

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	3 November 2012 To 30 November 2012
Number of training days:	27 days (minus 10 holiday and weekend 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	Initially I learnt about the GTI Project from a colleague who benefited from it. However I obtained more information about its application process and requirements on the GTI's website.
Describe concisely how you have learned about this specific call for proposals	After learning about the GTI grants I kept visiting their website and checking for calls for proposals. At least I was aware the GTI proposals' calls are made every year therefore it was easy for me to keep track of their announcements.
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	First, I needed to improve my taxonomic skills and expertise on how to identify myxomycetes which is inadequate. Experts who can offer/ mentor on such skills and knowledge are few globally and none in Kenya as well as in the Africa continent. Secondly, I wanted to learn how to establish and management herbaria for myxomycetes' and other cryptogam groups. Specifically, how to curate, preserve, store, database, and share information. In Kenya as well as the whole of Africa such know-how and facilities are non existent.
If this was not your first study visit financed via the Belgian GTI National Focal Point, describe concisely why you needed further support	

<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 received training on taxonomy and collection management. Ms. 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"> • Ms. de Haan mentored and assisted me improve my taxonomic know how. She showed me how to take appropriate microscopic images and characters to focus on. During my stay we managed to access, and either confirmed or corrected taxonomic names for 337 specimens obtained from Africa between 1900 and 1974, from several countries including Morocco, Algeria, Kenya, Rwanda, Central Africa (Zaire), Zambia and Malawi. The specimen checked comprised approximately 60% of the collections at NBGB obtained from Africa. Additionally we took more than 1,000 microscopy images. • Ms. Ann Bogaerts, collection manager at NBGB gave me a guided tour of both the cryptogams and vascular plants herbaria. She explained to me standard methods used to curate, store, preserve, and document cryptogam's specimens. • NBGB donated reference material that included 16 original monographs/ booklets on taxonomical work of fungi and myxomycetes done in the Africa. Two were on myxomycetes and another 14 on fungi. The reference materials are kept at the library in the National Museums of Kenya (NMK). All of them are valuable taxonomical reference materials and will be accessible to all, including those studying in fungi. • Myriam shared with me literatures and publications on myxomycetes as soft copies (pdfs).
<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 of 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 standard 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 project I was able to do roughly 60% of the taxonomic work projected. To successfully complete this work I need another similar support in order to make a second visit to NBGB. During this second visit I will continue collaborating with Myriam and would seek to achieve the following: (i) finish keying/ confirming the remaining 40% of the collections obtained from Africa, (ii) continue taking specimens' images using the good facilities at NBGB, (iii) produce and publish a final updated checklist of African myxomycetes, and (iv) plan on publishing a African myxomycetes monograph series under the framework of NBGB's Fungi Flora of Tropical Africa. Additionally I would require support to transport collections/specimens to be loaned to either NBGB or NMK.</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 development is still at infancy stage in Kenya. The NMK, which is the only institute in tropical Africa where myxomycetes are studied is keen to spearhead and expand research on these organisms, the reason why this work and our collaboration is even more important To boost 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 and place them on shelves; (iii) current identifications books. Taxonomic books are few and expensive; and herbarium/ space is limited at NMK. Currently specimens are stored temporary on book shelves in the laboratory.</p>
<p>Describe concisely how you think the Belgian GTI National Focal Point could further construct capacity for you and your institution</p>	<p>Science and taxonomy advancement in developing countries such as Kenya remain 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 and preparation of joint publications. • give grants to scientists and taxonomists from NMK attend taxonomic conferences/ meetings/ training in developed countries. • allocate grants to support taxonomic/ biodiversity field expeditions. • support regional taxonomic training initiatives/ meetings. NMK staff who are taxonomically better trained in region can train those from neighbouring countries i.e., south to south collaboration. • give grants to acquire up to date research facilities such specimen/ storage cabinets, microscopes, taxonomic/ reference books etc. • avail funds to cover costs of transporting loaned specimens from NBGB to NMK and vice versa. • encourage and support biodiversity/ environmental education and awareness initiatives in NMK, Kenya and Africa.

PART III – TAXON SPECIFIC INFORMATION

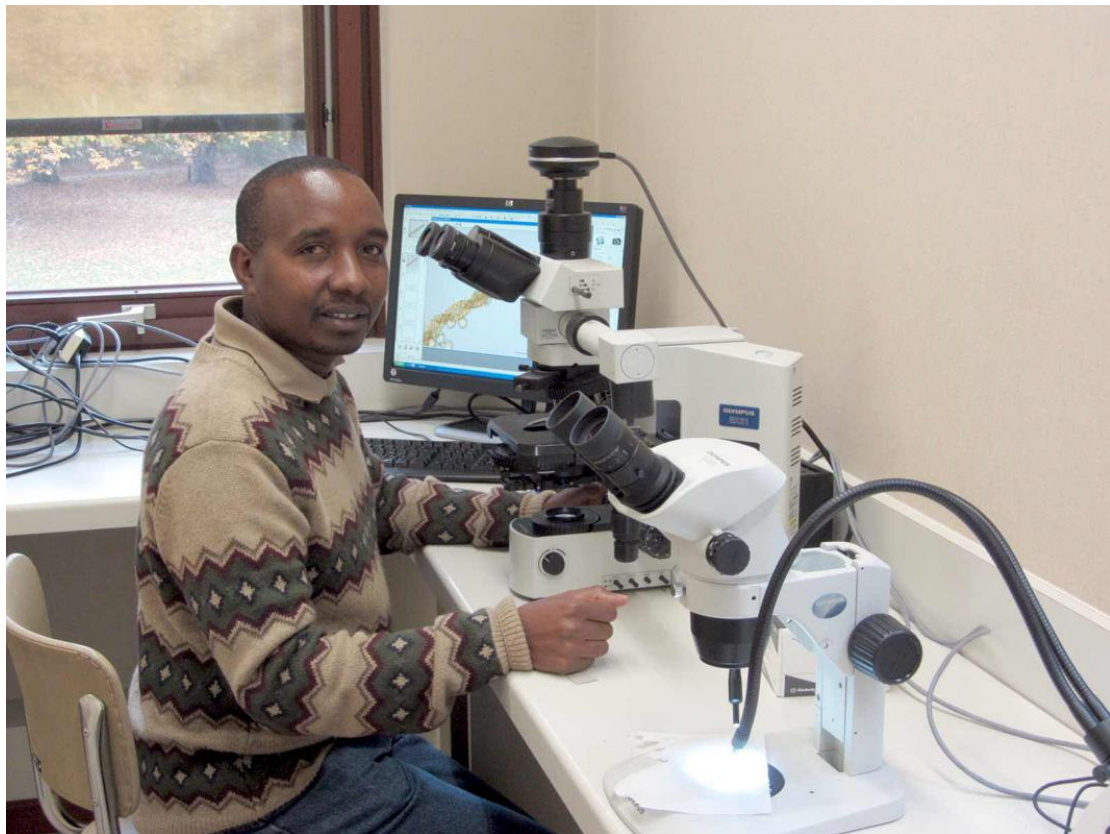
<p>What is your taxon of interest</p>	<p>Class: Myxomycetes</p>
<p>Describe concisely the different methodologies for collecting your taxon.</p>	<p>Myxomycetes are primarily obtained using two major methods: (i) field collection and (ii) laboratory culturing commonly known as moist chamber technique. 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 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 with specimen box lid left open. The dried specimen are then placed in zipped nylon bags and refrigerated at -20 °C for a few days to eliminate pests. Finally the specimen are removed, zipped with 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 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 countable 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 is 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 on 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 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. They are found in all types of terrestrial ecosystems, where they are the primary bacterivores in soils and decaying plant material. 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.

Pictures taken during this project



Dr George Ndiritu from Kenya, a beneficiary of Belgian GTI grant working in the laboratory at National Botanical Garden of Belgium



Dr Ndiritu with his mentor Ms. Myriam de Haan at NBGB



Dr Ndiritu examining a collection at NBGB



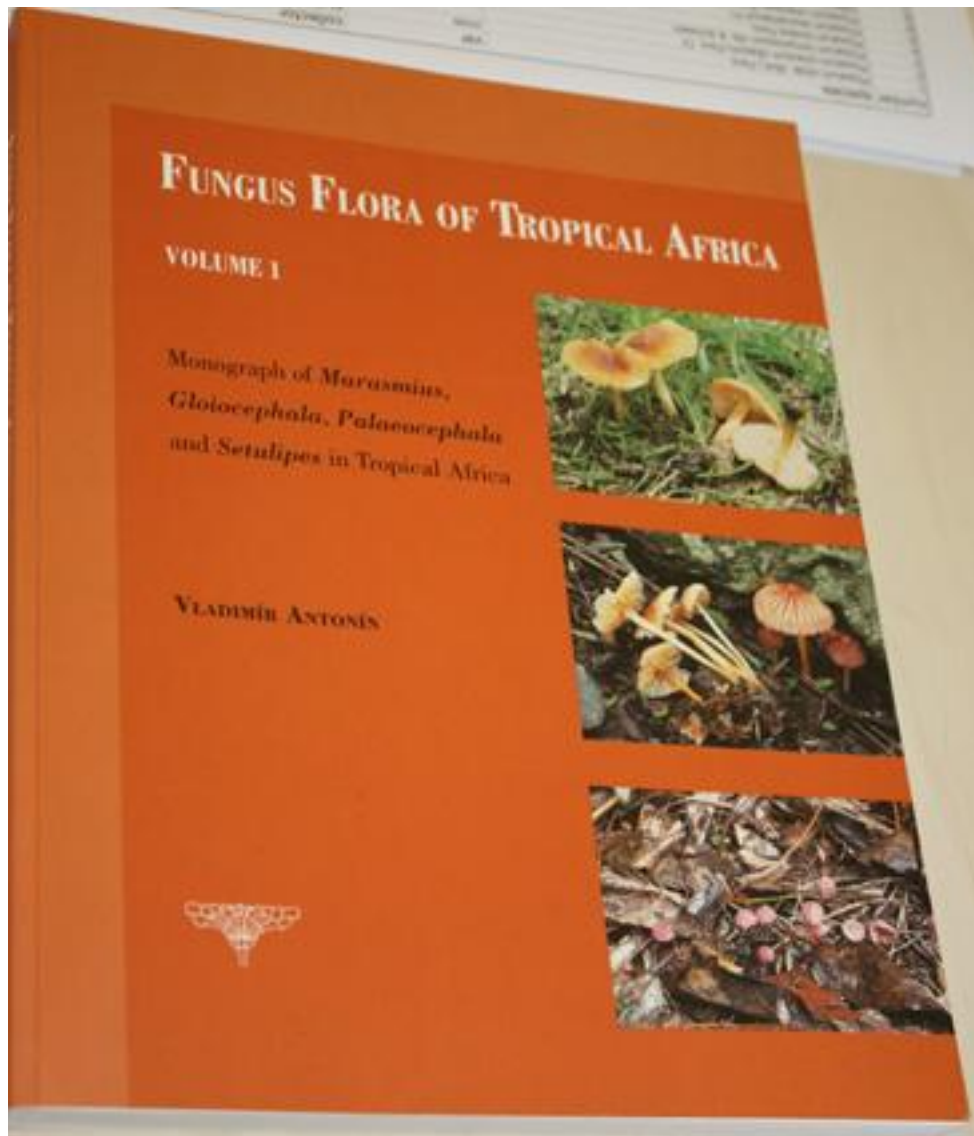
On left are collections in boxes obtained by among other Dr. Rameloo in Africa that were accessed and keyed. Cabinets where collections from Africa are properly stored.



Collections from Africa in labeled boxes



Taxonomic and literature used to key myxomycetes.



A typical example of monograph published by scientists from NBGB which this project anticipate to produce on myxomycetes from Africa.



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Global Taxonomy Initiative