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Fungal flora of Ullung Island (V)
—on additional agaric fungi—

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울릉도의 균류상 (V)
—기타 주름버섯류에 대하여 —

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ABSTRACT: Some additional fungi were collected during two field trips to Ullung Island in July and September of 1992. Through the observation of agaric fungi, 36 mushrooms were identified to the species or subspecies and are listed below. Among them, three species and one subspecies, *Mycena luteopallens, Mycena macrocystidiata, Amanita hemibapha* ssp. *similis*, and *Pluteus petasatus*, were confirmed new to Korea and are registered here with descriptions.

KEYWORDS: Ullung Island, agaric fungi

Following the fourth report (Jung, 1993) of "Fungal flora of Ullung Island" series, some additional miscellaneous agaric fungi were collected through two field trips to Ullung Island of the Gyungsangbuk-do, which were made for 3 days in July and 4 days in September of the year 1992 along the Cheonbu to Seonginbong course of Buk-myeon, the Namyang and Taehwa areas of Seo-myeon, and the Do-dong to Seonginbong course of Ullung-eup.

A total of 84 collected fungi were examined, and about three fourths which counted 66 specimens were identified to the species. The rest of the fungi were reserved for later works. For the observation of specimens, laboratory techniques of Largent *et al.* (1977) and microscopic methods of Jung (1987) were employed. Total identified fungi amounted to 11 families, 21 genera, 35 species, and 1 subspecies. Among them, 1 family, 10 genera, 26 species, and 1 subspecies were newly added to the previous list of the fourth report (Jung, 1993), and three species and one subspecies, *Mycena luteopallens, Mycena macrocystidiata, Amanita hemibapha* ssp. *similis*, and *Pluteus petasatus*, were confirmed new to Korea and are presented here with Korean names and English and Korean descriptions.

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Taxonomy

The agaric fungi treated here belong to 21 genera in 11 families of the order Agaricales, and the genera studied were *Pleurotus* in the Pleurotaceae, *Crepidotus* in the Crepidotaceae, *Clitocybe, Collybia, Laccaria, Mycena, Oudemansiella,* and *Xeromphalina* in the Tricholomataceae, *Hygrocybe* in the Hygrophoraceae, *Amanita* in the Amanitaceae, *Pluteus* in the Pluteaceae, *Psathyrella* in the Coprinaceae, *Naematoloma* and *Pholiota* in the Strophariaceae, *Cortinarius, Hebeloma,* and *Inocybe* in the

Table 1. List of agaric fungi of Ullung Island.

Family	Scientific name	References
Pleurotaceae		
	Pleurotus ostreatus	1[a], 3[c], 4[d]
	Panus rudis	2[b]
	Panus tigrinus	3
Crepidotaceae		
	Crepidotus badiofloccosus	3
	Crepidotus geophilus	3
	Crepidotus mollis	4
Tricholomataceae		
	Armillariella mellea	2, 3
	Clitocybe clavipes	4
	Clitocybe decastes	2
	Clitocybe infundibuliformis	2
	Collybia butyracea	4
	Collybia confluens	4
	Collybia dryophila	4
	Collybia maculata	2, 4
	Flammulina velutipes	2
	Laccaria amethystea	4
	Laccaria laccata	3, 4
	Laccaria vinaceoavellanea	3, 4
	Lepisda nuda	3
	Marasmius maximus	3
	Marasmius siccus	1
	Mycena carolinensis	3, 4
	Mycena elegans	3, 4
	Mycena haematopoda	3
	Mycena luteopallens	4
	Mycena macrocystidiata	4
	Mycena pura	2
	Oudemansiella pudens	4
	Oudemansiella radicata	3, 4
	Panellus stipticus	3
	Strobilurus stephanocystis	3
	Tricholoma colossus	2
	Tricholoma robustum	2
	Xeromphalina campanella	3, 4
Hygrophoraceae		
	Hygrocybe cantharellus	3
	Hygrocybe coccinea	4
	Hygrocybe flavescens	4
	Hygrophorus russula	2
	Hygrophorus subcinnabarinus	2
Amanitaceae		
	Amanita hemibapha ssp. *similis*	4
	Amanita pantherina	1, 3
	Amanita verna	4
Lepiotaceae		
	Lepiota alborubescens	2
Pluteaceae		
	Pluteus depauperatus	4
	Pluteus petasatus	4
Coprinaceae		
	Coprinus atramentarius	2
	Coprinus comatus	3
	Coprinus disseminatus	2, 3
	Coprinus micaceus	3
	Panaeolus papilionaceus	2
	Psathyrella candolleana	4
	Psathyrella velutina	2
Bolbitiaceae		
	Conocybe lactea	2
	Agrocybe arvalis	2
Strophariaceae		
	Kuehneromyces mutabilis	2, 3
	Naematoloma fasciculare	2, 3, 4
	Pholiota spumosa	4
	Pholiota squarrosa	2
	Pholiota squarrosoides	2
	Stropharia aeruginosa	2
Cortinariaceae		
	Cortinarius multiformis	2
	Cortinarius pseudopurpurascens	3
	Cortinarius pseudosalor	4
	Cortinarius variecolor	2
	Dermocybe cinnamomea	3
	Hebeloma crustuliniformis	4
	Inocybe cookei	4
	Inocybe lacera	3
	Inocybe umbratica	4
Russulaceae		
	Lactarius piperatus	1
	Lactarius volemus	4
	Russula cyanoxantha	2, 4
	Russula emetica	1, 3, 4
	Russula foetens	1
	Russula senecis	4
	Russula sp.	2
Boletaceae		
	Boletus edulis	1
	Boletus pulverulentus	2
	Chalciporus piperatus	4
	Suillus bovinus	2, 3
	Suillus granulatus	2, 3
	Suillus grevillei	3
	Xerocomus astraeicola	4

[a] from Lee (1959), [b] from Hong and Jang (1981), [c] from Jung (1993), and [d] from this study. Old synonyms were not renewed and scientific names were cited as they appeared in references. Total enumerated taxa were 14 families, 40 genera, 82 species, and 1 subspecies.

Cortinariaceae, *Lactarius* and *Russula* in the Russulaceae, and *Chalciporus* and *Xerocomus* in the Boletaceae.

The genus *Schizophyllum* once treated in the Agaricales was listed under the Schizophyllaceae of the Aphyllophorales in the third report (Jung, 1992). For the taxonomy and descriptions of identified taxa, the system of Singer (1986) was followed and the classification of Moser (1978) was generally employed. The floral studies of Smith (1947) and Ito (1959) were very useful for the detailed identification of specimens. The colored illustrations of Breitenbach and Kränzlin (1991), Imazeki and Hongo (1965, 1987), and Imazeki *et al.* (1988) were frequently consulted for confirmation and the guide books of Arora (1986) and Linkoff (1981) were often cited for remarks. And for color descriptions of unrecorded species, the notations of Methuen handbook of colour (Kornerup and Wanscher, 1978) were used within parentheses right after color names.

In the past, Lee (1959) first reported 7 agaric species from Dagelet Island (=Ullung Island) and, 22 years later, Hong and Jang (1981) surveyed the island and listed 30 agaric species. And then Jung reported 30 species in 1993 and again added 26 species and 1 subspecies out of 36 mushrooms to them in this report. Excluding the species numbers counted more than twice before, total confirmed taxa of agaric fungi amounted to 14 families, 40 genera, 82 species, and 1 subspecies (Table 1).

Pleurotaceae 느타리과

1. *Pleurotus ostreatus* (Jacq.: Fr.) Kummer 느타리

Habitat : gregarious on broken and rotten decorticated stump of *Fagus crenata* var. *multinervis*.

Remarks : This mushroom can be easily identified by its white gills, tender flesh, smooth cap, and shelf-like growth on wood and was reported as a rather common one in Ullung Island especially on dead *Fagus crenata* var. *multinervis* (Jung, 1993).

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920707-7.

Crepidotaceae 귀버섯과

2. *Crepidotus mollis* (Schaeff.: Fr.) Kummer 젤리귀버섯

Habitat : gregarious on fallen decorticated *Tilia insularis*.

Remarks : This species seems not to be uncommon in the island and has fan-shaped fruitbodies, gelatinous texture when wet, and brown spores as its main characters.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-37-1, 920911-37-2, 920911-40-1, 920911-40-2.

Tricholomataceae 송이과

3. *Clitocybe clavipes* (Pers.: Fr.) Kummer 배불뚝이깔대기버섯

Habitat : scattered on humus under *Pinus densiflora*.

Remarks : This species is easily recognized in the field by its depressed or funnel-shaped fruitbodies of grayish brown color with a club-shaped stipe. The SNU specimen has larger spores (7.5−9.5×5−7 μm) which do not agree with those of descriptions.

Specimens : between the log-mud house of Nari Basin and Virgin Forest rest place, Buk-myeon, SNU 920911-27.

4. *Collybia butyracea* (Bull.: Fr.) Quél. 버터애기버섯

Habitat : gregarious to caespitose on humus under *Pinus densiflora*.

Remarks : This species is often confused with *C. dryophila* but has slippery surface when moist, somewhat larger fruitbodies, and apparently thicker stipes.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-3.

5. *Collybia confluens* (Pers.: Fr.) Kummer 밀애기버섯

Habitat : gregarious or often caespitose on hu-

mus of fallen leaves.

Remarks : This mushroom is separated from *C. butyracea* and *C. dryophila* by the reddish brown stipes with fine pubescent hairs and fruitbodies of hygroscopic nature like *Marasmius* (Arora, 1986).

Specimens : along the mountain ridge trail to Seonginbong from the direction of Do-dong, Ullung-eup, SNU 920911-50-1, 920911-50-2.

6. *Collybia dryophila* (Bull.: Fr.) Kummer 애기버섯

Habitat : scattered, gregarious, or frequently caespitose on humus of fallen leaves, pine needles, buried twigs, and rotten cones.

Remarks : This *Collybia* is one of the most common mushrooms in the area of Nari Basin of the island and is often found in abundance forming rings in the woods of both hardwoods and conifers.

Specimens : between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-17, 920911-21, 920911-25-1, 920911-25-2, 920911-25-3.

7. *Collybia maculata* (Alb. et Schw.) Quél. 점박이애기버섯

Habitat : Solitary, scattered, or gregarious on humus under *Pinus densiflora.*

Remarks : As one of mushrooms forming fairy rings in woods (Imazeki *et al.*, 1988), this mushroom is comparatively large for a *Collybia* and has a number of varieties in color and spores (Arora, 1986).

Specimens : between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-20-1, 920911-20-2.

8. *Laccaria amethystea* (Bull.) Murr. 자주졸각버섯

Habitat : gregarious on buried rotten cones of *Pinus parviflora.*

Remarks : Distant purple gills and tough fibrous stipes are main characters of the species in the field. The SNU specimen has a curious habitat on buried rotten cones of *Pinus parviflora* near the Communal Habitat of *Tsuga sieboldii, Pinus parviflora,* and *Fagus crenata* var. *multinervis* in Seo-myeon and deserves more examination.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-8-1, 920910-8-2.

9. *Laccaria laccata* (Scop.: Fr.) Berk. et Br. 졸각버섯

Habitat : scattered or gregarious on humus to sandy soil by trails.

Remarks : As a cosmopolitan species, this mushroom occurs most frequently in the island, especially around Nari Basin, and is really variable in shape and color but always has thick distant gills and a tough fibrous stipe.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-6; between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU920911-18, 920911-26; between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920911-35-1, 920911-35-2.

10. *Laccaria violaceoavellanea* Hongo 색시졸각버섯

Habitat : scattered on sloped soil by the trail.

Remarks : *L. laccata* looks alike in appearance but *L. violaceoavellanea* has a fading color when dry and radial grooves on the surface of the pileus.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-42.

11. *Mycena carolinensis* Smith et Hesler 큰애주름버섯

Habitat : solitary on rotten wood of a broken *Ulmus laciniata* trunk.

Remarks : This species is somewhat large and short for a *Mycena* of the island and rather looks like a *Collybia* in general but microscopically agrees very well with the literature of Smith (1947).

Specimens : below Seonginbong, SNU 920707-9-1.

12. *Mycena elegans* (Fr.) Quél. 긴대애주름버섯

Habitat : scattered on humus of fallen leaves and pine needles.

Remarks : This *Mycena* was reported as one of the most common species throughout the island (Jung, 1993) and usually occurs under hardwoods or conifers by trails.

Specimens : between Namseo-ri and Taehwa

Pass, Seo-myeon, SNU 920910-2; between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-15.

13. *Mycena luteopallens* (Pk.) Saccardo, Syll. Fung., 9: 37, 1891. 너도애주름버섯 (新稱)

Pileus 6−10 mm broad, initially ovoid, soon conic to campanulate, orange (5A7, 5B7) to orange yellow (4A7, 4B7), vivid, hygrophanous, fading to yellowish, margin decurved but strongly incurved on drying; surface hoary but becoming glabrous, translucent-striate when moist, wrinkled-striate when dry; flesh pallid, thin and somewhat pliant; gills light orange (5A4) to light yellow (4A4), adnate to adnexed, subdistant, somewhat broad, pruinose (lens); stipe 6−9 cm long, 1−2 mm thick, equal, terete, tubular, flexuous, concolorous with the pileus and pruinose toward the apex, grayish yellow (4B3) and downy to woolly toward the base.

Spores 7.5−9.5×4−5.5 μm, ellipsoid, smooth; basidia 20−30×7−9 μm, subclavate to clavate; pleurocystidia 60−85×10−16 μm, abundant, lageniform usually with a curved pedicel, projecting up to 35 μm; cheilocystidia 50−60×12−16 μm, abundant, ventricose to elongate-fusiform, projecting up to 25 μm; gill trama interwoven, homogeneous.

갓은 크기 6−10 mm, 처음에는 卵形, 곧 圓錐形에서 鐘形, 오렌지色에서 오렌지 黃色, 밝고 濕性, 나중에는 淡黃色으로 퇴색, 갓주변은 下向이며 건조하면 內屈性; 표면은 백색 솜털狀이나 平滑해지고 습하면 半透明線을 띠나 건조하면 條線을 띰; 肉은 淡色, 얇고 彈性; 주름살은 옅은 오렌지色에서 淡黃色, 바른주름살 내지 올린주름살, 다소 성긴 편이며 비교적 넓고 微粉狀 (lens); 대는 길이 6−9 cm, 두께 1−2 mm, 均等, 圓柱形, 속은 비어 있고 屈曲性, 갓과 같은 색이며 上部는 微粉狀, 基部는 灰黃色에 솜털 내지 絨毛狀.

胞子는 크기 7.5−9.5×4−5.5 μm, 楕圓形, 표면은 平滑; 擔子柄은 크기 20−30×7−9 μm, 準곤봉형에서 곤봉형; 側囊狀體는 크기 60−85×10−16 μm, 풍부, 호리병박形에 基部는 보통 屈曲, 표면에서 35 μm까지 돌출; 緣囊狀體는 크기 50−60×12−16 μm, 풍부, 腹形에서 長紡錘形, 표면에서 25 μm까지 돌출; 주름살 組織은 혼합형, 同質.

Habitat : gregarious on buried particles of beechnuts between exposed roots of *Fagus crenata* var. *multinervis*.

Remarks : This elegant *Mycena* was found in a group of four mushrooms on buried remains of small beechnut particles under a big tree of *Fagus crenata* var. *multinervis*. It has a vivid orange color when fresh and microscopically has conspicuous cystidia of ventricose to lageniform shapes (Smith, 1947).

Specimens : between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920707-4.

14. *Mycena macrocystidiata* Singer, Ann. Myc., 34: 430, 1936. 소녀애주름버섯 (新稱)

Pileus 1−2.5 cm broad, conic, becoming obtuse and expanded, bronze brown (5E5) to mouse gray (5E3), subhygrophanous, fading to grayish brown (5D3), margin plane; surface hoary but becoming glabrous, somewhat translucent-striate when moist, often wrinkled-striate almost to the disc; flesh pallid, thin and fairly pliant; gills white at first, yellowish white (3A2, 4A2) to yellowish gray (4B2) later, adnate or with a decurrent tooth, close at first but subdistant when expanded, moderately broad and becoming ventricose on aging, pruinose (lens); stipe 2.5−5 cm long, 2 mm thick, equal or compressed, tubular, straight, pliant but fragile, light brown (5D4), fading to grayish brown (5D3), yellowish gray (4B2) when old, longitudinally striate, hoary toward the apex but becoming glabrous, strigose at the base.

Spores 7−9×5−6.5 μm, ellipsoid, smooth, amyloid; basidia 25−30×8−9.5 μm, clavate, clamped at the base; pleurocystidia 70−85×11−16 μm, abundant, subcylindric to ventricose, projecting up to 45 μm; cheilocystidia fusoid ventricose or similar but shorter, up to 70 μm long; gill trama interwoven, homogeneous.

갓은 크기 1−2.5 cm, 圓錐形에서 곧 中央볼록한 扁平形을 형성, 青銅褐色에서 쥐灰褐色, 準濕性, 나중에는 淡灰褐色으로 퇴색, 갓주변은 扁平; 표면은 백색 솜털狀이나 平滑해지며 습하면 半透明線을 띠고 종종 中央部까지 條線을 띰; 肉은 淡色, 얇고 彈性; 주름살은 백색, 나중에는 淡黃色에서 淡灰色, 바른주름살 내지 홈주름살, 처음에는 조밀하나 갓이 펴지면서 다소 성긴 편, 다소 넓은 편이고 차츰 腹

形으로 변하며 微粉狀 (lens); 대는 길이 2.5－5 cm, 두께 2 mm, 均等 또는 납작形, 管狀, 直線形, 彈力이 있으나 부서지기 쉬움, 淡褐色, 灰褐色으로 퇴색, 나중에는 灰黃色, 길이로 縱線, 上部는 솜털狀이나 平滑해지며 기부는 粗毛狀.

胞子는 크기 7－9×5－6.5 μm, 楕圓形, 표면은 平滑, 아밀로이드性; 擔子柄은 크기 25－30×8－9.5 μm, 곤봉형, 基部에 클램프 존재; 側囊狀體는 크기 70－85×11－16 μm, 풍부, 準圓筒形 내지 腹形, 표면에서 최고 45 μm 돌출; 緣囊狀體는 紡錘腹形 내지 側囊狀體와 유사하나 길이가 짧음, 표면에서 최고 70 μm까지 돌출; 주름살 組織은 혼합형, 同質.

Habitat : gregarious to caespitose on a broken rotten stump of *Alnus*.

Remarks : This species was described mostly on the basis of its large cystidia by Singer (Smith, 1947) and the SNU specimen also has abundant typical cystidia. *M. stipata* (=*M. alcalina*) is very similar to this species but has smaller fusiform cystidia.

Specimens : between the log-mud house of Nari Basin and Virgin Forest rest place, Buk-myeon, SNU 920911-28.

15. *Oudemansiella pudens* (Pers.) Pegler 털긴뿌리버섯

Habitat : solitary on sloped humus by trails.

Remarks : This mushroom looks alike with *O. radicata* in every respect but the dimension is much small and must be an uncommon species in the island.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-45; between the 1st and 2nd rest places, Ullung-eup, SNU 920911-56.

16. *Oudemansiella radicata* (Relhan: Fr.) Sing. 민긴뿌리버섯

Habitat : on sloped soil by the trail.

Remarks : This species seems not to be uncommon in the island (Jung, 1993) and can be easily recognized by its distant gills and long rooted stipe below the ground.

Specimens : between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920911-33.

17. *Xeromphalina campanella* (Batsch: Fr.) Maire 이끼살이버섯

Habitat : on mossy bark of *Sorbus commixta*.

Remarks : Even though this species is often mistaken for a *Mycena*, it is one of easily recognizable mushrooms and is characterized by orange decurrent gills, polished stipes, and constant habitat associated with moss.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Do-dong, Ullung-eup, SNU 920911-49.

Hygrophoraceae 벚꽃버섯과

18. *Hygrocybe coccinea* (Schaeff.: Fr.) Kummer 진빨간꽃버섯

Habitat : solitary or scattered on humus of fallen leaves.

Remarks : Due to the bright red color, this species is one of the most beautiful mushrooms. *H. punicea* is quite similar to the present species but is larger in size and has a yellow to orange stipe rather than red one.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Do-dong, Ullung-eup, SNU 920911-51.

19. *Hygrocybe flavescens* (Kauffm.) Sing. 노란대꽃버섯

Habitat : solitary or scattered on humus of fallen leaves.

Remarks : Instead of the red color of *H. coccinea*, this mushroom has a bright lemon-yellow fruitbody whose pileus is viscid when wet and becomes convex to plane often with a somewhat raised margin.

Specimens : below Seonginbong, SNU 920911-48.

Amanitaceae 광대버섯과

20. *Amanita hemibapha* (Berk. et Br.) Sacc. ssp. *similis* (Boed.) Corner et Bas, Persoonia, 2(3): 294-297, 1961. 회색달걀버섯 (新稱)

Spores 8－11.5×6.5－8 μm, broadly ellipsoid to subglobose, smooth; basidia 25－45×9－14 μm, clavate, clamped at the base; cheilocystidia 40－55×15－18 μm, somewhat common, clavate, cylindric, or pyriform, projecting about 15 μm; gill

trama homogeneous.

胞子는 크기 8－11.5×6.5－8 μm, 廣楕圓形 내지 準球形, 표면은 平滑; 擔子柄은 크기 25－45×9－14 μm, 곤봉형, 基部에 클램프 존재; 緣嚢狀體는 크기 40－55×15－18 μm, 다소 흔한 편, 곤봉형, 원통형, 또는 洋梨形; 표면에서 약 15 μm 돌출; 주름살 組織은 同質.

Habitat : solitary on sloped humus by the trail.

Remarks : As a subspecies of *A. hemibapha*, this mushroom is identical to the type subspecies, *A. hemibapha* ssp. *hemibapha*, in appearance but has a grayish brown to olivaceous brown pileus.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-43.

21. *Amanita verna* (Bull.: Fr.) Roques. 흰알광대버섯

Habitat : solitary on humus of fallen leaves.

Remarks : As one of so-called destroying angel Amanitas (Arora, 1986), this mushroom has deadly poison and its white fruitbody is morphologically typical with an annulus on the stipe and a volva at the base.

Specimens : Wildlife Reservation of Nari Basin, Buk-myeon, SNU 920911-13.

Pluteaceae 난버섯과

22. *Pluteus depauperatus* Romagnesi 살갗난버섯

Habitat : solitary on a broken exposed root of *Tilia insularis*.

Remarks : This mushroom has a fruitbody of the brownish gray color which fades to cream buff (Lee *et al.*, 1992), ovoid to globose spores, and lageniform to fusiform cystidia, and the SNU specimen also has typical spores and cystidia.

Specimens : between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920707-5.

23. *Pluteus petasatus* (Fr.) Gillet, Hyménomycètes de France, 395, 1874. 흰난버섯 (新稱)

Pileus 5.5 cm broad, plano-convex, with an obtuse umbo, white, with clay (5D5) tint due to appressed brownish scales around the disc, margin white, surface innately fibrillose to smooth, silky-shiny, striate to sulcate-striate toward the margin; flesh concolorous with the pileus, compact; gills white, then light orange (6A5), free with a collar, crowded, finely pruinose (lens); stipe 4.5 cm long, 4 mm thick, equal but somewhat thickened toward the base forming a bulb up to 7 mm broad, straight, white, fading to cream (4A3), silky-shiny, longitudinally striate, hoary toward the base but becoming glabrous, stuffed, solid.

Spores 6－7.5×4－5.5 μm, broadly ellipsoid, ovoid, to subglobose, smooth; basidia 25－30×7－8.5 μm, clavate, 4-spored but often 2-spored, clamped at the base; pleurocystidia 70－90×13－24 μm, common, fusiform to somewhat lageniform, with 3－5 hooked points, projecting up to 40 μm; cheilocystidia 30－45×14－19 μm, clavate to sphaeropedunculate, immersed or slightly projecting; gill trama interwoven, homogeneous.

갓은 크기 5.5 cm, 扁平볼록形, 중앙에 무딘 突起, 백색 바탕에 突起 주위의 淡褐色 부착비늘로 인한 淡黃土色, 갓주변은 백색; 표면은 纖維質性 平滑에 絹絲狀 광택을 띰, 갓주변으로 條線 내지 홈파인 條線; 肉은 갓과 同色이며 튼튼한 조직; 주름살은 백색, 나중에는 옅은 오렌지色, 環狀 自由形, 조밀하게 분포, 微粉狀 (lens); 대는 길이 4.5 cm, 두께 4 mm, 均等하나 基部는 7 mm 폭에 이르는 球根狀으로 팽창, 直線形, 백색에서 크림색으로 변색, 絹絲狀 광택을 띠며 길이로 縱線을 이룸, 基部는 솜털狀이나 平滑해지며 組織은 알차고 단단함.

胞子는 크기 6－7.5×4－5.5 μm, 廣楕圓形, 卵形에서 準球形, 표면은 平滑; 擔子柄은 크기 25－30×7－8.5 μm, 곤봉형, 4 胞子形에서 가끔 2 胞子形, 基部에 클램프 존재; 側嚢狀體는 크기 70－90×13－24 μm, 흔한 편, 紡錘形에서 다소 호리병박形, 頂端에 3－5개의 갈고리形 突起가 있으며 표면에서 최고 40 μm 돌출; 緣嚢狀體는 크기 30－45×14－19 μm, 곤봉형 내지 球狀자루形, 함몰 내지 다소 돌출; 주름살 組織은 혼합형, 同質.

Habitat : solitary on a decayed base of *Fagus crenata* var. *multinervis*.

Remarks : This species seems to be an uncommon *Pluteus* and has a unique whitish color by which it is differentiated from other members of the genus. *P. atricapillus* (=*P. cervinus*) is close to the present species but has brown pilei and similar cystidia of somewhat different dimension.

Specimens : between the 2nd rest place and the

mountain ridge to Seonginbong, Ullung-eup, SNU 920707-12.

Coprinaceae 먹물버섯과

24. *Psathyrella candolleana* (Fr.: Fr.) Maire 족제비눈물버섯

Habitat : gregarious to caespitose on buried twigs or wood and on buried rotten roots of *Sorbus commixta.*

Remarks : This species is known to form a species complex of great variation (Linkoff, 1981) and was frequently found during the collection trips of the year 1992 and proved to be one of most common or frequent mushrooms throughout the island. The fragile fruitbody, the color fading from honey to pale buff, and the gills turning into dark brown are sure field characters.

Specimens : between Taehwa Pass and Communal Habitat of *Tsuga sieboldii, Pinus parviflora,* and *Fagus crenata* var. *multinervis,* Seo-myeon, SNU 920910-9; 920910-9-1, 920910-9-3; between Virgin Forest rest place and Virgin Forest valley, Buk-myeon, SNU 920911-30; between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920911-31, 920911-34-2; along the mountain ridge trail to Seonginbong from the direction of Nari Basin, 920911-38-1, 920911-38-2; between the 2nd rest place and the mountain ridge to Seonginbong, Ullung-eup, 920 911-55.

Strophariaceae 독청버섯과

25. *Naematoloma fasciculare* (Hudson: Fr.) Karst. 노란다발

Habitat : caespitose on a decorticated and decayed stump of *Tilia insularis.*

Remarks : This mushroom was reported as a rare species in the island (Jung, 1993) and has bright sulphur yellow to orange yellow pilei in clusters with greenish yellow gills and dark spores.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-36.

26. *Pholiota spumosa* (Fr.) Sing. 노란갓비늘버섯

Habitat : gregarious on a buried twig of *Prunus* and a fallen trunk of *Ulmus laciniata* or at a base of a live *Acer okamotoanum.*

Remarks : The SNU specimens have exceptionally larger cheilocystidia (70−120×15−20 μm) than those of the description by Smith and Hesler (1968) and apparently has a possibility to be a species or a variety of its own.

Specimens : below Seonginbong, SNU 920707-9-2; between the 2nd rest place and the mountain ridge to Seonginbong, Ullung-eup, SNU 920707-11, 920707-13.

Corticiaceae 끈적버섯과

27. *Cortinarius pseudosalor* J. Lange 가지색끈적버섯

Habitat : solitary on humus of fallen leaves.

Remarks : This *Cortinarius* looks similar to *C. collinitus* but has an olivaceous brown to grayish brown pileus, purplish gills when young, and almond- or lemon-shaped roughened spores of slightly smaller size.

Specimens : between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-14.

28. *Hebeloma crustuliniformis* (Bull.) Quél. 무우자갈버섯

Habitat : solitary on humus under *Pinus densiflora.*

Remarks : The convex pileus with an incurved margin when young and a viscid surface when wet, the absence of a veil, and radish-like odor when fresh distinguish this poisonous mushroom from others in the field.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-7.

29. *Inocybe cookei* Bres. 단발머리땀버섯

Habitat : solitary to gregarious on humus of fallen leaves.

Remarks : This straw-colored small mushroom has ellipsoid spores inconspicuously curved in the middle and clavate to pyriform cheilocystidia up to 40 μm long, which characters are identified un-

der the microscope.

Specimens : Wildlife Reservation of Nari Basin, Buk-myeon, SNU 920911-11.

30. *Inocybe umbratica* Quél. 흰땀버섯

Habitat : solitary or scattered on humus under *Pinus densiflora.*

Remarks : This species belongs to the section *Inocybe* of the subgenus *Inocybe* (Imazeki and Hongo, 1987) and the SNU specimens also have typical *Inocybe* characters with angularly nodulose spores measuring 7−8.5×5−6 μm and apically encrusted thick-walled cystidia measuring 40−50 ×17−23 μm.

Specimens : between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-22, 920911-23.

Russulaceae 무당버섯과

31. *Lactarius volemus* (Fr.) Fr. 배빛버섯

Habitat : solitary on humus of fallen leaves.

Remarks : This milky mushroom which seems to be rare in the island has stout texture, dry orange brown pileus and stipe, and exudes copious white milk which slowly turns brown and stains wounded tissue brown.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-5.

32. *Russula cyanoxantha* (Schaeff.) Fr. 청머루무당버섯

Habitat : scattered on humus of fallen leaves.

Remarks : The pileus of this mushroom is characterized by its variable color appearing in a mixture of pinkish lilac, bluish green, green, olive, dull purple, or even yellow colors and its viscid or slippery surface which dries up soon.

Specimens : between Wildlife Reservation and the log-mud house of Nari Basin, Buk-myeon, SNU 920911-19, 920911-19-2-1, 920911-19-2-2.

33. *Russula emetica* (Schaeff.: Fr.) S. F. Gray 냄새무당버섯

Habitat : solitary on humus of fallen leaves.

Remarks : This *Russula* was reported not so uncommon in the island (Jung, 1993) but seems to be usually common in the mainland. This red mushroom is easily recognized by its color, white gills and stipe, and acrid taste.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-39-1.

34. *Russula senecis* Imai 냄새무당버섯

Habitat : solitary on humus of fallen leaves.

Remarks : This mushroom has a dirty clay-colored pileus with surface distinctly striated to the margin and globose spores with well-developed ridges.

Specimens : between Namseo-ri and Taehwa Pass, Seo-myeon, SNU 920910-1.

Boletaceae 그물버섯과

35. *Chalciporus piperatus* (Bull.: Fr.) Bataille 매운그물버섯

Habitat : gregarious on sloped soil or humus of fallen leaves by trails.

Remarks : This bolete has splitting tubes when the pileus is broken and unequal angular pores which do not stain when injured (Smith and Thiers, 1971). The SNU specimens have spores of 9−11.5×3.5−4.5 μm and pleurocystidia of 40−70×12−16 μm.

Specimens : between Virgin Forest valley and the mountain ridge to Seonginbong, Buk-myeon, SNU 920911-34-1; along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-39-2.

36. *Xerocomus astraeicola* Imaz. 먼지산그물버섯

Habitat : gregarious on sloped soil by the trail.

Remarks : This bolete has a clay-colored pileus with a velvety surface and radially arranged angular pores which stain blue when injured. Its spore size is variable and the spores of the SNU specimen have a dimension of 11.5−16 (−18)×4.5−6.5 μm.

Specimens : along the mountain ridge trail to Seonginbong from the direction of Nari Basin, Buk-myeon, SNU 920911-41.

Conclusion

Some additional agaric fungi were collected from Ullung Island through two collection field

trips in July and September of the year 1992 and were detected to the species according to the recent classification systems. They represented 35 species and 1 subspecies from 21 genera in 11 families of the Agaricales and, among them, three species and 1 subspecies were confirmed as unrecorded taxa to Korea, which were *Mycena luteopallens, Mycena macrocystidiata, Amanita hemibapha* ssp. *similis*, and *Pluteus petasatus*. There used to be five common or frequent agarics, *Pleurotus ostreatus, Laccaria laccata, Armillariella mellea, Mycena elegans*, and *Coprinus micaceus*, which were listed in the fourth report (Jung, 1993). Through the follow-up floral study on agaric fungi of the island, two more dominant species of the island, *Collybia dryophila* and *Psathyrella candolleana*, were discovered and discussed in this report. And through a reference study, the agaric mushrooms listed or reported from Ullung Island to the present including those of this report were enumerated and total recorded agaric fungi were 14 families, 40 genera, 82 species, and 1 subspecies.

摘 要

1992년 7월과 9월 2차례에 걸쳐 채집한 84점의 주름버섯류 표본을 최근의 분류체계에 따라 정리한 결과 이들 표본의 약 3/4이 최종적으로 동정되어 주름버섯목의 11과, 21속, 35종, 1아종으로 확인되었다. 그중 3종과 1아종은 국내 미기록종으로 판명되어 우리나라의 균류목록에 새로이 추가되었으며, 이들 미기록종 균류는 송이과의 *Mycena luteopallens* (新稱, 너도애주름버섯), *Mycena macrocystidiata*(新稱, 소녀애주름버섯), 광대버섯과의 *Amanita hemibapha* ssp. *similis*(新稱, 회색달걀버섯), 및 난버섯과의 *Pluteus petasatus*(新稱, 흰난버섯)이었다. "울릉도의 균류상" 제 4보에서 보고한 균류중 가장 흔한 종류는 느타리(*Pleurotus ostreatus*), 졸각버섯(*Laccaria laccata*), 뽕나무버섯(*Armillariella mellea*), 긴대애주름버섯(*Mycena elegans*), 그리고 갈색먹물버섯(*Coprinus micaceus*) 등 5종이었으며, 본 연구를 통하여 새로이 애기버섯(*Collybia dryophila*)과 족제비눈물버섯(*Psathyrella candolleana*)이 울릉도 주름버섯류의 우점종으로 추가로 확인되었다.

많은 종류의 주름버섯류들이 활엽수와 침엽수 아래의 부식토에서 자라고 있었으며 일부는 활엽수의 둥치, 밑동, 기부, 노출 뜨는 매몰 뿌리, 매몰 가지, 솔방울이나 너도밤나무 열매, 또는 이끼낀 수피에 서식하고 있었다. 목재서식 주름버섯류에는 느타리속(*Pleurotus*), 귀버섯속(*Crepidotus*), 애주름버섯속(*Mycena*), 난버섯속(*Pluteus*), 눈물버섯속(*Psathyrella*), 개암버섯속(*Naematoloma*), 및 비늘버섯속(*Pholiota*)의 균류들이 있으며, 주로 너도밤나무(*Fagus crenata* var. *multinervis*), 마가목(*Sorbus commixta*), 및 섬피나무(*Tilia insularis*)가 이들의 가장 좋은 숙주였다. 반면에 우산고로쇠(*Acer okamotoanum*)와 소나무(*Pinus densiflora*)는 깔대기버섯속(*Clitocybe*), 애기버섯속(*Collybia*), 꽃버섯속(*Hygrocybe*), 끈적버섯속(*Cortinarius*), 자갈버섯속(*Hebeloma*), 땀버섯속(*Inocybe*), 젖버섯속(*Lactarius*), 및 무당버섯속(*Russula*)과 같은 토양서식 주름버섯류의 생장에 좋은 환경을 제공하고 있었다. 육지의 주름버섯류 균류상에 비하여 울릉도의 균류 다양성은 매우 제한되어 있었으며 육지에서 가장 흔히 볼 수 있는 낙엽버섯속(*Marasmius*), 벚꽃버섯속(*Hygrophorus*), 광대버섯속(*Amanita*), 갓버섯속(*Lepiota*), 주름버섯속(*Agaricus*), 먹물버섯속(*Coprinus*), 볏짚버섯속(*Agrocybe*), 비늘버섯속(*Pholiota*), 끈적버섯속(*Cortinarius*), 땀버섯속(*Inocybe*), 외대버섯속(*Entoloma*), 무당버섯속(*Russula*), 젖버섯속(*Lactarius*), 그물버섯속(*Boletus*), 쓴맛그물버섯속(*Tylopilus*), 및 껄껄이그물버섯속(*Leccinum*)의 균류 분포는 매우 빈약하거나 전혀 없는 것으로 밝혀졌다. 울릉도에서는 일부 우점종들이 섬전역을 통하여 광범위하게 분포하는 반면에 미기록종을 포함한 일부 고유종들이 울릉도 균류상의 특징을 규정짓고 있었다.

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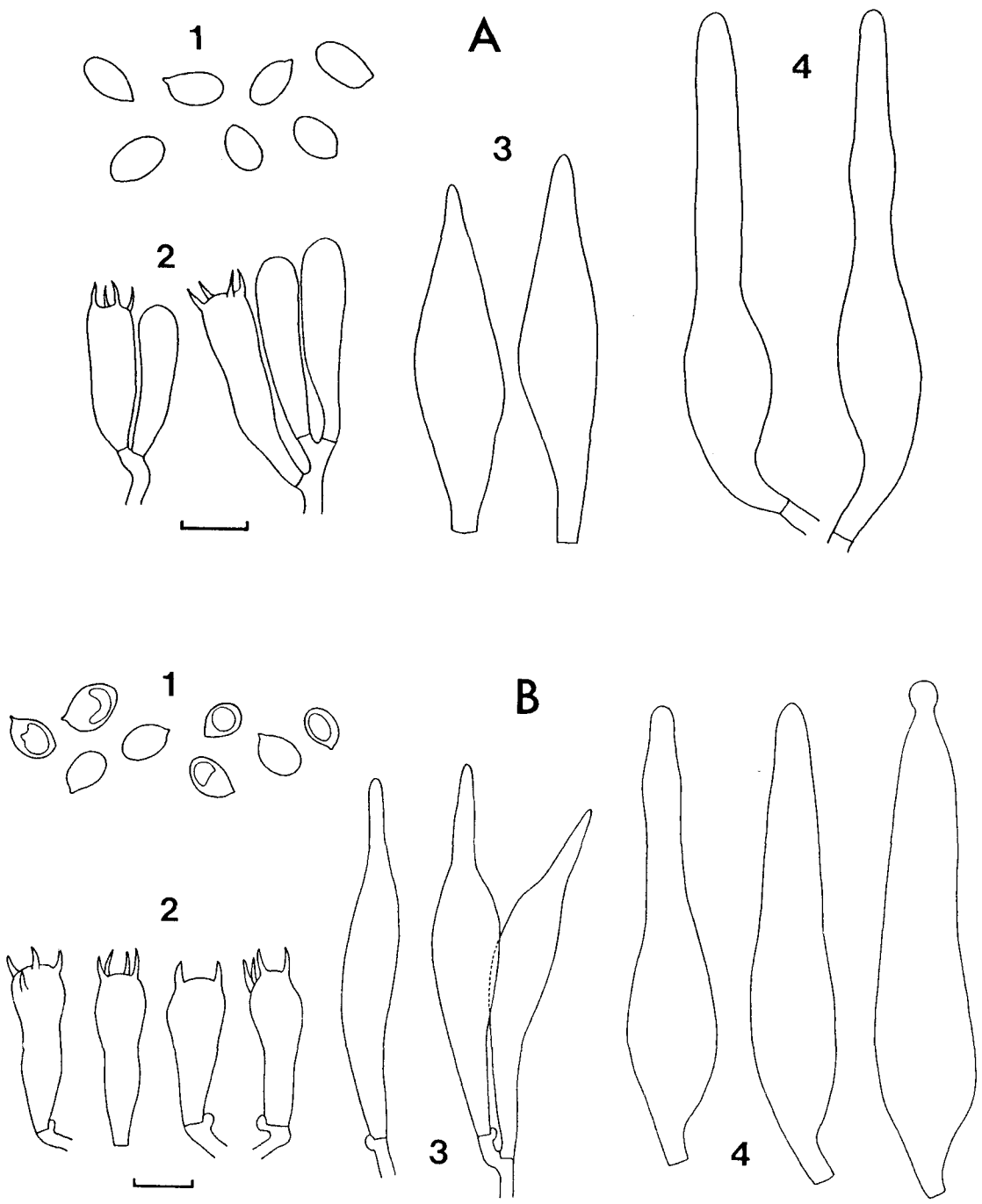

Plate 1. Microscopic structures (bars = 10 μm)
A. *Mycena luteopallens*: 1) basidiospores, 2) basidia, 3) cheilocystidia, 4) pleurocystidia
B. *Mycena macrocystidiata*: 1) basidiospores, 2) basidia, 3) cheilocystidia, 4) pleurocystidia

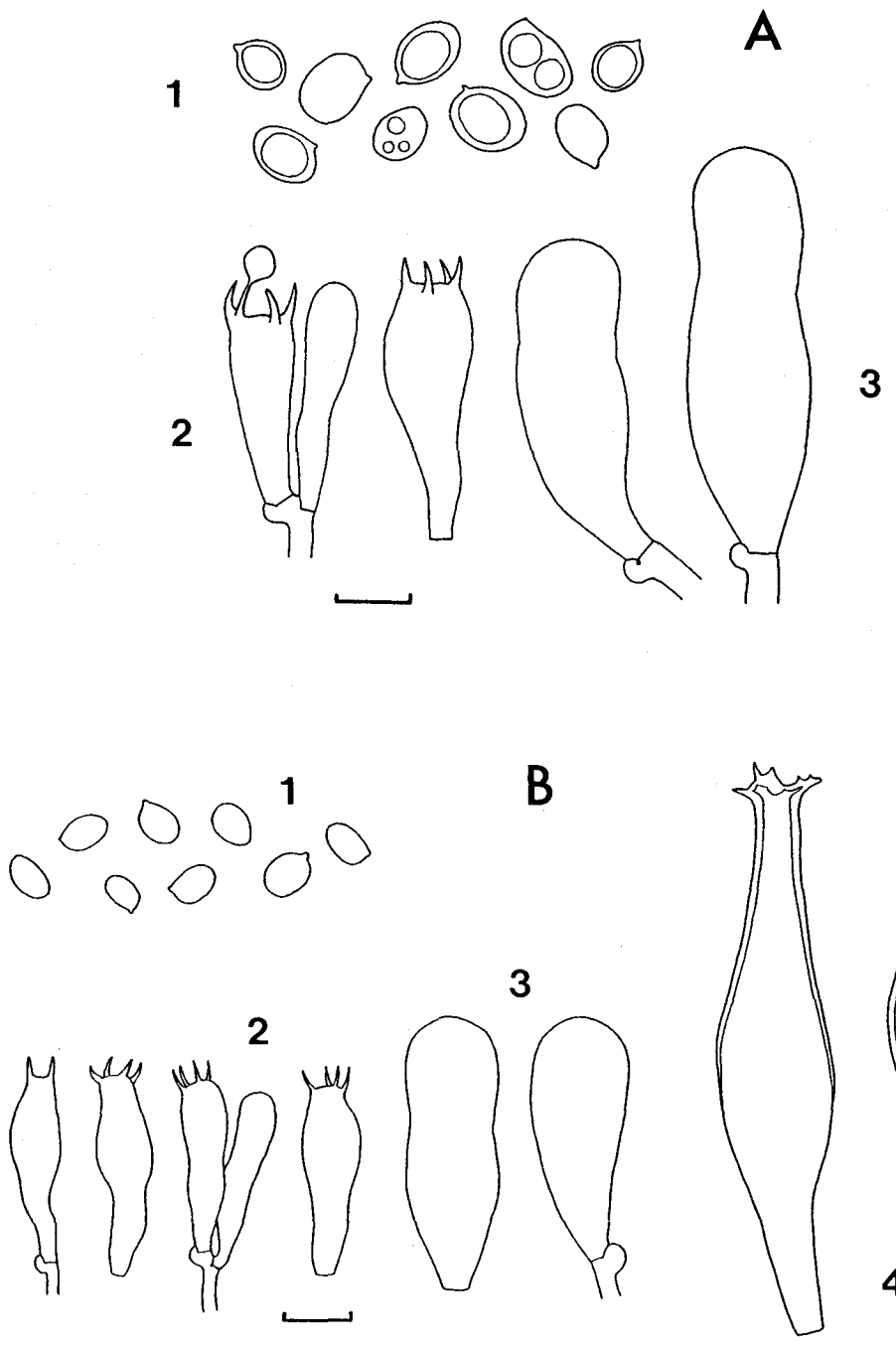

Plate 2. Microscopic structures (bars=10 μm)
A. *Amanita hemibapha* ssp. *similis*: 1) basidiospores, 2) basidia, 3) cheilocystidia
B. *Pluteus petasatus*: 1) basidiospores, 2) basidia, 3) cheilocystidia, 4) pleurocystidia