

Newsletter #5

September 2007

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



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Distributed
Institute of
Taxonomy

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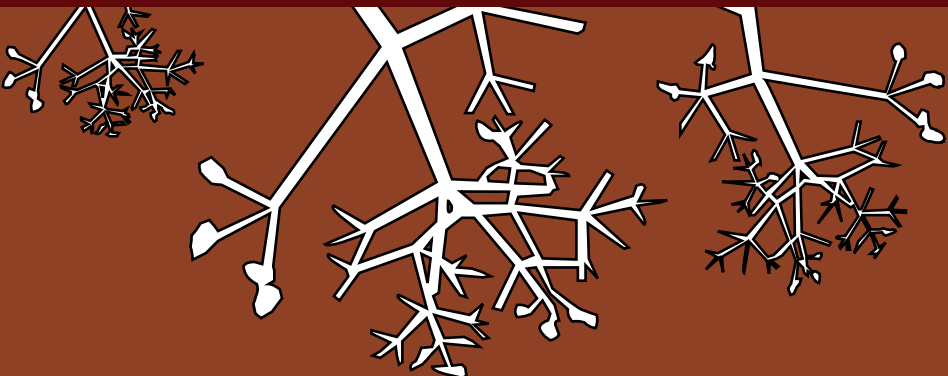
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Recent news

WP5 - EDIT Platform for Cybertaxonomy - Breakthrough

The second Information Science & Technology Commission (ISTC) Meeting, held in Berlin between September 13 & 14, 2007, was attended by 22 participants representing 15 EDIT and 3 non-EDIT partners. The meeting was a success as it addressed several important integration issues, namely:

- European IST resources and organisation
- A common data model for the Platform for Cybertaxonomy
- Institutional IST integration at the level of Memoranda of Understanding (MoUs)

The breakthrough, an ISTC agreement for a series of MoUs, will be formulated to cover all major areas of taxonomic information and software implementation and use. It is expected that all EDIT partners will have signed a number of such MoUs by the end of 2008.

The MoUs are the first step toward a common architecture (i.e. Common Data Model, shared services, interfaces and implementation technologies) for taxonomic IT applications, which will be implemented or prototyped and will serve as a reference standard for the participating institutions in the future. The CDM will provide an opportunity for taxonomists worldwide to use components of the EDIT platform for cybertaxonomy (i.e. either adhere directly to the platform, are interoperable, or at least semantically compatible to it). These platform applications and services will be accessible through an EDIT portal with an intuitive user interface that follows the taxonomic work process in guiding the taxonomist towards the needed resources.

The implications of the ISTC recommendation will be an integration of IST resources across Europe, the US and Russia at the level of MoUs, which will ensure that a fully operational taxonomic platform for cybertaxonomy will be available beyond the EDIT funding period.

Walter Berendsohn & Malte C. Ebach

To learn more about EDIT WP5 activities, visit the dedicated website:
<http://wp5.e-taxonomy.eu/blog/index.php>

Meet...

Would you like to introduce a new colleague in the EDIT Newsletter?

This section is for you.

Please send your texts to edit-webmaster@mnhn.fr

Katrine Mohr

Katrine Mohr joined EDIT in September this year as Work package Coordinator of WP2 (Integrating the expert and expertise basis). Katrine did her studies in Behavioural Biology at the University of Copenhagen in Denmark. During her masters she specialized in pest management, mainly with regard to the African multimammate mouse. Previously she has been working at the Danish Pest Infestation Laboratory and was project leader of a research project in Tanzania monitoring rodent movements in urban areas. Furthermore, she has been employed at the Danish CITES department placed at the Danish Forest and Nature Agency.

Katrine is based in Copenhagen, Natural History Museum of Denmark with the WP2 leader, Henrik Enghoff.



Zoulika Labghiel

Zoulika is an experienced administrative assistant. She joined the network by the end of August as WP1 (EDIT Coordination and Management) administrative assistant. Zoulika grew up in the South-West of France and studied Art History at the University of Toulouse. After a few months spent in Great-Britain, she moved to Paris where she worked in various fields, in particular medical research, human rights defence, and recently agricultural research with the completion of a contract for the French National Institute for Agricultural Research. In order to broaden her skills, Zoulika also took a training course in assistant editorship.

She is mad with arts, particularly contemporary art, and loves wandering in museum and art galleries.

Where do we find taxonomy outside the scientific fortresses?

This newsletter section wants to provide a list of recent publications appearing in the daily or weekly international press discussing societal subjects touching on taxonomic problems and research. Please send your text suggestions to edit-webmaster@mnhn.fr

Virus is seen as suspect in death of honeybees

An abandoned queen bee remaining alone in a deserted hive full of pollen and honey is an a typical symptom of colony collapse disorder (CCD). Affecting one fourth of the United States' bee-keepers, CCD was first reported in 2004. Its appearance coincided with the first import of honeybees in the USA since 1922.

Whereas numerous theories were put forward to explain the vanishing of entire bee colonies -from climate change to genetically-modified crops- it appears today that the responsible virus (Israeli acute paralysis virus) transmitted by a parasitic mite (*Varroa jacobsoni*). In a recent study published in *Science*, a research group showed that the virus was present in 96 per cent of CCD-affected colonies but in almost none of the unaffected hives. However, the survey does not demonstrate whether it was the virus that caused the die-offs. "I hope no one goes away with the idea that we've actually solved the problem", said Dr Pettis, co-director of the research group. According to him, it is likely that more than one factor has to align for a CCD to occur: stress, bad nutrition, or possibly other micro-organisms. But whatever the causes of the CCD, one must identify them as soon as possible since bees are essential not only for honey production, but also for food production. Nearly 100 major crops worldwide depend on pollination by bees to set fruits. And CCD has already been reported in Brazil and European countries.

<http://www.nytimes.com/2007/09/07/science/07bees.html>

This article shows that -combined with other disciplines- taxonomic expertise is essential to identify and control

Wrong trout

«This is an incredibly sobering story, and it's not something we wanted to find,» says Prof. Andrew Martin, co-author of the article «Across the great divide: genetic forensics reveals misidentification of endangered cutthroat trout populations».

In this publication¹, Jessica Metcalf, the lead author, demonstrated that biologists trying to save Colorado's native greenback cutthroat trout from extinction were, in most cases, protecting the wrong fish. Although the fish was officially declared extinct in 1937, a few small surviving populations were found in the 1950s and in the 1970s a programme for its conservation was created. Eggs and sperm from the newly discovered trout were used for the last several decades to rear new generations and restock parts of Colorado with what biologists thought were greenback cutthroats. But Metcalf et al.'s sophisticated DNA analysis showed that five of nine relic populations used were actually Colorado River cutthroat trout, a closely related subspecies. According to Metcalf, this error can be explained by the introduction of Colorado River cutthroat trout throughout the native range of greenback cutthroat trout in the late 19th and early 20th centuries by fish stocking activities. An artificial introduction that occurred before the documentation of the native flora and fauna of the area was recorded...

http://www.denverpost.com/ci_6807634

This case teaches us that three conditions are essential for efficient conservation policies: trained experts to identify species to protect, availability of new technologies, and existence of acute and exhaustive field data.

¹ <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-294X.2007.03472.x>

Overcrowded ark

In this article, the author is drawing attention to the United States' Endangered Species Act which is currently protecting approximately 1880 living species. According to the author, the act «has become unwieldy»: because of its statute of unique powerful law, it is today the chief weapon of environmentalists. They use the text to obtain the classification of areas in «critical habitats» in which development, farming and mining are greatly restricted. These restrictions lead to the loss of thousands of jobs.

Detractors of the act stress the fact that since its creation in 1973, only 47 species came off the endangered list, most of which because they became extinct. According to these opponents, the act is not only useless, but it may also be dangerous to the species it is supposed to protect: some people may be tempted to destroy protected species living on they land before they are discovered by biologists rather than reporting them and suffer restrictions. On the contrary, the act's supporters think this situation demands a stronger enforcement of the law. For them, the main problem is not the harshness of the act but the fact it does nothing to help species before they become endangered.

Despite this controversy only few people talk openly about scrapping the act, but at the same time it is gradually being tamed by the creation of habitat-trading schemes where compromises are considered. According to the author, imperfect as they are, these compromises represent the best hope for balancing the interests of the various parties.

<http://www.economist.com/displaystory>.

[cfm?story_id=9767816](http://www.economist.com/displaystory?story_id=9767816)

One can disagree with this article, but it informs us on a particular vision of conservation that has to be considered when implementing conservation policies. This text also shows us how important it is that the communicated information is correctly understood by the concerned stakeholders. It is about explaining why saving the trivial Stock Island tree snail may be as important as saving the majestic bald eagle. And taxonomists have a role to play.

Find other cases studies about «Why taxonomy matters?» on the [BioNET-INTERNATIONAL](http://www.bionet-intl.org) website: <http://www.bionet-intl.org>

Publications

This contribution from David Williams (NHM, London) & Antonio G. Valdecasas (MNCN, Madrid) is pursuing the debate launched by B. Dayrat (please read more about this in EDIT Newsletter #4).

'Integrative Taxonomy' Then and Now: A response to Dayrat (2005)

Authors: Valdecasas, Antonio G.; Williams, David; Wheelert, Quentin D.

Source: to be published soon in the *Biological Journal of the Linnean Society*

Abstract:

Deep misunderstandings still besiege taxonomy after more than 200 years of fruitful output. It has been asserted in this Journal



that taxonomy should be integrative and conform to a series of restrictive guidelines. We show that taxonomy has been integrative for most of its history, although in our sense, integrative does not mean the indiscriminate pooling of any source of data. The guidelines proposed are not founded in good scientific rationale and can have, if followed, a detrimental effect, not only on taxonomy, but biology as a whole.

What to read ?

Suggestions of biology-related books. Feel free to share your favorite readings by sending their references to edit-webmaster@mnhn.fr



The Wild Trees: A story of Passion and Daring

Richard Preston, Random House

Richard Preston is well known for his thriller novels retracing histories of Ebola and smallpox viruses. In his last book, he leaves the infinitely small world of micro-organisms to enter the giant world of the tallest living trees: redwoods. The biggest known redwoods are 350-370 feet high - the equivalent of a 35-37-story building- and their main trunk can be up to 25 feet in diameter near its base. Botanists think they may live up to 3,000 years old. During a long time, the redwoods forests canopies were largely a mystery and scientists believed the redwoods to be bereft of all other life at the top. Stephen C. Sillett, a professor of botany at Humboldt

State University, was the first explorer of the redwood-forest canopy. He discovered that this 3-dimensional labyrinth was actually filled with countless forms of animal and plant life stretching over several acres above the forest floor.

With this book, Preston follows Sillett, his wife Marie Antoine and a few other characters as they explore the old redwoods forests canopies and discover the unsuspected beauties that are the "wild trees" of the title.

Read reviews about «The Wild Trees» by Richard Preston:

http://www.newyorker.com/archive/2005/02/14/050214fa_fact_preston

<http://www.nytimes.com/2007/04/22/books/review/Zernike.t.html>



Find more information about Stephen C. Sillett at:

<http://www.humboldt.edu/~sillett/sillett.html>

More images are available at:

<http://www.humboldt.edu/~sillett/redwoods.html>



FORTHCOMING EVENTS

Ocean Biodiversity Informatics Conference 2007' (OBI'07)

2.-4. Oct. 2007

The 'Ocean Biodiversity Informatics Conference 2007' (OBI'07), International Conference on Biodiversity Data Management, will be held at the Bedford Institute of Oceanography, Dartmouth NS, Canada on October 2-4, 2007. This conference is co-organized by International Ocean Data and Information Exchange (IODE) and the Ocean Biogeographic Information System (OBIS) and hosted by the Centre for Marine Biodiversity (CMB) and the Bedford Institute of Oceanography (BIO). Major point of discussions will be data policy issues and the advantages of free and open sharing of biodiversity data.

Programme

1. Welcome
2. Visualization Tools
3. Habitat and Ecosystems
4. Species Name Management and Tools
5. Metadata Developments
6. Data Use and Analysis
7. New Data Systems
8. Integrating Different Types of Data
9. Posters

Conference website:

<http://www.marinebiodiversity.ca/OBI07>

DNA Barcoding in Europe

3.-5. Oct. 2007

EDIT, the European Distributed Institute of Taxonomy, is organizing a meeting on DNA Barcoding in Europe at Naturalis, the National Museum for Natural History, in Leiden. Researchers from EDIT and non-EDIT organizations and stakeholders are invited to join in.

The goal of the meeting is to provide a platform for European researchers working on DNA barcoding and other DNA sequence-based species identification systems to meet

and exchange. One main focus of the meeting will be to explore funding options, particularly with view to the 7th framework.

On-site registration commences Wednesday, 3rd October 2007, 8:30 hrs. A few places are still available.

Programme

Wednesday 3 October 2007

- 10:00 hrs Welcome session
- 11:00 hrs Status of DNA barcoding
- 13:50 hrs Barcoding funding opportunities in Europe
- 16:00 hrs Discussion on funding opportunities

Thursday 4 October 2007

- 08:30 hrs Applications of DNA barcoding
- 09:30 hrs DNA barcoding & databasing
- 11:00 hrs «Classical» DNA barcoding
- 14:00 hrs New technologies
- 15:30 hrs Funding / working groups
- 16:35 hrs Posters & drinks

Friday 5 October 2007

- 08:30 hrs Non-COI DNA barcoding
- 10:40 hrs Multi-locus barcoding
- 13:50 hrs Barcoding the «invisible»
- 15:40 hrs Closing session

Further information and registration:

<http://www.ecbol.org> or
r.linden@cbs.knaw.nl



Buffon International Symposium

18.-19. Oct. 2007

Last days to register to the Buffon international Symposium to be held in Paris on the 18-19th October 2007!

This first meeting of museums worldwide will allow natural history institutions to highlight their contributions to major global issues, notably the biodiversity crisis and sustainable development. More than 130 institutions from 30 different countries will be represented to discuss «the role of Natural History Institutions

in the 21st century and its impact on our common future».

More information about the programme of conferences and registration on

<http://www.mnhn.fr/buffon-en>

IMoSEB - Second International Steering Committee meeting 15.-17 Nov. 2007

International Mechanism of Scientific Expertise on Biodiversity second International Steering Committee meeting, Montpellier, France.

For further information please contact
maxime.thibon@gis-ifb.org

EDIT 7th Network Steering Committee Meeting, 19.-20. Nov. 2007

The 7th NSC meeting will take place in Paris. More information will be posted on the EDIT website soon.

WP4 Symposium on future trends of Taxonomy, 21.-23. Jan 2008

WP4 (Coordinating Research) will be organizing a symposium on the future trends of taxonomy within the framework of its objective 4.3 «Prospecting new strategies and tools for research in Taxonomy». The scientific organization of the symposium is being done by Dr. Rafael Zardoya and Dr. Ignacio Ribera from the Museo Nacional de Ciencias Naturales (CSIC), and is set to be a new appraisal of Royal Society symposium «Taxonomy for the 21st century», held in 2003. It plans to involve mainly younger scientists from both EDIT and non EDIT institutions working in Taxonomy and Phylogenetics, as well as experts in technologies that will most likely be used for

systematic purposes in a short to medium term. Due to the scope of the symposium, its outcome will likely be of great importance for the future of EDIT, so it has been decided together with WP1 to organize it in the same venue as EDIT's General Meeting, the 3rd SAC Meeting and 4th BoD Meeting that will take place the following days. This will allow to maximise the attendance of members of all partner institutions to this important event.

It is planned that the total number of participants will be 125 and grants will be available, especially for young active taxonomists.

For more detailed information (ie. subjects to be discussed and schedule) please visit EDIT website at <http://www.e-taxonomy.eu>
You can also contact Xavier Eekhout:
xeeekhout@mncn.csic.es

EDIT General meeting 23.-24. Jan 2008

EDIT General Meeting will be held in Portugal, near Faro, on the Algarve coast, in a village called Carveiro.

It will represent a unique opportunity to exchange on what has been accomplished during nearly two years and to discuss the further orientations of the network activities.

3rd EDIT Scientific Advisory Council 24. Jan. 2008

The 3rd SAC will take place in Carveiro, Portugal, during the week of the network general meeting.

4th EDIT Board of Directors meeting 25. Jan. 2008

The gathering week in Carveiro, Portugal, will end with the 4th Board of Directors meeting.

More informations about these three events will soon be published on the EDIT website (<http://www.e-taxonomy.eu>).



Responding to end-users of taxonomy in less industrialised countries

Humankind depends on Nature's services for their well-being, socio-economic development, and potentially even survival. To understand, quantify, map and sustainably use natural resources we need «Taxonomy» – the science and process of discovery, naming and classification of all living things. Without taxonomic know-how, how can we tackle our health, food and environmental needs? How can environment agencies identify and combat harmful invasive species, farmers control agricultural pests, pharmaceutical researchers discover new drugs, medical science identify diseases and developing countries benefit from their biodiversity while allowing scientific research on it?

In a world where political responses to our already changing climate are increasing in scope almost by the day, the taxonomic community has an important and urgent contribution to make. Climate change is affecting the potential distributions of many species, causing new health and food security dangers. Identifying such species and comparing information on their present and past occurrence is important for determining where, when and how fast climate change is happening and how risks can be managed to minimise threats to agriculture, health and biodiversity.

Yet, with few exceptions, taxonomic institutions are in critical decline worldwide. Expertise is fragmenting, the number and

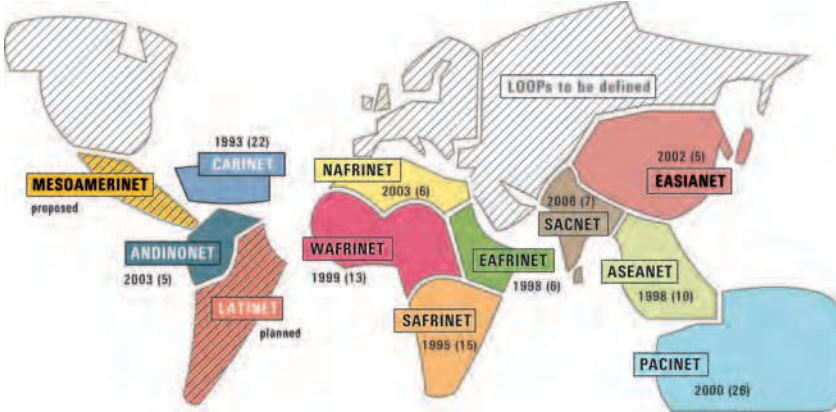
range of specialists decreasing («Taxonomic Impediment»). The output of user-friendly and locally-adapted taxonomic products (such as identification keys and field guides for invasive alien species; or check lists for pest species specific for a given region; etc.) is wholly insufficient to respond to people who need names to manage biodiversity, support agriculture, promote health and regulate trade. As a result, the provision of taxonomic support and services increasingly depends on the cooperation of institutions in networks and exploitation of opportunities offered by modern technologies such as DNA barcoding and digital taxonomy.

BioNET¹ is «the most comprehensive network» (Convention on Biological Diversity) and the

BioNET at a glance

BioNET - the global network for taxonomy - is the leader in establishing and operating partnerships for capacity building in taxonomy in developing countries. BioNET is a not-for-profit organisation comprising a UK-based Secretariat and ten regional networks world-wide, the «Locally Owned and Operated Partnerships» (LOOPs), endorsed by the respective governments of 115 countries and territories in Africa, Asia, the Caribbean and Latin America, and Oceania.

BioNET LOOPs (Locally Owned and Operated Partnerships). Hatched areas indicate LOOPs to be defined / being in the process of establishment. Date of establishment and number of member countries are given.



only international not-for-profit organisation dedicated to promoting taxonomy. Founded in 1993, BioNET comprises today a UK-based Secretariat¹ linking regional, government-endorsed partnerships and over 2,500 experts with international technology, informatics and capacity building partners. From the outset BioNET has worked with governments and scientific institutions to build and mobilise taxonomic capacity in the less industrialised countries through its regional networks, the «Locally Owned and Operated Partnerships» (LOOPs).

The potential for taxonomy to contribute to biodiversity conservation and poverty reduction

through trade, health and sustainable agriculture is greatest in the developing world where, on the other hand, the capacity of the taxonomic sector to respond to such needs, is often very limited, preventing the implementation of key elements of Multilateral Environmental Agreements. This is why BioNET focuses its activities on the developing countries in work that is recognised in key decisions of the Convention on Biological Diversity (CBD).

BioNET's main area of excellence is to understand the needs of the taxonomic markets (via LOOPs and policy forums), mobilise capacity across borders, and incorporate its local knowledge to produce taxonomic products and

Locally Owned and Operated Partnerships (LOOPs)

LOOPs are BioNET's unique capacity building and product delivery mechanisms. Their interests extend from taxonomic services (e.g. species identifications), product development (e.g. identification aids) and adoption and use of technologies, to training and facilities for biological and literature collections, and more. LOOP membership is open to any institution offering taxonomic services. LOOPs serve the ultimate beneficiaries of BioNET's work, namely the end-users of taxonomic outputs such as national and subregional agencies and businesses with interests in the environment, agriculture, trade, education, etc., and provide BioNET and its international partners with in-depth local knowledge and direct insights into local priorities and institutional opportunities for developing taxonomic products and capacity.

¹ BioNET-INTERNATIONAL, Bakeham Lane, Egham, Surrey, TW20 9TY, UK

<http://www.bionet-intl.org> / bionet@bionet-intl.org / tel +44 (0)1491 829036 / fax +44 (0)1491 829082

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BioNET's mission

Enhance human well-being and biodiversity conservation by building capacity to discover, name and classify the world's living organisms



The BioNET Strategy: LOOPs are BioNET's unique capacity building and product delivery mechanisms. Local know-how is complemented by the Secretariat's in-depth knowledge of international taxonomic priorities and its strategic partnerships with leading international technology and capacity building organisations.

services that meet market needs. BioNET's network comprises both taxonomic tool-makers and tool-users and a major thrust in BioNET's Global Programme is to create an interface among these and link taxonomic research with societal requirements. Understanding and engaging with the end-users of taxonomy is therefore an integral component of BioNET's work.

Awareness raising and advocacy for taxonomy

Working with relevant partners, BioNET publishes and disseminates information materials on taxonomy and its applications demonstrating where taxonomy (or the lack of it) has had profound impacts on society. For example, a brochure was published in 2006 on «Why Taxonomy Matters» with a selection of 1-page, summary case studies revealing how taxonomic knowledge and resources were used to meet user needs and benefit society,

or how the lack of taxonomic resources and information has led to poor decision-making, negatively affecting society in some way. A much larger set of freely downloadable «Why Taxonomy Matters» case studies is available on BioNET's website (www.bionet-intl.org). They are used by non-experts curious about the subject and taxonomists who can use them as powerful examples of why taxonomy is important when talking to decision-makers or when submitting proposals for funding. BioNET aims to publish 100 case studies (in English, French and Spanish) by the end of 2008 and encourages taxonomists to submit appropriate stories, thus helping to raise awareness of taxonomy and contributing to the goals of the Global Taxonomy Initiative of the CBD.

Creating an enabling policy environment for taxonomy

BioNET aims to promote the long-term sustainability of the taxonomic sector by helping

to create an enabling policy environment. This includes not only the provision of relevant and timely technical input into policy development (via its LOOPS), but also advocating for the needs of taxonomists and taxonomy-users when addressing societal requirements such as the management of invasive species, access and benefit sharing, or compliance to sanitary and phytosanitary measures. Hence, BioNET is active in many relevant fora (e.g. CBD, IPPC, CITES), relaying the regional knowledge from its LOOPS, actively supporting policy development, and encouraging policy bodies to promote the taxonomy needed to implement multilateral agreements in various parts of the developing world.

The highest-level policy forum for taxonomy is the Global Taxonomy Initiative (GTI) of the CBD, the importance of which is recognised in the Plan of Implementation of the World Summit on Sustainable Development. BioNET has engaged actively in developing the GTI and provides ongoing advice to the CBD Secretariat on taxonomy. In response to requests in several key CBD decisions, BioNET has aligned its programme to support several aspects of the GTI work programme, namely communication and advocacy, needs identification, capacity building, collaboration, regional cooperation and resource mobilisation.

BioNET's end-user focussed objectives

- **awareness raising and advocacy for taxonomy**
- **creating an enabling policy environment for taxonomy**
- **mobilisation of taxonomists and engagement with end-users**
- **assessment of taxonomic needs and product prioritisation**
- **development of locally adapted products and services**
- **training and technology transfer**
- **fund raising and project development support**

Assessing taxonomic needs

The programme of work for the GTI includes a focus on taxonomic needs assessment and identification of priorities at national, regional and global levels. To date, of the taxonomic assessments that have been carried out around the world, most have been taxonomic capacity assessments. They have identified gaps in capacity to conduct taxonomic research and specified what financial, human or material resources are needed to conduct taxonomic work. Yet, the question of who will make use of the particular outputs and research is rarely explicitly considered. In contrast, the purpose of taxonomic needs assessments is first, to identify the taxonomic deliverables required by practitioners in health, agriculture, conservation etc., second, to prioritise these and third, to specify the capacity needed to deliver these outputs. Only taxonomic needs assessments can identify priority needs and allow resources to be focused on supporting the production of relevant taxonomic products. In 2006/2007, BioNET's Secretariat together with the Natural History Museum (London) has been implementing a project supported by DEFRA (UK) – Taxonomy for invasive alien species management - the first global assessment of needs for the GTI, where the users of taxonomic resources are the primary focus of consultation.

Mobilising taxonomists

While taxonomic resources are limited, taxonomists and taxonomic institutions nevertheless must continue to pursue efforts to serve societal needs, conserve biological diversity, and achieve sustainable development. By connecting taxonomists worldwide, the Internet allows mobilising collective responses to increase taxonomic output. Information on existing taxonomic knowledge, including for example data on taxa contained in reference collections, is increasingly being made available to countries of origin. BioNET is able to mobilise taxonomists worldwide to utilise this newly available information for the creation of locally adapted taxonomic products.

BioNET maintains a user-friendly website and e-Bulletin (the latter available in

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English, French and Spanish) that serve as communication platforms for taxonomists and non-taxonomists alike. BioNET's communication work helps make taxonomists aware of the GTI and increases understanding of taxonomic issues among decision makers. BioNET also organises global workshops to further the strategic development of taxonomy and its application to conservation and development priorities. The 4th Global Taxonomy Workshop on "Technologies for Democratising Taxonomy" is planned for 2009; interested organisations are invited to contact BioNET.



Developing locally optimised taxonomic products and services

To meet the development and conservation challenges of the 21st-century, taxonomists and taxonomic institutions such as natural history museums must have the capacity to develop, use and offer tools and services for a range of specialist and non-specialist users. Diverse demands for taxonomic support include local-language and end-user-focused taxonomic identification aids, lists of species such as potential invasives and pests, reference collections, as well as accurate and cost-effective identification-, surveying- and monitoring-services. With its highly developed partnership structure and track record working with developing countries, BioNET is uniquely positioned to accelerate the development of taxonomic products and services by mobilising collective responses and customising products according to the formats and languages required

by end-users world-wide. Cooperation with technology partners such as the Consortium of the Barcoding of Life (CBOL) or the Centre of Biological Information Technology (CBIT) further enhances the delivery of high value, demand-driven and user-friendly taxonomic outputs.

Training to meet local needs

BioNET LOOPS have created many opportunities for taxonomy students and graduates to obtain training through scholarships and travel bursaries, and countless non-specialist training courses (for parataxonomists, farmers, environmentalists, etc.) have been conducted linking taxonomy with biodiversity conservation and/or agricultural productivity / agricultural trade. Among these are training in species identification and conservation, in the identification of invasive species threatening biodiversity, workshops on plant pests and diseases damaging local agriculture, demonstrations of pest damage and eco-friendly control, and courses on plant pollinators.

A special focus is given to taxonomic training in support of developing country exports - a key factor in poverty reduction. Exporting countries need taxonomic knowledge of their regional pest and pathogen distributions and occurrences in order to assess the risk their export commodities pose to importing countries and certify their exports appropriately. Equally, taxonomic identification tools and training are needed for monitoring imports so as to uphold sanitary and phytosanitary (SPS) standards and avoid trade disputes. Particularly BioNET-ASEANET has been active in conducting regional workshops on the compliance with the SPS regulations of the World Trade Organisation.

Through training, BioNET also supports its technology partners in introducing and establishing modified or new technologies in the



taxonomy community. For example, several regional workshops on the development and use of digital (Lucid) keys have been organised together with CBIT to introduce the Lucid platform and train local practitioners in the production of locally adapted, digital identification keys.

Fund raising and project development

BioNET helps its technology partners to locate local funding opportunities, initiate projects addressing regional priorities, and promote the implementation of their technology by the national governments in the region as part of their biodiversity programs. In 2006/07 BioNET has partnered with CBOL and others to organise four regional DNA barcoding workshops and follow-up meetings

BioNET and EDIT

BioNET and EDIT share some common approaches, particularly the focus on understanding and addressing end-user needs while delivering taxonomic outputs through inter-institutional partnerships. But there are also decisive differences which make the organisations complementary. For instance, whereas EDIT is focused on Europe, BioNET works principally in the developing world. While BioNET partners with global technology and tool developers from various fields such as CBIT, GBIF, and CBOL, EDIT has its own programmes pushing the frontiers of online taxonomy and digital tools. There is clearly scope for cooperation. Indeed, BioNET is represented on the EDIT Scientific Advisory Committee by the Director of its Secretariat, Richard Smith, and five BioNET LOOPs - from Latin America, Pacific Islands, West Africa and Southeast Asia - have already expressed an interest in collaborating with EDIT. The Secretariat will be represented at the October EDIT meeting on DNA barcoding by Kornelia Rassman.

in southern and eastern Africa, South America, and Asia. The aim was to build awareness of the technology, discuss its potential applications, examine the practical steps needed to initiate barcoding activities in these regions, and establish prioritised, demand-driven barcoding projects, under careful consideration of the specific local, technological and financial needs. One direct output of these meetings is the Scale Insect Barcoding Initiative (SIBI), a pan-African initiative to develop DNA barcoding for scale insects - a major agricultural pest in Africa and world wide - and transfer the technology among the countries of the Southern African Development Community (SADC). A proposal for SIBI capacity building and development has been submitted to SADC by BioNET-SAFRINET, via the Department of Agriculture, South Africa.

BioNET's Global Programme 2007 - 2011

Since its establishment in 1993, BioNET's role has grown among international organisations and the demands on its centrally-managed services have evolved and are increasing. Following the successes of establishing regional partnerships, the BioNET Secretariat has developed its new Global Programme 2007 - 2011 focussing largely on the delivery of timely and user-focused taxonomic products via its LOOPs. To obtain resources for this programme the Secretariat has recently launched a funding campaign on its webpage and has organised a side event¹ at the twelfth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in Paris, France, to officially launch the campaign².

Empowered to deliver its Global Programme, BioNET will help to reduce the «Taxonomic Impediment». BioNET's unique partnership approach, its capability to accelerate product and capacity development, its longstanding experience in developing countries and, above all, its ability to engage the end-users of taxonomy in the process of product delivery and establishment - means it is ideally placed to achieve its vision: that the capacity to name all living organisms will be accessible to serve the needs of people everywhere. ♦♦

¹<http://tinyurl.com/3bsbx9>

²<http://linkger.com/6e4f67>

Geospatial components for EDIT

The aim of EDIT WP5 (platform for cybertaxonomy) geospatial components part is to identify and offer services useful for taxonomic research, that is to provide the instruments for taxonomists to perform geospatial analysis and interpretation, and to prepare the result for publication.

Geographical information is an important part of any biological dataset. Any specimen collected or observed is linked to a particular locality, and certainly current expeditions should note precisely the associate geospatial information. The locality is important for determining the specimen's habitat needs, geographic variant of a certain taxa as well as more ecologically oriented information like presence, abundance and distribution of certain taxa at a regional or global scale.

True to EDIT's spirit of openness and sustainability, the tools developed within the project are open-source, and are meant to be maintained and enhanced beyond the project's period. In the same line and to guaranty interoperability and long term offer of the services, it is taken particularly care to use OGC (The Open Geospatial Consortium) and EU directive INSPIRE compatible standards and software.

The interest of the EDIT community and beyond in the geographic process is illustrated by the growing number of contribution on WP5 wiki and mailing lists concerning this domain.

Tools for scientists

EDIT geospatial components group aims at providing a comprehensive, robust, intuitive platform to support scientific analysis respecting international standards, but without burdening the user with technical details... The system will work with minimal components to install. The user interface should not change dramatically if new technologies or standards are adopted. Only then will we convince people to use these tools on a daily basis.

The services to be provided are planed as follow:

The Open Geospatial Consortium, Inc.® (OGC, www.opengeospatial.org/) is a non-profit, international, voluntary consensus standards organization that is leading the development of standards for geospatial and location based services. Biodiversity Information Standards (www.TDWG.org) has signed a MoU with OGC and has a BioGeo Interoperability Task Group dedicated to is focus on testing standards, mainly from TDWG and OGC, to promote interoperability and demonstrate their use together.

The Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007. You can have access to the full text of the Directive here <http://www.ec-gis.org/inspire/>. When submitting Geospatial related projects to the EU it is thus now requested to take the requirements of the INSPIRE Directive into account.

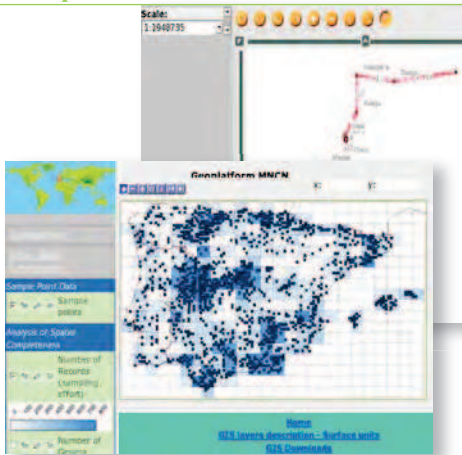
- Quick maps are an important first : just plotting your data points (observations/collections) on a map of the region can provide a better overview of (sub)species distribution;
- A step further is occurrence data, such as native/extinct/invasive species per region. On these points, calculations can be performed that yield information on

a higher (group) level, such as a simple sum of the occurrences per region;

- More intricate processing is possible, such

as predictive distribution modeling and reconstruction of collecting pathways, or gap analysis for assessment of the spatial completeness of the biodiversity data.

Example of services to scientists



«Spatial analysis» with the Madrid tool for asserting spatial completeness of data



Reconstruction of the Lang & Chapin expedition

Same reconstruction, with Blue Marble NASA background

Next steps

The close collaboration with WP7 (Applying taxonomy to conservation) will continue to display the results of the All Taxa Biodiversity Inventories (ATBI). The collected information will be used as test bed and to produce guidelines on how to optimally collected and serve information to cybertaxonomy platform.

An e-conference is planned by end of the year with the subject «Geospatial needs for taxonomic research». We have now a general framework for the geospatial platform and the displaying of geographic information. The next steps will be to add services for taxonomist to the core components of the Geospatial infrastructure.

During the first year of the EDIT project, it has already been identified that areas are of high interest for taxonomists in their daily work like:

- **Distribution modeling based on presence data when no absence data (typically the case of Museum specimens):**

Species distribution modeling using sampling locations and associated environmental information is commonly used in the field of ecology. There is a growing interest of using museum and botanical garden specimens for this type of modeling. One of the issues identified is that Nature historical collection specimens have often been collected in a qualitative way rather than in a quantitative way, as it is the case in ecological studies. This results in the fact that you have often presence information but not absence information, which is needed in most modeling algorithms.

ARTICLES

By assessing ongoing modeling activities using collection specimens, tools like MAXENT and GARP have been identified as adequate for the Geospatial components of the EDIT cyber taxonomy platform. Information about these tools, including possibilities for reviewing, can be found at <http://www.bdtracker.net/>

- **Phylogeography (*links with DNA Barcoding*):**

Phylogeography is the study of the processes controlling the geographic distributions of lineages by constructing the genealogies of populations and genes. This term was introduced to describe geographically structured genetic signals within and among species. An explicit focus on a species' biogeographical past sets phylogeography apart from classical population genetics. Phylogeographical inferences are usually made by studying the reconstructed genealogical histories of individual genes (gene trees) sampled from different populations. Past events that can be inferred include population expansion, population bottlenecks, vicariance and migration. One of the goals of phylogeographic analyses is to evaluate the relative role of history in shaping the genetic structure of populations relative to important ongoing processes. Approaches integrating genealogical and distributional information can address the relative roles of different historical forces in shaping current patterns. <http://en.wikipedia.org/wiki/Phylogeography>

- **Distribution of morphological variants of a same taxon or of related taxa (*links with Geometric Morphometrics*):**

Morphometrics studies the «form follows function» aspect of biology, mapping the changes in an organism's shape in regards to its function. Many programs useful for morphometric analysis are available. These programs are listed at the <http://www.bdtracker.net> under the item Description and Keys. By combining results for Geometric Morphometrics software and Geospatial tools the aim is to detect morphological variants. Both the Phylogeography and detection of morphological variants by geospatial regions are considered as adequate services to assist taxonomists in their revisions of taxa or descriptions of new taxa.

The aim of planned the e-conference will be to yield feed-back from the scientific community to add other potential services to the list and to prioritize their implementation according to the ranking of their usefulness to taxonomic research.

A framework for collaboration

- The general news concerning geospatial components can be followed under WP 5.4 on the WP5 blog at <http://wp5.e-taxonomy.eu/blog/>.
- A complete and regularly updated technical information on the Geospatial components can be consulted on the WP5 wiki at <http://dev.e-taxonomy.eu/trac/wiki/GeographicComponents>
- EDIT has implemented a Biodiversity Service & Application Tracker which a collection of links to software, tools

Links, Services and Products

- Assessment of predictive distribution report and gap analysis : http://wp5.e-taxonomy.eu/blog/files_edit_wp5/2007-07-26_D5.35_&_D5.38.doc
- Map viewer prototype (developed by CSIC, Madrid) : http://edit.csic.es:8080/edit_geo/prototype/edit.html
- Tool for reconstruction of collecting pathways (developed by RMCA, Tervuren) : <http://synthesys.africamuseum.be/home.html/>
- Tool for assessment of spatial completeness of biodiversity data (developed by CSIC, Madrid) : http://edit.csic.es:8080/edit_geo/prototype/edit.html

and resources useful to taxonomists, including Maps and Geospatial services. Users are free to submit and to review services and software. <http://www.bdtracker.net/>

A mailing list (wp5-geo-edit@mnhn.fr) with the developers working on the Geospatial

Components has been created and has been quickly very active. Our aim is to expand the list of subscribers to have at least one GIS contact in all EDIT participant institutions and beyond. Please contact the WP 5.4 task leader to add the GIS-specialists of your institution to the dedicated mailing list at Patricia.Mergen@africamuseum.be. ♦♦



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EDIT Meeting in November 2006 in BGBM, Berlin

Wouter Los

How do the major biodiversity projects interrelate?

The involved observer will notice that a multitude of large national and European scientific and technological projects contribute to different objectives for biodiversity research. This is good news, but sometimes leaves you puzzled with the question how these projects are interrelated. This article aims at explaining the interactions between Synthesys, EDIT and Lifewatch.

Such confusion is partly inherent to the funding mechanisms which only allow to subsidize well defined and time-limited plans, resulting in an array of apparently

independent projects. Another reason is that the biodiversity scene is large and that we need many projects to respond to the large societal and scientific questions. Good news is also

that there is a fair communication between the larger European initiatives, although this does not originate from a pre-defined strategy. But the interaction between scientific communities and the vision on how to proceed in biodiversity research is satisfactory established to allow for a common and cooperative approach.

An example is the suite of biodiversity informatics projects of BioCISE, BioCASE, ERMS, Euro+Med Plantbase, Fauna Europaea, Species 2000-Europe, ENBI and more to follow. Also the SYNTHESYS project which followed a number of earlier «Large-Scale-Facilities» projects of individual institutes. Another example are the networks of excellence MARBEF, AlterNET, EDIT with the other more or less related networks of EurOCEANS and Marine Genomics. All initiatives were planned with mutual communication and have in part common memberships. Increasingly these projects and networks show how to build the fabric of the much needed cooperation at the European scale.

This still leaves the reader with the question how the major biodiversity projects are interrelated. This short article is not intended to explain all details, but will inform you about the presently most important 'sister' projects of EDIT: SYNTHESYS and LIFE WATCH.

The main objective of EDIT is typical for a network of excellence, which is to manage a process leading to the integration of European taxonomic efforts to create a European virtual centre with an increased scientific basis and capacity for biodiversity conservation. This should result in common priorities, activities and procedures, to be agreed upon amongst the cooperating directors.

In contrast the SYNTHESYS cooperative project (<http://www.synthesys.info/>) has the very concrete objective to increase the number of high quality visiting researchers in our collections, and to undertake supporting activities such as standards and best practices for collections care. The main focus is on the interests of visiting researchers by selecting the best ones and by providing top-services in the collection facilities.

LIFE WATCH (<http://www.lifewatch.eu/>) is

a relative young initiative of the cooperating networks as mentioned above, aiming at establishing a large-scale infrastructure for biodiversity research by bringing genomic, species and ecological data in a digital environment for analysis and modelling. It is presently entering in a (EU funded) preparatory phase to work towards agreement of a coalition of countries to start the actual construction and operations of the infrastructure.

Although there clear differences between these activities, there are also important relations. SYNTHESYS shows how collection institutes can cooperate and its network activities feed in a number of EDIT work packages. Plus, the SYNTHESYS activities for developing best practice in collections care are assisted by EDIT with the broader implementation across European institutes. As such SYNTHESYS also contributes to LIFE WATCH, as its mechanisms for the selection and support of visiting researchers will contribute to designing the Service Centre of LIFE WATCH. Also EDIT will contribute to LIFE WATCH by focussing on data priorities, enabling technologies for data capture, and on the research agenda.

Within these relationships the task of EDIT is crucial. When the European taxonomic community wants to play a leading role in science and society of the 21st century it has to liaise with other disciplines and get a strong position in the new large initiatives. EDIT is the network cooperation that should result in the agreements and new work practices that will allow to play this collaborative leading role. ♦♦

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