

# Species listing and distribution of macrofungi in Consocep Mountain Resort, Tigaon and Mount Isarog National Park, Goa, Camarines Sur

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## Abstract

The Philippines is known for its environmental diversity due to its ideal climatic conditions. Scientists have studied various species of flora and fauna in the country, including macrofungi. However, not all regions have been studied and explored for macrofungi such as Mount Isarog in Camarines Sur. To add to Philippine macrofungal diversity, this study accounted for naturally occurring macrofungi collected in April 2018 at Consocep Mountain Resort in Tigaon and Mount Isarog National Park in Goa, Camarines Sur. The samples collected were identified based on their morpho-anatomical characteristics, as well as their substrate with the aid of published taxonomic keys. A total of 36 taxa were identified from the two sites and classified under eight orders, 17 families, and 26 genera. Order Polyporales had the most number of specimens. The number of species provided evidence for the high diversity of macrofungal species in the area with most of them attached to bark substrates.

**Keywords:** Ascomycetes, Basidiomycetes, mycology, Philippines, taxonomy

## Introduction

Macrofungi form large fructifications visible without the help of a microscope (Servi et al., 2010). Among the different fungal phyla, macrofungi are classified under Ascomycota and Basidiomycota. Oftentimes macrofungi serve as food sources, alternative medicine, and raw materials in other industries. They also play vital roles in the ecosystem and are considered decomposers of a wide variety of plant wastes and residues (Dulay and Magsalang 2017). Macrofungal diversity can also be observed in different types of forests and magnitudes of habitats, which give rise to several microclimatic pockets suitable for the growth of macrofungi (Vishwakarma et al., 2012). However, according to Mueller et al. (2006), macrofungi are still understudied over most of the world. Only about 6.7% of the 1.5 million species of fungi estimated in the world have

been described and these are mostly in temperate regions (Kinge et al., 2017).

The Philippines has one of the most diverse ecosystems in the world. In fact, the geographic isolation of the country and its ideal climatic conditions result to high endemism of its flora and fauna (Dagamac et al., 2013) including macrofungal species (Bhatt et al., 2018). However, most of the macrofungal taxonomic studies in the Philippines focused on the general descriptions of Basidiomycota inhabiting mountainous areas (Musngi et al., 2005).

Interestingly, only few regions in the Philippines have documented macrofungi including Nueva Ecija (Reyes et al., 1997; Musngi et al., 2005; Sibounnavong et al., 2008), Bataan (Tayamen et al., 2004), Isabela (Jacob et al., 2017) and Laguna (Quimio, 1996; Militante and Tadiosa, 2005; De Castro & Dulay, 2015). Other areas where mushroom diversity was studied include Albay (Daep and Cajuday, 2003), Mount Apo in Mindanao (Biadnes and Tangonan, 2003), and Nueva Ecija (Dulay and Magsalang, 2017; Guzman et al., 2018).

Mount Isarog in Camarines Sur (1,966 masl) has approximately 60% forest cover that provides habitats for a large number of endemic and threatened species of flora and fauna. It is a home to at least 143 species of birds and harbors 1,300 species of

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plants (Balcita and Nolasco, 2000). However, most people depend on the mountain forest for livelihood (Balcita and Nolasco, 2000) and have converted some forest areas into agricultural lands (Guiang et al., 2001). These human activities have impacted on the biodiversity of forest communities (Orlove and Brush, 1996).

Despite having high biodiversity, the macrofungi in Mount Isarog National Park and Consocep Mountain Resort remain poorly documented. Thus, this research aims to identify species of macrofungi in these two sites.

## Materials and Methods

### Study Site

Mount Isarog Natural Park (MINP) is located in Camarines Sur province encompassing six municipalities (Calabanga, Pili, Ocampo, Tigaon, Goa, and Tinambac) and Naga City. It has an area of 10,112 ha. The climate is characterized by an absence of a distinct dry season, but with pronounced wet period with maximum rain during December and January (Balet and Heaney, 1997). The annual average rainfall is 2,565 mm with an average temperature of 27°C and relative humidity of 25.8% (Philippine Statistics Authority, 2019).

The site in Consocep Mountain Resort (13°37'4.8"N, 123°25'1.2"E) has a small waterfall with scattered logs that serves as substratum for macrofungal species. However, the site in Mount Isarog National Park (13°39'36"N, 123°22'59"E) in Goa has a drier condition due to little to no water source. Canopy cover was sparse, allowing more sunlight to reach the ground.

### Collection and herbarium preparation

Collection was done during the latter part of April 2018 using the quadrat sampling method. Three 0.5 m x 0.5 m sampling quadrats were randomly deployed in each study site. The specimens were photographed inside the quadrats before collection. They were removed by excavating around the base of the stipe to reveal the volva, rooting base, bulb, or attachment to a sclerotium or buried substrata (Lodge et al., 2004). During collection, the dry and wet specimens were placed in a paper bag and wrapped in aluminum foil, respectively. Each specimen was labelled with the date, collection site and size of the samples. Sample coding, further documentation and storage of voucher specimens were done in the Central Laboratories, University of Santo Tomas.

### Morphological characterization of macrofungi

Characterization and identification of the collected and preserved samples were done using morphometric data. This

consists of the different features of the pileus, lamellae, and stipe such as the color, texture, and arrangement. The diameter, width, and height were also noted for certain parts. Based on the observed morpho-anatomic features, the specimens were identified with the help of an index of characteristics from Biotec Bangkok Herbarium, available taxonomic keys and various published works of Tadiosa and Arsenio (2014) and Quimio and Capilit (1983). The names were confirmed in Mycobank.com and Indexfungorum.com and were authenticated by Dr. Angeles De Leon of the Central Luzon State University.

## Results

Thirty-six taxa of macrofungi were identified from the two collection sites: Consocep Mountain Resort in Tigaon and Mount Isarog National Park in Goa, Camarines Sur. The macrofungal taxa were further classified under eight orders, 17 families, and 26 genera. Twenty-one macrofungal specimens were identified down to species level while only 15 were identified to genus level (Fig.1). The morphological features of the pileus, lamellae, and stipe, as well as the substrate and growth habit were also noted.

### Phylum Basidiomycota

#### Agaricales

*Agaricus moelleri* Wasser, 1976 (Agaricaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 20 mm in size, solitary on bark substrate; **pileus** 18 mm in diameter, white with brown patches at the center, surface scales appressed, shape moderately intended, margin even; **lamellae** whitish brown, arrangement regular; **stipe** 21 x 3 mm, whitish brown, surface smooth, cylindrical, annulus present

*Coprinopsis* sp. (Psathyllaceae)

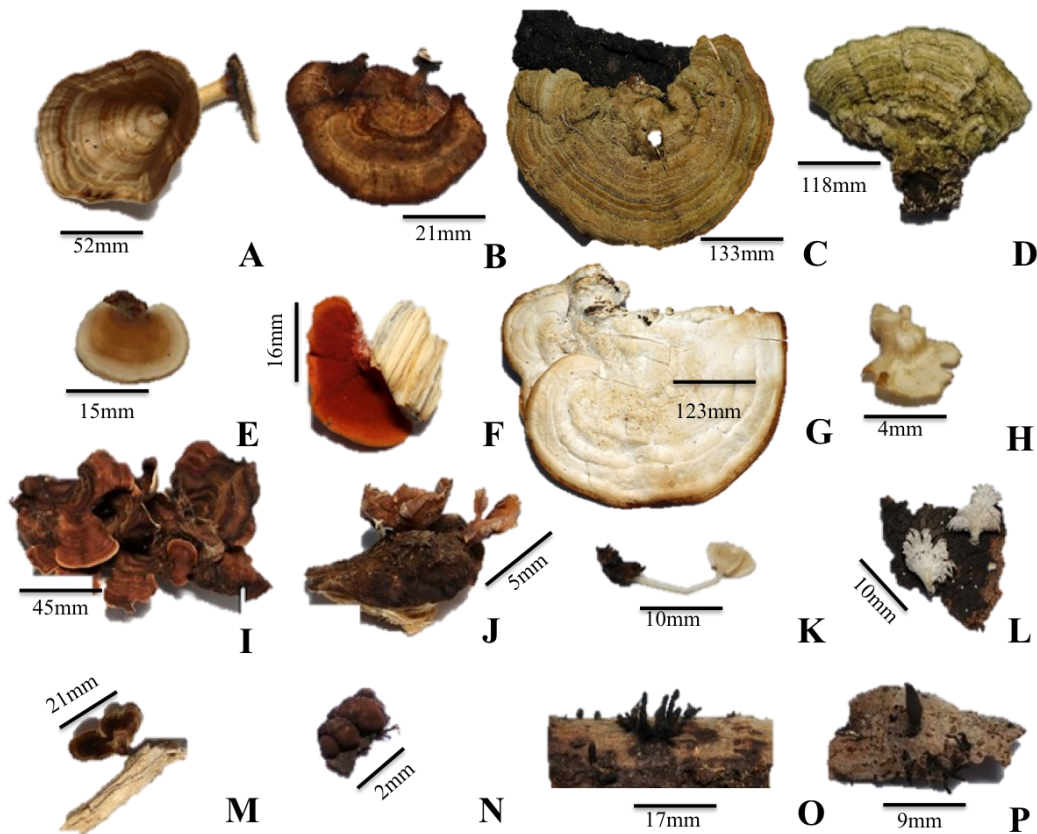
Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 55 mm in size, solitary on bark substrate; **pileus** 10 mm in diameter; gray, surface smooth, shape convex, margin undulating; **lamellae** gray, arrangement equal; **stipe** 50 x 1 mm, white, surface longitudinally striate, shape equal, annulus absent

*Leucocoprinus* sp. (Agaricaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 15 mm in size, caespitose on bark substrate; **pileus** 3 mm in diameter, yellowish brown, surface



**Figure 1.** Macrofungal species collected in Mt. Isarog, Camarines Sur (A) *Microporus xanthopus* (B) *Microporus* sp. (C) *Trametes hirsuta* (D) *Trametes ochracea* (E) *Trametes* sp. (F) *Pycnoporus sanguineus* (G) *Tyromyces chioneus* (H) *Polyporus* sp. (I) *Stereum subtomentosum* (J) *Stereum* sp. (K) *Mycena* sp. (L) *Schizophyllum commune* (M) *Ischnoderma resinosum* (N) *Hypoxylon fragiforme* (O) *Xylaria* sp. (P) *Xylaria polymorpha*

glabrous, shape broadly parabolic, margin tuberculate; **stipe** 12 x 1 mm, white, surface smooth, cylindrical, annulus absent

***Marasmiellus* sp.** (Marasmiaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 8 mm in size, solitary on bark substrate; **pileus** 8 mm in diameter, brown, surface rivulose, flabelliform, margin plicate; **lamellae** brown, arrangement equal

***Marasmius* sp.** (Marasmiaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 2 mm in size, solitary on bark substrate; **pileus** 3–5 mm in diameter, brown, surface areolate,

broadly concave, margin plicate, veil absent; **lamellae** light brown, attachment free, arrangement intercalated in one series, margin serrate; **stipe** 9–11 x 0.5 mm ( $\pm 0.1$ ), surface velutinate, cylindrical, annulus absent

***Mycena* sp.** (Mycenaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 7 mm in size, solitary on twig substrate; **pileus** 5–23 mm in diameter, brown or white, surface areolate, broadly concave, margin plicate, veil absent; **lamellae** light brown or white; **stipe** 12–30 x 0.5–1.5 mm ( $\pm 0.3 \times 0.7$ ), light brown or white, attachment to pileus central, cylindrical

***Schizophyllum commune*** Fries, 1815 (Schizophyllaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines

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Description: **fruiting body** solitary, gregarious, or caespitose on bark substrate; **pileus** covered by a pellicle of loosely interwoven hyphae; the content composed of closely aggregated hyphae with relatively narrow lumens; **lamellae** bifurcate and clothed near the extremities, in dry weather mostly inrolled to cover the hymenial layer; **stipe** lateral, eccentric, or lacking, and when present usually short and always attached to the pileus on the opposite side from the hymenium; parasitic or saprophytic, mostly xylophilous.

*Tricholoma lascivum* (Fries) Gillet, 1874 (Tricholomataceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 100 mm in size, solitary on bark substrate; **pileus** 72 mm in diameter, white, surface glabrous, campanulate to convex, margin appendicular; **lamellae** white, arrangement irregular; **stipe** 61 x 7 mm, yellowish white, surface smooth, tapering downwards, or broadened at base, annulus absent

#### Auriculariales

*Auricularia auricula* (L. ex Hooker) Underwood, 1902 (Auriculariaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 31 mm in size, solitary on bark substrate; **pileus** 21 mm in diameter, color peach, surface tomentose, shape plain, margin even; **stipe** 10 x 9 mm ( $\pm 4.6 \times 2.1$ ), yellowish white, surface smooth, flattened, annulus absent

*Auricularia delicata* (Montagne ex Fries) Hennings, 1893 (Auriculariaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 35 mm in size, solitary on bark substrate; **pileus** 25 mm in diameter, brown, surface rivulose, flabelliform, margin crenate

*Auricularia polytricha* (Montagne) Saccardo, 1885 (Auriculariaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 43 mm in size, solitary on bark substrate; **pileus** 42 mm in diameter, brown, surface glabrous, infundibuliform, margin inrolled, apex umbilicate, veil absent; **stipe** 12 x 6 mm ( $\pm 7.1 \times 1.4$ ), brown, surface fibrillose, clavate, annulus absent

#### Hymenochaetales

*Phellinus* sp. (Hymenochaetaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 30 mm in size, solitary on bark substrate; **pileus** 30 mm in diameter, brown, surface hirsute to glabrous, shape dimidiate, margin irregular and slightly split

#### Polyporales

*Amauroderma* sp. (Ganodermataceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 72 mm in size, solitary on soil substrate; **pileus** 28 mm in diameter, dark brown, surface finely tomentose to glabrous, flabelliform, concave, umbilicate to strongly infundibuliform, margin plicate; **lamellae** light brown, arrangement poroid; **stipe** 65 x 2 mm, dark brown, surface finely tomentose to glabrous, cylindrical, annulus absent

*Ischnoderma resinsum* (Schrad.) P. Karsten, 1879 (Fomitopsidaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 21 mm in size, solitary on twig substrate; **pileus** dark brown, surface finely tomentose, shape dimidiate, margin incised, veil absent; **lamellae** white, arrangement poroid

*Lentinus* sp. (Polyporaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 25 mm in size, solitary on twig substrate; **pileus** 29 mm in diameter, light brown, surface rugulose, infundibuliform, margin split; **lamellae** light brown, arrangement equal; **stipe** 14 x 3 mm, brown, surface longitudinally striate, annulus absent

*Microporus* sp. (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 21 mm in size, solitary on bark substrate; **pileus** 24 – 71 mm in diameter, brown, infundibuliform, veil absent; **lamellae** white, texture smooth; **stipe** white; attachment to pileus central

*Microporus xanthopus* (Fries) Kuntze, 1898 (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 52 mm in size, solitary on bark



substrate; **pileus** 13 – 72 mm in diameter, color alternating dark and light orange, flabelliform to infundibuliform, margin wavy and lobed; **lamellae** white, arrangement poroid; **stipe** 1-33 x 1.5 -5 mm ( $\pm 4.8 \times 0.3$ ), brown

*Podoscypha* sp. (Meruliaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 52 mm in size, solitary on bark substrate; **pileus** 55 mm in diameter, brown, surface rugose, flabelliform to infundibuliform, margin tuberculate; **lamellae** white, arrangement poroid; **stipe** 25 x 7 mm ( $\pm 1.4 \times 2.1$ ), brown, surface smooth, shape equal, annulus absent

*Polyporus* sp. (Polyporaceae)

Sampling localities: Consocep Mountain Resort, Tigaon, Camarines Sur; Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 41 mm in size, solitary on bark substrate; **pileus** 38 mm in diameter, brown, surface smooth to scaly or finely tomentose, shape dimidiate, margin tuberculate; **lamellae** light brown, arrangement poroid, **stipe** 3 x 4 mm ( $\pm 3.3 \times 1.5$ ), beige, surface glabrous to finely tomentose, shape marginate, annulus absent

*Polyporus varius* (Persoon) Fries, 1821 (Polyporaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 42 mm in size, solitary on bark substrate; **pileus** 20 mm in diameter, yellow, surface glabrous, shape dimidiate to circular, margin eroded; **lamellae** yellow, arrangement poroid; **stipe** 39 x 6 mm, surface tomentose, tapering, annulus absent

*Pycnoporus sanguineus* (L.) Murrill, 1904 (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 16 mm in size, solitary on bark substrate; **pileus** 16 mm in diameter, red-orange to cinnabar with lighter and darker zones, shape dimidiate to flabelliform; **lamellae** red-orange to cinnabar, arrangement poroid

*Trametes* sp. (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 15 mm in size, solitary on bark substrate; **pileus** 15 mm in diameter, white and pale brown, surface glabrous, applanate, margin even, veil absent, attachment to substrate institious

*Trametes hirsuta* (Wulfen) Lloyd, 1924 (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 133 mm in size, solitary on bark substrate; **pileus** gray, surface hirsute, zonate, or concentrically sulcate, shape dimidiate to applanate; **lamellae** white to tan or cinereous, arrangement poroid

*Trametes ochracea* (Persoon) Gilbertson & Ryvarden, 1987 (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 118 mm in size, solitary on bark substrate; **pileus** white to reddish brown (ferruginous) or pale buff with faint darker zones, surface finely tomentose to glabrous, shape dimidiate to elongated; **lamellae** color cream to cinereous, pores circular with thick dissepiments

*Tyromyces chioneus* (Fries) P. Karsten, 1881 (Polyporaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 123 mm in size, solitary on bark substrate; **pileus** 115 mm in diameter, color cream to light yellowish or pale grayish, shape appalanate to slightly convex

**Russulales**

*Stereum* sp. (Stereaceae)

Sampling localities: Consocep Mountain Resort, Tigaon, Camarines Sur; Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 25 mm in size, solitary on bark substrate; **pileus** 25 mm in diameter, brown, surface uneven, veil absent

*Stereum rugosum* Persoon, 1794 (Stereaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 42 mm in size, solitary on bark substrate; **pileus** 42 mm in diameter, brown, surface tomentose to glabrous, shape dimidiate, margin eroded; **lamellae** brown, arrangement poroid

*Stereum subtomentosum* Pouzar, 1964 (Stereaceae)

Sampling localities: Consocep Mountain Resort, Tigaon, Camarines Sur; Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 21 mm in size, solitary on soil and bark substrates; **pileus** 21 mm in diameter, brown, surface

tomentose to velutinous, flabelliform to spathulate, margin entire to undulate, apex umbilicate, veil absent

### Tremellales

*Tremella fuciformis* Berkeley, 1856 (Tremellaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 75 mm in size, solitary on bark substrate; **pileus** 75 mm in diameter, light brown, surface uneven, flabelliform, margin eroded

### Phylum Ascomycota

#### Pezizales

*Peziza* sp. (Pezizaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 15 mm in size, solitary or caespitose on soil substrate; **pileus** 26 mm in diameter, brown, surface virgate, deeply to shallowly concave, margin entire; **stipe** 4 x 12 mm, brown, surface fibrous, compressed, annulus absent

*Plicariella scabrosa* (Cooke) Spooner, 2001 (Pezizaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 77 mm in size, solitary on bark substrate; **pileus** 77 mm in diameter, brown, surface zonate, shape dimidiate, margin entire; **lamellae** brown, arrangement poroid

#### Xylariales

*Daldinia concentrica* (Bolton) Cesati & de Notaris, 1863 (Xylariaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 9 mm in size, solitary on bark substrate; **pileus** 9 mm in diameter, black, surface poroid, veil absent

*Hypoxylon fragiforme* (Persoon) J. Kickx f., 1835 (Hypoxylaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 2 mm in size, clustered on bark substrate, **pileus** 2 mm in diameter, brownish-black, surface smooth, veil absent

*Xylaria* sp. (Xylariaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 17 mm in size, solitary on bark substrate; **pileus** 7 mm in diameter, black, surface poroid, veil absent

*Xylaria longiana* Rehm, 1904 (Xylariaceae)

Sampling locality: Consocep Mountain Resort, Tigaon, Camarines Sur

Description: **fruiting body** 39 mm in size, solitary on bark substrate; **pileus** 13 mm in diameter, black, surface smooth, veil absent

*Xylaria polymorpha* (Persoon) Greville, 1824 (Xylariaceae)

Sampling locality: Mount Isarog National Park, Goa, Camarines Sur

Description: **fruiting body** 9 mm in size, clustered on bark substrate; **pileus** 2 – 4 mm in diameter, black, surface smooth, clavate to irregular or lobed at the tip, veil absent

### Discussion

Most of the taxonomic works in Philippine macrofungi have focused on the Basidiomycetes (Musngi et al., 2005), which is also similar to the results obtained in this study. Most of the information on macrofungi were only noted mainly in Luzon: Mt. Nagpale, Abucay, Bataan (Tayamen et al., 2004), Nueva Ecija (Musngi et al., 2005; Sibounnavong et al. 2008), Bazal-Baubo Watershed, Aurora (Tadiosa et al., 2011), Mount Makiling Forest Reserve, Los Baños, Laguna (De Castro & Dulay, 2015; Paquit & Pampolina 2017; Nacua et al., 2018), Isabela State University, Isabela (Jacob et al., 2017) Angat Watershed Reservation, Bulacan (Liwana et al., 2017) and in the Aeta tribal communities scattered across Zambales, Pampanga and Tarlac (De Leon et al., 2013). The present study is the first survey of macrofungi conducted in the Bicol region in southeastern Luzon. A survey conducted on San Antonio Island in the province of Northern Samar by Jusayan and Vicencio (2019) seems to be the only survey performed outside of Luzon. It is obvious that more surveys are needed in the Visayas and Mindanao regions of the Philippines.

In this study, thirty-six taxa of macrofungi were identified from the two collection sites in Camarines Sur and were classified under eight orders, 17 families, and 26 genera. Among these, Consocep Mountain Resort in Tigaon showed a higher number of macrofungal species with a total of 22 species, while Mount Isarog National Park in Goa had only a total of 17 species. It is interesting to note that most of the species reported were from the family Polyporaceae (Table 1), which conformed with the results observed by De Leon et al. (2013), Tadiosa et al. (2011) and Jacob et al. (2017). However, it should be noted that

three macrofungal species have been found in common with those sites including *Polyporus* sp., *Stereum* sp. and *Stereum subtomentosum*. These macrofungi, classified under Agaricomycetes, are considered wood-rotter fungi that play a vital role in monitoring the state of forest ecosystems (Aref'ev 2008).

The climate in Mount Isarog National Park in Goa is classified as tropical with significant rainfall even in the driest month of the year. The area has an average precipitation of 2,794 mm and an average annual temperature of 26.7 °C (climate-data.org 2019), which could also explain the diversity and number of species observed in the study sites. Consocep Mountain Resort provides a suitable habitat for macrofungi due to the presence of a waterfall, a downstream river, various trees, and fallen trunks and twigs. Tadosa and Arsenio (2014) stated that a moist environment contributes to the richness and diversity of the macrofungi. De Leon et al. (2013) also said that most macrofungi have mycorrhizal associations with trees to support their growth. These trees provide substrates such as bark and twigs for the development of the macrofungal mycoflora as observed in the study. Humidity, temperature and soil type also play an important role in the efficient growth of the macrofungi. However, drier habitats generally have less vegetation than moist and cooler habitats (Talley et al., 2002). Meanwhile, forests with disturbed areas, which may be due to natural disasters and man-made activities, characterize Mount Isarog National Park. Some areas of the forest are elevated with abundant canopies however, there are also some parts that are denuded. The amount of canopy affects the humidity levels in the forest floor, which then influences the forest floor biota (Spur et al., 1980). Since there are some parts of the forest with no canopy left, some forest floor is fully exposed thus resulting to drier and warmer conditions (Brooks and Kyker-Snowman 2008). It should also be noted that climate can act as a limiting factor in the diversity of macrofungi in Mount Isarog. The collected specimens suggest that the observed mycofloral composition of the area is correlated with the combination of the climatic factors in Philippine forest areas (Tadosa et al., 2011). Sibounnavong et al. (2008) also said that dry season with high temperature and low humidity yields more dried specimens.

A total of four Ascomycetes and 18 Basidiomycetes were found in Consocep Mountain Resort, and three Ascomycetes and 14 Basidiomycetes in Mount Isarog National Park.. The dominance of Basidiomycetes on both sites may be due to the availability of trees and leaf-litter as substrate, and the high humidity and moisture that support the rapid growth of macrofungi (Hema et al., 2015). Most of these macrofungi were wood-rotters and leaf-litter decomposers indicating an

ecological threat to dipterocarps and other valuable forest trees (Bolhassan et al., 2012; De Castro & Dulay, 2015). Orders Agaricales and Polyporales have the most number of species, most of which grow on tree barks and twigs except for a few that grow in soil, such as *Peziza* sp., *Amauroderma* sp., and *Stereum subtomentosum*. Tree-dwelling macrofungi are abundant because they withstand higher temperatures, and their toughness deters herbivory by animals (Andrew et al., 2013). Order Polyporales was also reported as the dominant macrofungi in six Aeta tribal communities in Tarlac, Pampanga and Zambales (de Leon et al., 2013).

Many common species found in the present study were also encountered in other sites around Luzon and in Northern Samar. Most of the community residents in those sites are aware of the presence of these macrofungi but do not recognize their economic uses. De Leon et al. (2013) and Lazo et al. (2015) on the other hand, noted that some indigenous people in Central Luzon utilize some species based on folk knowledge for various purposes such as home decoration. Since most of these macrofungi are non-edible, further evaluation must be considered for their health and environmental potential.

## Conclusion

Thirty-six species of macrofungi were identified and were classified under eight orders, 17 families, and 26 genera. Most of the macrofungi collected belonged to the Basidiomycetes. Consocep Mountain Resort in Tigaon showed the higher number with a total of 22 species, while Mount Isarog National Park in Goa had a total of 17 species. Three species are shared by both sampling sites namely, *Polyporus* sp., *Stereum* sp. and *Stereum subtomentosum*. Since most of the species collected were wood-rotter fungi, this work suggests that the role and impact of macrofungi in Philippine forest ecosystem should be evaluated. More detailed surveys should be conducted in the Visayas and Mindanao as well as portions of Luzon outside of the central regions. Furthermore, more ethnomycological investigations should be encouraged in the Philippines especially among indigenous groups where traditional knowledge may reside. Folk uses such as medicinal, agricultural, cultural and culinary should be documented before they are lost.

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