



Full Length Article

Composition and Distribution of Wild Macrofungal Species in Real, Quezon, Philippines

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Abstract

This study was carried out to assess the diversity, distribution, and promising potential of macrofungi in Barangay Malapad, Real, Quezon Province, Philippines. A total of 125 specimens representing three classes, 23 families, 35 genera, and 56 taxa were documented. The macrofungal communities were predominantly composed of wood-decaying taxa associated with dead and decomposing woody substrates. Site 1, located near Nonok Falls, showed higher macrofungal composition (77%) than Site 2 (50%), indicating the influence of localized moisture on the occurrence of macrofungal species. Temporal variation was also evident, with August recording the highest macrofungal composition (70%), coinciding with lower temperatures, higher relative humidity, and increased rainfall. *Microporus xanthopus* was recorded across all the sampling months, while *Panus neostrigosus* had the highest number of specimens collected. Polyporaceae was the most species-rich family, while *Lentinus*, *Trametes*, and *Pluteus* were the most diverse genera. Notably, we successfully established pure cultures of 20 specimens on potato dextrose agar, providing viable materials for further taxonomic, biochemical, and biotechnological studies. The findings highlight Barangay Malapad as a potential reservoir of macrofungal diversity with promising prospects for sustainable utilization and future mushroom-related applications.

Keywords: Distribution; Macrofungi; Polyporaceae; Quezon Province; Species listing

Introduction

Macrofungi comprise diverse members of the phyla Ascomycota and Basidiomycota that produce conspicuous fruiting bodies and occur in various terrestrial ecosystems, including forests, grasslands, and agricultural areas. They predominantly colonize lignocellulosic substrates and play important ecological roles as decomposers, contributing to organic matter degradation and nutrient cycling (Dulay *et al.* 2020). Some species form mycorrhizal associations with plants, facilitating nutrient exchange and contributing to ecosystem stability (Javaid 2009). Beyond their ecological functions, macrofungi are valuable sources of food and bioactive compounds, providing proteins, carbohydrates, dietary fiber,

lipids, vitamins, minerals, and diverse mycochemicals with reported antioxidant, antibacterial, antidiabetic, anti-inflammatory, antihypertensive, anticoagulant, and anticancer activities (Dulay *et al.* 2021; Dulay 2023; Fabros and Dulay 2025; Plosca *et al.* 2025; Pozzobon *et al.* 2026). Their ecological, nutritional, and pharmacological attributes underscore the importance of exploring and documenting macrofungal diversity, particularly in poorly studied habitats and among species with potential for food, medicinal, and biotechnological applications.

The Philippines, recognized for its high biological diversity and wide range of ecosystems and climatic conditions, harbors a considerable diversity of macrofungi that remains incompletely documented. A comprehensive

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review by Dulay *et al.* (2022a) on the documented mushroom diversity of the Philippines indicated that macrofungal biodiversity surveys have been conducted in numerous provinces and localities across Luzon, Visayas, and Mindanao, including Ilocos Norte, Cagayan, Ifugao, Mountain Province, Isabela, La Union, Benguet, Nueva Vizcaya, Nueva Ecija, Pampanga, Bulacan, Bataan, Aurora, Tarlac, Zambales, Rizal, Cavite, Laguna, Batangas, Bicol, Palawan, Camarines Sur, Northern Samar, Dinagat Islands, Davao Oriental, Agusan del Sur, Camiguin, Misamis Oriental, Surigao del Norte, Bukidnon and Cagayan de Oro. More recent investigations have further expanded knowledge of macrofungal diversity in specific habitats. Bustillos *et al.* (2024), for instance, assessed macrofungal diversity along an elevation gradient in the Mt. Arayat Protected Landscape, Pampanga. In addition, Alfonso *et al.* (2026) investigated the composition and distribution of macrofungi in Mt. Mingan, Aurora Province. These different studies demonstrate continued efforts to characterize the Philippine macrofungal resources; however, substantial geographic gaps remain.

In Quezon Province, macrofungal surveys have been performed in the four municipalities, namely; Tayabas, Atimonan, Padre Burgos, and Pagbilao, as well as in the northeastern portion of the Quezon Protected Landscape (Tadiosa *et al.* 2015; Brazas *et al.* 2020; Parlucha *et al.* 2021). Despite these efforts, several areas of the province remain poorly explored. In particular, information on the species composition, distribution, and natural occurrence of wild macrofungi in the Municipality of Real remains limited. This knowledge gap warrants systematic surveys to characterize the local macrofungal assemblages and establish baseline information for biodiversity assessment and conservation. Among the potentially important sites in Real is Barangay Malapad, which encompasses a heterogeneous landscape of hills, mountains, narrow valleys, streams, waterfalls, secondary forests, and agricultural areas. Nonok Falls and its downstream stream provide a continuous water source that supports the surrounding forest and agroecosystems, creating diverse habitats potentially suitable for macrofungal growth. The area is also an emerging ecotourism site, where increasing tourist activities and land conversion may alter natural habitats and potentially affect native fungal resources. Because the occurrence and distribution of macrofungi are influenced by environmental conditions and substrate availability, changes in habitat structure may affect their persistence and diversity. Therefore, documenting the macrofungal resources of Barangay Malapad is important for establishing baseline data, assessing local fungal diversity, and identifying species with potential ecological, nutritional, medicinal, and biotechnological value. This study presents the first systematic documentation of macrofungal diversity in Barangay Malapad, Real, Quezon Province, Philippines. This work contributes to the understanding of local macrofungal resources and provides a scientific basis for future biodiversity monitoring, conservation initiatives, and sustainable utilization of fungal resources in the area.

Materials and Methods

Sampling site

Barangay Malapad, Municipality of Real, Quezon Province, Philippines was the study site (Fig. 1). Two sampling sites were selected based on vegetation characteristics, habitat conditions, and accessibility for macrofungal assessment. Both sites were forested areas with generally similar vegetation and environmental conditions, consisting of mixed trees, shrubs, ferns, and grasses, with abundant leaf litter, fallen branches, and decomposing plant materials that provide suitable substrates for macrofungal growth. Site 1 was located in a forested area near Nonok Falls, while Site 2 was situated in a forested area farther from the waterfall.

Field sampling of macrofungi

Macrofungi were collected through purposive sampling along two 1,000-m transect lines established on existing trails within the study area. Field surveys were conducted monthly from April to August 2026. For each collection, the geographic coordinates, type of substrate, and growth habit were documented. Fruiting bodies were photographed *in situ* and carefully detached from the substrate with their basal structures intact. Each specimen was labeled, placed in a paper bag, and brought to the laboratory for morphological examination and mycelial isolation. Temperature, rainfall, and relative humidity corresponding to each sampling period were acquired from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). Mycelial cultures were established from fresh tissues on potato dextrose agar (PDA) following the procedure of Dulay *et al.* (2020) for the preservation of viable cultures.

Morphological identification

Collected macrofungi were identified based on a combination of macroscopic and microscopic characteristics. Macroscopic features, including pileus shape, size, color, surface characteristics, hymenophore type, and stipe morphology, were documented and measured. Microscopic characteristics, particularly spore morphology, color, and dimensions, were examined and determined using a compound microscope. Taxonomic identification was performed using established taxonomic keys and relevant mycological literature (Arenas *et al.* 2015; Tadiosa *et al.* 2015; Dulay *et al.* 2020; Dulay *et al.* 2026) and was subsequently verified by a mushroom taxonomic expert.

Data analysis

The occurrence of macrofungal taxa was summarized across sampling sites and months. The percentage macrofungal composition of each site and month was calculated using the formula:

$$\text{Composition (\%)} = \left(\frac{\text{Total number of macrofungi occurred}}{\text{Total number of macrofungal taxa}} \right) \times 100 \quad (1)$$

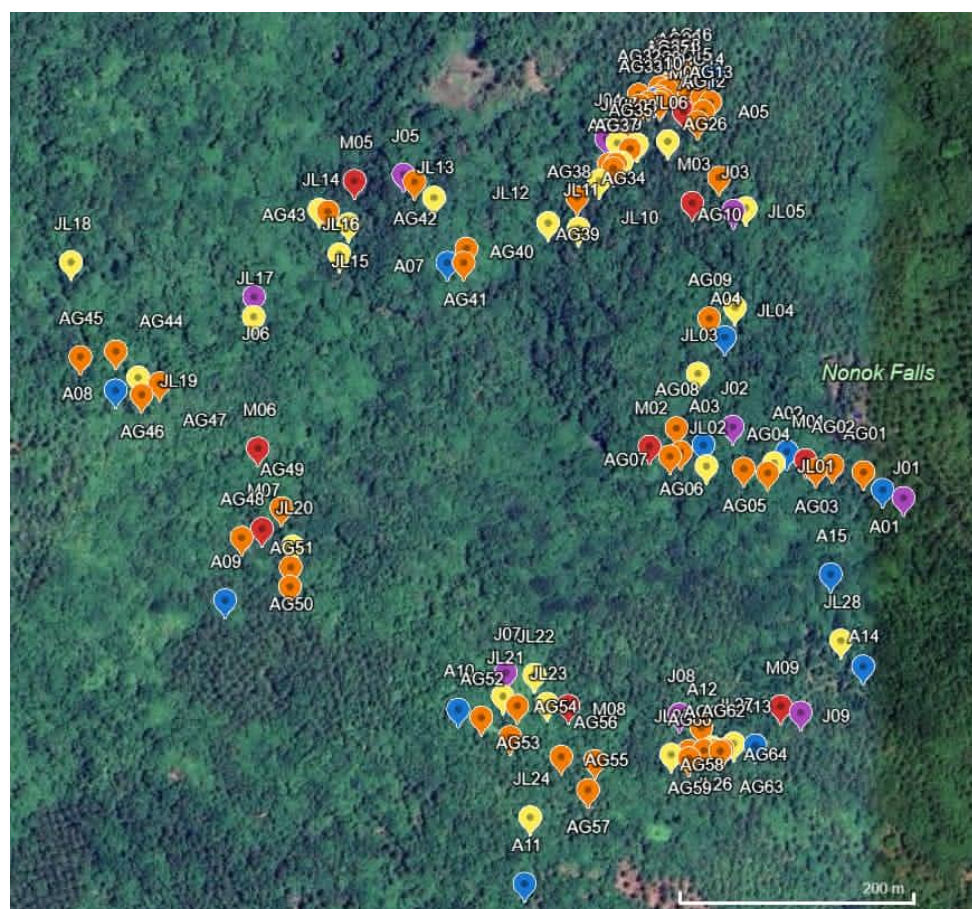


Fig. 1: Distribution of 125 collected macrofungi in the two collection sites in the month of April (blue), May (red), June (purple), July (yellow) and August (orange)

Results

The natural habitat of macrofungi

Two sampling sites in Barangay Malapad, namely, a forested area near Nonok Falls (Site 1) and another forested area farther from the waterfall (Site 2) but within the same locality, were selected for the study. Both sites exhibited generally similar vegetation, including mahogany, coconut, mango, and other indigenous trees, shrubs, ferns, and grasses, with abundant leaf litter, fallen branches, and decaying woody materials that provide suitable substrates for macrofungal growth. Site 1 was located near Nonok Falls, where the waterfall and downstream stream system contribute to the moist conditions of the surrounding forest. Site 2 was situated in a forested area away from the waterfall but with comparable vegetation and substrate conditions. The ambient temperatures ranged from 28–30°C, with relative humidity of 55–68% from April to July, whereas in August, temperature decreased to 24–26°C and relative humidity increased to 78–82%. Monthly precipitation was lowest in April and May, and progressively increased during the succeeding months, with August recording the highest rainfall. These seasonal

variations in temperature, relative humidity and precipitation may have influenced the occurrence and fruiting patterns of macrofungi in the study area.

Distribution of macrofungi

Most of the collected macrofungi were identified as lignin-degrading fungal species, occurring predominantly on dead woody substrates, including standing trunks, fallen logs, branches, decaying wood, and stumps. Other taxa were recorded on soil, leaf litter, animal dung, and organic-rich mounds, reflecting the diversity of substrates utilized by macrofungi in the study area. The distribution of macrofungal species across the two collection sites and sampling months is presented in Table 1. Site 1, located near Nonok Falls, showed a higher macrofungal composition (77%), whereas Site 2, located in a forested area farther from Nonok Falls, exhibited a lower composition (50%). The spatial distribution of the 125 collected macrofungal specimens based on their geographic coordinates is presented in Fig. 1. Among the five sampling months, August recorded the highest macrofungal composition (70%), while the other sampling months recorded lower values ranging from 9% to 23%.

Table 1: Distribution of 125 macrofungi in the two collection sites and five sampling months

No.	Macrofungi	Collection Site		Collection Month					No. of specimen
		Site 1	Site 2	Apr	May	Jun	Jul	Aug	
1	<i>Auricularia auricula-judae</i>	X	X		X		X	X	5
2	<i>Clavulinopsis laeticolor</i>	X						X	2
3	<i>Coltricia</i> sp.	X		X					1
4	<i>Cookeina speciosa</i>	X					X	X	2
5	<i>Cookeina tricholoma</i>	X						X	1
6	<i>Coprinopsis</i> sp.	X						X	1
7	<i>Crepidotus</i> sp.	X						X	1
8	<i>Cubamycetes</i> sp.		X	X					1
9	<i>Cyathus striatus</i>	X						X	1
10	<i>Cymatoderma elegans</i>	X	X	X			X	X	9
11	<i>Cymatoderma</i> sp.		X		X				1
12	<i>Earliella scabrosa</i>		X		X				1
13	<i>Fabiosporus sanguineus</i>	X	X			X		X	5
14	<i>Favolus tenuiculus</i>	X						X	1
15	<i>Ganoderma applanatum</i>	X	X					X	2
16	<i>Hygrocybe</i> sp.	X						X	2
17	<i>Inocybe</i> sp.		X					X	1
18	<i>Lactarius</i> sp.	X						X	1
19	<i>Lentinus arcularius</i>	X						X	2
20	<i>Lentinus crinitus</i>	X						X	1
21	<i>Lentinus sajor-caju</i>	X						X	2
22	<i>Lentinus squarrosulus</i>	X		X					1
23	<i>Lentinus tigrinus</i>	X	X					X	2
24	<i>Lentinus</i> sp.		X		X				1
25	<i>Lepiota cristata</i>	X					X		2
26	<i>Lignosus rhinocerus</i>		X	X					1
27	<i>Marasmiellus candidus</i>	X						X	1
28	<i>Microporus affinis</i>		X	X		X			2
29	<i>Microporus xanthopus</i>	X	X	X	X	X	X	X	9
30	<i>Panaeolus antillarum</i>	X						X	1
31	<i>Panus neostrigosus</i>	X	X		X	X	X	X	14
32	<i>Parasola</i> sp. 1	X	X				X	X	3
33	<i>Parasola</i> sp. 2		X				X	X	2
34	<i>Picipes</i> sp.	X	X	X					3
35	<i>Pleurotus giganteus</i>		X					X	1
36	<i>Pleurotus tuber-regium</i>	X		X					2
37	<i>Pluteus</i> sp. 1	X	X				X		3
38	<i>Pluteus</i> sp. 2	X	X				X		7
39	<i>Pluteus</i> sp. 3	X					X		1
40	<i>Pluteus</i> sp. 4		X				X		2
41	<i>Pluteus</i> sp. 5	X	X				X	X	3
42	<i>Polyporus auratus</i>		X					X	1
43	<i>Polyporus</i> sp.	X						X	1
44	<i>Ramaria</i> sp.	X						X	1
45	<i>Sanguinoderma rude</i>		X			X			1
46	<i>Sanguinoderma rugosum</i>		X					X	1
47	<i>Schizophyllum commune</i>	X	X					X	2
48	<i>Stereum ostrea</i>	X		X	X				2
49	<i>Termitomyces clypeatus</i>	X	X	X				X	4
50	<i>Trametes coccinea</i>	X						X	1
51	<i>Trametes elegans</i>	X	X					X	2
52	<i>Trametes gibbosa</i>	X						X	1
53	<i>Trametes hirsuta</i>	X						X	1
54	<i>Trametes</i> sp. 1	X						X	1
55	<i>Trametes</i> sp. 2	X						X	1
56	<i>Xylaria polymorpha</i>	X						X	1
Total		43	28	11	7	5	13	39	125
Composition (%)		77	50	20	13	9	23	70	-

Notably, *Auricularia auricula-judae*, *Cymatoderma elegans*, *Ganoderma applanatum*, *Lentinus tigrinus*, *Microporus xanthopus*, *Panus neostrigosus*, *Parasola* sp. 1, *Picipes* sp., *Pluteus* sp. 1, 2, 5, *Fabiosporus sanguineus*, *Schizophyllum commune*, *Termitomyces clypeatus*, and *Trametes elegans*

were recorded at both collection sites. Among the recorded taxa, only *M. xanthopus* was consistently observed across all sampling months. Among the 56 recorded taxa, *P. neostrigosus* showed the highest number of collected specimens (14), followed by *C. elegans* and *M. xanthopus*



Fig. 2: Some wild mushrooms collected in Barangay Malapad, Real, Quezon Province, Philippines; (A) *Microporus xanthopus*, (B) *Termitomyces clypeatus*, (C) *Lignosus rhinocerus*, (D) *Pleurotus tuber-regium*, (E) *Hygrocybe* sp., (F) *Trametes* sp. 1, (G) *Cymatoderma elegans*, (H) *Ramaria* sp., (I) *Cookeina speciosa*, (J) *Cookeina tricholoma*, (K) *Fabisporus sanguineus* and (L) *Clavulinopsis laeticolor*

(9 specimens each), *Pluteus* sp. 2 (7 specimens), *F. sanguineus* and *A. auricula-judae* (5 specimens each), and *T. clypeatus* (4 specimens). Representative wild macrofungi collected from Barangay Malapad, Real, Quezon Province, are presented in Fig. 2.

Taxonomic list of macrofungi in Brgy. Malapad

The collected macrofungal specimens were subjected to morphological characterization and taxonomic assessment to determine their identity and taxonomic affiliations. A total of 125 specimens were documented, representing three classes, 23 families, 35 genera and 56 taxa (Table 2). The recorded assemblage predominantly belonged to Basidiomycota, with

Agaricomycetes accounting for the majority of the taxa. Among the families, Polyporaceae exhibited the highest species richness, indicating its prominent representation within the surveyed macrofungal community. At the genus level, *Lentinus*, *Trametes*, and *Pluteus* were the most diverse, contributing the greatest number of taxa to the overall assemblage. Thirty-five taxa were identified as species, whereas 21 could only be assigned to the genus level based on the available morphological characteristics. In parallel with the taxonomic assessment, attempts were made to establish cultures from the collected specimens. Twenty of the 125 specimens successfully produced pure cultures on PDA, providing viable materials for subsequent laboratory analyses and further characterization.

Table 2: Classification of 56 macrofungal species documented in Brgy. Malapad, Real, Quezon Province

Class	Family	Species
Pezizomycetes	Sarcoscyphaceae	<i>Cookeina speciosa</i> (Fr.) Dennis 1994 <i>Cookeina tricholoma</i> (Mont.) Kuntze 1891
Sordariomycetes	Xylariaceae	<i>Xylaria polymorpha</i> (Pers.) Grev. 1824
Agaricomycetes	Agaricaceae	<i>Lepiota cristata</i> (Bolton) P. Kumm. 1871
	Auriculariaceae	<i>Auricularia auricula-judae</i> (Bull.) Quél. 1886
	Bolbitiaceae	<i>Panaeolus antillarum</i> (Fr.) Dennis
	Clavariaceae	<i>Clavulinopsis laeticolor</i> (Berk. & M.A. Curtis) R.H. Petersen 1965
	Crepidotaceae	<i>Crepidotus</i> sp.
	Ganodermataceae	<i>Ganoderma applanatum</i> (Pers.) Pat. 1887 <i>Sanguinoderma rude</i> (Berk.) Y.F. Sun, D.H. Costa & B.K. Cui, in Sun, Costa-Rezende, Xing, Zhou, Zhang, Gibertoni, Gates, Glen, Dai & Cui 2020 <i>Sanguinoderma rugosum</i> (Blume & T. Nees) Y.F. Sun, D.H. Costa & B.K. Cui 2020
	Gomphaceae	<i>Ramaria</i> sp.
	Hygrocybaceae	<i>Hygrocybe</i> sp.
	Hymenochaetaceae	<i>Coltricia</i> sp.
	Inocybaceae	<i>Inocybe</i> sp.
	Lyophyllaceae	<i>Termitomyces chypeatus</i> R. Heim 1951
	Nidulariaceae	<i>Cyathus striatus</i> Willd. 1787
	Omphalotaceae	<i>Marasmiellus candidus</i> (Fr.) Singer 1948
	Panaceae	<i>Cymatoderma elegans</i> Jungh. 1840 <i>Cymatoderma</i> sp. <i>Panus neostrigosus</i> Drechsler-Santos & Wartchow 2012
	Pleurotaceae	<i>Pleurotus giganteus</i> (Berk.) Karun. & K.D. Hyde 2012 <i>Pleurotus tuber-regium</i> (Fr.) Singer 1951
	Pluteaceae	<i>Pluteus</i> sp. 1
		<i>Pluteus</i> sp. 2
		<i>Pluteus</i> sp. 3
		<i>Pluteus</i> sp. 4
		<i>Pluteus</i> sp. 5
	Polyporaceae	<i>Cubamyces</i> sp. <i>Earliella scabrosa</i> (Pers.) Gilb. & Ryvarden 1985 <i>Fabiosporus sanguineus</i> (L.) Zmitr. 2001 <i>Favolus tenuiculus</i> P. Beauv., Fl. 1805 <i>Lentinus arcularius</i> (Batsch) Zmitr. 2010 <i>Lentinus crinitus</i> (L.) Fr. 1825 <i>Lentinus sajor-caju</i> (Fr.) Fr. 1838 <i>Lentinus squarrosulus</i> Mont. 1842 <i>Lentinus tigrinus</i> (Bull.) Fr. 1825 <i>Lentinus</i> sp. <i>Lignosus rhinocerus</i> (Cooke) Ryvarden 1972 <i>Microporus affinis</i> (Blume & T. Nees) Kuntze 1898 <i>Microporus xanthopus</i> (Fr.) Kuntze 1898 <i>Picipes</i> sp. <i>Polyporus auratus</i> B.K. Cui, X. Ji & J.L. Zhou 2022 <i>Polyporus</i> sp. <i>Trametes elegans</i> (Spreng.) Fr. 1838 <i>Trametes coccinea</i> (Fr.) Hai J. Li & S.H. He 2014 <i>Trametes gibbosa</i> (Pers.) Fr. 1838 <i>Trametes hirsuta</i> (Wulfen) Lloyd 1924 <i>Trametes</i> sp. 1 <i>Trametes</i> sp. 2
		<i>Coprinopsis</i> sp.
		<i>Parasola</i> sp. 1
		<i>Parasola</i> sp. 2
	Russulaceae	<i>Lactarius</i> sp.
	Schizophyllaceae	<i>Schizophyllum commune</i> Fr. 1815
	Stereaceae	<i>Stereum ostrea</i> (Blume & T. Nees) Fr. 1838

Discussion

The spatial heterogeneity and temporal dynamics of macrofungal communities in Barangay Malapad are primarily influenced by the interaction of microclimatic conditions, substrate availability, and species-specific physiological

tolerances. The differences in species composition between Site 1, located near the moisture-rich perimeter of Nonok Falls, and Site 2, situated in the upland secondary forest, demonstrate the importance of moisture availability and relative humidity in regulating fungal distribution. Water-adjacent microhabitats provide relatively humid and cooler

conditions that reduce desiccation stress and favor the development of fungal fruiting bodies. This observation agrees with previous studies indicating that moisture availability is a major environmental factor influencing fungal activity and spatial distribution in tropical ecosystems (Dulay *et al.* 2025; Alfonso *et al.* 2026).

The marked increase in species composition during August coincided with increased precipitation and lower ambient temperature, suggesting that seasonal climatic conditions strongly influence macrofungal fruiting. Increased moisture promotes mycelial hydration, cellular expansion, and the physiological processes associated with sporocarp development (Herman and Bleichrodt 2022). Higher rainfall may also provide favorable conditions for spore production and dispersal. Similarly, Dulay *et al.* (2020) recorded greater macrofungal abundance during the wetter month of August than in the relatively drier month of October in Sitio Canding, San Clemente, Tarlac Province. These findings indicate that rainfall, temperature, and humidity collectively create favorable periods for macrofungal emergence and reproduction.

Substrate availability further contributes to the observed community structure. The predominance of wood-decaying taxa, particularly Polyporaceae and genera such as *Trametes*, *Lentinus*, and *Pluteus*, reflects the abundance of lignocellulosic substrates, including decaying mahogany, coconut residues, and fallen branches. Such substrates favor white-rot basidiomycetes capable of producing ligninolytic and cellulolytic enzymes that facilitate the decomposition of complex plant polymers (Drula *et al.* 2022). Through this activity, saprotrophic fungi play important roles in nutrient cycling and carbon turnover (Ogwu *et al.* 2025). The frequent occurrence of *M. xanthopus*, *P. neostrigosus*, and *C. elegans* may further indicate broad ecological tolerance and the ability to utilize diverse substrates.

Beyond their ecological functions in forest decomposition and nutrient cycling, the macrofungal taxa documented in the study area possess considerable nutritional, pharmacological, and socioeconomic potential. Wild macrofungi are recognized as functional food resources due to their substantial dietary fiber and protein content, relatively low lipid levels with a predominance of unsaturated fatty acids, and diverse vitamins and minerals (Lu *et al.* 2020; Niego *et al.* 2021). The occurrence of genera such as *Auricularia*, including *A. auricula-judae*, and *Termitomyces*, including *T. clypeatus*, is particularly noteworthy because these mushrooms are valued as edible resources in local and regional food systems for their desirable culinary characteristics and nutritional composition (Nabubuya *et al.* 2010).

From a pharmacological perspective, wood-decaying and saprotrophic fungi produce diverse bioactive metabolites, including polysaccharides such as β -glucans, triterpenoids, lectins, and phenolic compounds (Niego *et al.* 2021; Fabros *et al.* 2022). These metabolites have been associated with antioxidant, antimicrobial, immunomodulatory, anti-inflammatory, and antitumor activities (Dulay *et al.* 2021;

2022b; Sun *et al.* 2024). Such bioactivities highlight the potential of the documented macrofungi as sources of functional and therapeutic compounds, consistent with the established medicinal importance of genera such as *Ganoderma* and *Pleurotus* (Cabuhad *et al.* 2026; Ong *et al.* 2026).

Beyond food and medicinal applications, the recorded fungi have potential in environmental and industrial biotechnology. White-rot fungi possess extracellular oxidative enzymes capable of degrading persistent pollutants, including synthetic dyes, polycyclic aromatic hydrocarbons, and agricultural pesticide residues (Ali *et al.* 2025). Their mycelial networks can also serve as natural binding materials for biodegradable packaging, structural composites, and mushroom-based leather alternatives (Singh *et al.* 2025; Periyasamy *et al.* 2026). In addition, fungal secondary metabolites have potential applications as natural pigments, food and textile colorants, and cosmetic ingredients because of their antioxidant and melanin-inhibitory properties (Niego *et al.* 2023; Paterska *et al.* 2024). Thus, the macrofungal diversity of Barangay Malapad represents not only an important component of forest ecosystem functioning but also a potentially valuable biological resource for food, pharmaceutical, environmental, and industrial applications.

Conclusion

Overall, the findings identified Barangay Malapad as an important reservoir of macrofungal diversity, with moisture availability, substrate composition, and habitat heterogeneity influencing species distribution and fruiting. The results highlight the ecological importance of riparian areas, forest vegetation, leaf litter, fallen logs, and decomposing wood in sustaining fungal diversity and ecosystem functions. The occurrence of potentially edible, medicinal, and biotechnologically valuable taxa indicates promising socioeconomic applications. It is recommended that key fungal habitats and substrates be conserved, while those successfully cultured macrofungal species be further evaluated for their nutritional, medicinal, and biotechnological potential. Additional seasonal surveys, molecular identification, and long-term monitoring are also recommended to support conservation and sustainable utilization of the macrofungal resources of Barangay Malapad.

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Authors' Contributions

WMJ performed collection of samples, analysis of data and writing of manuscript. RMR supervised data interpretation, and manuscript writing. SPK, MJGV, ESD and AMDL provided guidance and valuable comments during manuscript writing. All authors approved the final version of the manuscript.

Conflict of Interest

All authors declare no conflict of interest.

Data Availability

Data presented in this study will be available upon reasonable request to the corresponding author.

Declaration of Generative AI Use

No generative AI tools were used in the preparation of this manuscript, including for content generation, language improvement, editing, or translation. The authors take full responsibility for the content, accuracy, originality, and integrity of the manuscript.

Ethics Approval

The conducted study was reviewed and approved by the CLSU-ERC with ERC No. 2026-457.

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