Ethnomycological Study of Macrofungi in Sesaot Forest of West Lombok

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Abstract: Communities living near forested areas play a crucial role in preserving forest biodiversity. Ethnomycological studies are an important first step in identifying the variety and potential of macrofungi used by people in a region. This study aims to document the use of macrofungi by the local community around Sesaot forest. The collection and identification of macrofungi samples were carried out using opportunistic sampling. Data on the use of macrofungi was obtained from semi-structured interviews with residents around Sesaot Forest. A total of 26 respondents from the Sesaot community participated in the survey. The people usually collected macrofungi for consumption and occasionally for medicinal purposes. The results identified 12 species of macrofungi from 10 families (Pezizaceae, Auriculariaceae, Sarcoscyphaceae, Comphaceae, Pleurotaceae, Canademataceae, Psathyrellaceae, Polyporaceae, Agaricaceae, and Nidulariaceae) in Sesaot forest. Auricularia sp. and Pleurotus sp. were used as food, while Lignosus sp. was used as medicine by the local people in Sesaot.

Keywords: Ethnomycology; Food; Local community; Macrofungi; Medicine

Introduction

Fungi are one of the constituent components of biodiversity in Indonesia (Nurdiyanti et al., 2020). Hawksworth et al. (2017) estimated the number of fungi approximately 2.2 to 3.8 million species worldwide. According to Gandjar et al. (2006), there are 200,000 species of fungi found in Indonesia. Macrofungi are a group of fungi with easily observed spore-bearing structures called fruiting bodies. They grow in various forms of fruiting bodies such as gilled fungi, boletes, polypore fungi, puffballs, bracket fungi, jelly fungi, cup fungi, stinkhorn, morels, and bird’s nest fungi (Mueller et al., 2007). They are commonly found as saprobes or mycorrhiza in soil, leaf litter, dead organic matter, decaying wood, and logs. While some of the species are pathogens of plants and other fungi (Teke et al., 2018). These fungi have a significant role in the natural ecosystem as decomposers and food for animals (Tang et al., 2015). The majority of the macrofungi are members of Basidiomycota or Ascomycota, while a small number belong to Zygomycota (Mueller et al., 2007).

Various types of macrofungi have been used as a food source since ancient times, probably for their taste and appealing flavor (Das, 2010). There are around 1,069 species of macrofungi that have been reported to be used as food ingredients (Boa, 2004). They have high content of proteins, fiber, minerals, fibers, trace elements, and low fats (Bilal et al., 2010). Macrofungi is also traditionally utilized for medical purposes. Some studies reported that several species of macrofungi contain bioactive and antioxidants (Adeoye-Isijola et al., 2018; Herawati et al., 2021).

The ecological knowledge of the local community is crucial for understanding the dynamics of the environment. Ethnomycology, a field of science that studies the cultural importance and uses of macrofungi in everyday life (Brown, 2019), sheds light on the significance of macrofungi in cultural traditions across the world. However, macrofungi are not as extensively studied as plants and animals. More data on the
utilization of macrofungi by the local community is needed to comprehend the relationship between humans and natural resources in the ecosystem (Hamzah et al., 2023).

Ethnomycology is the study of how local communities use fungi (Santosa et al., 2021; Has et al., 2023). According to Sawitri et al. (2011), communities residing in forested areas play a pivotal role in safeguarding forest biodiversity. These communities possess a deep understanding of which macrofungi are suitable for consumption, which are toxic, and which have medicinal properties. This valuable knowledge is transmitted across generations, shaped by the accumulated experiences of individuals within their environment (Metananda et al., 2012).

Ethnomycological studies are a crucial first step in identifying the diversity and potential of macrofungi used by people in a specific region (Nurdiyanti et al., 2020). Many local communities possess valuable local knowledge and wisdom that should be researched, documented, and preserved (Sitanggang et al., 2022; Zulharman & Noeryoko, 2023). References containing information about organism diversity, especially macrofungi, are essential for safeguarding this knowledge (Saridewi et al., 2022). It is important to gather data on their utilization to prevent the loss of this knowledge among the younger generation.

Lombok Island is surrounded by forest areas with climatic conditions, topography, and humidity that provide habitats for fungi. The increase in population in areas around the forest, followed by increased activities to meet daily needs, has had a significant impact on the forest ecosystem on the island of Lombok. According to Mukhtar et al. (2010), the ecological condition of the Sesaot forest area has decreased due to activities carried out by communities around the forest. If this condition is left unchecked and occurs in the long term, it will have an impact on reducing biodiversity, especially macrofungi.

The aim of this study is to comprehensively document the biodiversity and the utilization of macrofungi by the local community residing in the vicinity of the Sesaot forest. This exploration is underpinned by the recognition that ethnomycological knowledge can serve as a valuable tool for assessing fungal diversity within a specific geographic area.

**Method**

This study was conducted between March-August 2023 in forest area of Sesaot Village, located in the sub-district of Narmada, West Lombok Regency, West Nusa Tenggara. Sesaot village is located within the coordinates 8°30’-8°33’S and 116°13’-116°18’E.

Macrofungi samples were collected and identified using opportunistic sampling methods. The macrofungi samples were photographed, placed in a sample box, and labeled. Macrofungi that grow in soil are collected by plucking or digging at the base of the stipe to obtain the complete sporocarp. Macrofungi that grow on wood are removed with a knife, along with the bark from which they grow. Identification is carried out by examining the fungus' morphology (pileus, stipe, lamella, annulus, volva, and spores), environmental condition, and matching it with reference book and various journal articles.

![Figure 1. Sesaot forest located in the Sesaot Village as the study area](image)

Data about the utilization of the macrofungi obtained from semi-structured interview with the local people reside around Sesaot Forest. The interview was composed of question designed to gather information about the importance of macrofungi in their everyday life. The question was adapted and modified from De Leon et al. (2012), De Leon et al. (2016) and Lazo (2015). The data was presented using table.

**Result and Discussion**

A total of 26 respondents from the Sesaot community participated in the survey. Most of the respondents (42.3%) were between 26 and 45 years old (see Table 1), with the majority being men (61.5%) as the interviews were conducted in the morning near the forest area where many men work. The majority of the respondents had only completed high school (69.2%). All respondents are Muslim (100%), reflecting the majority religion in West Nusa Tenggara.

All of the respondents (100%) were aware of mushrooms (Table 3), which belong to the well-known group of macrofungi. The local people refer to macrofungi as *tengkong*. Most macrofungi names are based on the characteristics of the mushrooms and the
substrates on which they grow (De Leon, 2012). The majority of the respondents believed that macrofungi grow in the rainy season (92.3%), while few believed that macrofungi also grow in the dry season. They reported that macrofungi grow in soil, leaf litter, and decaying logs (Table 3). The people usually collect macrofungi for consumption and rarely for medicine or rituals. Since the primary use of macrofungi was for food, the respondents preferred to process the macrofungi by boiling or frying it with other food ingredients (Table 4). Most of the respondents believed that macrofungi are not dangerous (96%). A study by Yusran et al. (2020) in Lore Lindu National Park, Central Sulawesi describes how the residents can distinguish poisonous fungi based on its features. Residents describe poisonous fungus as having a brightly colored fruiting body that is not eaten by insects or rodents (such as mice and squirrels). The fungus that is safe to consume usually has a white or dark fruit body and is visited by insects or other animals.

**Table 1.** Socio Demographic Profile of the Respondents

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16-25</td>
</tr>
<tr>
<td>26</td>
<td>6</td>
</tr>
</tbody>
</table>

**Table 2.** Additional Information on the Socio Demographic Profile of the Respondents

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>Gender</th>
<th>Educational attainment</th>
<th>Job</th>
<th>Religion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Man</td>
<td>Woman</td>
<td>College</td>
<td>High school</td>
</tr>
<tr>
<td>26</td>
<td>16</td>
<td>10</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>

**Table 3.** Knowledge on Mushroom of the Respondents

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>Do you know mushroom?</th>
<th>When does mushroom appear?</th>
<th>Where do mushroom appear?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Dry season</td>
</tr>
<tr>
<td>26</td>
<td>25</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 4.** Survey of the Indigenous Beliefs of the Respondents on Mushroom Utilization

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>How do you use mushroom</th>
<th>How do you cook it?</th>
<th>Are there any harmful fungi?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food</td>
<td>Medicine</td>
<td>Rituals</td>
</tr>
<tr>
<td>26</td>
<td>25</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 5.** Macrop fungi Collected in the Sesaot Forest

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
<th>Substrate</th>
<th>Division</th>
<th>Traditional Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peziza sp.</td>
<td>Pezizaceae</td>
<td>Decaying log</td>
<td>Ascomycota</td>
<td>Food</td>
</tr>
<tr>
<td>Auricularia sp.</td>
<td>Auriculariaceae</td>
<td>Decaying log</td>
<td>Ascomycota</td>
<td></td>
</tr>
<tr>
<td>Cookeina sp.</td>
<td>Sarcoscyphaceae</td>
<td>Soil</td>
<td>Ascomycota</td>
<td></td>
</tr>
<tr>
<td>Ramaria sp.</td>
<td>Gomphaceae</td>
<td>Soil</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Pleurotus sp.</td>
<td>Pleurotaceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td>Food</td>
</tr>
<tr>
<td>Ganoderma sp. 1</td>
<td>Ganodermataceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Ganoderma sp. 2</td>
<td>Ganodermataceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Ganoderma sp. 3</td>
<td>Ganodermataceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Parasola sp.</td>
<td>Psathyrellaceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Lignosus sp.</td>
<td>Polyporaceae</td>
<td>Soil</td>
<td>Basidiomycota</td>
<td>Medicine</td>
</tr>
<tr>
<td>Coprinus sp.</td>
<td>Agaricaceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
<tr>
<td>Cyathus sp.</td>
<td>Nidulariaceae</td>
<td>Decaying log</td>
<td>Basidiomycota</td>
<td></td>
</tr>
</tbody>
</table>

This study identified 12 species of macrofungi from 10 families (Pezizaceae, Auriculariaceae, Sarcoscyphaceae, Gomphaceae, Pleurotaceae, Ganodermataceae, Psathyrellaceae, Polyporaceae, Agaricaceae, and Nidulariaceae) in Sesaot forest. The macrofungi collected belong to the division of Ascomycota and Basidiomycota. Only 3 species of macrofungi collected during the study were used by the local community in Sesaot forest as a source of food and medicine. Macrofungi species were used by many local communities for food, medicine, and rituals.
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Sarcoscyphaceae, Comphaceae, Pleurotaceae, Ganodermataceae, Psathyrellaceae, Polyporaceae, Agaricaeae, and Nidulariaeae) in Sesaot forest which belong to Ascomycota and Basidiomycota division. The local community utilized Auricularia sp. and Pleurotus sp. as food. While Lignosus sp. is used as medicine. The result of this study can be used as basic data on fungal in diversity in Sesaot forest.

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Author Contributions
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Conflict of Interest
All authors have declared no conflicts of interest.

References


