SOCIAL IDENTITY, LOCAL KNOWLEDGE AND ADAPTIVE MANAGEMENT BY TRADITIONAL COMMUNITIES OF THE BABASSU REGION IN MARANHÃO

ROBERTO PORRO[1]
NOEMI SAKIARA MIYASAKA PORRO[2]

Introduction

The interactions between peasant societies and the biophysical environment they occupy combine multiple factors, interfering with paths that define livelihoods and provoke changes in land use and land cover. In these relationships, we observe different expressions of access to resources, property rights, adopted production system, and market interactions. Additional intervening factors are the terms of collective action, relations of gender and generation, the life stages of the households and the intra- and inter-family processes of economic differentiation, as well as the occurrence of external interventions.

The way these factors are assimilated within each context depends on the agency of the individuals and groups involved and the presence of institutions. But it also depends on the existent socio-economic structures. This social and environmental configuration exerts direct effect on the condition of natural resources and on the quality of life of those who depend on these resources. The aim of this paper is to discuss how traditional communities, in areas containing babassu palms (*Attalea speciosa* Mart. ex Spreng), strategically configure these intervening factors and relate with the biophysical environment they occupy. The focus of our study is the adoption of cattle ranching in traditional communities that are characterized, in the public space, by the struggle of women (babassu-nut breakers) who extract babassu nuts while protecting the palm forests.

Anthropological research greatly contribute to the analysis of the interactions between society and nature (eg.: BALÉE, 2006; CRUMLEY, 1994; HEADLAND, 1997; INGOLD, 1986, 2000; LITTLE, 1999; MORAN, 1990; VAYDA and WALTERS, 1999). In studies of the Brazilian Amazon, a synergy between the structuralist and historical anthropological approaches is observed in assessments of the interaction between social formations in the indigenous and so-called traditional communities, and of the ecological

1. Researcher, Embrapa Eastern Amazon. Graduate Program in Environmental Sciences, Federal University of Pará. E-mail: roberto.porro@embrapa.br.

2. Professor and researcher of the Graduate Program in Amazonian Agricultures of the Center for Agrarian Sciences and Rural Development, Federal University of Pará. E-mail: noemi@ufpa.br.

diversity of their respective environments (ALBERT, 2002; CASTRO, 1996; CUNHA and ALMEIDA, 2000; DESCOLA, 1996). In contexts associated with the Amazonian peasantry (ALMEIDA, 1993; NUGENT, 2002), polarized analyses contrast the environmental focus of agroextractivist households with the productivist logic of migrant farmers. Such analyses, however, do not give due recognition to the complex adaptive processes determining the use and management of natural resources by this peasantry. This complexity can be seen, for example, in the contextualization of multiple connections involved in "ranching" at the extractive reserves in the Brazilian state of Acre (GOMES et al., 2011; PANTOJA et al., 2010; VADJUNEC et al., 2009) and in colonist areas in the Transamazon region (GOMES et al., 2012; PERZ, 2002).

In this article, we will examine the complexity of these interactions through the interpretation of productive strategies pursued by communities that depend on the extraction of babassu products in Maranhão state. Over the past few decades, these communities have begun to engage in production systems that integrate crops, the use of secondary forests of palm trees, and cattle ranching. By emphasizing the adaptive nature of the economic strategies practiced in traditional agro-extractive communities in the Mearim Valley, the analysis helps to undermine dichotomies associated with ahistorical interpretations of the peasant mode of production, such as the apparent resistance of these communities to raising livestock. Such resistance in fact occurred only during periods of agrarian conflict. The understanding of traditional communities' interpretations, choices and practices associated with the use of resources and, in particular, the employment of livestock by peasant production units in the Mearim Valley, illustrates the construction of complex socio-natural systems, and the dynamic nature of this resource use. Indeed, users of these resources share patterns of organization and perception of the natural environment, while reconfiguring their knowledge and rebuilding their livelihoods (NYGREN, 1999).

Our direct work experience with agroextractivist producers and their organizations in the 1980s and 1990s, and subsequent visits for anthropological fieldwork, enabled us to observe firsthand their strategies to deal with limited access to resources and the political ecology of this context (PORRO et al., 2011; PORRO, 2005). One of our studies centered on the adoption of cattle ranching by farmers in Maranhão, using ethnographic methods with a focus on life histories and social trajectories (PORRO et al., 2004). This paper develops from that analysis, emphasizing social and environmental aspects related to agroextractive-pastoral integration.

Social and environmental transformations in areas of babassu occurrence.

Socio-environmental trajectories and transformations in rural Maranhão have been defined in the last century by changes in the relative importance attributed to annual crops, the extraction of babassu products and livestock raising. This section summarizes the dynamic conditions of babassu occurrence areas during four periods in the last century, with a special focus on the middle reaches of the Mearim river valley (Middle Mearim) in Maranhão state.

The initial period[i] comprised the regional occupation[ii] by peasants and the establishment and formation of a peasantry. The clearing of primary forests for agricultural use resulted in their replacement by palm-dominated secondary forests. The securing of land for peasant occupation in the Middle Mearim corresponded to the expansion of smallholder agriculture in the state, as described by Velho (1972, p. 224-225) and Almeida (1974, p.16-21). As Almeida notes (1989, p.187), annual clearings for cropping were established without private land ownership, and did not necessarily maintain territorial continuity. Ecological succession patterns created conditions for the development and dominance of babassu in a landscape featuring the so-called oligarchic forests (Peters, 1992). At that stage, there was a clear distinction between those then identified as native producers (*maranhenses*), and those who migrated from the semiarid region (mainly the *cearenses*)—they adopted different forms of interaction with nature. Particularly noted was the scale and intensity of cultivation adopted by the latter, as portrayed by Valverde (1957).

During the subsequent period of economic differentiation, land incorporation for annual crops was accentuated. The intense migration of northeasterners resulted in the rice-cultivated area of the state having more than quadrupled between 1940 and 1960. In those two decades Maranhão's population more than doubled, reaching 2.5 million in 1960. By then, primary forests were limited to hard-to-reach areas. At the end of the 1950s' rice production peak in the Middle Mearim, trade had a greater expression. The extraction of agricultural surpluses allowed additional links in the value chain (MUSUMECI, 1988). Peasants in better economic situations became middlemen financed by commercial capital. Selective accumulation of resources benefited a minority group of producers who took advantage of the collective work invested in land clearing. They installed jaraguá grass (*Hyparrhenia rufa* (Nees) Stapf) pastures in areas already taken by babassu, with palm trees still in relatively high densities.

Processes that hitherto could be considered of economic differentiation assumed in the following period the stronger feature of social stratification. The "1969 State Land Law " stimulated land and income concentration, increasing violence and conflict in the countryside, and consequently peasant expropriation. In this period, 77 subsidized livestock projects were introduced in Maranhão, on more than one million hectares (AMARAL FILHO, 1990, p. 233). In parallel, intense transformations affected the biophysical environment. After a few cycles of slash-and-burn cultivation, the original rain forest's seed bank became restricted. Furthermore, the resistance of babassu fruits to fire assisted in securing the hegemony of babassu palms in the landscape.

In this context, the growing establishment of pastures by ranchers (*fazendeiros*) was accompanied by the adoption of babassu management practices by peasants, enhancing the polarization between these two social groups. Pastures restricted the stock of land for cultivation, reducing fallow periods and limiting the succession of annual fields by fallows. Further, the elimination or drastic reduction of palm trees within brachiaria grass pastures (which replaced jaraguá ones) represented the ultimate challenge to the integrity of the peasant production system. Statewide, planted pastures increased from 150,000 hectares in 1960 to 2.8 million hectares in 1985. Maranhão's herd grew 135% between

1960 and 1985 (reaching more than 3.2 million heads). Conversely, the production of rice and babassu kernels increased by about 40% (IBGE, 1979, 1990).

A large amount of peasants mobilized in opposition to such changes. The privatization of land associated with ranching has restricted access of the babassu coconut breakers to palm stands located within pastures. From the moment this restriction was challenged, ranchers began to perceive the maintenance of dense palm groves as a threat to their property. The consequence was the indiscriminate cutting of palm trees. Due to concentration of land ownership and the increasing pressure on natural resources, peasant families were forced to reduce fallow periods, destabilizing their production system. Rallies mobilized by the Rural Workers' Union (STTRs) and supported by the Catholic Church and other civil society organizations resulted in a considerable number of families regaining access and land tenure in the last three decades. Since 1985, 945 land reform "settlement projects" were created in Maranhão to secure land access and security for more than 140,000 families, within an area of about 4.5 million hectares (INCRA, 2012).

The channeling of collective action towards policy instruments that supported smallholder production systems followed this recovery of tenure. Grassroots organizations, based on traditional institutions such as rural communities and their derivations (dwellers' societies, producers' associations, women's groups and agroextractivist cooperatives), played an important role in defining the economic strategies to be adopted. These social organizations and their collective actions have been critical for obtaining tangible benefits, beginning with the effective recovery of access to land and to natural resources.

In parallel, the Brazilian 1988 Constitution expanded social security benefits and provided larger coverage parameters. Such instruments became clear vectors of change, transforming the role of senior, retired people in rural areas, and especially in the most vulnerable households (DE CARVALHO FILHO, 2008; OLIVEIRA et al., 1997). In the last decade, benefits of the Family Grant Program (*Bolsa Família*) leveraged the impact of social transfers for the peasant economy (FENWICK, 2009). The shifting of gender roles within the babassu economy was likewise affecting the social structure of family units. Indeed, the extraction of babassu has been an active arena for the construction of practices, discourses and social relations in the last two decades, extending the participation of extractivists to broader dimensions of the social and political discourse (PORRO et al., 2011).

Regarding production systems, the same agrarian conflicts that resulted in the recovery of access to land, and in the continued revision of the principles governing common resource use, also provoked a revised perception of the role assigned to pasture and livestock activity. We observed new paths of resource use. On the one hand, pasture fallowing or abandonment led to the reintroduction of these lands for agricultural use. On the other hand, peasant producers increasingly included livestock within their production strategy. The logic of agro-extractive-pastoral systems indeed benefits from patterns of natural succession and the synergy among palm trees and pastures, thus optimizing labor and existing resources. In the remainder of this article, we examine the combination of factors contributing to social and environmental settings that make this option attractive for peasant families and their communities.

The integration of babassu and pastures in peasant landscapes and economy

The occurrence of the palm known as babassu[iii] within areas of secondary succession is the most important ecological feature of the Brazilian Mid-North region[iv]. Introduced by indigenous peoples (BALÉE, 1989), larger densities of babassu stands covered more than 100,000 km^2 of Maranhão's lands in the 1980s (MIC, 1982). Babassu's presence is closely associated with human action, which is in turn influenced by the species' population dynamics. After the clearing of native forests, the occurrence of high-density palm stands is due to the palm's tolerance to fire, the position of the meristematic tissue during the seedling stage, fruit rigidity, and its capacity for regeneration. This combination confers to babassu extraordinary resilience, and the ability to spread to neighboring land. In areas of occurrence of babassu with a strong peasant population, landscapes thus feature a combination of agricultural plots, some in production and others at various stages of fallow. The traditional slash-and-burn agricultural system practiced in Maranhão thus includes the cutting of the forest or fallow vegetation (*capoeira*). When annual fields are cropped in secondary forests with dense babassu stands, the biomass resulting from burning leaves of these palm trees is sufficient to provide needed nutrients. Peasant farmers therefore avoid the permanent removal of these secondary forests, which allow new cropping after four to five years—about half the time required for the regeneration of secondary forests where babassu palms do not predominate. In addition to this ecological function, the babassu tree provides many products and services critical to the survival of the greater peasant contingent in the Amazon, explaining terms like "subsidy of nature" or "tree of life" (ANDERSON AND ANDERSON, 1985; ANDERSON et al., 1991; MAY, 1986). Ecological patterns that form the structure of current landscapes of the region are thus related to social processes, especially since the time when changes in resource use were manifested with greater intensity.

Extractivists identified as babassu breakers promoted significant changes in practices associated with the activity, despite employing a century-old extraction technology. Until the 1970s, the "gathering and breaking in the bush" prevailed within high-density palm groves in secondary forests formed after land clearings for cultivation. The women left early in the day, returning to their villages to sell the daily production or exchange it for goods. The progressive formation of pastures brought about profound implications for the activity. Restrictions on access to land and natural resources not only limited the possibilities for cultivation. They were also accompanied by the imposition of a number of conditions for the practice of babassu gathering, which were harmful to peasant families. Still, the income from babassu kernels became even more important to the livelihood of families expropriated from their land tenure and use rights.

Moreover, the ecology of babassu populations also allows the species to subsidize the establishment of pasture, as it does for annual crops. The combination of jaraguá grass (also known locally as *lageado* grass) and palm trees enhances the success of each of the components of this agro-ecosystem. The recycling of biomass provided by falling babassu leaves improves environmental conditions for pastures, while the partial shade of the palms helps to maintain soil moisture and provide relief to animals. Pastures in turn favor the even distribution and optimal density of babassu, optimizing isulation conditions

to maximize biomass production of palm trees, and the consequent production of larger fruits. The jaraguá grass, not being as aggressive as brachiarias, does not prevent the growth of juvenile palm trees (pindovas). If not grazed for a few years, this allows forest regeneration and the re-establishment of swidden agriculture.

Peasant women recognized such favorable conditions, and babassu extraction gradually became more frequent within pastures. Now, fruits are carried to residences, ("gathering within pastures and breaking at home"). Compared to areas of fallow vegetation, advantages to gathering babassu on grasslands include higher productivity of palm trees, proximity of gathering sites to villages, and ease of moving within the area, particularly with draft animals. The viability of these strategies depends, however, on the maintenance of proper palm densities within pastures, the maintenance of juvenile palms aiming future production, and above all, ensuring access to resources, which is sometimes impossible given restrictions in private areas.

Therefore, we observe in these areas that human intervention in the environment is associated with ecological processes that define subsequent decisions about land use. These, in turn, will have environmental and social consequences that will influence future decisions. This dynamic process is the focus of the relationship between society and environment, hardly captured by ahistorical explanatory models. In this case, the tolerance to fire of a palm tree species interacts with adaptive features of a species of grass pasture, producing—in environments altered by human intervention—conditions for the expansion of pastures, and greater economic attractiveness of livestock to peasant producers.

The dynamic integration between social processes and gradual changes in the biophysical environment is noticeable in situations of land struggle and tenure returns to peasant families. After such conflict, these families end up with distinct resource conditions, different from the usual ones. To those who come across land largely overrun by grass, raising cattle is a rational option in the short term. When jaragua grass pastures dominate the landscape, it becomes increasingly difficult to prevent its diffusion to surrounding areas. Peasant families opposed to livestock are faced with the choice of either engaging in the activity or selling their land to more capitalized producers. However, by applying their knowledge of the species and the environment, these individuals may develop techniques that enable new production options. The ecological dynamics of the species involved in the agro-ecosystem, coupled with their intentional management according to desired objectives, allows different social and environmental trajectories. As will be treated next, decisions associated with these trajectories are deeply influenced by producers' economic logic and social identity.

Social identity, economic rationale and local knowledge in the management of pasture and palm trees

Family farmers in the Mearim Valley, who engage in diversified systems that include cattle ranching, consider a wide range of factors in the definition of their management strategies. The role of pastureland for them is extended to its use in landscape dynamics. Four narratives below illustrate the contrasting perspectives of Mearim Valley producers.

Their discourses indicate that, in essence, the choice between jaraguá grass and brachiaria is the producer's goal to (a) reduce manual labor and the competition of invasive species, and optimize fodder supply in the dry season; or to (b) rely less on purchased inputs and consider the possibility of fallow regeneration, despite the need to supplement livestock feed in the dry season.

> "When we only had jaraguá, we raised half of the cattle, and it was not a good cattle like today. Jaraguá brings no return. In the summer time, after we move the cattle outside the pasture, the grass only grows back with the rain, because it gets completely dry." (Informant 1)

> "I think it's good because it [brachiaria] does not allow the bush to grow up. When it is there, even the pindovas [juvenile palms] turn yellow. As for the fodder, I think it's poorer than the other one [jaraguá], but I think it's good. At least we're improving the cleaning job by decreasing its cost." (Informant 2)

> "This jaraguá grass that we have, it has been there since I got here. You have to know how to work with it, you have to get the seeds, because sometimes a fire comes and kills the grass, but the seed stays and grows. Never let the cattle eat it all ... if they eat it up to the bare ground, you'll never have pasture." (Informant 3)

> "I have friends who speak about braquiarão. They say it looks good, because it covers up the soil, it prevents weeds, but it is very expensive to deal with, because it is fertilized, cannot throw the seed because birds will eat, ..., you have to plant it almost like rice, and manual labor is expensive." (Informant 4)

Jaraguá grass pastures are characterized by ease of production and germination of seeds, and by increased demand for manual labor to manage it. If weeds are not controlled every year, pastures are suppressed by secondary vegetation. If properly managed, however, they remain productive for over 20 years, despite supporting a lower stocking rate. Brachiaria pastures, on the other hand, although propagated by expensive seeds of difficult local production, are more aggressive once established. They are less susceptible to weed competition, provided they are periodically renewed to avoid loss of strength. Renewal periods, according to local informants, range from three to four years, as illustrated below.

> "The problem with braquiarão is that after 3 or 4 years it needs to be plowed and planted again. The areas that are dying, I plow and plant it again. It is another high expense. It is difficult. We have to find a pasture grass that is better." (Informant 5)

Slashing, sometimes combined with the use of fire, is often the management practice for jaraguá grass pastures. Slashing demands most of the manual labor, particularly

in areas where *juquiras* (unwanted successional vegetation in grasslands) are composed of *pindovas* (juvenile babassu palms). In the dry season, with the exception of wetlands, the jaraguá grass dries completely, and is easily consumed by intentional or accidental fire even when it is not grazed. For the recovery of areas with low fodder density, they are slashed and burned. The grass is then sown by broadcasting; the area is isolated until the pasture develops, preferably until producing seeds. The alternative to burning is limited to mechanization. Indeed, for most of the farmers interviewed in the region, "pasture management" is a notion closely connected to mechanization.

Family farmers and traditional ranchers who use jaraguá grass consider it more advantageous to install new pastures in fallows than recover or "manaje" a very degraded pasture. In these cases, the so-called "*encabelamento*" of pastures is a common practice, consisting of fallowing the land without grazing it for a few years. When the fallow vegetation develops, it is slashed for annual cropping and the sowing of grass. Although "pasture degradation" is defined by contamination and the replacement of grass by invasive species, the concept must be relativized to a producer's perspective on resource management and future use. The meaning of "degradation", for those employing capital intensive systems, and who do not consider a wider range of land uses, is different from the meaning for those who are more flexible in the use of land, even allowing its return to cropping and extractive use. The management option adopted by producers is therefore associated with their social identity as autonomous peasants in traditional communities and, for women, as babassu-nut breakers. This becomes evident when we observe that family farmers seeking to replace jaraguá grass with brachiarias are usually identified with capital-intensive systems, aiming to differentiate themselves from the group to which they once belonged. Such differentiation would comprise establishing relations of production that are dependent on wages and profit, abolishing family-based labor relations (CHAYANOV, 1986; GODOI et al., 2009; SHANIN, 2005).

Several informants acknowledged that brachiarias have lower palatability compared to jaraguá and guinea grass (*Panicum maximum*), which are better accepted by dual-purpose cattle. According to them, only the more rustic Nelore cattle adapts to brachiaria. The strategy of family farmers who feed mixed-breed livestock includes the integration of crop residues, the processing of annual crop by-products, and the use of fodder species from fallow vegetation. The fact that family farmers establish brachiaria pastures therefore denotes their adoption, with needed adjustments, of productive components associated with hegemonic social groups, such as the narrative below illustrates:

> "The big farmers begin to make that beautiful thing, to plant the braquiarão. And what always goes on in the head of the small guys is that they do it better ... Once one changes it, the others find it beautiful and do it in the same way ... But the cattle does not eat it the same way it eats jaraguá. It thinks jaraguá tastes better .... Nelore cattle eat everything, but those who raise a little cow at the corral have to be patient. It just won't get into the braquiarão, it is not used to it." (Informant 6)

The above narrative raises the discussion of farmers' access to technologies and mechanisms that allow them to choose between production systems. We can argue that, in the current context, the option for brachiaria is associated with a set of practices that are not in the domain of most peasant farmers' production units, let alone affordable to them. In contrast, the formation and management of jaraguá pastures has been, often for generations, part of their universe of acquired knowledge and adopted practices. As with traditional slash-and-burn swidden fields, the rationale of those who adopt jaraguá pastures combines factors such as the lack of access to technologies and technical assistance, the minimization of risk and the maximization of returns on their labor. Those who seek to preserve the unity of their social group tend to associate livestock with other activities, and do not prioritize the replacement of jaraguá grass with brachiarias. In choosing jaraguá, these producers expand their safety margin to cope with future uncertainties, while keeping the restoration of agricultural land use within pastures as an open possibility.

> "This brachiaria is really mean. After having it on the ground you're done. With the jaraguá, if you want to crop a field, you can. Just need to burn it ... and we bring cattle into the fallow to further kill the grass, mainly for cassava fields." (Informant 7)

The above narrative illustrates that such reincorporation is taking place in settlement areas in the Middle Mearim. Land reform settlers chose to keep only some of the pastures that existed on state-expropriated land, where ranchers had initially formed them. The remaining area is reserved for the planting of annual crops. Due to their lack of access to mechanization, this strategy is feasible through continuous grazing, and even purposeful overgrazing. Cattle (owned or leased) are placed in smaller paddocks, progressively weakening the grass towards its eradication. The secondary vegetation thus finds more favorable conditions to develop. This management practice transforms the predominant type of land cover from pasture to fallow. As the narrative below indicates, after five to six years the land is again suitable to agricultural crops. Over a longer period, it can return to the condition of forested area.

> "In the traditional system with jaraguá, the land is not covered with grass, giving opportunity for the juquira to grow. With the rain, the bush grows a lot, and as cattle is always moving along and eating grass, the juquira gets thicker and the fallow grows up. That gives life to the soil. Many people even go back there to work in a small field. When it turns into mature fallows, we set fire. With braquiarão we don't have that. With the braquiarão the land is suffering." (Informant 8)

Challenges and paradoxes for the integration of pastures and babassu

The dynamics of secondary succession in the areas of babassu occurrence contributes to the integration of annual agriculture, extractive activity and livestock. Social and environmental transformations that occurred in these areas in the last century seldom

concern the introduction of new production technologies. Rather, they relate to various ways in which traditional activities are integrated. The combination of palm trees and pastures on land previously intended for agriculture thus results from post-deforestation ecological dynamics and associated social processes.

A coherent alternative to farmers who raise livestock, from an ecological, economic, and social point of view, is the establishment of pastures containing palm groves. The density of these palms, though lower than in natural succession, is sufficient to confer continuity to the upper stratum of the landscape. This coherence is due to the abundance of palm trees in secondary successions, to the costs and difficulties involved in their eradication, to the limitations on soil fertility in the babassu region, the economic gains brought about by the integration of babassu and livestock, and the microclimatic benefits to pastures arising from their association with palm trees. The narratives below, from small-scale ranchers, attest to the benefits of this integration:

> "If you look down when traveling by plane, you do not believe that all these palm trees are in a pasture farm. It seems that there is no cattle there. But that's how it should be. If you remove these palms it will turn into desert. The cattle seek the shadow, and palm trees provide organic matter to the soil. "(Informant 9)

> "The only problem for babassu is when they are too close to each other, because then there is too much shade. But if a palm tree is 10 meters apart to the other, that is fine. "(Informant 10)

However, this consistency is seldom observed. Most ranchers reject the integration due to the social problem of concentration of land ownership associated with peasant settlements in the vicinity of farms. Once babassu extraction becomes a relevant activity for families without land access, the maintenance of palm trees within pastures is perceived as a threat to their property. Palm groves mitigate the effect of water scarcity in the dry season. Partial shade does not harm pasture productivity, and provides places for livestock refuge during intense sunlight periods. Yet, the massive elimination of palm trees in farms is still common, though illegal.

Secondary forests of babassu are under pressure, not only from ranchers that eliminate palms within pastures, but even from the peasant group, as swidden fields in the context of land scarcity do not get along with the extractive activity. The density of palm trees in a field should be significantly lower than in pastures. Even in cases when palm trees are not cut, the management performed, i.e. eliminating outer leaves and burning the dry matter surrounding it, temporarily interrupts these palms' fruit production. This was not a problem when land availability was enough for longer fallows. But the present distribution of land results in higher population density and causes discomfort within peasant communities. Even within family units there are oppositions between agricultural activities exercised by men, and babassu extraction, essentially involving women. The following narrative, illustrates this situation.

> "Land to work on it, to farm on it, is not good for the babassu. Because you set fire to the field, the land is burned every 3 or 4 years. Each time you burn, you burn the palm trees, and when they recover, another fire comes again, and there will be no production of babassu nuts. There was a place with a beautiful babassu forest, with great babassu production. People fought for this land until they got it. Today you look and there is no babassu anymore. Where they did not slash and burn the palm trees, the forest eventually grew up ... The palm tree in the thick bush, it produces, but is that little thing, it seems that the bushes suck her resistance, there's no way. Now when it is a clear spot, that is a beautiful palm tree. It only produces well on a clear site. If you nurture it, there will be three or four bunches." (Informant 11)

The "clear site" of the above statement means pasture. The transition from common land tenure situations, to producers settled in a context of insufficient support from public policies, combined with difficulties to maintain the traditional production system and the comparative disadvantages of prices for primary products in the region, have destabilized forms of peasant organization. The previous state of common resource use, regulated by traditional mechanisms, becomes one of unregulated access. This affects the reproduction of social relations that made feasible the maintenance of these resources, demanding new social-organizational bodies and new production arrangements.

Conclusions and recommendations

In 2006 family farms comprised 84% of the approximately 93,000 Maranhão land holdings involved in livestock. These farms accounted for 41% of the cattle herd in the state (IBGE, 2009). Although the share of Maranhão's cattle of the total herd in the Brazilian Amazon[v] is only 10%, this percentage increases to 21% when calculated for the two million head that, in 2006, was found in farms of up to 20 hectares. These figures indicate that although still associated with social inequalities, livestock has been recognized as a component of family farmers' production systems and livelihoods. Indeed, the research cannot disregard empirical evidence of this association: peasant families are increasingly adopting livestock as a strategy to revise their production systems in contexts where the market economy is hegemonic.

Previous studies (PORRO et al., 2004) show that a comprehensive explanatory framework is needed to understand decisions leading to the adoption of livestock by farmers, and to define pasture types and management styles. The agroextractivist production units of the Mearim Valley are complex entities characterized by multiple economic strategies. Growing engagement of these producers in livestock adds, to swidden fields, the extraction of babassu oil and possible wage labor opportunities. It also adds to raising smaller livestock, to fish farming, planting small fruit orchards and artisanal production. Retirement payments, pensions, and social transfers supplement their income, which may also stem from small business, seasonal work in mining or agribusiness in other states, or even from rural credit.

Agriculture remains critical to the subsistence of peasant groups in the Middle Mearim, and there is little evidence of short-term technological solutions that would effectively replace traditional slash-and-burn systems. Given this limitation, agrarian reorganization programs should be based on the provision of land areas large enough for the continuity of family farming according to the length of fallow cycles. Such availability must include grazing areas, and land for conservation purposes. The majority of peasant families in the Middle Mearim have the knowledge to manage pastures and livestock. Their main limitation is capital for initial investment in livestock and basic production infrastructure. In areas already incorporated into the agricultural production process, it thus makes sense the devising of support programs for agro-extractive-livestock integration, focused on the maintenance and rational use of babassu stands and their access by traditional communities.

The century-old history of resource use and management by these communities already results in a system that integrates pastures and palm trees, providing conditions for the practice of traditional agriculture. However, action research interventions are still necessary for participatory identification of new management practices, and more effective varieties or arrangements of species that enhance the potential of this production system to succeed in current environmental and demographic conditions. An urgent demand identified by producers in the Middle Mearim is the development of more productive pastures that maintain the positive association with babassu featured alongside jaraguá grass. Other priorities include cultivars of rice, cassava, maize and beans, adapted to low fertility soils and to the lack of chemical inputs. Yet another priority is experimentation with perennial or semi-perennial species, those with high economic potential, that could be integrated with palm trees. Where effective technological alternatives are feasible, agricultural areas would be used more intensively—providing greater economic returns to producers, reducing the area cropped, and triggering the consequent increase in forest reserve.

Furthermore, while initiatives focused on cattle raising tend to favor better-off farmers and families, they do not exclude the simultaneous implementation of measures to support the most vulnerable ones. Because of the compatibility between palm trees and pastures, and the considerable efforts of social movements towards the recognition of free access to babassu (SHIRAISHI NETO, 2006), the maintenance of pastures in palm groves near rural communities will favor the continuity of the extractive activity as a critical element for these families' survival. This also points to securing rights to fairer gender and generation relations, given the usual association of babassu extraction with women and youth. Additional initiatives to optimize the processing and cooperative marketing of babassu products would provide an immediate effect in reducing rural poverty. Such initiatives contribute to the achievement of broader civil rights, and to the implementation of policies aimed at food and social security for these traditional communities.

Innovative research initiatives have been devised to meet the demand for an agriculture that reduces emissions and mitigates the effects of climate change. It is thus unacceptable to ignore a social group that historically contributes to this mitigation through the maintenance of relevant carbon stocks in babassu forests. These traditional

communities of the Middle Mearim maintain hereditary knowledge and practices, and although vulnerable, have demonstrated the capacity to adapt to considerable social and environmental change. The sheer number of family farms involved in babassu-agroextractive production substantiates the prioritization of their demands by agricultural research and development organizations. Two decades of evidence illustrate that peasant families and their organizations are key protagonists of initiatives that effectively contribute to a dynamic reconstruction of their social and environmental contexts.

Notes

i The four periods summarized in this article are fully presented in the analytical framework developed by Porro (2005: 36-40).

ii Some plantations were established in the Middle Mearim since the colonial period, especially in the then parish of São Luis Gonzaga. Such farms originated current quilombola (runaway slaves' descendants) communities, which exert strong influence on the composition of the local society.

iii For details on the biology and economic importance of babassu, see Anderson, May and Balick (1991).

iv At the beginning of the 1980s secondary forests of babassu occurred in about 200,000 km^2 of the Brazilian territory (MIC, 1982). The area of greatest economic importance, referred to herein as the "babassu region," lies between latitudes 2 to 7° S, and longitudes 42 to 48° W.

v Considering total herd in the states of Maranhão and Mato Grosso (although only part of the area of these states is located in the Legal Amazon).

References

ALBERT, B. O ouro canibal e a queda do céu. Uma crítica xamânica da economia política da natureza (Yanomami). In: ALBERT, B.; RAMOS, A. R. (Orgs.). **Pacificando o branco: cosmologias do contato no norte-amazônico.** *São Paulo: IMESP/IRD/Ed. UNESP*, pp. 239-274,2002.

ALMEIDA, A. W. B. de. Terras de preto, terras de santo, terras de índio--uso comum e conflito. **Novos Cadernos NAEA**, Belém: NAEA, v. 10, pp. 163-196, 1989.

———.**Movimentos migratórios nos Vales do Tapajós e Xingú**. Rio de Janeiro: Programa de Pós-graduação em Antropologia Social, Museu Nacional / UFRJ. Mimeo. Relatório de Pesquisa, 1974.

ALMEIDA, M.W.B. **Rubber tappers of the Upper Juruá River: The making of a forest peasantry**. Ph.D. dissertation. University of Cambridge, 1993.

AMARAL FILHO, J. **A economia política do babaçu: Um estudo da organização da extrato indústria do babaçu no Maranhão e suas tendências**. São Luis, SIOGE, pp. 309,1990.

ANDERSON, A. B.; ANDERSON, S. A 'tree of life' grows in Brazil. **Natural History,** v. 94, n. 12, pp. 40-47, 1985.

ANDERSON, A. B.; MAY, P. H.;BALICK, M. J. **The subsidy from nature: Palm forests, peasantry, and development on an Amazon frontier**. New York: Columbia University Press, p. 233,1991.

BALÉE,W. L. The research program of historical ecology. **Annual Review of Anthropology,** v. 35, pp. 75-98, 2006.

———.The culture of Amazonian forests. In: Posey D. A.; Balée, W. L. (Eds.). **Resource management in Amazonia: Indigenous and folk strategies**. New York: The New York Botanical Garden, pp. 1-21, 1989.

CASTRO, E. V. de. Images of nature and society in Amazonian ethnology. **Annual Review of Anthropology**, v. 25, p. 179-200, 1996.

CHAYANOV, A. V. Sobre a teoria dos sistemas econômicos não capitalistas. In: DA SILVA, J. G.; STOLCKE, V. **A Questão Agrária**. Tradução de A. A. Malagodi; S. Brizollaç; J. B. A. Filho. São Paulo: Editora Brasiliense, pp. 133-163,1981.

CRUMLEY, C. L. Historical ecology: a multidimensional ecological orientation. In: Crumley, C. L. (Ed.). **Historical ecology: Cultural knowledge and changing landscapes**. Santa Fe, NM: Sch. Am. Res., pp. 1-16, 1994.

CUNHA, M. C.; ALMEIDA, M. W. B. Indigenous people, traditional people, and conservation in the Amazon. **Daedalus**, v. 129, n. 2, pp. 315-338, 2000.

DE CARVALHO Filho, I. E. Old-age benefits and retirement decisions of rural elderly in Brazil. **Journal of Development Economics**, v. 86, n. 1, pp. 129-146, 2008.

DESCOLA, P. Constructing natures: symbolic ecology and social practice. In: Descola, P.; Pálsson, G. (Eds.). **Nature and society: Anthropological perspectives**. London: Routledge, pp. 82-102, 1996.

FENWICK, T.B. Avoiding governors: The success of Bolsa Família. **Latin American Research Review**, v. 44, n. 1, pp. 102-131, 2009.

GODOI, E. P.; MENEZES, M. A. de; ACEVEDO-MARIN, R. E. Introdução. In: **Diversidade do campesinato: expressões e categorias**. Vol. I. Construções identitárias e sociabilidades. São Paulo: Editora UNESP; Brasília: NEAD, pp. 23-36, 2009.

GOMES, C. V. A., PERZ, S. G.,Vadjunec, J. M. Convergence and Contrasts in the Adoption of Cattle Ranching: Comparisons of Smallholder Agriculturalists and Forest Extractivists in the Amazon. **Journal of Latin American Geography**, v. 11, n.1, pp. 99–120, 2012.

GOMES, C. V. A.; VADJUNEC, J. M.; PERZ, S. G. Rubber tapper identities: Political-economic dynamics, livelihood shifts, and environmental implications in a changing Amazon. **Geoforum**, v. 43, n. 2, pp. 260-271, 2011.

HEADLAND, T. N. Revisionism in ecological anthropology. **Current Anthropology**, v.38, n. 4, pp. 605–630, 1997.

IBGE - Instituto Brasileiro de Geografia e Estatística. **Censo Agropecuário 2006: Brasil, Grandes Regiões e Unidades da Federação**. Rio de Janeiro, IBGE, 2009.

———. **Censo Agropecuário, 1995-1996**. Rio de Janeiro: Ministério do Planejamento e Orçamento–IBGE, 1998.

———. **Censos econômicos de 1985. Censo agropecuário**. Rio de Janeiro: Ministério da Economia, Fazenda e Planejamento – Fundação IBGE, 1990.

———. **Censos Econômicos de 1975: Censo Agropecuário**. Rio de Janeiro: Secretaria de Planejamento da Presidência da República, Fundação IBGE,1979.

INCRA – Instituto Nacional de Colonização e Reforma Agrária. **Relação de Projetos de Reforma Agrária.** Disponível em: http://www.incra.gov.br/index.php/reforma-agraria-2/projetos-e-programas-do-incra/relacao-de-projetos-de-reforma-agraria. Acessado em 30 março de 2012.

INGOLD, T. **The Perception of the environment: Essays in livelihood, dwelling and skill**. New York: Routledge, p. 465 , 2000.

———. **The appropriation of nature: Essays on human ecology and social relations.** Manchester, UK: Manchester University Press, p. 287, 1986.

LITTLE, P. E. Environments and environmentalisms in anthropological research: facing a new millennium. **Annual Review of Anthropology**, v. 28, pp. 253-284, 1999.

MAY, P.H.**A modern tragedy of the non-commons: Agro-industrial change and equity in Brazil's babassu palm zone**. Ithaca, N.Y: Latin American Program Dissertations Series, Cornell University, p. 432,1986.

MIC--Ministério da Indústria e do Comércio / Secretaria de Tecnologia Industrial. **Mapeamento e Levantamento do Potencial das Ocorrências de Babaçuais nos Estados do Maranhão, Piauí, Mato Grosso, e Goiás**. Brasília: MIC, 1982.

MORAN, E. F. Ecosystem ecology in Biology and Anthropology: A critical assessment. In: Moran, E. F. (Ed.). **The ecosystem approach in Anthropology: From concept to practice.** Ann-Arbor, MI: University of Michigan Press, pp. 3-40,1990.

MUSUMECI, L. **O mito da terra liberta: Colonização espontânea, campesinato e patronagem na Amazônia Oriental**. São Paulo: Editora Vértice, p. 419,1988.

NUGENT, S. Whither o campesinato? Historical peasantries of Brazilian Amazonia. *The* **Journal of Peasant Studies**, v. 29, n. 3-4, pp. 162-189, 2002.

NYGREN, A. Local knowledge in the environment–development discourse: From dichotomies to situated knowledges. **Critique of Anthropology**, v. 19, n. 3, pp. 267-288, 1999.

OLIVEIRA, F. E. B.;BELTRÃO, K. I.; FERREIRA, M. G. **Reforma da previdência.** Texto para Discussão 508. Rio de Janeiro: IPEA, 1997.

PANTOJA, M. C.; COSTA, E. L.; POSTIGO, A. A presença do gado em Reservas Extrativistas: algumas reflexões. **Revista Pós Ciências Sociais**, v. 6, n. 12, p.115-130, 2010.

PERZ, S. G. The Changing Social Contexts of Deforestation in the Brazilian Amazon. **Social Sciences Quarterly**, v. 83, pp. 35–52, 2002.

PETERS, C. M. The ecology and economics of oligarchic Amazonian forests. In: **Advances in Economic Botany 9**, pp. 15–22, 1992.

PORRO, N. S. M.; VEIGA, I.; MOTA, D. Traditional communities in the Brazilian Amazon and the emergence of new political identities: The struggle of the quebradeiras de coco babassu breaker women. **Journal of Cultural Geography**, v. 28, n.1, pp. 123-146, 2011.

PORRO, R. The political and practical ecology of 'agro-extractive/shifting-cultivators' in Maranhão, Brazil. **Human Ecology**,v. 33, n. 1, pp. 17–55, 2005.

PORRO, R., MESQUITA, B. A., SANTOS, I. J. P. **Expansão e trajetórias da pecuária na Amazônia: Vales dos Rios Pindaré e Mearim, Maranhão**. Brasilia: Editora Universidade de Brasilia, pp.183, 2004.

SHIRAISHI NETO, J. **Leis do babaçu livre: Práticas jurídicas das quebradeiras de coco babaçu e normas correlatas**. Manaus: PPGCA-UFAM / Fundação Ford, 77 p.,2006.

SHANIN, T. **A definição de camponês: conceituações e desconceituações – o velho e o novo em uma discussão marxista**. Revista NERA. Presidente Prudente. Ano 8, n. 7 p. 1-21 Jul./Dez. 2005. [Original: A definição de camponês: conceituações e desconceituações. Novos Estudos Cebrap, São Paulo, n. 26, 1980. pp.43-80.] http://www2.fct.unesp.br/nera/rev07.php

VALVERDE, O. Geografia econômica e social do Meio-Norte. **Revista Brasileira de Geografia**, v. 19, n. 4, pp. 341-418, 1957.

VADJUNEC, J.; GOMES, C.V.; LUDWIGES, T. Land-Use/Land- Cover Change Among Rubber Tapper in the Chico Mendes Extractive Reserve, Acre, Brazil. **Journal of Land Use Science**, v. 4, n. 4, pp. 249-274, 2009.

VAYDA, A. P.; WALTERS, B. B. Against political ecology. **Human Ecology**, v. 27, n. 1, pp. 167–79, 1999.

VELHO, O. G. **Frentes de expansão e estrutura agrária: estudo do processo de penetração numa área da Transamazônica**. Rio de Janeiro: Zahar Editores, p. 178,1972.

Submitted on: 17/12/2012
Accepted on: 27/06/2014
http://dx.doi.org/10.1590/1809-4422ASOC507V1812015en

SOCIAL IDENTITY, LOCAL KNOWLEDGE AND ADAPTIVE MANAGEMENT BY TRADITIONAL COMMUNITIES OF THE BABASSU REGION IN MARANHÃO

ROBERTO PORRO
NOEMI SAKIARA MIYASAKA PORRO

***Abstract*:** This paper examines productive strategies of traditional communities, which integrate agriculture and extractive activities in secondary forests of babassu palm in the Mearim Valley, Maranhão State. Underscoring the adaptive nature of agroextractivist practices, the analysis contributes to demystify dichotomies associated with peasant mode of production with regard to the apparent resistance of these communities to livestock. The article examines interpretations, choices and practices in the incorporation of livestock by these farmers. We highlight the need to contextualize the multiple connections involved in the integration of productive activities in complex environmental systems, which in turn redefine the ways in which resource users delimit patterns of perception and management of the natural environment.

***Keywords*:** Agroextractive economy; Peasantry; Maranhão; livelihoods.

***Resumo*:** Este artigo examina estratégias produtivas de comunidades tradicionais, que integram agricultura, pecuária e extrativismo nas florestas secundárias de babaçu no Vale do Mearim, Estado do Maranhão. Ressaltando o caráter adaptativo das práticas agroextrativistas, a análise contribui para desmistificar dicotomias associadas ao modo de produção camponês no que se refere à aparente resistência dessas comunidades à criação de gado. O artigo examina interpretações, escolhas e práticas na incorporação da pecuária por esses camponeses. Destaca-se a necessidade de contextualizar as múltiplas conexões envolvidas na integração de atividades produtivas em sistemas socioambientais complexos, que por sua vez redefinem formas através das quais usuários dos recursos delimitam padrões de percepção e gestão do meio natural.

***Palavras-chave*:** Agroextrativismo; Campesinato; Maranhão; Meios de vida.

Resumen: Este artículo examina las estrategias productivas de comunidades tradicionales, que integran la agricultura y las actividades extractivas en los bosques secundarios de babasú en el Estado de Maranhão. Subrayando la naturaleza adaptativa de las prácticas agroextractivistas, el análisis contribuye a desmitificar dicotomías asociados con el modo de producción campesino con respecto a la aparente resistencia de estas comunidades a la ganadería. El artículo examina las interpretaciones, decisiones y prácticas de la incorporación del ganado por estos agricultores. Destacamos la necesidad de contextualizar las múltiples conexiones que intervienen en la integración de las actividades productivas en los sistemas ambientales complejos, que a su vez redefinen las formas en que los usuarios de recursos delimitan los patrones de percepción y gestión del medio natural.

Palabras clave: Agroextrativismo; Campesinos; Maranhão; Medios de vida.