MycoAfrica

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Index

Deadline for next MycoAfrica issue:

30 January 2008

Instructions to authors:

Short **mycological pieces** of African relevance are encouraged. These should not be longer than 3 pages/800 words of text

Permanent features that need input from members:

News on our members

Important Dates of upcoming events, forays, workshops, congresses, etc.

Classifieds that can be used to advertise jobs, post-graduate positions, initiatives, etc.

Useful websites relevant to African mycology.

Please submit contributions as doc or txt files and images should be high quality jpg files.

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In search of a lost world – the African microfungi on trees

By Jolanda Roux

If estimates for the percentage of known/described fungi in the world is ~7% (Hawksworth 2004; Crous *et al.* 2006), and those for southern Africa is ~0.05% (Crous *et al.* 2006), then that for the African continent as a whole must be considerably lower. Not only is this sad in the sense that we may be missing out on some really beautiful fungi, but it is also important in the fact that we might be missing the causes of potentially important tree and plant diseases, or fungi that could be beneficial to us in industrial and agricultural processes and to plants as symbionts. Not to speak of the incredible gaps in conclusions we make about the origins of many important fungal pathogens, or the important biological processes we are destroying because of a lack of understanding of the fungal biodiversity on our continent.

No one person, or group, can single handedly report and describe all the fungi on the African continent. We are all hampered by time and often a lack of funding for "basic" research. However, in the last few years researchers of the Tree Protection Co-operative Programme (TPCP) and DST/NRF Centre of Excellence in Tree Health Biotechnology (CTHB) of the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria, South Africa, have been able to report and describe a number of microfungi from the African continent. These groups focus their research efforts on the fungal pathogens of trees (www.fabinet.up.ac.za). In collaboration with foresters and researchers, especially in eastern and southern Africa, but now also in Cameroon and Ghana, they have been responsible for several "first reports" of known tree pathogens on the African continent, as well as the description of a number of previously unknown species of microfungi.

Most of us would agree that the most successful research is done through collaboration. This is

especially important on the African continent, where many of us would only be able to have access to expensive equipment, or the necessary expertise, through interactions with other researchers on the continent and internationally. Researchers at FABI are passionate about their continent and the training of young people in forest pathology, mycology, bacteriology and biotechnology. Considerable effort has, therefore, been made in building collaborations with other researchers on our continent. Special effort has also been made to include students in these collaborations.

Prof. Jolanda Roux, a researcher at FABI, has undertaken a number of research visits to scientists and foresters in other African countries. Many of her research visits were conducted by vehicle, with Jolanda driving thousands of kilometres on survey trips. She specifically opted to do a lot of her research in this manner, instead of flying to destinations, as she can include students on these trips at minimal extra cost, thereby exposing them to practical pathology, as well as the different cultures on our continent. Furthermore, by driving, the group is able to more carefully survey for tree diseases. The big white FABI Landrover (Figure 1a) has thus become a regular sight in countries such as Zambia, Malawi, Namibia and Tanzania, and has even been up to Nairobi. Funding for these research trips and the resultant laboratory work has come from various sources, but these trips have also been made as affordable as possible, with the group often camping (Figure 1b), and never staying in expensive hotels, while "per diems" is unheard off in order to use the money for research. Most nights the researchers are responsible for their own cooking (Figure 1c), while the campsite is also quickly turned into a temporary laboratory to do isolations from the material collected during the day (Figure 1a).

Collaborative research trips, apart from providing a means of expanding our knowledge regarding the fungi in Africa, provide valuable training for students, foresters, farmers and researchers alike. Not only does the FABI researchers have the opportunity to spread the word about fungi and tree pathogens (Figure 1d), but it provides our students and ourselves with a clearer perspective of the situation on our continent. Through collaboration with researchers in Malawi (Forestry Research Institute) (Figure 1e), Tanzania (Forestry Research, Tanganyika Wattle Co., Kilombero Teak Co.) (Figure 1f), Zambia (Copperbelt University, Forestry Research), Namibia (University of Namibia), Uganda (Makerere University, Sawlog Production Scheme) (Figure 1d), Kenya (Forestry Research, Tree Biotechnology Group), Mozambique (Forestry Research), Ghana (Forestry Research) and Ethiopia (Forestry Department) several tree pathogens have been reported from plantation forestry trees in Africa. Some of these, such as Coniothyrium canker, caused by the recently renamed pathogen *Raederiella zuluense* (Crous *et al*. 2007), has been found in countries from as far south as South Africa (Wingfield *et al*. 1997), all the way up to Ethiopia in the north east (Roux *et al*. 2005; Alemu *et al*. 2005), causing severe stem cankers, especially on *Eucalyptus grandis* trees. This fungal pathogen has a major impact on trees grown for sawn timber and construction as it weakens stems and the resultant products. This pathogen is an example of a fungus that was first recorded and described as a new species from the African continent (Wingfield *et al*. 1997). These studies have also been expanded to include native African forestry trees and are already yielding interesting results. A fungus that is currently known only from Africa, and was first described from this continent, is *Ceratocystis albifundus* (Wingfield *et al*. 1996). *Ceratocystis albifundus* causes a wilt disease of non-native Australian *Acacia* spp., but has also been found on several native tree families in Africa (Roux *et al*. 2007). Some of the other native trees we have been looking at includes species in the Myrtales (Figure 1g) (Nakabonge *et al*. 2005) and *Adansonia* spp. (Figure 1h).

More information on the African projects, and some of the surveys we have done, can be found on the CTHB and TPCP websites (www.fabinet.up.ac.za). We welcome any collaboration with fellow African researchers and would love to hear from you if you notice tree diseases in your area. Please don't hesitate to contact Jolanda Roux (jolanda.roux@fabi.up.ac.za).

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Uganda's Mycota

By Perpetua Ipulet

Uganda is a small country between the Democratic Republic of Congo (DRCongo) and Kenya, lies within the East African region and covers an area of about 236,000 km^2. The central part of the country is characterised by a gentle topography of flat-topped hills and broad, often swampy valleys lying at an altitude of 1000 – 1500 m. More spectacular scenery is found in the west where the landscape is dominated by the rift valley and its associated lakes and mountains. In the east the international border follows a line of raised land associated with the large Miocene volcanoes of Mountains Elgon, Kadam and Moroto. Lake Victoria, the second largest lake in the world covers the down-warped south-central part of the country.

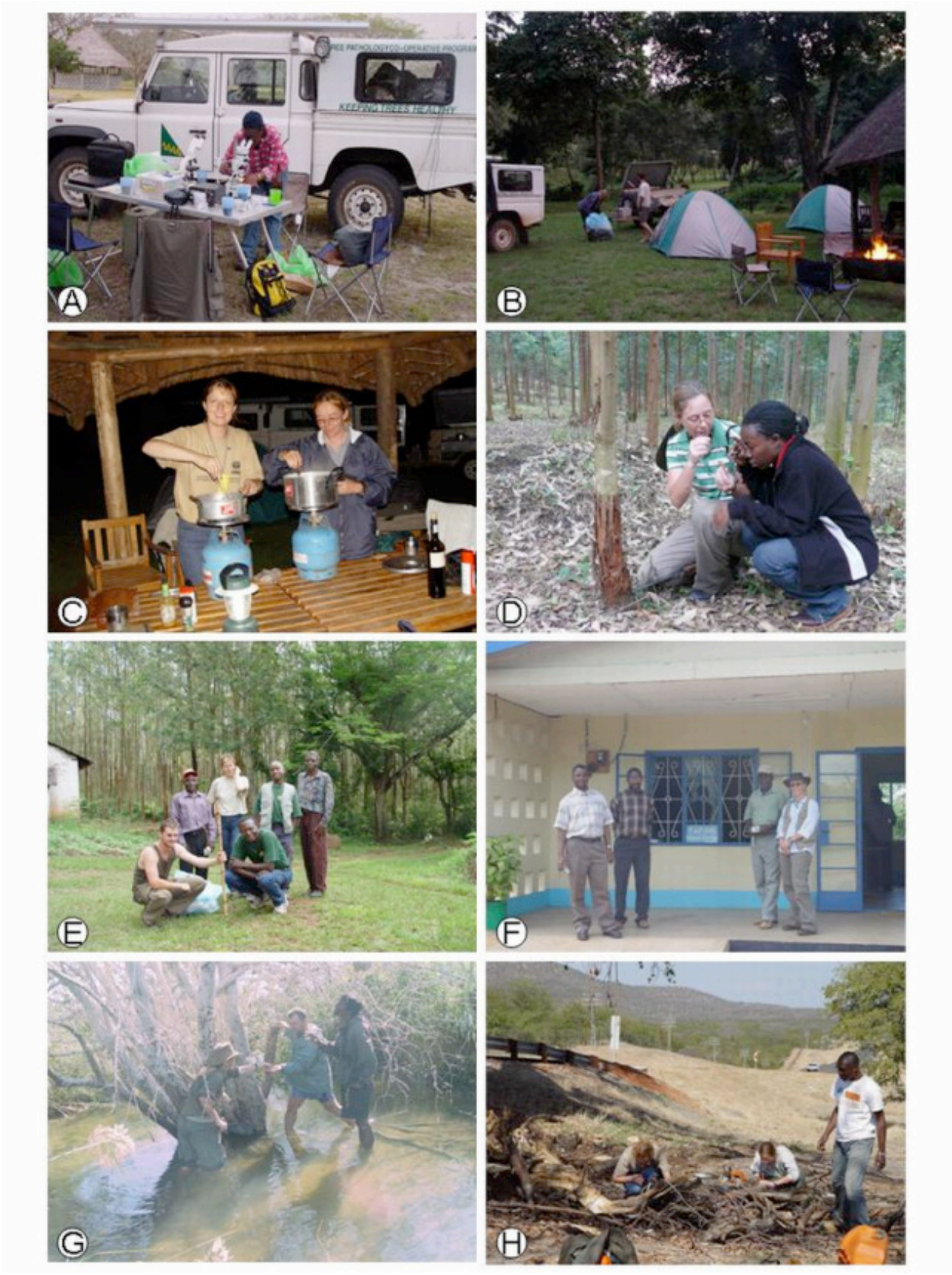
Uganda has a diverse climate influenced by latitude, altitude and topography. Seasonal movements of the Inter-tropical Convergence Zone (ITCZ) determine the general pattern of rainfall, with rainy seasons during April – May and October – November. Much of the country receives 1000 – 1500 mm of rain per annum. Mean temperatures are influenced mainly by altitude, the warmest areas lying in the Rift Valley and the plains of the north, the coolest being the highlands of south-west and eastern border areas. Climatic conditions favourable to the formation of forest are found in parts of the southern half of the country where rainfall exceeds 1150 mm p.a. evenly distributed throughout the year, and on the Karamoja mountains where low temperatures associated with altitude serve to moderate water loss during the long dry season.

Ecologically Uganda is exceptionally diverse largely due to its location in east-central Africa, in a zone of overlap between ecological communities characteristic of the dry East African savanna, and those of the West African rainforests. It is also partly the result of the country's great topographical diversity, with a range of altitude from below 600 m in the bottom of the rift valley, to 5109 m (16 763 feet) at the top of the Rwenzori mountains, Africa's third highest mountain range. The UNESCO Vegetation map of Africa (White, 1983) shows that seven of mainland Africa's 18 phytochoria ('plant endemic species' richness regions) are represented in Uganda, more than in any other single country. Uganda therefore contains vegetation and associated animal communities, characteristic of habitats as diverse as glacier-topped mountains, lowland and montane rainforests, wooded savanna, grassland, bushland and thicket.

There is evidence of forest clearance and cultivation dating as far back as 2000 years. Currently less than 12% is covered by forest and woodland, 96% of energy consumption is provided by wood fuels. In addition, Uganda is predominantly an agricultural nation and with its population standing at about 29 million, there is a lot of pressure on land.

Development of myco-collections alongside plant herbaria in tropical Africa has for several decades been neglected. In the past 10 or so years in Uganda, fungi and especially macrofungi have received a little more attention. Edible and medicinal mushrooms stealing the show; with mycorrhizal fungi, polypores and litter decomposing fungi as isolated studies.

The Makerere Herbarium (MHU) at the Botany Department, Makerere University (Mak), plays the



Pictures from Jolanda Roux's African trips.

role of a national herbarium. Established in 1946, it houses a little over 50 000 collections of plants including lichens and bryophytes. Except for crop pathogens, documented species of fungi are housed in myco-collections outside Africa, and the MHU duplicates cannot be traced. It has also been noted that most local researchers of macrofungi do not obtain material useful for reference purposes.

A myco-collection of 2008 specimens is being established, consisting of roughly 173 species of polypores. Other groups represented, though in small numbers, are mostly hymenomycetes - *Aphyllophorales* and *Agaricales*. The polypores are 54% of species recorded Africa south of the Sahara which has about 317 documented species according to Ryvarden (2000). Given the country's high diversity for reasons above, and that most areas have not been visited, possibly many species are yet to be documented. Material is also being collected for DNA analysis of the difficult taxa, and plans are underway to establish a culture collection. A short local course on 'Modern fungi systematics' is planned for January – February 2008 at Makerere University and Rwenzori mountains DR Congo.

Acknowledgements
We thank the following persons for their contribution to the development of this collection: Prof Leif Ryvarden's (University of Oslo, Norway), Prof HK Taligoola (Department of Botany, Mak), Prof Kare Lye (Norwegian University of Life Sciences), Dr Cornelius Decock (Catholic University Louvain, Belgium). Many persons especially fellow mycologists are saluted for their contributions.

Sincere thanks are extended to the following organisations for their support: MacArthur Foundation, Makerere University Institute of Environment and Natural Resources, Chicago Field Museum, Norwegian Development Agency – NORAD, and The Global Taxonomy Initiative – Belgian Focal Point.

Collecting fungi in Liege, Belgium: Perpetua Ipulet (standing), Gabriel Castillo (bending), Cony Decock.

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Report of the All Fungi Barcode of Life

By Amy Rossman

An abridged version reprinted with permission from Inoculum 58(6), the official newsletter of the Mycological Society of America.

Summary. Thirty-seven invited participants from twelve countries met from 13-15 May 2007 at the Smithsonian Conservation and Research Center Front Royal, Virginia to discuss DNA barcoding of all true Fungi as well as the Oomycota. The goals of the meeting were to arrive at a consensus on a standard gene region for barcoding fungi, brainstorm and prioritize projects, and establish a steering committee. The first day was devoted to reporting experiences with use of the CO1 gene as a barcode followed by those who had used other genes. Although the CO1 gene works for the non-fungal group Oomycota and a few groups of true Fungi, it does not work well for most true Fungi. The consensus of the participants was that the most appropriate gene known at present for DNA barcoding of true Fungi is the ITS region of the nuclear rDNA. The next day researchers reported on fungal DNA barcoding projects already in progress and brainstormed about possible big science projects that involved DNA barcoding. General topics such as vouchering specimens from DNA barcoding, obtaining DNA from herbarium and culture collections, and standards for DNA barcodes were woven into these discussions.

The Meeting

With 90-99% of the fungi still unknown, it is expected that a great deal of diversity will be revealed through DNA barcoding as demonstrated by studies using environmental sampling in which major new lineages have been revealed. Those most excited about the application of this technology are ecologists working with

environmental samples who would like to determine the role of fungi in, for example, belowground systems associated with roots of forest trees. In addition, DNA barcoding of fungi would be extremely useful to biosecurity and agricultural quarantine agencies around the world to prevent the spread of invasive fungi. Andre Levesque described DNA barcoding as 'horizontal genomics' i.e. determining one gene for all species instead of all genes for one species and sees the next step as analogous to functional genomics in identifying "up and down regulated" species, rather than genes, in environmental samples.

Following is a summary of the discussion at this workshop.

1. Standard DNA Barcode for True Fungi.

Requirements for DNA barcode for true fungi - The problem of selecting a barcoding locus was based on the realization that the locus needed to be multicopy, have robust primer sites, and vary between species. The multicopy requirement was based on the need to obtain sequences from old and degraded specimens limiting our choices to rDNA repeat segments or mtDNA loci. The robust primer requirement was based on the need to amplify from environmental samples with unknown contents, and only rDNA segments meet this requirement. The need for interspecies variation is obvious and it was acknowledged that no single locus would always meet this need.

Experience with CO1 for fungi - CO1 is the designated standard for animals and there would be an obvious advantage to having one locus for all groups of organisms. The main problem with CO1 is that in true Fungi the regions used for PCR priming evolve more rapidly than those used for rDNA. Different CO1 primer pairs are needed for different genera of fungi, so a mixture of primer pairs necessary to recover even a few known genera and unknown groups of fungi would be missed in environmental sampling.

Problems with CO1 for fungi - There are additional problems with CO1 in true Fungi involving amplification because of extreme length variation in this gene observed in the mitochondrial genomes sequenced to date. This results from the unpredictable presence of multiple and sometimes mobile introns of differing lengths, the presence of multiple copies of the gene including possible nuclear copies. While the presence of multiple copies could be handled using reverse transcriptase PCR to avoid introns and work only with copies that are transcribed, the attendant problems of handling RNA are less amenable to high throughput methods and not suitable for herbarium specimens. It was noted that the variability in CO1 across true Fungi was much greater than that represented by animals and that the mitochondrial genome evolves in a different way in true Fungi than in animals. Thus, it is not surprising that, although CO1 works for the animals, it does not work well for the highly variable true Fungi. The Oomycota, which do not appear to have introns in CO1, could be different case, but so far the sampling of Oomycota is mostly limited to *Pythium* and *Phytophthora* spp.

Qualifications of ITS region of rDNA - Within the true Fungi the ITS region varies from 527-700 bp and thus is easy to sequence using high throughput techniques. A huge database of ITS sequences already exists and this gene has been sequenced as part of the AFTOL project and the UNITE consortium. ITS has been sequenced for a sampling of all the major groups of true Fungi. In addition fungal-specific ITS primers exist, have been widely applied, and are known to work well across the major groups of fungi. Participants agreed that they could meet CBOL's requirements for proposing a non-COI barcode region and they prepared preliminary responses to these requirements. A formal proposal to make ITS the barcode region for fungi will be prepared and submitted to CBOL.

Problems with ITS region - In some groups of fungi ITS is too variable to determine major groups. In addition there were a number of good examples, especially from plant pathogenic ascomycetes (*Alternaria, Fusarium, Cercospora, Colletotrichum, Mycosphaerella)* and *Trichoderma,* where ITS clearly does not separate distinct species. In addition, the ITS has paralogs as determined for some *Fusarium* species and the Glomeromycota (AM fungi). The solution suggested was to use ITS as the first step or first key and a second gene for a precise identification. This approach has been used successfully in the TrichoKey DNA barcoding system. For each group of fungi this locus will need to be determined, although the translation elongation factor 1-alpha (tef) and RPB2 have been shown to be useful in several groups.

Decision - After considerable discussion the decision was made that the entire ITS region should serve as the DNA barcoding locus for the true Fungi, but not necessarily the Oomycota. The two other contenders for the DNA barcoding locus were CO1 or the 5' end of LSU.

2. Species Lists. About 120,000 species of fungi are relatively well-known and characterized; however, an accurate list of these species does not exist. *Mycobank* was recently developed to provide

an identifier for newly described taxa, thus a list of most fungal taxa since 2005 does exist. The *Index Fungorum* provided by CABI combined with *Mycobank* names constitute a list of all described fungi, over 500,000 names, although many of these names are unknown, obscure or synonyms. The long-term goal of the DNA barcoding of fungi project would be to sequence all of the described species of fungi. During this process it is anticipated that many previously undescribed fungal species will be encountered revealing a portion of the remaining 90% of the as-yet undiscovered fungi.

For each group of fungi, it may be necessary to develop standardized lists of known species that should be included in a DNA barcoding project. For a few economically important groups and genera and some geographic regions, these lists already exist such as for the genera *Aspergillus, Penicillium* and *Trichoderma*, Saccharomycotina, and primarily plant-associated fungi in Brazil, Canada, the Caribbean, New Zealand, South Africa, and the United States. For plant-associated fungi worldwide, a comprehensive list exists as a database at the SBML, Beltsville, MD, consisting of about 74,000 species. Accurate scientific names have been determined for the species in the United States and on important agricultural commodities or about 34,000 of these fungal names.

3. DNA recovery from herbarium specimens. Based on data presented by Martin Bitardondo from his research at Kew Gardens, it was decided that herbarium specimens up to 30 years old could be useful in obtaining DNA for barcoding without applying "heroic" measures. Herbaria with recent collections such as BPI, F, K, NY, OSC, MICH, PDD, PREM, and TENN will be canvassed for their willingness to supply recent specimens for DNA barcoding. Recently collected herbarium specimens will be useful for barcoding lichenized fungi, macroascomycetes such as the Pezizales, and macrobasidiomycetes including the Agaricales and long-lived Polyporales.

4. Living culture collections. For microfungi, culture collections provide the most ready source of culture for DNA barcoding. The Centraalbureau voor Schimmelcultures (CBS) is willing to provide cultures for this purpose with other culture collections as potential additional resources including ATCC, DAOM, ICMP, MAFF, MUCL, NBRC, NRRL, TENN, UAMH, and UKNCC. It is estimated that only about 10% of described species of fungi are represented in culture collections.

5. Non-culturable microfungi. These fungi pose particular difficulty for obtaining DNA and sequencing. For these species it may be necessary to conduct direct PCR amplification from freshly collected specimens or cloning pooled DNA. In addition, it may be necessary to develop primers specific to phylogenetic groups for direct amplification of the ITS locus from specimens. As mentioned above, additional genes may be required for accurate species identification.

6. Vouchering and data standards. All agree that vouchering is essential and that all specimens and cultures would be deposited in public herbaria and culture collections. The group needs to determine what will be the minimum standards for characterizing the barcode sequence of a species. Ideally, five vouchered specimens/cultures would be sequenced and compared to cover the variability within a species. If the sequence were derived from the type specimen/culture, this would serve as the standard, although additional, unlinked samples would be required to cover the species' variability. The issue of DNA vouchers was addressed and considered important especially for environmental samples. In addition, participants discussed the requirement that trace files must be deposited in GenBank if a sequence record is to be given BARCODE status.

7. GenBank and EMBL. All agree that these sequence repositories provide an invaluable service; however, the number of erroneous sequences has reached 20% or more with little opportunity for non-authors to annotate or provide corrections due to institutional constraints. There was strong consensus for changing this and allowing third party annotation of public sequences. The need for vouchering DNA barcodes with specimens, cultures, DNA, if possible, and trace files was considered essential.

Members of the All Fungi DNA Barcoding Steering Committee

Martin Bidartondo (United Kingdom), Gerald Bills (Spain), Dominik Begerow (Germany), Joseph Bischoff (United States), Thomas Bruns (United States, representing FESIN), Pedro Crous (The Netherlands), Irina Druzhinina (Austria), Urmas Koljag (Estonia), Mary Palm (United States), Dirk Redeker (Germany), Amy Rossman (United States), Keith Seifert (Canada), Bernard Slippers (South Africa), John Taylor (United States), Rytas Vilgalys (United States).

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Mycology Workshop in Togo

By André de Kesel

A mycology workshop was held in Togo (West Africa) in July 2007. It was organised by the National Botanical Garden of Belgium and the Department of Botany (Faculty of Sciences, University of Lomé, Togo). Most of this project (GTI/ExtC/2007.10DeKesel) was kindly financed by the Belgian focal point for the Global Taxonomy Initiative.

The workshop was set up as an individual and institutional capacity reinforcement training in taxonomy and curation of mycological collections. It was attended by 3 scientists from the Department of Botany of the Faculty of Sciences from the University of Lomé in Togo, i.e. Dr. Guelly Kudzo Atsu as co-organiser, Mr. Nadjombé Pondika and Mr. Maba Dao and two more scientists from the University Abdou Moumouni of Niamey in Niger (with Ir. Hama Oumarou and Dr. Marafa Dahiratou Ibrahim).

The theoretical part was held at the Department of Botany (Faculty of Sciences, University of Lomé). A microscope and an extensive bibliography on African fungi was sponsored by the GTI and the National Botanic Garden of Belgium respectively. The practical part included a 17-day mycological expedition in the forests and reserves from the districts Plateau, Centre and Maritime of Togo. During this expedition several hundreds of specimens were collected, photographed, described and dried.

More than 50% of the collected taxa are ectomycorrhizals associated with Caesalpiniaceae (*Berlinia*, *Isoberlinia*, etc.) and Euphorbiaceae (*Uapaca*). The taxonomy and microscopy of these specimens will be studied at the National Botanic Garden of Belgium and in close collaboration with Dr. A. Guelly from the University of Lomé. Most of this material will be used for monographing African Fungi (Fungus Flora of Tropical Africa). Based on our present knowledge, about 50 edible taxa were sampled in Togo. Future surveys by Mr. Pondika and Mr. Maba will focus on ethnomycological aspects.

We are convinced that studying African Fungi will benefit from collaborations like these. In this context Dr A. Guelly, his students and Dr. A. De Kesel defined a number of goals (mostly scientific papers) to be publish in the near future. For 2008 they plan a second field expedition and a supplementary course in microscopy. The latter will enable researchers, from the newly erected 'Unité de Mycologie', to access important microscopic data of their specimens and subsequently obtain reliable identifications. Soon the Faculty of Sciences from the University of Togo will have an operational mycology unit.

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Participants (ltr): Dr. Atsu Guelly, Ir. Hama Oumarou, Mr. Etienne, Dr. Marafa Dahiratou, Mr. Abou (sitting), Dr. André De Kesel and Mr. Nadjombé Pondika

AMA members glaringly scarce at the recent IMMC4 in Slovenia

By Elenimo Khonga

I was privileged to attend the 4th International Medicinal Mushrooms Conference (IMMC4) held in Ljubljana, Slovenia, 22-29 September 2007. What struck me most was the glaring scarcity of mycologists specializing in medicinal mushrooms from Africa. Apart from myself, the other African mycologists were Dr Ayman Daba from Egypt and the USA based Nigerian mycologist Dr Omon Isikhuemhen.

A total of nine plenary lectures were presented by distinguished scientists including Prof Shu Ting Chang who presented a paper on medicinal mushrooms as a good source of dietary supplements for HIV/AIDS patients with special reference to Africa. It was indeed a privilege to hear Prof Paul Stamets (USA), Prof Solomon Wasser (Israel), Prof Gaston Guzman (Mexico) lecture on various aspects of medicinal mushrooms.

A total of 71 papers from 27 countries were presented orally in two parallel sessions and 106 posters were presented. The oral presentations were divided into the themes: Systematics, Taxonomy, Distribution, Ecology and Fungal Culture Collections (8.5%); Medicinal value and pharmacology of mushroom active compounds (25.4%); Mushroom nutraceuticals (7%); Fungal physiology, Biochemistry and Genetics (16.9%); Mycotechnology and mushroom cultivation (25.4%); Mycoremediation (8.5%) and Ethnomycology, folk medicine and Homeopathy (8.5%). The distribution of the oral presentation by region was: eastern Europe (majority from Slovenia) (37.3%), south east Asia (26.7%), central Europe (12.0%), USA (8%), Indian subcontinent (6.7%), Africa (4.0%) and Middle East (2.7%).

Why was Africa glaringly under-represented at the IMMC4? Possible reasons could be lack of funding for researchers to attend the conference, lack of funds for research on medicinal mushrooms or lack of mycologists altogether. I presented a paper on indigenous knowledge on edible, poisonous and medicinal mushrooms in Botswana. The crust of the paper was that people in Botswana lack knowledge on edible, poisonous and medicinal mushrooms. In Botswana, the edible mushroom or *mabowa* is the one that is very large and grows on or near termite mounds (*Termitomyces* sp.); or in the Kalahari desert, the underground potato-like desert truffle or *Mahupu* (*Kalaharituber pfeilii*). All other macrofungi are poisonous or *Dithuthunthswane* in Setswana or *Mazhangalakudzimu* in Sekalanga.

The IMMC5 will be held in China and I pray that Africa will be more represented.

From Left: The three African Mycologists (Prof E.B. Khonga, Dr A. Daba and Dr O. Isikhuemhen) posing for a photo with Prof Thomas J. Volk from the USA (second from right).

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Message from the Committee

It has now been a year that MycoAfrica has been running. MycoAfrica was the first of a few things this year that have been established in the committee's efforts to revitalize the AMA as an important association that serves the needs of its members and promotes African mycology. We are positive that 2008 will bring even more exciting prospects and that the AMA will grow with each consecutive year. We thus wish all of you a prosperous 2008, and those of you with a slightly different timetable, best wishes to all of you as well.

The Committee

News on our Members

- Prof. A.A. Razek from Alazhar University, Egypt recently passed away. He obtained his Ph.D. from London University and was a lecturer, associate professor and professor of microbiology at the Alazhar University. He was the editor of the African Journal of Mycology and Biotechnology, and head of the regional Center for Mycology and Biotechnology at Alazhar University.

  - El-Sayed El-Morsy

- Dr Paul Kirk from the CABI Bioservices team has been honoured with the European Mycological Association (EMA) award for his exceptional work in the field of Mycology. The Governing Committee of the European Mycological Association decided unanimously to grant the award "which is the first of its kind" to Dr Kirk in recognition of his outstanding contribution to fungal nomenclature. In particular this relates to his work in establishing and maintaining IndexFungorum, the world's leading database of fungal names. The award was presented to him at the General Assembly of the EMA in St Petersburg on 21st September 2007.

  - Isabella Rong

Classifieds

- The National Botanic Garden of Belgium has a long-standing tradition in the study of the mycoflora of central Africa. Since the last volume of the Flore illustrée des Champignons d'Afrique centrale published 15 years ago, there was a need for a bilingual (English-French) flora treating the mushrooms of Africa south of the Sahara. We decided to replace the 'Flore illustrée des Champignons d'Afrique centrale' in a 'Fungus Flora of Tropical Africa', building on the experiences with the former series. I am very pleased to announce that the first volume of FFTA "Monograph of Marasmius, Gloiocephala, Palaeocephala and Setulipes in Tropical Africa" by V. Antonín was published last October and is available (price 50 E). Hopefully this will encourage some of you to contribute to the knowledge of the mycoflora in tropical Africa by publishing in this new series a revision of his/her taxa of interest. Do not hesitate to contact me for further information. (Editor: book review pending)

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- The journal Persoonia has been re-erected and transformed into an open-access journal. Papers are published fast and should deal with molecular systematics and evolution of fungi that can be in the form of research articles, or topical and book reviews. More information can be found at www.persoonia.org.

Important Dates

Annual Conference of the South African Association of Botanists (SAAB) 2008 and the VIIth Southern African Society for Systematic Biology (SASSB) Biennial Conference (followed by Cape Biota Symposium)
Drakensville Resort, South Africa
Congress: 14-8 January 2008
Abstract deadline: 1 November 2007
http://web.wits.ac.za/NewsRoom/Conferences/SAAB-SASSB/

BIO-08 (a combined conference supported by the South African Society for Microbiology, Biotech SA and the South African Society for Biochemistry and Molecular Biology).
Grahamstown, South Africa
Abstract deadline: 30 June 2007
Congress: 21-25 January 2008
http://www.ru.ac.za/bio-08

9th European Conference on Fungal Genetics (ECFG9)
Edinhurgh, Scotland
Abstract deadline: 11 January 2008
Congress: 5-8 April 2008
http://www.ecfg.info

The XXIII International Congress of Entomology, Breaking the Barriers
(sponsored by the Entomological Society of South Africa)
Durban, South Africa.
Congress: 6-12 July 2008
http://www.ice2008.org.za This congress will include sessions on entomopathogens

Sixth International Congress on the Systematics & Ecology of Myxomycetes
Yalta, Crimea, Ukraine,
Congress: 4-11 October 2008
Registration: 1 May 2008
http://www.icsem6.org/

17th International Society for Mushroom Science (ISMS) International Congress
Cape Town, South Africa
Congress: 20-24 May 2008
Abstract deadline: 1 May 2007
http://www.isms2008.co.za

IUMS (International Union of Microbiological Societies) Congresses 2008: XII Bacteriology and Applied Microbiology/XII International Congress of Mycology/ XIV Congress of Virology
Istanbul, Turkey
Abstract deadline: 31 January 2008
Congress: 5-10 August 2008
http://www.IUMS2008.org/

9th International Congress of Plant Pathology (ICPP)
Torino, Italy
Congress: 24-29 August 2008
Abstract deadline: 15 October 2007
http://www.icpp2008.org/

21st International ICFMH Symposium "Evolving Microbial Food Quality and Safety (FOOD MICRO 2008)
Aberdeen, UK
Congress: 1-4 September 2008
Abstract deadline: 29 February 2008
http://www.foodmicro2008.org/

International Mycological Congress (IMC9)
(hosted by the British Mycological Society)
Edinburgh, Scotland
Congress: 1-6 August 2010
www.imc9.info

Useful websites

AGIS (Agricultural Geo-Referenced Information System
http://www.agis.agric.za/agisweb/agis.html

Agricultural Research Council (ARC)
http://www.arc.agric.za/

ASCOfrance (ascomycete taxonomy in Europe and provides a forum for general ascomycete taxonomy)
http://www.ascofrance.com

BioNET (global network for taxonomy)
http://www.bionet-intl.org/

BPI (including **South African phytopathogenic fungi database**)
http://www.ars.usda.gov/main/site_main.htm?modecode=12-75-39-00.

CABI Databases (including **Index fungorum, search family names, search author names)** (nomenclature of names)
http://www.indexfungorum.org/Index.htm

Centraalbureau voor Schimmelcultures (CBS); also houses **Mycobank**, **Mycoheritage** (online versions of scarce and old mycological literature, including Ethel Doidge's monographic work on South African fungi), **polyphasic identification tools**, and **Studies in Mycology** online (including **SIM 55**, an issue devoted to southern African mycology).
http://www.cbs.knaw.nl

Forestry & Agricultural Biotechnology Institute (FABI)
http://fabinet.up.ac.za

Global Biodiversity Information Facility (GBIF)
http://www.gbif.org

Global slime mold project (databases for slime mold collections, images, current taxonomy, protocols and educational resources)
http://slimemold.uark.edu

International Mycological Association (with links to **other mycological societies and associations**, and numerous useful mycological links)
http://www.ima-mycology.org/

International Society for Plant Pathology
http://www.isppweb.org/

Mycology.net (useful mycological links)
http://www.mycology.net/

Myconet (online journal, "Outline of Ascomycota" and "Notes on ascomycete systematics")
http://www.fieldmuseum.org/myconet/

Mycokey (includes information on the interactive fungal identification program Mycokey, and other research done such as studies on the Fungi of Burkino Faso)
http://www.mycokey.com/BurkinaFaso.html

Mycoroot (information on indigenous mycorrhizal fungal products and mycorrhizal analysis services)
www.mycoroot.com

National Center for Biotechnology Information (sequences)
http://www.ncbi.nlm.nih.gov/

South African National Biodiversity Institute (SANBI)
http://www.sanbi.org/

Southern African Society for Plant Pathology (SASPP)
http://www.saspp.co.za/

World Taxonomists Database
http://www.eti.uva.nl/tools/wtd.php

Deep hypha (also see Vol. 98, no. 6 issue of Mycologia on Mycological Society of America webpage)
http://ocid.nacse.org/research/deephyphae/

Assembling the Fungal Tree of Life
http://aftol.org/

Consortium for the Barcode of Life (CBOL)
http://barcoding.si.edu/

All fungi Barcoding
http://www.allfungi.org/index.php

Cybertruffle's Robigalia: Observations of fungi and their associated organisms
http://www.cybertruffle.org.uk/robigalia/eng/index.htm

Cyberliber: digital library for mycology, providing scanned images of pages of mycological literature
http://www.cybertruffle.org.uk/cyberliber/

Cybernome (a nomenclatural and taxonomic database for fungi and their associated organisms, providing direct onward links to global standard nomenclatural databases
http://www.cybertruffle.org.uk/cybernome/eng/index.htm

Cybertruffle's Fungal Valhalla (a website providing information about now dead mycologists)
http://www.cybertruffle.org.uk/valhalla/index.htm

Darwin Initiative for the conservation of microfungi
http://www.cybertruffle.org.uk/darwin-microfungi/index.htm

NZFUNGI - New Zealand Fungi (and Bacteria) Landcare
http://nzfungi.landcareresearch.co.nz/html/mycology.asp

Wild Edible fungi. A global overview of their use and importance to people
http://www.fao.org/docrep/007/y5489e/y5489e00.HTM

International Code of Botanical Nomenclature – Vienna code
http://www.bgbm.org/iapt/nomenclature/code/default.htm

African Library: Polyphasic identification on-line

CBS polyphasic identification:
http://www.cbs.knaw.nl

- Yeasts database
- *Penicillium* subgenus *Penicillium* database
- Medical fungi database
- *Phaeoacremonium* database together with Studies in Mycology 54: Taxonomy and Pathology of *Togninia* (Diaporthales) and its *Pheaoacremonium* Anamorphs by Mostert et al. (2006). Online: http://www.studiesinmycology.org
- *Pseudallescheria*/*Scedosporium* network
- *Russula* database
- *Mycosphaerella* database
- *Aspergillus* and *Penicillium*

Systematic Mycology and Microbiology Laboratory, USDA:
http://nt.ars-grin.gov/sbmlweb/fungi/keydata.cfm

- Hypocreales of the Southeastern United States
- *Hypomyces*
- Legume Rusts
- *Ravenelia*
- *Tilletia*
- *Trichoderma*

Botryosphaeria:
http://www.crem.fct.unl.pt/botryosphaeria_site/key.htm

***Fusarium* Database:**
http://fusarium.cbio.psu.edu/

Pestalotiopsis
http://www.botany.utoronto.ca/ResearchLabs/MallochLab/Malloch/Moulds/Pestalotiopsis.html
(also moulds in general if you go to home page)

***Phytophthora* database:**
http://www.phytophthoradb.org/

Trichoderma
- Trichokey: http://www.isth.info/tools/molkey/index.php
- Also see http://nt.ars-grin.gov/taxadescriptions/ on the BPI website

UNITE molecular database for ectomycorrhiza:
http://unite.ut.ee/

***Xylariaceae* and *Hypoxylon*:**
http://mycology.sinica.edu.tw/Xylariaceae/GenusHypoxylon.asp

Many groups: http://www.discoverlife.org/
Fungi, North America
Hysteriaceae
Invasives, North America
Tubeufiaceae
More sites under construction on discoverlife:
Myxomycetes
Mycetozoa, Great Smoky Mountains National Park
Coelomycetes
Plant Diseases
Fungal diseases
Dictyostelids
Dictyostelids
Macrofungi of Point Reyes
Laccaria
Fungal groups

Macrofungi in general:
http://www.mushroomexpert.com/

QUESTIONNAIRE OF AFRICAN MYCOLOGISTS FOR THE AMA

(please post/fax to Marieka Gryzenhout)

Name:

Title:

Institution and Postal Address:

Country:

Country or origin:

Email:

Website:

Phone number:

Fax number:

Research interests (choose one or between cell biology, physiology, ecology, pathology, molecular biology, systematics, evolution, medical mycology):

Specific interests:

Details of other African mycologists who may want to join AMA:

Skills to offer AMA (committee member, conference organiser, fund raising etc.):