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Research Article

Species Composition and Distribution of Macrofungi in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines

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ABSTRACT

Macrofungi are crucial in recycling organic matter needed for the growth and survival of living organisms, including humans, and are essential for maintaining biodiversity. Despite their ecological importance, there is limited documentation on the macrofungi species composition and their distribution in several mountain ecosystems in the Philippines, particularly in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon in Mindanao. Hence, this study was conducted to determine the composition and distribution of macrofungi in Mount Malimumu, through repeated transect walks during the 3-day field survey at two identified sites: tropical lower montane (I) and tropical upper montane rainforests (II), along with an opportunistic sampling method outside the belt transect. A total of 33 macrofungi taxa were collected in the two sampling sites (Site I has 22 and Site II has 11 taxa). The recorded taxa belong to 12 families and 19 genera, representing 0.83% of the Philippine macrofungi taxa. Most macrofungi taxa were from the family Polyporaceae with 49% (16 taxa) and least in families Stereaceae, Rigidoporaceae, Auriculariaceae, Calostomataceae, Fomitopsidaceae, Irpicaceae, Mycenaceae, Physalacriaceae, and Pleurotaceae with 3% (1 taxon for each family). Macrofungi taxa were identified based on their morphological characteristics. They were observed in different habitats and substrates, such as decomposing logs (37%), fallen branches and twigs (33%), ground soil (15%), tree trunks (9%), leaf litter (3%) and others, such us roots of trees (3%). Overall, the results of this study could be a basis for more studies to be conducted on macrofungi taxa in Mount Malimumu and adjacent areas, and determine their importance in the decomposition process of the organic forest material.

Keywords: Ascomycota; Basidiomycota; fungal diversity; mushrooms; Polyporaceae; Southeast Asia.

INTRODUCTION

Fungi, estimated to encompass 2.2–3.8 million species, inhabit diverse environments including soil, freshwater, marine ecosystems, plants, animals, and even the human body (Hawksworth & Lucking, 2017). Of the approximately 144,000 known species, members include yeasts, rusts, smuts, mildews, molds, and mushrooms, existing either freely in soil or water or parasitic and symbiotic relationships with plants and animals (Ahmadjian et al., 2025). Macrofungi, comprising ascomycetes and basidiomycetes, are characterised by large fruiting bodies and are essential in decomposing organic matter, promoting nutrient cycling (Zotti et al., 2013), stabilising soil, and aiding in post-disturbance remediation (Claridge et al., 2009; Kubrova et al., 2014). They also serve as bioindicators of habitat disturbance (Arnolds, 1992), with some, such as ectomycorrhizal fungi, capable of absorbing heavy metals from their environment (Nowakowski et al., 2020). With the global macrofungal diversity estimated at 50,000–110,000 species, 98% of these remain undescribed, particularly those occupying unique niches (Mueller et al., 2007; Taylor et al., 2014).

In the tropics, like the Philippines, macrofungal diversity is especially rich due to favourable climate and abundant organic substrates, and many species remain poorly documented but host a wide range of macrofungi (Biadnes & Tangonan, 2003; Sibounnavong et al., 2008), and are valued for their ecological roles and use as food and medicine. However, extensive studies remain scarce in many regions, including Mount Malimumu in the Pantaron Mountain Ranges in Mindanao, an area known for its biodiversity but that lacks data on its macrofungal communities. These species, having been neglected for several expeditions in the sites, are significant components of the forest's overall conditions. Hence, this study aimed to document the species composition of macrofungi in Mount Malimumu, describe their morphological characteristics of each species, determine their substrate preferences, and map out their distribution in the two selected sampling sites.

METHODOLOGY

Entry protocol

A letter requesting permission to conduct the study was sent to the Barangay Captain and the Municipal Mayor of San Fernando, Bukidnon, while a prior informed consent (PIC) was obtained from the Datu of the Indigenous Peoples Mandatory Representative and the tribal chieftain of the Indigenous People residing within the study area. A certification from the Municipal Environment and Natural Resources Office (MENRO) was secured, allowing us to conduct the study at Mount Malimumu Critical Habitat and Conservation Center. Furthermore, a copy of the approved prior informed consent, proposal, and letter of request was sent to the regional director of the Office of the Department of Environment and Natural Resources (DENR) Region X at Puntod, Macabalan, Cagayan de Oro City, Misamis Oriental, to obtain a Wildlife Gratuitous Permit (WGP number R10-2024-64).

Site description

The study was conducted in two selected sampling sites in Mount Malimumu, Pantaron Range, in the municipality of San Fernando, Bukidnon, Philippines (Fig. 1), utilising the Wildlife Gratuitous Permit (WGP) obtained by the first author. The first site, located at 692–742 m a.s.l., comprised tropical lower montane rainforest dominated by dipterocarp species, including *Shorea contorta* S.Vidal (Dipterocarpaceae), with other emergent trees reaching 30–50 m in height. The canopy was mixed with tall trees, while the understory plants included tree ferns, shrubs, and epiphytic orchids. Situated at 800–1,274 m a.s.l. is site two, which consists of upper montane mossy forest characterised by smaller-statured trees such as *Lithocarpus* spp. (Fagaceae). Tree trunks and branches were densely covered with mosses, liverworts, and lichens, and the ground layer was dominated by ferns, bryophytes, and other shade-tolerant herbs, reflecting the cooler and more humid high-elevation conditions. The whole duration of the study was conducted from January 2024 to May 2024.

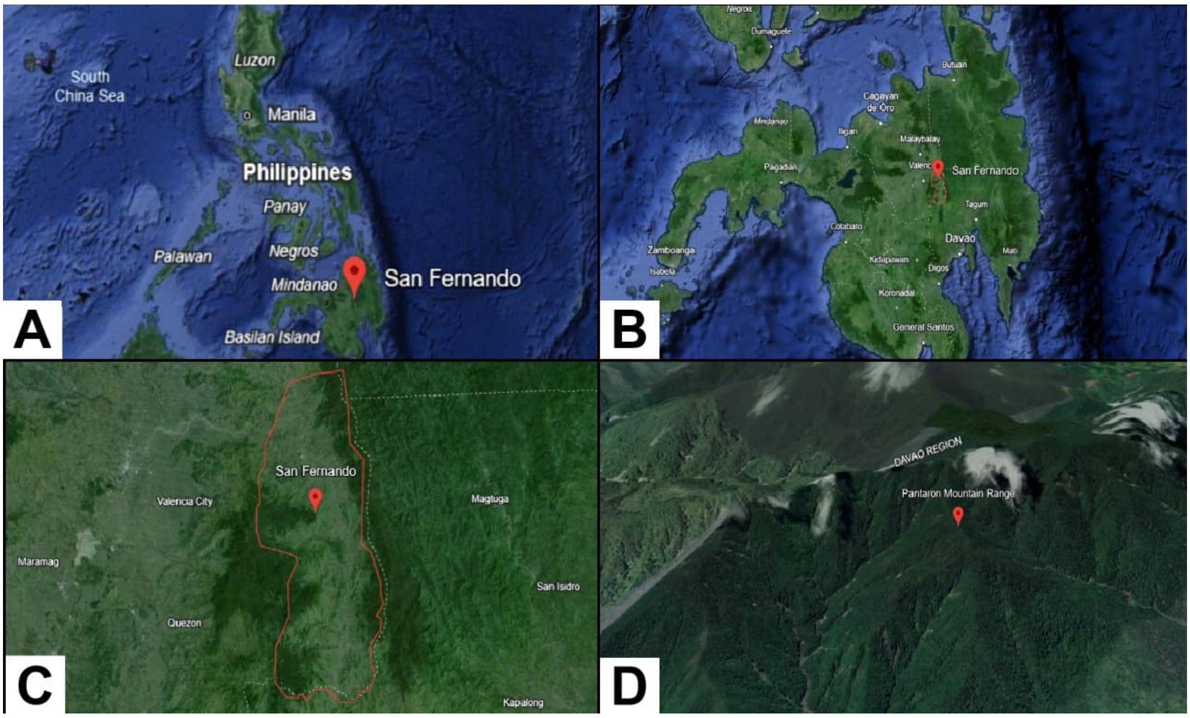

Figure 1: Location of the study area. **A.** Map of the Philippines. **B.** Map of Mindanao Island. **C.** Map of San Fernando, Bukidnon. **D.** Map of Mount Malimumu, Pantaron Range in San Fernando, Bukidnon.

Sampling techniques

A belt transect with 2-kilometer trail with 5 meters on each side was employed in the two specific sampling stations, and each of the species found within the transect was recorded by their morphological characteristics, growth habitat, and also photographed. Likewise, opportunistic sampling was also carried out outside the transect trail, and specimens collected were stored in an airtight ziplock bag. These sampling techniques were employed in the two sampling sites: site I (lower montane forests) and site II (upper montane forests) (Fig. 2).

Collection and identification of the specimens

Macrofungi species were collected using a knife if found in the soil, and a scraper if found in tree trunks, while those found in leaf litter and fallen branches were collected using hands with gloves. Specimens collected were stored in an airtight ziplock pocket or a paper pocket labeled with their collection numbers, growth habitat, and other substantial information. The collected specimens were initially described at the campsite by their morphological characteristics, growth habitat, bracket and stipe measurements, and whether they were solid or fleshy in form. Final identification was done through pictorial keys (MYCOBANK, 2025; MyCoPortal, 2025), dichotomous keys, scientific publications (Tadiosa et al., 2011; Jacob et al., 2017; Paguirigan et al., 2020; Tadiosa et al., 2021; Tadiosa et al., 2022; Obedencio et al., 2023; Bustillos et al., 2024), herbarium specimens, and verified by E.R. Tadiosa.

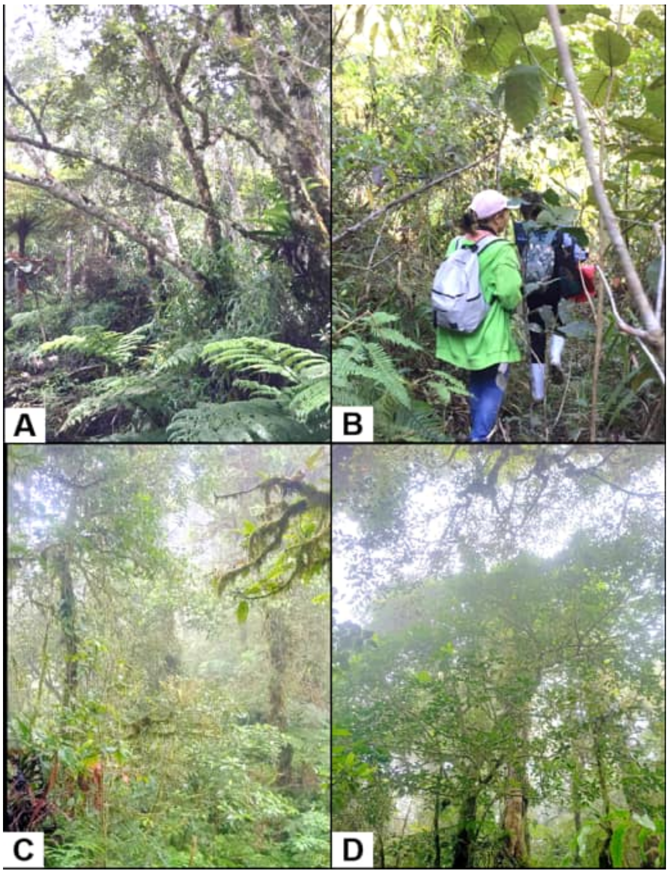

Figure 2: Forest types of the two selected sampling sites for macrofungi at Mount Malimumu, Pantaron Range in San Fernando, Bukidnon, Philippines. **A, B.** Site I: tropical lower montane rainforest or the tropical evergreen forest trail to the falls. **C, D.** Site II: Upper montane rainforest or inside the mossy forest covered in canopy.

Processing and preparation of macrofungi specimens

Macrofungi specimens were placed in an airtight ziplock and labeled with their collection numbers, date, elevation, and other information, and only mature and undamaged specimens were collected and air-dried (for a day) at the campsite. Bracket fungi were stored in a ziplock pocket, and the fleshy ones were stored in plastic containers. and their morphological characteristics, such as their colour, growth habitat, cap or bracket surface, and measurements, were recorded in the field notebook following protocols of Bremmer et al. (2006). All materials were deposited in the personal collection of the first author (WALJ).

Construction of the distribution map

The distribution of recorded macrofungal species was determined by recording precise elevation coordinates using Gaia GPS (Version 2024.1), with elevation estimates cross-verified through the altimeter function of Google Maps. Location and elevation data from the two sampling sites in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, were processed and mapped by the GeoMin Office using the coordinates tabulated in Microsoft Excel through QGIS.

Data analysis

The morphological characteristics of each macrofungi taxon—such as cap shape, size, colour, texture, gill attachment, spore print colour, and substrate—were documented in detail in a field notebook. Records were organised in summary tables to facilitate comparison, and data were digitised in Microsoft Excel for basic computation of species richness and frequency.

RESULTS

Composition of macrofungi

A total of 33 macrofungi taxa (Site I with 22 taxa and Site II with 11 taxa) encompassing 19 genera and 12 families, were recorded in Malimumu, Pantaron Range, San Fernando, Bukidnon (Table 1; Fig. 3 and Fig. 4).

Table 1: List of macrofungi taxa in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines recorded from January to May 2024. Site I: Lower montane forest, site II: upper montane forest.

Family	Genus	Taxa	Site		Collection number
			I	II	
Auriculariaceae	*Auricularia*	1. *Auricularia* cf. *polytricha* (Mont.) Sacc.	√		WALJ024
Calostomataceae	*Calostoma*	2. *Calostoma* cf. *fuscum* (Berk.) Massee		√	WALJ036
Fomitopsidaceae	*Rhodofomitopsis*	3. *Rhodofomitopsis* cf. *feei* (Fr.) B.K. Cui, M.L. Han & Y.C. Dai	√		WALJ002
Ganodermataceae	*Ganoderma*	4. *Ganoderma* cf. *applanatum* (Pers.) Pat.		√	WALJ027
		5. *Ganoderma* cf. *ellipsoideum* Hapuar., T.C. Wen & K.D. Hyde	√		WALJ019
		6. *Ganoderma* cf. *mastoporum* (Lév.) Pat.		√	WALJ037
		7. *Ganoderma* cf. *philippii* (Bres. & Henn. ex Sacc.) Bres.		√	WALJ029
		8. *Ganoderma* cf. *tropicum* (Jungh.) Bres.		√	WALJ035
	Sanguinoderma	9. *Sanguinoderma* cf. *rugosum* (Blume & T. Nees) Y.F. Sun, D.H. Costa & B.K. Cui		√	WALJ030, WALJ040
Hymenochaetaceae	*Phellinus*	10. *Phellinus* cf. *gilvus* (Schwein.) Pat.		√	WALJ034
		11. *Phellinus* sp.	√		WALJ021
Irpicaceae	*Byssomerulius*	12. *Byssomerulius* cf. *corium* (Pers.) Parmasto	√		WALJ022
Mycenaceae	*Mycena*	13. *Mycena* cf. *galericulata* (Scop.) Gray		√	WALJ032
Physalacriaceae	*Oudemansiella*	14. *Oudemansiella* sp.	√		WALJ007
Pleurotaceae	*Pleurotus*	15. *Pleurotus* cf. *ostreatus* Bull.	√		WALJ006
Polyporaceae	*Cubamyces*	16. *Cubamyces* cf. *flavidus* (Lév.) Lücking		√	WALJ028
	Favolus	17. *Favolus* cf. *acervatus* (Lloyd) Sotome & T. Hatt.	√		WALJ017
	Lentinus	18. *Lentinus* cf. *tigrinus* (Bull.) Fr.	√		WALJ025
	Microporus	19. *Microporus* cf. *affinis* (Blume & T. Nees) Kuntze	√		WALJ018
		20. *Microporus* cf. *xanthopus* (Fr.) Kuntze	√		WALJ016

		21. *Microporus* sp. 1	√		WALJ010
		22. *Microporus* sp. 2	√		WALJ020
		23. *Microporus* sp. 3		√	WALJ041
	Polyporus	24. *Polyporus* cf. *tenuiculus* (P.Beauv.) Fr.		√	WALJ043
		25. *Polyporus* sp. 1	√		WALJ023
		26. *Polyporus* sp. 2	√		WALJ042
	Pycnoporus	27. *Pycnoporus* cf. *coccineus* (Fr.) Bondartsev & Singer	√		WALJ004
		28. *Pycnoporus* cf. *sanguineus* (L.) Murrill	√		WALJ026
	Trametes	29. *Trametes* cf. *elegans* (Spreng.) Fr.	√		WALJ001, WAL008
		30. *Trametes* cf. *hirsutus* (Wulfen) Lloyd	√		WALJ005, WALJ009
		31. *Trametes* cf. *versicolor f. nigrozonata* (Bondartsev) Domanski, Orlos & Skirg.	√		WALJ003
Rigidoporaceae	*Rigidoporus*	32. *Rigidoporus* cf. *microporus* (Fr.) Overeem	√		WALJ014
Stereaceae	*Stereum*	33. *Stereum* cf. *ostrea* (Blume & T. Nees) Fr.	√		WALJ011

Remarks: Site I – Lower montane; Site II – Upper montane

All documented taxa are classified under a single class, Agaricomycetes (phylum Basidiomycota), and six distinct orders, with one order remaining undetermined. Of which, 26 taxa were identified to species level and 7 taxa were identified to genus level. It was observed that among the two sampling sites, the highest collection of macrofungi taxa was observed in site I (lower montane forest) with 24 taxa.

A total of eight families were recorded across the two sampling sites in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, with *Ganoderma* and *Polyporus* with 5 taxa for each genus emerging as the most represented genera, comprising 15.63% of the 32 collected specimens, in addition to one genus that remained unidentified. Polyporaceae had the highest representation of the total family present, with 49% of the total macrofungi with 16 taxa, followed by the family Ganodermataceae with 18% (6 taxa), and least in families Stereaceae, Rigidoporaceae, Auriculariaceae, Calostomataceae, Fomitopsidaceae, Irpicaceae, Mycenaceae, Physalacriaceae, and Pleurotaceae with 3% (1 species for each family) (Fig. 5).

Figure 3: Selected macrofungi taxa of Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines recorded in January to May 2024. **A.** *Auricularia* cf. *polytricha* (Mont.) Sacc. **B.** *Calostoma* cf. *fuscum* (Berk.) Massee. **C.** *Rhodofomitopsis* cf. *feei* (Fr.) B.K. Cui, M.L. Han & Y.C. Dai. **D.** *Ganoderma* cf. *applanatum* (Pers.) Pat. **E.** *Ganoderma* cf. *ellipsoideum* Hapuar., T.C. Wen & K.D. Hyde. **F.** *Ganoderma* cf. *mastoporum* (Lév.) Pat. **G.** *Ganoderma* cf. *philippii* (Bres. & Henn. ex Sacc.) Bres. **H.** *Ganoderma* cf. *tropicum* (Jungh.) Bres. **I.** *Sanguinoderma* cf. *rugosum* (Blume & T. Nees) Y.F. Sun, D.H. Costa & B.K. Cui. **J.** *Phellinus* cf. *gilvus* (Schwein.) Pat. **K.** *Phellinus* sp. **L.** *Byssomerulius* cf. *corium* (Pers.) Parmasto. **M.** *Mycena* cf. *galericulata* (Scop.) Gray. **N.** *Oudemansiella* sp. **O.** *Pleurotus* cf. *ostreatus* Bull. **P.** *Cubamyces* cf. *flavidus* (Lév.) Lücking. **Q.** *Favolus* cf. *acervatus* (Lloyd) Sotome & T. Hatt. **R.** *Lentinus* cf. *tigrinus* (Bull.) Fr. **S.** *Microporus* cf. *affinis* (Blume & T. Nees) Kuntze. **T.** *Microporus* cf. *xanthopus* (Fr.) Kuntze.

Figure 4: Selected macrofungi taxa of Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines recorded in January to May 2024. **A.** *Microporus* sp. 1. **B.** *Microporus* sp. 2. **C.** *Microporus* sp. 3. **D.** *Polyporus* cf. *tenuiculus* (P.Beauv.) Fr. **E.** *Polyporus* sp. 1. **F.** *Polyporus* sp. 2. **G.** *Pycnoporus* cf. *coccineus* (Fr.) Bondartsev & Singer. **H.** *Pycnoporus* cf. *sanguineus* (L.) Murrill. **I.** *Trametes* cf. *elegans* (Spreng.) Fr. **J.** *Trametes* cf. *hirsutus* (Wulfen) Lloyd. **K.** *Trametes* cf. *versicolor f. nigrozonata* (Bondartsev) Domanski, Orlos & Skirg. **L.** *Rigidoporus* cf. *microporus* (Fr.) Overeem. **M.** *Stereum* cf. *ostrea* (Blume & T. Nees) Fr.

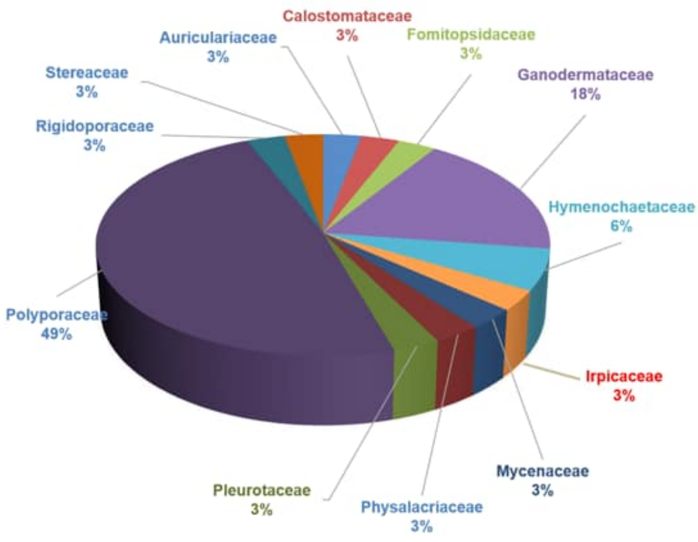

Figure 5: Composition of macrofungi families in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines.

Habitat preferences

The macrofungi taxa recorded in the area have been observed to inhabit six different habitats (Table 2). Macrofungi inhabiting decomposing logs have the highest percentage of 37%, followed by fallen branches/twigs with 33%, ground soil habitats with 15%, tree trunks with 9%, and least in leaf litter other substrate (attached to *Zea mays*) with 3% each (Fig. 6).

Table 2: Habitat preferences of macrofungi taxa in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines recorded in January to May 2024.

Taxa	Habitat					
	DL	**GS**	**TT**	**FB**	**LL**	**Others**
1. *Auricularia* cf. *polytricha* (Mont.) Sacc.	√					
2. *Calostoma* cf. *fuscum* (Berk.) Massee		√				
3. *Rhodofomitopsis* cf. *feei* (Fr.) B.K. Cui, M.L. Han & Y.C. Dai	√					
4. *Ganoderma* cf. *applanatum* (Pers.) Pat.			√			
5. *Ganoderma* cf. *ellipsoideum* Hapuar., T.C. Wen & K.D. Hyde	√					
6. *Ganoderma* cf. *mastoporum* (Lév.) Pat.			√			
7. *Ganoderma* cf. *philippii* (Bres. & Henn. ex Sacc.) Bres.	√					
8. *Ganoderma* cf. *tropicum* (Jungh.) Bres.			√			
9. *Sanguinoderma* cf. *rugosum* (Blume & T. Nees) Y.F. Sun, D.H. Costa & B.K. Cui		√				
10. *Phellinus* cf. *gilvus* (Schwein.) Pat.	√					
11. *Phellinus* sp.	√					
12. *Byssomerulius* cf. *corium* (Pers.) Parmasto	√					
13. *Mycena* cf. *galericulata* (Scop.) Gray		√				
14. *Oudemansiella* sp.		√				
15. *Pleurotus* cf. *ostreatus* (Jacq.) P. Kumm						√
16. *Cubamyces* cf. *flavidus* (Lév.) Lücking	√					
17. *Favolus* cf. *acervatus* (Lloyd) Sotome & T. Hatt.				√		
18. *Lentinus* cf. *tigrinus* (Bull.) Fr.	√					
19. *Microporus* cf. *affinis* (Blume & T. Nees) Kuntze				√		
20. *Microporus* cf. *xanthopus* (Fr.) Kuntze		√				
21. *Microporus* sp. 1				√		
22. *Microporus* sp. 2				√		
23. *Microporus* sp. 3				√		
24. *Polyporus* cf. *tenuiculus* (P.Beauv.) Fr.					√	
25. *Polyporus* sp. 1				√		
26. *Polyporus* sp. 2				√		
27. *Pycnoporus* cf. *coccineus* (Fr.) Bondartsev & Singer	√					
28. *Pycnoporus* cf. *sanguineus* (L.) Murrill				√		
29. *Trametes* cf. *elegans* (Spreng.) Fr.	√					
30. *Trametes* cf. *hirsutus* (Wulfen) Lloyd				√		
31. *Trametes* cf. *versicolor f. nigrozonata* (Bondartsev) Domanski, Orlos & Skirg.	√					
32. *Rigidoporus* cf. *microporus* (Fr.) Overeem				√		
33. *Stereum* cf. *ostrea* (Blume & T. Nees) Fr.				√		
Total	12	5	3	11	1	1

DL - Decomposing logs, **GS** - Ground soil, **TT** - Tree trunks, **FB** - Fallen branches/twigs, **LL** - Leaf litter, and **Others.**

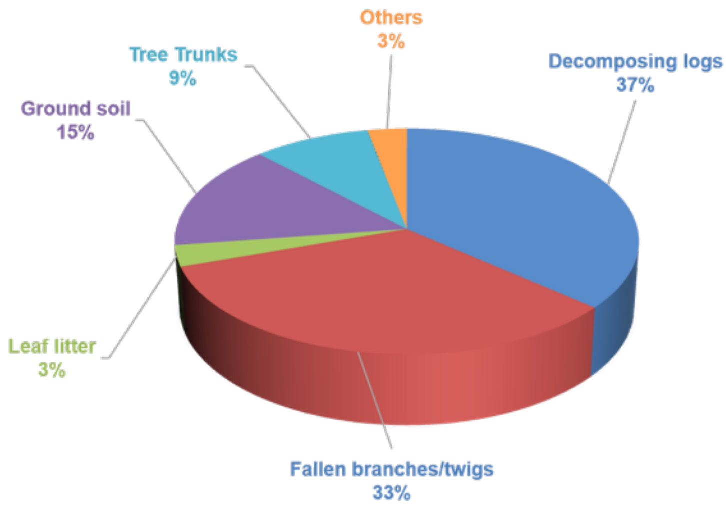

Figure 6: Habitat preferences of macrofungi taxa present in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines in January to May 2024.

Distribution of macrofungi

The distribution revealed that site I (lower montane) has recorded more macrofungi taxa than site II (upper montane) (Fig. 7). Lower montane forest recorded 22 macrofungi taxa, whereas the upper montane forest recorded 11 macrofungi taxa. A total of 26 taxa were identified to species level, and 7 taxa were identified up to genus level only.

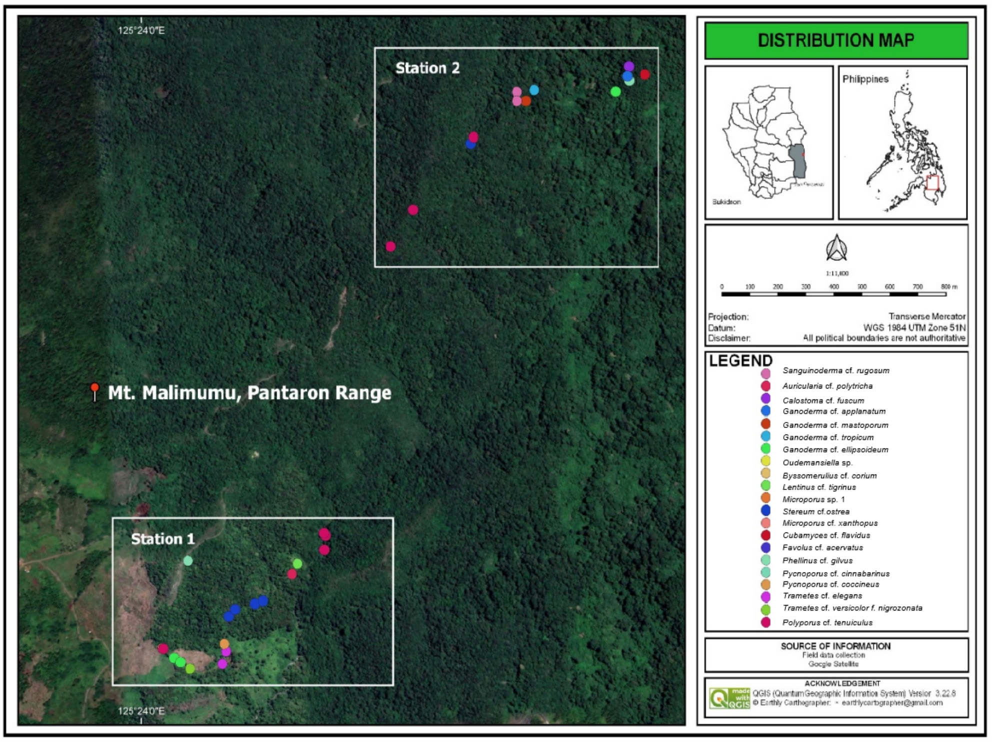

Figure 7: Distribution map of macrofungi taxa found in the two sampling sites in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, Philippines in January to May 2024.

DISCUSSION

Composition of macrofungi

Agaricomycetes represent the predominant class of basidiomycete macrofungi, encompassing a substantial proportion of the country’s fungal diversity; in the Philippines alone, 3,956 species across 818 genera have been documented (Tadiosa, 2012). Approximately 53,000 to 110,000 macrofungi species worldwide belong to both Ascomycota and Basidiomycota (Sridhar et al., 2019). The total number of taxa collected in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, comprises only 1.32% of the total number of genera in the Philippines. In Mount Malimumu, most recorded macrofungi taxa were associated with decaying woody organic matter, occurring in leaf litter, decomposing logs, fallen twigs, and branches—substrates that provide essential nutrients and microhabitats for their growth (Guisan et al., 2000). This number is higher than the study of Baynosa et al. (2025) with 30 collected taxa in Mt. Namnam, Pantaron Range, San Fernando, Bukidnon.

Habitat preferences

Most macrofungi taxa recorded were from decomposing logs since a diverse assemblage of macrofungi naturally grows on various substrates, such as in rotting logs, especially during the rainy season (De Leon et al., 2019). Macrofungi taxa inhabiting decomposing logs have the highest percentage of 37%, followed by fallen branches/twigs with 33%, ground soil habitats with 15%, tree trunks with 9%, and least leaf litter other substrate with 3% each. Decomposing logs and ground soil abundantly provide substrates for the development of the macrofungi species as they grow on rotten wood, which is deemed a vital habitat that can sustain their growth (Guisan et al., 2000).

Both lower and higher elevations where the sites were located were mostly covered in trees and abundant canopies. Various macrofungi species can be found in various habitats with different temperature and humidity levels. The relationship between climatic factors, specifically temperature, humidity, and rainfall, has been extensively studied (Tadiosa, 2012). These factors and certain habitat types affect macrofungal species' growth and life cycle. It has been observed that macrofungi species thrive best in their preferred habitats or substrates.

Based on these findings, macrofungi species predominantly inhabit decomposing logs and ground soil, comprising 48% and 21% of the collected species, respectively. These species have a particular affinity for decaying wood, which serves as a crucial substrate for their growth (De Leon et al., 2019; Guisan et al., 2000). The remaining percentage of macrofungi species collected were found in other habitats, such as tree trunks, fallen branches/twigs, leaf litter, and others.

Distribution of macrofungi

Macrofungi species suitably occur in various habitats with temperature and humidity. Moreover, there is a relationship between climatic factors, especially temperature, humidity, and rainfall (Tadiosa, 2012). Hence, climatic factors and certain habitat types are crucial and affect macrofungal species' growth or life cycle. It is revealed that macrofungi species thrive most in their preferred habitat or substrates, and each of the macrofungi species’ different elevations was recorded using Google Earth and the GAIA GPS Application.

CONCLUSIONS

This study documented 33 macrofungi taxa in Mount Malimumu, Pantaron Range, San Fernando, Bukidnon, representing 12 families and 19 genera, which account for approximately 1.32% of the 818 known Philippine macrofungal genera. Polyporaceae had the highest number of species with 16 (49%) of the total macrofungi species collected) and least in families Stereaceae, Rigidoporaceae, Auriculariaceae, Calostomataceae, Fomitopsidaceae, Irpicaceae, Mycenaceae, Physalacriaceae, and Pleurotaceae with 3% (1 species for each family). Identification was based on detailed morphological assessment, with specimens collected from diverse substrates, including decaying logs, fallen branches and twigs, ground soil, tree roots, and leaf litter along established trails. The distribution map indicated that site 1 yielded the highest collected macrofungi taxa, given the greater abundance of decomposing woody substrates, and more favorable microclimatic conditions, such as higher humidity, which promotes fungal growth and sporulation. The assemblage observed highlights the ecological role of macrofungi in facilitating the decomposition of forest organic matter, thereby contributing to nutrient cycling and ecosystem functioning. These findings contribute to the growing body of knowledge on Philippine fungal biodiversity, underscoring the importance of Mount Malimumu as a habitat for ecologically significant fungi.

It is recommended that future research incorporates molecular identification techniques, such as DNA barcoding, to improve taxonomic resolution. Furthermore, targeted ethnomycological investigations in collaboration with indigenous communities are essential for documenting traditional ecological knowledge, which can inform both fungal conservation strategies and the sustainable management of forest resources.

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DECLARATIONS

Research permit(s). A Wildlife Gratuitous Permit (WGP number R10-2024-64) was obtained from the Department of Environment and Natural Resources (DENR) Region X at Puntod, Macabalan, Cagayan de Oro City, Misamis Oriental.
Ethical approval/statement. A prior informed consent (PIC) was obtained from the Datu of the Indigenous Peoples Mandatory Representative and the tribal chieftain of the Indigenous

People residing within the study area. A certification from the Municipal Environment and Natural Resources Office (MENRO) was also secured.
Generative AI use. I/we declare that generative AI was not used in this study nor in the writing of this article.

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