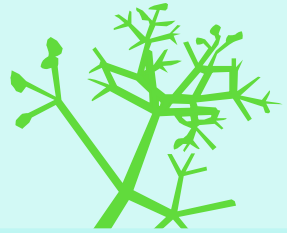
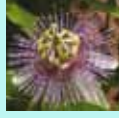
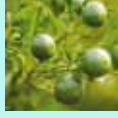


Newsletter #25

February 2011



<http://www.e-taxonomy.eu>



EDIT
European
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Institute of
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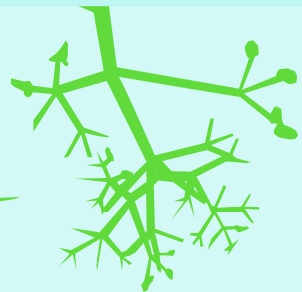
- BioFresh Cabinet of Curiosities
- Atlas of Soil Biodiversity
- BIONOMINA Journal on Nomenclature
- REV Research and Evaluation
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- International Day Biological Diversity
- UN Year of Forests 2011
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- European Conference on Biodiversity
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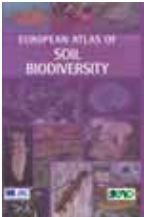


BioFresh launches *The Cabinet of Freshwater Curiosities*

BioFresh is behind a novel initiative to re-invigorate public interest in nature, *The Cabinet of Freshwater Curiosities*, an online showcase of the curious and exiting world of the freshwater flora and fauna. It is filled with fascinating information on each species presented in text, pictures and videos and it provide links to their distribution, being it in the wild, in captivity, or as specimens in botanical gardens, museums, zoos, etc.

Vistis *The Cabinet of Freshwater Curiosities* at:
<http://cabinetoffreshwatercuriosities.wordpress.com/>

Comprehensive Atlas of Soil Biodiversity



The EC Joint Research Centre's Land Management and Natural Hazards Unit have released a very comprehensive atlas on life in the ground below us. It is a broad-scoped guide to soil biology including 128 pages of information on the functions and global importance of the soil ecosystem, as well as a lexical part on the biota, such as bacteria, fungi, nematodes and arthropods.

The atlas is published to support policies such as the EU biodiversity action plan, promote protection related activities and highlight the needs for policy and research strategies to protection of soil biodiversity.

More information and PDF download at:
http://eussoils.jrc.ec.europa.eu/library/maps/biodiversity_atlas/

BIONOMINA: New journal on biological nomenclature and terminology



BIONOMINA is a new peer-reviewed journal for rapid publication of high quality papers on any aspect of biological nomenclature and terminology. It will encompass topics such as the history of practices and traditions, theoretical analyses of terminology, philosophies of the naming process and the use of scientific concepts as well as opinions and critical papers and much more...

BIONOMINA is published simultaneously online and in paper version by Magnolia Press (*Zootaxa*, *Phytotaxa*, *Zoosymposia* and *Molluscan Research*).

Access BIONOMINA at:
<http://www.mapress.com/bionomina/>

Ecsite launches REV

REV is a new thematic group within ecsite for Research and Evaluation, formed to help in exchanging evaluative practices and research outcomes in European science centers and museums.

REV is meant to reach both academic researchers, evaluators, exhibition developers, marketing and public relations staff as well as management.

For more information
<http://www.ecsite.eu/>

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Young Researchers Awards - Call for proposals

GBIF wants to promote research and discovery by students in biosystematics and biodiversity informatics at universities in countries participating in the GBIF network. GBIF is therefore awarding two scholarships of each 4000 € to master's thesis or PhD graduate students using or planning to use GBIF enabled data in their thesis.

Details on application and submission can be acquired through the GBIF Head of Delegation or the national GBIF Node Manager in the country where the studies are registered. Submission of the application is to be done through these focal points and not sent directly to the GBIF Secretariat

The winners of the 2011 YRA will be announced at the GBIF Governing Board meeting due to take place in the Argentina during October 2011.

Deadline for applications 15 March 2011.

Find your contact here:

<http://www.gbif.org/communications/directory-of-contacts/governing-board-of-gbif/>

or here:

<http://www.gbif.org/communications/directory-of-contacts/nodes-committee/>



International Day for Biological Diversity

The United Nations has nominated May 22 the International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues. This year's theme Biodiversity and Forests makes it a part of the International Year of Forests.

See IDB 2011 events here:
<http://www.cbd.int/idb/2011/>



The UN International Year of Forests 2011

Forests are important habitats housing a large part of the world's biodiversity as well as being important for human in providing food, medicine and clean water, while also playing a vital role in maintaining a stable global climate and environment.

The United Nations General Assembly declared 2011 as the International Year of Forests to raise awareness on sustainable management, conservation and sustainable development of all types of forests.

Log in to the Forests 2011 website, where you will find information on the events being organized worldwide, promotional resources and much more...

Forests 2011 main page:

<http://www.un.org/en/events/iyof2011/index.shtml>



Campaigning for the eco-services of bats

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Eurobats have teamed up to run the "Year of the Bat" campaign in 2011-2012.

Half of the earth's species of bats are considered by the IUCN to be threatened, mainly due to various factors caused by human development. The campaign will therefore focus on promoting conservation, research and education on bats, in particular emphasizing bats' significant function as pest controlling agents; mind-blowing examples of consumption of as much as 13 tons of insects per night by huge urban based bat populations have been estimated.

Learn much more at:
<http://www.yearofthebat.org/>

FORTHCOMING EVENTS

5th International Oligochaete Taxonomy Meeting

11-15 April, 2011, Beatenberg, Switzerland



The International Oligochaeta Taxonomy Meetings (IOTM) convenes scientists working within the fields of Oligochaete taxonomy and phylogeny, ecology, faunistics and phylogeography.

It is the aim of the 5th IOTM to encourage cooperation and to speed up information flow among researchers working on Oligochaetes

Late registration until 1 March, 2011

For more information visit 5. IOTM website at:
<http://5thiotm.tomas-pavlicek-biologie.net/>



European Conference on Biodiversity and Climate Change



12-13 April, 2011, Bonn, Germany

This two-day conference offers the opportunity to participate in a discussion about recent research results in the field of climate change and biodiversity. The focus will in particular be on relating these results to policy making and how to support the practitioners.

The conference will be based on talks by invited speakers. No conference fee will be charged but participation is limited to 200 participants.

The conference is organized by the German Federal Agency for Nature Conservation (BfN) in co-operation with the European Network of Heads of Nature Conservation Agencies (ENCA).

Visit the BfN website for programme,
registration form and travel info at:
<http://www.bfn.deindex+M52087573ab0.htm>



BWB 2011: Four Days on Biodiversity Conservation

8-12 May, 2011, Nebraska, USA

BWB is a four day training and education annual conference on biodiversity conservation. BWB summons the conservation community for the exchange of knowledge, discussion of current issues and sharing of innovations.

Scientists, natural resource managers, environmental consultants and corporate and public policy-makers will all convene to explore the problems and solutions of conservation today.

Visit BWB website for more information:
<http://www.natureserve.org/visitLocal/conference/BWB2011.jsp>

The 11th African Small Mammal Symposium

3-8 July 2011, Kwaluseni, Swaziland

The Department of Biological Sciences at the University of Swaziland hosts the 11th African Small Mammal Symposium (ASMS). It is held every fourth year and attracts both scientists, students and laypersons, who come to meet and exchange ideas.

"Africa's Small Mammal Tackling Africa's Big Problems" is the theme of this year's symposium. Its various aspects will be presented at the many colloquies taking place:

- Afrotheria
- Bat Ecology & Ecosystem Services
- Anthropogenic Impacts on Small Mammals
- Integrated Pest Management
- Systematics & Phylogeography
- Disease Ecology
- Ecology & Conservation
- Small Carnivores & Primates

For more information visit ASMS webpage:
<http://www.asms.uniswa.sz/>

EDIT Success Stories



Here in the final edition of the EDIT Newsletter, we would like to present some of the many achievements produced by our members and by our Work Packages. For the five years EDIT has lasted, we have been working to both promote the taxonomical science as well as integrate the taxonomic community and we have done so in many different ways. The success stories presented here does not complete the whole picture of EDIT's achievements, but they reflect the many different levels we have been operating on to serve our objectives of promoting collaborative research, of strengthening the scientific, technological and information capacities needed to understand the global biodiversity crisis, to promote the spreading of excellence within the field of taxonomy and to create a forum for stakeholders and end-users of taxonomy in biodiversity and ecosystem research.

Finally, we are happy to announce that many of the products and services like DEST, ViBRANT, and the IT products of the Platform for Cybertaxonomy will outlive EDIT and thereby sustain the activities that were originally developed in EDIT.

Toward an Open Access repository and data services for plant biodiversity research

Sierra, S. E. C., Roos, M. C., Hamann, T. (Stichting Nederlands Centrum voor Biodiversiteit Naturalis), Berendsohn, W. G., Guentsch, A., Kirchhoff, A. (Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin), Kirkup, D. (Royal Botanic Gardens Kew) and Janssen, T. (National Botanic Garden of Belgium)

EDIT Benefits

EDIT has provided modern tools for taxonomists to access, share and publish taxonomic information, and has in this way strengthened and expanded the network of the plant taxonomic community.

Concept

A wealth of knowledge on plant biodiversity (i.e. descriptions of morphological and molecular features, diagnostic characters, distribution, ecology, morphological correlates of functional traits, traditional and economic uses, species conservation status) has been assembled over hundreds of years in major European botanical

institutions. The plant biodiversity knowledge is available in the form of Floras (i.e. condensed expert accounts for given regions). The accounts in Floras concern the highest quality refereed and validated data on identity and relations, descriptions and reference specimens, traits and characters, identification keys, plant uses, ecological properties and distributions over time. Generating complete Flora information is labour intensive and time consuming to collate; hence represents considerable long-term financial investment. Flora information is mainly available in the form of printed books and scattered journal publications, rarely as marked up text files, or increasingly, as locally created and curated databases.

Modern society demands up-to-date, reliable and accurate plant biodiversity information, but this to date is highly fragmented, and almost exclusively accessed by taxonomic specialists. Data are dispersed by organisation, format (a multitude of local databases or printed formats),

and research community (taxonomy, morphology, functional or phenotypic traits, ecology, conservation issues, etc.). Information is frequently not shared because of protective copyright claims. Where data are shareable in principle, doing so requires not only overcoming technical obstacles, but also harmonising different data quality standards and applying compatible ontologies. Hence, the data are not readily available, and re-use across various subdisciplines, or for delivering new custom information products is not directly possible.

As a result of this, EDIT Work Package 3 (Integrating and Reshaping the Infrastructure Basis) started a coordinated effort among twenty European institutions to optimise and share curated plant information and skills: OpenPlantBio (Open Access repository and data services for Plant Biodiversity research).

OpenPlantBio aims at a coordinated and integrated structure to assist a broad scope of users to obtain scientifically sound information on plant

diversity, by federating plant biodiversity data repositories. This distributed repository will comprise the information of the major (inter)national Flora series produced and/or coordinated by European institutes. The objectives of OpenPlantBio are to: 1) enhance accessibility of the taxonomic information; 2) make this content usable for a wider scientific audience, and 3) ensure sustainability of the infrastructure.

This coordinated effort is an unprecedented initiative for the botanical sphere. It builds on existing infrastructure, technology, and earlier efforts (e.g. several e-Flora initiatives, EDIT Work Package 5: EDIT Platform for Cybertaxonomy: Tools, Sharing, Networking and Integration; see Figure 1). For additional information, see article "Using the EDIT Platform for Cybertaxonomy to elaborate and disseminate complex floristic information" (page 26). It has new emphasis on consolidation, interoperability, data quality curation, preservation, data mining tools (retrieval, visualization) and service deployment for scientists, policy makers,

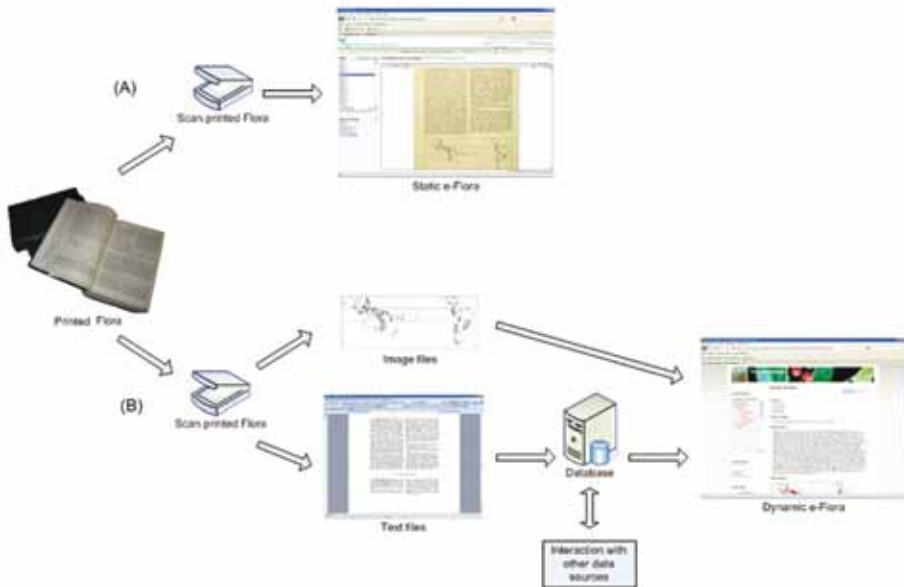


Fig. 1. From printed Floras to e-Floras: (A) from printed Flora to static e-Flora, (B) from printed Flora to locally data based dynamic e-Flora.

and citizen scientists. Most consortium members are key reference institutes for plant taxonomy and will play a vital role in providing the content that will be integrated in the repository.

OpenPlantBio is annex to existing e-infrastructure projects, makes use of their infrastructure and services, and adds unique value by focusing on federating and unifying the e-Flora data and outputting innovative information and identification systems that underpin processes in science and society.

Outcomes

The OpenPlantBio infrastructure will help the scientific community, as well as national, regional and global organisations to have access to accurate biodiversity information, by:

- Constructing a high quality distributed repository containing the most complete synthesis of plant diversity information covering Europe, the greater part of the paleotropics, and some neotropical areas. In total it would cover ca. one third of the plant species diversity worldwide.
- Enhancing and sustaining service provisioning by the standardisation of the input and access processes and a single overarching technical structure. It will employ and refine rigorous data quality standards that are internationally approved, interoperable, functional, and that have already been used with success. To meet the need for information of flexible and transparent quality levels, it will transport tailor made plant biodiversity information to the public and to the entire environmental sciences community (see Figure 2).
- Providing a rich set of modern web-services and (search) applications in response to needs and demands. Content from a broad geographical coverage will be available and access to these data resources will be facilitated, thus, promoting data mining and exploitation by a wide user base including the environmental/natural sciences research community, the public and citizen scientists. Expert tools, particularly for identification, visualization, special purpose queries and further use of the data, will maximize user-friendliness.
- Serving the needs of the scientific community and creating a new research environment for

a virtual environmental research community (e-Science): based on the collective power of integrated and expert-curated plant biodiversity data in key European botanical research facilities.

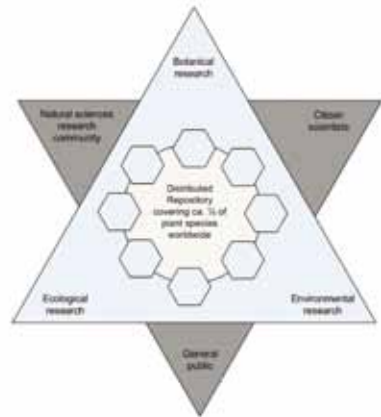


Fig. 2. Schematic overview of OpenPlantBio set-up.

- Promoting data sharing and collaboration between botanical, ecological and environmental research institutions and build trust (in collaborators as well as in data quality).
- Leveraging national e-Science activities (e.g. by the data services provided) and allowing open and participatory generation and presentation of plant biodiversity knowledge.
- Providing access from raw data (specimens, observations, analysis) to integrated and curated data in a data warehouse environment (Floras, trait databases, environmental analysis). Data from various sources will be accessible to new user communities via one portal and unified access points.
- Providing a common source for developing custom plant information and identification system; products that can be used online and offline and in home/office environments as well as in the field using mobile devices and modern communication technology.

For additional information on OpenPlantBio, please contact:

roos@nhn.leidenuniv.nl; sierra@nhn.leidenuniv.nl

Fact Box

Examples of static Flora information

Flora Malesiana: <http://www.biodiversitylibrary.org/bibliography/40744>
 Flora Zambesiaca: <http://apps.keew.org/efloras/>
 Flora of China: <http://hua.huh.harvard.edu/china/>



Static e-Floras:
 Flora Malesiana at the Biodiversity Heritage Library (left) and Flora of China (right).

Examples of dynamic Flora information

Araceae taxonomy on the web: <http://www.cate-araceae.org>
 Palms of the World On-Line: <http://www.palmweb.org>
 Flore d'Afrique Centrale: <http://www.br.gov.be/RESEARCH/DATABASES/FOCA/index.php>



Dynamic e-Floras:
 Palmweb (Palms of the World On-Line) showing interactive distribution map (top left), Flore d'Afrique Centrale (top right), CATE Araceae (Araceae taxonomy on the web) showing various features (bottom left) and interactive keys (bottom right).

Data providers of OpenPlantBio belong to the major natural history museums and/or centers of biodiversity research in Europe. They house some of the largest and most diverse botanical collections in the world (MNHN 11 million, NHMW 8 million, RBGK 7 million, CJBG 6 million, NCB Naturalis 5.5 million, NBGB 3.5 million, BGBM 3.5 million).

Let's do it together – EDIT directors of collections on their way towards agreed collection management standards and principles

Quaiser, C., International Scientific Liaison Officer
 Museum fuer Naturkunde - Leibniz Institute for Research on Evolution
 and Biodiversity at the Humboldt University Berlin

Any collection of certain extent needs to be managed to ensure long-term preservation and accessibility. This also applies to natural history collections. Starting with the massive growth of natural history collections in the 19th Century, methods, standards, and procedures in the management of these specific collections have been developed and (more or less) formalized through institutional policies and principles. This process has not come to an end. Because of increasing knowledge, the development of new techniques and societal changes, policies have continuously been adapted and changed and this process will go on in the future.

It is surprising that regardless diverse and close cooperation between collections managers all over the world, policies have often been developed in institutional isolation differing from one to the other even in fundamental details. This especially applies to Europe where for historical reasons natural history collections have developed independently in many different ways. But it is even more surprising that it took two hundred years to bring together staff at decision-taking level to talk to each other and start thinking about new ways of managing and developing collections in order to prepare them for the demands of collection based research in the 21st Century.

EDIT facilitated the initiation of such a group. Heads and directors of collections of EDIT institutions met for the first time in Leiden in June

2008 to discuss the needs for joint efforts towards common collection management policies and strategies. Ever since, they have met on a regular basis; both with the full audience and in a smaller working group. Now, three years after the first meeting, the enthusiasm of the group has not decreased. They just expressed their wish to continue after the end of EDIT by setting up a business plan of the new structure, the European Collection Policy Board.

The coordinator of the EDIT group, Dr. Christiane Quaiser, wanted to know what it is that makes this group so attracting. To get an inside view she asked Dr. René Dekker, Director of Collections at the Netherland Centre for Biodiversity Naturalis in Leiden, about his view on the past and future of

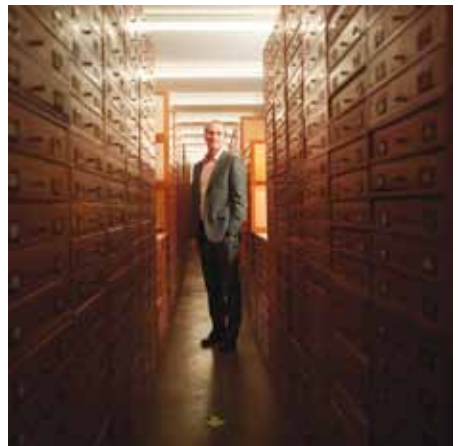


Fig. 1: Dr René Dekker, Director of Collections at the Netherland Centre for Biodiversity Naturalis in Leiden and head of ca. 37 mio. objects, in 'his' collection.

this initiative and the reason why he spend much of his valuable time on this initiative.

René, what is a "Director of Collections"? - Do you like your job?

"A Director or Head of Collections, who is often also a member of the institutional management team, is responsible for the definition and implementation of policies and standards in the collections under his care. This also includes supervision of the day-to-day curation of the collections. So this job is very multifaceted with new challenges every day. Not all museums have got a Director or Head of Collections. Especially in smaller institutions these tasks are often taken on by the General Director."

"Whether I like my job? - The fact that so many colleagues are jealous about what I do, gives the answer: "YES"! [He laughs.] When I was a child I used to search the beach for dead birds to collect their skulls and wings. I had the dream of having a museum of my own. In this sense I am now more or less living my dream and it is even more exciting since we are in the middle of a merger of four Dutch natural history collections into a single large national centre for biodiversity. Everything - from collections facilities to staff structures - is changing and I am part of this process. I can't think of anything I would prefer more."

Why is it useful to have a working group of Directors of Collections? Don't we have enough working groups? - How come that you are so enthusiastic about this initiative?

"The DoC initiative brought together 'hands on' practitioners faced with the same objectives and challenges concerning collection management and development. The deep knowledge within this group of experts and the willingness to share experiences was much beyond expectation and incredibly stimulating. From the beginning, there has been a certain confidence. No one was afraid of showing weaknesses of his collection, but was open to discuss it and learn from it. In the meantime, questions are specifically brought into the group for advice or support. Numerous ideas about policies, standards and best practise popped up, simply by exchanging experiences and "looking into each others kitchen". And last but not least: they are such nice colleagues, all as enthusiastic as I am. To be able to share your

thoughts with someone and to be understood gives you a good feeling. And it also saves time and money to have someone you can ask for advice. - So, why should I NOT be enthusiastic?!"

Apart from knowing each other and related institutions much better now, what are the most valuable, most tangible results of this group after the three years work?

"Our biggest achievement so far is the document on "common principles and standards for research loans". The related MoU has now been signed by twelve EDIT partners and with distribution outside EDIT, I am sure, more institutions will follow. The problems of research loans had by far our highest priority. Not a single member could not report about problems with collection objects sent out or received from other institutions for the purpose of research. Most of the experiences came down to the fact that valuable collection material got lost, irretrievably damaged, or treated in the wrong way. The exchange of material between collections is essential for many kinds of research but it is also risky. Furthermore, loan policies differ widely from one institution to another. What is forbidden in one institution might be allowed in another. The implementation of 'our' common principles will harmonize them, will reduce the risk and will make the loan procedure more transparent for all partners. Apart from that, we are busy with setting up a European collection manager forum for the people with their hands on the collections, developing mechanisms in case a collection gets orphaned, discussing problems like collections security, the development of new collection facilities and political issues, e.g. repatriation and Access and Benefit Sharing related items."

What is next on your to-do-list?

"Next step will be the transition of the EDIT initiative into a self-sustaining working group under the new name Collection Policy Board and some new organisational structures like a chair. Linked with this the group will be opened up to institutions which have not been member of the EDIT project. The more like-minded colleagues sit around the table, the more stimulating the discussions will be. It will make the group even more productive and effective. Apart from structural changes we will continue and finish current tasks



Fig. 2. A group of enthusiastic people: Participants of the third EDIT workshop of Directors of Collections in Tervuren, May 2010.

and projects as mentioned. In parallel new issues will be taken on board, e.g. common principles in collections acquisition and priorities in collections digitisation. I am not afraid of running out of topics."

How do you manage to do all this next to your own work at the NCB Naturalis?

"To be honest, I don't. That is why I am currently transferring some of my tasks and responsibilities to my colleagues within NCB Naturalis. This will allow me, as part of the ambition of the Leiden museum, to focus more on international initiatives. I think it is important to dedicate a certain amount of your working time especially to this task. Having in mind how busy I am and that this will not change in the future, it is an illusion to think that squeezing this work as an additional task in an overloaded agenda will work out. It simply won't."

Would you like to swap your job in Naturalis with one of your colleagues?

"Swap my job in Naturalis?! – I would like to, but not at the moment. The merger of the four institutions including their staff is both, the biggest

challenge and most exiting opportunity, of professional life. I simply don't want to miss that. But after that, let's say in 2017, I would really like to work in a natural history museum abroad. However, I must admit I would prefer an institution somewhere far away, outside Europe. Sydney and Santiago, Chile, have drawn my attention on earlier trips and that has certainly to do with the beautiful countries in which they are situated...."

Last but not least: Where do you think this group will go? What is your vision of this group and collection management in general?

"I expect that the collection management as the whole, including policies and principles, will become more and more harmonized between institutions, in Europe but also worldwide. Working according to same rules and standards will become common practice. In doing so, our community of European natural history museums will then act in fact as a single and much more efficient and powerful network".

"René, thank you very much indeed for this interesting interview. Good luck for your and the future of the Collection Policy Board!"

The diversity of biodiversity events!

- The online event calendar BYSE for the International Year of Biodiversity

Articus-Lepage, K., Edit Public Awareness Officer (WP8)
International Relations, Royal Belgian Institute of Natural Sciences

The United Nations assigned 2010 to be the International Year of Biodiversity (IYB). The IYB has been celebrated world wide with many innovative events. The online event calendar "Biodiversity Year Schedule of Events", short BYSE, schedules many of these events.

BYSE was first planned to promote the European biodiversity events. However, soon we received information from all over the world! Now, BYSE schedules events from more than forty countries from various organisers such as natural history museums, botanic gardens, zoos, aquaria, science centres, universities, international organisations, associations, companies and private people.

Among the events are biodiversity festivals, new biodiversity galleries, workshops, lectures, environmental education programmes, film festivals, new biodiversity glass houses, traveling photo exhibitions, informative websites, engagement campaigns and many more activities.

The BYSE calendar has been created in collaboration between EDIT and the IUCN Countdown 2010 and is managed by the EDIT Public Awareness team. The International Year of Biodiversity has been a good opportunity to raise awareness of the core business of the taxonomic facilities: biodiversity research and awareness raising of biodiversity! Please take a look at BYSE on www.countdown2010.net/byse

EDIT-Public Awareness

EDIT Public Awareness has as goal to work towards the integration of PA officers in European taxonomic facilities (EDIT and allied institutions) and to enhance the exchange of best practices in communicating modern taxonomy/biodiversity. For this two workshops have been arranged: "How to communicate taxonomy?" in 2008 and

"Debriefing the International Year of Biodiversity" in 2011. The first workshop has e.g. led to the BYSE calendar and inspired partners to contribute with innovative events to the International Year of Biodiversity. The second workshop unites the PA officers of EDIT as well as international organisations (UNESCO, IUCN, CBD, BGCI) to debrief the organisation and communication during the International Year of Biodiversity.

Best practices in communicating taxonomy/biodiversity are presented within success stories in the EDIT newsletter and EDIT-PA promotes the outreach activities of taxonomic facilities in reports as well as in the online event calendar BYSE.

Furthermore, the professional taxonomist is promoted within researcher portraits. They are directed towards biology students and are presented on the Taxonomy Training Website of EDIT.



Contact: Dr. Kristina Articus-Lepage,
EDIT-PA Officer
kristina.articus@naturalsciences.be

Web Information :

EDIT-PA reports and success stories on the EDIT website: www.e-taxonomy.eu/node/895

EDIT Taxonomist Portraits:

www.taxonomytraining.eu/content/edit-taxonomist-portraits

The Biodiversity Year Schedule of Events :

www.countdown2010.net/byse



Fig. 1. BYSE: The Biodiversity Year Schedule of Events

Towards gender equal opportunities in taxonomy !

Paleco, C., EDIT GAP Chair, Royal Belgian Institute of Natural Sciences

The Gender Action Plan

The Gender Action Plan (GAP) has created instruments within EDIT to provide financial support, such as fellowships for women scientists and work-life balance grants to researchers in their early career, so that both the excellent female and male taxonomists can boost their career. During the last year, another instrument has been developed to supplement the help provided to early career researchers through an inter-institutional mentoring scheme. These instruments are build on GAP's objectives to: 1) raise gender awareness among EDIT participants; 2) work towards achieving gender balance in all activities; 3) promote women in science and 4) consider family-friendly policies

What is the Work-Life Balance action ?

The action is based notably on a survey performed on the EDIT partners' family friendly policies. It provides a financial support to scientists (male or female) with babies or toddlers up to three years old for their travel to missions abroad. The WLB supports services for nursery care at the meeting or training places of the project and helps with the researchers' timetables to make research conferences, training sessions and workshops more family friendly.

The grant is from 50€/day to 75€/day and up to 300€ for the whole grant. Ten Work-Life Balance grants were attributed, one in 2008 to a woman, six in 2009 to four women and two men and two in 2010 to one woman and one man.

Below are some excerpts from the grantees' reports on the way the EDIT WLB grant helped them take care of their child(ren) while they were abroad:

"Our main concern was to be able to maintain the weekly routine and meet the various commitments of our children. For that purpose we have hired for our youngest son from Monday to Wednesday additional time on Thursday with the childminder where he normally stays.

We have hired a person to guide my daughter to and from her music class and her art class on Tuesday, and my son to and from his football training and his extra homework class on Monday."

"During my participation to the EDIT meeting in Berlin my wife also had obligations as a result of her work. Therefore, none of us were present during the days of the meeting. We overcame this by hiring somebody to stay in our house (except for school hours). We could manage this with the travel grant of EDIT, which would take care of a large part of the costs. Without the grant I would not have participated in the Berlin meeting and that would have negatively influenced the outcome of the meeting and the resulting work."

"The EDIT WLB offered me the possibility to attend the EDIT General meeting that took place in Faro (Dec. 2009) without altering the daily week routine of my children in the absence of their mother. Through the grant I could arrange that the oldest son was taken to and picked up from school, participate in his swimming lessons, and be with someone until his father arrived from work. For my youngest (eight months) I could arrange travel costs for somebody to look after him during the day."

Fellowships for Women Scientists

EDIT's Gender Action Plan supports outstanding women working in taxonomy or related fields and promotes them in their early career through grants enabling them to perform their research in another EDIT institution for a limited period of time. Fourteen early career scientists benefited from this grant.

Below are some excerpts from the grantees' reports on their research visit to show the importance of funding of their research.

Raquel López-Antoñanzas, Systematics and phylogeny of the Rhizomyid rodents:



"Finding grants for taxonomic projects is extremely difficult. EDIT fellowships for women scientists have offered me the opportunity to work on the rhizomyine collections of the MNHN. This has been of vital importance in the project I am developing, which deals with the phylogeny of the extinct and extant members of the subfamily. [...] My project includes the systematic survey of a subfamily of rodents that are known in the fossil record since early Miocene time. They live now in Asia and Africa. My project is comprehensive: both the extinct and extant species are taken into account. Without the EDIT fellowship, I am not sure how I would have performed this project in its entirety."

Without the EDIT fellowship, I am not sure how I would have performed this project in its entirety."

Sancia van der Meij, Taxonomy of corall gall crabs (Cryptocrididae), symbionts of stony corals.



"My time at SI was very fruitful, not at least because of the very helpful staff of MSC. The data that I collected will allow me to finish a manuscript on gall crabs associated with Fungiidae corals and prepare for my PhD-project. I am grateful to EDIT for granting me a Women in Science Fellowship."

I am grateful to EDIT for granting me a Women in Science Fellowship."

The EDIT Mentoring programme

A survey performed in 2009 on the representation of the female scientists among the EDIT partners showed that twenty three percent of the decision-maker scientists among the thirteen respondents are females.

This figure encouraged the development of the mentoring programme which was chosen as

a solution for this gender gap because it is a direct and interpersonal way to: 1) guarantee the transmission of the expertise and excellence in taxonomy from senior researchers to researchers in early career; 2) encourage women (but also men, with priority given to women) that are doctoral students and post-docs in taxonomy in their career through advices, in terms of work-life balance and career, from the full professors already well installed in the scientific community and 3) foster the advantages that the network provides to females in early career in terms of mobility and of trans-disciplinary exchanges.

The EDIT Mentoring pairs

Six scientists (women) in early career have benefited from the programme in 2010. Some of the mentees' expectations :

- *"I hope that this program could help me to establish a network of scientific people, and provide me with a broader panoramic of how to continue within the scientific world, either in my current discipline or in something new."*
- *"Having experience of various aspects of botany and conservation [...] during my MSc and PhD studies, but lacking in confidence in my skills, I feel that the EDIT GAP Mentoring Programme will help me develop my potential as*

a female scientist in this field. I am particularly interested in the advice of another female scientist, at a more advanced stage in their career, about career development opportunities, relevant networks I could join, and advice on managing ones work-life balance."

- *"The mentoring programme appeals to me, as I would like to gain further insight into different career options available. I also hope to benefit from the personal expertise and experience of researchers already established in the scientific community with regards to making career decisions."*

The mentoring pairs are encouraged to meet at least twice a year. Financial support is given to the mentee for the travel and meetings organization.

The programme was implemented among EDIT partners in 2010 with a wish for it to be continued after the end of the project.

Contact: Carole Paleco, EDIT GAP Chair
Royal Belgian institute of Natural Sciences
carole.paleco@naturalsciences.be

Web information:
<http://e-taxonomy.eu/gap>

Focus on taxonomic training: The Distributed European School of Taxonomy

Van de Velde, I. and Backeljau, T.
Royal Belgian Institute of Natural Sciences, Brussels

The Distributed European School of Taxonomy (DEST) has been established within the framework of EDIT by leading taxonomists of EDIT and other international partners, providing a high quality training that prepares students for future taxonomic careers. Part of EDIT's financial means supported trainees to attend the courses in the form of individual grants.

DEST currently involves a network of around a hundred taxonomic experts from sixty institutions, delivering three training components: the Summer School (coordinated by the Royal Museum for Central Africa, Tervuren and the National Botanic Garden of Belgium, Meise), the Expert-in-Training programme and the Modern Taxonomy course programme (coordinated by the Royal Belgian Institute of Natural Sciences, Brussels).

Best field practices: Summer Schools

The Summer Schools train students in 'best field practices' for basic taxonomic research, biodiversity studies, and conservation biology. They focus on practical taxonomic experience, combined with theoretical lectures, to provide an in depth understanding of the current state of taxonomic research, biodiversity sampling methods and their broad applicability in other scientific disciplines and areas of social relevance. Summer schools provide a unique chance for students to meet professional taxonomists and experience firsthand the challenges and rewards of field work in an inspiring setting.

The two-week Summer Schools are open to students who have recently finished their Masters or who are in an early stage of their PhD research in a biological discipline. A maximum of twenty students from EDIT or European institutes and universities can be accepted per year. Student and teacher participation is financially supported by EDIT.

The Summer School 2008 'Modern Taxonomy and Field Work' was held, jointly with EDIT's ongoing 'All Taxa Biodiversity Inventory and Monitoring (ATBI+M)' initiative in the French/Italian



Fig. 1. Botanist at work. Summer School 2010, Madeira.

Alpine nature reserves of Mercantour and Alpi Maritime. The setting for the Summer School 2009 'From Field to Web - studying biodiversity with the taxonomist's toolbox' was the biodiversity-rich region of the Muránska Planina National Park, Slovakia. The Summer School 2010 'Modern Taxonomy and Field Work' was held on the Portuguese island of

Madeira. In each case, the Summer Schools were fully booked and hence during the three schools together sixty students were trained by fifty experts from all over Europe.

Training on-the-job: Expert-in-Training programme

This training programme allows young graduate students and early career researchers from

European institutions to benefit from on-the-job training in EDIT institutions and other partner institutions.

Training takes place individually or in small groups. The trainee joins a project team where they are coached by an expert (mentor), and shown 'how to do the job' in a particular, specialised taxonomic discipline. Depending on the training subject, the training period lasts from one to four weeks.

The Expert-in-Training programme was launched in 2008. In the 2008-2009 sessions, twenty one taxonomic training subjects were offered by EDIT institutions for trainees from other EDIT institutions. To improve the impact and visibility of European taxonomic training resources, institutions outside EDIT were involved in the 2009-2010 sessions. Thus the number of training offers increased to thirty one, while grants were offered to trainees from EDIT partner institutions or from other European universities/research institutes.

Especially the 2009-2010 sessions received many more requests for grants than could be supported and selection of participants became an important part of the process. Within the anticipated budget, twenty six students were accommodated, equivalent to fifty five weeks of training. All costs for attending the courses were covered by EDIT.

In addition to the large number of applications received, the evaluation feedback of the trainees shows that there is an overwhelming interest in these intensive, individual, training sessions. Another positive outcome is that, to our knowledge, at least two trainees obtained a job thanks to the completion of an Expert-in-Training formation! Furthermore, the programme generates future research cooperations and enhances networking.



Fig. 2. Students of Summer School 2010, Madeira

Basic taxonomic training: Modern Taxonomy programme

As the number of dedicated taxonomic training courses is limited, the Modern Taxonomy theoretical course programme, launched in 2010, provides future professionals with a solid basic taxonomic training.

The course programme is developed in a modular manner, so that courses are offered at several institutions. In this way the courses will give the best quality that partners can provide in function of their available staff, experiences and equipment. The training curriculum targets topics such as: nomenclature, identification tools and methods, describing and illustrating species, phylogenetic systematics and molecular dating, DNA barcoding, and conservation and care of natural history collections. At present seven intensive courses are offered.

The courses are open to trainees from all over the world. Participation is on a self-financed basis. A subscription fee is asked. EDIT awards a limited number of grants to defray subscription fee, travel and subsistence costs.

At the end of the EDIT project (1 March 2011), about seventy trainees coming from all over the world will have followed the programme. All courses received a high interest and the number of applications largely exceeded the number of available places. One of the challenges will be to integrate the course programme into university curricula.



Fig. 3. Specimen salvage. 'Conservation and Care of Natural History Collections' course, October 2010, Natural History Museum, London.

And what about trainees' opinions on DEST? Some excerpts of trainees' feedback...

"Actually I applied for a job immediately after the training and the knowledge acquired was crucial during my interviews and I got the job!! Now I have a tenure-track position in cryptogamic botany at University of Brasilia, Brazil."

- C.P., 18/03/2009, Universidade de Brasília, Brazil

"For my career in general, I have complemented my taxonomic and systematic expertise with know-how in IT. Only recently I was successful with my application for a position in a EU-project in the field of biodiversity informatics. My knowledge acquired during the EDIT-training will definitely help me to work successfully in this project."

- SvM., 11/01/2009, Johannes Gutenberg-Universität Mainz, Germany

"For me it was a fantastic time. I received a lot of taxonomical information in different groups of animals and plants. We became skillful in different kinds of field work (from sampling of algae in the ocean to hearing bats through bat detectors). New opportunities were opened for us like for young scientists. I will never forget this time in Madeira!"

- E.G., 01/08/2010, Russian Academy of Sciences, Moscow, Russian Federation



Fig. 4. Training provider and participants of the 'Biological Nomenclature' course, November 2010, Muséum national d'Histoire naturelle, Paris



Fig. 5. Training providers and participants of the 'Basics of taxonomy: describing, illustrating and writing biodiversity' course, November 2010, Sven Lovén Centre for Marine Sciences, Kristineberg, Sweden

"In view of the tendency towards increasing responsibility of technical staff for care of collections within the organization for which I work, the training provides a useful basis of relevant knowledge and skills. Using the framework provided, it will now be easier for me to approach more specifically entomological subjects (and to solve potential problems)."

- A.L., 09/11/2010, Senckenberg Deutsches Entomologisches Institut, Muencheberg, Germany

"The training provider was the perfect man to teach this course. He convinced me that nomenclature is very important and made me think about the several aspects and problems of it. He succeeded in showing his passion about taxonomy and nomenclature. Overall the structure and quality of the course was excellent."

- E.A., 18/11/2010, Natural History Museum London, United Kingdom

Future prospects

DEST was evaluated as being a successful EDIT product and the EDIT Board of Directors (7th BoD, June 2010, Paris) recommended a continuation of its activities under the umbrella of EDIT's eventual integration into CETAF.

Partners involved in the present training activities have a strong interest to continue their investment in delivering training courses beyond the EDIT project. A Memorandum of Understanding on training cooperation in DEST is being signed, providing evidence of a continued coordinated international effort to sustain the taxonomic train-

ing programmes beyond termination of the EDIT contract.

It is the objective to incorporate a wide range of partners from taxonomic institutions, universities, research centres and international organisations from outside of Europe into a widely publicised global training programme. An Agreement to Collaborate has already been signed with ABRIS (Australian Biological Resources Study) and SANBI (South African National Biodiversity Institute) on concrete and specific developments in future collaborative DEST training.

The expansion and integration of DEST training activities on a wider global scale and the opening up of all training programmes to trainees of any nationality would be a tremendous contribution to global taxonomic capacity building, since many countries are in desperate need of professionally trained taxonomists.

For more information see:
www.taxonomytraining.eu

Other links:
EDIT Summer Schools
<http://www.atbi.eu/summerschool>

EDIT Expert-in-training programme
<http://www.taxonomytraining.eu/content/edit-expert-training-programme>

Modern Taxonomy <http://www.taxonomytraining.eu/content/modern-taxonomy-course-programme-2010-2011>

A Pan-European Species-directories Infrastructure (PESI) - Towards a Taxonomic Backbone for Europe

de Jong, Y.¹, Kouwenberg, J., Boumans, L., Pedersen, H. Æ., Boegh, P., Costello, M., Nash, R., Aktaç, N., Hussey, C., Hyam, R., Bourgin, T., Guentsch, A., Geoffroy, M., Berendssohn, W., Hernandez, F., Vanhoorne, B. and Appeltans, W.

¹ *Zoological Museum Amsterdam, Faculty of Science - University of Amsterdam, Amsterdam, The Netherlands; yjong@uva.nl*

The correct use of names and their relationships is essential for biodiversity management; therefore the availability of taxonomically validated, standardised reference files is fundamental for biological e-infrastructures. PESI is the next step in integrating and securing taxonomically authoritative species name registers, serving to underpin the management of biodiversity in Europe, by building a Taxonomic Backbone for Europe.

PESI is a joint initiative of two Networks of Excellence: EDIT (European Distributed Institute of Taxonomy) and MarBEF (Marine Biodiversity and Ecosystem Functioning), funded by the European Commission under the Seventh Framework Capacities Work Programme - Research Infrastructures - and is led by the University of Amsterdam. It was started in May 2008 and will last three years, involving forty partner organisations from twenty six countries and several non-contracted associated partners.

PESI defines and coordinates strategies to integrate the infrastructural components of four major community networks on taxonomic indexing and their respective knowledge (social and technical) infrastructures; those of marine life, terrestrial plants, fungi and animals, into a joint work programme. These include the three main all-taxon registers in Europe, namely the European Register of Marine Species, Fauna Europaea, and Euro+Med PlantBase in coordination with EU-based nomenclators, i.e. Index Fungorum, International Plant Names Index (IPNI), and AlgaeBase, plus the network of EU-based Global Species Databases (GSDs).

The integration of the social expertise networks results in functional knowledge systems of taxonomic experts and regional focal points, which will collaborate on the establishment of standardised and authoritative taxonomic data and the development of approaches for their long-term sustainability. The maintenance of these taxonomic expert networks is considered as the most threatening issue to PESI's success, since Europe is experiencing a decline in its number of professional taxonomists. PESI is addressing this concern by advancing the abilities of the Society for the Management of Electronic Biodiversity Data (SMEBD), by collaborating with the EDIT project and the Consortium of European Taxonomic Facilities (CETAF), as well as reaching out to non-professional taxonomists and taxonomic societies in a hope to revive this vital science. So far the established European Taxonomic Workforce (ETW), contributing to the taxonomic indexing process, consists of more than seven hundred highly qualified experts and numerous local experts connected to the regional focal points.

Regional (often national) focal points become increasingly important for the integrated and synergistic promotion of taxonomic expertise and data standards throughout Europe. With their geographical, national and regional focus, focal points differ from traditional expert networks that are organised around a taxonomic group of organisms. The PESI Focal Points contribute to the organisation and management of European biodiversity information in a different, complementary way and liaise, for example, with national governmental bodies on the implementation of European biodiversity legislation.

The technical integration of the pan-European checklists into a joint 'European Taxonomic Backbone' relies on the Common Data Model (CDM), ensuring the conceptual mapping of taxonomic databases. This is hosted in the CDM store as a denormalised relational database management system (the so-called 'PESI data warehouse'). The CDM represents a component of EDIT's Platform for Cybertaxonomy.

PESI also contributes to the global efforts on the development of a joint strategy for the assignment of persistent identifiers to its primary checklist (name) elements and implements rudimentary mechanisms for propagating identifiers from the initial data provider to the PESI portal and web services.

PESI is involved in supporting international efforts on the development of the 'Global Names Architecture' by building a common intelligent name-matching device in consultation with principal initiatives like GBIF and LifeWatch. This provides a unified cross-reference system to all stakeholders optimising their taxonomic meta-data service functioning.

The final goal of PESI is to build a single web portal for all species in Europe, not only bringing together the relevant taxonomic details, but also information on the importance of species to human society. A pilot of the PESI web portal can be found at <http://www.eu-nomen.eu/portal/>

Links to other projects mentioned in the article

PESI <http://www.eu-nomen.eu/pesi>
 Fauna Europaea <http://www.faunaeur.org/>
 ERMS <http://www.marbef.org/data/erms.php>
 Euro+Med PlantBase <http://www.emplantbase.org/home.html>
 EDIT <http://www.e-taxonomy.eu/>
 MarBEF <http://www.marbef.org/>
 SMEBD <http://www.smebd.eu/>
 CETAF <http://www.cetaf.org/>
 LifeWatch <http://www.lifewatch.eu/>

Plants on the Web - Accelerating the taxonomic workflow, integrating distributed information and presenting dynamic monographs

¹von Raab-Straube, E., ²Baker, W., ¹Hand, R., ¹Kilian, N. and
²Villalba, S.

¹International Cichorieae Network, Botanic Garden and Botanical Museum Berlin-Dahlem, ²Royal Botanic Gardens Kew

A truly immense amount of information on the living organisms of our planet has been accumulated over centuries and is growing faster than ever before. There is a wealth of scientific literature distributed in libraries, vast specimen collections in natural history museums and universities around the world, and all kinds of biodiversity-related databases, many of them now searchable on-line.

Many recent initiatives are trying to bundle at least parts of these data masses and make the information in these scattered resources easily available to the scientific community and to a wide public audience. These activities reflect an increasing need for society to have access to comprehensive, expert-driven, authoritative information systems on the earth's biodiversity.

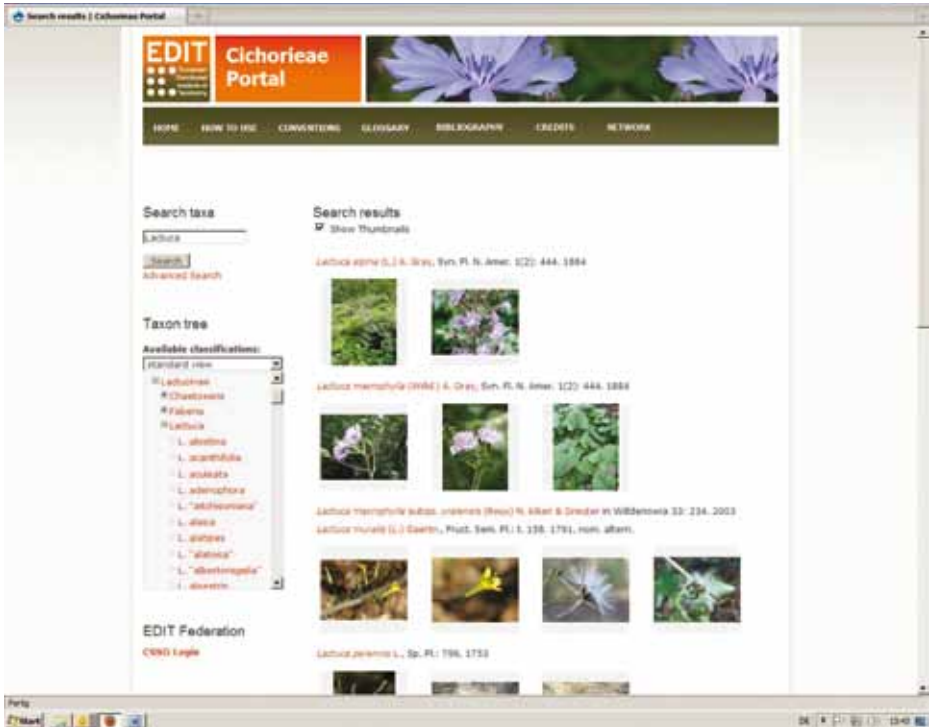


Fig. 1. Screen shot of the Cichorieae Portal

Within Work Package 6 of EDIT, three teams have tried to assemble the existing taxonomic knowledge of exemplar groups of organisms in one place and to disseminate this knowledge via on-line data portals. In close co-operation with the developers of the Internet Platform for Cybertaxonomy (EDIT Work Package 5), they also explored the possibility of changing the way taxonomic work is done. A variety of IT tools now enables taxonomists to do a large part of their work in an integrated, virtual environment that greatly speeds up their working procedures, from field-work to publication of the results. These tools also facilitate fast and direct cooperation between people working on the same organisms.

Two of the EDIT exemplar groups focused on plants, one on the palm family (Arecaceae or Palmae) with one hundred eighty three genera and ca. two thousand four hundred species, and the other one on the Cichorieae (the lettuce tribe of Asteraceae or Compositae, the sunflower family), with ninety three genera and over two thousand four hundred species plus ca. seven thousand three hundred apomictic and hybrid taxa. Both exemplar groups have built internet data portals - Palmweb and the Cichorieae Portal. Palmweb has capitalised upon a large amount of existing literature, notably a full checklist of the family, and a well-organised expert community in Europe. In contrast, the Cichorieae Portal was

created as a part of an entirely new initiative, the International Cichorieae Network (ICN). Starting from very different points of departure, the teams were well placed to test if the Platform for Cybertaxonomy could fulfil the different user needs, represented by the exemplar groups. At the same time, definition of requirements and continuous feedback from the user groups greatly helped the EDIT developer team in creating and improving their products.

Palms are among the most charismatic and recognisable plants in the world and are emblematic of the tropics. The family holds several botanical records such as the longest leaf and heaviest seed, and includes some of the most economically valuable plants in the world. They provide an immense diversity of resources to people across the economic spectrum, providing essential means of subsistence to some of the poorest rural communities as well as valuable international commodities. Because of the value of palm products and the vulnerability of the tropical forest ecosystems they most frequently inhabit, very many palms are threatened with extinction.

Palmweb is a growing on-line encyclopaedia for all the world's palms. Taxon pages with maps exist for all species and genera, and around half of these are fully populated with detailed descriptive content already. Links to original literature in which names were published are available for sixty percent of all accepted taxa and around three thousand images are already accessible. Interactive keys to genera and an on-line glossary help to improve accessibility to a wide range of users.

Cichorieae, as a subgroup of the sunflower family, have a truly worldwide distribution - they can be found literally everywhere but Antarctica. They inhabit all climatic zones, with a focus on the mediterranean and temperate zones, but less representatives in the tropics. Their altitudinal level ranges from near sea level to the high alpine zones of all mountain systems of the world; and even in the arctic tundras a considerable diversity of dandelion species colours the ground. Cichorieae have few, but well-known economically relevant species: lettuce and cichory are important vegetables in many parts of the world. A few of them are invasive weeds in some parts

of the world. Their flower heads are very often bright yellow with ligulate flowers of the dandelion type, and many people will call most of them with this popular name - probably not being aware that there are hundreds of microspecies of dandelion alone!

The Cichorieae Portal displays today the first on-line monograph of the Cichorieae. It provides a geographically referenced species inventory of the entire tribe and assembles the information from all recent national or regional checklists or floras of the world, and of all major monographs that have been published so far.

The databases underlying the Palmweb and Cichorieae Portal follow the so-called Common Data Model (CDM), the core of the Internet Platform for Cybertaxonomy. With the help of a newly developed Taxonomic Editor, all data in the CDM can be directly managed by any expert who has access to it. Any new information - editing of existing data or addition of new data or images - becomes available on-line within seconds after editing. For instance, information such as a new record of an invasive species in a certain country will be visualised immediately in the corresponding on-line distribution map. The data portals also serve as digital image repositories, which makes it possible to link images to taxonomic data. In the long run, the data portals aim at presenting an constantly up-dated encyclopedic knowledge base of their groups, with interactive keys to allow easy identification of its members, and specimen-based distribution maps.

The extensive testing of the Internet Platform for Cybertaxonomy by the exemplar groups has shown that these tools are well suited for a wide range of applications in the field of taxonomy and biodiversity research. They can be used by anyone to create and present taxonomic monographs, checklists at any scale, image repositories or even electronic floras (see page 26 "Using the EDIT Platform for Cybertaxonomy to elaborate and disseminate complex floristic information" by Kirchoff et al.).

Fact Box

The International Cichorieae Network (ICN) – an initiative towards a web-distributed revision of the Cichorieae
<http://wp6-cichorieae.e-taxonomy.eu/portal/>

Contact: Cichorieae Team at the Berlin Botanic Garden and Botanical Museum, Free University of Berlin, Germany (n.kilian@bgbm.org)

Palmweb: Palms of the world online
<http://www.palmweb.org/>

Contact: Palmweb Team at the Royal Botanic Gardens Kew, U.K. (w.baker@kew.org)

The Cichorieae Portal and Palmweb provide:

- search tools
- browsable taxonomic trees
- accepted names and synonyms with literature citations
- protologues (first descriptions)
- type information
- common names
- morphological descriptions
- ecology
- uses
- distribution maps
- image galleries
- glossaries
- background information on systematics
- bibliography
- credits to all contributors

ViBRANT: Following up an EDIT success

Smith, V., Rycroft, S. and Roberts, D., Natural History Museum, London

Scratchpads represent one of EDIT's success stories, although they were not anticipated in the project proposal. As EDIT's funded phase draws to a close, there are over one hundred ninety Scratchpads and over two thousand four hundred registered users who have produced more than two hundred sixty thousand web pages (see <http://scratchpads.eu/scratchpads/stats> for current figures) and this with only one full-time developer (Rycroft). The essence of Scratchpads is that they aim to mobilise data, thus to make data easier to find and use, by providing an infrastructure and tools. Scratchpads do not own content, that very firmly remains the property and responsibility of the site community. They are both cheap and easy to establish, so we give one to anyone that asks, subject only to a statement of purpose that fits EDIT's goals. This, in turn, means that many of the individual sites are experimental and a proportion will never develop into a dynamic site for

collaboration. London's Natural History Museum has underwritten the continuation of the Scratchpad service for the next five years.

The Scratchpad team, however, had greater ambitions and wanted to help focus the collective output of biodiversity science, making it more transparent, accountable, and accessible. Mobilising these data will address global environmental challenges, contribute to sustainable development, and promote the conservation of biological diversity. This gave us ViBRANT (<http://vibrant.eu>), an e-Infrastructure project that started on 1st December 2010 and runs for three years. ViBRANT has been funded with an EU contribution of 4.75M €. The project will distribute the management, hardware infrastructure and software development of services operating through Scratchpads, to connect with the broader landscape of biodiversity initiatives. Our overall goal is to establish the means, tools and infrastructure

to produce a more rational and a more effective framework for European biodiversity research.

ViBRANT will put in place a sustainable programme to support:

- A Virtual Research Environment (Scratchpads) where users can safely store, share and manage their research information.
- Analytical services for users to build identification keys and phylogenetic trees.
- A publication platform for users to automatically compile taxonomic manuscripts from their research database.
- A portal for users to centrally access publicly accessible biodiversity research information and literature.
- Training, support & sociological study, helping research communities to use these tools and services.
- A standards compliant technical architecture that can be sustained by biodiversity research community.

Networking activities

ViBRANT’s networking activities foster a culture of co-operation within the various user communities. As biodiversity research moves from small, autonomous scholarly guilds to larger, more enlightened and more interconnected communities our networking activities take on a new level of significance. These will foster a stronger, more professional infrastructure within the consortium and an enriched and more valuable set of scientific

services for our user communities. A third set of networking activities have been developed to focus on integrating ViBRANT with a wider group of stakeholders who use biodiversity data, but are not traditionally part of the core taxonomic and systematic research communities.

ViBRANT networking activities are grouped in three workpackages (WP3, Training; WP4, Standards and WP8, Mobilisation) each of which has the goal of both raising levels of co-operation and facilitating new or enhanced service capability to the programme.

Service activities

ViBRANT services are based on feedback from a series of independent user studies that identified and prioritised new functionality requested by the current userbase. The purpose of these activities is to foster the development of an ongoing integrated knowledge resource within the ViBRANT framework, and to use this as the basis for scientific infrastructure serving science and society. Central to these activities is the need to integrate the existing infrastructure more effectively. Work is stratified into two service layers. Data services (WP5) that perform some analytical or synthetic task on data present within the ViBRANT framework (specifically a Scratchpad), and a publishing service that provides the means for ViBRANT users to publish species descriptions and taxonomic acts in a manner that is compliant with the codes of Zoological and Botanical nomenclature. These services are aimed at maximising the efficiency and reuse of biodiversity data. Service activities are spread between six ViBRANT partners including two SME’s.

Research activities

ViBRANT’s research activities are in two workpackages focused on developing an enhanced and sustainable technical architecture to host the Scratchpad virtual research communities, and research supporting biodiversity literature access and data mining. The first (WP2) is a prerequisite to hardening our technical infrastructure. ViBRANT needs to make it as easy as possible for any institution to host their own Scratchpad node server. Currently all the Scratchpads are on a virtual machine hosting a single Scratchpad node server at the Natural History Museum, London.



Fig.1. The extension of the EDIT Scratchpads with new functions under ViBRANT.



Fig.2. The main Scratchpad site, from where you can find usage statistics and a list of existing Scratchpads (under 'Sites') and apply to get your own.

We want to develop a network of Scratchpad servers each of which has local server failover to ensure constancy of service. Failover means that if one server goes down its workload is shared between the remaining servers until it returns to service and external users will continue be able to use the services offered by the failed machine.

The second Work Package (WP7) addresses the problem of accessing biodiversity literature. Recent studies amongst biodiversity researchers have highlighted access to literature as a major obstacle to efficient research. Access to literature, or more specifically, data within published literature, also hinder a broad range of other disciplines including education, biodiversity con-

servation, protected area management, disease control, and maintenance of diverse ecosystems services. For this reason biodiversity literature access and data mining has been selected as a prime research area within ViBRANT.

User communities

ViBRANT's potential user base spans a large fraction of the worldwide community of biodiversity researchers, from back-garden naturalists to professional academics. This is because ViBRANT supports multidisciplinary groups in the construction of their own virtual research communities. These activities include: 1) the monitoring of environmental change; 2) biodiversity conservation;

3) the sustainable economic use biodiversity; 4) biological collections; and 5) education & training activities. Each group typically has a taxonomic, regional or thematic focus surrounding the construction of work such as eBooks, eJournals, conservation assessments, flora & faunal studies, data collection, community vocabularies, and citizen science projects.

International aspects

ViBRANT is working with a range of projects and partners worldwide. These include LifeWatch where we are acting as the prototype service centre; ELIXIR where we are providing taxonomic metadata services; and EMBRC where we are supporting marine model organism research. ViBRANT also has a relationship with PESI and 4D4Life EU project; the Encyclopedia of Life; the Barcode of Life and the Biodiversity Heritage Library. We are also working with the South African National Biodiversity Institute and Atlas of Living Australia.

Direction and planning

Unlike most EU projects, ViBRANT is flexible and uses an agile approach to development. This means we need to measure how well we are doing as we go along, modifying the infrastructure and introducing new features in response to user feedback. Some feedback will be of the write-in variety but we will also monitor usage by building counters into our services from the outset. It is enormously valuable to have pages automatically generated (e.g. <http://scratchpads.eu/scratchpads/stats>) so that anyone can monitor progress and impact. This allows the project to be more sustainable and motivates contributions. As part of this process we need to support a high level of granularity in the data we capture. For example for individual site maintainers, data for their site are important, but have to be judged against the background of data from other sites. Overall, *ViBRANT success will be judged by usage.*

As with the Scratchpad project ViBRANT products will be Open Source and we will encourage data reuse by having a Creative Commons licence by default on all public content. Individual sites can, as before, use any licence they wish on multi-media content. Once data are placed

in the public domain it has become important to follow and quantify how those data are used. ViBRANT will develop an enhanced set of citation and impact metrics comparable to the system for traditional paper publication. This is urgently needed so that we can better measure the impact of on-line resources.

For enquiries to ViBRANT, please contact: enquiries@vbrant.eu



Using the EDIT Platform for Cybertaxonomy to elaborate and disseminate complex floristic information

Kirchhoff, A., Müller, A., Berendsohn, W. G. (Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin), Janssen, T. (National Botanic Garden of Belgium), Roos, M. C., Sierra, S. E. C. (Stichting Nederlands Centrum voor Biodiversiteit Naturalis)

A Flora provides a complete survey of the plant diversity in a certain area like a country or a geographic region. It usually includes detailed and complex information about each plant species. Why are Floras important? Often, Floras are the first available overall treatment of plant diversity, especially for tropical regions. These publications are necessary to determine the names of plants and to obtain high quality information on the morphology, ecology and distribution of the species. Floras provide essential data for research in biodiversity, nature conservation and ecology, including many of the urgent issues of global change.

Where does the information necessary to compile Floras come from? Collections of dried plant specimens (herbaria), observation data and a wealth of literature sources and databases are scattered in institutions all over the world and constitute the building material for Floras. This material is usually reviewed by researchers that are experts for certain plant groups. Those experts form a small geographically distributed community. This often results in slow progress in the elaboration of Floras. Therefore, many tropical regions Floras are still incomplete or unavailable to this date or the available accounts are outdated and do not take into account all currently available information.

With the start of the computer era the organization of floristic information has changed fundamentally and new options of data storage, analysis, and presentation as well as new opportunities to foster collaboration between experts from remote locations came up. Furthermore, the dissemination of floristic information online has the potential to make it more readily available to potential users and to make it more rapidly updatable as new information arise.

The editors of two tropical Floras, *Flore d'Afrique Centrale* and *Flora Malesiana*, decided to collaborate and use state of the art computer software for their work. A close collaboration with the EDIT Platform for Cybertaxonomy as the most promising technical solution to handle the complex data included in Flora publications was initiated.

The EDIT Platform for Cybertaxonomy is a suite of software tools that support the taxonomic workflow in all its different phases from retrieving data during fieldwork and editing it with modern tools to the point of publishing the results in a printed or online publication.

The Platform offers a wide range of data exchange capabilities and supports multiple import and export formats. One of these is a format for scanned text data which enables the user to easily import originally printed data, e.g. from existing Flora publications, into a database, publish it on the web and make it available for further data processing with modern IT tools. Volume 11 (3) (*Sapindaceae* – soap berry family) with 352 accepted taxa and 966 synonyms as well as volume 13 of *Flora Malesiana* have been imported already. 10824 taxa and 15926 synonyms were imported from *Flore d'Afrique Centrale*.

The software constituting the EDIT Platform for Cybertaxonomy comes in three different flavors depending on the kind of intended collaboration: (1) an easy to install individual installation suitable for taxonomists working alone on a project; (2) a local installation suitable for taxonomists collaborating on a project in a local network, e.g. an institute; and (3) a community installation allowing collaborative work through the internet and thus enabling scientist teams spread all over the world to work on the same data simultaneously. The latter is an important feature to facilitate the

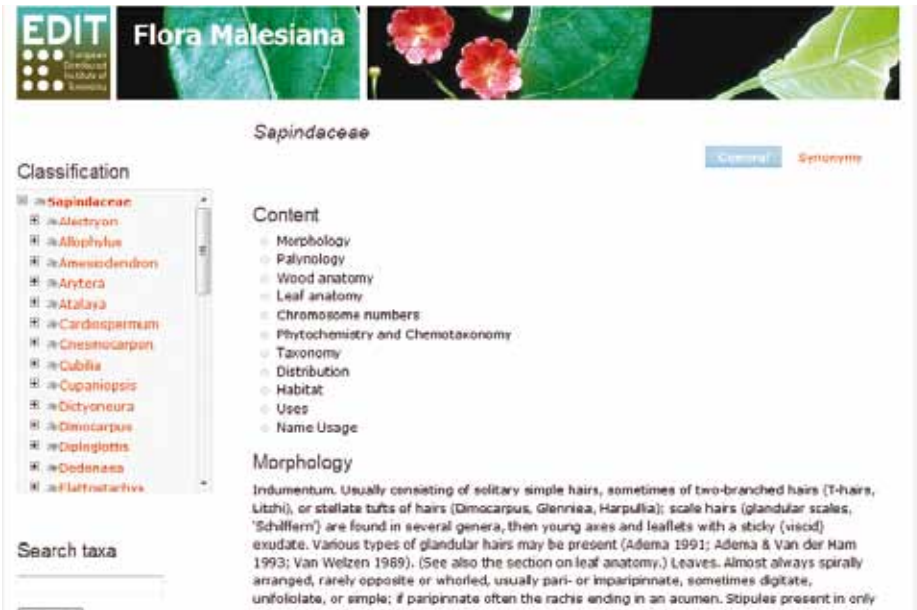


Fig.1. Draft version of the Flora Malesiana Portal. The EDIT Data Portal software is highly configurable, so the data portals that will be established for all participating Floras will have their individual design.

elaboration of Floras from scattered data sources by a distributed expert community.

The EDIT Platform for Cybertaxonomy uses a wide array of software components that can be installed on local computers and services that are available via an internet connection. The core tool for entering and editing data, the taxonomic EDITor, can be used as a local installation or it can be accessed via a web browser in a community setting (see above). Hence, the tool is also usable for scientists working in remote areas or countries with limited internet access.

Different types of online services are part of the Platform and publicly available for everyone. For example, geographic maps showing all kinds of distribution data for a given species can be generated on the fly from the data in a user database. This allows users to publish up-to-date distribution maps for print or online publication without the need to understand the complex

technology behind it. Also the creation and handling of identification keys to identify species in certain areas is well supported by the Platform. Identification keys are one of the core features for users of florals and therefore a must-have for software supporting the management of e-floras. With all this functionality the EDIT Platform for Cybertaxonomy meets the requirements of both Floras for a future oriented data management system allowing to reuse existing data easily, to publish up to date information online directly from an underlying database and to foster collaboration among remote experts to create missing treatments of plant families.

In the course of this exemplar group collaboration, additional European botanical institutions have expressed their interest to use a similar approach for their Floras.

Fact Box

Flora exemplar groups using the EDIT Platform for Cybertaxonomy:
National Botanic Garden of Belgium (Meise, Belgium), Netherlands Center for Biodiversity Naturalis (Leiden, The Netherlands), Royal Botanical Gardens Kew (Kew, United Kingdom), Botanical Garden Botanical Museum Berlin-Dahlem (Berlin, Germany)

More than 20 major European institutions with a research focus on botany have expressed interest.

EDIT Platform for Cybertaxonomy:
<http://wp5.e-taxonomy.eu/>

Flore d'Afrique centrale (Democratic Republic of Congo, Rwanda, Burundi):
<http://www.jardinbotanique.be/RESEARCH/DATABASES/FOCA/index.php>

Flora Malesiana (Indonesia, Malaysia, Singapore, Brunei, Darussalam, the Philippines, Papua New Guinea): <http://floramalesiana.org/>

The ATBI+M pilot site Mercatour/Alpi Maritime – Establishing the taxonomic baseline for nature conservation

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² State Museum of Natural History Stuttgart

Background

EDIT aims to strengthen the input of taxonomic expertise for biodiversity conservation. Therefore it organizes and supports the participation of taxonomists and other experts in biodiversity inventory and monitoring efforts in protected areas through its Work Package 7, "Applying Taxonomy to Conservation". The mechanism for achieving this objective is the establishment of "All Taxa Biodiversity Inventories + Monitoring" (ATBI+M) sites for selected protected areas and other areas of specific conservation concern. ATBI+Ms are intensive, large-scale efforts to record, identify, and document the entire biodiversity of a given area.

The ATBI+M site Mercatour/Alpi Maritime

Following the signing of a Memorandum of Understanding between representatives of the Mercatour and Alpi Maritime Natural Parks and EDIT, activities at this bi-national ATBI+M site started in 2007. Since then, participation has greatly increased (Fig. 1), especially if one considers the number of institutions having sent experts to the field. This is a clear indication that the ATBI+M programme has transcended the EDIT boundaries and has received increasing perception by non-EDIT institutions.

Between 2007 and 2010, more than two hundred and fifty scientists carried out surveys in the

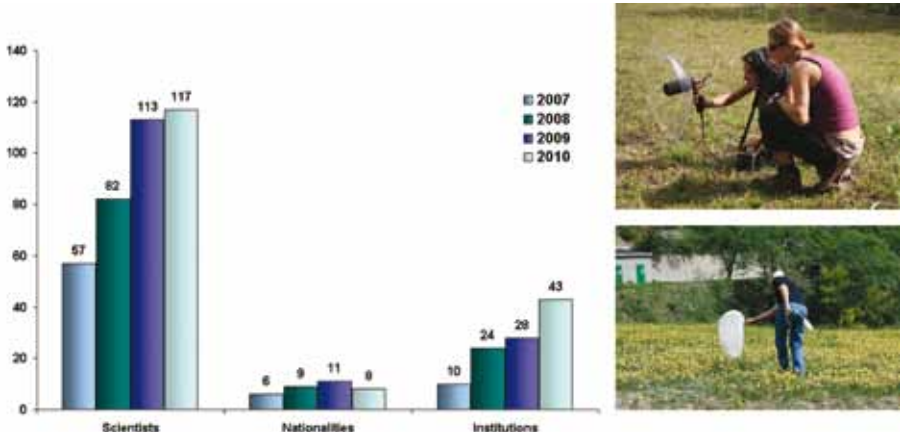


Fig. 1. Number of scientists, nationalities and institutions having participated between 2007 and 2010 at ATBI+M activities in Mercantour/Alpi Maritime.

region in some two thousand three hundred field days. As a result, about eight thousand species of animals, plants, and fungi were collected, observed or recorded. More importantly, about five thousand seven hundred data sets on their distribution were delivered (Fig. 2). As the identification process has not been completed yet, these numbers will still increase. The obtained data will help to accurately map species distributions, to develop probability range maps and are basic

for attempts to understand the complex ecological processes that drive habitat dynamics.

Enhancing knowledge on biodiversity

Important additions to the knowledge on the flora and fauna of this ATBI+M pilot site have been achieved so far: two hundred thirty seven new species records for the region Mercantour/Alpi Maritime, thirty five new species records for France/Italy. One of these examples is the

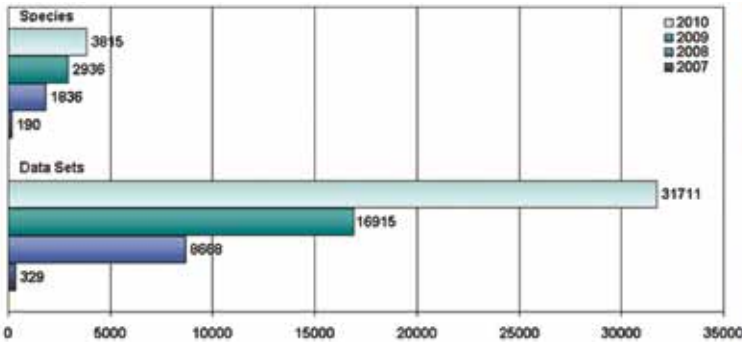


Fig. 2. Number of recorded species and number of datasets on species distribution between 2007 and 2010.



cuckoo wasp *Philoctetes helveticus* (Linsenmaier, 1959) (Hymenoptera: Chrysididae, Figure 3, right). Paolo Rosa, identifier of the species, comments: "One of the last mysterious European species. Probably distributed throughout the Alps, but only three specimens from Switzerland were known until now!"



Fig. 3. *Philoctetes helveticus* (Linsenmaier, 1959), collected at Le Pra, Coll de la Bonette in Mercantour by Christian Schmid-Egger (Pictures by Christian Schmid-Egger (left) and Michele Zilioli (right))

At least twenty species new for science have been discovered so far and are in the process of description. One example is the cave dwelling mite *Troglocheles lanai* (Arachnida, Acari: Rhagidiidae), recently described in the Journal of Natural History. Marco Isaia, one of the scientists involved, comments: "The cave also hosts several other amazing organisms, like *Troglohyphantes konradi* (a rare subterranean spider, previously only known from another cave), or *Duvalius carantii* (a rare cave beetle). They all show the incredible process of how life fits to environmental conditions, resulting in a perfect adaptation of an organism to its environment."



Fig. 4. *Troglocheles lanai* (Acari: Rhagidiidae), collected in the cave Barun Litrun near Gesso Valley in Alpi Maritime by Marco Isaia. (Pictures by Francesco Tomasinielli)

Data use for conservation management

The higher the number of species inventoried, the more information the park management staff has gained on habitats and ecosystem conditions. The Mercantour National Park could benefit from the data collected for the definition of

a list of its natural heritage (endemic, rare and/or protected species). This list was included in the Charta, an official document which defines the major orientations of the institution for the next fifteen years. As a result, the future land management actions could be defined as efficiently as possible.

Moving forward

Funding additional to the resources provided by EDIT was and still is essential to sustain the ATBI+M activities on the long term. Grants from the French Ministry of Environment (230000 €) and from the Prince Albert II Foundation, Monaco (45000 €) were received by the Mercantour national park. A joint project proposal submitted by both parks to the Integrated Transboundary action Plan IV Programme of the European Union awarded financial support within the framework of the "Alcotra 2007-2013" programme.

Part of this large plan concerns the "Generalised Biological Inventory" (GBI) which will integrate and widen the ATBI+M activities started by EDIT, and will benefit from the collaboration of the Muséum national d'Histoire naturelle in Paris (MNHN), and the Museo Regionale di Scienze Naturali in Turin (MRSN). The GBI will continue all activities aimed at improving the knowledge on animal and plant biodiversity in the Mercantour / Alpi Maritime territory.

Fact Box

Detailed information about this ATBI+M site can be found at: <http://www.atbi.eu/mercantour-maritime>

Summarized facts as of December 2010:

- Activities started in 2007.
- More than 250 scientists have participated;
- More than 8000 species of animals, plants and fungi have been recorded;
- More than 57000 datasets on their distribution have been delivered;
- 237 new species records for the region;
- 35 new species records for the countries;
- At least 20 species new for science;
- Additional funding through the Integrated Transboundary action Plan IV Programme of the European Union until 2012.

Integrating Research Grants: An effective tool for integrating the taxonomic work force

Schmidt, J. B. & Pedersen, H. Æ., Natural History Museum of Denmark, Copenhagen

EDIT Work Package 2 introduced the Integrating Research Grant (IRG) in 2008 to promote the integration of research in the fields of systematic and descriptive biology - two disciplines that work on sorting out the evolutionary relationships among species and on naming and describing them. These areas have for a long time found it very hard to receive funding, especially in competition with new advancing disciplines within molecular and applied biology.

EDIT has therefore been very happy to be able to fund skillful and dedicated scientists in pursuit of describing and classifying the overwhelming biodiversity of this planet and the IRG has by now awarded funding to several high-quality taxonomic and systematic projects. A good example is one lead by Jeremy Miller of the Netherlands Centre for Biodiversity Naturalis (Leiden) and Nikolaj Scharff of the Natural History Museum of Denmark (Copenhagen). They have gathered a group of arachnologists which include both the renowned capacities Charles Griswold of the California Academy of Sciences in San Francisco and Milan Řezáč of the Crop research institute (Prague) as well as the young scientist Mohammad Marhabaie of Akron University in the United States. This group was awarded an IRG in May 2010 for their project to do a systematic revision of the spider family Eresidae, commonly known as the velvet spiders.

The content of the project

The project is very comprehensive and includes microscopy, especially the Scanning Electron Microscope (SEM), which allows for examination of microstructures by enlarging to ten thousand times or even more in some cases, phylogenetic analysis, molecular work to match males with

females of some species, scientific drawing and documentation by photo-microscopy and collection of specimens in Tanzania. In addition to making the results available through traditional scientific publication, the group will also contribute cybertaxonomic content to established websites such as Encyclopedia of Life (EOL), (an online encyclopedia with species descriptions), Morphbank, (a website where images of anatomical structures and forms can be deposited), and the Global Biodiversity Infrastructure Facility (GBIF) (an internet portal for scientific biodiversity data).



Fig. 1. Photo-micrograph showing frontal view of *Paradonea splendens*, one the many intriguing spiders included in the velvet spider project.

Why choose velvet spiders?

Jeremy Miller originally came up with the idea to establish a project on the eresid spiders. He had been working together with Charles Griswold and Milan Řezáč on another project on an enigmatic subfamily of spiders that used to be included in the family of velvet spiders. However, it turned out that these spiders did not belong to the velvet spiders and Miller and colleagues promoted them to family rank, giving them the scientific name Penestomidae.

But as typically happens in science, answering one question and gaining new knowledge seems to raise new questions and in this case the investigation into the familial relationship of the velvet spiders created a need for clarifying the circumscription of this family. Another phenomenon that makes these spiders particularly interesting to scientists is that they seem to have evolved sociality several times independently. It may be surprising, but sociality is not a common phenomenon in nature, even though some of the species displaying sociality (ants, for example) are very easily seen as they typically occur in great numbers. In a group such as spiders, which is well known for being solitary to a degree where the females eat males, the evolution of sociality therefore becomes very intriguing.



Fig. 2. SEM picture showing a spigots of a species belonging to the African genus *Gandanameno*. Spiders extrude their silk through these small spigots.

Integration

Jeremy and Nikolaj have never collaborated on a paper before this project, but as a professional relationship has now been established the prospects for future collaboration are very high. Mohammad Marhabaie has benefitted from the opportunity to work with and being trained by established specialists and is now about to begin his Ph. D. program at the University of Akron in Ohio, U.S.A. Furthermore, he is even forming a society of

Iranian arachnology together with fellow arachnologist Majid Moradmand. So, in addition to the scientific output, this projects is also establishing new connections among the scientists involved and are thereby implementing one of the key objectives of EDIT and the IRG, namely to integrate the taxonomic work force.

Links to other projects mentioned in the article

Morphbank <http://www.morphbank.net>
 Encyclopedia of Life (EOL) <http://www.eol.org/>
 Global Biodiversity Information facility (GBIF) <http://data.gbif.welcome.htm>

Fact Box

In order to develop a mechanism to support integrating research projects especially for systematic and revisionary biology EDIT by way of WP2 established the Integrating Research Grants (IRG). These grants were implemented in 2008 and have been awarded every year.

Applications for IRG are evaluated by a panel of researchers, who score each one according to the following criteria

- Degree with which the project advanced EDIT's goals
- Quality of proposed research project
- Research qualifications
- Justification for items applied for
- Degree of justified use of EDIT products

In 2008 nine out of thirteen applications were deemed successful. The total amount awarded was 10.000 EURO.

In 2009 six out thirteen applications were deemed successful. The total amount awarded was 100.000 EURO

In 2010 six out of twenty applications were deemed successful. The total amount awarded was 100.000 EURO.



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