

REPORT

Taxonomic training & access to collections in Belgium

NOTICE

The present questionnaire must arrive with the Belgian National Focal Point to the Global Taxonomy Initiative within one month of the official closure of the capacity building visits. Electronic submission on the general e-mail address of the Belgian GTI NFP (cbd-gti@naturalsciences.be) is strongly encouraged. If electronic submission should however be impossible, paper copies may be sent by fax or ordinary mail. The Belgian GTI NFP will acknowledge receipt of all project reports.

If grantees have **relevant pictures** to illustrate their capacity building visit, these may be annexed to the report. The Belgian National Focal Point might use some of these pictures in one of its reporting activities, but only after the copyright holder has given his permission.

Contact and further information

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PART I – CANDIDATE INFORMATION

Family name:	Ndiritu
First name(s):	George Gatere
Nationality:	Kenya
Date of arrival and departure in / from Belgium	16 August 2013 to 15 September 2013
Number of training days:	30 days
Type of visit	<input checked="" type="checkbox"/> Mainly training in taxonomy and collection management <input checked="" type="checkbox"/> Mainly access to collections <input type="checkbox"/> Other, <i>specify</i>
Location of training:	<input type="checkbox"/> Royal Belgian Institute of Natural Sciences, Brussels <input type="checkbox"/> Royal Museum for Central Africa, Tervuren <input checked="" type="checkbox"/> National Botanic Garden of Belgium, Meise <input type="checkbox"/> Other, <i>specify</i>

PART II - GENERAL INFORMATION

Describe concisely how you have learned about the Belgian GTI Project	I learnt about the GTI Project from a colleague who benefited from it. However more information on its application process and requirements was obtained on the GTI's website.
Describe concisely how you have learned about this specific call for proposals	As a previous beneficiary of the GTI project, I received an announcement from the GTI office via an email.
If this was your first study visit financed via the Belgian GTI National Focal Point, describe concisely why you needed capacity building in taxonomy and collection management	Second visit
If this was not your first study visit financed via the Belgian GTI National Focal Point, describe concisely why you needed further support	The initial GTI support in 2012 allowed me to compile and identify ~60% of African myxomycetes collection in NBGB. This second grant is intended to assist me: (i) complete the 40% remaining identifications and (ii) continue taking specimens' images using the good facilities at NBGB. Information obtained is to be used to compile a monograph of African Myxomycetes.

<p>Describe concisely what support (e.g. training, access to collections,...) you have received and how this training can be related to taxonomy and /or collection management</p>	<p>During my stay in NBGB, I tremendously improved my knowledge on taxonomy and collection management of myxomycetes. Myriam de Haan who was my tutor shared with me her many years experience, skills and knowledge on how to identify myxomycetes. Specifically:</p> <ul style="list-style-type: none"> • She continued to show me how to take appropriate microscopic images and key species. • I was able to access and either confirm or correct taxonomic names for more than 300 specimens obtained from Africa between 1900 and 2013. • I managed to take more than 1,000 microscopy images.
<p>Describe concisely how your gained capacity will help you in your professional duties</p>	<p>The taxonomic capacity I gained is a big boost to my professional duties. The training has made me a better scientist and taxonomist on myxomycetes. Now I feel comfortable to work independently on myxomycetes, and in case of taxonomic difficulties I have an understanding of which key characters to share with other experts. Similarly for collection management, I am aware of standards methods of establishing and maintaining appropriate cryptogam herbaria. Lastly, now I am in a better position to: (i) train others interested in taxonomy and ecology of myxomycetes, (ii) independently disseminate my study findings in journals and other platforms, and (iii) conduct seminars and public educations on the important roles played by myxomycetes amoeba in the environment.</p>
<p>Describe concisely how your gained capacity will be implemented in your institution</p>	<p>The taxonomic and collection management gained will be beneficial to my institution in a number of ways. (i) I have made a concept proposal strongly recommending for establishment of permanent cryptogamic herbaria in the NMK, (ii) proposed methods to improve management of the current collections of myxomycetes in the NMK, (iii) recommended to NMK to support research on myxomycetes in order to increase the number of collections and species known from this part of the world, and (iv) for NMK to continue offering education and dissemination awareness materials on myxomycetes.</p>
<p>Describe concisely what other support you eventually would need</p>	<p>During this visit I was able to access, key or confirm most of the specimens obtained in Africa. In order to publish the project's findings I will need support to produce and publish an African myxomycetes monograph. Support needed is for printing the monograph.</p>
<p>Describe concisely what infrastructural and human resources you and your institution eventually still need to become fully functional</p>	<p>Myxomycetes taxonomic research and collection management level is still at infancy stage in Kenya. To develop it, the following basic resources are urgently required: (i) both compound and scanning microscopes mounted with cameras. Presently we relies on other departments' microscopes in the NMK; (ii) cabinets to preserve and store specimens. At the moment we store them in cartons; (iii) current identifications books. Taxonomic books are few and expensive; and (iv) apart from me, there are no other experts studying myxomycetes in Africa. There is urgent need to train more experts in this field.</p>

<p>Describe concisely how you think the Belgian GTI National Focal Point could further construct capacity for you and your institution</p>	<p>Advancement of science and taxonomy in developing countries such as Kenya remain poor, and is one of the major challenge facing biodiversity management. There are several ways Belgian GTI can contribute to science and taxonomy advancement in developing countries. For NMK, Belgian GTI can significantly contribute by:</p> <ul style="list-style-type: none"> • continue supporting north-south scientist exchanges / collaboration initiatives like this one. Apart from facilitating mentorship, these initiatives also build networks and collaborations that can lead to preparation and submission of joint research proposal project as well as preparation of joint publications. • giving grants to scientists and taxonomists from NMK so that they can attend taxonomic conferences / meetings / training in developed countries. • allocating grants to support taxonomic / biodiversity field expeditions. • supporting regional taxonomic training initiatives / meetings. NMK staff who are taxonomically better trained in region can train those from neighbouring countries i.e., through south to south collaboration. • giving grants to acquire up to date research facilities such specimen storage cabinets, microscopes, taxonomic reference books etc. • availing funds to cover costs of transporting loaned specimens from NBGB to NMK and vis visa. • encouraging and supporting biodiversity / environmental education and awareness initiatives in NMK, Kenya and Africa.
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PART III – TAXON SPECIFIC INFORMATION

<p>What is your taxon of interest</p>	<p>Myxomycetes</p>
<p>Describe concisely the different methodologies for collecting your taxon.</p>	<p>Myxomycetes are primarily obtained using two major methods: (i) field collection and (ii) laboratory culturing commonly known as moist chamber technique. Field collection generally involve collecting myxomycetes fruiting bodies or sporocarps from their natural habitats and substrates, which are decaying woods, leaves, twigs and barks. Sometimes they are also found fruiting on bark of standing trees and living parts of plants. The moist chamber technique entails collecting natural substrates where myxomycetes are known to occur and incubating them in the petri dish in the laboratory. For both methods, encountered sporocarps are carefully taken with part of the substrates, mounted on hard paper as a tray and then placed on specimen boxes.</p>
<p>Describe concisely how to best preserve collected specimens of your taxon for taxonomic purposes</p>	<p>The collected myxomycetes specimens are allowed to air dry for a few days in the specimen box with lid left open. The dried specimen are then placed in zipped nylon bags and refrigerated at -16 °C for a few days to eliminate pests. Finally the specimens are removed, zipped in nylon bags and stored in insect proof cabinets. For easy retrieval, the specimens' boxes, cabinet compartments and cabinets are labelled and this information entered in databases. Other details associated with the stored specimen and made available on databases are collection number, collector's name, date collected, the person who identified the specimen, substrate, habitat, site name, province or state and country.</p>
<p>Describe concisely how you intend to make your taxonomic data available to other colleagues</p>	<p>Taxonomic data obtained will be shared in both local and international platforms, including:</p> <ul style="list-style-type: none"> • on NMK botany department quarterly newsletter, which has local to national distribution. • publishing an update checklist of Africa myxomycetes in peer-reviewed journal that has an national and international audience. • taxonomic data will also be used to publish a African myxomycetes monograph series under the framework of NBGB's Fungi Flora of Tropical Africa. • share the taxonomic data during scientific meetings and conferences.

<p>Describe how your taxonomic work helps improving the status of biodiversity in your country</p>	<p>Only few myxomycetes taxonomic studies have been carried in Kenya. As result our knowledge on their diversity and distribution is incomplete. This work is among several initiatives being undertaken with an aim of laying a foundation for future taxonomic studies of myxomycetes in Kenya. By the end of this project the number of myxomycetes reported and collected from Kenya and Africa continent are expected to be well documented. For many years, myxomycetes have been ignored during other taxonomic surveys because they are regarded as less important. However, myxomycetes are heterotrophic organisms, important predator in microbial food webs. They engulf and digest bacteria, yeast, fungal spores, and decaying matter. As such myxomycetes are important components of decomposition and nutrient cycling pathways in any terrestrial ecosystem. There are indications that the feeding activities of myxomycetes assist in unlocking nutrients held by bacteria and, in the process, facilitate soil fertilization. Myxomycetes are sources of food for a number of organisms such as birds, beetles and animals particularly the fruiting bodies and plasmodia.</p>
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Describe how your project could help reduce poverty in your country

Myxomycetes constitute a significant percentage of the terrestrial microbial diversity. Their grazing pressure on bacteria is suspected to unlock nutrients present in these bacteria, and thus enrich the soil. As such their role in maintaining the ecological processes cannot continue being overlooked. Recent research findings suggest that strong interactions exist between vegetation and microorganisms; with others indicating microorganisms are responsible in large part for the current vegetation structure and composition in the tropics. Poverty in Africa is presently being worsened by factors and problems associated with dysfunctional and degraded environment. Systematics and taxonomy of myxomycetes forms the bases of understanding the ecological role played by these organisms, hence the strong case for us to study and understand them.

Some Pictures



Examples of myxomycetes pictures collected from Kenya by Dr. Ndiritu taken during this training. Top left *Perichaena depressa*, top middle (*Metatrachia arundinariae*), top right (*Hemitrachia clavata*), bottom left (*Didymium bahiense*), bottom middle (*Didymium difforme*) and bottom right (*Physarum melleum*). Pictures taken by Myriam de Haan, National Botanical Garden of Brussels, Belgium.



George Ndiritu and Myriam de Haan at NBGB

