Inventory of Some Fungi Species in Laligan Falls, Laligan, Valencia City, Bukidnon

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DOI: https://doi.org/10.56293/IJASR.2022.5499

IJASR 2023
VOLUME 6
ISSUE 1 JANUARY - FEBRUARY **ISSN: 2581-7876**

Abstract: The study investigated the macroscopic fungi in Laligan Falls Laligan, Valencia City, Bukidnon. Specifically, it aimed to determine the species richness of fungi in the study area; describe, classify, and identify the fungi species in relation to Family, Genera, and Species; and ascertain which species of fungi are have medicinal value. Quadrat methods were employed in the study. The researchers laid out a 20m x 20m quadrat plot on each side of the falls. A total of 37 species were collected and photo-documented. Of these 21 species were identified, belonging to Class Basidiomycetes and Class Ascomycetes, and 16 species are unidentified. Among the twenty-eight fungi species, 8 species have therapeutic potential. Further results show that the Polyporaceae family had the most species collected. Altitude greatly influences the distribution the fungi, with lower altitudes having fewer fungi than higher altitudes. To evaluate the species diversity, more field research must be scientifically studied in relation to the physical parameters and other vegetation types.

Keywords: Fungi, Species Richness

1. Introduction

Fungi were classified as plants when all species were classified as either animals or plants. They get their nutrients from a variety of sources, including the breakdown of both animal and plant remains (saprophytes). As a result, they contribute to ecosystem balance, nutrients, and carbon cycling, and are now acknowledged as a separate kingdom from both animals and plants (Jyunichi et al., n.d.). Plant pathologists, agronomists, and plant regulatory officials, among others, who continue to face diseases caused by previously unknown or understudied fungi, need to be aware that many new species have yet to be discovered (Rossman & Hawksworth, 2007).

Fungi can be found all over the world and can grow in a variety of environments, including deserts. The majority of species thrive in terrestrial conditions, although a few exist exclusively in aquatic environments. The majority of fungi grow in soil or dead matter, and they have symbiotic connections with plants, animals, and other fungi. In terrestrial ecosystems, fungi, together with bacteria present in the soil, are the principal decomposers of organic matter. The decomposition of dead organisms returns nutrients to the soil, and the environment ("Fungi", 2021).

Although we commonly think of fungi as disease-causing organisms that destroy food, they are essential to human survival on many levels. Fungi, as we have seen, have a major impact on human populations since they are a part of the nutrient cycle in ecosystems. These are the reasons why there is a need to study fungi: Fungi can improve Microfluidic systems, which are well-suited for investigating mixed biological communities for enhancing industrial processes such as fermentation, biofuel production, and pharmaceutical manufacture (Millet et al., 2019), aquatic fungi can be found in lentic environments. They interact with other creatures, impacting food web dynamics, and play potentially essential roles in nutrition and carbon cycling. The development and application of molecular technologies have substantially expanded the possibilities for understanding fungi's biodiversity and ecological significance in lake environments (Wurzbacher, Barlocher, & Grossart, 2010), and fungi and fungal compounds are also used to make fermented meals, which have better storage stability and health benefits.

Climate change will put more strain on agricultural production and productivity, and one possible response is to use fungi as a new generation of agricultural inoculants to produce more robust, nutrient-efficient, and drought-tolerant crop plants. However, much more research is needed to fully leverage fungi's potential supply what is necessary, and address important global concerns through innovative biological processes, products, and solutions. The fungal proteome and metabolome, as well as the biology of fungal RNA and epigenetics, homologous and heterologous protein expression, fungal host/substrate relations, physiology, particularly of extremophiles, and, last but not least, the extent of global fungal biodiversity, can all be used to gain this knowledge (Lange et al., 2012).

Laligan Falls in Valencia City is another Bukidnon hidden gem. The 4-series waterfalls are an incredible scenery amid the forested rocky cliffs of Laligan that is unknown to many. The waterfalls streams are clean, fresh water from the mountains to the barrio, bringing life to the huge rice paddies that support Valencia's war cry of "City of Golden Harvest". There haven't been any fungus studies in this area yet because it's only known for tourism. The study will be conducted to record the richness of fungi species and to provide further recent information about the species present in the area.

2. Methodology

Prior to collecting and photo-documenting macroscopic fungi, the researchers were able to coordinate with the Chairman of Barangay Laligan. A letter of permission to perform the research study and collect samples of fungi at Laligan Falls Laligan was signed by the honorable chairman of the Barangay. The administration of the stated barangay takes precautions like sending a tour guide to accompany the researchers to the Falls. Laligan is located on the island of Mindanao at 7.8864, 125.1806 degrees. At these coordinates, the elevation is calculated to be 319.9 meters (1,049.5 feet) above sea level. Sampling, documentation, and recording of macroscopic fungi were conducted at Laligan Falls Valencia City, Bukidnon. The highlight of the place is its four series of waterfalls namely Cariis Falls, Cabayugan Falls, Paluhan Falls, and Laligan Falls which are forested by some rocky cliffs. The waterfall streams are pure, fresh water that falls from the mountain to the barrio, bringing life to the rice farms that sustain Laligan rice farmers.

The field sampling employed a 20m x 20m quadrat plot on each side of the falls. The waterfalls' vicinity is forested by trees and logs which make the major substratum for fungi species. Because the steep slope is typical of the waterfall's surroundings, the researchers limit it to areas where we can walk and ascend. All macroscopic fungi found within the quadrat were photographed, collected, identified, and categorized in their natural habitat.

Species Identification, Classification, Description, And Confirmation

The kingdom of fungi is divided into five primary phyla based on sexual reproduction mode or molecular data. Polyphyletic fungi that reproduce without a sexual cycle are grouped in a sixth category called a "form phylum" for convenience. Some species can only be identified by looking at the patterns on their small spores or the cells in their gills under a microscope. The focus of the study is more on macrofungi thus; observation is the first step in identifying and classifying the fungi. The researchers used a variety of daily manuals, articles, keys, checklists, monographs, and associated literature to identify and classify the collected fungi. The specimens that had been pre-identified were sent to a mycologist for confirmation.

3. Results and Discussion

A total of 37 fungus samples were collected at Laligan Falls however, only a few have been identified. Based on the identification, the study was able to gather 14 families, 16 genera, and 19 species of fungi of which 15 species belong to Basidiomycetes and 5 species belong to Ascomycetes. The identified samples of fungi obtained from Laligan falls are included in the figures below.

Front view of "Dead man's finger" sp. 1

Kingdom: Fungi
Phylum: Ascomycota
Class: Sordariomycetes
Order: Xylariales
Family: Xylariacea
Genus: Xylaria
Scientific name: Xylaria polymorpha
Habitat: Decaying logs/woods

Description: The fruiting body is dense and nearly woody and the interesting feature of this fungi is it has dark outside skin but has a distinct white flesh on the inside (MSU, 2018).

Front View of “Yellow-footed Polypore” sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Polyporales
Family: Polyporaceae
Genus: Microporous
Scientific name: Microporous xanthopus
Habitat: Decayed logs

Description: This fungus's lovely fruiting body can be found on rotting wood in tropical locations. It is most frequent on fallen branches, but it can also be found on trees with deadwood. The disc attachment is frequently yellow. The funnels are up to 9 cm in diameter and have distinct bands on the inside surface in varied colors of brown and cream. The lower surface is white to pale brown in color and has several minute pores, hence the name polypore (JCU, 2022).

Front View of “Splitgill mushroom” sp. 1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Schizophyllaceae
Genus: Schizophyllum
Scientific name: Schizophyllum commune
Habitat: Decaying logs

Description: The cap is 1–4 cm broad, fan-shaped when attached to the log's side, irregular to shell-shaped when attached above or below; finely hairy to velvety or virtually granular when attached above or below; dry; whitish to grayish or brownish; sometimes developing concentric textural zones. The gills are pale to grayish, curled together, and appear divided down the middle (Kuo, 2021).

Front View (no common name) sp.1

Kingdom: Fungi
Phylum: Ascomycota
Class: Sordariomycetes
Order: Xylariales
Family: Xylariaceae
Genus: Hypoxylon
Scientific name: Hypoxylon coccineum
Habitat: Decayed logs

Description: Fruit bodies start out grayish-white, then turn salmon-pink, then brick-red, and eventually brownish-black as they mature. At maturity, the surface is bumpy (pimple-dotted). The bumps are the apertures forming structures implanted just beneath the surface. The flesh on the inside is dark and firm (Mushrooms, n.d)

Front View of "fairy inkcap" sp. 1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Psathyrellaceae
Genus: Coprinellus
Scientific name: Coprinellus disseminates
Habitat: Decaying logs

Description: Cap size is minute to 2 cm; oval when young, expanding to broadly convex or bell-shaped; almost white with a brownish center—or grayish—darkening to grayish or grayish-brown with a brownish center, paler towards the margin; smooth, or very finely granular/hairy when young; lined or grooved from the margin nearly The gills are attached to or detached from the stem; they are white at first, then gray, then blackish; and the flesh is exceedingly thin and brittle.

Front View of "Willow bracket fungus" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae
Genus: Phellinus
Scientific name: Phellinus ignarius
Habitat: Decayed logs

Description: Upper surface grey on immature fruitbodies turning black and often developing vertical fractures as they age; outer edge dark and velvety even on very old fruitbodies; hoof-like and concentrically ridged in annual layers; up to 40cm across and as much as 20cm thick; Inside these brackets, the flesh is a reddish-brown color. Brown tubes, 3 to 5mm in diameter and spaced at 4 to 6 per mm, terminate in grey-brown to red-brown pores with a purple tinge (Quél, 2022).

Front View of (no common name) sp.1

Kingdom: Fungi
Phylum: Ascomycota
Class: Pezizomycetes
Order: Pezizales
Family: Sarcoscyphaeae
Genus: Phillipsia
Scientific name: Phillipsia subpurpurea
Habitat: Decayed woods

Description: The species resembles a funnel with red or purple color on its cap. The back surface is white and often pink in color.

Front View of "False turkey-tail" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Russulales
Family: Stereaceae
Genus: Stereum
Scientific name: Stereum ostrea
Habitat: decaying bark of trees

Description: The crown of Stereum ostrea is multicolored and fluffy, with zones of brown, red, orange, buff, and green. Stereum ostrea lacks a pore surface, resulting in a smooth underside. To put it another way, it's a crust fungus, not a polypore (Kuo, 2013).

Front View of "Shaggy ink cap" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Agaricaceae
Genus: Coprinus
Scientific name: Coprinus comatus
Habitat: dead hard leaf

Description: The cap is usually white, but it turns pink with time and covers the stipe. It changes color to black and disappears in a couple of hours after depositing spores or being picked. A cap is typically 5 to 10 cm tall, egg-shaped at first, and expands into a long bell. Its top breaks out into big recurved scales when it is white. CC has a white, hollow stem that is 6–15 cm tall. The stem ring develops a black spore coloration. Spores are black, smooth, and ellipsoidal, measuring 9–13 7–9.5 m in diameter (Nowakowski et al., 2020).

Front View of "Beef steak fungus" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Polyporales
Family: Irpicaceae
Genus: Leptoporus
Scientific name: Leptoporus mollis
Habitat: decayed logs

Description: The cap is shelf-like, bent outward to form a cap from a flat surface with pores exposed, or rarely entirely flat with pores exposed, single, semicircular to elongate, up to 1cm x 3cm x 2cm, upper surface whitish pink or pale reddish purple becoming purplish brown, margin colored the same or cream-colored next to the wood where growing flat, upper surface whitish pink or pale reddish purple becoming purplish Cream to pinkish buff to pale pinkish brown, "soft, spongy, succulent" flesh that is up to 0.7cm thick, soft and felty, weakly zonal or not zoned (Gibson, 2022).

Front View of "Turkey tail" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Polyporales
Family: Polyporaceae
Genus: Trametes
Scientific name: Trametes versicolor
Habitat: dead fallen wood

Description: Caps can grow to be up to 10cm in diameter, and they can overlap in layers to make much bigger compound fruiting masses. The thickness of these brackets ranges from 1 to 3mm. The upper surface is colored in concentric zones of red, yellow, green, blue, brown, black, and white, while the underside is white or cream and covered in small shallow pores spaced at 3 to 6 pores per millimeter. When injured, the pores do not discolor considerably (First Nature, 2022).

Front View of "Lumpy bracket fungus" sp.2

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Polyporales
Family: Polyporaceae
Genus: Trametes
Scientific name: Trametes gibbosa
Habitat: Saprophytic on trunks and stems of a tree

Description: The fruiting body is 5-20 cm x 1-8 cm thick; sessile; color greyish white, semicircular, slightly convex, upper surface initially downy, later smooth; flesh white, thick, initially soft, later tough and hard when dry; color greyish white, semicircular, slightly convex, upper surface initially downy, later smooth; Algal development generally turns the upper surface green. Pores are creamy-white, elongated, and slotlike in a radial configuration, with 1-2 pores per mm; tubes are creamy-white, 5-15 mm deep (Healing Mushroom, 2022).

Front View "no common name" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Tricholomataceae
Genus: Clitocube
Scientific name: Clitocube metachroa
Habitat: Decayed branch of a tree

Description: Greyish to pale brown (nearly white when dry with darker center), convex, then depressed, border lined, to approximately 5 cm broad, with greyish white, decurrent gills (Naturespot, 2015).

Front View of "Violet fairy cup" sp.1

Kingdom: Fungi
Phylum: Ascomycota
Class: Pezizomycetes
Order: Pezizales
Family: Pezizaceae
Genus: Peziza
Scientific name: Peziza violacea
Habitat: Damp soil, charred wood

Description: Cup fungus, stemless (or with a very short inconspicuous stem), hemispheric at first, expanding to create a shallow cup with a scalloped rim; 1 to 4cm across. The inner surface is frequently slightly wrinkled, especially in the center. The flesh of the cup is yellowish and 0.5 to 2mm thick. The hymenium (fertile upper surface), which is violet to deep lilac when young, turns brown with age and exposure to sunshine; its surface is smooth and waxy (First Nature, 2022).

Front View of "Milk white tooth polypore" sp. 1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Polyporales
Family: Phanerochaetaceae
Genus: Irpex
Scientific name: Irpex lacteus
Habitat: Trunk and branches of a tree

Description: Caps are about 1-4cm wide. The growth of the upper surface entirely resupinate to effused-reflexed; caps whitish, drying yellowish; velvety hair. The pore surface is a white cream, dingy yellow in age; with tubes breaking up into flattened teeth up to 6mm long (Emberger, 2012).

Front View (no common name) sp. 1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Marasmiaceae
Genus: Campanella
Scientific name: Marasmiaceae campanella
Habitat: decayed twig

Description: Characterized by small, sessile, pleurotoid basidiomata with a bluish-gray to greenish-gray pileus, greenish-white to grayish-white lamellae, ellipsoid and smooth basidiospores, flexuosocylindric cheilocystidia with a subcapitate apex and flexuose-fusoid pleurocystidia often with a subcapitate apex (Farook & Manimohan, 2014).

Front View of "Oyster mushroom" sp.1

Kingdom: Fungi
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Pleurotaceae
Genus: Pleurotus
Scientific name: Pleurotes ostreatus
Habitat: Decayed trunk of tree

Description: The mushroom has a 2–30 cm wide, fan or oyster-shaped top. Natural examples range in color from white to gray or tan to dark brown; the edge is smooth and commonly lobed or wavy when young. Because of the stipe arrangement, the flesh is white, solid, and varies in thickness. The mushroom's gills are white to cream in color and descend on the stalk if one is present (Davidson & Jaine, 2014).

The table below shows the unidentified samples of fungi obtained from the right and left sections of the Laligan falls Valencia City, Bukidnon. This includes the photo, substrate, and description of the samples.

Table 1: List of unidentified species of fungi collected from Laligan falls

Photo	Substrate	Description
Sp. 1 	Decaying branch of a tree	The unidentified species has a fruiting body of circular, uneven shape. The upper surface has a maze-like pattern of which some are round or almost circular.
Sp. 2 	Decayed logs	The unidentified species' flesh is white to yellowish in color and is smooth and oval in texture.

Sp. 3 	Decayed logs	The unidentified species has a rotten circular surface. Brownish in color and very has a very thin and fragile cap.
Sp. 4 	Decayed logs	The unidentified species have a white-brownish color with an uneven shape. Mostly lying flat on the logs and saprobic. The edge of this specimen is brownish and the center part is white.
Sp. 5 	Dead logs	The unidentified species has an umbrella-shaped upper surface. It has a line running from the center up to the tip of the cap. The color of the specimen is white-grey.
Sp. 6 	Rotten log	The unidentified species appears to be white and yellow in color. The surface has powder-like granules.

Sp. 7 	Decayed logs	The unidentified species is grey in color. It has a round cap and an uneven shape. The upper surface is smooth and thick.
Sp. 8 	Decayed log	The unidentified species is a yellow-grey to beige fungus less than 5 cm across with granular flesh. The cup-shaped fruiting bodies are round and look like a cup.
Sp. 9 	Decayed log	The unidentified species is thick and is white-grey in color. Its shape is a scale like and is saprobic.
Sp. 10 	Decayed trunk of trees	The unidentified species is small and the upper surface is white in color. The fruiting body has an irregular shape.

Sp. 11 	Decayed log	The unidentified species has a spongy-like structure. Its fruiting body is uneven and is white and black in color.
Sp. 12 	Decayed log	The unidentified species has strips and combined to form patches. The upper surface is white and hyphae generally are cylindrical that coat the log.
Sp. 13 	Decayed twigs	The unidentified species has a circular fruiting body. The color is violet to black and the flesh is jelly-like which is smooth.
Sp. 14 	Decayed logs	The unidentified species fruiting body has a little hair like structure and is brown to black in color.

Sp. 15 	Fallen dead branches	The unidentified species has an ear shape and is purple to black in color.
Sp. 16 	Dead twigs/branches	The unidentified species is a young fungus whose cap is still enclosed. The edge of the cap is white and the inner part of the cap is brown in color.

Fungi are multicellular organisms that can be single-celled or multicellular. They can be found in almost any location, but the majority of them reside on land, primarily in soil or plant material, rather than in the sea or freshwater. Macroscopic filamentous fungus grows underground by creating a mycelium. They vary from molds in that they develop visible fruiting bodies that contain spores (often referred to as mushrooms or toadstools). The fruiting body is made up of densely packed hyphae that divide to form various components of the fungal structure, such as the cap and stem. The spores cover the gills beneath the cap, and a 10 cm diameter cap can yield up to 100 million spores every hour (Microbiology Society, 2022).

According to Organismal biology (n.d.), the majority of fungi are multicellular creatures. There are two main morphological stages in which they appear: vegetative and reproductive. The vegetative stage is characterized by a tangle of slender thread-like structures known as hyphae (plural, hypha), whereas the reproductive stage is more visible. It stated that fungal hyphae allow for the rapid transport of nutrients and small molecules throughout the fungal body. Many fungi combine these hyphae into a mass known as mycelium. Fungi reproduce by spores, which are dispersed by wind, water, or animals and only grow if they settle on suitable food. Spores are extremely stable and will survive until environmental conditions are appropriate for hyphae production (Farson, 2021).

Fungi inhabit every ecological niche (Farson 2021). He added that most fungi preferred temperatures between 70 and 90 degrees Fahrenheit, although some species may survive in freezing temperatures like 32 degrees and as high as 150 degrees. The same as how mushrooms prefer the dark while rusts and mildew can thrive in direct sunshine.

The Philippine archipelago has a climate with moderately high temperatures and humidity, as well as widespread rainfall. The temperature varies with height, therefore as the elevation rises, the temperature drops. Humidity, defined as the amount of moisture in the atmosphere, is linked to warm temperatures. The distribution of precipitation, or rainfall, in the Philippines is the most notable climatic factor. Tadiosa (2015) cited the work of (Halling and Mueller 2005), that the optimum time to collect macroscopic fungus is in the morning when the weather is favorable. He added that it is also at this period that the fruiting bodies of macroscopic fungi expand and the spores on the pores, teeth, and gills remain intact. As stated by Silva & Simpson (2014), the growth requisites that can be easily changed to inhibit fungal growth and postpone decay development include moisture level, oxygen content, and temperature. Other factors that affect fungi growth include keeping wood dry or below the fiber saturation point (28–30 percent), which prevents effective microbial growth.

The table below shows the list of identified samples given to Central Mindanao University's College of Agriculture Department of Plant Pathology. The diverse samples obtained in Laligan falls, Laligan, Valencia City, Bukidnon were identified by their family, genus, and species.

Table 2: List of identified species of fungi

Family: XYLARIACEAE Genus/Species Xylaria polymorph sp. 1 Xylaria polymorph sp. 2 Xylaria polymorph sp. 3 Hypoxylon coccineum
Family: POLYPORACEAE Genus/Species Microporus xanthopus Trametes versicolor Trametes gibbosa sp.1 Trametes gibbosa sp. 2
Family: SCHIZOPHYLACEAE Genus/Species Schizophyllum commune
Family: PSATHYRELLACEAE Genus/Species Coprinellus disseminatus sp.1 Coprinellus disseminatus sp. 2
Family: HYMENOCHAETACEAE Genus/Species Phellinus ignarius
Family: SARCOSCYPHAEAE Genus/Species Phillipsia subpurpurea
Family: STEREACEAE Genus/Species Stereum ostrea
Family: AGARICACEAE Genus/Species Coprinus comatus

Family: IRPICACEAE Genus/Species Leptoporus mollis
Family: TRICHOLOMATACEAE Genus/Species Clitocube metachroa
Family: PEZIZACEAE Genus/Species Peziza violaceae
Family: PHANEROCHAETACEAE Genus/Species Irpex lacteus
Family: MARASMIACEAE Genus/Species Marasmiaceae campanella
Family: PLEUROTACEAE Genus/Species Plearotes ostreatus

Table 2 shows the various species of fungi collected at Laligan Falls Laligan, Valencia City, Bukidnon. Based on Babu (2016), the abundance of species is just the number of individuals of each species in an area. Accordingly, it revealed two (2) genera with two (2) species under the Xylariaceae family, two (2) genera with three (3) species of the Polyporaceae family, one (1) genus with one (1) species in Schizophylaceae family, one (1) genus with one (1) species under Psathyrellaceae family, one (1) genus with one (1) species in Hymenochaetaceae family, one (1) genus with one (1) species under Sarcoscyphaeae family, one (1) genus with one (1) species of the Stereaceae family, one (1) genus with one (1) species under Agaricaceae family, one (1) genus with one (1) species on Irpicaceae family, one (1) genus with one (1) species under Tricholomataceae family, one (1) genus with one (1) species of Pezizaceae family, one (1) genus with one (1) species under Phanerochaetaceae family, one (1) genus with one (1) species in Marasmiaceae family, and one (1) genus with one (1) species under Pleurotaceae family. As reported by Selem et al., (2021), macrofungi (mushrooms) are found all over the world and flourish in a variety of environments. However, changes in elevation greatly affect the distribution of fungi (Ogwu et al., 2019). On Mt. Norikura in Japan, they were able to sequence the ITS2 region and examine the fungal diversity and community composition from 740 to 2940 meters above sea level. Accordingly, fungi from higher-elevation habitats appear to be more ecologically generalist, at least in terms of climate-related gradients. These findings support the findings of latitudinal fungal range investigations, which also suggest that the Rapoport Rule (broader ranges at higher latitudes) holds true on a global scale.

Since prehistoric times, fungi have played a significant role in man's life as food, medicine, poison, and for religious and other purposes (Molitoris, H.P.). As Lange (2014) has mentioned in the review of literature, fungi convert the waste stream into a portion of valuable food and antibiotics preventing lifestyle diseases. Eight (8) species of fungus collected from the Laligan falls have therapeutic potential. These are the Microporus xanthopus which is considered an antioxidant and antiangiogenic (Broudette, O., et al. 2018), Trametes versicolor, and Trametes gibbosa which has been used to enhance the immune system of a person as it is packed with antioxidants, contains immune-boosting polysaccharopeptides, reduce inflammation, antibacterial etc. (Kubala, J.), Coprinellus dissematus is an anti tumor which inhibits proliferation and induces apoptosis in human cervical carcinoma cells by activation of caspase, a key protein involved in the regulation of apoptosis (Healing Mushrooms, n.d.), Phellinus ignarius as an anti-cancer (Zapora, E., et al., 2016), Sterium ostrea which is antibacterial (Imtiaj, A., et al. 2007), Coprinus comatus as a natural antiandrogenic (Dotan, N., Wasser, S., Mahajna, J., (2011), and Plearotes ostreatus is an edible oyster that can treat Cardiometabolic diseases (2020).

Table 3: Summary of Families, Genera, and Species of the Collected Samples.

	Total
Families	14
Genera	16

Species	17

Table 3 shows the summary of the number of species collected with their families, genera, and species. As illustrated in the table, there were fourteen (14) families, sixteen (16) genera, and seventeen (16) species. Among these, 16 were unidentified species due to delays in the identification process. Based on table 2, Xylariaeae family has two (species) namely Xylaria polymorph sp. 1, Xylaria polymorph sp. 2, and Xylaria polymorph sp. 3, and Hypoxylon coccineum. Family Polyporaceae have three (3) species which are Microporus xanthopus, Trametes versicolor, and Trametes gibbosa. Schizophylaceae has one (1) species only, namely Schizophyllum commune. The Psathrellaceae has one (1) collected species as well which are the Coprinellus disseminatus sp1, and Coprinellus disseminatus sp2. Hymenochaetaceae has one (1) species, namely Phellinus ignarius. One (1) species belong to the Sarcoscyphaeae family which is Phillipsia subpurpurea. Stereaceae family has one (!) species as well namely, Stereum ostrea. Agaricaceae has one (1) species which is the Coprinus comatus. Irpicaceae has only one (1) species collected namely Leptoporus mollis. Tricholomataceae has one (1) species which is the Clitocube metachroa. Pezizaceae family has one (1) species namely Peziza violaceae. The family of Phanerochaetaceae has one (1) identified species namely Irpex lacteus. Marasmiaceae has one (1) species which is Marasmiaceae campanella. Last but not the least, the family of Pleurotaceae with one (1) species, the Plearotes ostreatus. Among the families, the Polyporaceae has the greatest number of species collected at the Laligan falls.

4. Conclusion and Recommendation

The inventory of fungi in Laligan falls Laligan, Valencia City, Bukidnon released a total of 28 identified fungi with seventeen (17) species, and sixteen (16) genera under fourteen (!4) families. The abundance of fungi species in the area revealed two (2) genera with two (2) species under the Xylariaceae family, two (2) genera with three (3) species of the Polyporaceae family, one (1) genus with one (1) species in Schizophylaceae family, one (1) genus with one (1) species under Psathyrellaceae family, one (1) genus with one (1) species in Hymenochaetaceae family, one (1) genus with one (1) species under Sarcoscyphaeae family, one (1) genus with one (1) species of the Stereaceae family, one (1) genus with one (1) species under Agaricaceae family, one (1) genus with one (1) species on Irpicaceae family, one (1) genus with one (1) species under Tricholomataceae family, one (1) genus with one (1) species of Pezizaceae family, one (1) genus with one (1) species under Phanerochaetaceae family, one (1) genus with one (1) species in Marasmiaceae family, and one (1) genus with one (1) species under Pleurotaceae family. Among the twenty-eight collected species, eight (8) species of fungus have therapeutic potential namely; Microporus xanthopus, Trametes versicolor, Trametes gibbosa, Coprinellus dissematus, Phellinus ignarius, Sterium ostrea, Coprinus comatus, Plearotes ostreatus. Though an altimeter wasn't used in calculating the altitude of the two measured parameters, the findings indicated that the distribution of fungi is greatly affected by the elevation or the topographic composition of the environment.

There were 16 species of fungi that were left unidentified. The expert from Central Mindanao University's Department of Pathology was having difficulty recognizing the specimen because only photographs were utilized in the diagnosis. Because photographs were the only way to identify the fungi, it was suggested that photos be taken of the upper surface, the lower surface, or the back of the cap, and stalk. If the specimens were brought in person, identification would be more precise.

The distribution of fungi at Laligan falls is abundant that the researcher found thirty-seven (37) fungi in the area. The location is moist and steep area where the researcher mostly found the samples at the higher elevation. The findings signify that fungi species are mostly located at the higher elevation. This claim supports the result of Ogwu et al. (2019) that fungi is abundant at higher elevation.

The Laligan falls is understudied especially in the field of fungi. This study might be helpful to future researchers who want to study the diversity of fungi present in the area. Future researchers should build more plots like include the riverbanks and collect more samples to estimate species diversity. Also putting into consideration the temperature and the altitude where the specimen is collected. In-depth research of the morphological structure and interaction between physical parameters with diverse fungus at various elevations would also be beneficial.

Acknowledgment

This acknowledges many people for the support and success of this study especially to the Science Department, College of education of Central Mindanao University together with the cooperation of Barangay Laligan, Valencia City, Bukidnon. Deepest Gratitude and special thanks to the Department of Science and Technology-Science Education Institute (DOST-SEI) for supporting the entire study.

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