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Review Article

Review: Current Checklist of Local Names and Utilization Information of Indonesian Wild Mushrooms

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ABSTRACT
Mushrooms have been considered an important part of human life due to their various benefits and potential. In Indonesia, many indigenous people get used to foraging and using wild mushrooms as part of their daily lives. To date, there was no update following prior local name checklist of wild mushroom and their uses in Indonesia. Thus, this review aims to provide the latest work on that information known so far in the country. A literature review was focusing on available publications containing the local names and the use of wild mushrooms in Indonesia. 107 mushrooms in total are known to have 170 local names with 36 of them having more than 1 indigenous name. Some of them: *Coprinus* spp., *Polyporus* spp., *Schizophyllum commune*, *Scleroderma* spp., *Termitomyces* spp., and *Trametes* spp. are known to have 5 local names for each region and ethnicity that uses them. 50 species of mushrooms in total are used as food and traditional medicine. The information was derived from 8 provinces and 8 tribes, of which West Kalimantan Province and Javanese ethnicity contributed to the highest number of it. The number of local names is expected to increase as more investigations are conducted in the near future.

INTRODUCTION
The mushroom is a cosmopolitan-heterotrophic-organism due to its distribution in natural ecosystems to man-made sites in Indonesia (Putra et al. 2017; 2018; 2019). Based on the existing definitions, the mushroom is categorized as a group of fungi with macroscopic fruiting bodies, visible without a microscope, and can be picked up by hand (Arora 1986; Hawksworth 2001; Anon 2002). Taxonomically, most mushrooms belong to the phylum of Basidiomycota and a few of Ascomycota. Moreover, the mushroom is one of the living creatures with a large number of species in the world (Hawksworth 2001). Hence, it is increasing the chance of interaction with other organisms, including humans.

Wild mushroom is one of the important natural resources that have been utilized by various local people around the world (Boa 2004; Pala et al. 2013; Osarenkhoe et al. 2014; Semwal et al. 2014; Lazo et al. 2015; Álvarez-Farias et al. 2016; Ao et al. 2016; Yilmaz & Zencirci 2016; Merida Ponce et

al. 2019), including Indonesia (Putra & Hafazallah 2020). Mushroom contains high nutrients and bioactive compounds which are good for health (Lima et al. 2012; Wang et al. 2014). Mushrooms can grow on a broad range of habitats, different seasons, used as functional food, and some are known to have the potential for poisoning in Indonesia (Putra 2020a;b). However, the indigenous people are used to foraging and using the wild mushroom in their daily life without experiencing mushroom poisoning (Putra & Hafazallah 2020). This habit has been passed down through generations and became their local wisdom and identity. Yet, the documentation of indigenous knowledge regarding wild mushrooms in Indonesia is still partially done (Putra & Hafazallah 2020). Thus, a better collaboration between researchers and local people is needed in order to organize the local name and utilization of Indonesian wild mushrooms. Moreover, wild mushroom has the potential to increase the mushroom supply in the market which can contribute to the Indonesian economy. It is stated that mushroom is the largest commodity from horticulture (nonfruit commodities) which reach 33.000 tons y-1 (Statistics Indonesia 2021).

Hitherto, Indonesia does not have a checklist of Indonesian mushrooms diversity in contrast to Malaysia (Lee et al. 2008) and Vietnam (Kiet 2008). In addition, the checklist of Indonesian mushroom's local names has not been updated since Bisema (1968) and Heyne (1987). The participation of indigenous people in reporting ethnomycological information will contribute to Indonesian mushroom biodiversity and its potential utilization. The indigenous people are considered to have the empirical experience in utilizing wild mushrooms (Reyes-Lopez et al. 2020). The information regarding local name and uses of the wild mushrooms should be summarized, validated, and passed on to the next generation. Therefore, this review is aimed to providing the current checklist of Indonesian wild mushroom to optimize its potential uses in the future. Then, it might contribute to the Indonesian government's program, especially the ministry of agriculture, in developing mushroom cultivation from wild mushrooms and its production to support the food self-sufficiency program of world food barn 2045.

MATERIALS AND METHODS

We investigated the available published articles and records from books on the ethnomycology studies in Indonesia. The information was collected using related keywords such as local names of Indonesian mushrooms, local people knowledge about wild mushrooms, the use of wild mushrooms by Indonesian tribes. The information (including some photographs) was also obtained through periodically online communication with indigenous peoples, member of the Indonesian Mushroom Hunter Community (KPJI) from 2020 to 2021. Some of the wild edible mushroom specimens used by them were deposited to Herbarium Bogoriense and investigated for future taxonomical studies. Furthermore, the obtained taxonomical position was validated based

on Index Fungorum (2021) (http://www.indexfungorum.org/names/Names.asp). The data then presented in checklist (tables) and graphs.

RESULTS AND DISCUSSION

The total of 107 wild mushrooms (Basidiomycota 103 species, Ascomycota 4 species) are known to have long been used by local people from various provinces (West Java, West Kalimantan, South Sumatra, Lampung, Bangka Belitung, Jambi, Central Sulawesi, Riau) in Indonesia. Most of them have been identified up to the species level (Table 1), with 170 local names recorded. This data will contribute to the record of Indonesian fungal biodiversity. Until 2017, there are only 2273 species of fungi in Indonesia (micro-and macroscopic fungi), or only approximately 0.15% of the total species in the world and did not include the information on their use (Indonesian Institute of Sciences 2019). Blackwell (2011) suggested that 70,000 fungal species have been described, of an estimated total of 1,500,000 species exist on earth. To date, the estimated number of fungal species in the world is increasing between 2.2–3.8 million (Cannon et al. 2018). Furthermore, Hawksworth (2001) argued that fungi in the tropics should be more diverse than the temperate areas, but the documentation has not been done well, and Indonesia is no exception. Currently, Indonesia does not have a checklist of mushroom species and the updated information of index of local mushroom names. Thirty-six species of wild mushrooms in this report are known to have more than one local name, either from the same or different local ethnicity knowledge (Table 1, Figure 4). They have between 2-5 names for each species with a total of 99 local names, while the other 71 mushrooms have only one local name (Table 1). Some of wild mushrooms include *Coprinus* spp., *Polyporus* spp., *Schizophyllum commune*, *Scleroderma* spp., *Termitomyces* spp., and *Trametes* spp. have five different local names from each province and the ethnicity that uses them. The result shows that these mushrooms are popular in various tribes in Indonesia.

The mushroom information is obtained from 8 provinces in Indonesia (Figure 2), with West Kalimantan (40.2%), West Java (36.2%), and South Sumatra (18.9%) having the highest data, respectively. This result indicates that these areas have the records of wild mushrooms by indigenous peoples provided in appropriate scientific publications. The information related to ethnomycology in Indonesia should be higher than the presented data, considering the vast territory of Indonesia with the extravagant of ethnic groups. According to The Consensus of the Central Statistics Agency of Indonesia (2010), there are 1340 ethnic groups in Indonesia. It is implied that the possibility to obtain more information on the use of wild mushrooms in Indonesia. Meanwhile, information regarding the use of wild mushrooms was obtained from 8 tribes (Figure 3), with Javanese (28.3%), Dayak (26.7%), Baduy (20.4%), and Malay (15.7%) having the highest data, respectively. Until recently, these tribes contributed the most information related to wild mushroom uses in Indonesia (Putra & Hafazallah 2020). A total of 50 species of mushrooms (Table 2) are used by various tribes primarily as food and traditional medicines (Figures 1; 5). The wild mushrooms are generally

consumed by themselves, but some communities sell them in conventional or modern markets (Putra 2020a; Putra & Hafazallah 2020). Some of the mushrooms sold by local people include 'pelawan' mushroom/*Heimioporus* sp. (Bangka Belitung Province), 'melinjo' mushroom/*Scleroderma* spp. (South Sumatra Province), and *Favolaschia manipularis* (Central and East Java Provinces). Many wild mushrooms have been reported as a low-calorie food source and rich in vegetable protein, minerals, and vitamins (Chang & Miles 2004; Wang et al. 2014). In addition, mushrooms contain bioactive ingredients that function as anticancer, antibacterial, antifungal, antioxidant, anti-inflammatory, and other derivative active ingredients (Adhikari 2020). The mushrooms used by the community in this review were generally collected from soil, wood, straw, and oil palm bunches (Figure 6). Due to their cosmopolitan lifestyle, mushrooms are known to grow in various environmental conditions in Indonesia (Putra et al. 2018).

Figure 1. Some of wild edible mushrooms used as food by local people in Indonesia. A-B. *Termitomyces eurizhus*. C-D. *Schizophyllum commune*. E-F. *Scleroderma* sp. G-H. *Cookeina speciosa*. (With permission: A-D, G-H Putra & Hafazallah (2020), E-F Indonesian Mushroom Hunter Community).

Table 1. List of local names of Indonesian wild mushrooms.

Local Name	Scientific Name	Location	Ethnicity Group	Literatures
Supa baseuh	*Agaricus* sp.	West Java	Baduy	Khastini et al. 2019
Kulat ipoh	*Amanita vaginata*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa kamanden	*Amauroderma* sp.	West Java	Baduy	Khastini et al. 2018, 2019
Kulat gadong	*Amauroderma rugosum*	West Kalimantan	Dayak	Syafrizal et al. 2014; Yunida et al. 2014
Supa jambu	*Armillaria* spp.	West Java	Sunda	Putra & Hafazallah 2020
Supa ceuli, Supa lember lutung, Supa lamber sungu	*Auricularia* spp.	West Java	Baduy , Sunda	Al Ulya et al. 2017; Khastini et al. 2019; Putra & Hafazallah 2020
Kulat kuping	*Auricularia auricula-judae*	West Kalimantan	Dayak	Syafrizal et al. 2014
Kulat kerup	*Auricularia delicata*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa kebo	*Boletus* sp.	West Java	Sunda	Al Ulya et al. 2017
Supa koneng	*Calocera* sp.	West Java	Baduy, Sunda	Al Ulya et al. 2017; Khastini et al. 2019
Kulat mata sapi, Kulat mate	*Calostoma* sp.	West Kalimantan	Dayak	Syafrizal et al. 2014; Yunida et al. 2014
Jamur impes	*Calvatia excipuliformis*	South Sumatra	Malay	Riastuti et al. 2018
Kulat nangka, Supa brui	*Cantharellus* sp.	Lampung, West Java	Malay, Sunda	Putra & Hafazallah 2020
Supa padali bodas	*Cellulariella* sp.	West Java	Baduy	Khastini et al. 2019
Supa koja	*Clavaria* sp.	West Java	Baduy	Khastini et al. 2019
Supa jangkar	*Clavariadelphus* sp.	West Java	Baduy	Khastini et al. 2019
Jamur gagang	*Clitocybe desembris*	South Sumatra	Malay	Riastuti et al. 2018
Jamur payung rayun	*Clitocybe infundibuliformis*	South Sumatra	Malay	Riastuti et al. 2018
Kulat nyiur	*Collybia* sp.	West Kalimantan	Dayak	Yunida et al. 2014
Jamur ati	*Coltricia perennis*	South Sumatra	Malay	Riastuti et al. 2018
Supa taneh lojor, Supa jarum	*Conocybe* sp.	West Java	Baduy, Sunda	Al Ulya et al. 2017; Khastini et al. 2019
Kulat mangkok	*Cookeina speciosa*	West Kalimantan	Dayak	Syafrizal et al. 2014; Putra & Hafazallah 2020
Kulat mangkok	*Cookeina sulcipes*	West Kalimantan	Dayak	Yunida et al. 2014
Kulat mangkok, Kulat terap	*Cookeina tricholoma*	West Kalimantan, South Sumatra	Dayak, Malay	Syafrizal et al. 2014; Yunida et al. 2014; Riastuti et al. 2018; Putra & Hafazallah 2020
Kulat beras, Supa taneh leutik, Supa amis, Supa jarami, Supa taneh bodas	*Coprinus* spp.	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2019
Jamur krikik	*Coriolus pubescens*	South Sumatra	Malay	Riastuti et al. 2018
Jamur racun	*Coriolus versicolor*	South Sumatra	Malay	Riastuti et al. 2018
Supa kasungka	*Cortinarius* sp.	West Java	Baduy	Khastini et al. 2019
Kulat tepus	*Crepidotus applanatus*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa batok	*Cyathus* sp.	West Java	Baduy	Khastini et al. 2019
Kulat gadong	*Cymatoderma elegans*	West Kalimantan	Dayak	Syafrizal et al. 2014

Table 1. Contd.

Local Name	Scientific Name	Location	Ethnicity Group	Literatures
Supa kayas bodas, Supa kayang	*Daedalea* spp.	West Java	Baduy	Khastini et al. 2019
Jamur racun	*Daedalea elegans*	South Sumatra	Malay	Riastuti et al. 2018
Supa padali coklat	*Daedaleopsis* sp.	West Java	Baduy	Khastini et al. 2019
Jamur krikik	*Daedaleopsis confraggosa*	South Sumatra	Malay	Riastuti et al. 2018
Kulat bulat	*Daldinia* sp.	West Kalimantan	Dayak	Yunida et al. 2014
Jamur batu	*Daldinia concentrica*	South Sumatra	Malay	Riastuti et al. 2018
Kulat gadong putih	*Filoboletus manipularis*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa letah	*Fistulina hepatica*	West Java	Sunda	Putra & Hafazallah 2020
Kulat gadong, supa bereum	*Fomes fomentarius*	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2018
Supa tutung, supa awi	*Fomitopsis* spp.	West Java	Baduy	Khastini et al. 2019
Jamur mata kerbau	*Galiella* sp.	Riau	Malay	Putra & Hafazallah 2020
Supa tutung bodas, Supa tutung hideng	*Ganoderma* spp.	West Java	Baduy	Khastini et al. 2019
Kulat gadong, Kulat gadong hitam, Supa coklat kayas	*Ganoderma applanatum*	West Kalimantan, West Java	Dayak, Baduy	Syafrizal et al. 2014; Yunida et al. 2014; Khastini et al. 2018
Kulat gadong amas	*Ganoderma australe*	West Kalimantan	Dayak	Yunida et al. 2014
Kulat gadong, Supa tutung bodas	*Ganoderma lucidum*	West Kalimantan, West Java	Dayak, Baduy	Syafrizal et al. 2014; Khastini et al. 2018
Kulat gadong	*Gloeophyllum sepiarium*	West Kalimantan	Dayak	Syafrizal et al. 2014
Jamur dipa	*Grifolla frondosa*	South Sumatra	Malay	Riastuti et al. 2018
Supa catang, Supa Wood, Supa awi	*Gymnopus* sp.	West Java	Baduy	Khastini et al. 2019
Kulat minyak	*Gymnopus dryophilus*	West Kalimantan	Dayak	Syafrizal et al. 2014
Kulat pelawan	*Heimioporus* sp.	Bangka Belitung	Malay	Putra & Hafazallah 2020
Kulat sisik	*Hexagonia papyracea*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa kasongket	*Hygrocybe* sp.	West Java	Baduy	Khastini et al. 2019
Kulat tiong, kulat siung	*Hygrocybe conica*	Bangka Belitung, West Kalimantan	Malay, Dayak	Putra & Hafazallah 2020
Kulat gadong, Kulat kalimbauan	*Hymenochaete rubiginosa*	West Kalimantan	Dayak	Syafrizal et al. 2014; Yunida et al. 2014
Supa kincir coklat	*Hymenopellis* sp.	West Java	Baduy	Khastini et al. 2019
Supa akar hideng	*Laccaria* sp.	West Java	Baduy	Khastini et al. 2019
Supa nyiruan	*Laetiporu*s sp.	West Java	Baduy	Khastini et al. 2019
Kulat kuning	*Laetiporus sulphureus*	West Kalimantan	Dayak	Yunida et al. 2014
Kulat tawak, Supa cau, Supa kayas bereum	*Lentinus* sp.	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2019
Jamur tui, kulat ngkasehan, jamur lot	*Lentinus sajor-caju*	South Sumatra, West Kalimantan	Malay, Dayak	Yunida et al. 2014; Riastuti et al. 2018; Putra & Hafazallah 2020
Supa tai kotok, supa wereu	*Lepiota* sp.	West Java	Baduy, Sunda	Al Ulya et al. 2017; Khastini et al. 2019
Jamur barat	*Lepiota cristata*	South Sumatra	Malay	Riastuti et al. 2018
Jamur telor	*Lycoperdon pyriforme*	South Sumatra	Malay	Riastuti et al. 2018

Table 1. Contd.

Local Name	Scientific Name	Location	Ethnicity Group	Literatures
Supa amis, Suapa glenter	*Marasmiellus* spp.	West Java	Sunda	Al Ulya et al. 2017
Kulat kerang	*Marasmiellus affixus*	West Kalimantan	Dayak	Syafrizal et al. 2014
Kulit putih	*Marasmius* spp.	West Kalimantan	Dayak	Yunida et al. 2014
Kulat papan, Supa arey	*Microporus* spp.	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2019
Kulat gadong	*Microporus xanthopus*	West Kalimantan	Dayak	Syafrizal et al. 2014
Kulat terang, Supa lumar catang, Supa payung, suum caum oranye	*Mycena* spp.	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2019
Kulat gadong putih	*Mycena chlorophos*	West Kalimantan	Dayak	Syafrizal et al. 2014
Jamur kelapa	*Mycena haematopus*	South Sumatra	Malay	Riastuti et al. 2018
Kulat pangku anak	*Mycena leaiana*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa tikukur, kulat tawe	*Oudemansiella* sp.	West Java, West Kalimantan	Baduy, Dayak	Khastini et al. 2019; Putra & Hafazallah 2020
Kulat tangar	*Mycena subcana*	West Kalimantan	Dayak	Yunida et al. 2014
Jamur wulu	*Panus rudis*	South Sumatra	Malay	Riastuti et al. 2018
Jamur iwak	*Phaeolus schweinitzii*	South Sumatra	Malay	Riastuti et al. 2018
Jamur pengantin	*Phallus* spp.	West Java, West Kalimantan	Sunda, Dayak	Putra & Hafazallah 2020
Supa bereum	*Phellinus linteus*	West Java	Baduy	Khastini et al. 2018
Supa akar, Supa akar Wood	*Pleurotus* spp.	West Java	Baduy	Khastini et al. 2019
Kulat pangku anak, Kulat beras	*Pleurotus ostreatus*	West Kalimantan	Dayak	Syafrizal et al. 2014; Yunida et al. 2014
Jamur gromo	*Pleurotus pulmonarius*	South Sumatra	Malay	Riastuti et al. 2018
Kulat labang, Cendawan elang, supa kincir, supa liat, supa lipit	*Polyporus* spp.	West Kalimantan, Jambi, West Java	Dayak, Kerinci, Sunda	Syafrizal et al. 2014; Saputra et al. 2018; Putra & Hafazallah 2020
Kulat gelang	*Polyporus durus*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa cau hideng, Supa kiray	*Psathyrella* spp.	West Java	Baduy	Khastini et al. 2019
Supa bereum	*Pycnoporus* sp.	West Java	Baduy	Khastini et al. 2019
Jamur merah, Kulat areh	*Pycnoporus cinnabarius*	South Sumatra, West Kalimantan	Malay, Dayak	Yunida et al. 2014; Riastuti et al. 2018
Kulat gadong, kulat areh	*Pycnoporus sanguineus*	West Kalimantan	Dayak	Syafrizal et al. 2014; Yunida et al. 2014
Jamur karang	*Ramaria kunzei*	South Sumatra	Malay	Riastuti et al. 2018
Supa kayas hideng, Supa lumar catang	*Rigidoporus* spp.	West Java	Baduy	Khastini et al. 2019
Kulat gadong, kulat krikik	*Rigidoporus microporus*	West Kalimantan, South Sumatra	Dayak, Malay	Yunida et al. 2014; Riastuti et al. 2018
Supa kayas hideung	*Rigidoporus stereum*	West Java	Baduy	Khastini et al. 2018
Kulat kawi	*Russula vesca*	West Kalimantan	Dayak	Syafrizal et al. 2014
Supa kincir bereum	*Sarcoscypha* sp.	West Java	Baduy	Khastini et al. 2019
Kulat manis	*Stereum ostrea*	West Kalimantan	Dayak	Syafrizal et al. 2014
Jamur grigit, kulat karang, Supa mireg, tanggidi, taggojo	*Schizophyllum commune*	South Sumatra, West Kalimantan, West Java, Central Sulawesi	Malay, Dayak, Baduy, Kaili	Yunida et al. 2014; Riastuti et al. 2018; Khastini et al. 2019; Putra & Hafazallah 2020
Jamur so, jamur melinjo, jamur kodok, jamur tangkil, supa buled	*Scleroderma* spp.	Sumatra, Java, Kalimantan	Malay, Betawi, Sunda, Java	Al Ulya et al. 2017; Putra & Hafazallah 2020
Suung tunggal, Jamur rayap, jamur barat, jamur bulan, jamur sempagi	*Termitomyces* spp.	Java, Kalimantan, Sumatra	Baduy, Sunda, Malay, Java	Al Ulya et al. 2017; Putra & Hafazallah 2020
Jamur barat, supa bulan, suung rampak, kulat elong	*Termitomyces eurhizus*	West Java, East Java, West Kalimantan	Sunda, Java, Dayak	Putra & Hafazallah 2020

Table 1. Contd.

Local Name	Scientific Name	Location	Ethnicity Group	Literatures
Kulat papan, Supa kayas putih, Supa cau leutik, Supa Wood putih, Supa cau leutik	*Trametes* spp.	West Kalimantan, West Java	Dayak, Baduy	Yunida et al. 2014; Khastini et al. 2019
Kulat gadong	*Trametes hirsuta*	West Kalimantan	Dayak	Syafrizal et al. 2014
Kulat gadong	*Trametes pubescens*	West Kalimantan	Dayak	Syafrizal et al. 2014
Jamur mata kerbau	*Trichaleurina javanica*	West Kalimantan	Dayak	Putra & Hafazallah 2020
Kulat hati bekut	*Tricholoma sulphureum*	West Kalimantan	Dayak	Yunida et al. 2014
Suum cau hiding, jamur lengkuas	*Volvariella* sp.	West Java, Central Java, West Kalimantan	Baduy, Java, Dayak	Khastini et al. 2019; Putra & Hafazallah 2020
Jamur sawit	*Volvariella volvacea*	South Sumatra	Malay	Riastuti et al. 2018
Jamur rambut sawit	*Xylaria* sp.	South Sumatra	Malay	Riastuti et al. 2018

Table 2. Information on the utilization of wild mushrooms by local people in Indonesia.

Species	Habitat	Uses	References
Agaricus spp.	Soil	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Agaricus campestris	Soil	Food	Putra & Hafazallah 2020
Amauroderma sp.	Soil	Fever medicine	Khastini et al. 2018
Amauroderma rugosum	Soil	Fever medicine	Putra & Hafazallah 2020
Armillaria spp.	Wood	Food	Putra & Hafazallah 2020
Auricularia spp.	Wood	Food, Fever medicine	Al Ulya et al. 2017; Khastini et al. 2019; Putra & Hafazallah 2020
Auricularia cornea	Wood	Food	Putra & Hafazallah 2020
Auricularia delicata	Wood	Food	Putra & Hafazallah 2020
Auricularia mesenterica	Wood	Food	Putra & Hafazallah 2020
Auricularia nigricans	Wood	Food	Putra & Hafazallah 2020
Boletus spp.	Soil	Food	Putra & Hafazallah 2020
Calvatia spp.	Soil	Food, Bump medicine	Putra & Hafazallah 2020
Calvatia excipuliformi	Soil	Food (young basidiomata), Wound medicine	Riastuti et al. 2018
Clitocybe decembris	Soil	Food	Riastuti et al. 2018
Coltricia perennis	Wood	Food	Riastuti et al. 2018
Cookeina speciosa	Wood	Food	Riastuti et al. 2018
Cookeina tricholoma	Wood	Food	Riastuti et al. 2018
Coprinellus sp.	Soil	Food	Al Ulya et al. 2017
Coprinus spp. (young basidiomata)	Soil, Straw	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Coprinus comatus	Soil	Food	Putra & Hafazallah 2020
Daldinia concentrica	Wood	Itchy medicine	Riastuti et al. 2018
Favolaschia manipularis	Wood	Food	Putra & Hafazallah 2020
Favolus spp.	Wood	Food (flavour seasoning)	Putra & Hafazallah 2020
Fomes fomentarius	Wood	Fever medicine	Khastini et al. 2018
Galiella sp.	Wood	Wound medicine	Putra & Hafazallah 2020
Ganoderma lucidum	Wood	Cancer medicine	Khastini et al. 2018
Grifolla Frondosa	Wood	Food	Riastuti et al. 2018
Heimioporus sp.	Soil	Food	Putra & Hafazallah 2020
Hygrocybe conica	Soil	Food	Putra & Hafazallah 2020
Laetiporus sulphuratus	Wood	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Lentinus sajor-caju	Wood	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Lycoperdon pyriforme	Soil	Food	Riastuti et al. 2018
Marasmiellus sp.	Wood	Food	Al Ulya et al. 2017
Mycena sp.	Wood	Food	Khastini et al. 2019
Mycena haematopus	Wood	Food	Riastuti et al. 2018

Table 2. Contd.

Species	Habitat	Uses	References
Oudemansiella sp.	Wood	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Phaeolus schweinitzii	Wood	Food	Riastuti et al. 2018
Phellinus linteus	Wood	Blood circulation disorder medicine	Khastini et al. 2018
Pleurotus sp.	Wood	Food	Al Ulya et al. 2017
Pleurotus pulmonarius	Wood	Food	Riastuti et al. 2018
Polyporus spp.	Wood	Food	Putra & Hafazallah 2020
Rigidoporus stereum	Wood	Immune deficiency medicine	Khastini et al. 2018
Russula spp.	Soil	Food	Putra & Hafazallah 2020
Schizophyllum commune	Wood	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Scleroderma spp. (young basidiomata)	Soil	Food	Putra & Hafazallah 2020
Tremella sp.	Wood	Food	Putra & Hafazallah 2020
Trichaleurina javanica	Wood	Eye medicine	Putra & Hafazallah 2020
Volvariella spp.	Wood, Palm bunch, Straw	Food	Khastini et al. 2019; Putra & Hafazallah 2020
Volvariella bombycina	Wood	Food	Putra & Hafazallah 2020
Volvariella volvaceae	Palm bunch	Food	Riastuti et al. 2018

One of the mushrooms reported in this review has the highest economic value in Indonesia, namely the 'pelawan' mushroom, commonly consumed and traded by the local people in Bangka Belitung Province (Putra 2020a; Putra & Hafazallah 2020). This macrofungus forms the the ectomycorrhizae symbiosis with 'pelawan' plant (*Tristaniopsis* spp.) and has not been successfully cultivated. To date, the Malay indigenous people in Bangka Belitung still depend on the production of this mushroom in nature. This mushroom has a high price, both in fresh conditions (ranging between 200-500 thousand of Indonesian rupiah/kg) or dry condition (> 1 million Indonesian rupiah/kg, depending on the season and availability). This fact has become the concern of the local government to preserve the 'pelawan' forest, the habitat of pelawan' mushroom.

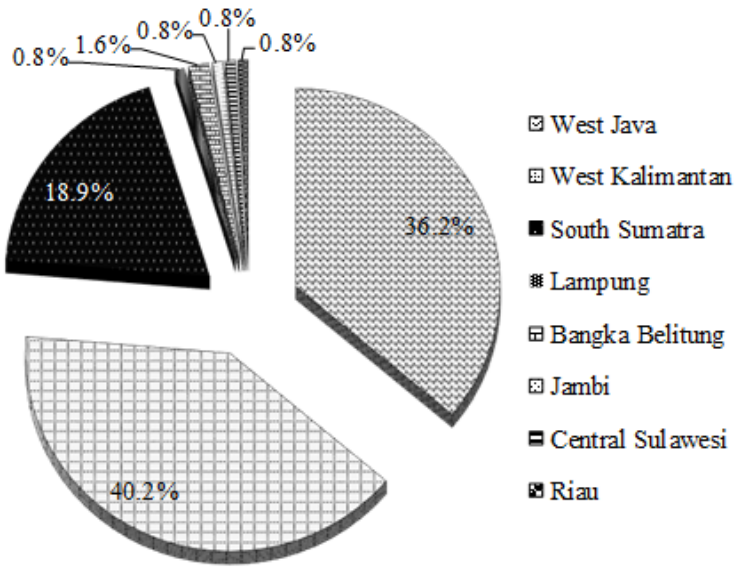

Figure 2. Percentage of local knowledge distribution of mushrooms utilization in the provinces of Indonesia.

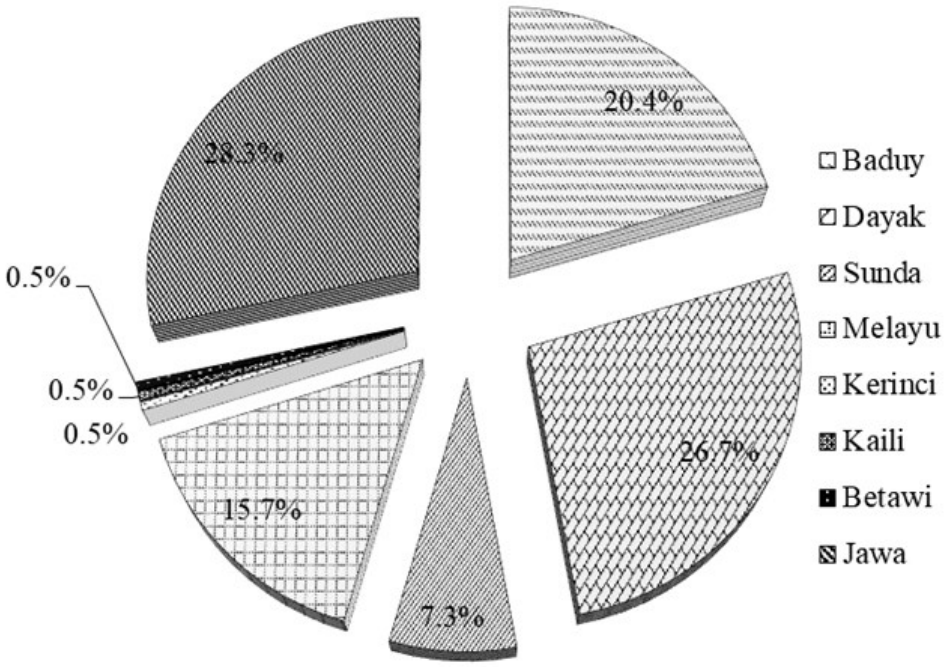

Figure 3. Percentage of local knowledge distribution of mushrooms utilization by ethnic groups in Indonesia.

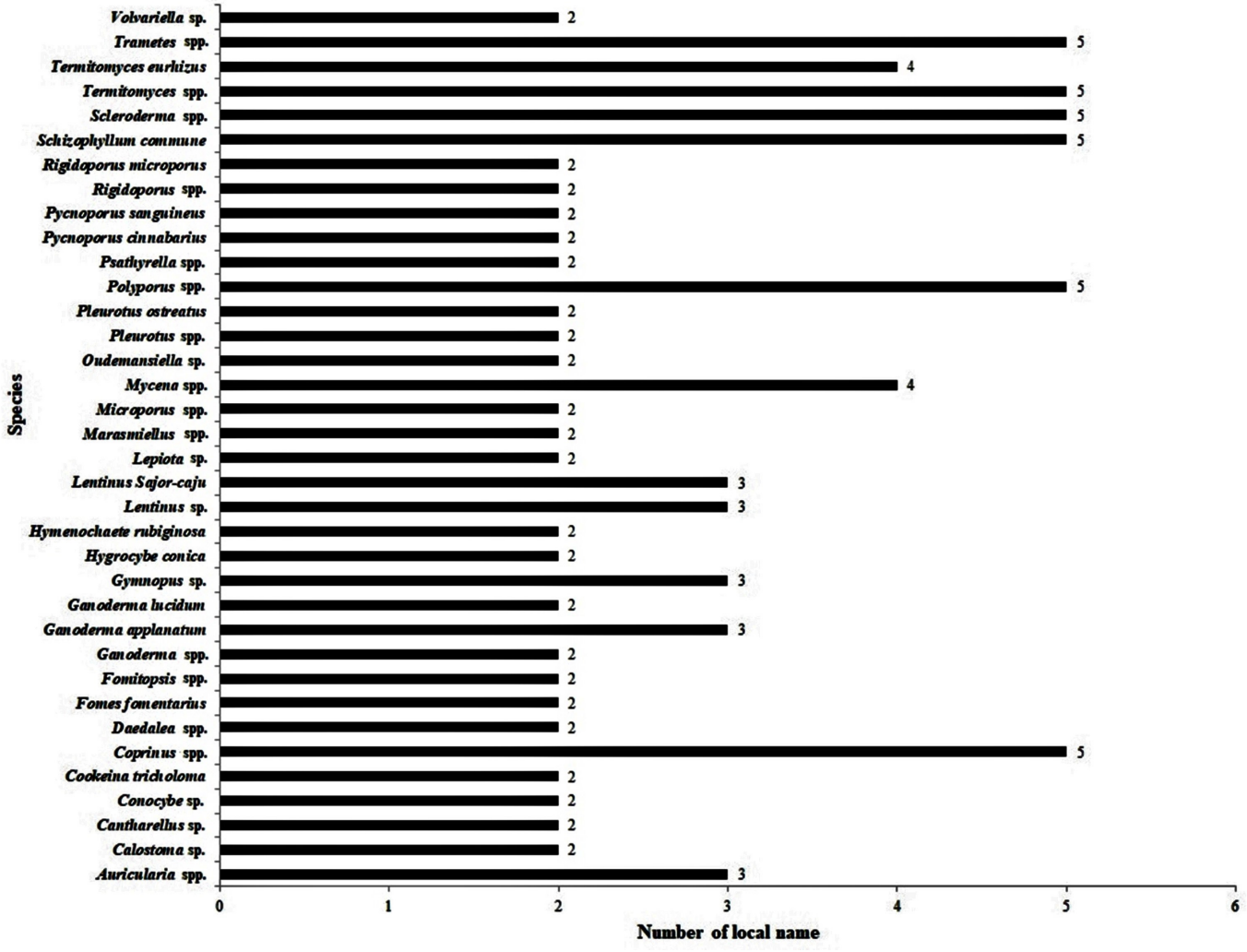

Figure 4. Indonesian wild mushrooms with more than one local name.

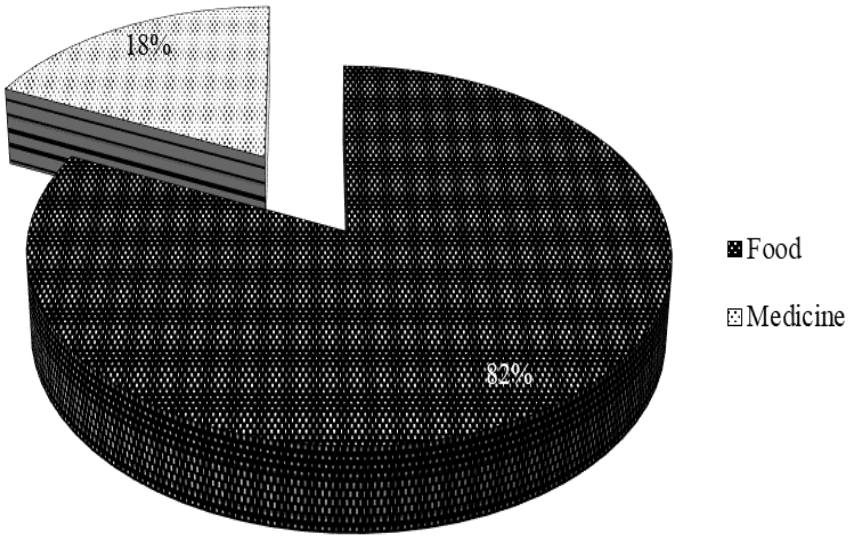

Figure 5. Indonesian wild mushrooms utilization by local people in Indonesia.

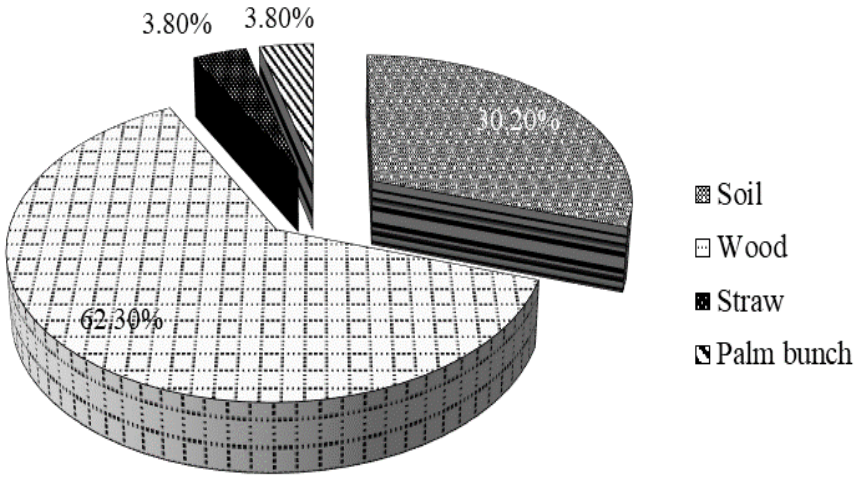

Figure 6. The habitat of Indonesian wild mushrooms used by local people in Indonesia.

Ethnomycology focuses on the interaction between local communities and fungi (Reyes-Lopez et al. 2020). However, this topic is less popular in Indonesia. We consider that this discipline is helpful to collect the data on mushroom germplasm in Indonesia, especially from the indigenous knowledge. We suggest that the collection of information in this review needs a special attention regarding the biodiversity records in Indonesia. Our data revealed that the distribution of mushroom taxonomy information is not centered only on Java Island. Indonesian Institute of Sciences (2019) stated that until 2017 most of the reports on fungal biodiversity in Indonesia were obtained mainly from Java Island. Hence, the validation taxonomy of wild mushrooms at the species level should be more comprehensive, especially from West Kalimantan with higher data contributions than provinces in Java Island. Further research on ethnomycology in Indonesia needs to be carried out thoroughly on the comprehensive aspects by considering biology (identification), conservation, cultivation, production, marketing, and the preservation of the local knowledge to optimize its benefits in the future.

CONCLUSION

In conclusion, we present the current checklist of local names of Indonesian wild mushrooms and their uses. Total of 107 wild mushrooms have 170 local names, with 36 of them having more than one name. Considering the vast territory of Indonesia and the existing tribes, we suspect that there is still more information which has not been studied and published in the scientific publications. We expect the data should be periodically updated, and the information will be in flux.

AUTHORS CONTRIBUTION

I.P.P. and N.N. contributed to the study conception and design. R.H. and M.P.A. obtained the data. I.P.P. and N.N. analyzed the data. All authors wrote the manuscript. All authors read, critically revised, and approved the final manuscript.

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CONFLICT OF INTEREST

The authors declare no competing interests.

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