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Livelihoods or Hardwoods: Extractive Reserves, Logging, and a Sustainable Future?

Kevin S. McDaniel [1,*]

[1] Department of Anthropology, University of Florida, Gainesville, FL

E-Mails: kmcdaniel@ufl.edu

* Author to whom correspondence should be addressed; Tel.: +1-615–542-7463

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Abstract: Recently images of indigenous people stripping loggers to their underwear and running them off the land have been in the media. This paper will examine the extractive reserve policies, implications, and alternative conservation strategies in Gurupá, Para. Gurupá is located roughly 500 nautical miles inland from the mouth of the Amazon, in the northeastern state of Pará, near the confluence of the Amazon and Xingu rivers. Extractive reserves are governmentally relegated, rural, tracts of land set aside to stymie Amazonian land degradation. Extractive reserves in Gurupá are seen, by most, to be a great success. Yet, problems still underpin the success seen in the region. The land relegated by the government is not in the total control of people living here.Thus, policy makers have to put the people living the every day experience at the center of discussions.

Keywords: Amazonia, extractive reserves, sustainability, Amazonian dark earth, Gurupá.

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1. Introduction

This paper will look at the viability of extractive reserves, around the municipality of Gurupá, Para in the northeast of Brazil in light of continued logging.The goals of this research is not to take a position

but to demonstrate gaps in dialogue between policy makers and those affected by the policies. Gurupá is a small town along the Amazon near the mouth of the Xingu River (figure 1). In 2006 the urban population roughly number 7,500 people while the rural population numbered around 27,000 [1]. Policies concerning forest conservation and use will obviously effect a large portion of the Gurupá populations. The people living on the rural country side are small landowners that rely on the land. Both the urban and rural populations in the municipality are by many standards, including Brazilian, poor. The gross domestic product of Brazil in 2010 was 11, 239 U.S. dollars, juxtapose that with Gurupa just six years prior in 2004: 900 U.S. dollars [1].

Western Imagination

The Amazon stands out in the imagination, of many people, as a primordial zone of ecological fragility. With the recent announcement of "uncontacted tribes" coming out of the forest this ideal is further entrenched in the Western perception. The Amazon does not appear outright as a place with a pre-European history as rich as North America. In fact, a common perception of the Amazon is one of

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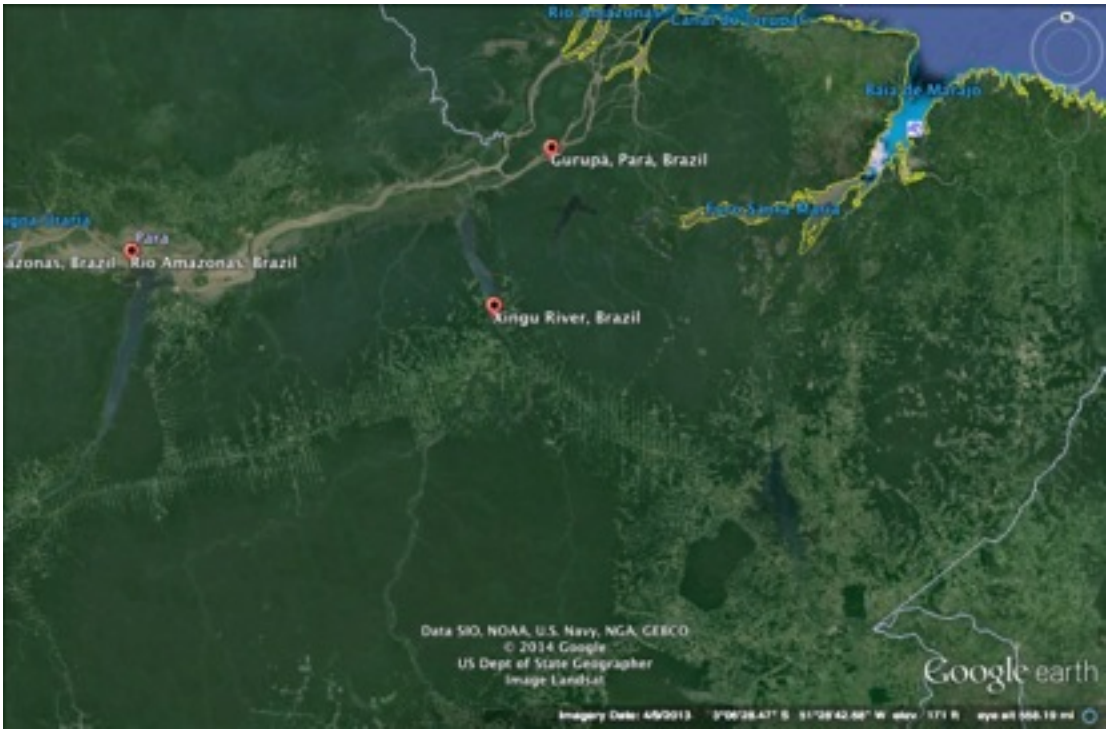

Figure 1(A): Google earth image showing the location of Gurupá

backwards people without any technology, political structure, or specialization of labor organized under a form of government-these are only seen in conjunction with the arrival of the State [2].This popular imagination inherently leaves out the long history of indigenous populations in the Amazon [3-5]. When the perception of the Amazon as untouched, or primordial, is compounded with an imagined separation between man and the environment, contention will underpin conservation dialogue[6].

2. Extractive Reserves

Extractive reserves are defined as, "…natural forest area to which the government grants the exclusive usufruct rights to selected resident population who's livelihoods are customarily based on extraction of minor forest products (e.g rubber latex, Brazil nuts, various fruits and palms)" which also attempt to "reconcile economic development with the conservation of natural resources"[7-8].The creation of extractive reserves were pushed for after a backlash to a rural development model created by the Brazilan government. The focus was on cattle ranching, agriculture and logging. Yet, it took the murder of the Chico Mendes, an activist on the part of the rubber tappers, for the government to implement them. Modeled after indigenous reserves, extractive reserves were created for the specific purpose of the sustainability of the forest resources.

After the 1992 earth summit in Rio de Janeiro the world bank and the Netherlands government committed to preserve the "natural rainforest" and over the course of the past 20 years a total of 463.1 million dollars has been spent on forest conservation and preservation. The rights to resource use on these reserves is granted free of charge and valid initially for ten years. After ten years rights are renewable provided that the rule established in the plan of use and in the legislation are complied with [9]. It is important to note here that as established in the legislation sustainable use of the forest requires traditional knowledge, practices, and techniques.

2.1 Politics of Sustainability

Gurupá extractive reserves are seen by many as a great success. Yet, problems still underpin the "success" seen in the region. The land relegated by the government is not in the total control of people living here. These extractive reserves are intended to be sustainable. Developed for forest resource extraction by local people and forest degradation mitigation, predatory logging persists (Figure 2 A-B). While the government has laws on the books that logging companies must reforest these laws say nothing about where to reforest[10][9]. Additionally, the "*Law on the Management of Public Jungles for Sustainable Development* allows private companies and community associations, through community management, to exploit the timber of the Amazon jungle in sustainable conditions, awarding them long-term concessions and creating conditions for this purpose."[11]. It is difficult to guarantee that any type of logging by a private company will be sustainable and legal. This issue is evidenced by the recent media coverage of illegal loggers entering indigenous territory in Brazil.

Entering into any type of legal debate is virtually impossible without any type of outside help navigating the bureaucratic process due to legal, financial, and technical barriers[12]. This continues to leave the policy choices in the hands of large federal and state governments. Logging companies have a large presence in Gurupá and policy makers appear more focused on short term economic gain than any type of long-term true sustainability.

A B

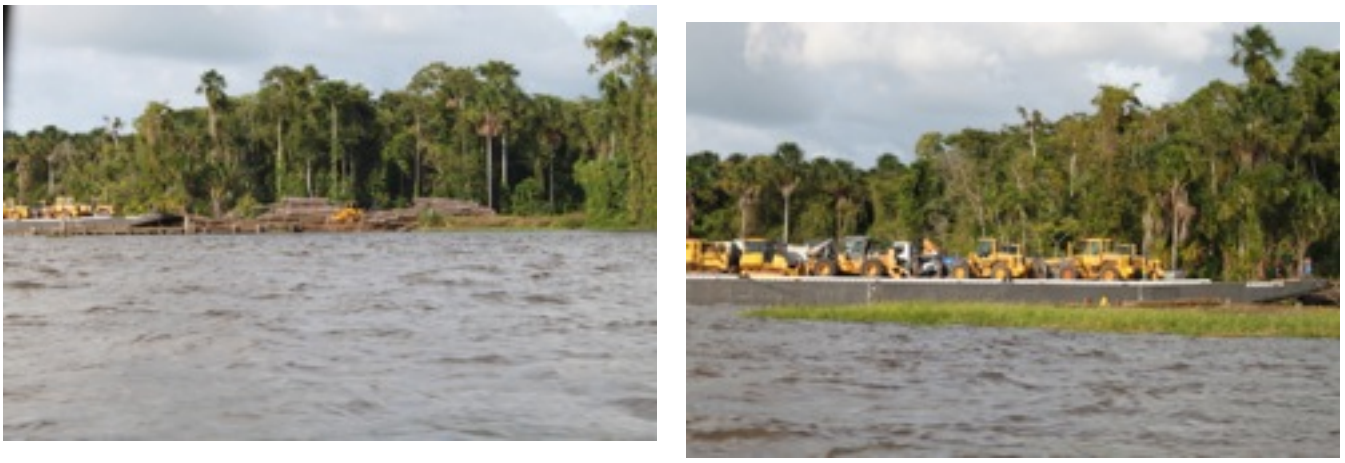

Figure 2 (A): Timber extraction in Gurupá **(B)** Heavy machinery used for timber extraction.Photos credited to Dr. Richard Pace

2.2 The Past Looking Forward

Traditional knowledge is said to be the core tenet of extractive reserves sustainability. *Neoextractivism* and *floresania* are two incarnations of this ideal. Neoextrativism developed in 1990 emphasized a policy based on sociocultural use of the natural resources, wherein the focus was the people living on the land and their "traditional" techniques. Floresania on the other hand looked at land tenure rights and the land use strategies of extractivists. The focus of florestanis was universal human rights in order to produce economic growth to overcome social inequalities [13]. Florestania policies were important because to some people the degradation of the land was wholly the fault of the poor people living there. By recognizing people on the land as having universal human rights the people could be seen more as citizens of Brazil instead of marginalized peoples of their own doing.

The 2002 World Bank report *Sustainable Amazon* highlights the potential for agriculture in Bragantina, Para [14]. The outcome, as it states, is "Agricultural performance in the Amazon is strongly determined by rainfall patterns; experience with agriculture in the Amazon has been based primarily on the development of relatively dry areas…the humid tropics, agricultural performance would be substantially worse than the marginal performance observed to date" [14:29]. Subsequently, "Attempts to transform the Amazon into a vast area of agricultural production at the beginning of the twentieth century….over 100 years..almost all crops failed" [14:10]. The authors of the report pay close attention to types of risk involved in implementing any type of conservation policy: implementation risk and reputational risk. The reputational risk can be mitigated by implementing policies that have less of a chance to fail. Their solution: implement a policy and have the locals monitor effects and report back to the appropriate representatives.

Soil fertility, agricultural potential, and economic viability are specific issues that the government attempts to attack head on with extractive reserves. Yet, in 2009 there was an estimated 150-200 illegal sawmills in Gurupá alone [15]. This raises some issues. First of all, logging companies

continue to strip the forest, exposing swaths of land to erosion via rainwater and low-productivity cattle rearing. So the question is: how can we mitigate any further damage? Second: laws in place currently state that reserves are meant to improve the livelihoods of the people using them by supplying people with land to sustainably collect natural resources. One must ask if the laws were effective why any issue? Is there something that was overlooked?

3.Amazonian Dark Earth:agricultural potential

Amazonian Dark Earths (ADE) are a soil type known to be anthropogenic in nature with high levels of pyrogenics (charcoal) throughout the matrix of the soil [16]. ADE soil fertility and productivity tests in the past[17-19] resulted with an increased crop production around 220%. On the other hand surrounding soils have low nutrient holding capacity, they leach nutrients quickly due to rainfall which inherently causes a low crop yield. ADE soils have been dated to "7000-50000 years ago" [5] and are still currently being used for small scale agriculture.

Slash and burn agriculture is the most common type of land management practiced today in Gurupá and across the Amazon. While this technique does add carbon to the soil the ash that accumulates on top is mostly washed away in the rain, the cycle starts again. What has been proposed in the past [22-23][5][16][18] is to understand the process of ADE composition because it is a realistic option to actually recovering the stripped land while lending a hand to the local people's livelihood. So far scientists[23-24][16] know that ADE has the characteristics because of high phosphorous and nitrogen levels (possibly human and animal excrement), household waste (Fishbones-rich in calcium) ash residue, compost, and algae[18]. Yet the most abundant element is carbon resulting in the deep black appearance (figure3). Reported at levels of up to 70% more carbon that other soils[25]. Large amounts of charcoal in the soils might also make soils more water repellant that other soil types which explains the lack of erosion observed in ADE soils.

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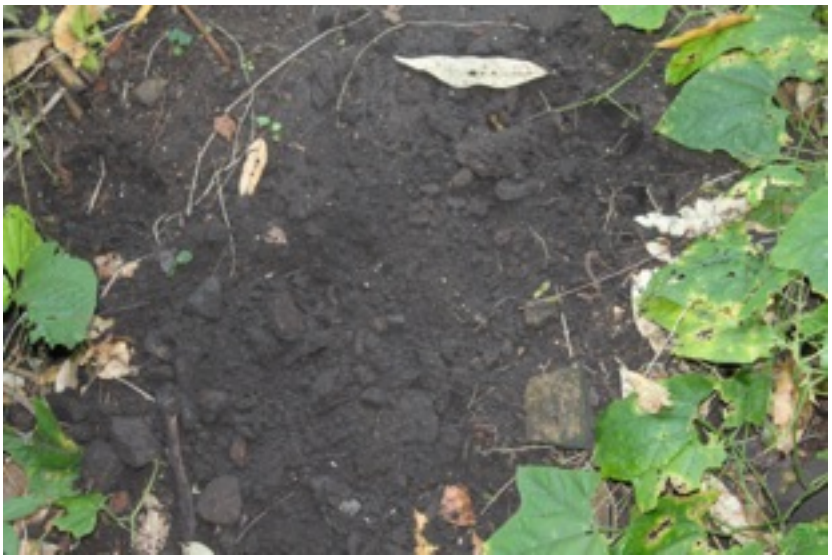

Figure 3(A): Dark Earth Soils found in Carrazedo. Photo credited to Dr. Richard Pace

As for the second issue concerning the laws, a stated above-there seems to be a disconnect between the policy makers and the beneficiaries. Law number 11.284 deals with the management of public forests for sustainable production [26]. A provision in article 2 states, “the protection of ecosystems, soil, water, biodiversity and associated cultural values, as well as public property”, Fearnside [27] acknowledges that state governments want to involve municipal governments to make sure conservation units are created where the municipal governments want. But, as pointed out earlier the number of sawmills alone suggests mill owners have more influence than the extractive farmer. The result: short-term gain from logging takes precedence over long-term conservation.

4. Conclusions

Studying the traditional cultural and ecological knowledge is a way to understand and discover the potential for sustainable resource use in the Amazon. Amazonian populations developed specific subsistence strategies that worked best within the diversity of the Amazonian ecologic niche’s [28].The European traditions of extraction for monetary gain still linger today. The primary objective of the Europeans in the past was to make a profit by exploiting the forest resources. The jesuit missions

during the seventeenth century were expected to be extract the forest resources and send any surpluses to Belém.

This is still evident today. Heavy deforestation for timber extraction,mono cropping soy beans for agribusiness, and cattle ranching compound the deforestation problem and rate. Additionally, soy agriculture is mechanized thus it does nothing to provide work. To mitigate failing fertility governments and corporation will introduce fertilizer and attempt to raise the nitrogen and phosphorous content in order to prolong the life of the soils. Groups come to these decisions based on supposed estimates instead of on-the-ground interpretations [29]. A 2011 report by the Food and Agriculture Organization of the United Nations states the expected population in 2050 of over nine billion people will need an increase of overall agricultural production by 70%. In developing countries the demand will have to double[30].

While the need to feed people is there the current practices are totally unsustainable. If we continue using the same agricultural production models the land no matter how fertile will fail. Perhaps shifting from a grand global scale of agricultural supply and demand, to a localized, micro economic, crop diversity focused model is more applicable. If western scientists and ecologists want the forest and the people to thrive then perhaps it is time to put ego aside, listen to the people, and start doing it their way.

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Conflict of Interest

The authors declare no conflict of interest

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