other regions of Brazil who came to the Tangará da Serra region in the 1970s and 1980s as agricultural workers and were unable to obtain land of their own. The settlement was previously part of a



**Figure 1.** Mato Grosso state, Brazil, showing municipal boundaries. Shaded areas indicate municipalities with MST settlements.

large estate comprising 60% degraded pasture and 40% partially logged transitional forest, and represents one of the MST's first experiments in alternative settlement design in Brazil (ANCA 2002).

Movement leaders negotiated with the federal land-reform agency, the National Institute of Colonization and Agrarian Reform (Instituto Nacional de Colonização e Reforma Agrária, or INCRA), to organize a settlement design that allocated the organization of physical space according to movement principles, including areas for collective agro-ecological production and environmental reserves. The resulting settlement plan designated 20% of the settlement area in permanent forest reserve, 15% in three areas of collective mixed-use reserve areas, and 20% of each family plot of 25 to 28 hectares as an individual environmental reserve. The settlement also has an alternative housing nuclei layout compared to the standard government model. Lots are cut for groups of 15 to 20 families in a "sun-ray" pattern, where houses are concentrated in the



Figure 2. Antonio Conselheiro settlement, Mato Grosso, Brazil.

centre of the nucleus and cultivation plots and forest reserves extend out as rays (see figure 2). These nuclei facilitate infrastructure installation and collaborative production. In addition to these settlement design policies, the settlement Coordinating Council plans to reforest riparian corridors that were deforested by the previous landowner, and is also working on an eco-tourism project to be carried out in one of the reserves. Post-settlement organizing strategies include agricultural, political, environmental, and education activities.

## Citizenship and Production

In practice, the discursive commitment of the MST to ecological citizenship has been exhibited most prominently in the adoption of agro-ecological production principles. Agro-ecology involves designing and testing agricultural systems using a blend of traditional knowledge and modern agricultural science in order to maintain food security as well as genetic and cultural diversity (Altieri 1995). These methods are capable of increasing yields in marginal environments by over 100%, while conserving soil fertility and biodiversity (Kawell 2002). The landscape surrounding the Antonio Conselheiro settlement comprises large-scale commercial soybean and sugar-cane plantations, and cattle ranches. Within the settlement, the agro-ecological landscape exhibits mixed-use plot management, including a variety of agro-forestry systems involving coffee, banana, coconut, and other tree crops, as well as organic market vegetable and milk production. While many farms produce solely for subsistence, sales of organic seeds, natural medicines, and organic agriculture inputs (fertilizers and pesticides) are coordinated at the national level by the MST company BioNatur, and through local and regional co-operatives and markets, including the municipal farmers market in Tangará da Serra, in Mato Grosso.

Support systems in environmental education and agricultural extension also play a role in implementing the principles of an ecological land reform in the Antonio Conselheiro settlement. The MST trains agricultural extension workers in agro-ecological production methods and co-operative organization of production in collaboration with the state and federal universities in Mato Grosso and several non-governmental organizations (NGOs).

Some Antonio Conselheiro settlers attribute their changing agricultural management strategies to the environmental consciousness that they acquired through participation in the MST. One settler, who is reforesting parts of his lot with native trees, suggests that environmental action "has to come from the conscience of each person," a consciousness that gains material expression once one has a "space of his own" to act upon.<sup>5</sup> Another MST settler explains that inter-generational environmental education carried out in the MST settlement has changed his perspective on environmental management:

5. Interview no. 192, Antonio Conselheiro settlement, May 15, 2004.

I learned a lot of things about the environment in the movement. My father used a lot of poison [agro-chemicals], and he didn't have the custom of watching out for the streams. In the movement I learned to leave the stream banks undisturbed. I didn't understand that if you cleared them that the springs would dry up. There was another piece [on my lot] over there that didn't even have water. It was just a ditch. I went to clear it out [of brush] and my daughter caught my attention. She said, "Father, if you clear out that ditch, when the rain comes it will take out all the soil." My daughter, who is only 14, learned that in the movement's school.<sup>6</sup>

The changing production strategies of settlers is part of a changed relation to land and community, in which land is no longer just a means of survival or a piece of property, but a space in which to carry out socially responsible environmental action. This ecological action and discourse extends beyond the individual space of production to the collective forest reserve in the settlement, which faces its own set of challenges.

## Citizenship and Conservation

Each of the three ecological reserves within the Antonio Conselheiro settlement (the Serra Forest reserve, the Salto Macial biodiversity reserve, and the Juba riparian zone) has been threatened with illegal extraction and degradation by non-settlers, requiring collective action by settlement residents to protect the areas. Before the lots were distributed to individual families, a local politician and neighbouring rancher sponsored the arrival of three cattle trucks containing city residents seeking land. The rancher had promised to pay them a monthly wage while they cleared trees from the Serra Forest reserve area so that he could then illegally rent the land for cattle grazing, even though according to federal law, settlement lands may not be rented or sold. The MST settlers quickly organized a four-day non-violent occupation of the central settlement area, and called in the state and federal authorities who negotiated the removal of those families without legal residency status in the settlement. In another case, individual non-settler families associated with regional sawmills entered the Serra Forest reserve, and began removing timber. One settler remembered, "People were invading the reserve, so the neighbours [from the settlement] called us, from the MST, to enter into the area."<sup>7</sup>

MST families subsequently set up a permanent monitoring presence in the Serra reserve and negotiated with the federal authorities to designate settlement plots on a portion of the reserve periphery, with the understanding that the MST would continue to monitor the remainder of the protected area. This "reoccupation" served to more firmly establish a physical and political MST presence in the area, and stem further encroachment by non-residents. Today, although some high-value trees continue to be illegally logged by non-residents, the reserve area remains basically intact. Settlers

6. Interview no. 70, Antonio Conselheiro settlement, January 15, 2004.

7. Interview no. 45, Antonio Conselheiro settlement, January 11, 2004.

living alongside the Serra reserve are also engaging in reforestation and creating buffer zones with their individual reserve areas. As one settler living on the reserve edge explained,

People took a few trees out [of the Serra reserve] for their own use, and some others came from outside and cut down valuable trees like the aroeira [Brazilian Pepper] and mahogany. But there, you can't open up lots because it is a reserve. I planted 800 aroeira seedlings, also 80 cedar seedlings. The kids ask me, "Who's this tree for?" And I said, it's not for me, and not for my children, but for their children, so they can know what an aroeira tree is. If I don't do this, they won't know this tree. Now, I'm going to leave four hectares in forest for my little zoo. I am planting mango trees and other fruit trees and am going to make a little forest.<sup>8</sup>

The settlers in the Antonio Conselheiro settlement have also responded to several threats to the second collective area, a 350-hectare biodiversity reserve with a spectacular waterfall, Salto Maciel. In one instance, a coalition of regional politicians and economic interests attempted to subdivide the reserve for a tourism development project that would privatize the settlement's collective reserve area. The coalition lobbied the local municipal council to pass a resolution "expropriating" the reserve from the settlement, contravening federal law. One MST leader explained,

That reserve area around the waterfall historically has been, shall we say, very appreciated by the politicians and business people from Tangará da Serra, to use for a kind of rural tourism. After the settlement was made, then people began to want to take that area away from the settlers. One old rancher wanted to title the area for himself and occupied the area with a group of [hired] landless people and wanted to divide up lots around the waterfall. At the same time, the mayor wrote a piece of legislation for the municipal council. For a municipality to create legislation in a federal area is absolutely impossible, but they were trying to say that they had a legal basis to kick the settlers out, to say that this isn't yours anymore.<sup>9</sup>

Land on agrarian reform settlements is federal property until titled to the settlers, but MST settlers provide a monitoring role to ensure the preservation of the legal reserve and to preserve their own current and future rights to the area. In this case, the municipal resolution did not take legal effect, but municipal employees in 2006 still indicated an interest in establishing a tourist destination in the settlement. MST settlers also have plans for eco-tourism within the settlement. Yet they wish to ensure local democratic control over their newly acquired environmental resources, as part of the movement's larger project for new democratic relations in the countryside.

8. Interview no. 192, Antonio Conselheiro settlement, May 15, 2004.

9. Interview no. 32, MST state coordinator, Cuiabá, May 31, 2004.

A third instance of active monitoring and defence involves the Juba riparian zone, at the northernmost edge of the settlement. A neighbouring rancher had developed plans to build a small hydroelectric dam on the Juba River that would inundate a portion of the settlers' plots as well as the collective reserve area that included the Juba waterfall. At a meeting in January 2004, where the threat to the Juba waterfall area was discussed, one MST settler who lives several kilometres from the reserve emphasized the responsibility of all inhabitants of the settlement to protect the environmental reserve for collective use, emphasizing the "goodwill" of the settlers as more effective than the environmental law. He said, "All of us from the settlement are responsible for the waterfall as our leisure area. The *usineiro* [rancher] is abusing the good will of all of us." One older female settler advocated a peaceful route to the conflict resolution: "No, we need to ... march them down to the IBAMA [Brazil's Federal Environmental Agency] and FEMA [Mato Grosso's State Environmental Agency] offices, make him sign a declaration of cessation in the legal office in front of the judge and everybody." A discussion ensued about the ultimate responsibility for the environmental risk: should the settlers negotiate with the workers carrying out the topographical survey or someone with more political power? Another settler argued, "But what if the big boss doesn't care about his workers? Then what?" A woman responded, "He'll have to sign the paper. We have to take legal measures." Another settler commented that waiting around for the government to "do what is required" may not be enough:

The movement doesn't work with paper. We've already signed papers, advised FEMA. What we need to do is go there and send them away, like we always do. We need to take action. Documents aren't worth anything, they don't resolve anything. If we wait for them to sign a paper, nothing will happen. We are in charge.

Another participant at the meeting declared, "The people that have even a little bit of conscience are the settlers. We have to protect our rights. They might have a lot of money; they can pay everything with money." Yet another settler added, "We don't have to ask anyone's blessing to go after those people. We've been through all this before." The MST settlers also discussed the possible ecological effects if the dam were to go forward. One person suggested that besides inundating the communal reserve area and the area set aside for irrigated agricultural production, there was potential for increased risk of mosquito breeding: "We have so many insects here already that attack us, imagine if there was a reservoir!"

From the meeting, a consensus emerged among MST settlers that they have both the right and the responsibility to employ the legal system and force compliance with the laws that protect the ecological and political settlement space. By delivering complaints to the appropriate authorities, the settlers exercise traditional routes of citizen action, but when that is insufficient, additional collective action is taken. The MST settlers organized a march through the settlement and confronted the topographers working at the proposed dam site. MST flags were raised at the locale while a conversation took place over a period of several hours with topographers, who argued that they had received permission to work on settlement lands from a settlement member. One

young MST leader insisted, however, that the communal areas and lots that would be inundated by the proposed project were property of the federal government, and that environmental laws prohibited the project from moving forward. After several hours, the topographers were persuaded to leave, piling their materials and food supplies in a small boat, and floating away down the river.

## Conclusion: Land Distribution and Ecological Citizenship

The developing practice of ecological land reform exhibited by the MST in this settlement is pragmatic and ideological. Settlers engage in individual agro-ecological production and participate in the collective preservation of ecological reserve areas because of their future productive values but also because of their intrinsic environmental values as communal nature. One participant in the Juba occupation and march remarked, “I told the *usineiro*, there isn’t any money that could take this land away from me. Live in the city with all these kids? With what money? We can’t destroy this forest too much because when the kids there are about 15, they need a place to work on.”<sup>10</sup> Another MST leader explained, “These areas are open to visitation for the whole community. We know that if outsiders enter, it’s going to turn into a private thing. So the people defend it.”<sup>11</sup> Through the practice of an ecological citizenship, the settlers exercise their right to place, and their right to make decisions on how that place will be economically developed and environmentally sustained.

In association with the MST, Antonio Conselheiro settlers work to change the structures of agrarian exclusion and environmental injustice in Brazil through social mobilization for ecological land reform. As shown in this ethnographic case study, ecological models of agrarian reform can provide space for the exercise of newly won rights to land as a means of production, as well as the opportunity for the exercise of collective decision making about the use and protection of environmental resources. Ecological land reform results in the construction of new spaces for the exercise of ecological citizenship. This model is part of a larger organizational MST project involving the construction of new society-nature relations. The physical features of the settlement and the installation of reserves, in addition to the organization of agro-ecological production, provide a sustainable alternative to the conventional agricultural model in Brazil. This model offers a new direction toward agro-ecological management and participation that goes beyond solely instrumental or administrative concerns. While land distribution is clearly not the only solution to Brazil’s many social and environmental problems, the growing dissemination of the ecological land-reform models proposed and enacted by grassroots actors offer one alternative for reducing pressures on the expanding agricultural frontier.

10. Interview no. 169, Antonio Conselheiro settlement, May 9, 2004.

11. Interview no. 128, Antonio Conselheiro settlement, February 17, 2004.

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