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The Boletes of Taiwan (VI)

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ABSTRACT: Four boletes of family Strobilomycetaceae are recorded as new to Taiwan, the specimens are described and illustrated. They are *Austroboletus gracilis* (Peck) Wolfe, *Austroboletus subvirens* (Hongo) Wolfe, *Boletellus obscurecoccineus* (Hochn.) Sing. and *Boletellus emodensis* (Berk.) Sing., respectively.

KEY WORDS: *Austroboletus*, *Boletellus*, Taiwan.

INTRODUCTION

Fifty species and two varieties of boletes have been recorded from the various parts of Taiwan since 1933 (Yeh and Chen, 1980, 1981, 1982, 1983, 1985; Hongo and Chen,1985). Among them, only three species of *Boletellus*, viz. *B. anans* (Curtis) Murr., *B. mirabilis* (Murr.) Singer and *B. lignicolus* Yeh & Chen, and one species of *Strobilomyces*, viz., *S. floccopus* (Vahl : Fr.) Karst were classified to the family Strobilomycetaceae. In the present paper , we describe four new records of Strobilomycetaceous fungi found in Taiwan. Among them, the genus *Austroboletus* (Corner) Wolfe appears in the region for the first time.

MATERIALS AND METHODS

Fresh fruit bodies were collected and examined in fresh condition. Spore prints were made from segments of fruit bodies placed on white paper. Subsequently the fruit bodies were dried in warm air and deposited in the mycological lab. of the Taiwan Endemic Species Research Institute (TESRI). Conventional mycological techniques for examination of specimens were used throughout this study. Fruit bodies were sectioned with free hand and mounted in mixture of 1% aqueous phloxine and 3% KOH solution for microscopic examination.

RESULTS

1. Austroboletus gracilis (Peck) Wolfe, Bibl. Mycol. 69: 69, 1979. Figs. 1 & 5

Boletus gracilis Peck. Rep. N. Y. St. Mus. **24** : 78, 1872.

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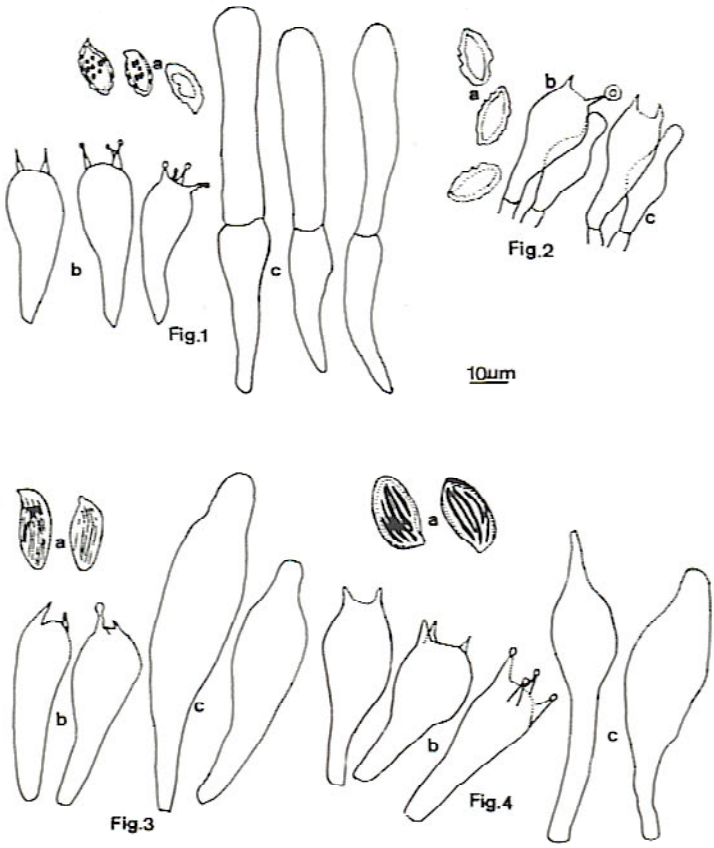

Fig. 1. *Austroboleus gracilis* (Peck) Wolfe. Fig. 2. *Austroboleus subvirens* (Hongo) Wolfe. Fig. 3. *Boletellus obscurecoccineus* (Hoehn.). Fig. 4. *Boletellus emodensis* (Berk). Singer: a: basidiospores; b: basidia; c: pleurocystidia.

Pileus 3-5 cm broad, convex to hemispheric, surface smooth to minutely tomentose and finely areolate, color chesnut brown or paler. Context soft, whitish and slightly pink, color unchanging when bruised, slightly bitter in taste. Tubes 0.7-1.5 cm long, strongly depressed around stipe, whitish, becoming brown pink to vinaceous. Pores circular to angular, 0.5-1.5 mm broad, whitish to silvery vinaceous. Stipe 5-12 cm long, 7-10 mm broad, slender tapered toward apex, quite bulbous at base up to 1.5-3.0 cm thick, solid, often bent, surface finely pruinose velvety, granular in appearance and often conspicuously striate, the striae sometimes anastomosing, concolorous with pileus or paler, with whitish mycelium around base. Spore print rosy brown. Spores 7-9.5 x 6.5-8.5 μm, fusiform-elliptical, with finely punctate in face view. Basidia 42-48 x 14-15 μm, clavate, sterigmata two or four, 6-8 μm long, Pleurocystidia 44-64 x 8-18 μm, clavate, hyaline and thin-walled. Tube trama of phylloporoid type.

Habitat: Solitary under conifers and broad-leaved forest, mostly growing with *Quercus Pinus*, *Tsuga*, *Betula*, etc.
Distribution: Taiwan, China (Yunnan, Tibet), Japan, New Guinea.

Taichung: Pahsienshan, alt. 1150 m, June 22, 1995. *Huang Hsiu-Wen (1236).*

2. Austroboletus subvirens (Hongo) Wolfe, Bibl. Mycol. **69**: 125, 1979. Figs. 2 & 6

Porphyrellus subvirens Hongo, Acta Phytotaxon. Geobot. **18**: 110, 1960.

Pileus 4-8 broad, hemispheric to convex, surface somewhat pruinose to velvety, margin incurved when young with narrow sterile belt, viscid when wet, dark green or olivaceous in youth, then green tinged yellowish in age, surface often cracked and becoming rimose-areolate. Context white, soft, bitter in taste. Tubes depressed around stipe, white at first then purple brown tinged red in age. Pores circular to angular, 0.5-1 mm broad, whitish tinged green at first then becoming concolorous with tubes. Stipe 4-11 cm long, 5-1.5 cm thick, subequal or equal, surface yellowish with raising longitudinal reticula, reticulum green to olivaceous and viscid when wet, with white mycelium around base. Spore print vinaceous brown. Spores 13-19 x 6-8 μm, fusiform in face view, with warts and ridges on surface. Basidia 32-38 x 14-18 μm, clavate, sterigmata 2 or 4, 4-5 μm long. Pleurocystidia 23-30 x 9-11 μm , ventricose or fusoid-ventricose. Tube trama of phylloporoid type.

Habitat: Scattered under *Cyclobalanopsis glauca* (Thunb.) Oerst. forest.
Distribution: Taiwan, China (Fanjing, Yunnan), Japan, New Guinea.

Taichung: Takeng, alt. 750 m, June 7, 1995. *Huang Hsiu-Wen (1169).*

3. Boletellus obscurecoccineus (Hoehn.) Sing., Farlowia **2**: 127, 1945. Figs. 3 & 7

Boletus obscurecoccineus Hoehn., Sitzungsber. Akad. Wiss. Wien **123**(1): 88, 1914.

Pileus 3-7 cm broad, convex to applanate, crimson carmine at first then becoming pink, subtomentose, minutely cracking towards the margin. Context yellowish, color unchanging when bruised, bitter in taste. Tubes depressed around stipe, pale yellowish, becoming olivaceous in age. Pores angular, 0.5-1 mm broad, concolorous with tubes. Stipe 4-8 cm long, 0.6-1.2 cm broad, cylindric, tapered toward apex, often flexuous, solid, pale primose yellow at the apex and with carmine fibrils and scurfy warts on the surface, with whitish mycelium around base. Spore print pale ochraceous brown. Spores 18-22 x 8-9.5 μm, elliptical, surface with 7-9 faintly longitudinally striae on each face. Basidia 54-61 x 18-21 μm, elongately clavate, sterigmata 2, 6 μm long. Pleurocystidia 60-130 x 19-23 μm , ventricose, apex obtuse. Tube trama of phylloproid type.

Habitat: Solitary under mixed forest.
Distribution: Taiwan, China (Guizhou), Borneo, Jawa, New Guinea, Congo.

Nantow: Shanlinhsi, alt. 1750m, June 17, 1994. *Chen Chien- Ming(1229)*; **Miaoli**: Leh-Shan, alt. 2080 m, Sept. 5, 1996. *Liao Kuo-Farn (2).*

4. Boletellus emodensis (Berk.) Sing., Ann. Mycol. **40**: 18, 1942. Figs. 4 & 8

Boletus emodensis Berk., Hook. Journ. Bot. **3** : 48. 1851.
Boletellus floriformis Imazeki, Nagoa **2** : 42, 1952.

Fig. 5. *Austroboleus gracilis*. Fig. 6. *Austroboleus subvirens*. Fig. 7. *Boletellus obscurecoccineus*. Fig. 8. *Boletellus emodensis*.

Pileus 4.5-8 cm broad, convex to plano-convex, surface dry, tomentose then cracked into subpyramidal floccose scales, dull crimson to rose pink, fading to pale fawn in age, margin stellate with remnants of false veil. Context 7-1.1 mm thick in the centre of the pileus, yellowish, soft, quickly change to blue when cut or bruised. Tubes 7-14 mm thick, strongly depressed at stipe, yellow, becoming olivaceous brown in age. Pores angular, 1-2 mm broad, yellow to brownish pink, quickly cyanescent when bruised. Stipe 5-10 cm long, 0.8-1.3 cm thick, solid, subcylindric, with whitish mycelium around enlarged base, surface fibrous, fading fuscous from the base upwards and apex yellowish. Spore print olivaceous brown. Spores 22-24 x 12-13.5 μm , boletoid elliptical with longitudinal oblique striae. Sterigmata two or four, 6 μm long. Cystidia 62-95 x 17-19 μm, ventricose with a subcylindric appendage or obtuse apex. Tube trama of phylloporoid type.

Habitat: Scattered under *Pinus*, *Castanopsis* etc.
Distribution: Taiwan, China (Guangxi, Yhainan Island, Yunnan, Tibet), Japan, India, Borneo.

Nantou: Sun Moon Lake, alt. 800m, Aug. 23. 1994. *Huang Hsiu-Wen (715)*.

DISCUSSION

Corner (1972) substituted subgen. *Austroboletus* for sect. Graciles (Singer) that was classified to genus *Porphyrellus* previously. Nevertheless *Austroboletus* resembles *Strobilomyces* in spore, *Boletellus* in pileus, and *Heimiella* in tube-trama. Thus Wolf (1979) proposed genus *Austroboletus*, based on the result of EM scanning observation. Its fruit bodies have a well developed marginal veil, a long lacunose-reticulate stem and boletoid tube-trama. Its spores are vinaceous pink to purple brown or chocolate in the mass; they are fusiform-amygdaloid and show a certain amount of compression. They have a hyaline exospore and coloured endospore with conical warts or a close reticulation, apiculus 0.3-0.5 μm long.

Corner (1972) had explained that smooth boletoid spore has evolved from the ornamented one and *Austroboletus* is a transition between the twos. In this paper, the spores of *A. gracilis* and *A. subvirens* almost entirely ornamented but with smooth adaxial patch. There is a reasonable proof for Corner's suggestion here. *A. subvirens* has been found that symbiotic associations among *Castanopsis* Spach., *Quercus* L. and *Lithocarpus* Bl.. Horak (1980) had predicted that this species should happen in China according to its ecological surroundings. Therefore it was known from China (Zang, 1985). Now it is found to extends southward to the central part of Taiwan.

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臺灣之網孔蕈類(六)

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摘　　要

本文報導在台灣首次發現的四種疣孢牛肝菌科新紀錄種，分別是細網南牛肝菌(*Austroboletus gracilis* (Peck) Wolfe)、淡綠南牛肝菌 (*Austroboletus subvirens* (Hongo) Wolfe)、暗紅條孢牛肝菌 (*Boletellus obscurecoccineus* (Hoehn.) Sing.) 和猩紅條孢牛肝菌 (*Boletellus emodensis* (Berk.) Sing).

關鍵詞：南牛肝菌屬，條孢牛肝菌屬，台灣。

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