

Diversity of Mushrooms in the Natural Pine-Deciduous Dipterocarp Forest and Pine Plantation in Chiang Mai, Northern Thailand

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ABSTRACT

Mushrooms were collected in the *Pinus kesiya* plantation and natural pine-deciduous dipterocarp forest at Bo Luang-Mae Sanam-Omkoi areas, Hod District, Chiang Mai Province, during the rainy seasons from May 1994 to August 1996. Four species of Ascomycotina and 51 species of Basidiomycotina were recorded. Mushrooms in the *P. kesiya* plantation (55 species) are much more diversified than in the natural pine-deciduous dipterocarp forest (20 species).

INTRODUCTION

The mycoflora of a particular area is determined by a number of factors, but most individual species have very specific environmental and ecological requirements, or even confined to a specific host or substrate. Some are mycorrhizal mushrooms associated with specific trees such as *Russula* spp.; *Amanita* spp. Some are plant pathogens or wood deterioration: *Fomitopsis pinicola*; *Gloeophyllum subferrugineum*, some are of economic importance with edible or medicinal value: *Astraeus hygrometricus*; *Russula virescens*, but some are deadly poisonous: *Amanita virosa*. The aim of this study is to make a preliminary survey on diversity of mycoflora in the pine plantation and the natural pine-deciduous dipterocarp forest.

MATERIAL AND METHODS

Ascocarps and Basidiocarps were collected in Bo Luang-Mae Sanam-Omkoi areas, Hod District, Chiang Mai Province, 150 km. southwest of Chiang Mai at elevation about 1,100 m.a.s.l. with annual rainfall 1,000–1,200 mm. per year. *Pinus kesiya* plantation and natural pine-deciduous dipterocarp forest are the two main vegetation types of the area. Mushrooms were collected during the rainy seasons from May 1994 to August 1996. After photographing and making field notes of macro characteristics, specimens were dried at 45°–50° C for overnight. Identifications were undertaken at the Forest Herbarium in Bangkok.

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RESULTS

Ainsworth & Bisby's Dictionary of the Fungi (Hawksworth et al., 1996) was consulted. The collected mushrooms are divided into two main groups, Ascomycotina (4 species) and Basidiomycotina (54 species). Mushrooms are more abundant in the *P. kesiya* plantation (55 species) than in the pine-deciduous dipterocarp forest (20 species) (Table 1).

Table 1. List of mushrooms collected in the *Pinus kesiya* plantation and deciduous dipterocarp forest, Hod District of Chiang Mai Province. P-Pinus kesiya plantation; D-Pine-deciduous dipterocarp forest.

Order/ Family	Scientific name	P	D
ASCOMYCOTINA			
Pezizales			
Helvellaceae	<i>Helvella crispa</i> Fr.	/	
	<i>Leptopodia elastica</i> (Bull. ex. st. Amans) Boud.	/	
Sphaeriales			
Xylariaceae	<i>Xylaria polymorpha</i> (Pers.) Grev.	/	
	<i>Xylaria</i> sp.	/	
BASIDIOMYCOTINA			
Agaricales			
Agaricaceae	<i>Agaricus silvaticus</i> Schaeff	/	
	<i>A. trisulphuratus</i> Berk.	/	
	<i>Leucocoprinus cepaestipes</i> (Sow. : Er) Pat.	/	
	<i>L. fragilissimus</i> (Rav.) Pat.	/	
Amanitaceae	<i>Amanita angustilamellata</i> (Hohm.) Boed.	/	
	<i>A. hemibapha</i> (Berk. & Br.) Sacc.	/	/
	<i>A. princeps</i> Corner & Bas	/	/
	<i>A. vaginata</i> (Bull. ex Fr.) Vitt.	/	/
	<i>A. virginea</i> Mass.		/
	<i>A. virosa</i> Fr.	/	
	<i>A. volvatus</i> (Peck.) Martin	/	
Boletaceae	<i>Boletellus ananas</i> (Curtis) Murr.	/	
	<i>Boletus reticulatus</i> Schaeff.	/	/
	<i>B. edulis</i> Bull. : Fr.	/	/
	<i>Suillus granulatus</i> (L. : Fr.) O. Kuntze	/	
	<i>S. luteus</i> S.F. Gray	/	

Table 1 (continued)

Order/ Family	Scientific name	P	D
Cantharellaceae	<i>Cantharellus cibarius</i> Fr.	/	
	<i>C. minor</i> Peck	/	
Clavariaceae	<i>Clavulinopsis fusiformis</i> (Fr.) Corner	/	
Coprinaceae	<i>Paneolus sphinctrinus</i> (Fr.) Quel.	/	
Cortinariaceae	<i>Cortinarius</i> sp.		/
Gomphaceae	<i>Gomphus floccosus</i> (Schw.) Sing.	/	
Lepiotaceae	<i>Lepiota cristata</i> (Bolt. : Fr.) Kummer	/	
Ramariaceae	<i>Ramaria flava</i> (Schaeff.) Quél.	/	
	<i>R. formosa</i> (Fr.) Quél.	/	
Russulaceae	<i>Lactarius pipearatus</i> (Scop. ex Fr.) S.F. Gray	/	/
	<i>L. rufus</i> Fr.	/	
	<i>L. volemus</i> Fr.	/	/
	<i>Russula cyanoxantha</i> (Schaeff.) Fr.	/	/
	<i>R. delica</i> Fr.	/	/
	<i>R. emetica</i> Fr.	/	/
	<i>R. foetens</i> Fr.	/	/
	<i>R. nigricans</i> (Bull.) Fr.	/	
	<i>R. virescens</i> Fr.	/	/
Schizophyllaceae	<i>Schizophyllum commune</i> Fr. : Fr.	/	/
Strobilomycetaceae	<i>Strobilomyces velutipes</i>	/	
	<i>Tylophilus virens</i> (Chiu) Hongo	/	
Tricholomataceae	<i>Filoboletus manipularis</i> (Berk.) Sing.	/	
	<i>Laccaria amethystina</i> (Bull.) Murr.	/	
	<i>L. laccata</i> (Scop. : Fr.) Berk. et Br.	/	
	<i>Oudemansella radicata</i> (Rehl. ex Fr.) Sing.	/	
	<i>Tricholoma crassum</i>	/	
	<i>Phylloporus bellus</i> (Mass.) Corner	/	
Xerocamaceae			
Aphylophorales			
Auriscalpiaceae	<i>Auriscalpium vulgare</i> S.F. Gray	/	
Coriolaceae	<i>Cryptoporus volvatus</i> (Pk.) Shear	/	
	<i>Fomitopsis pinicola</i> (Swartz.: Fr.) Karst.	/	
	<i>Gloeophyllum subferrugineum</i> (Berk.) Bond. et Sing.	/	
	<i>Trichaptum abietinum</i> (Dicks. : Fr.) Ryv.	/	
	<i>Amauroderma rugosum</i> (Bl. et Nees) Torr.	/	/
Ganodermataceae	<i>Ganoderma lucidum</i> (Fr.) Karst.	/	
Gasteromycetales			
Sclerodermataceae	<i>Astraeus hygrometricus</i> (Pers.) Morgan		/
	<i>Pisolithus arhizus</i> (Scop. : Pers.) Rausch.	/	/
	<i>Scleroderma bovista</i> Fr.	/	/
	<i>S. citrinum</i> Pers. : Pers.	/	/

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Figure 1. Showing some mushrooms in the natural pine-deciduous dipterocarp forest and pine plantation:
 A. *Agaricus trisulphuratus* Berk.; B. *Cantharellus cibarius* Fr.; C. *Ramaria formosa* (Fr.) Quél.;
 D. *Russula virescens* Fr.; E. *Pisolithus arhizus* (Scop.:Pers.) Rausch.; F. *Ganoderma lucidum* (Fr.)
 Karst.; G. *Lactarius volemus* Fr.; H. *Boletus reticulatus* Schaeff.; I. *Gomphus floccosus* (Schw.)
 Sing.; J. *Leptopodia elastica* (Bull. ex. st. Amans) Boud.; K. *Trichaptum abietinum* (Dicks.:Fr.)
 Ryv.; L. *Boletellus ananas* (Curtis) Murr.