

Sustainable Development in a Nutshell: A Study of the Ecological Impact and Cultural Perspectives of Brazil Nut Harvesting in Southeastern Peru

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Abstract

Brazil nuts harvesting in the Peruvian Amazon has the potential to serve as a near perfect model of sustainable development. The creation of a concession system in the early 2000s by the Peruvian government led to the protection of the large Brazil nut tree as a valuable tool for both ecological conservation and economic prosperity. However, overharvesting of Brazil nut trees could lead to a decrease in young trees, leading to dramatically lowered nut harvests and potentially harming both conservation efforts and socioeconomic conditions in the region. To assess the sustainability of current Brazil nut harvest practices, an exhaustive Brazil nut sapling inventory was performed at Finca Las Piedras, a biological station located in a non-protected area of Madre de Dios, Peru. Additionally, local Brazil nut concessionaries were interviewed to expand our understanding of the environmental, economic, and social aspects of harvesting. The results suggest that Brazil nut trees in a forest with patterns of previous intensive harvest, like Finca Las Piedras, showed insufficient recruitment of young trees to maintain population levels. This is evidence that, in the long-term, overharvesting of Brazil nut trees by concessionaires could lead to a decrease in young, viable trees, potentially leading to a demographic crash of nut harvests. However, interviews with local Brazil nut harvesters also brought to light aspects of price volatility and variability of production which have the potential to undermine the economic sustainability of Brazil nut harvest in the immediate future. Although the communication of sustainable harvest practices is important for long-term ecosystem health, addressing the concerns of local stakeholders must be prioritized to ensure the sustainability and continuance of the Brazil nut harvest in the future.

Introduction

The harvest of Brazil nuts (*Bertholletia excelsa*) in the Peruvian Amazonian region of Madre de Dios has the potential to serve as a near perfect model of sustainable development. From an economic standpoint, Madre de Dios houses the approximately one million hectare ‘Brazil Nut Corridor’ of the southeastern Peruvian Amazon, in which Brazil nut trees grow at high enough densities so that the harvest of their nuts from natural forest is economically viable (Nunes et al., 2012; Willem et al., 2019).

In 2002, the creation of a system of

concessions by the Peruvian government led Brazil nut harvesting to become the third largest grossing activity in the region, with around 30,000 people relying directly or indirectly on the Brazil Nut trade (Ágreda, 1999; Flores and Kalliola, 2009). Currently, this reliance poses a unique opportunity for ecological conservation, as forests cannot be cleared due to de facto conservation status by the Peruvian government. However, in the Peruvian Amazon, the overharvesting of Brazil nut trees by concessionaires could lead to a decrease in young, viable trees which, over time, might lead to a demographic crash

and dramatically lowered nut harvests. If Brazil nut production in Madre de Dios slips below a certain threshold, it is possible that the conservation value of Brazil nut trees versus the potential for economic gain as timber or other land uses may cause stakeholders to turn to logging or forest clearing, which is of great potential detriment to conservation efforts in the region.

In this study, I explore the Brazil nut harvest's long-term viability by examining the recruitment of Brazil nut trees at Finca Las Piedras, a biological station located in the heart of the Brazil Nut Corridor. Additionally, I also conducted interviews with local *castañeros*¹ to understand their perspectives on sustainability of the regional harvest, an important step in working directly with community members to enhance the long-term viability of this important economic activity in Madre de Dios.

Methods

1.1 Historical Context

Beginning in 2002, the government of Perú (INRENA), with the help of various non-governmental organizations, negotiated formal, long-term contracts with over 1,000 Brazil nut harvesters in the Peruvian Amazon to create a system of Brazil nut concessions (Amazon Conservation Association, 2005). These concessions allow producers to harvest and sell Brazil nuts, dependent upon compliance with ecologically sustainable regulations — primarily, that Brazil nut trees are not allowed to be cut down, despite their value as a large Amazonian hardwood. The project formalized land tenure for concessionaires along the newly constructed Trans-Oceanic Highway, providing incentive for long-term management as well as an economically

viable alternative to patterns of deforestation that characterize much of the region (Amazon Conservation Association, 2005). Today, about 30,000 people, or 38 percent of the population, in Madre de Dios work in the processing, transporting, or exporting aspects of the Brazil nut industry (Ágreda, 1999; Flores and Kalliola, 2009). However, researchers have found that overharvesting, overregulation, ineffective monitoring, overlapping property rights and tenure types, and uncontrolled illegal logging are common issues in many concessions (Willem et al., 2019). Without intervention, these patterns may lead to suboptimal outcomes for concessionaires and compromise sustainable forest use in the future.

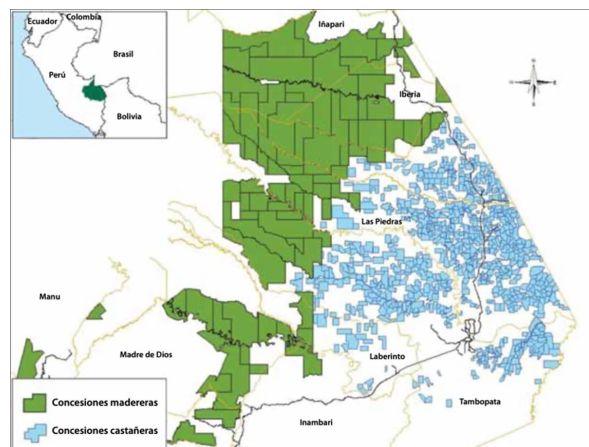


Figure 1. Map of the distribution of Brazil Nut Concessions in the Department of Madre de Dios, Perú (source: Center for International Forestry Research).

1.2 Study Site

The Alliance for a Sustainable Amazon's (ASA) field site at Finca Las Piedras (FLP; lat. -12.226°, long. -69.112°) provides a unique opportunity to study the harvest of Brazil nut trees. The field site is situated within the approximately one million hectare 'Brazil Nut Corridor' of southeastern Peru, in which Brazil nut trees grow at high densities and the harvest of their nuts from natural forest is

¹ Castañeros: Brazil nut harvesters

economically viable (Nunes et al., 2012; Willem et al., 2019). The field station's proximity to Brazil nut concessions poses a unique opportunity to study conservation efforts outside of a nature reserve, primarily in a selectively logged forest. Additionally, there is a valuable history of harvest management at FLP. Prior to ASA acquiring the property in 2016, harvest management of Brazil nuts at the property were consistent with current practices in neighboring forests; all Brazil nut trees were harvested to max capacity every year. As of 2017, ASA only harvests half of the mature Brazil nut trees on the property (about 25 individuals). Although current harvest quotas are managed sustainably, patterns of prior overharvesting have led to the current density and makeup of Brazil nut trees on the property today. The findings of this study can play a crucial role in developing conservation efforts where communities live, work, and seek to coexist with the natural world.

1.3 Brazil Nut Inventory

To complete an inventory of juvenile Brazil nut trees, twelve 100 meter transects were set up across the Finca Las Piedras property and neighboring forest. Transects were placed pseudo-randomly along a 1 km straight line running E-W along the length of the FLP border. The area sampled encompasses selectively logged forest from 25 years ago. Transects were set at 50-meter intervals and perpendicular to the 1 km border, alternating in the north and south directions. Each Brazil nut tree found within 2 meters of either side of the transect was catalogued, and diameter at breast height (in centimeters), approximate height (in meters), and light intensity (1-5) were recorded for each individual. Riley Fortier, plant ecologist and member of the ASA

Scientific Advisory Board, aided in identifying Brazil nut juveniles. In total, 4,800 m² of terra firme, or non-flooded, forest was surveyed as part of this study.

1.4 Preliminary Diagnostic Survey

To assess perspectives on sustainability of the regional harvest, a preliminary diagnostic survey was completed. Interviews were conducted with several concessionaires living and working in Madre de Dios. Questions were designed alongside Johana Reyes, community social-psychologist and Director of ASA Perú. The survey addressed concessionaire's perspectives on Brazil nut harvest within all three components of sustainable development: "economic development, social development and environmental protection" (Sachs, 2015). Interviews were confidential, and topics included quantity of annual harvest, experience with germination of Brazil nut seeds, view on long-term value of the concession, as well as presence of unsafe working conditions and child labor within concessions.

To gauge harvesting intensity, concessionaires were asked: 1) how many Brazil nut trees are on their property, 2) how many trees they harvest annually, 3) average tree production (in latas²), and 4) number of barricas³ harvested annually. Using 1) total Brazil nut trees and 3) average tree production across interviewees (3 to 6 latas) a benchmark range of average production was calculated (see equation below). After converting the benchmark range from latas to barricas, harvesting benchmark range was compared to 4) number of barricas harvested annually.

$$H: \left(\frac{3 \times N}{6} \right) \text{ to } \left(\frac{6 \times N}{6} \right)$$

where:

H: harvesting benchmark range (in barricas)

N: number of total Brazil nut trees

² Lata: bucket

³ Barrica: Sack typically used when transporting Brazil nuts to market, also useful in quantifying Brazil nut production. A typical barrica weighs 70 kilograms and is the equivalent of 6 latas, or buckets (Nunes et al., 2012).

Results

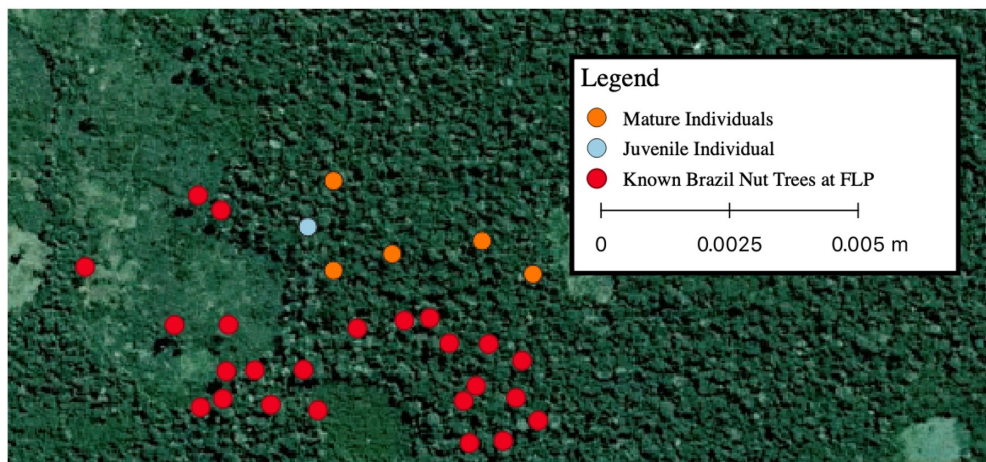


Figure 2. Map of inventory results

2.1 Brazil Nut Inventory

In 12 transects, each with an area of 400 square meters, Brazil nut trees of all ages were catalogued. In total, I found six individuals. Of these six individuals, five had diameter at breast height (DBH) ranging from 147.059 centimeters to 160.746 centimeters and were approximately 45 to 50 meters in height. All five of these individuals were classified as mature trees having a light intensity of 5, and round, woody fruits, colloquially known as “cocos” (Mori, 1992), were present at all mature trees. One individual (T12-B6) had a DBH of 17.189 centimeters, an approximate height of 25 meters, and a light intensity of 4. This individual was determined to be the only juvenile Brazil nut tree in the 4,800 meters surveyed.

Table 1. Inventory results

Transect/Individual	DBH (cm)	Approx. height (m)	Latitude	Longitude
T1				
T1-B1	146.741	50	-12.22335	-69.11326
T10				
T10-B5	147.0591674	45	-12.22515	-69.10938
T12				
T12-B6	17.18873385	25	-12.22424	-69.11376
T2				
T2-B2	160.7464925	45	-12.22508	-69.11326
T4				
T4-B3	155.9718442	50	-12.22476	-69.11212
T7				
T7-B4	154.3802948	45	-12.22451	-69.11037

2.2. Preliminary Diagnostic Survey

Interviews were conducted with five local castañeros (Brazil nut harvesters). Individuals are all men ranging from 30 to 64 years of age and work in a variety of fields, including maintenance, logging, and forestry. Individual concessions range in size from 480 to 860 hectares, with 80 percent of interviewees inheriting concessions from family members who also harvested Brazil nuts. The following sections correspond with the three pillars of sustainable development used as a framework for this diagnostic survey.

2.2.1. Environmental protection

From the harvesting benchmark range assessment, no castañero interviewed was found to utilize intensive harvest practices. In fact, 60 percent of interviewees routinely underharvest their concessions.

Table 2. Environmental protection section results (see Appendix for questions)

Environmental Question	Castañeros				
	C1	C2	C3	C4	C5
Harvesting intensity	Average	Low	Low	Low	Average
Harvest every coco?	No	No	No	No	No
Commonly see agouti?	Yes	Yes	Yes	Yes	Yes
Commonly see young Brazil nut trees?	Yes	No	Yes	Yes	Yes
Germinated/planted Brazil nut trees successfully?	No	No	Yes	No	Yes
Interested in learning how to germinate/plant?	Yes	Yes	N/A	Yes	N/A
Used for agriculture?	Yes	Yes	No	Yes	No
Used for logging?	Yes	Yes	No	No	No

With regards to production in the future, every individual commented on variability of production. Overall, three out of five castañeros believe production will stay the same in the future; the other two believe production will decrease, stating that every year their harvest decreases little by little.

Harvest typically lasts from January to April, with some concessionaires starting in December. One castañero commented that he only harvests for thirty days starting in February, due to the danger of falling cocos. All concessionaires commented that they leave some cocos unharvested for various mammals, particularly the agouti, which is commonly seen on property by all concessionaires interviewed. Four of the five interviewees also commonly see naturally regenerating young Brazil nut trees. When asked if they have ever germinated or planted their own castañas⁴, only two had successfully planted producing trees; one individual learned as part of his job as a forestry engineer and another as part of a government program. Those who had not successfully germinated or planted their own castañas all expressed interest in the activity, as well as reforestation of Brazil nuts in general.

Only two of the concessions are used solely for the Brazil nut harvest; three of the five castañeros have small agricultural plots (cacao, banana), and two of those three also selectively log their

forest. Of the two concessionaires who selectively log their concessions, both started very recently. When asked how much wood is being taken from concessions each year, one individual answered that it depends; the amount of wood taken must be in accordance with an annual plan created with a forestry engineer that marks profitable trees with a code, which can thus be tracked throughout the supply chain. The second individual estimated that ~130,000-150,000 cubic feet of wood is logged annually. Both answered that only maderacorriente⁵ is logged from the concession: misa, zapote, itauba, etc.

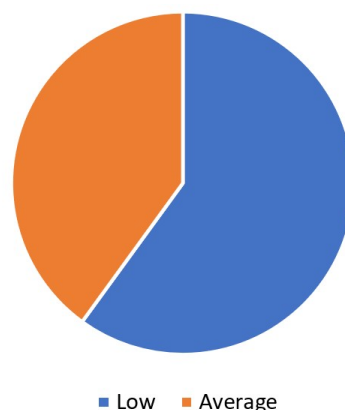


Figure 3. Individual harvest intensity, based off harvesting benchmark range assessment

2.2.2. Economic development

When it came to the question of selling shelled or unshelled Brazil nuts, results were mixed. Three of castañeros interviewed sell their Brazil nuts unshelled,

⁴ Castañas: Brazil nut trees

⁵ Madera corriente: commonwood

citing less work for them and higher demand for unshelled nuts by shelling companies. The remaining two castañeros who shell their Brazil nuts stated they did so for the higher market price. Additionally, no concessionaire interviewed has a certification (i.e., a “sustainable” or “organic” certification from a third-party). Most interviewees were interested, citing that a certification would be useful to increase profitability. Two of the concessionaires mentioned the difficulty in procuring a certification, as it is customary for the businesses which sell Brazil nuts — bought from individual castañeros — to obtain the certifications instead.

Three of the castañeros interviewed said the harvest production will decrease in the future, with one individual citing the cause as continued destruction of the environment. One individual answered that the production will increase, citing increasing popularity of reforestation initiatives. One answered production will stay the same. When asked about earnings from their harvest, all concessionaires mentioned price volatility, with many citing variations in price as a problem or drawback of harvesting. However, all concessionaires answered that they hoped their children would continue the harvest if they children so choose.

2.2.3. Social development

Responses for individuals needed

for the harvest ranged from three to eight individuals. Except for one interviewee, all concessionaires categorized the harvest as a family activity. Of those four concessionaires who utilize family to harvest, two of those individuals will also occasionally contract workers to come and help. Of the three interviewees that contract others to come and help with the harvest, all said the workers come as individuals and do not bring their families.

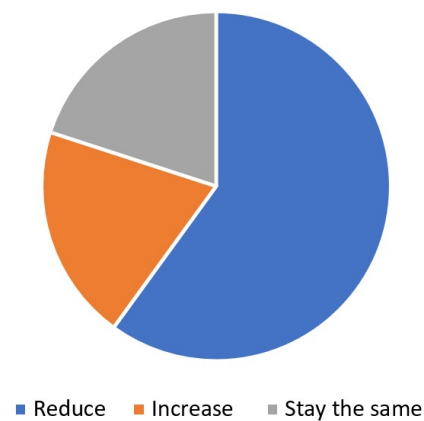


Figure 4. Prospective on future harvest production

Two of the castañeros said their standard equipment for the harvest includes cascós, due to the danger posed by falling cocos. The other three individuals do not use hard hats, mentioning that the protective equipment is not customary in this region. Only one individual said young children typically open the cocos, an activity which utilizes a machete.

Table 3. Economic development section results (see Appendix for questions)

Questions	Castañeros				
	C1	C2	C3	C4	C5
Shelled or unshelled?	Shelled	Shelled	Unshelled	Shelled	Unshelled
Certification?	No	No	No	No	No
Interested in a certification?	Yes	Yes	No	Yes	Yes
Perspective on future production?	Reduce	Increase	Stay the same	Reduce	Reduce
Positive or negative response on annual earnings?	Negative	Positive	Neutral	Negative	Positive
Hope children continue harvest?	Yes	Yes	Yes	Yes	Yes

Table 4. Social development section results (see Appendix for questions)

Questions	Castañeros				
	C1	C2	C3	C4	C5
Family activity?	Yes	Yes	Yes	Yes	No
Pay others?	Yes	Yes	No	No	Yes
Use <i>cascos</i> ?	Yes	No	Yes	No	No
Young children participate?	No	No	No	Yes	No
Young children open <i>cocos</i> ?	N/A	N/A	N/A	Yes	N/A

Discussion

After completing the inventory of FLP, I found that there are insufficient juvenile Brazil nut trees in the forest to maintain population levels. A 2007 study on regeneration in exploited Brazil nut populations found that, in forests deemed able to maintain population levels, densities of *B. excelsa* seedlings varied between 1.3 to 12.4 individuals per hectare, with 2.0–6.1 seedlings (<150 cm height) per reproductive adult (Wadt et al., 2007). Within the 4,800 square meters surveyed, no seedlings were identified, and only one non-reproductive juvenile was identified. This lack of natural regeneration within intensive-use forest is consistent with findings in Peres et al., a study conducted throughout the Amazon that found only Brazil nut tree populations with light or recent harvesting contain large numbers of juvenile trees (2003). A similar conclusion was reached in a study by Cornejo, which reported below average Brazil nut tree density in the Tambopata and Tahuamanu regions due to long-term overharvesting (2001).

This lack of natural regeneration can, in part, be attributed to the specific seed dispersal biology of *B. excelsa*. Besides humans, the only organism suited for seed dispersal of Brazil nuts is the forest rodent *Dasyprocta spp.*, commonly known as the agouti (Mori and Prance, 1990; Wadt et al., 2007). Agoutis open the woody *cocos*, consuming some seeds and storing others underground; seeds which remain

buried — and undisturbed by agoutis or other organisms —germinate (Scoles and Gribel, 2015). Current intensive harvest practices leave little for agoutis to consume or disperse. The Brazil nut tree recruitment's dependence on the agouti means that hunting of the rodent is also detrimental to natural regeneration (Scoles and Gribel, 2015). The presence of agoutis was not considered in this study, but another study could be done estimating the abundance and dispersal network of *cocos* by agoutis at FLP.

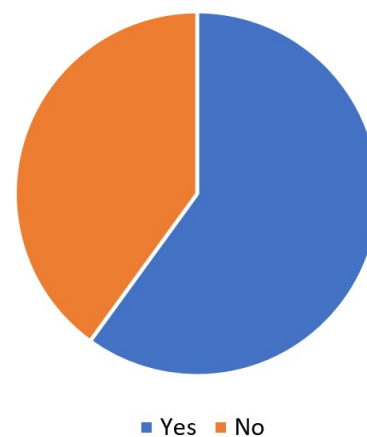


Figure 5. Use of cascos, or hard-hats, throughout the harvest season

Contrary to findings from the inventory, findings from the preliminary diagnostic survey suggest overharvesting is not prevalent among the concessionaires interviewed. When asked how many trees are harvested annually, each castañero answered the same: all trees that produce. However, from the benchmark harvest range assessment, which extrapolated an

average benchmark range for production based off total number of trees, average production per tree, and number of barricas harvested annually, it is clear none of the concessionaires interviewed are overharvesting their concessions. Due to a long history of harvest for all interviewees, production measurements are deemed to be accurate; a 2017 study done across the Peruvian Amazon found that productivity estimates given by harvesters can complement and even replace actual measurements in cases where harvesting occurred regularly over the course of years and decades (Valdivia et al., 2017).

Although overharvesting was not prevalent among concessionaires interviewed, many comments reflect increasing concern for economic and social sustainability. For example, a common theme from all interviews was the price volatility of the Brazil nut. When asked about earnings from their harvest, all concessionaires mentioned price volatility, with many citing variations in price as a problem or drawback of harvesting. On the global market, the price of Brazil nuts is usually set by larger Brazilian or Bolivian enterprises; because Peru is only a minor exporter of Brazil nuts, Peruvian companies often take on the role of “price-taker” in the international context (Kalliola and Flores, 2011). To insulate stakeholders from routine price volatility, a payment mechanism based off ecosystem services could be implemented. This solution is discussed in a 2011 study by Kalliola and Flores, which argues for ecosystem services payments to ensure concessionaires can stay above the minimum profitability threshold. Payment for the positive externalities provided by preserved forest, like maintaining biodiversity, supporting ecosystem services, and/or preserving indigenous cultures, helps internalize the monetary value of an intact forest (Kalliola

and Flores, 2011).

The idea of a payment mechanism to internalize value of intact forest was also mentioned positively by interviewees. When discussing selective logging within the concession, one castañero commented that, since the Brazil nut harvest is a seasonal activity with varying annual production, he is forced to participate in logging to make a living. However, he would be happy to stop logging his forest if the government would provide some sort of subsidy or payment program to offset costs. Some studies suggest these payment programs for the sustainable management of Brazil nut concessions could contribute to a 42–43 percent reduction in deforestation in Madre de Dios by 2050 (Nunes et al., 2012). Such programs could be channeled through current funding for Reducing Emissions from Deforestation and Forest Degradation (REDD+) initiatives. Although the implementation of REDD+ projects in Peru have been somewhat controversial, funds could be reallocated to reduce barriers to transport, certification, and commercialization of the Brazil nut industry in Madre de Dios (Nunes et al., 2012).

Another avenue for price stability would be to make the certification process more accessible to Brazil nut harvesters. The investment in obtaining an organic or sustainable certification may be rewarded by consumer markets in importing countries (Kalliola and Flores, 2011; Nunes et al., 2012). Although most castañeros interviewed as part of this study expressed interest in obtaining a certification, they also mentioned the difficulty in procuring a certification. It seems customary for the businesses which buy Brazil nuts from individual castañeros to obtain sustainable certifications. Research into the logistics and validity of available certification processes should be done, in hopes of

increasing the accessibility of certifications for individual harvesters.

In a 2019 study done in Madre de Dios, researchers found that, over time, castañeros perceived a lower value of Brazil nuts as well as lowered interest in their children becoming future concessionaires (Willem et al., 2019). This sentiment was not found in interviews conducted. Rather, the continuance of this economic activity is highly valued by local stakeholders. Differing cultural and socioeconomic factors across such vast land area may mean that concessionaires interviewed place higher value on Brazil nut trees and involvement in the activity by their children. Consistent with findings in interviews conducted, many concessionaires have expressed interest in the germination of Brazil nut trees with ASA directors (Dr. Gallice, pers. comm.), reflecting an interest in prolonged continuance of the activity.

From interviews conducted, there is some evidence of concern for social sustainability. Although missing school does not apply here — the Brazil nut harvest typically occurs over school holidays — dangerous working conditions within concessions is a concern for young children. Although only one interviewee stated that young children are tasked with opening cocos, which typically utilizes a machete, children's exposure to potentially hazardous working conditions throughout the Brazil nut harvest is an important topic that requires more research. Additionally, a majority of castañeros interviewed do not typically use “cascos” (hard hats) during their harvest. Two of these individuals cited that the use of “cascos” is not customary in the region, although all admitted the use equipment to protect against falling cocos is best-practice, even obligatory.

To build on these findings, another study could be done to compare Brazil nut

recruitment differences between the field and the forest. Multiple interviewees commented on differences in natural recruitment of Brazil nuts, noting that there is typically a higher incidence of young Brazil nuts in regenerating, secondary forest and in fields outside of the forest. Often, Brazil nut trees found in the field are not harvested due to the difficulty in finding and collecting of cocos in tall grass. Admittedly, Brazil nut trees are also a light-demanding species (Mori and Prance, 1990), and the abundance of light in the field versus sparsely available light gaps of the forest could also be a key factor in disparities between recruitment in the two locations. Still, the differences in harvest management practices between the two environments could add valuable insight to the question of the influence of harvest management on Brazil nut demographics.

Immediate implications for this study include informing current education projects, including ASA's next castañero outreach project. For example, of the three individuals who did not have experience successfully germinating or planting Brazil nut trees in their concessions, all expressed interest in learning how to germinate and plant their own trees. ASA's current outreach project centers around empowering concessionaires to germinate and plant castañas on their own properties, with goals to ensure the viability of Brazil nut harvest for years to come, strengthen ecological conservation efforts in the region, and increase the likelihood of sustainable economic prosperity for concessionaires and their families. Additionally, a report of key findings will be sent out to all interviewees (see Appendix: Resumen para Castañeros).

In summary, recruitment of Brazil Nut trees in transects spanning overharvested terra firme forest was found to be insufficient to maintain population

levels. These findings are evidence that, in the long-term, overharvesting of Brazil nut trees by concessionaires could lead to a decrease in young, viable trees, potentially leading to a demographic crash of nut harvests. This potential demographic crisis could jeopardize the conservation efforts in the Peruvian Amazon. Interviews conducted with castañeros prove the long-term viability and continuance of this economic activity is highly valued by local stakeholders. But rather than the long-term impact of overharvesting, aspects of price volatility and variability of production have the potential to undermine the economic sustainability of this activity in the immediate future. Even above prioritizing the communication of sustainable harvest practices, addressing the concerns of local stakeholders is paramount to ensuring the sustainability of the Brazil nut harvest in the future.

Acknowledgments

I am grateful to the Alliance for a Sustainable Amazon for the opportunity to study this important keystone species of the Peruvian Amazon, with special thanks to Johana Reyes for facilitating and advising on interview protocol and analysis; to Geoff Gallice for helping to develop the inventory methods; to Riley Fortier for aiding in identifying *B. excelsa*; and to Consuelo Alarcón and José Cueva-Santos for helping with translation, interview preparation, data analysis, and many invaluable discussions along the way.

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Supplementary Material

Appendix I: Abstract for Brazil nut harvesters in Spanish.



ALIANZA PARA UNA
**AMAZONÍA
SOSTENIBLE**

Mi proyecto: La Cosecha de Castaña en Madre de Dios

Lauren Apollaro

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Para mi proyecto, entrevisté a 5 castañeros que viven y trabajan en Madre de Dios. El objetivo de mi proyecto fue entender si la forma en que se trabaja la castaña actualmente garantizará que esta actividad siga generando dinero en el futuro.

5 castañeros
entrevistados



Cada castañero tiene
entre 180-870
arboles de castaña



Cada uno cosecha
entre 45-360 barricas
cada año

45-360

Cada árbol da entre
3-6 latas



Sobre hacer una cosecha sin accidentes, ¿qué dijeron los castañeros sobre los equipos de seguridad?

- Todos los castañeros entrevistados usan canastas, botas, y machetes para la cosecha. Solo dos usan cascos. Los otros dijeron que es una buena idea usar cascos para su seguridad, pero no es una costumbre en la región.

Sugerencia: Para una cosecha segura, es necesario que todos usen sus equipos de protección de seguridad y salud. Sería importante que desde el Estado se pueda capacitar a los castañeros en el uso correcto de los equipos de protección.



Sobre la reforestación en las concesiones, ¿qué dijeron los castañeros sobre germinar y plantar castaña?



- Los castañeros me comentaron que es muy difícil germinar y plantar sus propias castañas. Sin embargo, todos los castañeros quieren aprender como hacerlo. Sólo dos castañeros dijeron haber plantado castañas con éxito en el pasado.

Sugerencia: Las capacitaciones para enseñar a germinar y plantar castañas son importantes en los esfuerzos de reforestación en las concesiones y para asegurar la continuidad de una cosecha productiva.

Sobre la venta de castañas, ¿Se venden más en cáscara o pelada?

- Tres de los cinco castañeros venden sus castañas en cáscara porque es más fácil. Los otros venden las venden peladas porque el precio es más alto.

Sobre las certificaciones, ¿Piensan que son útiles?

- Ninguno de los castañeros tiene una certificación especial, como una certificación “sostenible” u “orgánica”. La mayor parte de ellos me dijeron que quieren una certificación, pero que es difícil recibir una. Es más común que las empresas que compran castaña tengan una certificación y no los castañeros.

Sugerencia: Las ganancias de la cosecha serían mejor si los castañeros pueden obtener una certificación. Pero, las certificaciones tienen que ser más fáciles de obtener.



¡Gracias por ayudarme con mi proyecto!

Si tiene preguntas puede escribirme al WhatsApp:

Para aprender más sobre como germinar y plantar castaña: