SURVIVAL AMIDST COVID-19 PANDEMIC: CONTRIBUTIONS OF THE FOREST TO THE LIVES OF THE FILIPINOS

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SURVIVAL AMIDST COVID-19 PANDEMIC: CONTRIBUTIONS OF THE FOREST TO THE LIVES OF THE FILIPINOS. COVID 19 has brought significant damage to the lives of the people due to extremely long lockdowns and unemployment. Thus, leaving no choice to the residents and forcing them to rely on what is available in the environment. This study was conducted to assess the contribution of the forests to the lives of the locals in Aurora through a survey on 161 respondents. Data were analyzed through descriptive statistics including frequency, mean, rank, and percentage. Results showed that 100% of the respondents depend on the forests for their food which includes fruits and vegetables in the wild and on their farms located in and along the forest. Meanwhile, 116 individuals (72%) obtained livelihood from the forest in times of the pandemic in the form of labor, farming, selling of forest goods, charcoal making, and furniture making. Generally, the individual income obtained from forest ranged from Php500.00 (8.85 USD)to Php25,000.00 (442.65 USD) and an overall mean individual monthly income of Php4,084.19 (72.32 USD). Each type of livelihood activity provided a mean monthly income ranging from Php 4350 (USD 77.02) to Php 9021 (159.73 USD) per person. However, the respondents faced challenges such as loss of products due to theft, the limited number of consumers, and struggles concerning the health of the workers especially the elders, disabled, and other high-risk individuals to COVID-19. The government must consider providing needs (financial, technical, knowledge) to the locals in obtaining products and services from the forest for sustainable utilization of the resources. This research dictate the importance of forest as a source of life to the people. Thus, the result of this study may be used as a baseline for the government in crafting policies to help ensure sustainability of the forest and the lives of the society.

Keywords: COVID-19, forest services, food source, livelihood, Philippine forest

KEBERLANGSUNGAN HIDUP DI TENGAH PANDEMI COVID-19: KONTRIBUSI HUTAN TERHADAP KEHIDUPAN MASYARAKAT FILIPINA. COVID-19 memiliki dampak yang signifikan terhadap kehidupan masyarakat yang antara lain disebabkan oleh lockdown panjang dan pengangguran. Keadaan ini memaksa masyarakat untuk bergantung pada apa saja yang tersedia di lingkungan sekitarnya. Kajian ini dilakukan untuk mengukur kontribusi hutan terhadap kehidupan masyarakat lokal di Aurora dengan menggunakan survey dari 161 responden. Analisis data menggunakan statistik deskriptif. Hasil studi menunjukkan 100% responden bergantung pada hutan untuk memnuhi kebutuhan makanan, yang terdiri dari buah dan sayuran yang tumbuh liar maupun yang dihasilkan dari ladang mereka yang terdapat didalam maupun sekitar hutan. Sementara itu, 72% responden selama pandemi juga melakukan kegiatan di hutan sebagai sumber mata pencaharian seperti bertani, menjual produk hasil hutan, membuat arang, membuat furniture, dan bekerja sebagai buruh. Secara umum, pendapatan individual yang diperoleh dari hutan antara 500,00 peso (8,85 US dolar) - 25.000,00 peso (442,65 US dolar) dengan rata-rata pendapatan per bulan 4084,19 peso (72,32 US dolar) per orang. Pendapatan per bulan rata-rata setiap jenis pekerjaan berkisar 4350 peso (77,02 US dolar) - 9021 peso (159,73 US dolar) per orang. Namun, para responden menghadapi tantangan seperti kehilangan produk karena pencurian, jumlah konsumen yang terbatas, dan masalah yang berkaitan dengan kesehatan pekerja, terutama golongan lansia, disabilitas, dan individu -individu lain yang masuk dalam golongan resiko tinggi terpapar COVID-19. Pemerintah wajib memberikan masyarakat lokal bantuan (finansial, teknis, dan pengetahuan) yang diperlukan untuk memanfaatkan

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sumberdaya hutan secara berkelanjutan. Penelitian ini menerangkan pentingnya hutan sebagai sumber kehidupan bagi masyarakat. Hasil kajian ini dapat digunakan sebagai dasar bagi pemerintah dalam menyusun kebijakan untuk membantu menjamin kelestarian hutan dan kehidupan masyarakat.

Kata kunci: COVID-19, jasa hutan, sumber makanan, sumber pencaharian, hutan Filipina

I. INTRODUCTION

The occurrence of the COVID-19 pandemic dramatically affected the lives of the people globally. The pandemic was brought by SARS-CoV-2, a coronavirus which was reported to originate from Wuhan, China in the late 2019 (World Health Organization, 2020). To address the problem, lockdowns were imposed in many countries in the world (Meo et al., 2020). Despite the efforts to prevent the spread of the virus, an increasing number of cases still emerged causing the lockdowns to be extended and officially declaring a global pandemic. Pandemic has caused death, business firms close, unemployment, and other economic challenges (Elliott et al., 2020); Blustein et al., 2020; Koh et al., 2020).

In the Philippines, the pandemic did not just exacerbate the situation of the economy and poverty but it also brought panic, trauma, and depression about their health and survival (Tee et al., 2020). The first lockdown was imposed in the country on March 2020 and until now, the people are not 100% free to roam as alert levels (classifications of restrictions on activities based on number and severity of COVID cased in the area) are still observed due to the rise in the numbers of cases of other COVID-19 variants (Hapal, 2021; Ocampo et al., 2020;). This has also caused closure of many businesses, high unemployment rate, and a significant decrease of GDP growth by 16.5% making the Philippines experience the largest decrease in GDP growth among all countries in the Association of Southeast Asian Nations (ASEAN) (Chong, Li, & Yip, 2021). The Philippine government has crafted programs and policies to help the marginalized and low-income families. Some of these programs were the provision of relief goods and Social Amelioration Program (SAP) aiming to distribute 206.6 billion Philippine pesos (£2.94 billion; $4.08 billion; €3.49 billion) to 18 million low-income families (Chiu, 2021. Yet these aids are mostly only one time or short-term. The Filipino people need a more stable and long-term help from the government to really survive amidst the pandemic such as livelihood and employment. In the rural areas where forests are abundant, food and livelihood are easily accessible). The Philippines is rich in forest resources, hence it has great ability to help in people's survival and recovery from the impacts of COVID-19. In other countries, forest livelihood and green recovery from COVID-19 are being prioritized (Basnyat et al., 2020; Saxena et al., 2021; Walters et al., 2021.

In the Philippines, one of the most affected provinces is Aurora due to its limited hospitals and weaker healthcare facilities. Aurora is a famous tourist destination due to its beautiful beaches and surfing experience (De Vera, 2019). Due to the pandemic, the province was forced to close access for millions of tourists, thus, affecting its main source of income, tourism. People who depend on tourism for their daily needs and survival was left with nothing. Hence, utilizing what is available in the environment to consume. This study was performed to assess the contribution of the forests to the lives of the locals in Aurora specifically in Barangay Nonong Sr. in the municipality of San Luis. There were very limited study tackling the role of forest for survival amidst COVID-19 especially in the Philippines. This will be a pioneer study about the role of forest in assuring people's survival amidst pandemic in the Philippines.

The results can give ideas to the government and non-government organizations on how they can help marginalized sector by sustainably utilizing the natural resources.

II. MATERIAL AND METHOD

The study was conducted in Barangay Nonong Sr., San Luis, Aurora in the Philippines (Figure 1). It is a *barangay* (smallest government unit) situated near the upland forests of the municipality. It is situated at approximately 15.6807 N, 121.4858 E with an estimated elevation of 291.2 meters or 955.4 feet above mean sea level (PhilAtlas, 2022). The area belongs to the 12,000-ha San Luis Watershed which covers two municipalities, Baler and San Luis in Aurora province (CENRO Dingalan et al., 2021). The watershed includes closed and open forests, perennial and annual crops, built-ups, and inland water. Dominant species in the area were *Shorea palosapis* (Blanco) Merr., *Ficus nota* (Blanco) Merr., and *Pterocarpus indicus* Willd. In terms of socio-economic status, the people's main sources of livelihood are farming and providing labor/service. The data gathering was conducted in a span of five months (June to October 2021).

The study utilizes the descriptive method to assess the contribution of forest to lives of the respondents amidst the pandemic. One-hundred and sixty-one (161) respondents were included in the study. The respondents were obtained based on snowball or chain-referral sampling to be able to exhaust the individuals that benefit from the forest, especially during the COVID-19 pandemic.

A survey using questionnaire was performed to know the roles of forest in providing food and livelihood as well as the challenges encountered in obtaining goods and services from the forest.

To analyze the collected data, descriptive statistics such as frequency count, mean, percentages, and ranking was utilized. Frequency and percentage were used to compute the portion of the respondents who benefit from the forest in terms of livelihood and food. Frequency count and ranking was also employed to know the most dominant forest livelihood activity and food. Mean computation and ranking was used to assess the monetary contribution of the livelihood to the residents.

Data Source: Google Maps

Figure 1. Location map of the study site

III. RESULT AND DISCUSSION

A. Respondents of the Study

The respondents were composed of 126 males (78.26%) and 35 females (21.74%). In terms of age, there were 17 respondents from 15 to 30 years old (10.56%), 59 from 31 to 45 years old (36.65%), 51 from 45 to 60 years old (31.68%), and 34 from above 60 years old (21.12%). In terms of residency, 71 respondents (44.10%) have been living in the area for more than 40 years , while the rest of them have been staying for a relatively shorter period. The livelihood of the people mainly comes from farming (21.74%) and providing labor works (37.89%) with a total of 96 individuals. The other livelihood sources were selling fruits, vegetables, and fish (23 individuals or 14.29%), being public servants/ officials (16 individuals or 9.94%), and other income sources (17 individuals or 10.56%) such as fishing, working in the office, owning a store, and making non-timber forest products. The remaining 9 individuals were housewives (5.59%) whose husbands and family members work with forests and related natural resources. Educational attainments of the participants were not disclosed but according to the Integrated Watershed Management Plan of San Luis, the majority of the people there are high school and elementary graduates only (CENRO Dingalan et al., 2021).

B. Forest as Food Source

All 161 respondents (100%) stated that they gather food from the forest during the pandemic. There are 44 types of forest food consisting of 32 agroforestry crops (72.73%) and 12 tree fruits/leaves (27.27%). The ten most consumed forest food were all agroforestry crops (Figure 2). The eggplant had the highest response obtained from the forest with 52 responses. According to the residents, they planted their crops inside, along, or near the forest together with their fruit trees. They stated that through this, they can meet their daily necessities even without spending money due to unemployment. The result of this study conforms with the findings of two studies in Nepal where forests also played a significant role in food provision highlighting the value of indigenous food systems (e.g., food from the river, agricultural crops, fruits, and many other biodiversity-linked resources) as a response to the food concerns amidst the pandemic (Gentle et al., 2020; Zavaleta-Cortijo et al., 2020).

C. Forest as Source of Livelihood

Of all the respondents, 116 (72%) gained livelihoods from the forest during the pandemic while 45 (28%) did not. These livelihood activities include charcoal making, farming, furniture making, labor, and selling forest goods (Figure 3). Labor and farming were the most dominant livelihood activity in the area with 60

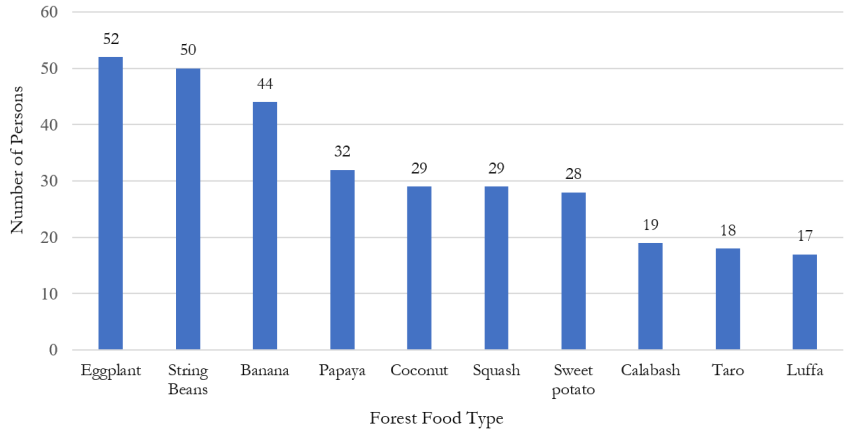

Figure 2. Top 10 forest food gathered from the forest by respondents

and 46 responses, respectively. Labor includes working on forest farms, and harvesting and processing forest products. Meanwhile, farming includes the establishment of agroforestry farms inside or near the forest. This result is in accordance with the studies of McNab in 2021 and Tripathi and colleagues in 2021 which highlighted the massive contribution of forest farming, agroforestry, and the co-produced livelihood (i.e., labor) to the lives of the upland/forest dwellers and small and large-scale farmers (McNab, 2021); Tripathi et al., 2021). There was also charcoal making which was generally perceived as environmentally unfriendly. However, the people stated that they only used fallen trees and branches, and coconut husk for the process which do not harm living trees in the ecosystem. It coincides with the charcoal-making practices in Quezon, Philippines performed sustainably which allows the trees in the area to replenish (Inzon et al., 2016), but it is different from the study result in Mozambique where the charcoal making was done unsustainably resulting in forest degradation and decrease in biodiversity (Sedano et al., 2016).

The study also revealed an individual monthly income from the forest ranging from Php500.00 (8.85 USD) to Php25,000.00 (442.65 USD) and a mean monthly income of Php4,084.19 (72.32 USD) per person. When compared with the domestic minimum wage in the area, which is Php4,000.00 (70.80 USD) (DOLE, 2022), the benefits they obtained from

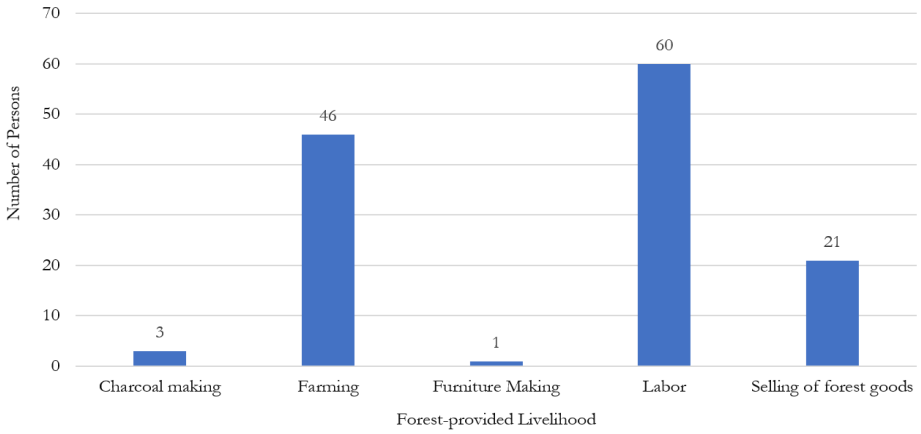

Figure 3. Forest livelihood in Barangay Nonong Sr.

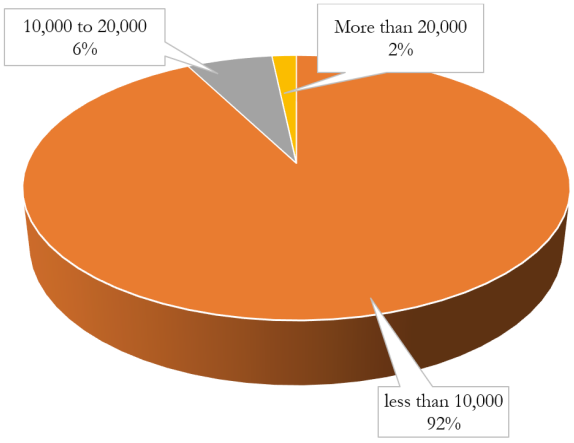

Figure 4. Mean monthly income of the respondents earned from forest livelihood

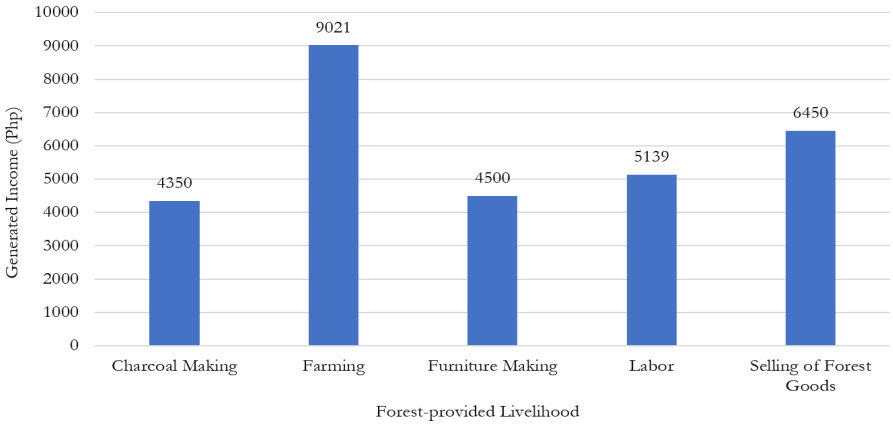

Figure 5. Mean monthly income per person per forest livelihood type

the forest are considerably helpful to survive and provide for their daily needs. Moreover, the income that the people obtained from the forest alone (approximately 2.36 USD per day), excluding their other sources of income, helped them exceed the poverty line measure of the World Bank which is 2.15 USD per day (World Bank, 2022). It was also found that the majority of the respondents (107 or 92%) only earn less than Php10,000 (17.7 USD) a month while the remaining 8% earn more than Php10,000.00 (17.7 USD) (Figure 4). In Figure 5, the mean individual monthly income from forest showed that farming had the highest contribution of 30.62% equivalent to Php9,021.00 (159.69 USD) while the lowest was charcoal making with 43.77% or Php4,350.00 (77 USD). The respondents thankfully stated that the income they gain from the forest is enough to fulfill their daily needs and the cost of education for their children amidst the pandemic. This result can be compared with the study of Wiebe and colleagues in 2022 in the Philippines where the mean monthly income generated by the household in forest livelihood ranged from Php3,143.30 (55.64 USD) to 17,781.00 (314.76 USD) (Wiebe et al., 2022).

D. Challenges Encountered in Obtaining Forest Livelihood During Pandemic

The respondents voiced out the challenges and issues they faced in gaining livelihood amidst covid 19 pandemic. These were loss of products due to theft, limited number of buyers and consumers, and struggles concerning physical health of the workers especially the elders, disabled, and other high-risk individuals to COVID-19. These issues especially theft and competition has been reported in several studies even before the pandemic has started (Hayama, 2003; Conrad & Grove, 2020), but the pandemic exacerbate the situation due to difficulty to go out especially if an individual is vulnerable. The lockdown in the country encourages them to stay at home to avoid being exposed to the coronavirus (Prasetyo et al., 2020). Thus, preventing them from obtaining livelihood outside their home out of fear to bring danger to their entire family's health

IV. CONCLUSION

Despite the presence of COVID-19 that led to the unemployment of many people in Aurora, Philippines due to the shutdown of tourism activities, they were able to survive because of the forest. All respondents depend on the forest for their food which is essential for their daily survival. Their agroforestry farms helped them in producing crops such as eggplant, string beans, banana, papaya, and coconut. The forest also significantly provided income that supported the people to meet

other needs including education for their children. These livelihood activities include labor, farming, charcoal making, furniture making, and selling of forest goods. They stated that they practice sustainable utilization of the forest resources especially in charcoal making which is considered as a destructive practice. Despite several livelihood potential that can be contributed from the forest, there are certain challenges they need to handle even before the pandemic including loss of products due to theft, limited number of buyers and consumers, and struggles concerning physical health of the workers. This resulted in limited opportunities for them to maximize gaining income forest livelihood. To overcome those challenges, the government can provide the people with financial support, technical trainings, comparative studies and involve them in learning discussions at the local level to increase their knowledge about sustainable natural resources management. . These will help them to improve and sustain their forest livelihoods even after the pandemic so that they will have other sources of income in addition to jobs related with local tourism. They can also consider prioritizing forest resources as a tool for "green recovery" on the impact of the COVID-19 pandemic. Add some explanation of the research results for future research.

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