Myxomycetes of Myanmar

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Ko Ko T. W., Rosing W. C., Ko Ko Z. Z. W. & Stephenson S. L. (2013) Myxomycetes of Myanmar. – Sydowia 65 (2): 267–276.

Myanmar, like most other countries in Southeast Asia, remains understudied for myxomycetes. Prior to the present study, only ten species had been reported for the entire country. Field surveys carried out during the period of mid-August 2011 to August 2012 at a number of localities in Myanmar yielded at least 67 species in 26 genera. This total includes species that fruited under natural conditions in the field along with those appearing in moist chamber cultures prepared with samples of dead plant material obtained in the same localities. Fifty-seven of the 67 species were new records for Myanmar, and one of these appears to be a species new to science.

Keywords: biodiversity survey, plasmodial slime molds, Southeast Asia, tropical forests.

Although numerous studies of myxomycetes, also known as plasmodial slime molds or myxogastrids, have been carried out in various parts of the world, there are relatively few records for this group of organisms from most of Southeast Asia. The most recent reports include those by Tran *et al.* (2006, 2008) and Ko Ko *et al.* (2010) for Thailand, van Hooff (2009) for Vietnam, Rosing (2009) and Rosing *et al.* (2011) for Singapore, Dagamac *et al.* (2011) and Macabago *et al.* (2012) for the Philippines, and Ko Ko *et al.* (2012) for Laos. For some counties such as Cambodia, there appear to be no records whatsoever. Although a few species have been reported previously from Myanmar, it still remains one of the least studied regions of Southeast Asia.

The first record of a myxomycete from Myanmar appears to have been a collection of what was reported as *Arcyria umbrina* Fr. (probably the species now recognized as *Arcyria pomiformis*) by Wilhelm Sulpiz Kurz during the period of 1864–1866, as mentioned by Currey (1875). Almost a century later,

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Reynolds & Alexopoulos (1971) listed seven species (*Arcyria cinerea*, *Diderma hemisphaericum*, *Didymium iridis*, *Hemitrichia intorta*, *Physarum cinereum*, *P. globuliferum*, and *P. melleum*). More recently, two additional species (*Arcyria pomiformis* and *Stemonitis herbatica*) were mentioned by Thaung (2007, 2008), and a search of records of species in the herbarium of the National Fungus Collections produced a record of *Protophysarum phlologenum*. As such, only ten species of myxomycetes were known from Myanmar prior to the present study. This is a very low total and simply reflects the fact that studies of myxomycetes in Myanmar are severely lacking. The objective of the study described herein was to generate a body of data on the occurrence and distribution of myxomycetes for several areas of the country. In order to make our study as comprehensive as possible, both specimens of myxomycetes that had fruited in the field under natural conditions as well as those appearing in moist chamber cultures under laboratory conditions were considered.

General study area

Myanmar (officially the Republic of the Union of Myanmar) has a total area of 676,578 km² and is bordered on the north and northeast by China, on the east and southeast by Laos and Thailand, on the south by the Andaman Sea and the Bay of Bengal, and on the west by Bangladesh and India. The country is located between latitudes 09° 32' N and 28° 31' N and longitudes 92° 10' E and 101° 11' E. Elevations range from sea level on the coast of the Andaman Sea to 5881 m on the summit of Hkakabo Razi.

Like other adjacent areas of Southeast Asia, Myanmar is characterized as having a tropical monsoon climate. There are three distinct seasons. A cold and dry season extends from November to February, when average monthly temperatures range from 20–24 °C; a hot-dry season occurs during the period of March to April, with average monthly temperatures of 30–35 °C; and a wet season takes place between May and October, with average temperatures of 25–30 °C. Annual rainfall in the delta region of the country is approximately 2500 mm, whereas coastal regions receive more than 5000 mm. However, some portions of the interior of Myanmar receive less than 1000 mm per year.

Field surveys for myxomycetes were carried out during the period of mid-August 2011 to August 2012 at a number of different localities (Fig. 1). These were Alaungdaw Kathapa National Park (22° 15.061 N, 94° 31.315 E, 500 m a.s.l.) in Sagaing Division; Bawdi-Yeik-Nyeik Meditation Center, Hmaw Bi (17° 08.932 N, 96° 03.103 E, 13 m a.s.l.) in Yangon Division; Hlawkar National Park (17° 01.564 N, 96° 05.110 E, 10 m a.s.l.) in Yangon Division; Hlawkar National Park (17° 01.564 N, 96° 05.110 E, 10 m a.s.l.) in Yangon Division; Htam Sam Cave, Hopone (20° 49.000 N, 97° 20.103 E, 1268 m a.s.l.) in Shan State; Kalaw (20° 37.535 N, 96° 34.108 E, 1265 m a.s.l.) in Shan State; Kyaik Htee Yoe National Park (17° 28.888 N, 97° 05.954 E, 1106 m a.s.l.) in Mon State; Kyaik-kout Pagoda in Thanlyin (16° 45.997 N, 96° 15.095 E, 32 m a.s.l.) in Yangon Division; Myathandar Garden (16° 49.920 N, 96° 11.648 E, 12 m



Fig. 1. Localities in Myanmar where field surveys for myxomycetes were carried out.

a.s.l.) in Yangon Division; Shwesettaw ($20^{\circ} 09.096 \text{ N}, 94^{\circ} 53.080 \text{ E}, 48 \text{ m} \text{ a.s.l.}$) in Magwe Division, and Yezin Agricultural University ($19^{\circ} 49.459 \text{ N}, 96^{\circ} 16.263 \text{ E}, 110 \text{ m} \text{ a.s.l.}$) in Mandalay Division. The predominant vegetation type at all of these localities is a secondary broadleaf tropical forest.

At each locality, an effort was made to examine all types of substrates upon which the fruiting bodies of myxomycetes might be expected to occur, and all of the specimens encountered were collected and returned to the laboratory. The methods followed are those described by Tran *et al.* (2006) and Ko Ko *et al.* (2010). In addition to the field collections, samples of various types of dead plant material (e.g., ground litter, aerial litter, twigs and bark) were obtained at the various localities and brought back to the laboratory, where they were used to prepare moist chamber cultures in the manner described by Stephenson and Stempen (1994). Myxomycete plasmodia and/or fruiting bodies that appeared in the moist chamber cultures were noted and recorded each time the cultures were checked. All fruiting bodies were airdried and glued in small pasteboard boxes for permanent storage.

Annotated list of species

A total of at least 67 species of myxomycetes representing 26 genera were collected from the various localities in Myanmar. In the list, these are arranged alphabetically by genus and then species. Information is provided on the source(s) of each record along with comments on particularly noteworthy examples. In order to save space, the number of records listed herein for a particular species is limited to no more than three. Nomenclature essentially follows Lado (2005-2010). Voucher specimens of species not reported previously in print as occurring in Myanmar are deposited in the herbarium of the University of Arkansas (UARK). Abbreviations: fc = field collection, mc = collection obtained from a moist chamber culture, ADK = Alaungdaw Kathapa National Park, BYN = Bawdi-Yeik-Nyeik Meditation Center, HLK = Hlaw-kar National Park, HSC = Hopone (Htam Sam Cave), KAL = Kalaw, KTY = Kyaik HteeYoe National Park, SHW = Shwesettaw, TGG = Myathandar Garden, TLY = Kyaik-kout Pagoda, and YAU = Yezin Agricultural University campus. Collection numbers are those of the first author (TWKK), the fourth author (SLS) or the second and fourth authors (WR/SLS).

Arcyria afroalpina Rammeloo

Collection examined: TWKK1108, KTY, ground litter (mc).

Arcyria cinerea (Bull.) Pers.

First recorded from Myanmar by Reynolds & Alexopoulos (1971).

Collections examined: TWKK 0983, BYN, dead bark (fc), 1 September 2011; TWKK1072, TGG, decaying wood (fc), 8 November 2011; TWKK 1132, HSC, aerial litter (mc).

Arcyria denudata (L.) Wettst.

Collections examined: TWKK0995, TGG, decaying wood (fc), 9 September 2011; TWKK1140, TGG, decaying wood (fc), 25 June 2012; TWKK1150, ADK, decaying wood (fc), 10 July 2012.

Arcyria incarnata (Pers. ex J. F. Gmel.) Pers.

Collection examined: TWKK1041, TGG, decaying wood (fc), 27 September 2011.

Arcyria cf. minuta Buchet in Patouillard

Collection examined: WR/SLS27431, HLK, bark (mc).

Arcyria pomiformis (Leers) Rostaf.

This species was first reported (as *Arcyria umbrina* Fr.) by Currey (1875) and then by Thaung (2008). *Arcyria umbrina* is listed as a possible synonym of *A. pomiformis* by Lado (2005), which is the treatment followed herein.

Collection examined: WR/SLS27185, YAU, bark (mc).

Badhamia affinis Rostaf.

Collections examined: TWKK1046, TGG, dead bark (fc), 27 September 2011; TWKK1053, TGG, dead bark (fc), 27 September 2011.

Calomyxa metallica (Berk.) Nieuwl.

Collection examined: WR/SLS27489, BYN, bark (mc).

Ceratiomyxa fruticulosa (O. F. Mull.) T. Macbr.

Collections examined: TWKK1057, TGG, decaying wood (fc), 27 September 2011; TWKK1156, ADK, decaying wood (fc), 10 July 2012.

Clastoderma debaryanum Blytt.

Collections examined: TWKK1057, TGG, decaying wood (fc), 27 September 2011; TWKK1096, TGG, decaying wood (fc), 25 September 2011.

Collaria arcyrionema (Rostaf.) Nann.-Bremek.

Collection examined: TWKK1087, TGG, decaying wood (fc), 15 October 2011.

Comatricha tenerrima (M. A. Curtis) G. Lister

Collection examined: SLS27412, HSC, liana (mc).

Cribraria cancellata (Batsch) Nann.-Bremek.

Collection examined: TWKK0982, BYN, decaying wood (fc), 1 September 2011.

Cribraria languescens Rex

Collection examined: TWKK1073, HLK, dead bark (fc), 12 August 2011. *Cribraria microcarpa* (Schard.) Pers.

Collection examined: TWKK1113, TGG, decaying wood (fc), 1 June 2012. *Cribraria violacea* Rex

Collections examined: TWKK1062, TGG, bark (mc); TWKK1110, TGG, bark (mc); TWKK1122, BYN, bark (mc).

Cribraria sp.

Collections examined: WR/SLS27816, KTY, bark (mc); WR/SLS27442, KTY, bark (mc).

Comments: These two collections represent what appears to be an undescribed species that is currently undergoing more detailed study.

Diachea leucopodia (Bull.) Rostaf.

Collections examined: TWKK1159, TGG, ground litter (fc), 10 September 2012.

Diderma chondrioderma (de Bary & Rostaf.) G. Lister

Collection examined: TWKK, TGG, bryophytes on decaying wood (fc), 23 September 2011.

Diderma effusum (Schwein.) Morgan

Collections examined: TWKK1160, TGG, ground litter (fc), 10 September 2012.

Diderma hemisphaericum (Bull.) Hornem.

First recorded from Myanmar by Reynolds & Alexopoulos (1971).

Collections examined: TWKK1027, TGG, moss (fc), 23 September 2011.

Diderma saundersii (Massee) Lado

Collections examined: WR/SLS27201, YAU, bark (mc).

Didymium anellus Morgan

Collections examined: TWKK1023, TGG, bark (mc); TWKK1045, TGG, bark (mc).

- Didymium difforme (Pers.) Gray
 - Collection examined: SLS27212, HSC, liana (mc).
- *Didymium iridis* (Ditmar) Fr.

First recorded from Myanmar by Reynolds & Alexopoulos (1971).

Collection examined: SLS27280, HSC, liana (mc).

Didymium squamulosum (Alb. & Schwein.) Fr.

Collections examined: TWKK1112, KAL, ground litter (mc); TWKK1113, KAL, ground litter (mc); TWKK1127, HSC, aerial litter (mc).

Echinostelium minutum de Bary

Collection examined: WR/SLS27202, KTY, bark (mc).

Echinostelium paucifilum K. D. Whitney

Collection examined: WR/SLS27208, YAU, bark (mc).

Fuligo septica (L.) F. H. Wigg.

Collections examined: TWKK1107, TGG, decaying wood (fc), 31 October 2011; TWKK1126, TGG, decaying wood (fc), 9 January 2012.

Hemitrichia calyculata (Speg.) M. L. Farr

Collections examined: TWKK0989, TGG, decaying wood (fc), 9 September 2011; TWKK1142, TGG, decaying wood (fc), 25 June 2012; TWKK1144, TWKK1151, ADK, decaying wood (fc), 10 July 2012.

Hemitrichia intorta (Lister) Lister

First recorded from Myanmar by Reynolds & Alexopoulos (1971) but not encountered during our surveys.

Hemitrichia minor G. Lister

Collection examined: WR/SLS27763, YAU, bark (mc).

Hemitrichia pardina (Minakata) Ing

Collection examined: WR/SLS27248, HLK, bark (mc)

Hemitrichia serpula (Scop.) Rostaf. ex. Lister

Collections examined: TWKK0980, TGG, decaying wood (fc), 20 August 2011; TWKK1035, TGG, decaying wood (fc), 26 September 2011.

Lamproderma scintillans (Berk. & Broome) Morgan

Collection examined: TWKK1119, TGG, bark (mc).

Licea biforis Morgan

Collection examined: TWKK1098, BYN, bark (mc).

Licea bulbosa Nann.-Bremek. & Y. Yamam.

Collection examined: WR/SLS27793, YAU, bark (mc).

Licea kleistobolus G. W. Martin

Collection examined: SLS27425, HSC, liana (mc).

Licea minima Fr. Collection examined: WR/SLS27190, YAU, bark (mc). Licea operculata (Wingate) G. W. Martin Collection examined: WS.SLS27432, KTY, bark (mc). Licea rugosa Nann.-Bremek. & Y. Yamam. Collection examined: WR/SLS72710, SHW, bark (mc). Lycogala epidendrum (L.) Fr. Collections examined: TWKK1069, TGG, decaying wood (fc), 8 October 2011; TWKK1141, TGG, decaying bamboo (fc), 25 June 2012. *Lycogala exiguum* Morgan Collection examined: TWKK1069, TGG, decaying wood (fc), 8 October 2011. Macbrideola decapillata H. C. Gilbert Collection examined: TWKK1085, TYL, bark (mc). Macbrideola scintillans H. C. Gilbert Collection examined: WR/SLS27751, YAU, bark (mc). *Metatrichia vesparia* (Batsch) Nann.-Bremek. ex G. W. Martin & Alexop. Collections examined: TWKK0984, BYN, bark (fc), 1 September 2011; TWKK1106, TGG, decaying wood, 2 November 2011; TWKK1125, TGG, decaving wood, 9 January 2012. Perichaena chrysosperma (Curr.) Lister Collection examined: TWKK1128, HSC, ground litter (mc). Perichaena depressa Lib. Collections examined: TWKK1124, KAL, ground litter (mc); TWKK1129, KTY, aerial litter (mc); TWKK1133, HSC, aerial litter (mc). Perichaena dictyonema Rammeloo Collection examined: SLS27414, HSC, liana (mc). Perichaena vermicularis (Schwein.) Rostaf. Collection examined: SLS27177, HSC, liana (mc). Physarella oblonga (Berk & M. A Curtis) Morgan Collections examined: TWKK0977, TGG, decaying wood (fc), 20 August 2011; TWKK1034, TGG, decaying wood (fc), 26 September 2011; TWKK1039 TGG, decaying wood (fc), 26 September 2011. Physarum album (Bull.) Chevall Collections examined: TWKK1042, TGG, bark (fc), 27 September 2011; TWKK1148, ADK, decaying wood (fc), 10 July 2012. Physarum cinereum (Batsch) Pers. First recorded from Myanmar by Reynolds & Alexopoulos (1971). Collection examined: TWKK1043 TGG, bark (fc), 27 September 2011. **Physarum crateriforme** Petch Collections examined: TWKK1001, TGG, bark (fc), 17 September 2011; TWKK1026, TGG, moss (fc), 23 September 2011; WR/SLS27206, TYL, bark (mc).

Physarum globuliferum (Bull.) Pers.

First recorded from Myanmar by Reynolds & Alexopoulos (1971).

Collections examined: TWKK0978, TGG, decaying wood (fc), 20 August 2011; TWKK 0992, TGG, decaying wood (fc), 9 September 2011; TWKK1030, TGG, decaying wood (fc), 26 September 2011.

Physarum lakhanpalii Nann.-Bremk. & Y. Yamam.

Collections examined: WR/SLS27191, YAU, bark (mc); WR/SLS27198, BYN, bark (mc); TWKK1000, TGG, aerial litter (fc), 17 September 2011.

Physarum melleum (Berk. & Broome) Massee

First recorded from Myanmar by Reynolds & Alexopoulos (1971).

Collections examined: TWKK0985, TGG, aerial litter (fc), 9 September 2011; TWKK0990, TGG, aerial litter (fc), 9 September 2011; TWKK 0994, TGG, decaying wood (fc), 9 September 2011.

Physarum pusillum (Berk. & M. A. Curtis) G. Lister

Collections examined: TWKK1002, TGG, aerial litter (fc), 17 September 2011.

Physarum viride (Bull.) Pers.

Collections examined: TWKK0993, TGG, decaying wood (fc), 9 September 2011; TWKK1028, TGG, decaying wood (fc), 24 September 2011; TWKK1058, TGG, decaying wood (fc), 27 September 2011.

Protophysarum phloiogenum M. Blackw. & Alexop.

This record is based upon a collection (BPI 809301) in the National Fungus Collections in Beltsville, Maryland. This species was not encountered during our surveys.

Stemonaria longa (Peck) Nann.-Bremek.

Collection examined: TWKK1095, TGG, decaying wood, 20 October 2011.

Stemonitis axifera (Bull.) T. Macbr.

Collection examined: TWKK1031, TGG, decaying wood, 26 September 2011.

Stemonitis fusca Roth

Collection examined: TWKK986, decaying wood, 9 September 2011.

Stemonitis herbatica Peck

First recorded from Myanmar by Thaung (2007) but not encountered during our surveys.

Stemonitis nigrescens Rex

Collection examined: SLS27278, HSC, liana (mc), sample collected May 2012.

Stemonitis splendens Rostaf.

Collection examined: TWKK0986, TGG, decaying wood (fc), 9 September 2011.

Stemonitopsis hyperopta (Meyl.) Nann.-Bremek.

Collection examined: WR/SLS27211, BYN, bark (mc).

Discussion

The results obtained from surveys for myxomycetes carried out in some areas of the New World tropics indicate that tropical forests support a diverse assemblage of these organisms. For example, more than 200 species are known for Costa Rica (Rojas *et al.* 2010). The highest total reported thus far for any country in Southeast Asia is 132 species from Thailand (Ko Ko *et al.* 2010), which is only slightly higher than the 129 species known from the Philippines (Reynolds 1981, dela Cruz *et al.* 2009, Moreno *et al.* 2009, Dagamac *et al.* 2011, Macabago *et al.* 2012) and the 119 species listed for Indonesia (Moritzi 1845, Berkeley & Broome 1876, Farr 1990).

Fifty of the 67 species now known from Myanmar also were reported from Thailand by Ko Ko *et al.* (2010), but 82 of the species listed by these authors have yet to be collected in Myanmar. In contrast, only 17 of the species listed herein are not among those listed for Thailand. On the basis of these totals, there is little doubt that additional efforts are needed to document more completely the myxomycete biota of Southeast Asia. We hope that the data presented in this paper will serve as a starting point from which to launch more comprehensive future studies of Myanmar as well as other countries in the region for which the myxomycetes are an understudied group.

Acknowledgements

The research reported herein was funded in part by a grant (8890-11) from the National Geographic Society, with additional support provided by a grant (OISE-1042602) from the National Science Foundation.

References

- Berkeley M. J., Broome E. C. (1876) Supplement to the enumeration of the fungi of Ceylon, Java. Transactions of the Linnean Society of London (Botany) 15: 82–85.
- Currey F. (1875) On a collection of fungi made by Mr. Sulpiz Kurz, Curator of the Botanic Gardens, Calcutta, Read June 4, 1874. Transactions of the Linnean Society, London, Series II, Botany 1: 119–131.
- Dagamac N. H. A., dela Cruz T. E. E., Pangilinan M. V. B., Stephenson S. L. (2011) List of species collected and interactive database of myxomycetes (plasmodial slime molds) for Mt. Arayat National Park, Pampanga, Philippines. *Mycosphere* 2: 449–455.
- dela Cruz T. E. E., Kuhn R. V., Javier A. O. M., Parra C. M., Quimio T. H. (2009) Status of the myxomycete collection at the UPLB – Museum of Natural History (UPLB-MNH) Mycological Herbarium. *Philippine Journal of Systematic Biology* 3: 97–111.
- Farr M. L. (1990) Myxomycetes. In: Contributions toward a Mycobiota of Indonesia: Hypocreales, synnematous hyphomycetes, Aphyllophorales, Phragmobasidiomycetes, and Myxomycetes. Memoirs of the New York Botanical Garden Vol. 59 (ed. Samuels G. J.), New York Botanical Garden, Bronx: 169–171.
- Ko Ko T. W, Hanh T. T. M, Stephenson S. L., Mitchell D. W., Rojas C., Hyde K. D., Lumyong S., Bahkali A. H. (2010) Myxomycetes of Thailand. Sydowia 62: 243–260.
- Ko Ko T. W., Tran T. T. M., Clayton M. E., Stephenson S. L. (2012) First records of myxomycetes from Laos. Nova Hedwigia 96: 73–81.

- Lado C. (2005–2013) An on line nomenclatural information system of Eumycetozoa. http:// www.nomen.eumycetozoa.com (accessed 10 Nov 2012)
- Macabago S. A. B., dela Cruz T. E. E., Stephenson S. L. (2012) First records of Myxomycetes from Lubang Island, Occidental Mindoro, Philippines. *Sydowia* **64**: 109–118.
- Moreno G., Mitchell D. W., Stephenson S. L., dela Cruz. T. E. (2009) A new species of Craterium (Myxomycetes) with reticulate spores. Boletín de la Sociedad Micológica de Madrid 33: 175–180.
- Moritzi A. (1845) Systematisches Verzeichniss der von H. Zollinger in den Jahren 1842–1844 auf Java gesammelten Pflanzen nebst einer kurzen Beschreibung der neuen Gattungen und Arten. Solothurn, Switzerland.
- Reynolds D. R. (1981) Southeast Asian myxomycetes II. Philippines. Kalikasan Philipine Journal of Biology 10: 127–150.
- Reynolds D. R., Alexopoulos C. J. (1971) Southeast Asian Myxomycetes. I. Thailand and Burma. Pacific Science 25: 33–38.
- Rosing W.C. (2009) Corticolous myxomycetes of Singapore. Gardens' Bulletin, Singapore 61: 151–157
- Rosing W. C., Mitchell D. W., Moreno G., Stephenson S. L. (2011) Additions to the Myxomycetes of Singapore. *Pacific Science* 65: 391–400.
- Rojas C., Schnittler M., Stephenson S. L. (2010) A review of the Costa Rican myxomycetes (Amebozoa). *Brenesia* **73–74**: 39–57.
- Stephenson S. L., Stempen H. (1994) Myxomycetes: A handbook of Slime Molds. Timber Press, Portland, Oregon.
- Thaung M. M. (2007) A preliminary survey of macromycetes in Burma. Australasian Mycologist 26: 16–36
- Thaung M. M. (2008) Report: Some noteworthy fungi of Burma. *Australasian Mycologist* 27: 111–116
- Tran H. T. M., Stephenson S. L., Hyde K. D., Mongkolporn O. (2006) Distribution and occurrence of myxomycetes in tropical forests of northern Thailand. *Fungal Diversity* 22: 227–242.
- Tran H. T. M., Stephenson S. L., Hyde K. D., Mongkolporn O. (2008) Distribution and occurrence of myxomycetes on agricultural ground litter and forest floor litter in Thailand. *Mycologia* 100: 181–190.
- van Hooff J. P. M. (2009) Cribraria tecta, a new myxomycete from Vietnam. Boletín de la Sociedad Micológica de Madrid **33**: 129–136.

(Manuscript accepted 13 May 2013; Corresponding Editor: I. Krisai-Greilhuber)

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sydowia

Jahr/Year: 2013

Band/Volume: 65

Autor(en)/Author(s): Win Ko Ko Thida, Rosing Wayne Curtis, Win Ko Ko Zin Zin, Stephenson Steven Lee

Artikel/Article: Myxomycetes of Myanmar 267-276