A checklist of aphyllophoraceous fungi in Thailand: Part I. New records

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A checklist of the aphyllophoraceous fungi (Polyporales *sensu lato*) is presented based on a 2-year study of the fungi of Thai forests. 54 species, 40 genera, 13 families, 6 orders (Auricularliales, Boletales, Corticiales, Hymenochaetales, Polyporales, Russulales) are reported. The checklist includes details of the location, substrata and dates collected.

Key words – aphyllophoraceous fungi – tropics – wood inhabiting.

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Introduction

The first major contribution to the aphyllophorales from Thailand was initiated by Danish mycologists, when John Schmidt collected on the island of Ko Chang. From this study, Emil Rostrup (1902) listed 94 fungal species in various groups, including 11 new species in the Polyporaceae and Hymenochaetaceae (*Polystictus atripes* Rostr., *Polystictus pusillus* Rostr., *Polystictus olivascens* Rostr., *Polystictus minutissimus* Rostr., *Polystictus alboluteus* Rostr., *Polystictus tigrinus* Rostr., *Polystictus purpureoalbus* Rostr., *Polystictus changensis* Rostr., *Polystictus crenatoporus* Rostr., *Polystictus schmidtii* Rostr., *Poria carnosus* Rostr.). Phanichapol (1968) compiled a checklist of fungi held in the Forest Herbarium and listed 67 fungal species of which 45 species were Polyporales sensu lato. Ryvarden (1976) re-examined all 11 new species of the Polyporales described by Rostrup (1902). Hjortstam & Ryvarden (1982) reported 154 species of Aphyllophorales, mostly Corticiaceae and Polyporaceae, from northern Thailand, 116 species were new records for the country, with seven new species: *Aleurodiscus cremicolor* Hjortstam & Ryvarden, *Byssocorticium naviculare* Hjortstam & Ryvarden, *Grammothele ochraceus* Ryvarden, *Hyphoderma tuberculare* Hjortstam & Ryvarden, *Boletopsis atrata* Ryvarden, *Ceriporia subreticulata* Ryvarden and *Oxyporus subulatus* Ryvarden. In 2005 we initiated a survey of the Aphyllophorales of Thailand focusing on those growing on bamboo, palms and other woody material. In this paper we document the new records of aphyllophoraceous fungi on various substrata collected in Thailand.

Material and methods

Thailand is located in the Indo-China/sub-Himalayan and Malaysian/Indonesia floristic zone (Hodel 1998), in South East Asia. It covers an area of 511,937 square kilometers and lies between 5º 37’ to 20º 27’N and 97º 22’ to 105º 37’W.

This checklist is based on data collected in an extensive study of the aphyllophoraceous

fungi from June 2005 to November 2006. The study included a wide range of forest types: evergreen and deciduous forests, tropical moist evergreen forests, grasslands and mangroves.

The major collecting sites were Nan Province, Nakhon Ratchasima Province, Prachin Buri Province, Trat Province, Chanthaburi Province, Surat Thani Province, Nakhon Si Thammarat Province, Trang Province, Krabi Province and Satun Province (Fig. 2).

Collecting

Specimens were collected following procedures outlined by Ryvarden & Johansen (1980). Basidiocarps were removed from substrata with a sharp knife and wrapped in newspaper or placed in a paper bag. Substrate, localities, collection date were recorded and on return to the laboratory. macroscopic characters of the pileus, stipe, colour, and pores were noted. All dried specimens are deposited in the BIOTEC Bangkok Herbarium (BBH).

Results

New records of Aphyllophoraceous fungi from Thailand

Auriculariales incertae sedis

Elmerina holophaea (Pat.) Parmasto, Nova Hedwigia 39: 107, 1984 Fig. 1

Localities – On dead wood in evergreen forest, Nakhon Ratchasima Province, Khao Yai National Park, 5 October 2006, R. Choeyklin, BBH 19114.

Substrate and distribution – On deciduous trees, mainly *Quercus* spp., but also on *Betula* spp. and *Populus* spp., on a rotting stump, on fallen trunk in sub-montane forest; Asia (Japan, Malaysia, Northern China, the Philippines, Vietnam), Far East Russia (Pegler 1983, Corner 1989a, Reid 1992, Núñez & Ryvarden 2001).

Boletales, Amylocorticiaceae

Ceraceomyces serpens (Tode) Ginns, Can. J. Bot. 54: 147, 1976 Figs 3–7

Localities – On dead oil palm (*Elaeis guineensis*) petioles, Trang Province, Huai Yot District, Ban Sai Bo Village, 24 January 2006, R. Choeyklin, BBH 19933.

Fig. 1 – *Elmerina holophaea* habitat.

Substrate and distribution – On rotting fir logs, on decayed conifers, on deciduous trees, on fronds of fern trees; Africa, Asia (China, Japan, Iran), Oceania (Australia), Europe (France), North America, South America (Cooke 1955, Eriksson & Ryvarden 1973, Boidin et al. 1986).

Corticiales, Corticiaceae

Punctularia strigosozonata (Schwein.) P.H.B. Talbot, Bothalia 7: 143, 1958

Localities – On oil palm petiole (*Elaeis guineensis*), Trang Province, Huai Yot District, Ban Sai Bo Village, 9 November 2005, R. Choeyklin, BBH 19942; on coconut palm (*Cocos nucifera*), Surat Thani Province, Ko Samui District, Ban Thong Krut Village, 13 October 2006, R. Choeyklin, BBH 19794.

Substrate and distribution – On decaying wood of hardwood trees, on wood of various broad leaved trees; Asia (China, India, Japan, Korea, Madagascar, Malaysia, Singapore), Oceania (Australia, Fiji, New Zealand), North America (USA, Canada, Mexico), South Africa, South America (Brazil, Chile, Venezuela) (Chamuris 1988).

Hymenochaetales, Hymenochaetaceae

Aurificaria indica (Massee) D.A. Reid, Kew Bull. 17: 279, 1963

Localities – On *Nypa fructicans*, Trang Province, Kantang District, Ban Bang Sak Village, 9 November 2005, R. Choeyklin, BBH 19962; on wood, Prachin Buri Province, Mueang Prachin Buri District, The Bamboo Park, 27 September 2005, R. Choeyklin, BBH 17812.

Fig. 2 – Map of sampling sites in Thailand.

Substrate and distribution – On rotten and fallen tree trunks, on dead and living deciduous trees, on a living tree of *Dialium* (Leguminosae) (Reid 1963, Ryvarden 1972, Ryvarden & Johansen 1980); Africa (Kenya), Oceania (Australia), Asia (Malaysia) (Reid 1963, Ryvarden & Johansen 1980, Corner 1991).

Coltriciella dependens (Berk. & M.A. Curtis) Murrill, Bull. Torrey Bot. Club 31: 348, 1904

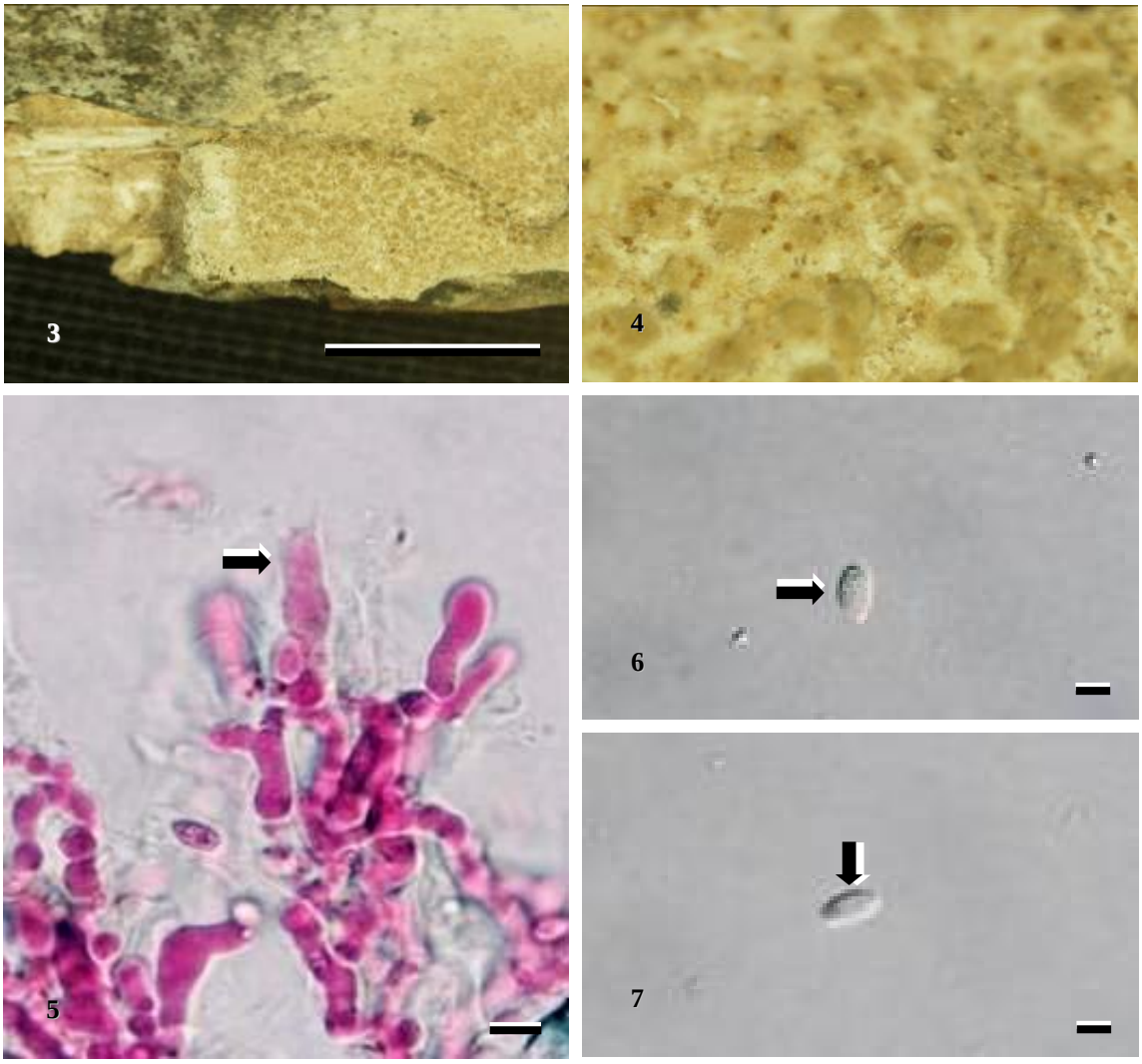
Localities – On leaf, Nan Province, Bo Kluea District, Doi Phuka National Park, 21 September 2005, R. Choeyklin, BBH 17811.

Substrate and distribution – On fallen trunks in the forest (Corner 1991); Asia (Malaysia) (Corner 1991).

Cyclomyces setiporus (Berk.) Pat., Essai Tax. Hyménomyc.: 98, 1900

Localities – On dead wood, Trang Province, Khao Chong Wildlife Development and Conservation Promotion Station, Na Yong District, Tone Pliw Waterfall, 2 May 2006, R. Choeyklin, BBH 19381; on dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 6 October 2006, R. Choeyklin, BBH 18712.

Substrate and distribution – On dead deciduous wood, on fallen trunks and branches (Ryvarden & Johansen 1980, Corner 1991); Africa (Kenya), Asia (China, Indonesia, Malaysia, Singapore, Sri Lanka), Oceania (Australia) (Corner 1991, Suhirman & Núñez 1998).



Figs 3–7 – *Ceraceomyces serpens*. **3**, **4** Basidiocarps. **5** Basidia (arrow). **6**, **7** Basidiospores (arrow). Bars 3 = 1 cm, 5–7 = 5 µm, 4 (50×) magnification.

Erythromyces crocicreas (Berk. & Br.) Hjortstam & Ryvarden, Mycotaxon 37: 55, 1990

Localities – On decayed wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19793.

Substrate and distribution – On decayed wood (Hjortstam & Ryvarden 1990); Africa (Gabon), Asia (Cambodia, Indonesia, Malaysia, the Philippines, Sri Lanka), Oceania (Australia, Fiji) (Hjortstam & Ryvarden 1990, Suhirman & Núñez 1998).

Hymenochaete anomala Burt, Ann. Mo. Bot. Gdn 5: 358, 1918 Figs 8–12

Localities – On dead bamboo culms, Prachin Buri Province, Mueang Prachin Buri District, The Bamboo Park, 6 December 2006, R. Choeyklin, THP 00576.

Substrate and distribution – On *Salix* sp. (Reeves & Welden 1967); North America (Cuba, El Salvador, USA), South America (Argentina, Brazil, Trinidad, Venezuela) (Reeves & Welden 1967).

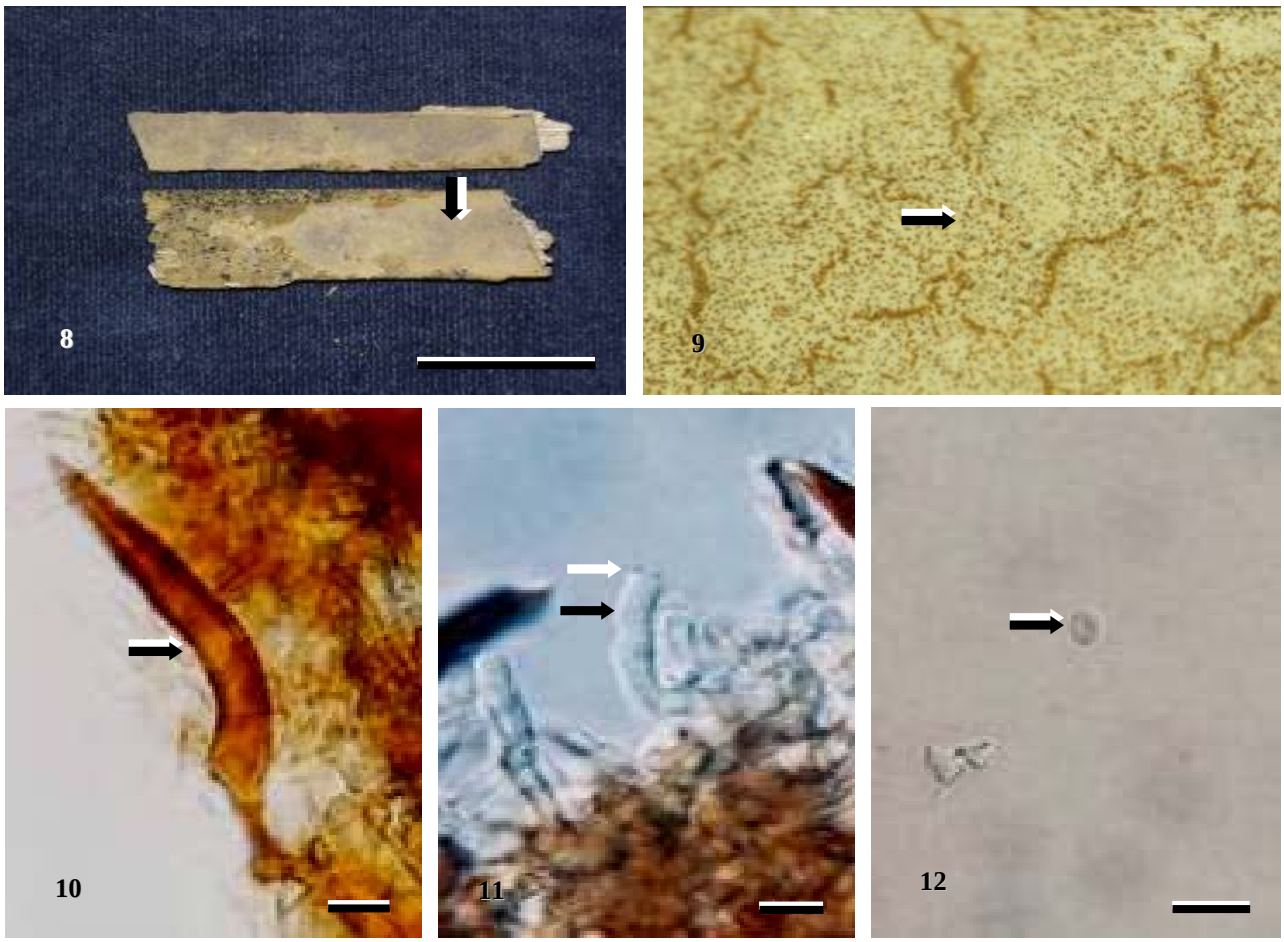
Hymenochaete innexa G. Cunn., Trans. Roy. Soc. New Zealand 85: 47, 1957 Figs 13–17

Localities – On dead bamboo culms, Prachin Buri Province, The Wang Bond Reservoir, June 2006, R. Choeyklin, THP00 577.

Substrate and distribution – On bark of dead branches (Cunningham 1957); Oceania (New Zealand) (Cunningham 1957).

Inonotus patouillardii (Rick) Imazeki, Bull. Tokyo Sci. Mus. 6: 105, 1943

Localities – On *Xylocarpus* sp., Chanthaburi Province, Tha Mai District,



Figs 8–12 – *Hymenochaete anomala*. **8**, **9** Basidiocarp. **10** Setae (arrow). **11** Basidium (black arrow) and young sterigmata (white arrow). **12** Basidiospore (arrow). Bars 8 = 2 cm, 10–12 = 5 µm, 9 (40×) magnification.

Khung Kraben Bay Royal Development Study Center, 3 October 2005, R. Choeyklin, BBH 17852.

Substrate and distribution – On living hardwoods, *Quercus* spp. (Núñez & Ryvarden 2000, Ryvarden 2005); Europe, Japan and tropical Asia, South Africa to Kenya, tropical to subtropical regions, USA (Núñez & Ryvarden 2000, Ryvarden 2005).

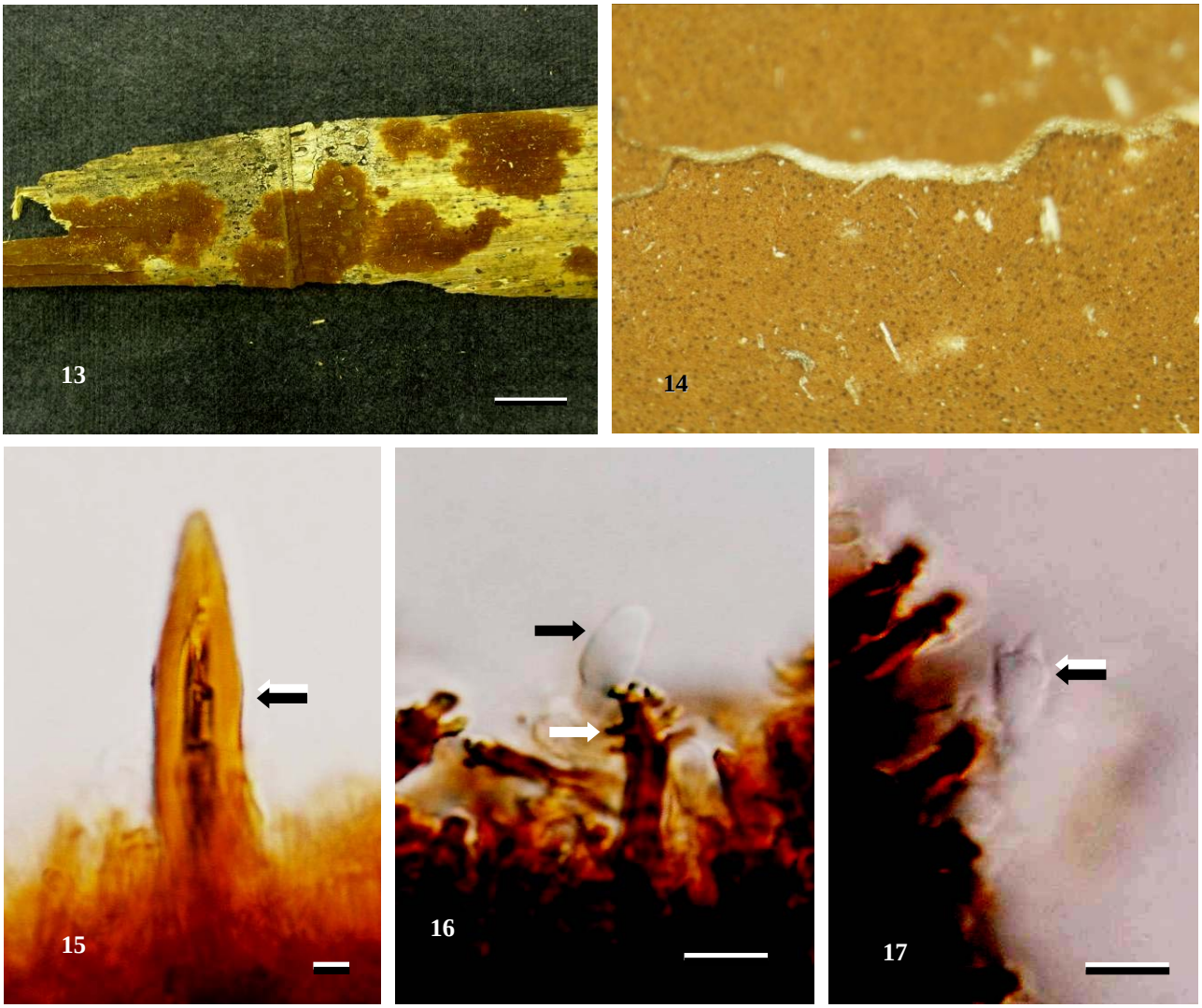
Phellinus rimosus (Berk.) Pilát, Annls Mycol. 38, 80, 1940

Localities – On mangrove wood of *Avicennia alba*, Chanthaburi Province, Tha Mai District, Khung Kraben Bay Royal Development Study Center, 3 October 2005, R. Choeyklin, BBH 17856, BBH 17860; on *Xylocarpus* sp., Surat Thani Province, Ko Samui District, Ko Tan, 11 October 2006, EBG Jones, BBH 19802, 19805; on same substrate and place, 12 October 2006, EBG Jones, BBH 19803; on dead wood, Nakhon Si Thammarat Province, Phrom Khiri District, Ban Khiriwong Village, 11 October 2006, R. Choeyklin, BBH 19804.

Substrate and distribution – On angiosperm woods, Fabaceae (Larsen & Cobb-Poulle 1990); Asia (China, Japan, Vietnam), Africa (Tunesia), North America (Mexico, Puerto Rico), Oceania (Australia, New Caledonia) (Larsen & Cobb-Poulle 1990, Núñez & Ryvarden 2000).

Phellinus setulosus (Lloyd) Imazeki, Bull. Tokyo Sci. Mus. 6: 104, 1943

Localities – On dead wood, Trat Province, Ko Chang District, Mu Ko Chang National Park, Than Ma Yom Waterfall, on dead wood, 5 October 2005, R. Choeyklin, BBH 19341.



Figs 13–17 – *Hymenochaete innexa*. **13** Basidiocarp. **14** Basidiocarp (40×) magnification. **15** Setae (arrowed). **16** Cystidium (black arrow) and dendrohyphidia (white arrow). **17** Basidium (arrow). Bars 13 = 1 cm, 15–17 = 5 μm.

Substrate and distribution – On dead wood (Cunningham 1965); Asia (China, Japan, Malaysia, Sri Lanka), East Africa (Kenya, Tanzania, Rwanda), Oceania (Australia, New Guinea, New Zealand), North America (Costa Rica) (Larsen & Cobb-Poulle 1990, Núñez & Ryvarden 2000).

Phellinus umbrinellus (Bres.) S. Herrera & Bondartseva, Mikol. Fitopatol. 14: 8, 1980

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19806.

Substrate and distribution – On hardwoods, on angiospermous wood (Larsen & Cobb-Poulle 1990, Núñez & Ryvarden 2000); Asia (Japan), North America (USA, Bahamas, Cuba, Costa Rica, Mexico, Jamaica, Haiti), Oceania (New Zealand), South America (Bolivia, Brazil, Peru) (Larsen & Cobb-Poulle 1990, Núñez & Ryvarden 2000).

Phylloporia spathulata (Hook.) Ryvarden, Syn. Fung. 5: 196, 1991

Localities – On dead wood, Trat Province, Ko Chang District, Mu Ko Chang National Park, Klong Plu Waterfall, 4 April 2005, R. Choeyklin, BBH 17828; on dead wood, Nakhon Ratchasima Province, Khao Yai National Park, Kong Kaeo Waterfall, 29 June 2006, R. Choeyklin, BBH 17835.

Substrate and distribution – On deciduous wood (Larsen & Cobb-Poulle 1990), parasitic on twigs and branches of hardwoods (Núñez & Ryvarden 2000); Asia (China, Japan,

Indonesia, Taiwan and Vietnam), East Africa (Ethiopia to Malawi), North America (Cuba), (Larsen & Cobb-Poulle 1990, Núñez & Ryvarden 2000).

Schizoporaceae

Echinoporia hydnophora (Berk. & Br.) Ryvarden, in Ryvarden & Johansen, Prelim. Polyp. Fl. E. Afr: 326, 1980

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 11 July 2005, R. Choeyklin, BBH 19142; on dead wood, same place, 25 July 2005, R. Choeyklin, BBH 19153 and BBH 19331.

Substrate and distribution – On angiosperm wood, on *Theobroma* sp. and other broad-leaved trees (Núñez & Ryvarden 2001, Ryvarden & Johansen 1980); Asia (Indonesia, Japan, Malaysia, Sri Lanka), Tropical America (Ryvarden & Johansen 1980, Núñez & Ryvarden 2001).

Hyphodontia abieticola (Bourdot & Galzin) J. Erikss., Symb. Bot. Upsal. 16: 84, 1958 Figs 18–22

Localities – On dead oil palm (*Elaeis guineensis*) petiole, Trang Province, Huai Yot District, Ban Sai Bo Village, 24 January 2006, R. Choeyklin, BBH 19932.

Substrate and distribution – On coniferous wood, on bark, such as: *Picea* spp., *Pinus* spp., *Pseudotsuga* spp., mostly found on *Vaccinium* spp. and *Hylocomium* spp. (Eriksson & Ryvarden 1976, Langer et al. 1995); Asia (Taiwan, Turkey), Africa (Malawi), Europe (Estonia, France, Netherlands, Poland, Sweden), North America (Canada, USA) (Eriksson & Ryvarden 1976, Langer et al. 1995).

Hyphodontia sambuci (Pers.) J. Erikss., Symb. Bot. Upsal. 16: 104, 1958 Figs 23–27

Localities – On the palm *Nypa fructicans* petiole, Trang Province, Kantang District, Ban Bang Sak Village, 9 November 2005, R. Choeyklin, BBH 19961.

Substrate and distribution – On *Phyllostachys mitis*, *Larix* sp., on *Rosmarinus officinalis*, bark and wood, dead branches, trunks, associated with white rot (Boidin et al. 1986, Ginns & Lefebvre 1993, Telleria 1991); North America (Canada, USA), South America (Argentina), Europe (France, Spain) (Boidin et al. 1986, Telleria 1991, Ginns & Lefebvre 1993, Greslebin & Rajchenberg 2000).

Polyporales, Fomitopsidaceae

Antrodia malicola (Berk. & M.A. Curtis) Donk, Persoonia 4: 339, 1966

Localities – On old fence wood, Nan Province, Doi Phuka National Park, Viewpoint, 21 September 2005, R. Choeyklin, BBH 19146; BBH 19354; on dead wood, Nakhon Si Thammarat Province, Phrom Khiri District, Ban Khiriwong Village, 11 October 2006, R. Choeyklin, BBH 19179.

Substrate and distribution – On dead wood, apple logs (Murrill 1910, 1920); Asia (Japan, Korea, China), Europe (Russia), North America (Jamaica), Oceania (New Zealand) (Gilbertson & Ryvarden 1986, Murrill 1910, 1920, Buchanan & Ryvarden 2000, Núñez & Ryvarden 2001).

Ganodermataceae

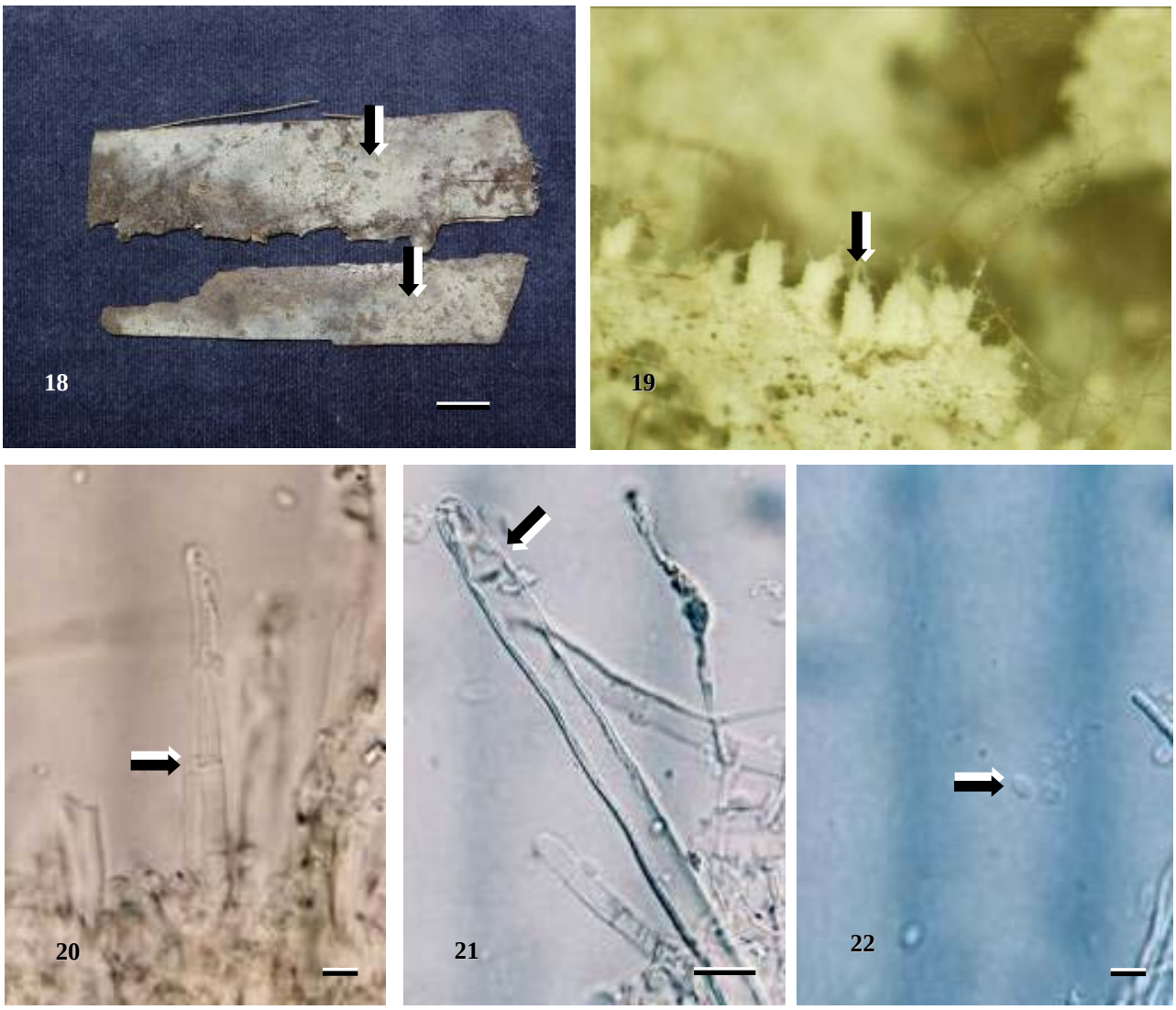
Amauroderma parasiticum Corner, Beih. Nova Hedwigia 75: 79, 1983

Localities – On dead standing trees, Krabi Province, Khlong Thom District, Khao Pra-Bang Khram Wildlife Sanctuary, Tonetaew Waterfall, 21 August 2006, R. Choeyklin, BBH 17827; on dead standing trees, Satun Province, Khuan Don District, Thale Ban National Park, Rani Waterfall, 19 August 2006, R. Choeyklin, BBH 17832, BBH 17850; on dead standing trees, Trang Province, Na Yong District, Khao Chong Wildlife Development and Conservation Promotion Station, Tone Pliw Waterfall, 2 May 2006, R. Choeyklin, BBH 17840, BBH 17849.

Substrate and distribution – On *Knema* tree (Myristicaceae), dead standing trees (Corner 1983); Asia (Singapore) (Corner 1983).

Ganoderma boninense (Fr.) Ryvarden Mycologia 92: 187, 2000

Localities – On dead oil palm (*Elaeis guineensis*) trunk, Krabi Province, Khlong Thom District, 4 May 2006, R. Choeyklin, BBH, 19068; on dead coconut palm (*Cocos nucifera*) trunk, Surat Thani Province, Ko Samui District, 13 October 2006, R. Choeyklin, BBH, 19071.



Figs 18–22 – *Hyphodontia abieticola*. **18**, **19** Basidiocarps (arrow). **20** Generative hyphae with clamp-connection (arrow). **21** Cystidium (arrow). **22** Basidiospore (arrow). Bars 18 = 1 cm, 20–22 = 5 μm, 19 (90×) magnification.

Substrate and distribution – On dead hardwoods, mainly palms: *Areca* spp., *Cocos nucifera*, *Elaeis guineensis*, *Livistona subglobosa*, *Casuarina torulosa*, *Albizia* spp. (Ryvarden 2000); Asia (Japan, Taiwan, Vietnam), North America (Puerto Rico, South America (Venezuela), West Africa (Guinea) (Ryvarden 2000, Núñez & Ryvarden 2001).

Meripilaceae

Rigidoporus hypobrunneus (Petch) Corner, Beih. Nova Hedwigia 86: 167, 1987

Localities – On dead wood, Nan Province, Bo Kluea District, Sobmang-Nabong Village, Huai Pla Pung Waterfall, 20 September 2005, R. Choeyklin, BBH 19360.

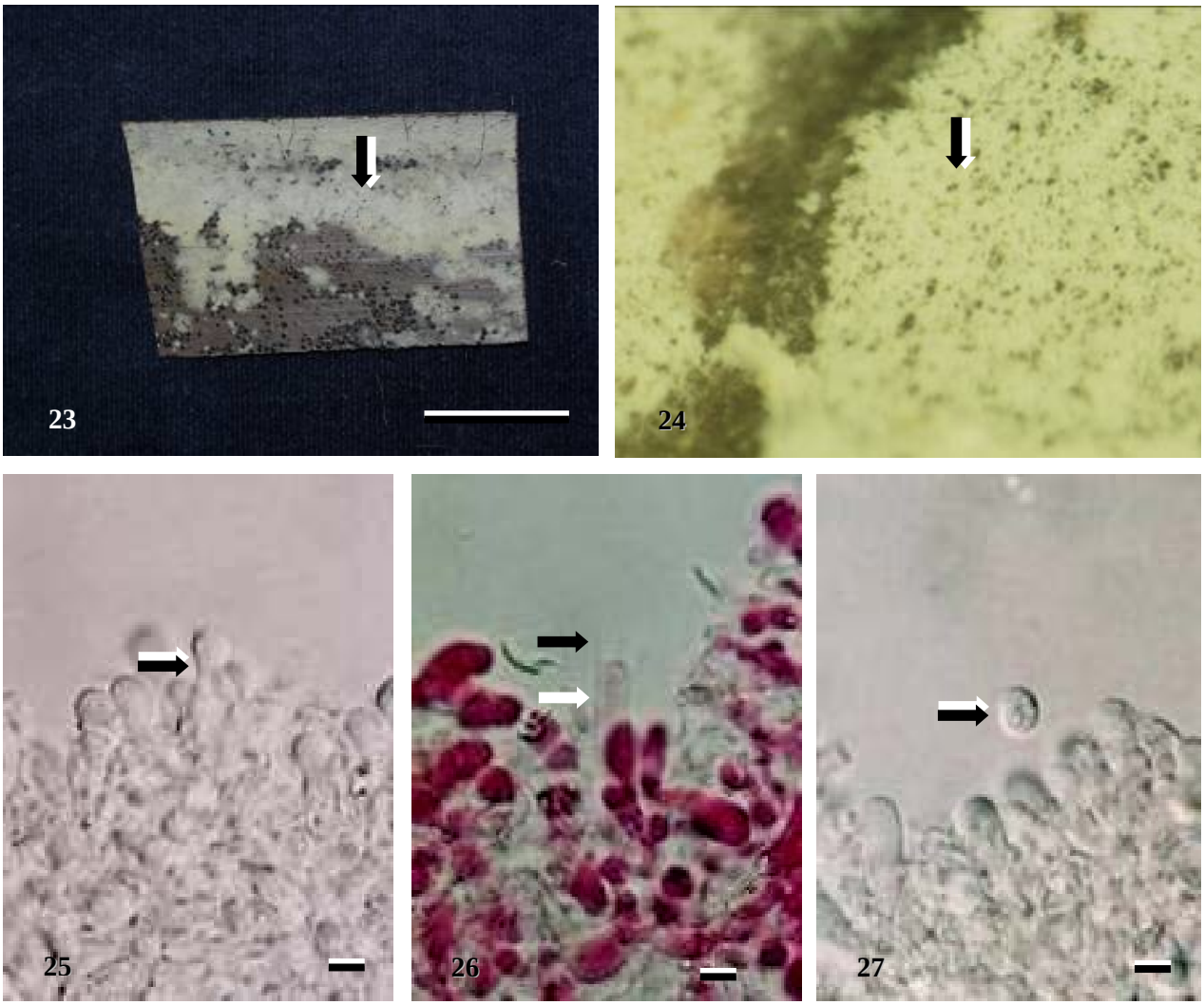
Substrate and distribution – On dead wood and bark in the forest, roots of *Citrus* sp., *Hevea* sp., trunk, fallen hardwood trunk, *Crotalaria anagyroides*, *Bixa orrekana*, *Ficus* sp., *Lagerstroemia speciosa*, *Acia* sp., *Cupressus lusitanica* (Setliff 1972, Corner 1987); Africa (Cameroon, Kenya, Tanzania, Uganda), Asia (Malaysia, the Philippines, Singapore, Sri Lanka), North America (USA) (Setliff 1972, Corner 1987).

Meruliaceae

Flaviporus liebmannii (Fr.) Ginns, Can. J. Bot. 58: 1584, 1980

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 5 October 2006, R. Choeyklin, BBH 19132.

Substrate and distribution – On deciduous wood of all kinds (Ryvarden & Johansen 1980); Pantropical, widely distributed



Figs 23–27 – *Hyphodontia sambuci*. **23**, **24** Resupinate basidiocarp. **25** Cystidium (arrow). **26** Basidium (white arrow) and sterigmata (black arrow). **27** Basidiospore (arrow). Bars 23 = 2 cm, 25–27 = 5 μm, 24 (50×) magnification.

in East Africa (Ryvarden & Johansen 1980).

Gloeoporus sulphureus Corner, Beih. Nova Hedwigia 96: 59, 1989

Localities – On dead wood, Trang Province, Khao Chong Wildlife Development and Conservation Promotion Station, Tone Plio Waterfall, 20 August 2006, R. Choeyklin, BBH 19366.

Substrate and distribution – On fallen trunks (Corner 1989a); Asia (Malaysia) (Corner 1989a).

Hydnophlebia chrysorhiza (Torr.) Parmasto, Eesti NSV Tead. Akad. Toim., Biol. seer 16: 384, 1967

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19819.

Substrate and distribution – *Acer* sp., *Carnegiea gigantean*, *Carpinus coroliniana*, *Citrus* sp., *Cornus florida*, *Gossypium hirsutum*, *Haplopappus laricifolius*, *Juglans* sp., *J. major*, *Liquidambar sytraciflua*, *Lycium* sp., *Nectandra coriacea*, *Nyssa sylvatica*, *Olneya tesota*, *Ostrya virginiana*, *Pinus* sp., *P. taeda*, *Platanus wrightii*, *Populus* sp., *P. grandedentata*, *P. tremuloides*, *Prosopis juliflora*, *Quercus* sp., *Q. arizonica*, *Q. emoryi* (Ginns & Lefebvre 1993); Asia (Japan), North America (USA) (Ginns & Lefebvre 1993).

Phanerochaetaceae

Porostereum crassum (Lév.) Hjortstam & Ryvarden, Syn. Fung. (Oslo) 4: 29, 1990

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 6 October 2006, R. Choeyklin, BBH 18705; on same substrate and place, 5 October 2006, R. Choeyklin, BBH 19119.

Substrate and distribution – On a wide range of dead bark and decorticated wood: *Agathis australis*, *Albizzia lophantha*, *Beilschmiedia tawa*, *Carpodetus serratus*, *Coprosma robustus*, *Coriaria arborea*, *Cytisus scoparius*, *Eucalyptus globulus*, *Freycinetia banksii*, *Hakea acicularis*, *Hedycarya arborea*, *Knightia excelsa*, *Leptospermum scoparium*, *Melicytus ramiflorus*, *Meryta sinclairii*, *Myoporum laetum*, *Nothofagus cliffortioides*, *Nothofagus truncata*, *Nothopanax arboreum*, *Oxylobium callistachys*, *Pinus radiata*, *Pittosporum tenuifolium*, *Prunus persica*, *Pyrus malus*, *Rhopalostylis sapida*, *Salix fragilis*, *Suttonia salicina*, *Vitex lucens*, *Weinmannia racemosa*, *Weinmannia sylvicola* (Welden 1975); Africa (Cameroon), Asia (Japan), Oceania (Australia, New Zealand), North America (Costa Rica, Guatemala, Mexico, USA), South America (Venezuela), Western Europe (Welden 1975, Hjortstam et al. 1993).

Polyporaceae

Abundisporus fuscopurpureus (Pers.) Ryvarden, Belg. Jl Bot. 131: 154, 1999

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19791.

Substrate and distribution – On dead deciduous wood, dead hardwoods (Ryvarden & Johansen, 1980, Núñez & Ryvarden 2001); Paleotropics, but rare in Africa (Uganda, Kenya), widespread in Asia, (China, Japan) (Ryvarden & Johansen 1980, Núñez & Ryvarden 2001).

Abundisporus roseoalbus (Jungh.) Ryvarden, Belg. J. Bot. 131: 154, 1999 [1998]

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 2 March 2006, R. Choeyklin, BBH 18745.

Substrate and distribution – On deciduous wood; East Africa, Asia (Indonesia) (Ryvarden & Johansen 1980, Corner 1989a).

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

Localities – On dead wood, Trang Province, Sikao District, Kuan Kang Hot Spring, 25 January 2006, R. Choeyklin, BBH 19374; on dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19815.

Substrate and distribution – On fallen trunks, branches and sticks in primary and secondary forest (Corner 1989a); Asia (India, the Philippines), Oceania (Solomon Islands) (Murrill 1907a, Corner 1989a).

Coriolopsis glabrorigens (Lloyd) Núñez & Ryvarden, Syn. Fung. (Oslo) 14:256, 2001

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 2 March 2006, R. Choeyklin, BBH 19147; on dead wood, same place, 25 July 2006, R. Choeyklin, BBH 19353; on dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19792; on dead wood, Nakhon Si Thammarat Province, Phrom Khiri District, Ban Khiriwong Village, 11 October 2006, R. Choeyklin, BBH 19180.

Substrate and distribution – On dead hardwood (Núñez & Ryvarden 2001); Asia (Brunei, Japan, Malaysia) (Corner 1989b, Núñez & Ryvarden 2001).

Coriolopsis lacunosa (Corner) T. Hatt., Mycoscience 45: 425, 2001

Localities – On dead wood, Trat Province, Ko Chang District, Mu Ko Chang National Park, Klong Pru Waterfall, 4 October 2005, R. Choeyklin, BBH 17809; on dead wood, same place, 5 October 2005, R. Choeyklin, BBH 19330, BBH 19334.

Substrate and distribution – On fallen branches and trunks in the forest, dead palm-trunks (Corner 1987); Asia (Malay Peninsula) (Corner 1987).

Coriolopsis retropicta (Lloyd) Teng, Fungi of China: 760, 1963.

Localities – On dead wood, Nakhon Si

Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19787; on dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 5 October 2006, R. Choeyklin, BBH 19131.

Substrate and distribution – On dead wood; Asia (China, Japan), tropical to subtropical Asia, (Núñez & Ryvarden 2001).

Datronia mollis (Sommerf.) Donk, Persoonia 4: 338, 1966

Localities – On dead wood, Pathum Thani Province, June 2005, R. Choeyklin, BBH 17821.

Substrate and distribution – On dead hardwoods (Gilbertson & Ryvarden 1986, Núñez & Ryvarden 2001); Asia (China, Japan), Far East Russia, North America (Gilbertson & Ryvarden 1986, Núñez & Ryvarden 2001).

Echinochaete russiceps (Berk. & Br.) D.A. Reid, Kew Bull. 17: 285, 1963

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, Kong Kaew Waterfall, 29 June 2006, R. Choeyklin, BBH 17819.

Substrate and distribution – On dead wood (Ryvarden & Johansen 1980, Núñez & Ryvarden 2001); Widespread in the Indo-Pacific area (Ryvarden & Johansen 1980), Asia (Malaysia, temperate to subtropical areas of Japan (Corner 1984, Sotome et al. 2009).

Epithele macarangae Boidin & Lanq., Mycotaxon 16: 477, 1983

Localities – On dead oil palm (*Elaeis guineensis*) petioles, Trang Province, Huai Yot District, Ban Sai Bo Village, 24 January 2006, R. Choeyklin, BBH 19934.

Substrate and distribution – On dead branches of *Macaranga spinosa* (Euphobiaceae) (Boidin & Lanquetin 1983); Central Africa (Boidin & Lanquetin, 1983).

Flabellophora licmophora (Massee) Corner, Beih. Nova Hedwigia 86: 32, 1987

Localities – On dead wood, Nan Province, Doi Phuka National Park, 21 September 2005, R. Choeyklin, BBH 19166, BBH 18730.

Substrate and distribution – On dead wood, fallen trunks, branches and twigs in open areas (Corner 1987); Asia (China Malay Peninsula), South America (Brazil), Oceania (Papua New Guinea), tropical and subtropical (Corner 1987, Núñez & Ryvarden 2001).

Fomitella fumosipora (Corner) T. Hatt., Mycoscience 46: 309, 2005

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19788.

Substrate and distribution – On dead wood; Asia (Malaysia) (Hattori 2005).

Grammothele lineata Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 327, 1868

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19821.

Substrate and distribution – On many kinds of deciduous wood (Ryvarden & Johansen 1980); Africa (Ethiopia, Kenya, Tanzania, Malawi), Asia (Indonesia) (Ryvarden & Johansen 1980, Suhirman & Núñez 1998).

Megasporoporia cavernulosa (Berk.) Ryvarden, in Ryvarden, Wright & Rajchenberg, Mycotaxon 16: 174, 1982

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 11 July 2005, R. Choeyklin, BBH 19322; on dead wood, same place, 11 April 2006, R. Choeyklin, BBH 19326.

Substrate and distribution – On deciduous wood (Núñez & Ryvarden 2001, Ryvarden 1990, Suhirman & Núñez 1998); Asia (China, Indonesia, Japan), North America (Cuba, Panama), Far East Russia, Africa (Guyana, Tanzania, Zaire), South America (Brazil, Ecuador) (Ryvarden 1990, Suhirman & Núñez 1998, Núñez & Ryvarden 2001).

Megasporoporia setulosa (Henn.) Rajchenb., in Ryvarden, Wright & Rajchenberg, Mycotaxon 16: 180, 1982

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 11 July 2005, R. Choeyklin, BBH 19321.

Substrate and distribution – On angiosperm wood, (Ryvarden & Johansen 1980, Ryvarden et al. 1982, Suhirman & Núñez 1998); Asia (Indonesia), East Africa (Kenya, Tanzania, Burundi, Malawi), South America (Ryvarden & Johansen 1980, Ryvarden et al. 1982, Suhirman & Núñez 1998).

Perenniporia corticola (Corner) Decock Mycologia 93: 776, 2001

Localities – On decayed dead wood, Trat Province, Ko Chang District, Mu Ko Chang National Park, Than Ma Yom Waterfall, 5 October 2005, R. Choeyklin, BBH 19328.

Substrate and distribution – On the bark of living trunks of *Dipterocarpus oblongifolia*, *Shorea* sp. (Corner 1989a); Asia (Indonesia, Malaysia, Singapore) (Corner 1989a, Decock 2001).

Perenniporia marmorata (Corner) T. Hatt., Mycoscience 41: 343, 2000

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, Wang Jumpee Waterfall, 25 July 2005, R. Choeyklin, BBH 17816.

Substrate and distribution – On the base of dead trees and stumps (Corner 1984); Asia (Malaysia, Singapore) (Corner 1984).

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

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19781.

Substrate and distribution – On dead deciduous wood (Núñez & Ryvarden 2001, Ryvarden & Johansen 1980); Africa (Ethiopia, Kenya, Malawi, Tanzania), Asia (Japan, Vietnam), Far East Russia (Ryvarden & Johansen 1980, Núñez & Ryvarden 2001).

Polyporus dictyopus Mont., Annls Sci. Nat., Bot., sér. 2, 3: 349, 1835

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 6 October 2006, R. Choeyklin, BBH 18717; same substrate and place, 15 June 2005, R. Choeyklin, BBH 18743; same substrate and place, 10 April 2006, R. Choeyklin, BBH 18746; on dead wood, Trang Province, Na Yong District, Khao Chong Wildlife Development and Conservation Promotion Station, Tone Pliew Waterfall, 2 May 2006, R. Choeyklin, BBH 18756.

Substrate and distribution – On dead wood (Ryvarden & Johansen 1980, Suhirman & Núñez 1998); Africa (Kenya, Uganda), Asia (China, Indonesia, Japan) (Ryvarden & Johansen 1980, Suhirman & Núñez 1998, Núñez & Ryvarden 2001).

Porogramme albocincta (Cooke & Massee) J. Lowe, Lloydia 21: 102, 1958

Localities – On dead wood, Nakhorn Si Thammarat Province, Lan Saka District, Khao Luang National Park, Phrom Khiri District, Ban Khiriwong Village, 11 October 2006, R. Choeyklin, BBH 19196.

Substrate and distribution – On deciduous trees, on *Uapaca staudtii* (Ryvarden 1979, Hjortstam et al. 1993); Africa (Cameroon, Ethiopia, Kenya, Malawi, Rwanda, Tanzania), North America (Mexico) (Ryvarden 1979, Hjortstam et al. 1993).

Pycnoporus puniceus (Fr.) Ryvarden, Norw. J. Bot. 19: 236, 1972

Localities – Under old wood bridge, Satun Province, Tammalung Port, 19 August 2006, R. Choeyklin, BBH 17820.

Substrate and distribution – On deciduous wood (Ryvarden & Johansen 1980); Africa (Angola, Ghana, Nigeria, Zaire), Asia (India, Malaysia), Oceania (New Caledonia) (Ryvarden & Johansen 1980).

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

Localities – On dead wood (dicot), Nakhon Ratchasima Province, Khao Yai National Park, 5 October 2006, R. Choeyklin, BBH 19113; on dead wood, Nakhon, Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karome Waterfall, 10 October 2006, R. Choeyklin, BBH 19807.

Substrate and distribution – On Indian oak, old hymenophores of a species of *Tyromyces* attached to a dead poplar trunk, on dead deciduous and coniferous wood (Murrill 1907b, 1920, Bakshi 1971, Ryvarden & Johansen 1980); Africa, Asia (India), Europe, North America (Canada, USA) (Bakshi 1971,

Murrill 1907b, 1920, Ryvarden & Johansen 1980).

Trametes daedaleoides Corner, Beihefte zur Nova Hedwigia 97: 93, 1989

Localities – On dead wood, Satun Province, Khuan Don District, Thale Ban National Park, Rani Waterfall, 19 August 2006, R. Choeyklin, BBH 19379.

Substrate and distribution – On dead fallen trunk in the forest; Asia (Malaysia) (Corner 1989b).

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

Localities – On dead oil palm (*Elaeis guineensis*) petiole, Trang Province, Huai Yot District, Ban Sai Bo Village, 5 April 2006, R. Choeyklin, BBH 19941.

Substrate and distribution – On dead wood (Ryvarden & Johansen 1980); Oceania (Australia), Central Africa (Kenya, Zaire, Zimbabwe), Central America, South America, South Asia (Fidalgo & Fidalgo 1968, Ryvarden & Johansen 1980).

Trametes pocas (Berk.) Ryvarden, Mycotaxon 20: 351, 1984

Localities – On rotten banana stem, Nan Province, Bo Kluea District, Sobmang-Nabong Village, Huai Pla Pung Waterfall, 20 September 2005, R. Choeyklin, BBH 18750; on dead wood, Nakhon Si Thammarat Province, Phrom Khiri District, Ban Khiriwong Village, 11 October 2006, R. Choeyklin, BBH 19184; BBH 19188; BBH 19198; on oil palm (*Elaeis guineensis*), Trang Province, Huai Yot District, Ban Sai Bo Village, 24 January 2006, R. Choeyklin, BBH 19951.

Substrate and distribution – On deciduous wood and hardwoods (Núñez & Ryvarden 2001, Ryvarden & Johansen 1980); Asia (China, Japan, Taiwan), East Africa (Burundi, Ethiopia, Kenya, Malawi, Rwanda, Tanzania, Zaire, Zambia, Zimbabwe), Far East Russia (Ryvarden & Johansen 1980, Núñez & Ryvarden 2001).

Tyromyces corticicola Corner, Beih. Nova Hedwigia 96: 166, 1989

Localities – On dead bark, Satun Province, Khuan Don District, Thale Ban National Park, Rani Waterfall, 19 August 2006, R. Choeyklin, BBH 17836; BBH 18765.

Substrate and distribution – On bark of living trees of *Eusideroxylon zwageri* (Lauraceae); Asia (Malaysia), Oceania (Solomon Islands) (Corner 1989a, Hattori 2002, 2003).

Russulales, Bondarzewiaceae

Steccherícium seriatum (Lloyd) Maas Geest., Verh. K. Ned. Akad. Wet., 2 Sectie 69, 325, 1966

Localities – On dead wood, Nakhon Si Thammarat Province, Lan Saka District, Khao Luang National Park, Karom Waterfall 10 October 2006, R. Choeyklin, BBH 19789.

Substrate and distribution – On *Quercus* sp., bark of dead stems and stumps of *Beilschmiedia tawa*, *Casuarina* sp., *Leptospermum ericoides*, *Litsaea calicaris* (Cunningham 1958, Ginns & Lefebvre 1993); Asia (Indonesia, Malaysia, the Philippines), Australia, New Zealand, North America (USA) (Cunningham 1958, Geesteranus 1971, Ginns & Lefebvre 1993).

Lachnocladiaceae

Asterostroma andinum Pat., Bull. Soc. Mycol. Fr. 9: 133, 1893 Figs 28–32

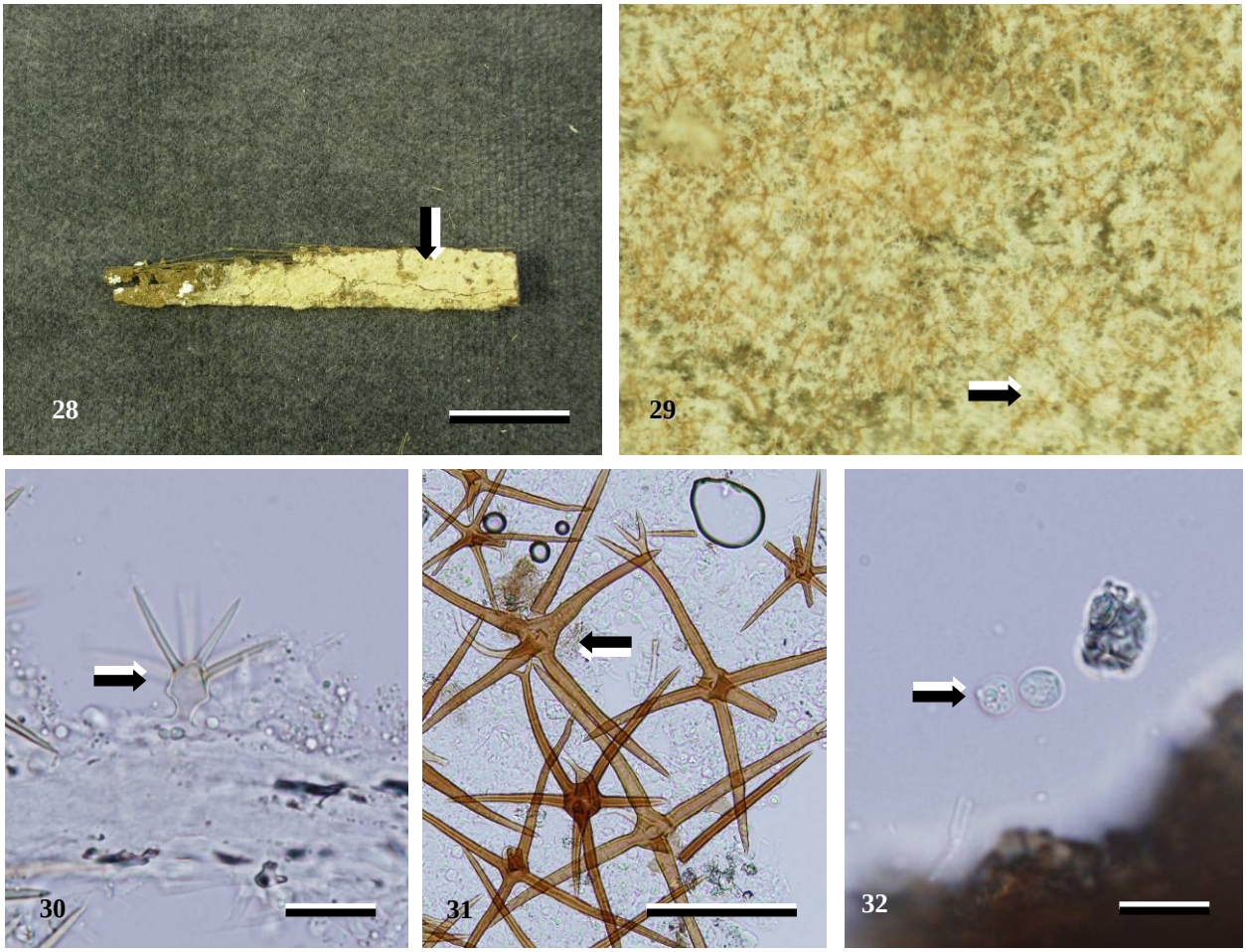
Localities – On dead palm (*Arenga pinnata*) leaf, Krabi Province, Than Bok Khorani National Park, 26 January 2006, R. Choeyklin, BBH 19923.

Substrate and distribution – On rotten wood of angiosperms and gymnosperms, *Acer* sp., *A. saccharum*, *Picea* sp., *Thuju plicata*, (Ginns & Lefebvre 1993); Asia (Japan, Sri Lanka), Oceania (Australia, New Zealand) Europe, East and West Indies, North America (Canada, USA), South America (Cunningham 1955, Ginns & Lefebvre 1993).

Scytinostroma renisporum Boidin, Lanq. & Gilles, Biblthca Mycol. 114: 97, 1987

Localities – On bamboo culms, Nakhon Nayok Province, the Wang Bon Reservoir, 29 June 2006, R. Choeyklin, BBH 19953.

Substrate and distribution – On dead wood or bark of trees; Ivory Coast (Jülich 1981).



Figs 28 – 32 – *Asterostroma andinum*. 28 Resupinate basidiocarp on leaflet of dead *Aranga pinnata*. 29 Asterosetae (arrow). 30 Young asterosetae (arrow). 31 Asterosetae (arrow). 32 Basidiospores (arrow). Bars: 38 = 1 cm; 39 (40×), 40–42 = 10 μm.

Stereaceae

Xylobolus annosus (Berk. & Broome) Boidin,Revue Mycol. 23: 341, 1958

Localities – On dead wood, Nakhon Ratchasima Province, Khao Yai National Park, 5 October 2006, R. Choeyklin, BBH 19130.

Substrate and distribution – On dead wood (Teng 1996, Dai et al. 2004); Asia (India, China), Oceania (Australia), Central America, North America (Mexico) (Teng 1996, Chamuris 1988, Dai et al. 2004).

Discussion

This study documents 54 new records of aphyllophoraceous fungi for Thailand, representing 40 genera, 13 families, and 6 orders. They were collected from several localities, but primarily from Southern Thailand.

Six species are first reported for Asia: *Epithele macarangae*, *Hymenochaete anomala*, *H. innexa*, *Hyphodontia sambuci*, *Porogramme albocincta*, and *Scytinostroma renisporum*.

Nine species have only been reported for Asia: *Amauroderma parasiticum*, *Coriolopsis glabrorigens*, *C. lacunosa*, *C. retropicta*, *Fomitella fumosipora*, *Gloeoporus sulphureus*, *Perennioporia corticola*, *P. marmorata*, and *Trametes daedaleoides*. Of these, are only recorded in Southeast Asia (Malaysia, Indonesia, Singapore and the Philippines).

Fourteen species are first recorded on the following substrata: oil palm (*Elaeis guineensis*), coconut palm (*Cocos nucifera*), mangrove palm (*Nypa fructicans*), sugar palm (*Arenga pinnata*), mangrove trees (*Avicennia alba*, *Xylocarpus* sp.), bamboo and banana stem, but most records are from oil palm. The fungal species recorded for new substrata include *Asterostroma andinum*, *Aurificaria indica*, *Epithele macarangae*, *Hymenochaete*

anomala, *H. innexa*, *Hyphodontia abieticola*, *H. sambuci*, *Inonotus patouillardii*, *Perenniporia corticola*, *Phellinus rimosus*, *Punctularia strigosozonata*, *Trametes mimetes*, *T. pocas*, and *Scytinostroma renisporum*.

Among the families, Polyporaceae is the most species rich (24 taxa) followed by Hymenochaetaceae (10 taxa). This study greatly extends our knowledge of these basidiomycetes in Thailand, and their host substratum. Four taxa were found on the culms of bamboo and nine taxa on palm materials.

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Corner EJH. 1987 – Ad Polyporaceas 4. The genera *Daedalea*, *Flabellophora*, *Flavodon*, *Gloeophyllum*, *Heteroporus*, *Irpex*, *Lenzites*, *Microporellus*, *Nigrofomes*, *Nigroporus*,*Oxyporus*, *Paratrichaptum*, *Rigidoporus*, *Scenidium*, *Trichaptum*, *Vanderbylia*, and *Steccherinum*. Beihefte zur Nova Hedwigia 86.

Corner EJH. 1989a – Ad Polyporaceas 5. The genera *Albatrellus*, *Boletopsis*, *Coriolopsis* (dimitic), *Cristelloporia*, *Diacanthodes*, *Elmerina*, *Fomitopsis* (dimitic), *Gloeoporus*, *Grifola*, *Hapalopilus*, *Heterobasidion*, *Hydnopolyporus*, *Ischnoderma*, *Loweporus*, *Parmastomyces*, *Perenniporia*, *Pyrofomes*, *Steccherícium*, *Trechispora*, *Truncospora* and *Tyromyces*. Beihefte zur Nova Hedwigia 96.

Corner EJH. 1989b – Ad Polyporaceas 6. The genus *Trametes*. Beihefte zur Nova Hedwigia 97.

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