More additions to the checklist of African myxomycetes

GEORGE G. NDIRITU[1] AND MYRIAM DE HAAN[2]

[1]*Centre for Biodiversity, National Museums of Kenya, P. O. Box 40658-00100, Nairobi, Kenya*
[2]*Botanic Garden Meise, Nieuwelaan 38, BE-1860 Meise, Belgium*

Abstract

During compilation of the first checklist of African myxomycetes in 2009, a number of myxomycetes records for some countries were not reported. These records were either in (i) literature not easily accessible; (ii) specimens identified but not reported or uploaded onto the Global Biodiversity Information Facility (GBIF) database or (iii) collections in museums that are not identified. During the 2009 initiative 291 species were reported. To update the checklist of African myxomycetes, the first author visited Botanic Garden at Meise (Belgium) and together with the co-author scrutinized collections of myxomycetes that were collected in Africa in the past. The herbarium in the Botanic Garden in Meise holds important collections of myxomycetes obtained from Africa in last century, estimated to be 1094 specimens and a significant percentage of them belongs to Ghent University. During this study a total of 600 specimens were checked, names verified or identified. This work was carried out in December 2012 and August 2013. To date 352 species have been reported from Africa. Our visit added significant records not previously reported from Democratic Republic of the Congo, Rwanda and Burundi. Others countries with a substantial number added are Zambia, Malawi and Morocco. Some of the collections were obtained in the early 1900s and most between 1970 and 1990, primarily from field collections and only a few from the laboratory method of moisture chamber. Additional data to be included are from recent field surveys in Kenya by the first author and in the Democratic Republic of the Congo by the co-author. Once compilation of species data is complete, it will be possible to (i) say with more certainty the number of species collected in each of the studied countries or territories in Africa, (ii) produce an updated checklist of African myxomycetes, and (iii) compile a monograph of African Myxomycetes in the series of Fungus Flora of Tropical Africa published by the Botanic Garden, Meise.

Africa

Africa is the second largest continent in the world. It has 54 fully recognized sovereign states ("countries") and nine territories. Its climate ranges from tropical to subarctic, gives rise to diverse landscapes and large biomes ranging from tropical forests, grasslands / savannas, deserts, and Mediterranean woodlands. With high human population growth and increasing demand for natural resources, the continent is witnessing high rate of natural vegetation degradation that is twice the world rate (UNEP 2008). For instance 31% of Africa's pasture lands and 19% of its forests and woodlands are classified as degraded. In addition, Africa is losing over four million hectares of forests every year, which is twice the average deforestation rate compared to the rest of the world. This is worrying considering most of these ecosystems have not been inventoried for a significant components of biodiversity, including myxomycetes.

Myxomycetes occurrences and distribution

An examination of all known currently available records indicates that myxomycetes have been reported from only 34 countries and territories in Africa (Fig. 1). No myxomycetes records exist for 25 countries and territories of Benin, Burkino Faso, Cape Verde, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal and Togo in Western Africa; Chad, Equatorial Guinea, Sao Tome and Principle, South Sudan as well as Sudan in Central Africa; Comoros, Djibouti, Eriteria, Mayotte and Somalia in Eastern African, and Botswana, Lesotho, Swaziland and Zimbabwe in Southern Africa. This study added 61 species to the 291 species compiled earlier (Ndiritu et al. 2009), which bring the total of myxomycetes known in Africa to 352 species. Noticeably there are a few countries where collection of myxomycetes have been comprehensive, with only 14 countries reporting more than 50 species.

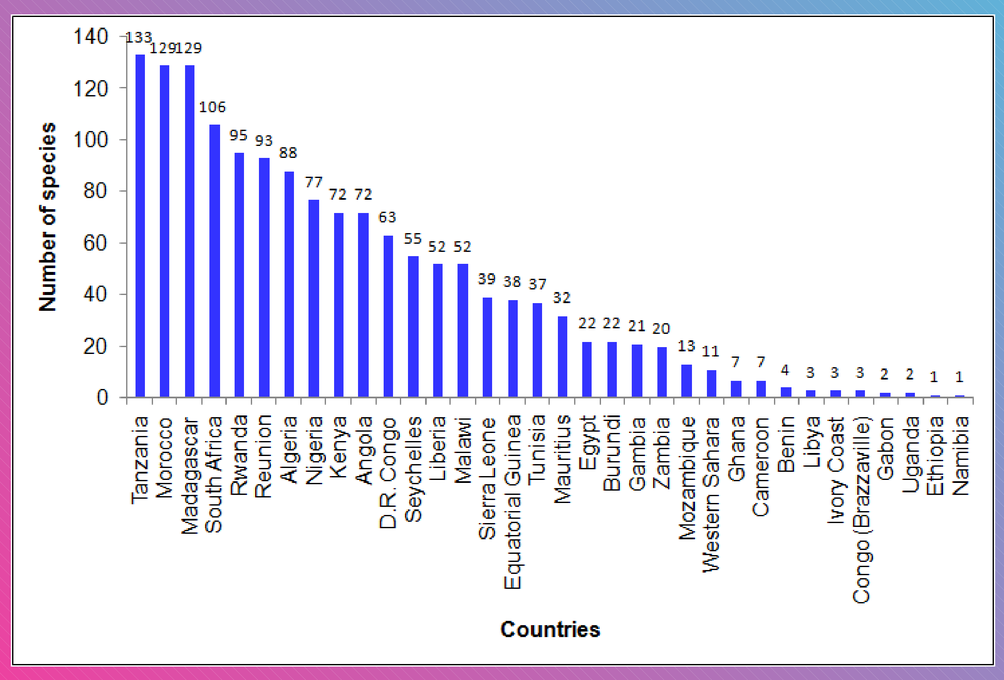

Fig. 1. Countries and number of myxomycetes

As expected cosmopolitan and common myxomycetes were the most frequent species and were encountered in most countries (Fig. 2). Overall, the most frequent species are *Arcyria cinerea, Arcyria denudata, Stemonitis fusca, Physarum pusillum, P. compressum, Ceratiomyxa fructiculosa, Lycogala epidendrum, Diderma hemisphaericum, Didymium nigripes, Stemonitis splendens, Didymium squamulosum, Fuligo septica, Hemitrichia serpula, Metatrichia vesparia* and *Pericheana depressa*.

More than half of the myxomycetes can be regarded as rare. 124 species were only encountered in only one country while 68 species occurred in two countries. While this is to a certain degree attributed to under sampling, some of these species are very unique and rare globally. Some of these species are *Diderma aurantiocolumellatum, Didymium columella-cavum, Didymium comatum, Didymium simlensis, Physarina echinocephala* and *Physarum urna*

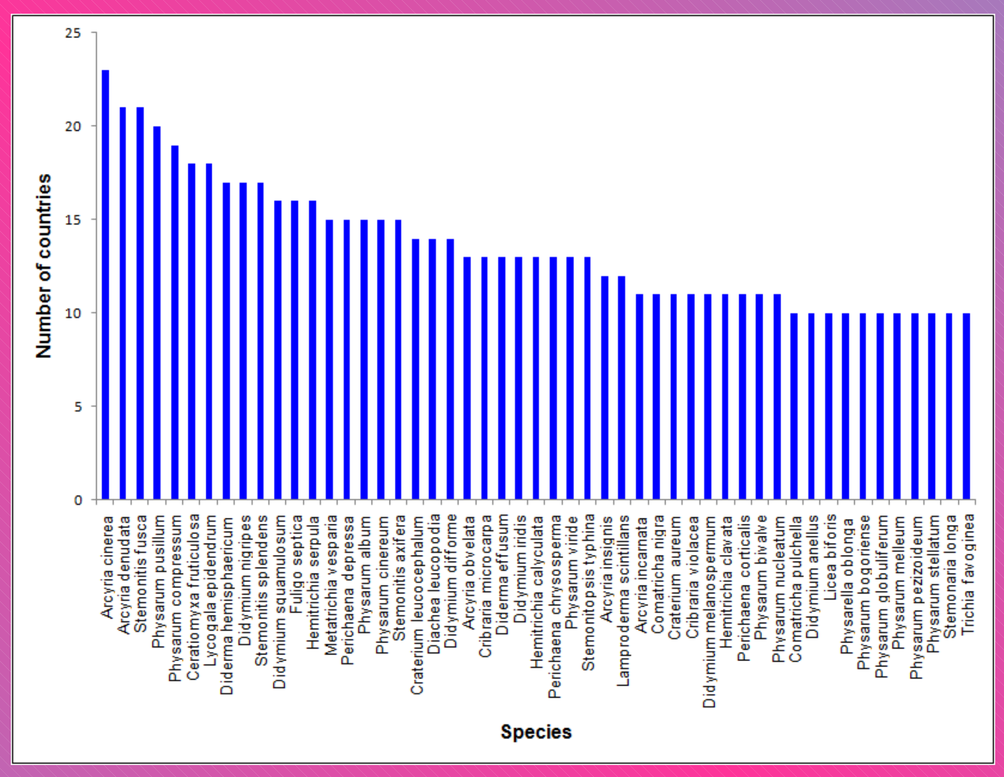

Fig. 2. Frequent myxomycetes in Africa

Examples of myxomycetes collected in Kenya (by GGN) and pictures taken in BGM (by MdH).
From left: *Perichaena depressa*, *Metatrichia arundinariae*, *Hemitrichia clavata*, *Didymium bahiense*, *Didymium difforme, Physarum melleum.*

Way forward for myxomycetes research in Africa

The level of knowledge on myxomycetes in Africa is almost non-existent. There is need for more concerted efforts to be made to transfer myxomycetes taxonomic knowledge from north to the south. Whereas funding for basic and taxonomic research is globally low, the situation is worse for free living organisms such as myxomycetes. More is required from the world governments and non government agencies to consider increasing funding for these organisms because they also play important ecological roles in nature. The rate at which natural vegetation is being degraded in Africa implies that we will never be able to tell in future how much myxomycetes biodiversity existed in these unique and globally important habitats.

Literature Cited

UNEP 2008. Africa Atlas of our changing environment. Nairobi. Kenya.

Ndiritu, G. G., K. E. Winsett, F. W. Spiegel and S. L. Stephenson. 2009. African myxomycetes. A checklist of African myxomycetes. Mycotaxon 107: 353–356.

Acknowledgments

The first author's stay in Belgium was supported by Belgian National Focal Point to the Global Taxonomic Initiative.