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List of Polypores and Other Aphyllophoraceous Fungi Collected in the Lambir Hills National Park, Sarawak, Malaysia

Satoshi YAMASHITA, Sim Mee HANG, Tsutomu HATTORI

ABSTRACT We collected 933 specimens of polypores and other aphyllophoraceous fungi in the Lambir Hills National Park, Sarawak, Malaysia, in 2006. We identified 848 specimens and recorded 57 species and 59 morphospecies. We compare our list to the results of a few former floral studies conducted in and near the park.

KEY WORDS fungal biodiversity/ macrofungi/ fungal flora/ Southeast Asian tropics/ Borneo

Introduction

Malaysia and other tropical regions are considered hot spots of fungal biodiversity (Pegler 1997). Several mycologists have recorded species of macrofungi in paleotropical regions (Corner 1983, 1984, 1987, 1989a, 1989b, 1991; Ryvarden and Johansen 1980), and Hattori (2000, 2001a, 2001b, 2002, 2003a, 2003b, 2005) examined type specimens of 204 species described by E. J. H. Corner from Asia and the Western Pacific region. However, few inventorial studies have been conducted in tropical Asia (Mueller et al. 2007).

This report lists 57 species and 59 morphospecies from a total of 848 (of 933) specimens collected in Sarawak, Malaysia. All the specimens reported here were collected by S. Yamashita in primeval forest of the Lambir Hills National Park (4°20' N, 113°50' E; 150 to 250 m a.s.l.) from 29 May to 2 July and from 30 November to 20 December 2006. All the specimens were deposited in the Sarawak Forestry Corporation (Forest Research Center) in Kuching, Sarawak, Malaysia. All specimens were identified to the species or morphospecies level under a microscope. Nomenclature defined by Kirk et al. (2001) was used for the higher taxa. In this report, we provide the species names and identification numbers of specimens.

List

HYMENOCHAETALES

Hymenochaetaceae

Coltricia cf. ***oblectans*** (Berk.) G. Cunn., *Bull. N.Z. Dept. Sci. Industr. Res. Pl. Dis. Div.* 77: 3 (1948) (Pic. 1)

Specimens examined: 1000091, 1000465, 1000624, 1000719, 1000720, 1000727, 1000902

Distribution of *C. oblectans*: Malaysia and Australia (Corner 1991)

Cyclomyces cf. ***tabacinus*** (Mont.) Pat., *Essai Hymen.* (Lons-le-Saunier): 98 (1900) (Pic. 2)

Specimens examined: 1000156, 1000212, 1000257, 1000277a, 1000282, 1000292, 1000332, 1000364, 1000463, 1000464, 1000805, 1000816, 1000819, 1000831

Distribution of *C. tabacinus*: Pantropical and rather common (Núñez & Ryvarden 2000)

Erythromyces crocicreas (Berk. & Broome) Hjortstam & Ryvarden, in Hjortstam & Tellería, *Mycotaxon* 37: 55 (1990) (Pic. 3)

Specimens examined: 1000007a, 1000071, 1000094, 1000098, 1000100, 1000103, 1000111, 1000688, 1000785, 1000789, 1000792, 1000793, 1000795, 1000802, 1000807, 1000835a, 1000838

Distribution of *E. crocicreas*: Paleotropical (Hjortstam and Tellería 1990)

Inonotus duostratosus (Lloyd) P.K. Buchanan & Ryvarden, *Mycotaxon* 31(1): 14 (1988)

Specimens examined: 1000185, 1000479

Distribution: Malaysia and Indonesia (Corner 1991 as *Coltricia duostratosa*)

Phellinus cf. ***allardii*** (Bres.) S. Ahmad, *Basidiomyc. W. Pakist.* : 57 (1972)

Specimen examined: 1000055

Distribution of *P. allardii*: Widespread and common in tropical zones of Africa and Asia (Núñez & Ryvarden 2000)

Phellinus discipes (Berk.) Ryvarden, *Kew Bull.* 31(1): 88 (1976) (Pic. 4)

Specimens examined: 1000404, 1000806

Distribution of *P. discipes*: Asia, Australia, and Africa (Ryvarden & Johansen 1980)

Phellinus extensus (Lév.) Pat., *Essai Hymen.* (Lons-le-Saunier): 97 (1900) (Pic. 5)

Specimen examined: 1000821

Distribution of *P. extensus*: Tropical to subtropical (Núñez & Ryvarden 2000)

Phellinus cf. ***glaucescens*** (Petch) Ryvarden, *Norw. J. Bot.* 19: 234 (1972)

Specimen examined: 1000835b

Distribution of *P. glaucescens*: Paleotropical (Núñez & Ryvarden 2000)

Phellinus lamaensis (Murrill) Sacc. & Trotter, in Saccardo, *Syll. Fung.* (Abellini) 21: 287 (1912) (Pic. 6)

Specimens examined: 1000112, 1000139, 1000173, 1000220, 1000234, 1000267, 1000321, 1000384, 1000460, 1000466, 1000475, 1000477, 1000506, 1000526, 1000566, 1000567, 1000568, 1000601, 1000642, 1000668, 1000685, 1000701

Distribution of *P. lamaensis*: Pantropical (Núñez & Ryvarden 2000)

Phellinus cf. ***linteus*** (Berk. & M.A. Curtis) Teng, *Chung-kuo Ti Chen-chun*: 762 (1963)

Specimen examined: 1000215

Distribution of *P. linteus*: Probably pantropical (Ryvarden & Johansen 1980)

Phellinus noxius (Corner) G. Cunn., *Bull. N.Z. Dept. Sci. Industr. Res. Pl. Dis. Div.* 164: 221 (1965)

Specimen examined: 1000032

Distribution of *P. noxius*: Pantropical (Núñez & Ryvarden 2000)

Phellinus pachyphloeus (Pat.) Pat., *Essai Tax. Hyménomyc.*: 97 (1900) (Pic. 7)

Specimens examined: 1000370, 1000827

Distribution of *P. pachyphloeus*: Probably widespread in Southeast Asia (Núñez & Ryvarden 2000)

Phellinus pectinatus (Klotzsch) Quél., *Enchir. Fung.* (Paris): 173 (1886) (Pic. 8)

Specimens examined: 1000101, 1000726

Distribution of *P. pectinatus*: Pantropical (Núñez & Ryvarden 2000)

Phellinus periclitatus Corner, *Beih. Nova Hedwig.* 101: 125 (1991)

Specimens examined: 1000184

Distribution of *P. periclitatus*: Malaysia (Corner 1991)

Phellinus rimosus comp. (Berk.) Pilát., *Ann. Mycol.* 38(1): 80 (1940)

Specimens examined: 1000352, 1000461

Distribution of *P. rimosus*: Widespread in the Mediterranean zone and throughout Africa, Asia, and Australia (Núñez & Ryvarden 2000)

Phellinus **sp. 1**

Specimen examined: 1000177

Phellinus **sp. 2**

Specimen examined: 1000645

Phylloporia cf. ***chrysites*** (Berk.) Ryvarden, *Norw. J. Bot.* 19: 235 (1972)

Specimen examined: 1000082

Distribution of *P. chrysites*: Widespread in the tropics and in subtropical America

and Asia (Núñez & Ryvarden 2000)

Phylloporia spathulata (Hook.) Ryvarden, *Syn. Fung.* (Oslo) 5: 196 (1991)
Specimens examined: 1000440, 1000442, 1000444, 1000445, 1000448, 1000449, 1000452, 1000456, 1000794
Distribution of *P. spathulata*: Pantropical (Núñez & Ryvarden 2000)

Schizoporaceae

***Hyphodontia* sp. 1**
Specimens examined: 1000005, 1000866

***Hyphodontia* sp. 2**
Specimen examined: 1000855

POLYPORALES

Fomitopsidaceae

Fomitopsis carnea (Blume & T. Nees) Imazeki, *Bull. Tokyo Sci. Mus.* 6: 92 (1943) (Pic. 9)
Specimens examined: 1000241, 1000363, 1000472, 1000705
Distribution of *F. carnea*: Asia and Africa (Tanzania, Kenya, and Malawi; Ryvarden & Johansen 1980)

Fomitopsis dochmia (Berk. & Broome) Ryvarden [as *dochmius*], *Norw. J. Bot.* 19: 231 (1972)
Specimens examined: 1000196, 1000219, 1000697
Distribution: Tropical Asia and America (Ryvarden and Johansen 1980 as *F. dochmius*).

Fomitopsis feei (Fr.) Kreisel, *Ciencias Biológicas* (Cuba) 16: 83 (1971) (Pic. 10)
Specimens examined: 1000200, 1000330, 1000930
Distribution of *F. feei*: Throughout subtropical and tropical America and Asia (Núñez & Ryvarden 2001)

Fomitopsis pseudopetchii (Lloyd) Ryvarden, *Norw. J. Bot.* 19: 231 (1972) (Pic. 11)
Specimens examined: 1000126, 1000692
Distribution of *F. pseudopetchii*: Mainly tropical Asia (Núñez & Ryvarden 2001)

***Fomitopsis* sp. 1**
Specimen examined: 1000788

***Fomitopsis* sp. 2**
Specimen examined: 1000134

Ganodermataceae

Amauroderma parasiticum Corner, *Beih. Nova Hedwig.* 75: 79 (1983)

Specimens examined: 1000244, 1000420

Amauroderma subrugosum (Bres. & Pat.) Torrend, *Broteria Ser. Bot.* 18: 128 (1920) (Pic. 12)

Specimens examined: 1000010, 1000011, 1000028, 1000054, 1000064, 1000065, 1000066, 1000067, 1000068, 1000069, 1000070, 1000074, 1000075, 1000097, 1000109, 1000124, 1000169, 1000231, 1000233, 1000280, 1000285, 1000289, 1000295, 1000297, 1000299, 1000300, 1000303, 1000306, 1000312, 1000314, 1000315, 1000325, 1000346, 1000362, 1000365, 1000371, 1000406, 1000443, 1000447, 1000454, 1000457, 1000467, 1000469, 1000474, 1000527, 1000530, 1000603, 1000612, 1000617, 1000625, 1000646, 1000647, 1000651, 1000653, 1000657, 1000658, 1000661, 1000675, 1000679, 1000713, 1000724, 1000741, 1000742, 1000764, 1000769, 1000772, 1000778, 1000780, 1000783, 1000784, 1000796, 1000799, 1000823, 1000843, 1000852, 1000876, 1000892, 1000905, 1000917, 1000920

Distribution of *A. subrugosum*: Tropical Asia and Africa (Furtado 1981)

Ganoderma australe (Fr.) Pat., *Bull. Soc. Mycol. Fr.* 5: 65 (1890) (Pic. 13)

Specimens examined: 1000007b, 1000008, 1000012, 1000016, 1000017, 1000093, 1000095, 1000099, 1000147, 1000157, 1000159, 1000174, 1000180, 1000181, 1000191, 1000192, 1000221, 1000223, 1000249, 1000252a, 1000254, 1000262, 1000269, 1000270, 1000274, 1000286, 1000310, 1000331, 1000334, 1000414, 1000459, 1000476, 1000536, 1000538, 1000539, 1000540, 1000541, 1000542, 1000543, 1000544, 1000545, 1000546, 1000547, 1000548, 1000549, 1000550, 1000551, 1000552, 1000553, 1000554, 1000555, 1000556, 1000557, 1000558, 1000559, 1000560, 1000561, 1000562, 1000563, 1000564, 1000565, 1000569, 1000570, 1000571, 1000572, 1000573, 1000576, 1000577, 1000578, 1000579, 1000580, 1000581, 1000582, 1000583, 1000584, 1000585, 1000587, 1000589, 1000590, 1000591, 1000594, 1000595, 1000602, 1000608, 1000609, 1000611, 1000630, 1000659, 1000662, 1000699, 1000709, 1000710, 1000716, 1000723, 1000731, 1000766, 1000803, 1000859, 1000869, 1000880,

1000893

Distribution of *G. australe*: Widely distributed in temperate and tropical areas (Núñez & Ryvarden 2000)

Ganoderma australe ?

Specimens examined: 1000009, 1000188, 1000279

Ganoderma lucidum comp. (Curtis) P. Karst., *Revue Mycol.* (Toulouse) 3(9): 17 (1881)

Specimens examined: 1000222

Distribution of *G. lucidum*: Cosmopolitan (Núñez & Ryvarden 2000)

Ganoderma mastoporum (Lév.) Pat., *Bull. Soc. Mycol. Fr.* 5(2,3): 71 (1889)

Specimens examined: 1000163, 1000211, 1000768

Distribution of *G. mastoporum*: Southeast Asia to New Zealand (Corner 1983)

Ganoderma cf. ***mastoporum*** (Lév.) Pat.

Specimens examined: 1000264, 1000343

***Ganoderma* sp. 1**

Specimen examined: 1000190

***Ganoderma* sp. 2**

Specimen examined: 1000178

***Ganoderma* sp. 3**

Specimens examined: 1000197, 1000252b, 1000600

***Ganoderma* sp. 4**

Specimen examined: 1000135a

***Ganoderma* sp. 5**

Specimens examined: 1000014, 1000800

Grammotheleaceae

Grammothele lineata Berk. & M.A. Curtis, *J. Linn. Soc. Bot.* **10**(46): 327 (1868) (Pic. 14)

Specimens examined: 1000268, 1000868

Distribution of *G. lineata*: Pantropical and widespread in Africa (Ryvarden & Johansen 1980)

Meripilaceae

Antrodia multipapillata (Corner) T. Hatt., *Mycoscience* 44(4): 268 (2003) (Pic. 15)

Specimen examined: 1000195

Distribution of *A. multipapillata*: Solomon Islands and Japan (Hattori 2003a)

Rigidoporus adnatus Corner, *Beih. Nova Hedwig.* 86: 155 (1987)
Specimen examined: 1000861
Distribution of *R. adnatus*: Sarawak (Corner 1987)

Rigidoporus defibulatus (D.A. Reid) Corner, *Beih. Nova Hedwig.* 86: 159 (1987) (Pic. 16)
Specimens examined: 1000047, 1000052, 1000056, 1000641, 1000650
Distribution of *R. defibulatus*: Paleotropical (Corner 1987)

Rigidoporus hypobrunneus (Petch) Corner, *Beih. Nova Hedwig.* 86: 167 (1987)
Specimen examined: 1000140
Distribution of *R. hypobrunneus*: Malaysia (Corner 1987)

Rigidoporus microporus (Sw.) Overeem, *Icon. Fung. Malay.* 5: 1 (1924)
Specimens examined: 1000324, 1000478, 1000588, 1000592
Distribution of *R. microporus*: Widely distributed in tropical areas, also in subtropical eastern North America and Asia (Núñez & Ryvarden 2001)

***Rigidoporus* sp. 1**
Specimen examined: 1000149

***Rigidoporus* sp. 2**
Specimen examined: 1000901

***Rigidoporus* sp. 3**
Specimens examined: 1000154, 1000418, 1000900

***Rigidoporus* sp. 4**
Specimens examined: 1000090, 1000102, 1000131, 1000136, 1000265, 1000487, 1000498, 1000610, 1000621, 1000663, 1000676, 1000683, 1000797, 1000804, 1000815, 1000840, 1000847, 1000854, 1000907, 1000915

***Rigidoporus* sp. 5**
Specimen examined: 1000652

Meruliaceae

Gloeoporus sulphureus Corner, *Beih. Nova Hedwig.* 96: 59 (1989) (Pic. 17)
Specimens examined: 1000259, 1000263, 1000271, 1000678
Distribution of *G. sulphureus*: Malaysia, Borneo, Solomon Islands (Corner 1989a).

***Phlebia* sp. 1**
Specimen examined: 1000484

Phanerochaetaceae

***Lopharia* sp. 1**

Specimens examined: 1000148, 1000372

Podoscyphaceae

Cymatoderma elegans Jungh., *Tijdschr. Nat. Gesch. Physiol.* 7: 290 (1840) (Pic. 18)

Specimens examined: 1000389, 1000400, 1000403, 1000700, 1000704, 1000926

Distribution of *C. elegans*: Paleotropical (Reid 1965)

Podoscypha mellissii (Berk. ex Sacc.) Bres., *Mém. Acad. Malgache* 6: 11 (1928) (Pic. 19)

Specimens examined: 1000042, 1000050, 1000063, 1000096, 1000423, 1000453, 1000517, 1000632, 1000634, 1000644, 1000759, 1000873, 1000896

Distribution of *P. mellissii*: Paleotropical (Reid 1965)

***Podoscypha* sp. 1**

Specimen examined: 1000076

***Podoscypha* sp. 2**

Specimen examined: 1000145

***Podoscypha* sp. 3**

Specimen examined: 1000844

***Podoscypha* ? sp. 1**

Specimen examined: 1000857

***Stereopsis* sp. 1**

Specimen examined: 1000130

***Stereopsis* ? sp. 1**

Specimen examined: 1000739

Polyporaceae

Coriolopsis badia (Berk.) Murrill, *Bull. Torrey Bot. Club* 34: 466 (1907) (Pic. 20)

Specimens examined: 1000122, 1000193, 1000777

Distribution: Tropical Asia (Corner 1989b, as *Trametes badia*)

Coriolopsis glabro-rigens (Lloyd) Núñez & Ryvarden, *Syn. Fung.* (Oslo) 14: 256 (2001) (Pic. 21)

Specimens examined: 1000489, 1000695, 1000897

Distribution of *C. glabro-rigens*: Tropical to subtropical Asia (Núñez & Ryvarden

2001)

Coriolopsis retropicta (Lloyd) Teng, *Chung-kuo Ti Chen-chun*: 760 (1963) (Pic. 22)

Specimens examined: 1000004, 1000186, 1000203, 1000208, 1000293, 1000302, 1000311, 1000335, 1000433, 1000434, 1000438, 1000462, 1000488, 1000686, 1000712, 1000737, 1000755, 1000809, 1000837, 1000851, 1000862, 1000863, 1000875, 1000885, 1000927

Distribution of *C. retropicta*: Tropical to subtropical Asia (Núñez & Ryvarden 2001)

***Dichomitus* sp. 1**

Specimens examined: 1000229, 1000436, 1000446

***Dichomitus* sp. 2**

Specimen examined: 1000858

***Dichomitus* sp. 3**

Specimen examined: 1000410

***Dichomitus* sp. 4**

Specimen examined: 1000087

***Dichomitus* sp. 5**

Specimen examined: 1000640

Earliella scabrosa (Pers.) Gilb. & Ryvarden, *Mycotaxon* 22(2): 364 (1985) (Pic. 23)

Specimens examined: 1000183, 1000326, 1000597, 1000649, 1000680, 1000860, 1000911, 1000914

Distribution of *E. scabrosa*: Widespread and common in tropical to subtropical areas (Núñez & Ryvarden 2001)

Flabellophora licmophora (Massee) Corner, *Beih. Nova Hedwig.* 86: 32 (1987) (Pic. 24)

Specimens examined: 1000006, 1000015, 1000025, 1000027, 1000035, 1000036, 1000037, 1000182, 1000209, 1000217, 1000218, 1000284, 1000288, 1000291, 1000296, 1000309, 1000337, 1000338, 1000340, 1000345, 1000355, 1000356, 1000451, 1000473, 1000616, 1000618, 1000629, 1000729, 1000736, 1000740, 1000744, 1000745, 1000747, 1000748, 1000751, 1000753, 1000754, 1000758, 1000760, 1000770, 1000773, 1000904

Distribution of *F. licmophora*: Tropical Asia, not common (Núñez & Ryvarden 2001)

Flabellophora obovata (Jungh.) Núñez & Ryvarden, *Syn. Fung.* 14: 294 (2001)

Specimen examined: 1000910

Distribution of *F. obovata*: Widespread in the tropical zone (Núñez & Ryvarden 2001)

Fomitella cf. ***rhodophaea*** (Lév.) T. Hatt., *Mycoscience* 46: 305 (2005)

Specimens examined: 1000316, 1000575

Distribution: Southeast Asia (Corner 1989b, as *Trametes rhodophaea*)

Hexagonia cf. ***tenuis*** J.M. Hook, *Saccardo's Syll. Fung.* 6: 366; 12: 309; 19: 867; 20: 1251 ; 23: 447 (1822)

Specimens examined: 1000213, 1000327

Distribution of *H. tenuis*: Pantropical (Ryvarden & Johansen 1980)

Microporellus grandiporus Corner, *Beih. Nova Hedwig.* 86: 110 (1987)

Specimens examined: 1000224, 1000702

Distribution of *M. grandiporus*: Malaysia and Brunei (Corner 1987)

Microporellus inusitatus var. ***parvisporus*** Corner, *Beih. Nova Hedwig.* 86: 115 (1987) (Pic. 25)

Specimens examined: 1000146, 1000166, 1000525, 1000638, 1000791

Distribution of *M. inusitatus* var. *parvisporus*: Malaysia (Corner 1987)

Microporus affinis (Blume & T. Nees) Kuntze, *Revis. Gen. Pl.* (Leipzig) 3(2): 494 (1898) (Pic. 26)

Specimens examined: 1000001, 1000044, 1000045, 1000046, 1000081, 1000107, 1000120, 1000143, 1000165, 1000168, 1000210, 1000239, 1000350, 1000351, 1000358, 1000373, 1000374, 1000379, 1000381, 1000399, 1000402, 1000405, 1000409, 1000428, 1000429, 1000435, 1000485, 1000486, 1000494, 1000495, 1000497, 1000499a, 1000502, 1000504, 1000508, 1000510, 1000512, 1000620, 1000623, 1000664, 1000669, 1000670, 1000671, 1000674, 1000690, 1000691, 1000693, 1000696, 1000708, 1000743, 1000746, 1000775, 1000786, 1000787, 1000801, 1000808, 1000811, 1000813, 1000820, 1000824, 1000826, 1000829, 1000834, 1000841, 1000845, 1000846, 1000849, 1000856, 1000872, 1000878, 1000889, 1000895, 1000909, 1000913, 1000918, 1000925

Distribution of *M. affinis*: Common species in paleotropics (Núñez & Ryvarden 2001)

Microporus carneoniger (Berk. ex Cooke) Kuntze, *Revis. Gen. Pl.* (Leipzig) 3(2): 495 (1898) (Pic. 27)

Specimens examined: 1000039, 1000194, 1000199, 1000214, 1000225, 1000240, 1000245, 1000246, 1000247, 1000250, 1000251, 1000304, 1000333, 1000336, 1000341, 1000353, 1000415, 1000421, 1000430, 1000432, 1000437, 1000636, 1000715, 1000717, 1000722, 1000850

Distribution: Paleotropical (Corner 1989b, as *Trametes carneo-niger*)

Microporus vernicipes (Berk.) Kuntze, *Revis. Gen. Pl.* (Leipzig) 3(2): 495 (1898) (Pic. 28)

Specimens examined: 1000043, 1000060, 1000061, 1000119, 1000152, 1000155, 1000275, 1000301, 1000382, 1000533, 1000626, 1000655, 1000656, 1000684, 1000734, 1000756, 1000814, 1000818, 1000833, 1000839

Distribution of *M. vernicipes*: Paleotropical species, in East Asia extending to subtropical and temperate areas (Núñez & Ryvarden 2001)

Microporus xanthopus (Fr.) Kuntze, *Revis. Gen. Pl.* (Leipzig) 3(2): 494 (1898) (Pic. 29)

Specimens examined: 1000003, 1000019, 1000020, 1000021, 1000023, 1000024, 1000029, 1000030, 1000031, 1000033, 1000049, 1000059, 1000062, 1000078, 1000079, 1000084, 1000085, 1000086, 1000089, 1000092, 1000104, 1000105, 1000106, 1000108, 1000113, 1000115, 1000116, 1000117, 1000118, 1000127, 1000128, 1000132, 1000137, 1000138, 1000141, 1000153, 1000160, 1000162, 1000189, 1000226, 1000232, 1000238, 1000248, 1000261, 1000278, 1000287, 1000305, 1000308, 1000317, 1000318, 1000319, 1000339, 1000342, 1000344, 1000347, 1000348, 1000349, 1000354, 1000359, 1000367, 1000368, 1000369, 1000375, 1000376, 1000377, 1000378, 1000380, 1000383, 1000385, 1000386, 1000387, 1000390, 1000397, 1000398, 1000407, 1000408, 1000411, 1000412, 1000413, 1000417, 1000419, 1000422, 1000425, 1000426, 1000458, 1000483, 1000490, 1000491, 1000493, 1000499b, 1000500, 1000503, 1000507, 1000509, 1000511, 1000514, 1000522, 1000528, 1000529, 1000531, 1000532, 1000534, 1000614, 1000619, 1000622, 1000628, 1000633, 1000681, 1000682, 1000687, 1000689, 1000707, 1000714, 1000721, 1000735, 1000738, 1000761, 1000763, 1000765, 1000828, 1000832, 1000836, 1000842, 1000871, 1000877, 1000883, 1000884, 1000912, 1000919, 1000923, 1000924

Distribution of *M. xanthopus*: Paleotropical species, in East Asia extending to

subtropical areas (Núñez & Ryvarden 2001)

Nigrofomes melanoporus (Mont.) Murrill, *Bull. Torrey Bot. Club* 31(8): 425 (1904) (Pic. 30)

Specimens examined: 1000129, 1000253, 1000524, 1000733, 1000928

Distribution of *N. melanoporus*: Widespread in the tropics north to subtropical areas (Núñez & Ryvarden 2001)

Nigroporus vinosus (Berk.) Murrill, *Bull. Torrey Bot. Club* 32(7): 361 (1905) (Pic. 31)

Specimens examined: 1000048, 1000201, 1000204

Distribution of *N. vinosus*: Pantropical but not reported from Australia (Ryvarden & Johansen 1980)

Perenniporia ferruginea Corner, *Beih. Nova Hedwig.* 96: 106 (1989)

Specimen examined: 1000243

Distribution of *P. ferruginea*: Brunei (Corner 1989a)

Perenniporia ochroleuca (Berk.) Ryvarden, *Norw. J. Bot.* 19: 233 (1972)

Specimens examined: 1000272, 1000496, 1000604, 1000605, 1000886, 1000891

Distribution of *P. ochroleuca*: Cosmopolitan species, mainly in tropical and warm temperate areas (Núñez & Ryvarden 2001)

***Perenniporia* sp. 1**

Specimens examined: 1000424, 1000894

***Perenniporia* sp. 2**

Specimens examined: 1000513, 1000615, 1000637

***Perenniporia* sp. 3**

Specimen examined: 1000665

***Perenniporia* sp. 4**

Specimen examined: 1000242

Polyporus cf. ***dictyopus*** Mont. sp. 1, *Ann. Sci. Nat. Bot. Sér.* 2(3): 349 (1835)

Specimens examined: 1000256, 1000260 1000298

Distribution of *P. dictyopus*: Pantropical, in East Asia also known from subtropical areas (Núñez & Ryvarden 2001)

Polyporus cf. ***dictyopus*** Mont. sp. 2, *Ann. Sci. Nat. Bot. Sér.* 2(3): 349 (1835)

Specimen examined: 1000077

Polyporus cf. ***grammocephalus*** Berk., *Hooker's J. Bot. Kew Gard. Misc.* 1: 1184 (1842) (Pic. 32)

Specimens examined: 1000013, 1000164, 1000187, 1000427, 1000468, 1000631,

1000870

Distribution of *P. grammocephalus*: Tropical and subtropical areas (Núñez & Ryvarden 2001)

Polyporus philippinensis Berk., *J. Bot.* (London) 1(3): 148 (1842)

Specimens examined: 1000018, 1000593, 1000596, 1000643

Distribution of *P. philippinensis*: Eastern Asia (Ryvarden & Johansen 1980)

Polyporus tenuiculus (P. Beauv.) Fr., *Syst. Mycol.* (Lundae) 1: 344 (1821) (Pic. 33)

Specimen examined: 1000810

Distribution of *P. tenuiculus*: Pantropical, also known from subtropical areas (Núñez & Ryvarden 2001)

***Polyporus* sp. 1**

Specimen examined: 1000133

Pseudofavolus cf. ***cucullatus*** (Mont.) Pat., *Ess. Tax. P.* 81: 100 (1900) (Pic. 34)

Specimens examined: 1000822, 1000887

Distribution of *P. cucullatus*: Tropical species extending to subtropical Japan (Núñez & Ryvarden 2001)

Pycnoporus sanguineus (L.) Murrill, *Bull. Torrey Bot. Club* 31(8): 421 (1904) (Pic. 35)

Specimen examined: 1000158

Distribution of *P. sanguineus*: Pantropical, also common in subtropical and warm-temperate eastern America and Asia (Núñez & Ryvarden 2001)

Pyrofomes albomarginatus (Zipp. ex Lév.) Ryvarden, *Norw. J. Bot.* 19: 236 (1972) (Pic. 36)

Specimens examined: 1000123, 1000255, 1000667, 1000677, 1000694, 1000698

Distribution of *P. albomarginatus*: Paleotropical (Ryvarden & Johansen 1980)

Pyrofomes cf. ***albomarginatus*** (Zipp. ex Lév.) Ryvarden, *Norw. J. Bot.* 19: 236 (1972)

Specimens examined: 1000135b, 1000728, 1000750

Roseofavolus eos (Corner) T. Hatt., *Mycoscience* 44(6): 458 (2003) (Pic. 37)

Specimen examined: 1000613

Distribution: Malaysia, Indonesia (Corner 1989a, as *Grifola eos*)

Skeletocutis nivea (Jungh.) Jean Keller, *Persoonia* 10: 353 (1979) (Pic. 38)

Specimens examined: 1000235, 1000881

Distribution of *S. nivea*: Cosmopolitan species, most abundant in temperate zones (Núñez & Ryvarden 2001)

Tinctoporellus epimiltinus (Berk. & Broome) Ryvarden, *Trans. Br. Mycol. Soc.* 73(1): 18

(1979)

Specimens examined: 1000072, 1000879

Distribution of *T. epimiltinus*: Pantropical, in Asia known from subtropical and warm-temperate zones (Núñez & Ryvarden 2001)

Trametes menziesii (Berk.) Ryvarden, *Norw. J. Bot.* 19(3/4): 236 (1972) (Pic. 39)

Specimens examined: 1000171, 1000329, 1000441, 1000492, 1000790

Distribution of *T. menziesii*: Paleotropical (Núñez & Ryvarden 2001)

Trametes cf. ***mimetes*** (Wakef.) Ryvarden, *Norw. J. Bot.* 19: 236 (1972)

Specimens examined: 1000022, 1000040, 1000150, 1000170, 1000206, 1000322, 1000323, 1000328, 1000391, 1000392, 1000393, 1000394, 1000395, 1000396, 1000450, 1000455, 1000501, 1000515, 1000516, 1000519, 1000523, 1000825, 1000882, 1000888, 1000906

Distribution of *T. mimetes*: Known from Zimbabwe, Kenya, and Zaire (Ryvarden & Johansen 1980)

Trametes **sp. 1**

Specimen examined: 1000202

Trichaptum durum (Jungh.) Corner, *Beih. Nova Hedwig.* 86: 219 (1987) (Pic. 40)

Specimens examined: 1000167, 1000277b, 1000281, 1000518, 1000749, 1000752, 1000762, 1000767, 1000774

Distribution of *T. durum*: Paleotropical (Núñez & Ryvarden 2001)

Trichaptum **sp. 1**

Specimen examined: 1000144

Steccherinaceae

Antrodiella liebmannii (Fr.) Ryvarden, in Ryvarden & Johansen, *Prelim. Polyp. Fl. E. Afr.* (Oslo): 258 (1980) (Pic. 41)

Specimens examined: 1000110, 1000114, 1000730, 1000916

Distribution of *A. liebmannii*: Pantropical in East Asia known from subtropical areas (Núñez & Ryvarden 2001)

Antrodiella **sp. 1**

Specimen examined: 1000706

Antrodiella **sp. 2**

Specimens examined: 1000361, 1000439, 1000711

RUSSULALES

Bondarzewiaceae

Wrightoporia cf. ***japonica*** Núñez & Ryvarden, *Fung. Divers.* 3: 119 (1999)
Specimen examined: 1000416
Distribution of *W. japonica*: Japan (Hattori 2008)

***Wrightoporia* sp. 1**
Specimen examined: 1000179

Stereaceae

Stereum cf. ***hirsutum*** (Willd.) Pers., *Observ. Mycol.* (Lipsiae) 2: 90 (1800) [1799]
Specimen examined: 1000258
Distribution of *S. hirsutum*: Worldwide (Chamuris 1988)

Stereum ostrea (Blume & T. Nees) Fr., *Epicr. Syst. Mycol.* (Upsaliae): 547 (1838) [1836] (Pic. 42)
Specimens examined: 1000038, 1000051, 1000357, 1000366, 1000388, 1000606, 1000639, 1000732
Distribution of *S. ostrea*: Asia, Australasia, Africa, North and South America (Chamuris 1988)

Stereum cf. ***ostrea*** (Blume & T. Nees) Fr., *Epicr. Syst. Mycol.* (Upsaliae): 547 (1838) [1836]
Specimen examined: 1000002

***Stereum* sp. 1**
Specimens examined: 1000401, 1000864

THELEPHORALES

Bankeraceae

Corneroporus subcitrinus (Corner) T. Hatt., *Mycoscience* 45(5): 426 (2001) (Pic. 43)
Specimen examined: 1000207
Distribution: Malaysia (Corner 1989a, as *Boletopsis subcitrina*)

Discussion

A few studies on macrofungi were conducted in and near the Lambir Hills National Park (Kohzu et al. 1997; Yamashita et al. 2008). Kohzu et al. (1997) provided a list of macrofungi and recorded *Ganoderma australe, Earliella scabrosa, Microporus xanthopus, Polyporus tenuiculus, Amauroderma rugosum* (Blume & T.

Nees) Torrend (= *A. subrugosum*), and *Ganoderma applanatum* (Pers.) Pat. *Ganoderma applanatum* is a temperate species and the name was probably misapplied for *G. australe*. Yamashita et al. (2008) recorded 67 species in field surveys in undisturbed primary forest, isolated patches of primary forest, old and young fallow forest, and rubber plantations near the Lambir Hills National Park. However, the following 11 species recorded by Yamashita et al. (2008) were not collected in our study: *Phellinus gilvus* (Schwein.) Pat., *Daedalea aurora* (Ces.) Aoshima, *Amauroderma atrum* (Lloyd) Corner, *Podoscypha nitidula* (Berk.) Pat., *Pachykytospora* sp., *Polyporus hemicapnodes* Berk. & Broome, *Polyporus leprieurii* Mont., *Pyrofomes tricolor* (Murrill) Corner ?, *Trametes jejuna* Corner ?, *Trametes scopulosa* (Berk.) Bres., and *Steccherícium seriatum* (Lloyd) Maas Geest. In this study, we recorded 57 species and 59 morphospecies of polypores and other aphyllophoraceous fungi among 933 specimens collected in 2006, suggesting that many species are still missing from the above list. In addition, although we extensively collected fruiting bodies from 0.1-ha transects (n = 12) and from about 5 km of trail from the bottom to the top of Mt. Pantu, at least 11 species that have been recorded previously near or in the Lambir Hills National Park were not collected this time. Yamashita et al. (2008) surveyed aphyllophoraceous fungi in several forest types and showed that community composition differed among forest types. This finding suggests that, to reveal fungal flora across a large area, it would be most effective to survey fungal flora in several forest types. Further study of the macrofungi is needed.

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References

Chamuris GP (1988) The non-stipitate stereoid fungi in the northeastern United States and adjacent Canada. Mycologia Mem. 14: 1-247

Corner EJH (1983) Ad Polyporaceas I. Beih. Nova Hedwig. 75: 1-182

Corner EJH (1984) Ad Polyporaceas I. Beih. Nova Hedwig. 78: 1-219

Corner EJH (1987) Ad Polyporaceas IV. Beih. Nova Hedwig. 86: 1-265

Corner EJH (1989a) Ad Polyporaceas V. Beih. Nova Hedwig. 96: 1-218

Corner EJH (1989b) Ad Polyporaceas VI. Beih. Nova Hedwig. 97: 1-197

Corner EJH (1991) Ad Polyporaceas VII. Beih. Nova Hedwig. 101: 1-175

Furtado JS (1981) Taxonomy of *Amauroderma* (Basidiomycetes, Polyporaceae). Mem. N.Y. Bot. Gdn. 34: 1-109

Hattori T (2000) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. I. Species described in *Polyporus*, *Buglossoporus*, *Meripilus*, *Daedalea*, and *Flabellophora*. Mycoscience 41: 339-349

Hattori T (2001a) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. II. Species described in *Gloeophyllum*, *Heteroporus*, *Microporellus*, *Oxyporus*, *Paratrichaptum*, and *Rigidoporus*. Mycoscience 42: 19-28

Hattori T (2001b) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. III. Species described in *Trichaptum*, *Albatrellus*, *Bletopsis*, *Diacanthodes*, *Elmerina*, *Fomitopsis*, and *Gloeoporus*. Mycoscience 42: 423-431

Hattori T (2002) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. IV. Species described in *Tyromyces* (1). Mycoscience 43: 307-315

Hattori T (2003a) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. V. Species described in *Tyromyces* (2). Mycoscience 44: 265-276

Hattori T (2003b) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. VI. Species described in *Tyromyces* (3), *Cristelloporia*, *Grifola*, *Hapalopilus*, *Heterobasidion*, *Ischnoderma*, *Loweporus*, and *Steccherícium*. Mycoscience 44: 453-463

Hattori T (2005) Type studies of the polypores described by E.J.H. Corner from Asia and the West Pacific. VII. Species described in *Trametes* (1). Mycoscience 46: 303-312

Hattori T (2008) *Wrightoporia* (Basidiomycota, Hericiales) species and their allies collected in Japan. Mycoscience 49: 56-65.

Hjortstam K, Tellería MT (1990) *Columnocystis*, a synonym of *Veluticeps*. Mycotaxon 37: 53-56

Kirk PM, Cannon PF, David JC, Stalpers JA (2001) Dictionary of the fungi. 9th ed. CABI Publishing, Wallingford, UK

Kohzu A, Yokoyama K, Wada E, Inoue T (1997) Flora of mushrooms in Lambir Hills National Park, Sarawak, Malaysia. IN: Inoue T & Hamid AA (eds.) Canopy biology program in Sarawak (CBPS). Series II. General flowering of tropical rainforests in Sarawak. Centre for Ecological Research, Kyoto, Japan

Mueller GM, Schmit JP, Leacock PR, Buyck B, Cifuentes J, Desjardin DE, Halling RE, Hyortstam K, Iturriaga T, Larsson K-H, Lodge DJ, May TW, Minter D, Rajchenberg M, Redhead SA, Ryvarden L, Trappe JM, Watling R, Wu Q (2007) Global diversity and

distribution of macrofungi. Biodivers. Conserv. 16: 37-48

Núñez M, Ryvarden L (2000) East Asian Polypores, volume 1. Synop. Fungorum 13: 6-168

Núñez M, Ryvarden L (2001) East Asian Polypores, volume 2. Synop. Fungorum 14: 170-522

Pegler D (1997) The larger fungi of Borneo. Natural History Publications, Kota Kinabalu, Malaysia

Reid DA (1965) A monograph of the stipitate stereoid fungi. Beih. Nova Hedwig. 18: 1-384

Ryvarden L, Johansen I (1980) A preliminary polypore flora of East Africa. Fungiflora, Oslo, Norway

Yamashita S, Hattori T, Momose K, Nakagawa M, Aiba M, Nakashizuka T (2008) Effects of forest use on aphyllophoraceous fungal community structure in Sarawak, Malaysia. Biotropica 40: 354-362

Addresses of the Authors:

(Mr) Satoshi Yamashita, Dr. 山下 聡
Graduate School of Global Environmental Studies, Kyoto University
Sakyo, Kyoto 606-8501, Japan

(Mr) Sim Mee Hang,
Sarawak Forestry Corporation Sdn Bhd.
Kuching 93250, Sarawak, Malaysia

(Mr) Tsutomu HATTORI, Dr. 服部 力
Microbial Ecology Laboratory, Forestry and Forest Products Research Institute
Tsukuba 305-8687, Japan

Legends

Pic. 1. *Coltricia* cf. *oblectans* (2006/12/9)

Pic. 2. *Cyclomyces* cf. *tabacinus* (2006/12/15)

Pic. 3. *Erythromyces crocicreas* (2006/12/15)

Pic. 4. *Phellinus discipes* (2006/12/15)

Pic. 5. *Phellinus extensus* (2006/12/15)

Pic. 6. *Phellinus lamaensis* (2006/12/5)

Pic. 7. *Phellinus pachyphloeus* (2006/12/15)

Pic. 8. *Phellinus pectinatus* (2006/12/9)

Pic. 9. *Fomitopsis carnea* (2006/12/7)

Pic. 10. *Fomitopsis feei* (2006/12/14)

Pic. 11. *Fomitopsis pseudopetchii* (2006/12/6)

Pic. 12. *Amauroderma subrugosum* (2006/12/15)

Pic. 13. *Ganoderma australe* (2006/12/14)

Pic. 14. *Grammothele lineata* (2006/12/16)

Pic. 15. *Antrodia multipapillata* (2006/6/19)

Pic. 16. *Rigidoporus defibulatus* (2006/12/4)

Pic. 17. *Gloeoporus sulphureus* (2006/12/6)

Pic. 18. *Cymatoderma elegans* (2006/12/6)

Pic. 19. *Podoscypha mellissii* (2006/12/2)

Pic. 20. *Coriolopsis badia* (2006/12/13)

Pic. 21. *Coriolopsis glabro-rigens* (2006/12/18)

Pic. 22. *Coriolopsis retropicta* (2006/12/15)

Pic. 23. *Earliella scabrosa* (2006/12/20)

Pic. 24. *Flabellophora licmophora* (2006/12/11)

Pic. 25. *Microporellus inusitatus* var. *parvisporus* (2006/12/14)

Pic. 26. *Microporus affinis* (2006/12/15)

Pic. 27. *Microporus carneoniger* (2006/12/8)

Pic. 28. *Microporus vernicipes* (2006/12/15)

Pic. 29. *Microporus xanthopus* (2006/12/20)

Pic. 30. *Nigrofomes melanoporus* (2006/12/20)

Pic. 31. *Nigroporus vinosus* (2006/6/19)

Pic. 32. *Polyporus* cf. *grammocephalus* (2006/12/2)

Pic. 33. *Polyporus tenuiculus* (2006/12/15)

Pic. 34. *Pseudofavolus* cf. *cucullatus* (2006/12/15)

Pic. 35. *Pycnoporus sanguineus* (2006/6/16)

Pic. 36. *Pyrofomes albomarginatus* (2006/12/6)

Pic. 37. *Roseofavolus eos* (2006/12/1)

Pic. 38. *Skeletocutis nivea* (2006/12/18)

Pic. 39. *Trametes menziesii* (2006/12/14)

Pic. 40. *Trichaptum durum* (2006/12/12)

Pic. 41. *Antrodiella liebmannii* (2006/12/9)

Pic. 42. *Stereum ostrea* (2006/12/2)

Pic. 43. *Corneroporus subcitrinus* (2006/6/19)

Pic. 1

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