



Taxonomy Battles Poverty

The Contribution of Belgium's National Focal Point to the Global Taxonomy Initiative

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Contributors

L. Baert; A. De Kesel, T.
Mwabvu, C. Ngereza, E.
Rour, Y. Samyn, A.
Sudhikumar, J. Van
Goethem, D. VandenSpiegel

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R. Aguila, M. Armenteros,
W. Decraemer, A. De Kesel,
P. Grootaert, A. Guelly, Y.
Hooker, P. Ipulet, Ph. Kok,
P. Martin, A. Pauly, A.
Réveillon, Y. Samyn, H.
Segers, S. Tchiboza, P.
Valdes, D. VandenSpiegel,
E. Verheyen, Ph. Willenz

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Preface

In 1995, the Belgian National Focal Point to the Convention on Biological Diversity (CBD) was assigned to the Royal Belgian Institute of Natural Sciences (RBINS).

Six years later, this same institute, employer of Belgium's largest critical mass of taxonomists and manager of Belgium's most extensive natural history collection, was designated as Belgium's National Focal Point to the Global Taxonomy Initiative (GTI).

Taxonomy - in short the science of discovering and naming life on earth - is very relevant to today's challenges: food security, pest control, alien invasive species, trade regulations, nature conservation, global change, etc.

These challenges are also crucial for countries in the South in particular for African countries that face immense problems coupled with severe shortage of taxonomy knowledge. Hence training and capacity building in countries in the South are among the core activities developed by the GTI team.

In the present volume, the GTI National Focal Point highlights its philosophy, its activities, its products and some of its results achieved after four years of functioning.

The Directorate General for Development Cooperation is the main funding organisation for the achievements mentioned hereafter. However, important contributions from the RBINS and other Belgian scientific institutions and university teams have been welcomed too.

Finally, I wish to thank all participants to our program for their enthusiasm and readiness to advance the GTI, even beyond their call of duty.



Dr J. Van Goethem
Executive Head
Belgian National Focal Point to the GTI

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How the GTI came to be

The immense value of biological diversity was officially and legally acknowledged by the vast majority of the worlds' governments at the famous Earth Summit in Rio de Janeiro, Brazil (June 1992). One of the instruments towards the conservation and sustainable use of the environment, adopted during that meeting, was the United Nations Convention on Biological Diversity (CBD), an agreement that, at present (December 2007), is ratified by 190 parties (189 countries + the European Community).

These parties have committed themselves to the conservation of biological diversity, the sustainable use of its components and the equitable sharing of the benefits arising out of the utilisation of genetic resources. Given these noble goals, and acknowledging the political response they evoked and harvested, it can safely be stated that the CBD treaty is one of the most far reaching, and humanity-just, pacts reached ever!

However, it was quickly realised that in order to implement the objectives of the CBD, one needed to discover, inventory, monitor and causally understand biodiversity. Such is achieved through **taxonomy, the science of detecting, describing, naming and classifying organisms.**

Unfortunately it was witnessed, and this already at the second Conference of the Parties (COP-2), that the standing global taxonomic and curatorial capacity was too limited and/or too eroded to provide accurate taxonomic data. This situation was recognised to be especially worrisome in the mega-diverse countries of the South where, paradoxically, only a tiny fraction of the world's taxonomists are active and this with serious financial and infrastructural handicaps.

With the adoption of the cross-cutting Global Taxonomy Initiative (COP-3), the CBD Secretariat installed a forum for resolving the so-called taxonomic impediment. This agreement quickly became an important lever for sound taxonomic research worldwide. During COP-6, the political decision for the GTI was complemented with an 'operational programme of work', a strategic plan that guides member parties to the execution of the GTI objectives. The latter not only sets effective goals, but also provides the rationale for the choice of the operational targets.

More information on how to implement the initial objectives of the GTI in order to remove the taxonomic impediment can be read in the so-called 'Darwin Declaration' as available under:

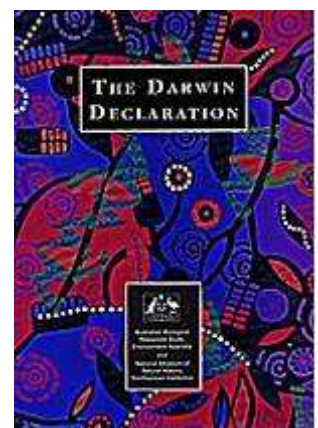
<http://www.environment.gov.au/biodiversity/abrs/publications/other/darwin/>

Up to date information on the GTI and its implementation is further available on the website of the Secretariat to the Convention on Biological Diversity as available under: <http://www.cbd.int/gti/>.



The GTI is one of the Cross-Cutting Issues of the Convention on Biological Diversity.

The ultimate goal of the GTI is to remove the taxonomic impediment: the knowledge gaps in our taxonomic system, the shortage of trained taxonomists and curators, and the impact these deficiencies have on our ability to conserve, use and share the benefits of our biological diversity.



Getting started in Darwin (Australia).

Increased taxonomic capacity combats poverty



Ecosystems and human well-being, two of a kind that could not do without sound taxonomy!

*(Read more in the Millennium Ecosystem Reports:
www.millenniumassessment.org)*

Nowadays, there is compelling evidence that the ever-growing impact of human activities has an adverse impact on biodiversity and ecosystem functioning and that this leads to a lowering of ecosystem services, that is, the free profits humans get from ecosystems.

People who rely directly on provisioning (including food, water, fuel, fiber and medicine), regulating (prevention of soil erosion and flooding) and supporting (e.g. soil formation, nutrient cycling) ecosystem services that healthy ecosystems provide them face the most serious and immediate risks from biodiversity loss. Combating inequality and marginalisation of the most vulnerable segments of society thus goes hand in hand with the restoring and protecting of the ecological functioning of healthy ecosystems. To achieve this, scientists rely primordially on such basic information as local, regional and global taxonomic inventories that reveal what organisms are living where, in what abundance and in what composition.

Yet, in the 21st century the taxonomic impediment makes that getting even this baseline information has parallels with 'Mission Impossible'. To alter this situation, the GTI, with as objectives to assess global and local taxonomic needs, develop a satisfying amount of human and infrastructural capacity and an improved access to taxonomic information, was set up.

Belgium and the GTI



The activities of the Belgian Focal Point to the GTI are financed by the Belgian Directorate-General for Development Cooperation.

In implementing COP decision V/9, paragraph 4, Belgium designated, in 2001, the Royal Belgian Institute of Natural Sciences (RBINS) as its National Focal Point to the GTI. This Focal Point works in partnership with the other Belgian natural history museums and institutes, *i.e.* the Royal Museum for Central Africa in Tervuren and the National Botanic Garden in Meise, as well as with other national and international partners.

Activities of the Belgian GTI NFP are financed by the Belgian Directorate-General for Development Cooperation (DGDC) and this through special conventions that span five years. The first convention (2003-07) will end on 31 March 2008. The new convention (2008-12) enters into force on 1 April 2008.

Our task force



Only the GTI tutor mans the GTI NFP full time. He obviously does not act as a singleton, but is scientifically supported by CBD NFP team members as well as by many (inter)national taxonomic authorities. Further, technical and technological support is provided by the NFP IT assistant and occasionally other contractual workers.

The task(s) at hand

The last couple of decades we have come to realise just how little we know about the biodiversity that surrounds (and supports) us. For instance, of the nearly two million species that we have currently described and validly named we know scarcely more than their collection locality. The amount of variation within the recognised taxa has remained largely non-documented. This makes that our taxonomic system continuously screams for novel taxonomic data; for instance new collections that bring insight into the developmental or geographical variation of species. Such insights invariably lead to a better understanding (and, ultimately, conservation) of biodiversity.

It has become crystal-clear that in order to advance taxonomy, we must not only liberate existing knowledge but must also **expedite taxonomic research, especially in those areas of the world that are rich in biological diversity but that remain under-explored due to lack of human and infrastructural capacity**. The Belgian GTI NFP is aware of this duality and has set up several initiatives to address taxonomist shortage that could derail conservation efforts.

Eligible countries

As soon as Belgium's GTI NFP became fully operational (2004) it has worked towards the installment of taxonomic and curatorial capacity in the mega-diverse, but resource poor developing countries of the South. Hereby special attention was given to the 18 developing countries with which the Belgian DGDC has privileged relations (Algeria, Benin, Burundi, Colombia, D.R. of Congo, Ecuador, Mali, Morocco, Mozambique, Niger, Palestine, Peru, Rwanda, Senegal, South Africa, Tanzania, Uganda, and VietNam). However, other developing countries have also been considered eligible for support as long as they figure on the OECD-DAC List of Aid Recipients as at 1 January 2003. As off 2008, only the 41 official partner countries of the Belgian DGDC will be considered.

Our twofold approach explained

The modus with which we respond to the expressed taxonomic needs is twofold: top-down or expert-driven, and bottom-up or demand-driven. In both cases, capacity building in taxonomy and/or collection management is achieved by transferring Belgian-based expertise and/or data to the needing developing country.

Needs are identified through calls for proposals, launched to reach Belgian specialists (the so-called internal call) as well as researchers and institutions from the developing world (the so-called external call).

First page of the application form for the 5th external call as made available over the internet.



For many species little more than their collection locality is known.

(Photo credit: Y. Samyn)



Developing countries, rich in biodiversity but poor in resources to study it, are the target of our actions.

(Photo credit: Y. Samyn)

National Institute of OPT (INSTITUT
 D'ÉTUDES OÉCÉANOLOGIQUES)
 Rue de l'Épave 1
 1050 Brussels (Belgium)
 Tel. : +32 2 527 41 26
 Fax : +32 2 527 41 42
 Email : dr.samyn@ibir.be
 URL : <http://www.ibir.be>

1. Internal Call

The top-down approach builds on the extensive expertise of Belgian taxonomists that have been extensively exploring developing countries. Here, Belgian experts with knowledge on local taxonomic impediments are funded by the Belgian GTI NFP to carry out taxonomic work in the developing country on the single condition that their project has at the same time clear-cut capacity building components such as: a theoretical training in contemporary taxonomy, a technical training in collection management, a field training in inventory and monitoring, etc. Such capacity building often acts across educational levels (from the lay-public to policy-makers; from amateur to academically formed taxonomists).

Four internal calls for proposals (2004, '05, '06 & '07) have been launched so far. These financed fifteen projects in seven developing countries spread over three continents.

Succinct information on the aims & scopes and some of the results that these projects achieved is provided below.

Herpetology in Guyana (2004-2007)

Initiated by: Dr G. Lenglet and Mr Ph. Kok (RBINS).

Partner institutions: CEIBA Biological Centre, University of Guyana, Iwokrama and the Guyana National Museum.

Identified taxonomic impediment: taxonomic knowledge of the amphibians and reptiles of the Kaieteur National Park (KNP) is insufficient.

Long term vision: generate data to support the Government of Guyana in their aim to get the Kaieteur National Park listed as a World Heritage Site.

Scientific capacity building: number of species known from the Park has raised from approximately 30 to over 125, many newly recorded for the region or even new to science, revealing the KNP as a location with a particular high and unique biodiversity.

Human capacity building: several people trained in basic to advanced herpetological taxonomy and collection management; ensuring local capacity and durability in monitoring of the herpetofauna.

Poverty reduction components: World Heritage Site status will increase eco-tourism whereby well-trained park-rangers will become key players; education and public awareness towards the richness of the exceptional natural resources of the KNP leads to more sustainable management.

Read more on: <http://www.naturalsciences.be/active/expeditions/guyana>

The Kaieteur National Park in Guyana, an extraordinary location for ecotourism development, extremely rich in herpetological diversity.



(Photo credit: Ph. Kok)

Entomology in Cambodia (2004-2006)

Initiated by: Dr P. Grootaert (RBINS).

Partner institution: Sam Veasna Centre for Wildlife Conservation, a NGO based near the historical site of Angkor Vat (a tourist hotspot).

Identified taxonomic impediment: taxonomic and curatorial expertise for insects is missing in Cambodia leading to a noteworthy lack of understanding of the ecological roles of insects (*e.g.* in pollination, as vectors for diseases, etc.).

Long term vision: establish the first Cambodian entomological center of expertise and equip it with a reference collection and didactical tools for Cambodian and non-Cambodian entomologists and other interested visitors.

Scientific capacity building: significant better understanding of the entomological fauna of Cambodia; several species new to science detected.

Human capacity building: two scientists aptly trained in entomology.

Poverty reduction components: local center of entomological expertise installed; education and public awareness to the richness of the natural resources leads to more sustainable management.



Flanked by the cultural heritage site of Angkor, taxonomic capacity in Cambodia is installed. This goes hand in hand with raising awareness for the large public.

(Photo credit: P. Grootaert)

Rodent and freshwater biodiversity in DR Congo (2004-2006)

Initiated by: Dr E. Verheyen (RBINS), Dr J. Snoeks (RMCA) & Dr H. Leirs (University of Antwerp).

Partner institution: University of Kisangani.

Identified taxonomic impediment: little to no knowledge on the diversity of forest shrews and rodents and freshwater fish of the region.

Long term vision: achieve sustainable management of animal resources.

Scientific capacity building: the University of Kisangani is emerging as a center of expertise in species identification enabling its staff to carry out monitoring and ecological studies. The University is also the first African institute to join the international Consortium for the Barcoding of Life.

Human capacity building: several researchers have been trained, in traditional (= morphology-based) and molecular (= DNA-based) taxonomy. Thanks to received training and contacts made, one of the principal trainees (S. Gambalamoke) currently carries out a PhD project, financed by an alternative sponsor.

Poverty reduction components: the scientific capacity of the University of Kisangani has significantly augmented, making them a key-player for inventory and monitoring in the region.



Raising a new generation of taxonomists can take extremes: top: adventurous field work in African tropical rain forest; middle: group training at the University of Kisangani; bottom: training in molecular systematics at the RBINS.

(Photo credit: E. Verheyen)

Taxonomy of free-living marine nematodes in Cuba (2006)

Initiated by: Dr W. Decraemer (RBINS).

Partner institutions: University of Havana and the Institute of Ecology and Systematics in Havana.

Identified taxonomic impediment: despite the fact that nematodes (roundworms) are among the most diverse animal lineages and that they have important ecological and economical importance, the taxonomy of the Cuban nematodes is little known.

Long term vision: use nematode composition for environmental monitoring.

Scientific capacity building: functional centre of expertise, inclusive of an adequate reprint collection and a high quality microscope installed.

Human capacity building: several academics trained during a one-week workshop in Havana; principal Cuban researcher (M. Armenteros) currently carries out a PhD project, financed by an alternative funding body.

Poverty reduction components: clearing the taxonomy of free living nematodes will not only allow a better understanding of their role in the recycling of nutrients in marine environments, but will also allow monitoring of pollution events to which they are sensitive indicators.



(Photo credit: W. Decraemer and M. Armenteros)

A one-week training workshop on the taxonomy of nematodes established marine nematology in Cuba.



(Photo credit: A. Pauly and S. Tchibozo)

Entomology in South Benin (2006)

Initiated by: Dr J.-L. Boevé (RBINS) & Dr A. Pauly (RBINS).

Partner institutions: Centre de Recherche pour la Gestion de la Biodiversité et du Terroir.

Identified taxonomic impediment: little to no knowledge on the taxonomy of insect pollinators in the sacred woods of South Benin.

Long term vision: achieve conservation of pollinators and agro-biodiversity to ensure sustainable agriculture.

Scientific capacity building: inventory and identification techniques installed during a 3 week-theoretical and practical (field) training; entomological fauna better documented.

Human capacity building: several entomologists trained in recognising pollinators.

Poverty reduction components: increased scientific and public awareness as to the importance of pollinators and agro-biodiversity in general.

Raising taxonomic capacity by providing training on samples collected earlier in the field (top and middle); worrisome declines in pollinator abundance is discussed with local farmers (bottom).

Two other projects are currently being carried out.

Since 2006, Dr P. Martin of the RBINS together with several scientists from the Université Cadi Ayyat in Marrakech (Morocco) tackles the **taxonomy of groundwater oligochaete worms**. This ill-studied faunal group potentially will reveal themselves as important indicators for environmental biomonitoring of underground water resources in Morocco.



(Picture credit: P. Martin and A. Réveillon)

GTI student Ali Ait Boughrou, takes a water sample during the field mission of July 2006; earlier that year he had received taxonomic training from RBINS taxonomist P. Martin.

In the fall of 2007, Dr Ph. Willenz of the RBINS together with colleagues from the Universidad Peruana Cayetano Heredia, the Museu Nacional, Universidade Federal do Rio de Janeiro and the Muséum d'Histoire naturelle de Genève set out to make an **inventory of the sponge fauna of the nearly 2 500 km long coastline of Northern Peru**. This inventory will allow a better faunistic characterisation of the poriferan fauna of Peru and will serve as a baseline for future bioprospecting as it is well known that sponges are rich in bioactive substances. Extensive training of local counterparts ensures that such bioprospecting has no chance to turn into biopiracy.

Read more on: <http://www.naturalsciences.be/active/expeditions/spongeblog>



Sampling the extensive coastline of Peru is a major challenge.



(Photo credit: Ph. Willenz & Y. Hooker)

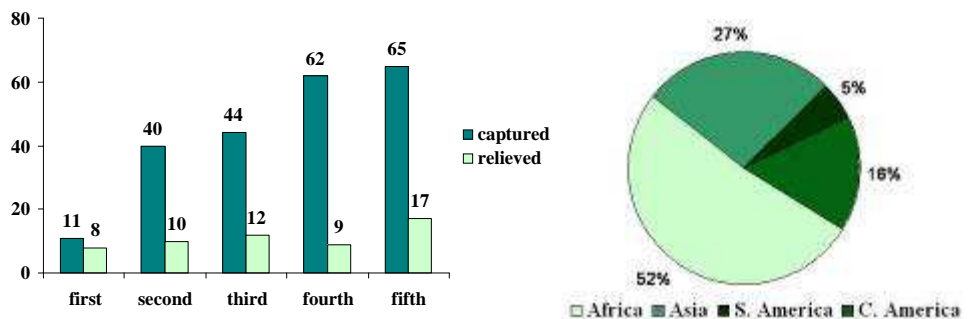
Ensuring the training of local partners and the sampling in natural wilderness conditions demands some 'punch' from the taxonomist.

2. External Call

The bottom-up approach seeks to capture the taxonomic and/or collection management needs of individuals or institutions from the developing world. It does so via internet-based calls for proposals that are widely publicised on national and international meetings and distributed through various thematic discussion groups (e.g. BioNET-INTERNATIONAL, Taxacom).

Selected candidates are invited to the RBINS, the RMCA, the NBG or other competent Belgian taxonomic units where they receive expert guidance to tackle their expressed taxonomic obstacle. Next to the taxon-specific training, candidates can, if needed, also benefit from a one-week general taxonomic training course that is provided by the Belgian GTI NFP. The latter includes theoretical introductions to the more relevant biological disciplines as commonly employed by the contemporary taxonomist (e.g. introduction to the myriad of components of biodiversity, species and classification concepts; cladistics; evolution; nomenclature), basics of databasing, as well as on funding bodies, international conventions and in taxonomic writing (e.g. preparing a paper).

Since 2004 we have launched five calls. The figure below shows that the response to our calls has increased steadily. The amount of projects supported follows this trend, except for the fourth call where many of the projects did not satisfy the selection criteria. Overall 56 of the 222 received projects have been supported; the bulk of these originated in Africa.



Left: our external call is increasingly known internationally; right: support goes primarily to African and Asian countries.

Individuals from developing countries benefit from general as well as taxon-specific training in a Belgian host institution.

From top to bottom: Ms C. Ngereza (National Museum of Tanzania) receives expert guidance from Dr J. Van Goethem; Dr Y. Samyn (RBINS) and Mr Wetsi Lofete (University of Kisangani) search the digital version of the Zoological Record as available at the RMCA; Dr H. André (RMCA) teaches Mr J N'Dri (Université Abobo-Adjamé) to recognise taxonomic characters, hereby using a Scanning Electron Microscope; the unique mycological herbarium of the MUCL was solicited by Ms P. Ipulet (Makere University), Mr. P Valdés (Cuban Zoological Society) revises an insect group to arrive at a scientific standard that can be used in habitat monitoring across Cuba.

(Photo credit: A. Réveillon, D. VandenSpiegel, Y. Samyn, P. Ipulet and P. Valdes)

Our direct support to individual researchers has clearly resolved several local taxonomic impediments. These actions however surpass the individual level as candidates implement their gained capacity in their home institution as can be learned from some of our alumni's responses to our question *'Describe concisely how your gained capacity will be implemented in your institution'*

"I am going to use the gained capacity in my research on millipede taxonomy which is an element of my part time PhD studies at the University of KwaZulu-Natal. This training will also enhance my capacity to publish my taxonomic research and supervise undergraduate students who choose to do taxonomic projects."

Tarombera Mwabvu, Zimbabwe (5th external call)



"The knowledge gained during the training will be transferred to other fellow researchers in my institute."

Ambalaparambil Sudhikumar, India (3rd external call)



"Ma fonction d'enseignant chercheur me permettra, ultérieurement, de diffuser les connaissances acquises lors de ce stage, à nos étudiants universitaires et m'offrira l'opportunité d'encadrer des jeunes chercheurs et de chercher des projets dans le domaine de la taxonomie des mollusques terrestres du Maroc."

Elhabib Rour, Maroc (2nd external call)



"With the capacity gained I will sort and identify all the slugs which are in the National Museum of Tanzania collection and feed the results into our database to make the malacological collection accessible. I will also use the malacological collection to make publications. I will also use the knowledge gained to train other museum personnel in collection management, various databases and database protocols, and preservation and preparative techniques for especially molluscs. The literature received will be placed in the Museum Library."

Christina Ngereza, Tanzania (1st external call)



To explain why taxonomic knowledge is needed to combat poverty, we have asked the taxon-specific tutors of the above GTI students to detail succinctly.

"The efficiency with which some tropical millipedes break down organic matter is truly stunning. Therefore these organisms are ideal partner for accelerating the formation of humus in impoverished soils. Studying their taxonomy, life cycle and feeding habits makes it possible to determine the species that are the most effective in terms of soil rehabilitation. With their ability to clean up dead plant material, millipedes are thus unexpected partners in sustainable development!"

Didier VandenSpiegel (tutor of T. Mwabvu)



"Having a good understanding of the taxonomy and biology of molluscs is of great importance to people in the developing world, because some of these fascinating invertebrates are economically very valuable. For instance, numerous species of snails and bivalves can be tapped as an alternative source of cheap animal protein, others can be collected for the curio trade or can be used in the manufacture of ornaments of various kinds. Sustainable collecting and nursery programs are key issues in this matter. "

Jackie Van Goethem (tutor of E. Rour & C. Ngereza)



"Relatively tiny organisms such as spiders can be so rich in venom that an accidental bite by them can be fatal to a human being. Knowing the taxonomy of this group thus literally can make the difference between life and death! But, their economical value undoubtedly resides with the exploration of their venom, bioactive substances that have little comparison. Possessing the capacity to recognise the concerned species surely brings added value to the involved taxonomist and his supportive community."

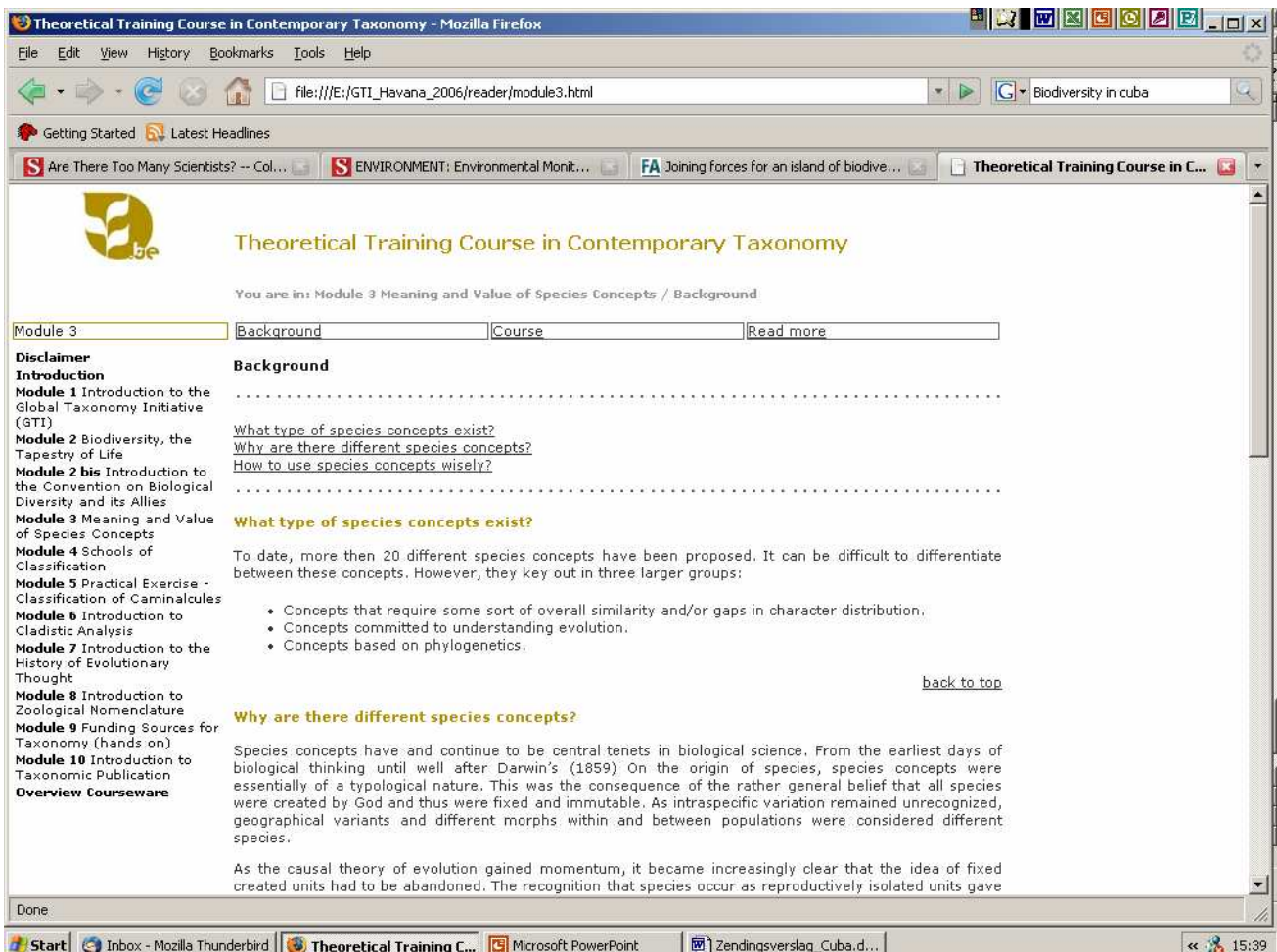
Léon Baert (tutor of A. Sudhikumar)



As briefly mentioned before, next to individual taxon-specific training in a Belgian host institution, GTI students can also benefit from a general training course that aims to provide participants with a theoretical introduction to contemporary taxonomy. These theoretical lessons are complemented with more practical teachings on accessing, managing and publishing taxonomic information. The teaching modules, together with a large selection of relevant scientific literature (mostly in pdf format), and a list of websites of prime interest to modern taxonomic research has been put on an easy to browse CD-ROM that students receive free of charge.

The structure of the CD-ROM is conceived in such a way that each training module holds three sections:

- *Background: What? Why? How?* Short introductory texts that place the module in context.
- *The course* an sich. The used teaching presentations, when needed complemented with other relevant teaching material. All slides are saved in jpeg format to save disc space and increase speed of access.
- *Read more.* References and relevant websites complement the information given on the slides. In many cases the research papers that were used to construct the slides are here given. As such, the CD-ROM becomes a true reference reader.



An easy to browse environment makes the information easily accessible.

This theoretical workshop can be given to students that are invited to Belgium, and can also be used in group trainings organised in the developing country. So far three *in situ* workshops have been organised, on two occasions the theoretical course was given.

1. September 2005 | Thailand

Two one-week sub-regional training workshops, comprising both theoretical (morning sessions) and taxon-specific training (afternoon session), have been organised in September 2005 at two different Thai universities.

The first workshop was taught at the Prince of Songkla University and focused on the shallow-water sea cucumbers of the Andaman Sea and the Gulf of Thailand. The second workshop was taught at Khon Kaen University and focused on the taxonomy of the rotifers from various freshwater habitats.

Overall, 31 students (25 from Thailand, 2 from Vietnam, 3 from PDR Laos and 1 from Cambodia) followed one or more of the offered course modules.

No taxonomy without specimens. RBINS-based taxonomists Y. Samyn (GTI NFP) and H. Segers (Belgian Biodiversity Platform) detail sampling methodology for sea cucumbers and rotifers.



(Photo credit: H. Segers and Y. Samyn)

2. November 2006 | Cuba

Together with the technical Focal Point to the Clearing-House Mechanism of Cuba (represented by Dr F. Cejas), the Belgian GTI NFP organised a one-week theoretical training course in Havana. 41 Students coming from ten different Cuban institutes benefited from this training workshop that not only fostered a better understanding of the position of taxonomy in biodiversity studies, but also enabled researchers from different Cuban research institutes to interact with each other in a constructive atmosphere.

Former GTI students E. Gutiérrez (Museo Nacional de Historia Natural, Havana) and Naomi Cuervo Pineda (Instituto de Ecología y Sistemática) acted as assisting lecturers and were helped in this endeavor by Dr J. Pérez (Instituto de Ecología y Sistemática) and Dr F. Cejas.

From top to bottom: trainees and trainers just fit on one picture; the director of the Instituto de Ecología y Sistemática, Dr Maira Fernández Zequeira, shares a hug with her staff member Rayner Núñez Aguila; Dr Cuervo Pineda details a nomenclatural problem during the training course.



(Photo credit: R. Núñez Aguila and Y. Samyn)

3. July 2007 | Togo

To arrive at trustworthy identifications, mycologists need taxonomic characters that are visible by microscope (e.g. spore structure) and taxonomic characters that are discernable only on fresh material (e.g. color and odor). Dr Atsu Guelly of the Department of Botany of the University of Lomé (Togo) realised this and submitted a project to the Belgian GTI NFP, requesting training in field collection and recognition techniques.



A. Guelly
(Photo credit: A. De Kesel)

The Belgian GTI NFP responded positively to this request and sought the help of Belgian mycologist Dr André De Kesel, employed at the National Botanic Garden of Belgium, to organise such training.

We give the floor to Dr A. De Kesel to explain why having a good knowledge on the taxonomy of mushrooms leads to poverty reduction.



*“In tropical Africa, edible mushrooms and other non-timber forest products (NTFP) constitute an important source of nutrients or income for communities that have kept a close connection with the forest. Uncontrolled deforestation (a.o. to produce charcoal) and underestimation of the locally generated NTFP income, often drives such communities to severe ecological bankruptcy and fast impoverishment. In many African countries, such as Benin, Togo, Burkina Faso, DR Congo, Zambia, Tanzania and others, one can witness the local importance of seasonal harvesting of mushrooms (e.g. spp. in *Cantharellus*, *Amanita* and *Termitomyces*). In many cases these highly valued species cannot be cultivated because they exclusively grow in intimate association with particular trees or with termites. A minority of edible species can however be cultivated with success. In Togo, people use edible species, both harvested in the wild, or cultivated locally. There is a stringent need for local experts who are able to identify the many different species and record the extensive native knowledge (ethnomycology) that still exists”.*



Forests offer more than just timber. (Photo credit: A. De Kesel)

The training, as organised by Dr A. De Kesel and jointly financed by the Belgian GTI NFP, the National Botanic Garden and the University of Lomé, took place in Togo from 2-26 July 2007. Five scientists (three from Togo and two from Niger) participated in the training. This little group now has the ability to identify species on the spot. This is essential in evaluating the usage of mushrooms as NTFP as identification allows enumeration and quantification (up to 100 kg/ha/y) of the total number of species.



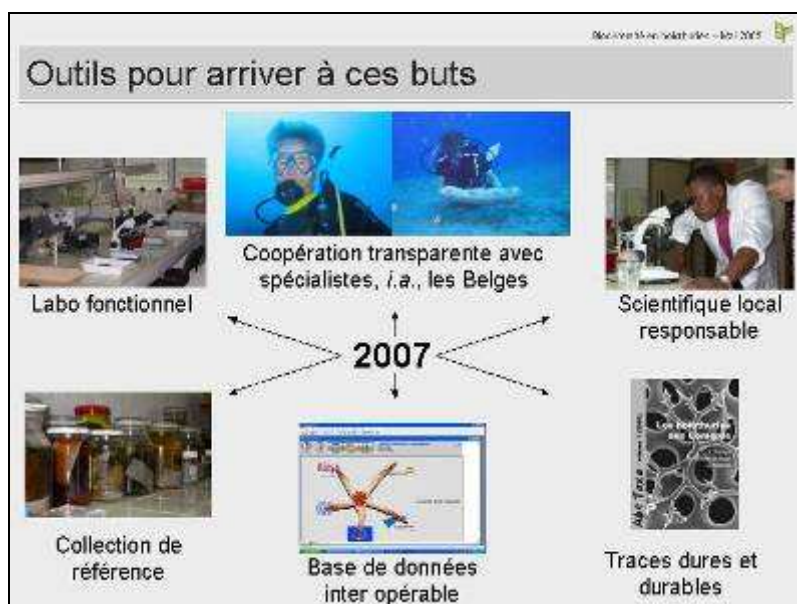
This implies that the mycological centre of expertise of the university, armed with a reference collection that comprises, a.o. 52 edible species, will be able to furnish strong economical arguments against the clearing of forest. The value of the provided training is thus closely linked to sustainable management and conservation of forest ecosystems, cornerstones in the battle against poverty in tropical Africa!

Lonely at the top? Not for much longer with a new local cohort of mycologists now adequately trained.



(Photo credit: A. Guelly & A. De Kesel)

To achieve durability and deepening of the training that our candidates received, the Belgian GTI NFP also can organise follow-up visits to the partner country. Such a visit was for instance carried out in November 2004 when RBINS taxonomists Cl. Massin & Y. Samyn and RMCA taxonomist D. VandenSpiegel organised a training in sampling and inventory of sea cucumbers. This training complemented the general and specific taxonomic training given earlier at the RBINS and RMCA.



Through synergy with another DGDC project, funded through the RMCA-based capacity building program ABIC (African Biodiversity Information Centre), the needed taxonomic infrastructure for beginning Comorese holothuroid taxonomists is left behind for them to act autonomously

Another such follow-up visit was carried out in October 2006, when the Belgian GTI tutor visited the Moroccan GTI NFP, Prof. Dr M. Menoui of the Institut Scientifique de Rabat, to discuss the possibility to establish a theoretical course on contemporary taxonomy in Morocco and later the complete Maghreb. It is roughly planned to materialise this course in 2008.

In 2008, Dr A. De Kesel (cf p. 12 & 13), sponsored by the National Botanic Garden of Belgium, will carry out a follow-up training to Togo in order to install and teach how to manipulate a new research microscope at the University of Lomé. This will render the University of Lomé into a solid expert in fungal taxonomy for western Africa

Further in 2008, Dr C. Decock of the Mycological Herbarium of the Université Catholique de Louvain-la-Neuve (MUCL) will, jointly with former GTI student P. Ipulet of Makerere University (Uganda), organise the first regional workshop on the taxonomy and collection management of wood-inhabiting Fungi.

Such enhanced expertise will allow Ugandese scientists to characterise African forest ecosystems by their fungal community, an important step towards the sustainable management of these crucial ecosystems.

More on the mycological projects in Uganda and Togo can be found in MycoAfrica vol 1 (4): 3-5, 8. (<http://194.203.77.69/AfricanMycologicalAssociation>)



Dr M. Menoui seeks to establish a taxonomic training course in his country.

Forest biodiversity is one of the Thematic Programmes of the CBD (read more on: <http://www.cbd.int/forest/>)

Durability in capacity building

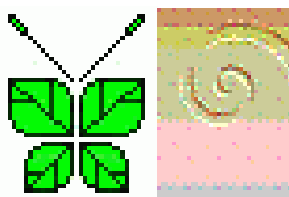
A taxonomist needs accurate taxonomic data, skills and competences to perform his duty. However these can only be fully deployed if a cooperative institutional environment is present. For that reason, the GTI NFP has signed several Memoranda of Understanding (MoU) with selected partners to assure more in depth institutional support.

1. National Parks in Gabon



When Mr. J.J. Tanga, park manager of the 'Parc National des Monts Birougou', was invited to the RBINS to be trained in the taxonomy of African amphibians and reptiles, he took the opportunity to request Belgian experts to help with the inventory and monitoring of Gabon's National Parks. The Belgian GTI NFP has, through a MoU, agreed to help by providing logistic support wherever possible.

2. Natural History Institutions in Cuba



No country has submitted more requests for capacity building than Cuba (~12 % of the project proposals received). The Belgian GTI NFP has supported 9 of these projects and has solidified its scientific and educational support with the two leading Cuban natural history institutions through two MoUs signed in the fall of 2006. The Cuban taxonomic community now stands very high on the agenda of the Belgian GTI NFP.

3. Biodiversity of VietNam



In the aftermath of a MoU that Dr O. Retout, International Relations Officer of the RBINS, signed with several Vietnamese institutions, the Belgian GTI NFP financially supported Dr P. Grootaert, head of RBINS' Entomology Department, to prospect possible cooperation with the Department of Insect Systematics of the Institute of Ecology and Biological Resources (IEBR) in Hanoi. His report advised institutional support to the IEBR. In a first instance one of IEBR's scientists, Mr. T. Pham, was invited to the RBINS to be trained in advanced entomological taxonomy.

4. Consortium of Scientific Partners to the CBD



On 27 March, at COP-8, in Curitiba (Brazil), the RBINS signed a MoU to promote CBD implementation through the organisation of training and educational activities. Six other institutes are involved, among others the Smithsonian Institution in Washington, Kew Botanical Gardens and the 'Muséum national d'Histoire naturelle' in Paris.

From top to bottom: Mr J.-J. Tanga, conservator of the Parc National des Monts Birougou takes the floor at the RBINS to notify Belgian biodiversity experts on the research opportunities of his Natural Park in Gabon; logo's of the two Havana-based Cuban institutes with which a MoU has been signed (the Instituto de Ecología y sistemática and the Museo Nacional de Historia Natural, respectively); 'brothers in arms' P. Grootaert and T. Pham, agreed to cooperate to achieve an inventory of the entomological fauna of VietNam; signing a MoU is only a small action for a hand but can represent a huge step forward in biodiversity conservation.

Speeding up capacity building

It is incontestable that the GTI increases taxonomic and collection management capacity. However, the velocity with which this happens remains too low.

It is this observation that has inspired the Belgian GTI NFP to set up a series of manuals devoted to capacity building in taxonomy and collection management. The series, named *Abc Taxa*, basically aims to be a **toll-free taxonomic information highway between experts and novices**. It is our opinion that such an artery will speed up the construction of taxonomic capacity as it does not evoke the expensive long-term teacher-apprentice relationships traditionally utilised to install operational, high-quality taxonomists and collection managers. In addition, *Abc Taxa* supplies a speaker's corner for those experts who have the skills to communicate on good practices in taxonomic research.

Even though *Abc Taxa* has been initiated by the Belgian GTI Focal Point, it is the joint product of the three main Belgian natural history museums: the Royal Belgian Institute of Natural Sciences (Zoology, world-wide), the Royal Museum for Central Africa (African Zoology), and Belgium's National Botanic Garden (Botany, world-wide).

The series is open to contributions of experts worldwide but preference is given to contributions that are the direct result of Belgian capacity building initiatives that adhere closely to the philosophy of the GTI.

Volumes of the series are distributed through the GTI and CHM (Clearing House mechanism) networks and can, on motivated demand, be obtained free of charge by interested parties from developing countries. For the interested public of non-developing countries copies will be charged at distribution and publication costs.

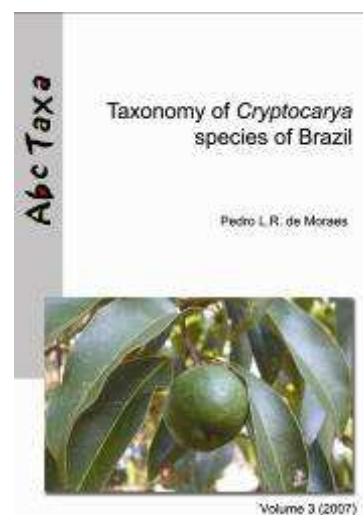
Contact information and author guidelines are available on the journal's website (<http://www.abctaxa.be>). The editorial board can be reached on abctaxa@naturalsciences.be.

The following volumes are already available:

- Samyn Y, VandenSpiegel D & Massin Cl. 2006. Taxonomie des holothuries des Comores. *Abc Taxa* Vol 1. i-iii, 1-130.
- De Prins R. & Rour E. (translation). 2007. Détérioration des collections de coquilles. Causes, conséquences et traitement. *AbcTaxa* Vol 2: i-iii, 1-60.
- de Moraes P.L.R. (2007, in press). Taxonomy of Brazilian species of *Cryptocarya* (Lauraceae). *Abc Taxa* Vol 3.



First page of the flyer that announced *Abc Taxa*.



The third volume is a detailed taxonomic account linked to the economical and ecological usage of the concerned species.

Partnerships to speed up more



Top: PEET participants gather in the RBINS to discuss how to proceed with their collaborative project; bottom: tracking down types in museums worldwide is just a small part of this very integrative project.

(Photo credit: Y. Samyn)

The U.S. National Science Foundation (NSF), in partnership with academic and natural history museums, runs the most extensive taxonomic capacity building program in the world: the so-called Partnerships for Enhancing Expertise in Taxonomy (PEET; cf <http://www.nhm.ku.edu/peet/>).

In 2005, Dr G. Paulay (University of Florida) and Dr A. Kerr (University of Guam) successfully attracted a PEET Award for the taxonomic revision of two sea cucumber families that attain their highest diversity on coral reefs. Given their extensive expertise in the taxonomy of that particular animal group, RBINS scientists Cl. Massin and Y. Samyn, and RMCA scientist D. VandenSpiegel, together with several other scientists from various institutes (<http://www.uog.edu/marinelab/peetcukes/index.html>) were invited to participate in this five-year project that has two crucial aspects of particular interest to the Belgian GTI programme of work: (i) the training of a new generation of taxonomists, (ii) the liberation of information towards a broad audience.

Several species in the two families under study are so highly searched for by the multi-million dollar ‘bêche-de-mer’ industry that overexploitation and local depletion of populations are increasingly documented. Such is especially the case in developing countries that are rich in this particular biological resource, but poor in taxonomic data and knowledge to drive its sustainable exploitation and conservation. The success of this project will thus directly lead to poverty alleviation.

Advancing the GTI at the national and international level

The CBD Secretariat regularly organises global and regional meetings for the GTI, among others as part of the ‘GTI Coordination Mechanism’. Other occasions to participate in international and European conferences include meetings of the Global Biodiversity Information Facility (GBIF), the EU Network of Excellence on Taxonomy (EDIT: European Distributed Institute of Taxonomy), CITES, and national and international scientific conferences on specific subjects or taxa.

The RBINS is often invited to these meetings to share its experience with other participants. During attendance to such meetings, every opportunity is taken to inform about the Belgian GTI capacity building activities.

Team members regularly participate in international meetings where advancement of the GTI is on the agenda

Top: putting forward a novel approach to install (and make operational) GTI National Focal Points in developing countries (SBSTTA-11, Montreal, November 2005); Mid: explaining the link between the science of taxonomy and sustainable development to various stakeholders (Brussels, May 2007); Bottom: detailing what taxonomy is about during a pre-SBSTTA gathering (Paris, July 2007).



Indicators of outreach

Measuring the taxonomic capacity that has been installed through our activities can hardly be called an easy exercise. However, by documenting the output achieved by our team as well as that of the people that benefited from our program, some valuable indicators can be obtained. Such will be done in a forthcoming issue of our *News Bulletin*, both for the GTI NFP as for the other NFPs housed at the RBINS.

In conclusion

The mission of the Belgian GTI NFP can be grasped in one key-sentence:

“Achieve active implementation of the GTI by and through Belgium”.



How to contact the Belgian CBD NFP?

Belgian CBD NFP

Royal Belgian Institute of Natural Sciences
Rue Vautier 29
1000 Brussels
Belgium



Find us on the web !
<http://www.biodiv.be>

Phone: +32 2 627 4xxx

Pascale Balhaut	Secretariat	xxx
Han de Koeijer	CHM activities	545
Anne Franklin	Coordination capacity building	267
François Muhashy	Archives D.R. Congo	587
Marc Peeters	CBD follow-up	267
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Yves Samyn	GTI activities	590
Marianne Schlessler	GTI activities	124
Jackie Van Goethem	CBD follow-up	525
	Promoter of the Belgian NFP	343

Fax: +32 2 627 41 41

E-Mail:

Member: firstname.name@naturalsciences.be
 CBD NFP: cbd-team@naturalsciences.be
 GTI NFP: cbd-gti@naturalsciences.be
 CHM NFP: cbd-chm@naturalsciences.be