

AGARICACEAE AND PSATHYRELLACEAE FROM SURANADI NATURAL PARK IN LOMBOK ISLAND

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Abstract

Fungi is one of the important organisms in ecosystem. Most macrofungi are composed of fungal species from the division Basidiomycota and some belong to the division Ascomycota. Macrofungi has a role in ecosystem by decomposing materials that contribute to carbon cycling. Mycorrhizal macrofungi organize nitrogen and phosphorus to support the other species in forest ecosystem. Additionally, some species of macrofungi are important food source and medicine. Agaricaceae is one of the most diverse families of fungi. Most of the species are cosmopolitan and saprotrophs that grow in dead wood, trees, log and leaf litter. The species of Agaricaceae have variety of morphology. Psathyrellaceae are a family of fungal species with dark spores. The member of the family generally has soft and fragile fruit body dissolve by autodigestion. This study aims to identify the macrofungi belong to family Agaricaceae that grow in Suranadi Natural Park. This is descriptive explotative study by exploring and describing the species of Agaricaceae and Psathyrellaceae found in Suranadi Natural Park. Sampling was carried out using the cruise method. The fungal sample found was documented and observed. Identification was carried out by matching the morphological characters of fungal sample and environmental conditions using the reference book and various scientific journals on Agaricaceae and Psathyrellaceae species. The identification results found 1 species of Agaricaceae including *Lepiota* sp. and 2 species of Psathyrellaceae i.e. *Coprinellus* sp. and *Parasola* sp.

Keywords: *Agaricaceae, fungi, Psathyrellaceae, Suranadi Natural Park*

INTRODUCTION

Fungi is one of the important organisms in ecosystem with high biodiversity level. Macrofungi are fungal species that form large fruit bodies and visible without microscope (Kirk et al., 2008). Most macrofungi are composed of fungal species from the division Basidiomycota and some belong to the division Ascomycota. Macrofungi has essential role in ecosystem by decomposing materials on the forest floor that contribute to carbon cycling (Thormann, 2006). Mycorrhizal macrofungi organize nitrogen and phosphorus to support the other species in forest ecosystem (Read and Perez-Moreno, 2003). Additionally, some macrofungi are important as food source (Chang, 2006; Chang and Miles, 1991) and medicine (Ooi and Liu, 2000; Daba and Ezeronye, 2003; Sullivan et al., 2006; Lindequist et al., 2005; Chang and Buswell, 1996).

Agaricaceae is one of the most diverse families of fungi with 85 genera and 1340 species (Kirk et al., 2008). Most of the species are cosmopolitan and saprotrophs that grow in dead wood, trees, log and leaf litter (Cannon and Kirk, 2007; Hiola, 2011). The species of Agaricaceae have variety of morphology (Vellinga, 2004). The fruit body including the pileate, gasteroid and the secotioid form. The pileate form the pileus, stipe and lamellae. The fruiting body of gasteroid fungi such as puffballs are round and hard that will split open when matured and release the spores. The secotioid fungi form a fruit body with a cap that completely closed. Spore print color in Agaricaceae species varies from white, pink, ochraceous, green, sepia, cream, and brown, (Singer, 1975, Vellinga, 2001; Vellinga et al., 2003; Canon & Kirk, 2007).

Agaricaceae species are important to humans as food source such as *Agaricus bisporus* that cultivated around the world (Canon and Kirk, 2007), as medicine such as *Agaricus blazei* (Takaku et al., 2001; Hetland et al., 2011). Species from the genera *Leucoagaricus* and *Leucocoprinus* are symbion to the ant (Aslim and Ozturk, 2011).

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Apart from the benefits of the Agaricaceae species, there are also harmful species such as the poisonous *Lepiota josserandii* (Haines et al., 1985)

Psathyrellaceae are a family of fungal species with dark spores. The member of the family generally has soft and fragile fruit body. The family consist of group of fungal species that do ot dissolve by autodigestion.

Suranadi Natural Park has a climate with average rainfall between 1500 to 2000 mm per year. The temperature ranges from 22.2 oC to 36.9 oC. The type of vegetation that covers TWA Suranadi is mixed vegetation that is evenly distributed and is characterized by the growth of tall trees mixed with shrubs that forms closed canopy layers (Wahyuni and Mildrayana, 2010). These environmental conditions are a suitable habitat for fungi to grow.

This study aims to identify the macrofungi belong to family Agaricaceae and Psathyrellaceae that grow in Suranadi Natural Park. This study is expected to provide preliminary information to conserve natural resources, especially fungi in Suranadi.

METHOD

This is descriptive explotative study by exploring and describing the species of Agaricaceae found in Suranadi Natural Park. Sampling was carried out using the cruise method (Rugayah et al., 2004) to obtain data on macrofungi found in wood, trees, soil and leaf litter in the Suranadi Natural Park area. The environmental data including temperature and moisture were measured using termohyrometer. The study was conducted in August - September 2020. Sampling was carried out along the trail in Suranadi Natural park.

The fungal sample found was documented with a camera and observed its morphological characters. Identification was carried out by matching the morphological characters of fungal sample and environmental conditions using the reference book i.e. Mushroom of West Virginia and the Central Appalachians (Roody, 2003), The Encyclopedia of Fungi of Britain and Europe (Jordan, 2004), Introduction to Fungi (Webster and Weber, 2007)), Fungal Families of the World (Cannon and Kirk, 2007), The Edible Mushroom Book (Conte and Laessoe, 2008), Mushrooms of the Pacific Northwest (Trudell and Ammirati, 2009) and various scientific journals on Agaricaceae species. The results of the study are descriptive analysis to identify the genus of Agaricaceae and Psathyrellaceae in Suranadi Natural Park.

RESULT AND DISCUSSION

The identification results found 1 species of Agaricaceae including *Lepiota* sp. and 2 species of Psathyrellaceae i.e. *Coprinellus* sp. and *Parasola* sp.

1. *Lepiota* sp.



Fleshy and soft. Pileus convex to plane with slight umbo, areolate with reddish brown patches on all over the pileus and solid reddish-brown color at the center, white background. Lamellae is free from the stipe, regular, crowded, white or cream. Stipe white, cylindrical with slightly bulbous base, smooth or finely scaly. Saprobic and grow solitary or in groups in soil and litter.

2. *Coprinellus* sp.



The fruit body is small, white or cream. Pileus is campanulate to conical, the margin is striate, white or cream and change to greyish with slightly darker buff towards the center. Lamella white when young and change to greyish brown and black when the spores mature, adnate, crowded and regular. Stipe white, smooth and equal. Grow in a large group on log or dead wood.

3. *Parasola* sp.



Pileus is thin, ovoid then turn to convex and becoming plane, with grey color and yellowish-brown color at the center. Lamella free, crowded, white and turn to dark grey as the spore mature. Stipe equal with slightly swollen base, thin, long, fragile, smooth, white color without ring. Saprobic. Grow solitary on twigs.

Suranadi Natural park average temperature of 27oC and humidity of 80% which is suitable conditions for fungal growth. Most of the fungi found grow on dead wood and log as the fungi need food from substances contained in wood such as cellulose, hemicellulose, lignin and other cell contents (Tambunan and Nandika, 1989). Most of the fungal species found as decomposers in food webs in the Suranadi Natural Park ecosystem. Suharna (1993) stated that macrofungi act as decomposers along with bacteria and several protozoa species, so that many help the decomposition process of organic matter to accelerate the material cycle in forest ecosystems.

CONCLUSION

The identification results found 1 species of Agaricaceae including *Lepiota* sp. and 2 species of Psathyrellaceae i.e. *Coprinellus* sp. and *Parasola* sp. The Suranadi Natural Park is a suitable habitat for fungal species to grow.

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