

Notes on Japanese Myxomycetes (III)

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Abstract Forty-two taxa, which were proposed as a new taxon or a new combination respectively in the book *The Myxomycete Biota of Japan* (Yamamoto, 1998), are enumerated with some taxonomic and ecological comments.

Key words: Japan, myxomycetes, taxonomy

When I summarized Japanese myxomycetes, many proposals of new taxa and new combinations became necessary for the taxonomic consistency. They have been already treated in my recently published book *The Myxomycete Biota of Japan* (Yamamoto, 1998). In this book, however, any comments concerning the proposals were not given. Then, I enumerate here forty-two taxa related the proposals and make some comments on them with a few ecological notes. All the specimens examined are deposited in the herbarium of the National Science Museum, Tokyo (TNS).

Four new varieties and two new forms were proposed mainly based on the size of spores and the color of fructifications, respectively, in the above book. One of the varieties, *Diderma simplex* var. *applanatum*, is described in detail for the clarification of its concept.

1. *Badhamiopsis ainoae* (Yamashiro) Brooks & Keller var. *macrospora* Y. Yamam., *The Myxomycete Biota of Japan*, 375, 1998.

A typo sporis majoribus, 13.2–15.1 μm diam. differt. Holotypus: YY-1843, on bark of a living tree, Inokuchi, Aki-shi, Kochi Pref., leg. Y. Yamamoto, 24 VI 1985.

This myxomycete is quite different from the type variety in the spore size; var. *ainoae* has smaller spores 9–11 μm . The present variety may be confused with one of the various forms of *Badhamia affinis* Rostaf., which had been treated as *B. orbiculata* Rex, because the both are similar to each other in making plasmodiocarpous fructifications often depressed above and below, and in having columnar capillitial threads. However, the present variety is distinguishable from the latter by the spore size.

2. *Ceratiomyxa fruticulosa* (Muell.) T. Macbr. var. *porioides* (Alb. & Schw.) Lister f. *rosea* Y. Yamam., *The Myxomycete Biota of Japan*, 43, 1998.

A forma *porioides* sporophoro roseo differt. Holotypus: YY-14865, on dead wood,

Mt. Gozaisho, Kahoku-cho, Kochi Pref., leg. Yoko Yamamoto, 8 VII 1995.

This myxomycete is different from *Ceratiomyxa fruticulosa* var. *porioides* f. *porioides* in its pinkish or rose fructification.

3. *Comatricha alta* Preuss var. *macrospora* Y. Yamam., The Myxomycete Biota of Japan, 528, 1998.

A typo sporis majoribus, 10.4–12.0 μm diam. differt. Holotypus: YY-14576, on dead wood, Miyajima, Miyajima-cho, Hiroshima Pref., leg. K. Takahashi, 2 IV 1994.

This myxomycete has larger spores than those of the type variety (7.5–9 μm). It is rare in Japan and found on dead wood of a coniferous tree in spring.

4. *Diderma simplex* (Schroet.) G. Lister var. *applanatum* Y. Yamam., The Myxomycete Biota of Japan, 284, 1998.

A typo fructificationibus applanatis et sporis minoribus, 8–9 μm differt. Holotypus: YY-11394, on fallen angiospermous leaves, Ohtsu, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 27 VI 1991.

Fructification usually plasmodiocarpous, sometimes sporocarpous. Plasmodiocarps gregarious, sessile, linear or flexuous, often netted, strongly depressed above and flattened, up to 0.2 mm high, 0.8 mm wide, 8 mm long. Peridium single, calcareous, brittle, brownish-orange to grayish-orange, dehiscing irregularly from above. Columella of thickened base of the plasmodiocarp, or almost lacking. Capillitium of pale threads which are sometimes branched dichotomously, linear to somewhat flexuous, and sometimes with dark fusiform, node-like or pale membranous expansions. Hypothallus indistinct. Spores globose, verruculose, with groups of darker and denser wartlets, reddish-brown in mass, brownish-gray by transmitted light, (7.6–) 8.1–9.0 (–10.4) μm (mean=8.5, sd=0.27, n=20) in diam. Plasmodium unknown.

This myxomycete is different from the type variety mainly in two respects; it does not make a heaped fructification and its spores are smaller than those of the var. *simplex* (9–11 μm). Though its sporocarpous form was reported as “*Diderma* cf. *donkii* Nann.-Brem.” (Nannenga-Bremekamp and Yamamoto, 1987), the present variety is not related to *D. donkii*, because it usually makes a plasmodiocarpous fructification with a single peridium.

5. *Physarum melleum* (Berk. & Br.) Masee f. *luteum* Y. Yamam., The Myxomycete Biota of Japan, 454, 1998.

A typo colore luteo peridii, capillitii et granulorum calcareorum differt. Holotypus: YY-6813, on fallen leaves, Ohtsu, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 6 VII 1988.

Capitula and lime nodes of this myxomycete are different from those of the type form in their yellow color. The present form is found on fallen leaves of deciduous broad-leaved trees, though the type form grows mainly on fallen leaves of evergreen

broad-leaved trees.

6. *Stemonitopsis reticulata* (H. C. Gilbert) Nann.-Brem. & Y. Yamam. var. **macrospora** Y. Yamam., The Myxomycete Biota of Japan, 634, 1998.

A typo sporis majoribus, 10.2–11.9 μm differt. Holotypus: YY-13298, on a fallen male inflorescence of *Castanea crenata*, Ohtsu, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 22 VII 1993.

This myxomycete has larger spores than those of the type variety (7–9 μm).

Recently, the present variety was found on fallen twigs in moist chamber culture (Personal communication from Mr. Y. Harakon, Motomachi Senior High School, Hiroshima). This fact suggests the moist chamber culture is effective for collecting this myxomycete.

New combinations of thirty-six taxa were proposed in the above book. Sixteen of them were reduced to forms from species or varieties mainly by the color variations, and the rest of them were treated as species or varieties based mainly on the morphological characteristics other than the color.

1. *Arcyria incarnata* (Pers.) Pers. f. **brunnea** (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 177, 1998 $\equiv$ *A. brunnea* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 89: 219, 1986.

This myxomycete was originally described as an independent species different from *Arcyria incarnata* not only in its brown color, but also in the lack of small rings formed by the capillitial tubes in an otherwise large meshed net, in the more crowded plicae of the narrower, sometimes even funnelliform cups and in the longer stalks with smaller cysts (Nannenga-Bremekamp and Yamamoto, 1986). However, the present myxomycete should be treated as a form of *A. incarnata*, because the re-examination of the type specimens showed that such features were variable except for the brown color.

This myxomycete is rare in Japan and found on dead wood of a broad-leaved tree.

Specimens examined: YY-1472 (Holotype), Aki-shi, Kochi Pref., leg. Y. Yamamoto, 15 VI 1982; YY-1522 (Paratype), Aki-shi, Kochi Pref., leg. Y. Yamamoto, 5 VII 1982.

2. *Arcyria magna* Rex f. **rosea** (Rex) Y. Yamam., The Myxomycete Biota of Japan, 180, 1998 $\equiv$ *A. magna* Rex var. *rosea* Rex, Proc. Acad. Phila. 45: 365, 1893.

This myxomycete differs from the type form in its rosy capillitium and concolorous spores. It is very similar to *Arcyria incarnata* and *A. major* (G. Lister) Ing in the color, but differs from the latter two species in the ornamentation of capillitia. The present form is rare in Japan and found on dead wood of a broad-leaved tree.

Specimen examined: YY-13317, Ashio-machi, Tochigi Pref., leg. M. Nomura, 25 VII 1993.

3. *Arcyria stipata* (Schw.) Lister var. *imperialis* (G. Lister) Y. Yamam., The Myxomycete Biota of Japan, 191, 1998=*Hemitrichia imperialis* G. Lister, Trans. Br. Myc. Soc. 14: 226, 1929=*Arcyria hemitrichioides* Koaze, Hiroshima Ryakus., 5, 1936 p.p. (nom. invalid.)

This myxomycete has a capillitium characteristic of *Hemitrichia* species, namely, its capillitium consists of a net of threads with distinct spiral bands. So it was originally described in *Hemitrichia* (Lister, 1929). But this myxomycete should be moved to *Arcyria* because it makes spores with a characteristically scattered pattern of warts never seen in other myxomycetes except for *Arcyria* species.

The present variety is rare in Japan and found on dead wood.

Specimen examined: YY-1228, Ootoyo-cho, Kochi Pref., leg. Y. Yamamoto, 15 IX 1981.

4. *Badhamia affinis* Rostaf. var. *armillata* (Nann.-Bremek.) Y. Yamam., The Myxomycete Biota of Japan, 361, 1998=*B. armillata* Nann.-Bremek., Proc. K. Ned. Akad. Wet. C. 69: 354, 1966.

Nannenga-Bremekamp (1991) stated that *Badhamia armillata* was related to *B. affinis* and that it was possibly no more than a variety characterized by the large dark spores with a pale germination line. I agree with her opinion as a result of my examination. This myxomycete is somewhat rare in Japan and mainly found on bark of a living tree.

Specimens examined: YY-1646, Gohoku-mura, Kochi Pref., leg. Y. Yamamoto, 1 VIII 1982; YY-5556, Ochi-cho, Kochi Pref., leg. Y. Yamamoto, 28 VII 1987; YY-7951, Aki-shi, Kochi Pref., leg. Y. Yamamoto, 26 VI 1989; YY-12621, Kubokawa-cho, Kochi Pref., leg. Y. Yamamoto, 11 IX 1992; YY-16507, Morioka-shi, Iwate Pref., leg. M. Tamayama, 3 VIII 1993.

5. *Ceratiomyxa fruticulosa* (Muell.) T. Macbr. var. *fruticulosa* f. *aurea* (Link) Y. Yamam., The Myxomycete Biota of Japan, 40, 1998=*Ceratium aureum* Link, Ges. Nat. Freunde Berlin Mag. 7: 39, 1815.

This yellow myxomycete is frequently found in Japan.

Specimens examined: YY-3584, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 9 IX 1985; YY-11586, Yubari-shi, Hokkaido Pref., leg. Y. & Y. Yamamoto, 2 VIII 1991.

6. *Ceratiomyxa fruticulosa* (Muell.) T. Macbr. var. *porioides* (Alb. & Schw.) Lister f. *flava* (Alb. & Schw.) Y. Yamam., The Myxomycete Biota of Japan, 43, 1998=*Ceratium porioides* β *flavum* Alb. & Schw., Consp. Fung., 359, 1805.

This yellow myxomycete is rare in Japan.

Specimen examined: YY-2318, Geisei-mura, Kochi Pref., leg. Y. Yamamoto, 18 VII 1984.

7. *Cribraria cancellata* (Batsch) Nann.-Bremek. var. ***anomala*** (Jahn) Y. Yamam., The Myxomycete Biota of Japan, 97, 1998=*Dictydium umbilicatum* Schrad. var. *anomalum* Jahn, Ber. Deut. Bot. Ges. 19: 99, 1901=*D. anomalum* (Jahn) Meylan, Bull. Soc. Vaud. Sci. Nat. 44: 295, 1908=*D. umbilicatum* subsp. *anomalum* (Jahn) Meylan, Bull. Soc. Bot. Geneve 2: 265, 1910. pro parte=*D. umbilicatum* var. *exile* (T. Macbr.) Meylan, Bull. Soc. Bot. Geneve 2: 264, 1910=*D. cancellatum* var. *papillatum* Koaze, in Shirai & Hara, List Jpn. Fungi ed. 3, 119, 1927, p.p. <nom. nud.>=*D. cancellatum* var. *anomalum* (Jahn) auct.=*D. cancellatum* f. *anomalum* (Jahn) G. Lister, Mycet. ed. 3., 179, 1925. pro parte=*D. cancellatum* subsp. *anomalum* (Jahn) Meylan, Bull. Soc. Vaud. Sci. Nat. 59: 485, 1937=*D. cancellatum* subsp. *anomalum* f. *longisectum* Meylan, Bull. Soc. Vaud. Sci. Nat. 59: 485, 1937.

This myxomycete differs from the type variety in making a partial peridial net. It is rare in Japan and found on dead wood.

Specimen examined: YY-1145, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 7 VIII 1981.

8. *Cribraria microcarpa* (Schrad.) Pers. var. ***pachydietyon*** (Nann.-Bremek.) Y. Yamam., The Myxomycete Biota of Japan, 81, 1998=*C. pachydietyon* Nann.-Bremek., Proc. K. Ned. Akad. Wet. C. 69: 342, 1966.

This myxomycete is distinguishable from the type variety by its pale and somewhat flattened peridial nodes. It is found on bark of a dead or living tree in moist chamber culture.

Specimens examined: YY-2054, Mt. Kajigamori, Kochi Pref., leg. Y. Yamamoto, 11 VIII 1983; YY-11370, Kotohira-cho, Kagawa Pref., leg. Y. Yamamoto, 10 VI 1991.

9. *Dictydiaethalium plumbeum* (Schum.) Rostaf. f. ***cinnabarinum*** (Berk. & Br.) Y. Yamam., The Myxomycete Biota of Japan, 106, 1998=*Licea cinnabarina* Berk. & Br., J. Linn. Soc. 14: 86, 1873=*Clathroptychium cinnabarinum* (Berk. & Br.) Sacc., Michelia 1: 545, 1879=*Dictydiaethalium plumbeum* var. *cinnabarinum* (Berk. & Br.) Hiranuma, in Shirai & Hara, List Jpn. Fungi ed. 3, 119, 1927=*D. cinnabarinum* (Berk. & Br.) Hiranuma, in Emoto, Myxom. Jpn., 24, 1977 (invalid.)=*D. cinnabarinum* (Berk. & Br.) Neub., Now. & Baum., Myxom. Deutschl. 1: 122, 1993.

This myxomycete differs from the type form in its red fructification and concolorous spores. It is somewhat rare in Japan and found on bark of a dead broad-leaved tree.

Specimens examined: M-S-1685, Minato-ku, Tokyo Pref., H. Hagiwara, 15 VI 1980; M-S-6771, Mt. Koshin, Gunma Pref., leg. M. Izawa, 25 VII 1993; 95TK-4, Chiyoda-ku, Tokyo Pref., leg. H. Hagiwara, J. Matsumoto & Y. Yamamoto, 26 VII

1995.

10. Dictydiaethalium plumbeum (Schum.) Rostaf. var. **japonicum** (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 105, 1998=*Enteridium japonicum* Nann.-Bremek. & Y. Yamam., in Y. Yamam. & Nann.-Bremek., Proc. K. Ned. Akad. Wet. C. 98: 321, 1995.

This myxomycete is quite different from the type variety in the spore size; var. *plumbeum* has spores 8–9 μm , while var. *japonicum* has spores 11–12 μm .

The present variety has not persistent pseudocapillitial threads depending from the peridial lids. So it was originally described in *Enteridium* (Yamamoto and Nan-nenga-Bremekamp, 1995). But this myxomycete should be moved to *Dictydiaethali-um*, because its spore morphology is characteristic of this genus, namely, its spores are spinulose, almost colorless in transmitted light, and birefringent.

11. Diderma darjeelingense Thind & Sehgal var. **takahashii** Y. Yamam., The Myxomycete Biota of Japan, 292, 1998=*Lepidoderma takahashii* Y. Yamam., J. Jpn. Bot. 67: 112, 1992.

This myxomycete is different from the type variety in the spore size: var. *darjeelingense* has spores 10–12 μm , while var. *takahashii* has spores 7.9–9.6 μm . The present variety sometimes has crystalline disks on the peridium. So it was originally described in *Lepidoderma* (Yamamoto, 1992). But this myxomycete should be moved to *Diderma*, because the examination of a recently collected specimen showed that the development of such crystalline disks was unstable.

Specimen examined: YY-13631, Saeki-cho, Okayama Pref., leg. K. Takahashi, 29 VIII 1993.

12. Diderma floriforme (Bull.) Pers. var. **subfloriforme** (Candoussau & Nann.-Bremek.) Y. Yamam., The Myxomycete Biota of Japan, 294, 1998=*D. subfloriforme* Candoussau & Nann.-Bremek., Crypt. Mycol. 1: 201, 1980.

This myxomycete is different from the type variety in the spore ornamentation: var. *floriforme* has spores sparsely covered with large warts, while var. *subfloriforme* has spores densely covered with minute warts.

Specimen examined: YY-14658, Okayama-shi, Okayama Pref., K. Takahashi, 2 II 1989.

13. Diderma microsporum (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 279, 1998=*D. effusum* (Schw.) Morgan var. *microsporum* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 90: 321, 1987.

This myxomycete is clearly different from *Diderma effusum* in its wider fructification, the glossy peridium partially covered with lime crystals, and the smaller brown spores. It is rare in Japan and found on living herbal plants.

Specimens examined: YY-4510, Gohoku-mura, Kochi Pref., leg. Y. Yamamoto, 3 VIII 1986; YY-15949, Mt. Futatsudake, Ehime Pref., leg. Y. Yamamoto, 21 VII 1996.

14. *Enteridium lycoperdon* (Bull.) Farr var. ***americanum*** (Nann.-Bremek.) Nann.-Bremek. ex Y. Yamam., The Myxomycete Biota of Japan, 110, 1998 (validated) = *Reticularia lycoperdon* Bull. var. *americana* Nann.-Bremek., Med. Bot. Mus. Herb. Rijksuniv. Utrecht (149): 773, 1958.

This combination was invalid according to Article 33.2 in the International Code of Botanical Nomenclature (1994, Tokyo), because of lacking the basionym and its reference in Nannenga-Bremekamp (1991).

15. *Fuligo* subgenus ***Erionema*** (Penzig) Y. Yamam., The Myxomycete Biota of Japan, 390, 1998 = *Erionema* Penzig, Myxom. Buitenz., 36, 1898 (ut genus, non Maire 1906). Type species: *Erionema aureum* Penzig. Only one species is recognized in this subgenus.

Genus *Erionema* has been distinguished from the genus *Fuligo* by the long cylindrical simple or branched plasmodiocarps and the lack of pseudocapillitia (Lister, 1925; Martin and Alexopoulos, 1969). However, its pseudoaethalium-like fructification is very similar to the fructification without a cortex of *Fuligo septica* in its shape and color, so that it is macroscopically difficult to distinguish them from each other. On the other hand, *F. septica* sometimes makes a pseudoaethalium without pseudocapillitia. Therefore, the genus *Erionema* should be treated as a subgenus of *Fuligo*. Definition of the genus *Fuligo* is emended as follows.

Fuligo Haller, Hist. Stirp. Helv. 3: 110, 1768. emend. = *Aethalium* Link, Ges. Nat. Freunde Berlin Mag. 3: 24, 1809 = *Aethaliopsis* Zopf, Pilzth., 149, 1885 = *Erionema* Penzig, Myxom. Buitenz., 36, 1898.

Fructification aethalioid or of a pseudoaethalium consisting of superimposed plasmodiocarps. Hypothallus membranous to spongy, frequently calcareous. Peridium calcareous, often forming a cortex and pseudocapillitia. True capillitium present, consisting of lime nodes and hyaline connecting threads. Spores dark in mass. Type species: *Mucor septicus* L.

Key to the subgenera in *Fuligo* is as follows.

Fructification pseudoaethalioid, consisting of long plasmodiocarps. Pseudocapillitium absent. Capillitium strongly elastic Subgenus *Erionema*
Fructification aethalioid or of a pseudoaethalium consisting of short plasmodiocarps. Pseudocapillitium usually present. Capillitium not or weakly elastic.....
..... Subgenus *Fuligo*

16. *Fuligo aurea* (Penzig) Y. Yamam., The Myxomycete Biota of Japan, 390, 1998 = *Erionema aureum* Penzig, Myxom. Buitenz., 36, 1898.

This myxomycete is common in southern Japan. It is mainly found on dead

wood of a broad-leaved tree rather than a coniferous tree.

Specimens examined: YY-2835, Aki-shi, Kochi Pref., leg. Y. Yamamoto, 24 VI 1985; M-S-4465, Tanabe-shi, Wakayama Pref., leg. S. Ono, 24 VIII 1985; M-S-4771, Iriomote Isl., Okinawa Pref., leg. Y. Degawa, 2 VII 1989; M-S-7368, Iwase-cho, Ibaragi Pref., leg. M. Izawa, 20 VII 1992; 95TK-43, Chiyoda-ku, Tokyo Pref., leg. H. Hagiwara, J. Matsumoto & Y. Yamamoto, 26 VII 1995.

17. *Fuligo septica* (L.) Wiggers f. *flava* (Pers.) Y. Yamam., The Myxomycete Biota of Japan, 401, 1998=*F. flava* Pers., Neues Mag. Bot. 1: 88, 1794=*Aethalium flavum* (Pers.) Link, in Nees, Syst. Pilze Schw., 99, 1816=*Fuligo septica* var. *flava* (Pers.) R. E. Fr., Sv. Bot. Tidskr. 6: 744, 1912.

This myxomycete differs from the type form in its yellow lime nodes. It is very common in Japan and frequently found rather than the type form.

Specimens examined: YY-13794, Minamiaizu-gun, Fukushima Pref., leg. M. Hario, 1 VIII 1980; YY-2260, Hongawa-mura, Kochi Pref., leg. Y. Yamamoto, 8 VII 1984; YY-3296, Otaki-mura, Saitama Pref., leg. Y. Yamamoto, 31 VII 1985; 95TK-43, Chiyoda-ku, Tokyo Pref., leg. H. Hagiwara, J. Matsumoto & Y. Yamamoto, 26 VII 1995; YY-15516, Chino-shi, Nagano Pref., leg. K. Takahashi, 22 X 1995.

18. *Fuligo septica* (L.) Wiggers f. *rufa* (Pers.) Y. Yamam., The Myxomycete Biota of Japan, 402, 1998=*F. rufa* Pers., Neues Mag. Bot. 1: 88, 1794=*Aethalium ferrincola* Schw., Trans. Am. Phil. Soc. II. 4: 261, 1832=*Reticularia rufa* (Pers.) Schw., Trans. Am. Phil. Soc. II. 4: 262, 1832=*Aethalium rufum* (Pers.) Wallr., Fl. Crypt. Germ. 2: 341, 1833=*Licea lindheimeri* Berk., Grevillea 2: 68, 1873=*Tubulina lindheimeri* (Berk.) Masee, Mon., 42, 1892=*Fuligo septica* var. *rufa* (Pers.) R. E. Fr., Sv. Bot. Tidskr. 6: 744, 1912.

This myxomycete differs from the other two forms of *Fuligo septica*, f. *septica* and f. *flava*, in its reddish cortex and concolorous lime nodes. It is rarely found in Japan.

Specimen examined: M-K-8546, Tanabe-shi, Wakayama Pref., leg. K. Minakata, 3 XI 1931.

19. *Lamproderma arcyrrioides* (Sommerf.) Rostaf. f. *leucofilum* (Neubert, Nowotny & Baumann) Y. Yamam., The Myxomycete Biota of Japan, 548, 1998=*L. arcyrrioides* var. *leucofilum* Neubert, Nowotny & Baumann, Carlinea 47: 39, 1989.

This myxomycete differs from the type form in its pale capillitium. It is rare in Japan and found on dead wood of a broad-leaved tree in autumn.

Specimen examined: YY-12819, Mt. Jirogyu, Tokushima Pref., leg. Y. Yamamoto, 8 XI 1992.

20. *Lamproderma latifilum* Nann.-Bremek. & Y. Yamam. f. *pallidofilum* (Y.

Yamam. & Nann.-Bremek.) Y. Yamam., The Myxomycete Biota of Japan, 559, 1998=*L. latifilum* var. *pallidofilum* Y. Yamam. & Nann.-Bremek., Proc. K. Ned. Akad. Wet. C. 98: 322, 1995.

This myxomycete differs from the type form in its pale capillitium. It occurs directly on dead wood, though the type form is mainly found on moss covering a dead tree. The present form is rare in Japan.

Specimen examined: YY-13531 (Holotype), Nigorigo-onsen, Gifu Pref., K. Takahashi, 10 X 1993.

21. *Lamproderma splendens* Meylan f. ***leucotrichum*** (Meylan) Y. Yamam., The Myxomycete Biota of Japan, 567, 1998=*L. splendens* var. *leucotrichum* Meylan, Bull. Soc. Vaud. Sci. Nat. 57: 367, 1932.

This myxomycete differs from the type form in the color of a capillitium. It is nivicolous and occurs on dead herbal stems near melting snow.

Specimen examined: YY-14241, Takane-mura, Gifu Pref., leg. K. Takahashi, 4 V 1994.

22. *Licea erecta* Thind & Dhillon var. ***erectoides*** (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 130, 1998=*L. erectoides* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 86: 209, 1983.

This myxomycete is quite different from the type variety in the spore size; var. *erecta* has spores 14–15 μm , while var. *erectoides* has spores 9–12 μm . It is not so rare in Japan and mainly found on bark of a living tree in moist chamber culture.

When Nannenga-Bremekamp and I originally described *Licea erectoides*, we noted “This is a very distinct taxon, only *Licea erecta* Thind and Dhillon when seen in situ is like it. The prominently warted peridium and smaller spores of *L. erectoides* will readily distinguish it under the microscope” (Nannenga-Bremekamp and Yamamoto, 1983). Lately, I had an opportunity to examine many specimens besides the type specimen of *L. erectoides*, but I couldn’t confirm any characters distinguishing between both the taxa except for the spore size.

Specimens examined: YY-640 (Isotype), Motoyama-cho, Kochi Pref., leg. Y. Yamamoto, 1 VII 1980; YY-2350, Gohoku-mura, Kochi Pref., leg. Y. Yamamoto, 26 VII 1984; YY-4712, Tano-cho, Kochi Pref., leg. Y. Yamamoto, 6 X 1986; YY-6284, Kawashima-cho, Tokushima Pref., leg. Y. Yamamoto, 13 IV 1988; YY-6590, Ishii-cho, Tokushima Pref., leg. Y. Yamamoto, 8 VI 1988; YY-6763, Donari-cho, Tokushima Pref., leg. Y. Yamamoto, 23 VI 1988; YY-7860, Eikokuji-cho, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 12 V 1989; YY-12808, Kochi-shi, Kochi Pref., leg. Y. Yamamoto, 5 X 1992.

23. *Lycogala epidendrum* (L.) Fr. var. ***terrestre*** (Fr.) Y. Yamam., The Myxomycete Biota of Japan, 118, 1998=*L. terrestre* Fr., Sym. Gast., 10, 1817.

This myxomycete is easily distinguished from the type variety by its nearly smooth cortex. It is rare in Japan and found on well-decayed wood.

Specimen examined: YY-10609, Mt. Miune, Kochi Pref., leg. Y. Yamamoto, 12 XI 1990.

24. *Macbrideola scintillans* (H. C. Gilbert) var. ***verrucosa*** (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 577, 1998≡*M. verrucosa* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 86: 233, 1983.

This myxomycete resembles the type variety in many respects, but differs in its warted peridium and its minutely spinulose spores with groups of closely placed spinules. It is sometimes found on bark of a living tree in moist chamber culture.

Specimens examined: YY-1261, Nichinan-shi, Miyazaki Pref., leg. Y. Yamamoto, 27 X 1981; YY-1286 (Holotype), Susaki-shi, Kochi Pref., leg. Y. Yamamoto, 7 X 1981; YY-3988, Aki-shi, Kochi Pref., leg. Y. Yamamoto, 20 V 1986; YY-4725, Kitagawa-mura, Kochi Pref., leg. Y. Yamamoto, 9 X 1986.

25. *Paradiacheopsis fimbriata* (G. Lister & Cran) Hertel var. ***penicillata*** (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 583, 1998≡*Comatricha penicillata* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 86: 223, 1983.

This myxomycete differs markedly from the type variety in the spore size; var. *fimbriata* has spores (10–) 11–12 (–14) μm , while var. *penicillata* has spores 7–8.5 μm . It is rarely found on bark of living *Pinus* in moist chamber culture.

Specimen examined: YY-795 (Isotype), Geisei-mura, Kochi Pref., leg. Y. Yamamoto, 1 IX 1980.

26. *Physarum dagawae* (Nann.-Bremek. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 433, 1998≡*P. spumarioides* Lakhanpal & Mukerji var. *degawae* Nann.-Bremek. & Y. Yamam., Proc. K. Ned. Akad. Wet. C. 93: 275, 1990.

This myxomycete was originally treated as a variety of *Physarm spumarioides*, because it was very similar to the description of the latter species (Nannenga-Bremekamp and Yamamoto, 1990). However, the present myxomycete differs considerably from *P. spumarioides* in several respects, namely, its white and thick peridium, conspicuously limy hypothallus, physaroid capillitium, and much larger spores. Therefore, it should be treated as an independent species.

Specimen examined: YY-4825 (Holotype), Yokohama-shi, Kanagawa Pref., leg. Y. Degawa, 13 X 1986.

27. *Physarum globuliferum* (Bull.) Pers. f. ***lilacinum*** (Sturgis & Bilgram) Y. Yamam., The Myxomycete Biota of Japan, 443, 1998≡*P. lilacinum* Sturgis & Bilgram, in Sturgis, Mycologia 9: 324, 1917 (non Fr. 1829)=*P. lilacinum* var. *coeruleum*

G. Lister, in Lister, Mycet. ed. 3, 30, 1925=*P. lilacinum* var. *lilacisporum* Koaze, Hiroshima. Ryakus., 1, 1936 (nom. invalid.)=*P. lilacinum* var. *laurinum* Koaze, Hiroshima. Ryakus., 1, 1936 (nom. invalid.)=*P. bilgramii* Hagelst., Mycologia 33: 306, 1941.

This myxomycete differs from the type form in its bluish capitula and concolorous lime nodes. It is rare in Japan and found on dead wood.

Specimens examined: M-K-1713, Kake-cho, Hiroshima Pref., leg. M. Inoue, 14 VIII 1936 (ut *P. lilacinum* var. *laurinum* Koaze); M-K-1715, Itsukushima, Hiroshima Pref., leg. Kosaka, 10 IX 1936 (ut *P. lilacinum* var. *lilacisporum* Koaze).

28. *Physarum psittacinum* Ditmar f. ***fulvum*** (A. & G. Lister) Y. Yamam., The Myxomycete Biota of Japan, 475, 1998=*P. psittacinum* var. *fulvum* A. & G. Lister, J. Bot. 44: 228, 1906.

This myxomycete differs from the type form in its yellowish stalk. It is found on dead wood of a broad-leaved tree more commonly than the type form.

Specimens examined: YY-11957, Monobe-mura, Kochi Pref., leg. Y. Yamamoto, 6 IX 1991; YY-16653, Muroto-shi, Kochi Pref., leg. Y. Yamamoto, 20 VII 1997.

29. *Physarum viride* (Bull.) Pers. f. ***aurantium*** (Bull.) Y. Yamam., The Myxomycete Biota of Japan, 495, 1998=*Sphaerocarpus aurantius* Bull., Hist. Champ. Fr., 133, 1791=*Stemonitis aurantia* (Bull.) J. F. Gmel., Syst. Nat. 2: 1469, 1791=*Physarum aurantium* (Bull.) Pers., Syn. Fung., 173, 1801=*Trichia aurantia* (Bull.) DC., Fl. Fr. 2: 255, 1805=*Physarum nutans* var. *coccineum* Fr., Syst. Myc. 3: 129, 1829=*P. striatum* var. *aurantiacum* Fr., Syst. Myc. 3: 131, 1829=*P. viride* var. *aurantium* (Bull.) Lister, Mycet., 47, 1894.

This myxomycete differs from the other two forms of *Physarum viride*, f. *viride* and f. *incanum*, in its orange capitula and concolorous lime nodes. Its plasmodium is also orange in color. This myxomycete is common in Japan and mainly found on dead wood.

Specimens examined: YY-2069, Mt. Tsurugi, Tokushima Pref., leg. Y. Yamamoto, 21 VIII 1983; YY-2424, Mt. Kajigamori, Kochi Pref., leg. Y. Yamamoto, 3 VIII 1984; YY-6998, Mt. Kitadake, Yamanashi Pref., leg. Y. Yamamoto, 23 VII 1988; YY-11572, Yubari-shi, Hokkaido Pref., Y. & Y. Yamamoto, 2 VIII 1991; YY-15135, Mt. Iwaguro, Ehime Pref., leg. Y. & Y. Yamamoto, 3 VIII 1995.

30. *Physarum viride* (Bull.) Pers. f. ***incanum*** (Lister) Y. Yamam., The Myxomycete Biota of Japan, 496, 1998=*P. viride* var. *incanum* Lister, Mycet., 47, 1894.

This myxomycete differs from the other two forms of *Physarum viride*, f. *viride* and f. *aurantium*, in the ashy color of capitula. Its fructification is similar to that of f. *viride* fading to a gray, but even in this case f. *incanum* is distinguishable from the latter by the color of lime nodes, namely, f. *incanum* has pale yellow lime nodes

while f. *viride* has yellow ones.

Specimens examined: M-985, Nikko, Tochigi Pref., leg. Y. Emoto, 30 VIII 1925; YY-8234, Tosayamada-cho, Kochi Pref., leg. Y. Yamamoto, 16 VII 1989.

31. *Stemonitis axifera* (Bull.) T. Macbr. var. *smithii* (T. Macbr.) Hagelst. f. *violacea* (Meylan) Y. Yamam., The Myxomycete Biota of Japan, 605, 1998=*S. ferruginea* Ehrenb. var. *violacea* Meylan, Bull. Soc. Bot. Geneve 2: 264, 1910.

This myxomycete is different from *Stemonitis axifera* var. *smithii* f. *smithii* in its lilaceous capitula and concolorous spores. It is rare in Japan and found on dead wood.

Specimen examined: YY-15428, Besshiyama-mura, Ehime Pref., leg. Y. Yamamoto, 26 VIII 1995.

32. *Stemonitis mussooriensis* G. W. Martin, Thind & Sohi var. *emotoi* (Nann.-Berm. & Y. Yamam.) Y. Yamam., The Myxomycete Biota of Japan, 618, 1998=*S. emotoi* Nann.-Berm. & Y. Yamam., in Nannenga-Bremekamp, Yamamoto and Sharma, Proc. K. Ned. Akad. Wet. C. 87: 463, 1984.

This myxomycete is different from the type variety in the spore size; var. *mussooriensis* has spores 10.5–12.5 μm , while var. *emotoi* has spores 9–10 μm .

The present variety was originally described as an independent species because it was clearly distinguishable from its most related species, *Stemonitis mussooriensis*, by its smaller and warted-reticulate spores and less flattened capillitium (Nannenga-Bremekamp et al., 1984). Lately, I had an opportunity to examine a specimen of the latter species (YY-12521, Kahoku-cho, Kochi Pref., leg. Y. Yamamoto, 27 VIII 1992), and confirmed that *S. mussooriensis* var. *mussooriensis* sometimes had not only irregularly warted to subreticulate spores but also less flattened capillitium. Therefore, the present myxomycete should be treated as a variety of *S. mussooriensis*.

Specimen examined: YY-765 (Holotype), Gohoku-mura, Kochi Pref., leg. Y. Yamamoto, 24 VIII 1980.

33. *Stemonitopsis aequalis* (Peck) Y. Yamam., The Myxomycete Biota of Japan, 625, 1998=*Comatriza aequalis* Peck, Ann. Rep. N. Y. State Mus. 31: 42, 1879=*Stemonitis aequalis* (Peck) Masee, Mon., 80, 1892=*Comatriza nigra* (Pers.) Schroet. var. *aequalis* (Peck) Strugis, Colo. Coll. Publ. Sci. 12: 34, 1907.

This myxomycete is rare in Japan and found on dead wood of a coniferous tree.

Specimen examined: YY-4758, Monobe-mura, Kochi Pref., leg. Y. Yamamoto, 23 XI 1986.

34. *Stemonitopsis brachypus* (Meylan) Y. Yamam., The Myxomycete Biota of Japan, 627, 1998=*Comatriza nigra* (Pers.) Schroet. var. *brachypus* Meylan, Bull. Soc. Vaud. Sci. Nat. 56: 71, 1925=*C. brachypus* (Meylan) Meylan, Bull. Soc. Vaud.

Sci. Nat. 57: 41, 1929.

This myxomycete is rarely found in Japan.

Specimen examined: YY-11578, Yubari-shi, Hokkaido Pref., leg. Y. Yamamoto, 2 VIII 1991.

35. *Trichia decipiens* (Pers.) T. Macbr. f. ***olivacea*** (Meylan) Y. Yamam., The Myxomycete Biota of Japan, 237, 1998=*T. fallax* Pers. var. *olivacea* Meylan, Bull. Soc. Vaud. Sci. Nat. 44: 300, 1908=*T. decipiens* var. *olivacea* (Meylan) Nann.-Bremek., Ned. Myxom., 154, 1974 (ut *olivacea* Meylan).

This myxomycete differs from the type form in its olivaceous capitula and concolorous spores. It was characterized by its clearly marked, dull, regular lid at the top of a olivaceous capitulum (Nannenga-Bremekamp, 1991). However, the lid is frequently indistinctive. This myxomycete is common in Japan and mainly found on dead wood in autumn.

Specimens examined: YY-12163, Mt. Shiraga, Kochi Pref., leg. Y. & Y. Yamamoto, 4 XI 1991; YY-12796, Konose-kyo, Tokushima Pref., Y. Yamamoto, 30 X 1993; YY-13581, Omogo-keikoku, Ehime Pref., leg. J. Matsumoto, 28 X 1993; YY-16763, Mitsu-cho, Okayama Pref., leg. K. Fujioka, 20 IV 1997.

36. *Trichia favoginea* (Batsch) Pers. var. ***persimilis*** (Karsten) Y. Yamam., The Myxomycete Biota of Japan, 240, 1998=*T. persimilis* Karsten, Not. Saellsk. Faun. Fl. Fenn. 9: 353, 1868=*T. affinis* de Bary, in Fuckel, Jahrb. Nass. Ver. Nat. 23–24: 336, 1870=*T. jackii* Rostaf., Mon., 258, 1875=*T. abrupta* Cooke, Ann. Lyc. Nat. Hist. N. Y. 11: 404, 1877=*T. proximella* Karst., Bidr. Nat. Folk 31: 139, 1879=*T. balfourii* Masee, J. Roy. Micr. Soc. 1889: 339, 1889=*T. sulphurea* Masee, J. Roy. Micr. Soc. 1889: 339, 1889=*T. intermedia* Masee, J. Roy. Micr. Soc. 1889: 341, 1889=*T. kalbreyeri* Masee, J. Roy. Micr. Soc. 1889: 344, 1889=*T. pulchella* Rex, Proc. Acad. Phila. 45: 366, 1893=*T. drakeae* Lodhi, Indian Slime-Moulds, 20, 1934 (ut *drakii*).

This myxomycete differs from the type variety in the shape of fructifications, the diameter of capillitia, and the height of spore reticula. Both the varieties are common on dead wood. In southern Japan, var. *persimilis* is found on dead wood of various trees at any season, while var. *favoginea* is limited to occur on dead wood of coniferous trees in autumn and winter.

Specimens examined: YY-6759, Tokushima-shi, Tokushima Pref., leg. Y. Yamamoto, 7 VII 1988; YY-9120, Monobe-mura, Kochi Pref., leg. Y. Yamamoto, 6 I 1990; YY-10912, Mt. Kuishi, Kochi Pref., leg. Yoko Yamamoto, 10 III 1991; YY-16383, Mt. Tochio, Ehime Pref., leg. Y. Yamamoto, 25 X 1996.

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