Vol. 13 January 2022
Print ISSN 2094-5019 • Online ISSN 2244-0461
doi: http://dx.doi.org/10.7828/ajob.v13i1.1495

Asian Journal of Biodiversity
This Journal is in the Science
Master Journal List of Clarivate
Zoological Record

A Preliminary Checklist of Macroscopic Fungi at Quezon Protected Landscape, Southern Tagalog Region, Philippines

EDWIN R. TADIOSA
ORCID NO. 0000-0002-8761-3680
ertadiosa@yahoo.com
College of Science, Bulacan State University
McArthur Highway, Brgy. Guinhawa
Malolos, Bulacan, Philippines

ABSTRACT

A preliminary collection of macroscopic fungal species was conducted at Quezon Protected Landscape (QPL) at Atimonan, Southern Luzon, Philippines (13°59′22″N 121°48′59″E). The Protected Area has been considered one of the diverse forest ecosystems in the Calabarzon region due to its forested area teeming with huge trees and numerous wildlife that demand conservation and protection. This paper aims to establish initial baseline data on the macroscopic fungal species in this significant forest ecosystem. An opportunistic sampling method resulted in the collection and identification of twenty-nine families, fifty-one genera, and hundred-six species of macroscopic fungi. Among 106 different species, 94 species (88.68%) are basidiomycetous fungi, while 12 (11.32%) are ascomycetous ones that accounted for the three families, Pezizaceae, Sarcoscyphaceae, and Xylariaceae. For Basidiomycetes, the family Polyporaceae is the most abundant in QPL, with six, genera and a total of twenty-five different species, eleven of which belong to the genus Polyporus. The family Tricholomataceae ranked second in high species count with twelve different species. For Ascomycetes, the family Xylariaceae has the highest species count, with eight different species seen and collected. *Xylaria multiplex* (Kunze) Fr. is the most abundant macroscopic fungi in the collection, comprised of 408 collected individuals. A greater number of fungal species (73 species) were markedly observed in higher elevations (245-258 masl) than in lower elevations (242-244 masl) which documented only 47 species.

Keywords: Diversity, forest ecosystem, macroscopic fungi, protected landscape

INTRODUCTION

The Quezon Protected Landscape is a lowland rainforest with karst landscape and vegetation located in the southern Sierra Madre mountain range. The park is situated north of the narrowest section of Luzon in Quezon province, located about 164 km southeast of Metro Manila. It spans the municipalities of Pagbilao, Padre Burgos, and Atimonan in Quezon province. The highest point is Mount Mirador (Mount Pinagbanderahan) 366 meters (1,202 ft) elevation. The park was first established as a national park on October 25, 1934, with Proclamation no. 740. The park has a total of 535.08 hectares (1,322.2 acres) and was named Quezon National Park. The park was enlarged to 983 hectares (2,430 acres) with Proclamation no. 594 on August 5, 1940. After the implementation of the National Integrated Protected Areas System (NIPAS) in 1992, the park was reclassified as a protected landscape and was re-established as Quezon Protected Landscape on June 2, 2003 by Proclamation No. 394, with a smaller area of 938 hectares (2,320 acres).

Being distinct from plants and animals, fungi are a large group of eukaryotic, spore-bearing, and achlorophyllous organisms which constitute an abundant element of terrestrial biota in the Philippines (Quimio and Capilit, 1981). Macrofungi are fungal species that produce fruiting bodies that are visible without the aid of a microscope (Kirk et al., 2008). Many studies explored the presence of flora, fauna, and fungi in certain areas because these organisms play an important role in determining the condition of a certain environment. It serves as an ecological indicator that can provide vital information on the ecosystem (Eusebio, 1998). However, the diversity and distribution of fungal species remain poorly studied, even on a regional basis in the Philippines (Tadiosa and Briones, 2013). Consequently, this preliminary study was conducted with the intent of providing baseline information that can be of help in exploring the diversity of macroscopic fungi in the country.

Macrofungi offer a number of benefits to humans and the environment. Lange 2010 has explained that fungal products are essential building block for change towards a more sustainable future for our planet. There is a need to be able to convert plant materials to provide renewable substitutes for the products we now get from fossil resources. In nature, fungi can help in breaking down plant materials by the means of a rich spectrum of plant cell wall degrading enzymes. In industry such fungal products can be brought in use for converting bio-waste and agricultural crop residues into bioenergy, biomaterials, biochemicals, biofertilizer, etc.

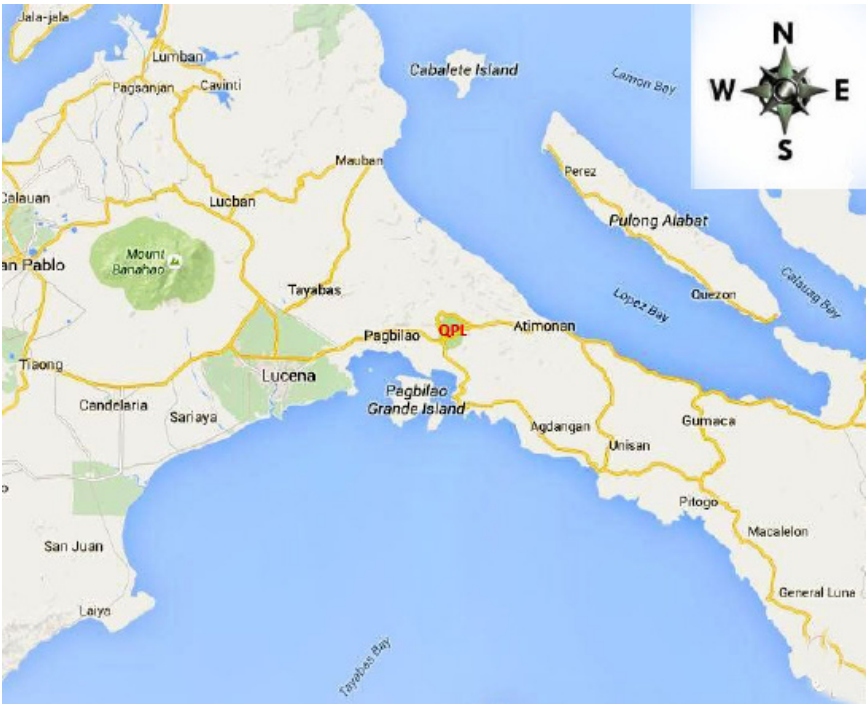

Figure 1. Map of the Quezon Province showing the sampling site, Quezon Protected Landscape. (en.wikipedia.org)

OBJECTIVES OF THE STUDY

This study aimed to initially record the current macroscopic fungal species at Quezon Protected Landscape (QPL). Specifically, this study addressed the following objectives to: (a). morphologically characterize and identify the collected fungal species found in QPL, (b). construct a preliminary taxonomic data of the collected macroscopic fungi, and (c). compare the number of species collected at low and high elevations in QPL.

MATERIALS AND METHODS

Study Site

The collection of samples was conducted in the Atimonan area of Quezon

Protected Landscape. The Municipality of Atimonan, Southern Luzon, Philippines (13°59′22″N 121°48′59″E) is a first class municipality in the province of Quezon, Philippines. It lies on the eastern shore of the province, 173 kilometres (107 mi) southeast of Manila. Atimonan is bounded by the municipalities of Gumaca, Plaridel, Pagbilao and Padre Burgos, and by Lamon Bay on the north. Atimonan has a tropical climate with a significant amount of rainfall during the year which explains its being home to lush vegetation and diverse biota. Climate of the municipality is of the third type as per classification of PAG-ASA. Due to its location on the southern portion of the province's mountain ranges, there is no pronounced dry and wet season. The average temperature is 26.9 °C. The warmest month of the year is May, with an average temperature of 28.3°C. January has the lowest average temperature of the year. It is 25.1 °C. The average annual rainfall is 2740 mm. The driest month is April, with 79 mm of rainfall. With an average of 445 mm, the most precipitation falls in November. The difference in precipitation between the driest month and the wettest month is 366 mm. However, the climatic condition of the area may become erratic due to climate change.

Sample Collection

The northeast monsoon had brought cloudy skies to the site with light to moderate rains and thunderstorms due to the tail-end of a cold front. The research survey was a preliminary exploratory in nature, and an opportunistic sampling method was carried out. Fruiting bodies were photographed in their natural habitat and corresponding substrate or host tree was duly noted together with all the information relevant and significant to the identification of collected specimens. The fungi were then collected either by simple handpicking or with the use of a bolo in the case of woody polypores. Each specimen was carefully labeled and wrapped for identification in the laboratory. To prevent degradation, some fleshy specimens were individually placed in paper bag while the more fragile ones were preserved in airtight jars containing 70% ethanol. When the researchers arrived home, the collected woody fungi were sun-dried immediately to retard deterioration of specimens which could be caused by insects or molds in fungal tissues.

Identification and Classification of Fungi

The gathered specimens were identified based on their microscopic and macroscopic features with the help of reliable and published literatures such as

The Great Encyclopedia of Mushroom, an Identification Guide Mushrooms of Hawaii (Hemmes and Desjardin 2002), the taxonomic keys of Barnett and Hunter (1973); Ainsworth & Bisby's Dictionary of Fungi (Hawksworth et al., 1995); and online resource such as mushroomexpert.com. Macroscopic characterization involved growth habit, color, size, shape and texture of cap, presence or absence of stalk, gills, pores, veil, and etc. (Niem and Baldovino 2015). The taxonomic and morphological features of the fungi were noted in the case of unconfirmed identity at collection site. Accurate identification and validation was conducted by an expert.

RESULTS AND DISCUSSION

Some descriptive literature and other details that pertain to the collected basidiomycetous specimens, as mentioned in section.

Species Account (Basidiomycetes)
Family Agaricaceae

Agaricus moelleri Wasser

It is one of the most common and widespread 'true mushrooms'. The cap expands to become broadly convex and eventually flattens without an in-rolled margin. The gills are pale pink; the stem diameter is 1 to 2cm with a smooth and silky surface. It was found on the roots of the mahogany tree.

Leucocoprinus sp.

Fleshy mushroom with gray-colored hat-like cap and layer of gills underside. It was found growing on the soil.

Lycoperdon sp.

It has pearl white cap to stem. The cap is convex and smooth. It was found on the soil.

Omphalina sp.

Fleshy white mushroom with smooth cap on the surface, irregularly arranged layer of gills underside. The cap has a typical deep central depression giving the umbrella-like to funnel-shaped cap the appearance of a belly button, or a belly with a navel. It was found on a rotting branch of makaasim tree.

Family Auriculariacae

Auricularia auricula-judae (Mont.) Sacc.

It is commonly known as "jelly ear". It was found attached on a palosanto tree. Unlike the cup fungi, this fungus has jelly-like flesh, and its spores are catapulted from little spore-holders, placing it in the Basidiomycetes rather than in the Ascomycetes, where spores are forcibly shot out of little spore-jets. Its fruiting body is wavy and irregular; typically ear-shaped; 2-15 cm; gathered together and attached at a central or lateral position; fertile surface gelatinous, tan to brown; sterile surface silky to downy, veined, irregular, brown; thin fleshy, gelatinous-rubbery.

Auricularia polytricha (Mont.) Sacc.

A fungus that is ear-to shell-shaped or forming narrow, imbricate brackets, flabby elastic or tough gelatinous; hymenial surface smooth, wrinkled or veined, often purplish. It was found on a rotting branch of tibig. Auricularia polytricha is variously called "wood ear," "tree ear," "black fungus," or "muk nge". The dried ear-shaped cap is medium sized, dull in texture, and dark brown to black. The wavy lower surface has a contrasting powdery gray color. The stem is absent or rudimentary. It has no gills.

Exidia recisa (Ditmar) Fr.

Light brown jelly-like fan-shaped fungi with textured spherical cap. It was found attached on a dapdap tree.It makes fairly discrete individual fruiting bodies, which are attached at a central point (sometimes by a stem-like structure); look-alike jelly fungi tend to be more glob-like or brain-like, fusing the individuals together so that they are hard to separate.

Family Auriscalpiaceae

Artomyces sp.

A peach coral-like fungus that grows on wood (usually the wood of hardwoods); its colors, when fresh, are whitish to yellowish; and its branch tips are distinctively "crowned," featuring a tiny cuplike depression surrounded by 3-6 points. Its fruiting body is 4-13 cm high and 2-10 cm wide; repeatedly branched. The branches range to 1-5 mm thick; smooth; whitish to pale yellowish at first, sometimes darkening to pale tan or developing pinkish hues, colored like the branches or becoming brownish.

Family Boletaceae

Phylloporus bellus (Mass.) Corner

A light brown in color fungus with underside prominent gills. It was found on the soil. Its cap measures 3-5cm broad, at first convex, with age plane and depressed. It surface is granular-fibrillose. Its stem measures1–5 cm tall and up to 1 cm wide, mostly equal or sub-equal, solid.

Family Cantharellaceae

Cantharellus infundibuliformis (Scop.) Fr.

Funnel-shape cap, smooth and light brown in color; decurrent type of gills found on a rotting dalisi branch. The gills are pale brown in color, not crowded, irregularly branching and running down the stem. The spore is color off-white. The stem is yellow, cylindrical to irregular and hollow. Its cap is convex with a depression in the center when young becoming funnel-shaped with irregular edges. A dark brown hole in the center runs right through the hollow stem.

Cantharellus sp.

Pleated funnel-shaped cap with brown woody stalk found on a rotting balubo branch. The chanterelles grouped together are usually fairly easy to spot; they are medium-sized, dark brown in color featuring a broadly convex, flat, or shallowly depressed cap, a central and fleshy stem, and false gills on the underside of the cap. The mushrooms are also known for their fruity, apricot-like odor, best detected when you have several of them together in your collection bag or basket.

Family Clavariaceae

Clavulinopsis miniata (Berk.) Corner

A white, root-like, slender with rough surface fungus. Its size range to 100 mm tall x 5 mm diameter. Club tip rounded or tapered, branched. The stalk has no distinct color difference between stem and upper fertile surface.

Family Dacrymycetaceae

Dacrymyces palmatus (Schwein.) Burt.

A fungus with light brown top while white on its underside. It looks like a

peeling of a fruit. Irregular brain-like or lobed gelatinous mass; yellowish-orange to orange; whitish near the point of attachment. It was found on rotting balobo branch.

Family Diplocystaceae

Astraeus hygrometricus (Pers.) Morgan

It looks like "earth stars" in the genus Geastrum, but its rays are "hygroscopic"; they cover the round spore case in dry weather but peel away from it in wet conditions. The inner (or "upper") surfaces of the rays become finely cracked, and the surface of the spore case is matted-fibrillose. The spore powder, at maturity, is chocolate brown—and, under the microscope, the spores are much larger than the spores of Geastrum species.

Family Ganodermataceae

Ganoderma applanatum (Pers.) Pat.

A woody shiny black fungus found attached on guyung-guyong tree. It is sometimes known as the "Artist's Fungus," since its pore surface bruises brown and retains the bruising for years if the mushroom is picked and brought inside. Distinguishing features for Ganoderma applanatum include its unvarnished, furrowed and lumpy, brown-crusted cap surface; its white pore surface, which bruises brown; and its brownish or cinnamon flesh. It is perennial, and the specimens can develop for dozens of years.

Ganoderma lucidum (Leys.) Karst.

A woody dark violet fungus. It is one of the most beautiful mushrooms in the world. While Ganoderma lucidum is annual and does not actually grow more each year like some perennial polypores, its fruiting body is quite tough and can last for months. It was found on a rotting makaasim tree branch.

Amauroderma rude (Berk.) Torrend.

This species is a tough woody mushroom. It grows as a saprophyte on rotting buried wood. Fruit bodies have caps that are typically 4–8 cm (1.6–3.1 in) wide with alternating bands of light and dark brown rings. On the cap underside are small white to pale grey pores that initially turn red when bruised before turning black; this red-staining behavior is unique in its genus. The light to dark brown

stipe measures 5–13 cm (2.0–5.1 in) long by 1–2 cm (0.4–0.8 in) thick.

Family Hygrophoraceae

Hygrocybe miniata (Fr.) Kumm.

A fungus that has red-orange to yellow cap, the stem is color yellow and has a convex to umbonate smooth cap. Its cap range to 5-22 mm across; convex, becoming broadly convex or nearly flat; often developing a broad central depression; dry or slightly moist in humid or wet weather; innately, finely, radially scurfy or fibrillose, especially with age; scarlet to reddish orange when young and fresh, fading to orange or yellow; the margin sometimes becoming thinly lined and/or scalloped. Its gill is broadly attached to the stem or beginning to run down it; nearly distant; thick; pale yellow at first, becoming yellow to orange; short-gills frequent.

Family Hymenochaetaceae

Hymenochaete rubiginosa (Dicks.) Lev.

It is woody, rusty brown in color found in a rotting branch of makaasim tree. Perennial fruitbodies are irregularly oval with wavy margins; 2-4cm across and concentrically ridged on the upper surface, which feels finely velvety. The infertile surface is dark brown, except for the growing margin which is noticeably paler. Sometimes the fruitbodies are largely resupinate, while on occasion they can form shelf-like brackets. The fertile surface is mainly smooth but often with a few scattered warty lumps or short warty ridges. Orange-brown when young, the fertile surface eventually darkens to a greyish red-brown.

Phellinus sp.

A fan-like, semi-woody fungus that is black in color. The basidiospores are on the underside.

Family Inocybaceae

Crepidotus mollis (Schaeff.) Quel.

The cap initially very pale, the 1.5 to 5cm diameter kidney-shaped caps turn ochre-brown with age. Faint striations are sometimes visible towards the margin of the cap, which has a gelatinous layer in the upper part of the flesh; this layer is

elastic, and when stretched a see-through window can be created. The cap flesh is white, very watery and easily broken. Gills are pale brown gills fan out from the attachment point; they are soft and gelatinous. As the fruitbody ages, the spores mature and the gills turn rusty brown from the center. It was found on a rotting branch of santol tree.

Family Marasmiaceae

Maramius pulcherripes Perk.

A very tiny umbrella-like fungus attached on the trunk of a Banaba tree. Its cap measures 0.5-2 cm with a central nipple and is broadly bell-shaped, convex, pleated and minutely roughened and in pinkish brown color. Its gills are free from the stem and it is color white. The stem is 2-6 cm long; less than 1 mm thick; equal; dry; wiry; often curved.

Marasmius haematocephalus (Mont.) Fr.

It is an umbrella-like fungus, red in color found in a makaasim tree branch. Its gills is pinkish with red edges and its spores is 16-22 x 4-5.5 micrometer.

Marasmius ramealis (Bull.) Fr.

It is known as "twig parachute". It is a umbrella-like soft fungus found on a rotting banaba branch. Upper stem is concolorous with the cap, slightly scurfy; delicate; 0.5 to 2 cm long and typically 1 mm in diameter. It has no ring.

Marasmius rotula (Scop.) Fr.

Brown fruiting body with depression on the center; has thin and long woody stalk. It was found on a rotting Lauan tree branch. Its cap is up to 2 cm (0.8 in) wide that are sunken in the center, and pleated with scalloped margins. The slender and wiry black hollow stems measure up to 8.0 cm (3.1 in) long by 1.5 mm (0.06 in) thick. On the underside of the caps are widely spaced white gills that are attached to a collar encircling the stem.

Marasmius sp.

Umbrella-like fungus, the cap is color brown and the stalk is gelatinous white in color. It was found on a rotting balobo branch.

Family Meruliaceae

Cymatoderma elegans Jungh.

Flower-like fungus, it is very small, white in color found on a rotting Mahogany branch. This sturdy leather has a brown, funnel-shaped cap and a brown woody stem. The cap has concentric zones of white, yellow and brown and is vertically ridged. The shallowly ridged lower surface is white to cream.

Family Mycenaceae

Mycena alcalina (Fr.) P. Kumm.

A fleshy fungus with off white to brown in color, commonly known as the "stump fairy helmet" mushroom. The cap of Mycena alcalina ranges from conical to bell shaped and is generally 1–4 cm in diameter. The cap is supported by a thin, hollow stem growing anywhere from 20-65mm long. The cap appears black at first, but fades to a grey-brown colour around the edges, with the stem generally being the same color as the cap. The flesh of Mycena alcalina ranges from white to translucent and is fragile and thin.

Mycena epipterygia (Scop.) Gray.

White to transparent(clear) in color; with stalk and defined gills. It was found in a rotting branch of makaasim tree. The species is saprotrophic and its appearance is quite variable. Some parts of the fungus are bioluminescent. It has a sticky, elastic and deductible surface. Its cap is 1-2 cm wide. The gills are white and the spores are amyloidic and have a length of 8 to 10 micrometers and a width of 4 to 5.5 micrometers.

Mycena flavoalba (Fr.) Quel.

Commonly known as the "ivory bonnet", a species of inedible mushroom. The cap is initially conical in shape, before becoming convex and then flattening out; it may reach dimensions of up to 1.5 cm (0.6 in) across. The cap color is ivory-white and the tubular stems are up to 8 cm (3.1 in) long and 2.5 mm (0.10 in) thick, and have long, coarse white hairs at their bases (https://en.wikipedia.org/wiki/Mycena_flavoalba). It has slender tall found on a rotting ligas branch.

Mycena galopus (Pers. ex Fr.) Kummer

A little umbrella-like fungus with a convex and fibrous cap. The cap and stem

are in white in color found on a rotting palosanto branch.

Mycena pura (Pers.) Kumm.

Umbrella type fungus, white in color. It is characterized by a white spore print, a small conical cap, and a thin fragile stem. It has a translucent and striate cap and has an incurved margin.The substrate is a balobo branch.

Mycena sp.

White, tiny fleshy fungus found in coconut husk. It is small saprotrophic mushrooms that are a few centimeters in width. It has translucent and striate cap, which has an incurved margin. The gills are attached.

Family Nidulariaceae

Cyatus striatus (Huds.) Hoffm.

A small white cone shape fungus. It has shaggy to hairy exterior and its prominently grooved interior. It was found on a rotting branch of bamboo. Its nest is typically 7-10 mm high and 6-8 mm wide, but variable in size; vase-shaped; outer surface grayish buff to dark brown, shaggy to woolly, with tufts of hairs; inner surface distinctly grooved or lined (otherwise bald) and shiny; "lid" typically white, disappearing with maturity.

Family Phanerochaetaceae

Byssomerulius corium (Pers.) Parmasto

Its fruiting body is irregular but mostly resupinate, sometimes forming brackets. Fruiting bodies are white, coalesce to form large patches or tiered brackets with lower (fertile) whitish surface covered in snaking net-like ridges or elongated warts. The pale upper surface, where visible, is faintly zoned and fibrous or finely downy, becoming finely hairy at the margin. It was found attached on yakal tree.

Family Physalacriaceae

Armillaria sp.

A brown semi-woody fungus and a wood-rotting gilled mushrooms with white spore prints and gills that are attached to the stem or run down it. Most of

the species have a partial veil, but the veil can manifest in several different forms - from cob-webby ring zones to full-blown rings.

Family Pleurotaceae

Pleurotus sp.

A fleshy fungus that is white to off white in color. The caps are laterally attached (with no stem). The spores are smooth and elongated.

Family Psathyrellaceae

Coprinellus disseminatus (Pers.) J.E Lange

A small bell-shaped mushroom with white cap and stalk; gills are free; appeared in colony. It is typically fruits in clusters near the bases of stumps in astounding numbers. Its cap is initially white, but soon begins to turn grayish brown, with a brownish center. It was found on a branch of dapdap tree. Its cap minute to 2 cm; oval when young, expanding to broadly convex or bell-shaped; when young 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 to the center. Their gills are attached to the stem or free from it; white at first, but soon gray, then blackish; not deliquescing; close or almost distant.

Coprinellus micaceus (Bull.) Fr.

A small fleshy bell-shaped mushroom with gray cap and slender stalk. It grows in clusters on decaying wood--though the wood may be buried, causing the mushrooms to look terrestrial. Saprobic, growing in clusters on decaying wood; its cap range from 2-15 cm, oval when young, expanding to broadly convex or bell-shaped, sometimes with a curled up and/or tattered margin; honey brown, tawny, amber, or sometimes paler; becoming paler with age, especially towards the margin; buttons covered with mica-like granules which frequently wash off with rain or dew; the margin lined or grooved, usually halfway towards the center or more. Its gills was not attached to the stem.

Family Polyporaceae

Earliella scabrosa (Pers.) Gilb. & Ryvarden

The fruit body of this fungus is tough and leathery giving its appearance of a woody fungus. The color ranges from reddish to dark red with white margin. This fungus can be commonly found growing widely effused along fallen branches and logs like the dapdap and narra tree.

Favolus sp. 1

A brown to dark brown fleshy fungus. The margin is curved and expanded.

Favolus sp. 2

The cap is small, thin, smooth and brown in color. The stipe is very short.

Fomes sp.1

It has hoof-shaped fruiting bodies that attach directly to lauan tree which its substrate without a stipe. The cap is hard, woody appearance with a black color on top and white underside.

Fomes sp. 2

Woody in appearance cap with white color. It is attached to rotten log of makaasim tree.

Fomes sp. 3

The color of this fungus is red with cream margin. It is attached to rotten log of dalingdingan tree.

Fomes sp. 4

A black color on top of the cap and white on the underside. This fungus is attached to decaying log of dalingdingan tree.

Hexagonia apiaria (Pers.) Fr.

It is covered with very stiff, branched hairs on the upper surface with a honeycomb-like structure on the underside.

Hexagonia tenuis (Hook.) Fr.

The fruiting body of fungus is brown and fleshy. The surface of the pore is more or less flat, with large shallow pores. Pores are usually hexagonal and honeycomb-like.

Lentinus sp.

The genus name Lentinus is derived from the Latin lent, meaning "pliable," and inus, meaning "resembling" (http://globalspecies.org). The cap is black and umbilicate. The stem is short. According to google books, this fungus is easily recognizable because of its characteristics like having a fibrous to scaly cap as what is observed in Quezon.

Lenzites elegans (Spreng.) Pat.

The genus Lenzites is named for the mycologist H. O. Lenz; elegans means "neat" or "elegant". The fungus is characterized by woody in appearance, white in color and the stalk is absent.

Lenzites repanda (Pers.) Fr.

A woody, fan-shaped and white in color fungus. The substrate is rotten log of malaikmo tree.

Microporus sp.

The species observed is thin and small. The color of the cap is dark brown with white margin.

Microporus affinis (Blume & T. Nees.) Kuntze

This fungus is characterized by fan-shaped cap with concentric zone of brown, reddish and yellow. According to fungimap.org, the saucer-shaped depression in the cap near the stem, and the very short lateral stem which expands at the base to form a dark 'foot' is the distinctive characteristic of this species.

Microporus vernicipes (Berk.) Kuntze

Heart-shaped cap of the species are thin and semi-woody. The color of the cap is pale brown with white margin.

Microporus xanthopus (Fr.) Kuntze

The fruiting body is funnel-shaped and thin. The cap has various shades of brown concentrically zone at the center. The substrates are decaying branch of guijo, narra, and makaasim tree.

Polyporus arcularius Fr.

The cap is convex with brown to golden brown scales. The center of the cap has a small depression. The undersurface has interesting characteristic, a white to cream pores are 'coffin'-shaped, increasing in size from the rim to the center.

Polyporus grammocephalus Berk.

A leaf-like fungus, the fruiting body is dark brown in color. The substrate is the decaying log of balobo tree.

Polyporus sp.

The color of the fruiting body ranges from white, orange to brown. The fungus representative from lower and higher altitude has irregular shape. In lower altitude, it is semi-woody while in higher altitude it is hard.

Polyporus sp.1

Fleshy flower-like fruiting body that has a color of white to off-white.

Polyporus sp.2

An orange to brown fruiting body of the species. It is thick, woody and has rough surface.

Polyporus sp.3

The fungal species has an off-white color. It is fleshy and no stalk. It is attached to rotten log of malasaging tree.

Polyporus sp.4

This fungus has no stalk. It is attached to a rotten log of lago tree. The fruiting body has an off-white color.

Polyporus sp.5

A white, leaf-like fungal structure. It has no stalk and attached to a decaying branch of balobo tree.

Polyporus sp.6

Attached to a rotten branch of balite.

Polyporus sp.7

The fungus is fan-shaped and has a light brown color. It is attached to a rotten branch of balobo tree.

Poria sp.

The fruiting body is characterized by a brown color. It is attached to a decaying log of pahutan tree.

Trametes sp.

This species has an orange color with yellow margin. The surface of the fungus is rough.

Family Ramariaceae

Ramaria gracilis Quel.

A coral-like fungus with smooth surface. It is in dirty white color found on the soil. Ramaria gracilis fruit bodies (basidiocarps), which are made up of a dense cluster of branches, measure up to 8 centimetres (3.1 in) in height and 4 centimetres (1.6 in) in width. The individual branches, which have fairly thin bases, are typically forked and sometimes entangled with one another. R. gracilis produces spores which measure from 5 to 7 by 3 to 4.5 micrometers.

Ramaria sp.

Coral-like fungus that is dark brown in color. It is made up of a dense cluster of branches, measure up to 8 centimeters. It was found on the soil.

Family Stereaceae

Stereum insignatum Blume

The cap is rust-brown or darker brown, sometimes with blackish zones. It was found in a rotting branch of Mahogany. It is a wood decay fungi that do not have tubes. They are simply small bracket-shaped membranes appearing on dead wood. The underside of the membrane contains spores but no ornament, i.e. gills, of any kind.

Stereum ostrea (Bl. & Nees.) Fr.

It is known as "turkey tails". It is woody, dark brown to black in color. It was found in a rotting branch of narra tree. Stereum ostrea lacks a pore surface, and therefore has a smooth underside. In other words, it is a crust fungus rather than a polypore. S. ostrea is distinguished by its relatively large size (it regularly reaches widths of 5-7 cm) and the fact that it tends to develop individual, sliced-funnel-shaped fruiting bodies, rather than laterally fused flat ones.

Stereum sp.1

A woody fungus that is semi-circular, irregular and in rusty orange in color. The underside of the membrane contains spores but no stipe and gills.

Stereum sp.2

A fan-like fungus with rough surface. It is dark brown in color with white margin found on a rotting Supa branch. This fungus do not have stipes, its fruiting bodies was attached to the branch.

Family Thelephoraceae

Thelephora sp.

A fungus that has a distinct cap that is in shiny brown to dark brown in color. Its cap has smooth surface found in a tamayuan tree. Almost all species in the genus are thought to be inedible.

Family Tricholomataceae

Tricholoma sp.1

Species are thin (1mm to 3mm thickness) and are concentrically zoned in various shades of brown, usually with a pale margin which is sometimes wavy. The cap can be up to 150mm wide. Caps can hold water. It was found in a branch of mahogany.

Tricholoma sp. 2

Umbrella type fungus, slightly fleshy, brown to dark brown in color found on a rotting balobo branch. It has prominent gills unattached to the stem.

Phylum Ascomycota

The ascus-bearing fungi include a very diverse and economically-important collection of organisms. Asci and ascocarps , the structures that bear the asci, are among the important structural themes in this phylum. Asci contain the sexual meiospores, the ascospores, which may be agents of dispersal, but most taxa disperse themselves asexually by means of conidiospores contained on conidia. The phylum itself is extraordinarily diverse formed of free-living, parasitic, and symbiotic taxa. Furthermore, they may form mycelia or live in the unicellular state as yeasts.

Family Sarcoscyphaceae

Cookeina sulcipes (Berk.) Kuntze

Apothecia rather deeply cup-shaped (up to 10 mm), 5–20 mm diam. and up to 30 mm high, stalked, funnel-shaped. Hymenial surface smooth, orange-red to cherry-red, scarlet red. Outer surface with long whitish hairs, considerably dense near the margin and grouped in tufts, concolorous to the hymenial surface, often with rough, wrinkled or folded aspect; margin regular, whole, densely hairy, showing a few concentric rings. Stalk variably long, cylindrical, only slightly enlarged at the top where it connects to the cup, 2–3.5 mm diam., whitish cream with delicate orange reflections, initially smooth, but feebly longitudinally furrowed in adults. Flesh waxy, fragile, pale whitish orange.

Cookeina tricholoma (Mont.) Kuntze

Apothecia quite deeply cup-shaped (up to 10 mm), 5–15 mm diam. and up to 40 mm high, more or less long stalked, funnel-shaped. Hymenial surface smooth, pale yellow-orange, pale pink-orange to orange-reddish in wet specimens. Outer surface provided with long, whitish or very faintly orange-brown hairs, markedly denser at the margin, also grouped in bundles, concolorous to the hymenial surface, sometimes rough; margin smooth, whole, often introflexed, densely hairy. Stalk variably long, cylindrical, slightly dilated at the top where it connects to the cup, about 2 mm diam., smooth, white-cream with vague orange reflexes. Flesh waxy, whitish or very pale whitish-orange.

Family Xylariaceae

Daldinia concentrica (Bolt.) Ces. & de Not.

The fungus is ball-shaped, with a hard, friable, shiny black fruiting body 2 to 7 centimeters wide. It resembles a chunk of coal, which gives it several of its common names, including coal fungus and carbon balls. Ascocarp irregularly semi-globose, subclavate, turbinate, ob-pyriform, sessile to distinctly stalked; up to 50 mm wide and 30–40 mm high. Perithecia globose or globose-elongated, ob-ovoidal, some cylindrical, very slightly papillate, smooth, blackish, up to 1 × 1 mm. Consistency carbonaceous and somewhat fragile in all the fruit-body.

Xylaria cornu-damae (Schwein.) Berk.

Recognized by sight: Stromata up to 4 cm x .3 cm, cylindric or clavate, often flattened, branched or unbranched, sometimes solitary or multiple arising from a common base, apices often pointed, usually a short stipe. Color (mature): black with traces of white scales. Surface longitudinally wrinkled and roughened, ostilar openings papillate, sometimes umbilicate. Interior white.

Xylaria longipes Nitschke

Stromata cylindrical to clavate with fertile apex mostly unbranched but occasionally up to two stromata arising from a common base, dull blackish brown with light brown polygonal scales.

Xylaria multiplex (Kuntze ex Fr.) Fr.

Perithecia completely immersed with apical ring bluing in Melzer's iodine reagent, quadrate to inverted hat shape.

Xylaria polymorpha (Pers.) Grev,

Commonly called "dead man's fingers," this odd mushroom dons a variety of costumes in its rather long life span. When young it is pale (often bluish), with a whitish tip; the pale covering is a coating of asexual spores produced in this early stage of development Fruiting Body: 3-10 cm tall; up to 2.5 cm across; tough; shaped more or less like a club or a finger but occasionally flattened; usually with a rounded tip; at first coated with a pale to bluish or purplish dust of conidia (asexual spores), except at the whitish tip--but soon blackish with a pale tip and eventually black overall; surface becoming minutely pimpled and wrinkled with maturity.

Family Pezizaceae

Peziza repanda Pers.

When young, Peziza repanda is very pale or even whitish overall, and it displays a central, stemlike structure. This stage is rarely illustrated or discussed in field guides. Gradually the upper surface darkens to brown, and the "stem" becomes negligible in proportion to the cup. In maturity flattened-irregular or bent backwards; 6-12 cm across; the margin often splitting; upper surface brown and smooth, often "pinched" or somewhat wrinkled over the center; under surface whitish and minutely fuzzy; attached to the substrate centrally, without a stem. Odor none. Flesh brownish or pale; brittle.

Family Sarcosomataceae

Galliela rufa (Schwein.) Nannf. & Korf.

Immature Fruiting Body: More or less cylindric; wrinkled; dark brown to black; hairy; interior gray and gelatinous; developing an apical cavity, enclosed and protected by the lid-like outer surface, in which the hymenium develops; with approaching maturity the cavity ruptures, exposing the hymenium and creating the fringed, pustulate margin.

Fruiting Body: Goblet-shaped to cup-shaped; 2-4 cm across; upper surface concave, orangish to brownish orange, bald; margin incurved, often finely toothed, fringed, or pustulate; undersurface hairy, dark brown to black, running down the pseudostem, becoming somewhat wrinkled with age; pseudostem 1-2 cm long, 3-5 mm thick, terminating in black basal mycelium; flesh gelatinous-rubbery and tough.

Family Pyronemataceae

Octospora humosa (Fr.) Dennis

This bright, reddish-orange fungus is one of the Ascomycota – the spore-shooting fungi. These fungi produce microscopic spores inside special, elongated sacs. As the spores mature, pressure builds inside until eventually the top bursts off, "shooting" out the spores. Octospora humosa is thought to live within with certain types of hair moss. The connection between the two species is not clear, but the fungus does not appear to harm the plant.

Discussion

The field survey provides the first documented report on the existence and distribution of the different species of macroscopic fungi in Quezon Protected Landscape. The collection sites provide wider range of fungal habitats and substrates such as dead and rotten log, living trees, leaf litters, timbers and soil. Thus, the area was a good study site for fungal collection and identification.

Opportunistic sampling method was employed that resulted to the collection and identification of twenty nine families, fifty one genera, and hundred six species of macroscopic fungi. Among 106 different species, 94 species (88.68%) are basidiomycetous fungi while 12 species (11.32%) are ascomycetous ones that accounted for the three families namely, Pezizaceae, Sarcoscyphaceae, and Xylariaceae. Conversely, there are twenty six families found that belong to class Basidiomycetes. For Basidiomycetes, Table 1 shows that the family Polyporaceae is the most abundant in QPL with six genera and a total of twenty-five different species, eleven of which belong to genus Polyporus.

The family Tricholomataceae ranked second in high species count with twelve different species. For Ascomycetes, the family Xylariaceae has the highest species count with eight different species seen and collected. Xylaria multiplex is the most abundant macroscopic fungi in the collection comprised of 408 collected individuals. A greater number of fungal species (73 species) were markedly observed in higher elevations (245-258 masl) than in lower elevations (242-244 masl) which documented only 47 species.

The high number of species and quantities gathered can be accounted for the rainy season during the field survey. Most fungi grow best when there is abundant moisture available. The study of Talley et al (2002) reveals that measures of moisture availability, such as relative humidity and vapor pressure deficit, explained more of the variance in fungal abundance and richness than did temperature. Thus, the data indicate that the time of collection influences the abundance and diversity of macroscopic fungi in QPL.

The difference in the altitude where the fungi were collected provides varying results. There were forty-six species of macroscopic fungi collected in lowland while seventy-five species in highland. This number shows that the number of species, as well as individuals, increases as the altitude increases. For example, the number of individuals of Microporus affinis counted in lowland is forty-three while four hundred three in highland. The climatic factors such as humidity, temperature and presence of moisture played significant roles in the existence of numerous macroscopic fungi in highland.

Table 1

Checklist of macroscopic Basidiomycetes and Ascomycetes in low and high altitudes of Quezon Protected Landscape, Southern Luzon, Philippines

List of collected Species		NUMBER OF INDIVIDUALS	
BASIDIOMYCETES		LOW ELEVATION	HIGH ELEVATION (245 – 258 masl)
FAMILY	SPECIES	(242 -244 masl)	
Agaricaceae	(5 species)		
	Agaricus moelleri	1	
	Agaricus sp.		45
	Coprinus sp.		206
	Leucocoprinus sp.		2
	Lycoperdon sp.	1	
Auriculariaceae	(4 species)		
	Auricularia auricular-judae	28	161
	Auricularia polytricha	4	
	Auricularia sp.	5	
	Exidia recisa	6	5
Auriscalpiaceae	(1 species)		
	Artomyces sp.		1
Boletaceae	(1 species)		
	Phylloporus bellus	1	
	Cantharellaceae (3 species)		
	Cantharellus infundibuliformis		1
	Cantharellus sp. 1		8
	Cantharellus sp. 2		1
Clavariaceae	(4 species)		
	Clavulinopsis miniata	3	
	Ramaria gracilis	2	
	Ramaria sp. 1	6	
	Ramaria sp. 2		2
Coriolaceae	(7 species)		
	Coriolaceae sp.		32
	Hexagonia apiaria	1	
	Hexagonia tenuis	4	3
	Lenzites elegans		7
	Lenzites repanda		2
	Trametes gibbosa	17	
	Trametes sp.		18
Crepidotaceae	(1 species)		
	Crepidotus mollis	11	
Dacrymycetaceae	(1 species)		
	Dacrymyces palmatus		24
Diplocystaceae	(1 species)		
	Astraeus hygometricus	4	7
Ganodermataceae	(5 species)		
	Amauroderma rude		2
	Ganoderma applanatum	3	
	Ganoderma lucidum		2
	Ganoderma sp. 1		85
	Ganoderma sp. 1		28
Hygrophoraceae	(1 species)		
	Hygrocybe miniata	2	

Table 1 continued.

Hymenochaetaceae	(3 species)			
	Hymenochaeta sp.	5		
	Hymenochaete rubiginosa			1
	Phellinus sp.		8	
Marasmiaceae	(5 species)			
	Marasmius haematocephalus			1
	Marasmius pulcherripes	11		
	Marasmius ramealis	49		7
	Marasmius rotula			14
	Marasmius sp.			2
Meruliaceae	(1species)			
	Cymatoderma elegans	1		
Nidulariaceae	(1 species)			
	Cyathus striatus	6		
Phanerochaetaceae	(1 species)			
	Byssomeralius corium			196
Physalacriaceae	(2 species)			
	Armillaria sp. 1			1
	Armillaria sp. 2			19
Polyporaceae	(25 species)			
	Earliella scabrosa	2		31
	Favolus sp. 1			3
	Favolus sp. 2			1
	Fomes sp. 1			2
	Fomes sp. 2			2
	Fomes sp. 3			1
	Fomes sp. 4			3
	Fomes sp. 5			1
	Microporus affinis	63		403
	Microporus vernicipes	22		
	Microporus xanthopus	95		14
	Microporus sp. 1			67
	Microporus sp. 2			57
	Polyporus arcularius	2		
	Polyporus grammocephalus			24
	Polyporus sp. 1			23
	Polyporus sp. 2			34
	Polyporus sp. 3			6
	Polyporus sp. 4			27
	Polyporus sp. 5	208		
	Polyporus sp. 6			5
	Polyporus sp. 7			10
	Polyporus sp. 8			2
	Polyporus sp. 9			2
	Poria sp.	2		
Psathyrellaceae	(2 species)			
	Coprinellus disseminatus			70
	Coprinellus micaceus			65
Pyronemataceae	(1 species)			
	Octospora humosa	8		

Table 1 continued.

Sarcoscyphaceae	(1 species)		
	Phillipsia domingensis		2
Sarcosomataceae	(1 species)		
	Galiella rufa	2	
Stereaceae	(4 species)		
	Stereum insignatum	3	
	Stereum Ostrea	5	
	Stereum sp. 1	5	
	Stereum sp. 2	30	
Thelephoraceae	(1 species)		
	Thelephora sp.	34	
Tricholomataceae	(12 species)		
	Lentinus sp.	1	
	Mycelia sp.	5	
	Mycena alcalina		48
	Mycena epipterygia		1
	Mycena flavoalba	4	
	Mycena galopus	82	
	Mycena pura		77
	Mycena sp.	14	
	Omphalina sp.		1
	Pleurotus sp. 1		42
	Pleurotus sp. 2		7
	Tricholoma sp.	2	21
ASCOMYCETES			
Pezizaceae	(1 species)		
	Peziza repanda		4
Sarcoscyphaceae	(3 species)		
	Cookenia colensoi		4
	Cookenia tricholoma	12	32
	Cookenia sulcipes	26	13
Xylariaceae	(8 species)		
	Daldinia concentrica	4	137
	Xylaria cornu-damae		5
	Xylaria longipes		14
	Xylaria multiplex		408
	Xylaria polymorpha	4	125
	Xylaria sp. 1	2	
	Xylaria sp. 2		1
	Xylaria sp. 3		3
Total: 29	**106**	**47**	**73**

CONCLUSIONS

Given the limited collection time and area covered by this preliminary study (5-10 meters away from the paved trails of the forest), the result shows that Quezon Protected Landscape is home to a numerous species of fungi. It is thus imperative to preserve the diversity of macroscopic fungal species in Quezon Protected Landscape, the government especially the Department of Environment and Natural Resources (DENR) should continue its advocacy to protect this natural park and monitor the activities in the area.

RECOMMENDATIONS

A more rigid study that covers the greater area of the QPL is deemed necessary and of much significance in order to establish a wider taxonomic work pertaining the macroscopic fungi that inhabit the landscape.

Plate 1. Species with the same genus at Quezon Protected Landscape. A-B) *Fomes sp.*; C-H) *Polyporus sp.*

.

Plate 2. Some ascomycetes found at Quezon Protected Landscape. A) *Ascomycetes*; B) *Cookeina sulcipes*; C-D) *Daldinia concentrica*; E-F) *Octospora humosa*; G) *Peziza repanda*; H) *Xylaria polymorpha*

Plate 3. Some species with large number of quantity found at Quezon Protected Landscape. A) *Marasmius ramealis*; B) *Mycena galopus*; C) *Coprinellus disseminatus*; D) *Auricularia auricula judae*; E-F) *Micro porus affiinis*; G) *Mycena alcalina*; H) *Xylaria multiplex*

Plate 4. Some ascomycetes found at Quezon Protected Landscape. A) *Philipsia domingensis*; B) *Hexagonia apiaria*; C) *Leococoprinus sp.*; D) *Astraeus hygometricus*

LITERATURE CITED

Alexopoulous, C. J., & Mims, C. W. (1979). *Introductory Mycology*. Third Edition, John Wiley & Sons. New York.

Angelini, C., Medardi, G. (2012). Tropical fungi: twelve species of lignicolous Ascomycota from the Dominican Republic. *Mycosphere 3*(5), 567–601.

Arriola, A. H., & Alejandro, G. J. D. (2013). A new species of *Villaria* (Octotropidea, Rubiaceae) from Luzon, Philippines including its conservation status.

CALABARZON Regional Physical Framework. (2008). Region IV –A (CALABARZON) REGIONAL PHYSICAL FRAMEWORK PLAN 2004-2030 (Volume 2 - Physical and Socio-Economic Profile and Situational Analysis) Philippine National Economic and Development Authority Regional Office IV-A (CALABARZON) Printed in Quezon City, Philippines page 44.

Chang, S. T., & Buswell, J. A. (1996). Mushroom nutraceuticals. *World Journal Microbiology Biotechnology, 12*: 473 -6

CLIMATE OF THE PHILIPPINES. (2014). http://kidlat.pagasa.dost.gov.ph/cab/climate.htm retrieved on January 2014.

Cooke, R. C., & Rayner, A. D. M. (1984). *Ecology of Saprotrophic Fungi*. Longman, London.

De Leon, A. M., Luangsa-Ard, J. J. D., Karunarathna, S. C., Hyde, K. D., Reyes, R. G., & Dela-Cruz, T. E. E. (2013). Species listing, distribution, and molecular identification of macrofungi in six Aeta tribal communities in Central Luzon, Philippines. *Mycosphere, 4*(3), 478-494.

Ecoutourism in CALABARZON. (2014). Data retrieved from http://pmd.6te.net/ecotourism calabarzon/Protected_PalayPalay.html on July 14, 2014.

Halling, R. E., & Mueller, G. M. (2005). *Common Mushrooms of the Talamanca Mountains, Costa Rica*. New York Botanical Garden.

Klemm, D. (2005). Cellulose: Fascinating Biopolymer and Sustainable Raw Material. *Chem. lnform. Vol. 36* (Issue 36),

Kuo, M. (2011). *Mushroom: The big picture, Retrieved December 09, 2013 from the Mushroom Expert*. Website: http://www.mushroomexpert. com/taxonomy.html.

Lange, L. (2010). The importance of fungi for a more sustainable future on our planet. *Fungal Biology Reviews 24*. 90-92. 10.1016/j.fbr.2010.12.002.

Lasco, R. D., Pulhin, F. B., Sanchez, P. A. J.,Villamor, G. B., & Villegas, K. A. L. (2008). Climate Change and Forest Ecosystems in the Philippines: Vulnerability, Adaptation and Mitigation. J*ournal of Environmental Science and Management 11*(1):1-14

Lodge, D. J., Ammiranti, J. F., O'dell, T. E., & Mueller, G. M. (2004). *Collecting and describing macrofungi In: Biodiversity of Fungi:Inventory Monitoring Methods* (eds GM Mueller, GF Bills, MS Foster). Elsevier Academic Press, USA, 128 -158.

Mueller, G. M., Schmit, J. P., Leacock, P. R., Buyck, B., Cifuentes J., May, T. W., Minter, D., Rajchenberg, M., Redhead, S. A., Ryvarden, L., Trappe, J. M., Watling, R., & Wu, Q. (2007). Global Diversity and Distribution of Macrofungi. *Biodiversity Conservation. 16*, 37 – 48.

NAMRIA National Mapping and Resource Information Authority. (1993). Central Mapping and Resource Agency of the Philippines Government. Department of Environment and Natural Resources.

Niem, J., & Baldovino, M. (2015). Initial checklist of macrofungi in the karst area of Cavinti, Laguna. *Journal of Museum of Natural History*, UPLB.

Osono, T. (2011). *Diversity and Functioning of fungi associated with leaf litter decomposition in Asian forests of different climatic regions*.

Ostry, M. E., Anderson, N. A., & O' Brien, J. G. (2010). *Field Guide to Common Macrofungi in Eastern Forests and Their Ecosystem Functions*. U.S. Forest Service, pp. 2 – 6.

PAGASA Philippine Atmospheric, Geophysical and Astronomical Services Administration Climate Map of the Philippines.

Quimio, T. H. (2001). C*ommon mushroom of Mt. Makiling*. Museum of Natural History. University of the Philippines Los Baños, Laguna.

Quimio, T. H. (2001). *Workbook on tropical mycology: collection, isolation and identification*. Bureau of Agricultural Research, Quezon City.

Reinking, O. A. (1921). Higher Basidiomycetes from the Philippines and their Hosts. *Philippine Journal of Science*. 479 – 480.

Reyes, R. G., Abella, E. A., & Quimio, T. H. (2003). Wild macrofungi of CLSU. *Journal of Tropical Biology 2*, 8-11.

Reyes, R. G., Eguchi, F., Kalaw, S. P., & Kikukawa, T. (2009). *Mushroom Growing in the Tropics: A Practical Guide*. Nueva Ecija, Philippines. Central Luzon State University Press.

Schmit, J. P., Mueller, G. M., Leacock, P. R., Mata, J. L., & Huang, Y. (2005). Assessment of tree species richness as a surrogate for macrofungal species richness. *Biological Conservation, 121*(1), 99-110.

Tadiosa, E. R. (1998). Some noteworthy species of wood – rotting fungi found in the forested hills of La Union Province, Northern Luzon, Philippines. *UST Journal of Graduate Research. 25*(2), 55-58.

Tadiosa, E. R. (2012). The Growth and Development of Mycology in the Philippines. *Fungal Conservation (2)*, 18-22

Tadiosa, E. R., Agbayani, E. A., & Agustin, N. T. (2011). Preliminary Study on the Macrofungi of Bazal-Baubo Watershed, aurora province, central luzon, philippines. *Asian Journal of Biodiversity, 2*(1), 149-171.

Tadiosa, E. R., & Arsenio, J. S. (2014). A Taxonomic Study of Wood – rotting Basidiomycetes at the Molave Forest of San Fernando City, La Union Province, Philippines. *Asian Journal of Biodiversity 5*, 92-108.

Tadiosa, E. R, Arsenio, J. S., & Marasigan, M. C. (2007). Macroscopic fungal diversity of Mount Makulot, Cuenca, Batangas, Philippines. *Journal of Nature Studies 6* (1 & 2): 111-124.

Tadiosa, E.R., R.U Briones. (2013). Fungi of Taal Volcano Protected Landscape, Southern Luzon, Philippines. *Asian Journal of Biodiversity 4*: 46-64.

Tadiosa, E. R., & Militante, E. P. (2006). Identification of Important Wood decaying Fungi Associated with some Philippine dipterocarps at the Makiling Forest. Sylvatrop, *The Technical Journal of Philippine Ecosystems and Natural Resources. 16* (1&2) January – December 2006.

Tadiosa, E. R., Militante, E. P., & Pampolina, N. M. (2012). Fungi Associated with Decay of Some Philippine Dipterocarps and Its Ecological Functions and Significance at Mt. Makiling, Laguna, Philippines. *IAMURE International Journal of Ecology and Conservation. Vol. 3*

Teodoro, N. G. (1937). An Enumeration of Philippine fungi. Comm. Phil. Dept. Agri., *Manila. Tech. Bull. 4*:1-568

http://www.mushroomthejournal.com/greatlakesdata/Taxa/PolypFamil570.html

http://mushroomobserver.org/name/show_name/27181

http://australianfungi.blogspot.com/2007/06/16-polyporus-arcularius.html

ACKNOWLEDGMENTS

The author is grateful to the Department of Environment and Natural Resources (DENR) personnel, particularly to the Community of Environment and Natural Resources Officer (CENRO-Talipan), Park Area Superintendent, Forester Ramil Gutierrez; Municipality of Pagbilao, Quezon official. Fieldwork was made enjoyable in the company of Kuya Nick and Kuya Ruel of Silangang Malicboy, Pagbilao, Quezon.