

FINLAND

Finland's response to CBD Notification 2016-078

Submission of biodiversity for poverty eradication and sustainable development

The Conference of the Parties encouraged Parties (decision XII/5) “to identify best practices and lessons learned on how to integrate biodiversity, poverty eradication, and sustainable development”. Also the need for sharing the information e.g. through relevant means was part of the decision.

Finland is pleased to contribute to Notification 2016-078 on Decision XII/5: Submission of Biodiversity for Poverty Eradication and Sustainable Development.

Enhancing food security and preserving local heritage on the use of wild mushrooms through high-quality handbooks

Wild mushrooms provide important high quality nutrition for the poor people in Africa. Their crucial importance for the life of poor people is significant, especially in the rural areas in the beginning of rainy season, when the agricultural crops have mostly been utilized. In addition, the sale of wild mushrooms provides income especially for rural women. Unfortunately, the heritage of knowing and picking wild mushrooms is rapidly fading within younger generations.

Finnish mycologists along with their African and British colleagues have published (2015) a guidebook on *Zambian mushrooms*, entitled *Zambian mushrooms and mycology*. Being the first four-colour illustrated publication on *Zambian mushrooms*, this work can be considered as a major socio-cultural achievement, as it might be only the second high-quality and comprehensive handbook on wild mushrooms native to the African continent. The first handbook, entitled *Tanzanian mushrooms – Edible, harmful and other fungi*, was also written in collaboration with Finnish mycologists and a local mycologist (2003). These publications have been well taken in both countries, as well as in international evaluations.

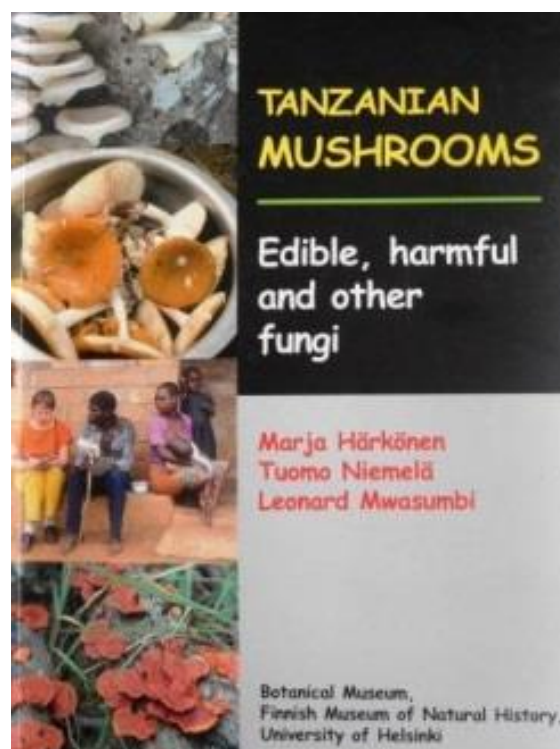
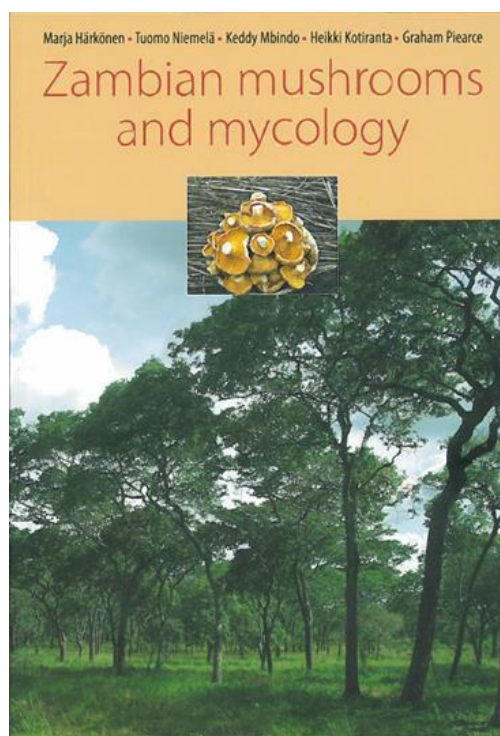
In addition to serving as a field guide for mushroom identification, the first part of the books also describes different types of fungi, their biology and growth, their different macroscopic and microscopic structures as well as their various habitats. The books describe extensively local species, along with their identifying features, edibility and local names in as many tribal languages as the researchers were able to find.

Some of the locally widely used mushrooms were new to science and are described also scientifically in the books (the books are also published as supplementums of a scientific mycological journal “*Norrlinna*” of the Finnish Museum of Natural History).

According to locals, the best mushrooms in Zambia are a certain species of agaric (*Amanita loosei*) and various *Termitomyces*, the largest of which, *Termitomyces titanicus*, is believed to be the largest mushroom in the world, with a cap that may reach up to one meter in diameter. Some mushrooms are also popular in Tanzania. Tanzanian book also pays attention with pictures to the poisonous *Amanita muscaria*, which is an invasive alien species introduced to tree plantations along with soil of seedling pots. *A. muscaria* closely resembles popular edible *Amanita* species in Tanzania and had caused several death cases.

Mushroom expeditions

The first edition of Tanzanian book was published 1995. It was sold out and the second updated edition was published in 2003. Collaboration with the Republic of Zambia on the mushroom book began in 2012, when the researchers reached an agreement to conduct two collection trips in the country. The first research trip, which lasted over three weeks, was conducted in February 2013, towards the end of rainy season. The second expedition, which also lasted approximately three weeks, was conducted around the start of rainy season, in late November 2013.



Recording local heritage

As people continue to migrate from rural areas into cities, the traditional knowledge and natural heritage is steadily being lost, for instance knowledge on mushrooms, such as their names and edibility. This is why the researchers also recorded some of the fading heritage on Zambian

mushrooms for the book. To do this, rural people from small, far-off villages as well as roadside mushroom sellers, were interviewed during the expeditions. The Zambian interviewees were asked the same questions previously used in the Tanzania mushroom project, which ensured that the results remain comparable.

When fresh mushrooms were not available, interviewees were shown large, colour pictures of the mushrooms. Some of the interviewees, usually the oldest women of the villages, proved to be very knowledgeable about mushrooms, and were able to share a great deal of information on the use, deliciousness (1–3 stars) or toxicity of the mushrooms, as well as their tribal names. The interview questions were first prepared in English, after which they were translated into the local language and the answers back into English.

Education and training, food security and mushroom recipes

Tanzanian books are already sold out. It would be worth of looking ways how to make the books and their information more readily available. The mobile phone revolution in rural Africa provides also feasible possibilities for internet version, which could be freely available for smart phones. There is an existing plan to produce such a book in the region.

It is hoped that *Zambian mushrooms and mycology* will be of use in the education and training of forestry professionals and that it will also spread to regular schools as well. In addition, one of the goals of the project was to support the food security of the local people. This is why the publication also contains simple mushroom-based recipes from around the world, mainly from Africa.



The largest Agaricales species in the world, *Termitomyces titanicus*, is well-loved in Zambia (Photo: Heikki Kotiranta).

Project organization and funding

The funding of the books came from ODA-funds of Finland. Tanzanian books were prepared through university collaboration between University of Helsinki and University of Dar es Salaam and ODA funding for NGOs (Finnish-Tanzania Society). *Zambian mushrooms and mycology* was produced as part of a collaborative project between the Finnish Environment Institute (SYKE) and the Republic of Zambia. The aim of the project was to develop Zambia's environmental administration as well as the collection, management and utilization of environmental information. The mushroom collection trips, research and writing of the book were conducted with the help of funds made available through the Institutional Cooperation Instrument (ICI) of the Ministry for Foreign Affairs of Finland. The project was coordinated by the Forestry Department of the Ministry of Lands, Natural Resources and Environmental Protection of Zambia (MLNREP) and the Finnish Environment Institute's Natural Environment Centre together with the Finnish Museum of Natural

History (LUOMUS). The publication event of the book was held in the Embassy of Finland in Zambia, Lusaka, on the 4th of November 2015.

Recent evaluation

Zambian mushrooms and mycology has received praise from an international mycological journal, which described the work with adjectives such as splendid, superb and stupendous! ([The Global Mycological Journal of International Mycological Association, IMA Fungus, Vol. 6, Issue 2, page 70; http://www.imafungus.org/Issue/62/25.pdf](http://www.imafungus.org/Issue/62/25.pdf)).



Mycologist Marja Härkönen asking roadside mushroom sellers about the prices of their wares (Photo: Heikki Kotiranta).

References

Härkönen, Marja, Niemelä, Tuomo, Mbindo, Keddy, Kotiranta, Heikki & Pearce, Graham 2015. *Zambian mushrooms and mycology*. – *Norlinia* 29: 1-208. Finnish Museum of Natural History (Botany Unit), University of Helsinki.

Härkönen, Marja, Niemelä, Tuomo & Mwasumbi, Leonard 2003. *Tanzanian mushrooms. Edible, harmful and other fungi*. – *Norlinia* 10: 1-200. Finnish Museum of Natural History, Botanical Museum, University of Helsinki.