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CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY

Ninth meeting

Bonn, 19–30 May 2008

Item 4.11 of the annotated agenda*

THE GLOBAL TAXONOMY INITIATIVE

Matters arising from decision VIII/3, including the development of outcome-oriented deliverables

Note by the Executive Secretary

I. INTRODUCTION

1. In paragraph 11 (f) of decision VIII/3, the Conference of the Parties requested the Executive Secretary to develop, in consultation with the Coordination Mechanism of the Global Taxonomy Initiative (GTI), other relevant consultative bodies, stakeholders and organizations, for each of the planned activities of the programme of work on the GTI, specific taxonomic, outcome-oriented deliverables to be considered as additions under “(ii) Outputs” with a timeline for possible consideration by the Conference of the Parties at its ninth meeting.

2. In paragraph 11 (g) of the same decision, the Conference of the Parties further requested the Executive Secretary to report to its ninth meeting on progress made towards the target of developing a widely accessible checklist of known species, as a step towards a global register of plants, animals, microorganisms and other organisms, bearing in mind the urgent need for timely provision of scientific names of organisms to support implementation of work under the Convention on Biological Diversity.

3. Emphasizing the need to build and retain capacity to address the taxonomic impediment, and in this context, explore options to ensure the long-term sustainability of the necessary financial support, the Conference of the Parties, in paragraph 5 of decision VIII/3, invited BioNET-INTERNATIONAL and other relevant organizations, in consultation with the Coordination Mechanism for the GTI, to establish a special fund for the GTI, and to report on progress to its ninth meeting.

4. Section II of this note contains a proposal on specific outcome-oriented deliverables, developed in consultation with the Coordination Mechanism of the GTI and the member institutions of the Consortium of Scientific Partners on Biodiversity. Section III reports on progress made towards: (i) the development of a widely accessible checklist of known species; and (ii) the establishment of a special

* UNEP/CBD/COP/9/1.

fund for the GTI. Section IV presents a set of draft decisions for the consideration of the Conference of the Parties.

5. The year 2007 celebrated the 300th anniversary of the birth of two of the principal founders of modern taxonomic science, Carolus Linnaeus and Georges-Louis Leclerc, Comte de Buffon. On the occasion of the celebration for Buffon at the French National Museum of Natural History, members of the GTI examined the history, role, options, future and challenges for taxonomy in the 21st century and adopted a declaration that is included as annex I to this note.

II. PROPOSALS ON SPECIFIC OUTCOME-ORIENTED DELIVERABLES FOR EACH OF THE PLANNED ACTIVITIES OF THE GTI PROGRAMME OF WORK

6. The deliverables contained in annex II were developed by the Coordination Mechanism of the Global Taxonomy Initiative at its seventh meeting in November 2006. They include concrete timelines and possible key actors. They are in general in line with the framework adopted in annex II of decision VII/30, are applicable to the programmes of work, and take into consideration the findings of the Millennium Ecosystem Assessment. Throughout the development of these proposed deliverables, the Coordination Mechanism and partners noted the importance of human, institutional and financial resources needed for their implementation in developing countries, in particular the least developed countries and the small island developing States among them, and countries with economies in transition.

III. PROGRESS REPORTS

A. *Development of a widely accessible checklist of known species*

7. The work of a number of initiatives and organizations is contributing to the development of the checklist of known species:

(a) The GBIF ^{1/} is developing technologies necessary to access, share and disseminate biodiversity data via the internet, the core of which is a checklist of known species. It currently mediates more than one million species names and about 145 million digital records of specimens and observations held in over 1000 databases located throughout the world. GBIF has facilitated access to information on the specimens held in these collections and the launch of an initiative to develop a global directory of these collections. The GBIF also provides important coordinating functions, training and capacity-building opportunities, and a forum for the taxonomic and biodiversity data community to develop robust and useful biodiversity analysis tools for science, policy, and management;

(b) The Ocean Biogeographic Information System (OBIS), established by the Census of Marine Life programme ^{2/} (CoML), makes marine biogeographic data freely available on the Web (accessible through the OBIS portal site at www.iobis.org and through GBIF). It contains 13.2 million records and 80,000 species, contributed by 238 databases from all over the world. The data are taxonomically and geographically resolved and analytical tools are also available. OBIS is one of the major data contributors in the GBIF;

(c) A widely accessible checklist of known species is being developed by Species 2000 & the Integrated Taxonomic Information System (ITIS) Catalogue of Life (COL) ^{3/} using 47 taxonomic databases from around the world, with contributions from over 3,000 taxonomists and specialists. The

^{1/} <http://www.gbif.org/>

^{2/} <http://www.coml.org/>

^{3/} <http://www.catalogueoflife.org/>

information is available through an annual checklist distributed freely as a CD-ROM. The most recent version of the checklist is on the web at <http://www.catalogueoflife.org/annual-checklist/2007/>. A Dynamic Checklist is updated frequently at www.catalogueoflife.org. The seventh edition of the Annual Checklist contains 1,008,965 species names, estimated to be slightly more than half of the world's known species. The first full version of an authoritative catalogue of all known species of organisms is expected to be completed by the year 2011. The COL is an important taxonomic index in the GBIF data portal (www.gbif.org). A Memorandum of Understanding (MOU) between the Secretariat of the Convention on Biological Diversity and the ITIS and Species 2000 is being developed. The objective of the MOU is to promote the development, dissemination and use of the COL as a contribution towards development of a coordinated global taxonomy information system, in support of the objectives of the Convention on Biological Diversity. This includes collaboration for outreach efforts and sharing of information. The Secretariat of the Convention on Biological Diversity and COL will hold a workshop with stakeholders to complete the coverage of the catalogue in 2009 in Montreal;

(d) BioNET-INTERNATIONAL is collaborating with Species 2000 to mobilize taxonomists through the sub-regional BioNET LOOPs (Locally Owned and Operated Partnerships) with the goal of contributing to GBIF by creating regional checklists that are needed to complete the Catalogue of Life. The first of these collaborations was initiated by BioNET-SACNET and Species 2000 Asia Oceania in 2007 with the goal of completing a South Asia Catalogue of Life by 2012 as a component of a South Asian Biodiversity Information System;

(e) The World Federation for Culture Collections (WFCC) possesses 531 culture collections in 67 countries containing 316,852 microbial strains and 11,327 cell lines. The task of characterizing the extensive diversity of microorganisms is huge due to the nature of microorganisms. These organisms need to be cultured prior to identification, and polyphasic approaches are often necessary for classification, although DNA sequence-based characterization, including whole genome sequencing, is rapidly becoming a preferred method of identification and classification of bacteria and archaea;

(f) The Encyclopedia of Life (EOL), which builds on the GBIF infrastructure, serves as an online reference source and database for every one of the 1.8 million species that are named and known on this planet, as well as all those later discovered and described. The EOL will be used as a teaching and a learning tool, helping scientists, educators, students, and the community at large gain a better understanding of this planet and all who inhabit it. Within the EOL, the Biodiversity Heritage Library programme is a consortium of 10 of the world's largest natural history libraries who have agreed to digitize their biodiversity print holdings, consistent with the adequate and effective protection of intellectual property rights, making this information freely available over the Internet. This will enable the historic taxonomic literature available in all of the countries of the world, further reducing the taxonomic impediment globally; and

(g) DNA barcodes ^{4/} and relevant DNA sequence data are available in public databases so that users can identify specimens even when type-specimens are located in geographically distant areas or outside their country of origin. Identification using DNA barcodes can be done by non-taxonomists using routine molecular biology tools and techniques, thereby making taxonomic information much more widely available and useful. Thus, barcode information will provide a new and rapid diagnostic tool for users to identify organisms. The taxonomic community that is developing and testing barcoding's robustness has created the Consortium for the Barcoding of Life (CBOL), which includes over 160 organizations (museums, collections, universities, government agencies, industry and NGOs) in over 50 countries. CBOL projects focus on key groups of organisms such as the All Birds Barcoding Initiative (ABBI), the Fish Barcode of Life campaign (FISH-BOL), Tephritid Barcode Initiative (TBI) (fruit flies),

^{4/} DNA barcoding is a taxonomic technique that involves a small, well-known gene sequence from a standardized region of mitochondrial DNA or a region of ribosomal DNA, as a diagnostic biomarker for species identification.

and the Mosquito Barcode Initiative (MBI). These initiatives have brought together relevant taxonomists from around the world and they are assessing the need for taxonomic revisions, capacity-building and training, additional field sampling and improved infrastructure for the preservation of reference collections.

B. Establishment of the special fund for the Global Taxonomy Initiative

8. The Interim Steering Committee for the Special Fund, coordinated by BioNET-INTERNATIONAL and including several Coordination Mechanism members, has done initial work to conceptualise the Special Fund and an associated global partnership. The GTI Special Fund concept aims to raise funds to:

(a) Build and sustain human and institutional capacities through support for training, salary, research, facilities (including collections), technology and tools; and

(b) Mainstream the use of novel digital and molecular practices in taxonomy.

8. This fund will be devoted to the expansion of the expert base and effectively and efficiently providing taxonomic information needed to understand biodiversity and the implementation of national, regional, and international initiatives of the Convention on Biological Diversity and other biodiversity related conventions. The mechanism for delivery would involve public/private partnerships with resources sufficient to disburse funds from a variety of donors. Initial discussions are beginning with potential funders about feasibility and interests.

9. A joint meeting between the Interim Steering Committee and the Coordination Mechanism to further discuss the global partnership and Special Fund took place on 22 November 2007 at the Secretariat of the Convention on Biological Diversity. The Interim Steering Committee will continue to work closely with Coordination Mechanism members on the concept documents, suggestions for funding sources, and ideas about priority areas/issues to be addressed (which can be region-specific), based on needs that have been identified but not adequately addressed. The Interim Steering Committee will regularly share progress with the Coordination Mechanism and welcomes inputs from Coordination Mechanism members at any time.

IV. DRAFT DECISION

10. In light of the above, the Conference of the Parties may wish to adopt a decision along the following lines:

The Conference of the Parties:

(a) *Welcomes* the progress made in the development of a widely accessible checklist of known species, as a step towards a global register of plants, animals, microorganisms and other organisms, and *encourages* all the organizations involved to continue developing and disseminating tools and techniques, gathering data, collecting and maintaining specimens, and building the related capacities so as to complete the work by 2010 for plants and 2012 for all other organisms;

(b) *Also welcomes* progress toward the establishment of a special fund for the GTI, and *encourages* BioNET-INTERNATIONAL and the Interim Steering Committee of the GTI Special Fund to continue seeking suitable funding sources so as to operationalise the Fund prior to 2010, and report on progress to the tenth meeting of the Conference of the Parties;

(c) *Recognises* the outcome-oriented deliverables contained in annex II to this note as outputs of the Programme of Work on the Global Taxonomy Initiative, and *urges* Parties, other Governments and relevant organisations to carry out the activities planned in the programme of work so

as to produce the expected outputs by the targeted time, and *requests* the Executive Secretary to report on progress in these matters to a meeting of the Subsidiary Body of Scientific, Technical and Technological Advice prior to the tenth meeting of the Conference of the Parties;

(d) *Emphasizes* the need for capacity-building, especially in developing countries, in particular the least developed countries and the small island developing States among them, and countries with economies in transition, in order to enable them to implement the planned activities to achieve and monitor progress towards the expected outputs; and

(e) *Invites* Parties, other Governments, international and funding organizations to provide adequate support for the development of a widely accessible checklist of known species, and timely support to developing countries, in particular the least developed countries and small island developing States among them, and countries with economies in transition, as appropriate, for the implementation of the planned activities in annex II to this note, including related capacity-building.

Annex I

THE BUFFON DECLARATION

Natural History Institutions and the Environmental Crisis

Concluding Message from the Buffon Symposium - October 18th and 19th, 2007

Muséum National d'Histoire Naturelle, Paris

Representatives of 93 natural history institutions (natural history museums and research institutes, botanic gardens, zoos...) from 36 countries from all continents met in Paris on 18th and 19th October, 2007, on the occasion of the tercentenary of the birth of Buffon, one of the great founding fathers of the scientific study of the diversity of life.

The many meetings and symposia on the lives and impacts of these scientific leaders have all strongly supported the GTI and reiterated the importance of taxonomy for achieving the three goals of the Convention. It was apparent in all of the meetings that taxonomists are anxious to effectively work to support the Convention, but that regulations and fears were increasingly negatively impacting the ability for taxonomists around the world to do their work and build the information bases needed for science based policy and management.

Given that science is critical for sustainable management of biodiversity and ecosystems and, through it, survival of human populations on this planet, the vital contributions of these institutions are fourfold.

- a) They are the primary repositories of the scientific samples on which understanding of the variety of life is ultimately based.
- b) Through leading-edge research they extend knowledge of the structure and dynamics of biodiversity in the present and in the past.
- c) Through partnerships, and through programs of training and capacity-building, they strengthen the global capability to address current and future environmental challenges.
- d) They are a forum for direct engagement with civil society, which is indispensable for helping bring about the changes of behaviour on which our common future and the future of nature depend.

Today natural history institutions have particular responsibilities because global biodiversity is collapsing. Current approaches are inadequate in the face of this challenge. We therefore reaffirm our commitment to work together, and to develop new integrated approaches to understand and address the environmental crisis, and to communicate the issues to the public, policy makers and a broad range of stakeholders.

We make three recommendations:

1 - Collections of specimens and other databases on nature are a model of nature's variability and are a part of the world's scientific infrastructure (as exemplified by the OECD Global Science Forum). They are crucial tools for understanding the impact of climate change, of biodiversity loss, and other environmental challenges, but natural history collections are nowadays disappearing in many countries due to lack of funding.

We therefore call on governments and organisations to give the conservation of these vital collections increased levels of support.

2 - Naturalist research in the field is essential for the continued gathering and dissemination of information, as well as training and capacity-building initiatives. As a group, natural history institutions have developed, and will continue to develop and implement, best practice in this area. However, current policy changes derived from the U.N. Convention on Biological Diversity have made research, and the management of collections for scientific research on biodiversity, increasingly difficult and expensive.

We therefore call on governments and the Convention on Biological Diversity:

- to recognize the difference between profit-oriented bioprospecting and science-oriented research for the public good, and
- to facilitate non-commercial biodiversity collecting and the movement of specimens in their approaches to Access and Benefit-Sharing (ABS), including through their development of policy and regulations.

3 – Evolution is without doubt the most acceptable explanation for the diversity of life. It is crucial that only such empirical and testable approaches are accepted as “scientific” when discussing evolution. We strongly urge that support be given for the dissemination of scientific perspectives, which is our duty as outreach organisations, and for the teaching of evolution in schools.

In conclusion, the participants in the Buffon Symposium express the desire that scientists, policy makers and civil society unite in their efforts to achieve sustainable management of nature and the maintenance and restoration of ecosystems and their services upon which civilization depends. We reaffirm our conviction that a flourishing development model that is compatible with a sustainable natural world is possible. We are enthusiastic regarding the contributions we can make through our missions in this context, which consist of extending human knowledge of nature, training specialists of all kinds, and sharing knowledge with the public, particularly young people. We strongly affirm our capacity to provide an unbiased forum for the development of new ideas and new approaches among all the stakeholders concerned.

*Annex II***OUTCOME-ORIENTED DELIVERABLES FOR EACH OF THE PLANNED ACTIVITIES OF THE PROGRAMME OF WORK OF THE GLOBAL TAXONOMY INITIATIVE*****Operational objective 1: Assess taxonomic needs and capacities at national, regional and global levels for the implementation of the Convention.****Planned Activity 1: Country-based taxonomic needs assessments and identification of priorities.*

Output 1.1.1. Develop an Assessment Support Pack to be made available through the GTI Portal by the end of 2009, building on assessments done to date, the GTI Guide, and the guidance on the BioNET-INTERNATIONAL web site. 5 Actors: BioNET-INTERNATIONAL; the Coordination Mechanism of the Global Taxonomy Initiative, and other compilers of Taxonomic Needs Assessments.

Output 1.1.2. A Taxonomic Needs Assessment in at least one sector to have been completed by 10% of Parties by 2010, and by 25% of all Parties by 2012. Actors: National Governments, with assistance from taxonomic institutions and networks and GTI National Focal Points.

Planned Activity 2: Regional taxonomic needs assessments and identification of priorities.

Output 1.2.1. Complete at least one pilot regional assessment within a UN subregion, integrated with implementation of a thematic area or cross-cutting issue of the CBD, by the end of 2009. Results and lessons learned can be placed before the fourteenth meeting of the SBSTTA and disseminated by the Clearing-House Mechanism. Actors include BioNET-INTERNATIONAL and CBOL.

Planned Activity 3: Global taxonomic needs assessments.

Output 1.3.1. Complete Global Taxonomic Needs Assessments for at least two thematic areas or cross-cutting issues of the CBD by the end of 2009. Actors include global initiatives such as, *inter alia*, BioNET-INTERNATIONAL, CABI, GBIF, The World Conservation Union (IUCN) and International Agriculture Research Centers (IARCs).

Planned Activity 4: Public awareness and education.

Output 1.4.1. Compile and disseminate a resource pack including background information and ideas for publicity to targeted groups by the end of 2009. Actors: the Coordination Mechanism of the Global Taxonomy Initiative, the Global Initiative on Communication, Education and Public Awareness (CEPA), the Clearing-House Mechanism of the CBD.

Output 1.4.2. Run at least one exhibition, at a national taxonomic institution, on the importance of taxonomy with mention of the Global Taxonomy Initiative by 2010, both physically and with a web presence. Actors: Parties, relevant bodies participating the Global Initiative on Communication, Education and Public Awareness, National Museums and Herbaria Consortium of Scientific Partners.

Output 1.4.3. Provide country web pages with species lists and identification materials for the national fauna and flora by 2015 (derived from the available information in the literature as baseline information for further research). Actors: GBIF and partners.

Operational objective 2: Provide focus to help build and maintain the human resources, systems and infrastructure needed to obtain, collate, and curate the biological specimens that are the basis for taxonomic knowledge.

Planned Activity 5: Global and regional capacity-building to support access to and generation of taxonomic information.

Output 2.5.1. Create an online registry of repositories of biological collections that provides globally unique identifiers for these collections, and initiate an analysis of countries and regions that lack essential collection infrastructure by 2012. Actors: CBOL, GBIF, CETAF, NSCA, MOSAIC.

Output 2.5.2: All Parties to develop national and regional priorities and action plans for taxonomic capacity-building by 2015, based on national and regional taxonomic needs assessments. Actors: National Governments, with assistance from taxonomic institutions and networks and GTI National Focal Points and the GTI Coordination Mechanism.

Output 2.5.3: Increase long-term positions for taxonomists with the goal to establish adequate taxonomic expertise for all major organism groups in all regions, and to double the taxonomic workforce by 2020. Actors: All Parties and Countries.

Output 2.5.4: Formulate and promote international standards for maintaining and curating biological specimens/cultured organisms as resource for taxonomic studies by 2012. Actors: Taxonomic institutions, Clearing-house mechanism of the CBD, Global Science Forum (GSF) of the OECD, BioNET-INTERNATIONAL, CGIAR, WFCC, European Culture Collection Organisation (ECCO).

Output 2.5.5: Develop and maintain taxonomic collections as basic knowledge infrastructure for CBD implementation with the goal of each Party by 2020 to maintain or have access to at least one institutional centre of taxonomic excellence at national or, where appropriate, at regional level. Actors: National Governments, taxonomic institutions and networks, GSF, CGIAR, European Distributed Institute of Taxonomy (EDIT), BioNET-INTERNATIONAL, WFCC, European Culture Collection Organization (ECCO).

Output 2.5.6. Identify national biological reference collections for all Parties by 2010. Actors include all Parties and Countries.

Planned Activity 6: Strengthening of existing networks for regional cooperation in taxonomy.

Output 2.6.1: Include all taxonomic institutions in appropriate networks to assess and build capacity by 2012. Actors include BioNET-INTERNATIONAL, other taxonomic networks, national taxonomic institutions, GSF, CGIAR, WFCC, European Culture Collection Organisation(ECCO).

Output 2.6.2. Strengthen taxonomic technical cooperation networks in ten UN sub-regions through the publication of a best practice handbook by end 2009. Actors include BioNET-INTERNATIONAL.

Output 2.6.3. Identify regional hubs for DNA barcoding and incorporate them into CBOL's Leading Labs Network. Actors: CBOL.

Operational objective 3: Facilitate an improved and effective infrastructure/system for access to taxonomic information; with priority on ensuring countries of origin gain access to information concerning elements of their biodiversity.

Planned Activity 7: Develop a coordinated taxonomy information system

Output 3.7.2. Develop an internationally-accepted standard for collections-level descriptions to enable clarity on collections holdings before all specimens are included in the database. Actors: GBIF, TDWG, Genbank/EMBL/DDBJ.

Output 3.7.3. Produce a widely accessible checklist of known species, as a step towards a global register of plants, animals, microorganisms and other organisms, by 2012. Actors: GBIF, Species 2000, ITIS, taxonomic institutions, Encyclopedia of Life (EOL), BioNET-INTERNATIONAL.

Output 3.7.4. Make 1 billion specimen records digitally available by the end of 2008. Actors: GBIF, collection-holding institutions.

Output 3.7.5. Increase the means and rate of digitisation of taxonomic literature, incorporating simple and effective interfaces for location and access to biological content; interoperable with major biological projects; and structured in accordance with appropriate data standards. Milestones from the Biodiversity Heritage Library Programme are: 6,000,000 pages available by end of 2008; 15,000,000 pages available by end of 2009; and 25,000,000 pages available by end of 2010. Actors: Biodiversity Heritage Library, libraries of major taxonomic institutions, AnimalBase, BiodivHeritage, the Scientific Electronic Library Online (SciELO), Society for General Microbiology (IJSEM Online Issues), as well as other Open Access platforms.

Output 3.7.6. Develop at least 5 Web-based taxonomic treatments covering large taxonomic groups, ecosystems and regions to be completed by 2010 in order to enable comparison of their utility. Actors: include, *inter alia*, the Creating a Taxonomy e-science Project (CATE), European Distributed Institute of Taxonomy (EDIT), the INTeGrated Open TAXonomic Access (INOTAXA), Plozi.org, .

Output 3.7.7: Develop a prototype for an openly accessible Global Species Information System (GSIS) as requested by the "Potsdam Initiative 2010" by 2010, and a comprehensive GSIS version with information on all species by 2020. Actors include, *inter alia*, Encyclopedia of Life (EOL), Fishbase, TDWG, GBIF, BioNET-INTERNATIONAL.

Output 3.7.8. Develop a system of species web pages, with community involvement, and a programme for their growth and sustainability by 2010. (Actors: Encyclopedia of Life (EOL), FishBase, GBIF, BioNET-INTERNATIONAL)

Output 3.7.9. Sustainably populate one or more systems with links and references to extant keys, guides and other identification tools, to cover all regions, by 2012. Actors include, *inter alia*, : EOL, International Centre of Insect Physiology and Ecology (ICIPE), BioNET-INTERNATIONAL.

Operational objective 4: Within the major thematic work programmes of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.

Planned Activity 8: Forest biological diversity.

Output 4.8.1: Establish an inventory of important species for forest biological diversity, their conservation status, ecology, and distribution, including a potential indicators of below-ground biodiversity, and appropriate sampling systems, by 2015. Actors include forest departments, taxonomic institutions, GBIF, the Tropical Soil Biology and Fertility Programme of the CGIAR;

Output 4.8.2. Create a mechanism to address data on forest extent and specimen data accessible through TDWG standards, to facilitate inventory work, by 2010. Actors: GBIF, TDWG, UNEP World Conservation Monitoring Centre (WCMC).

Planned Activity 9: Marine and coastal biological diversity.

Output 4.9.1. Create a centre for exchange of information on taxonomic guides and other identification tools for invertebrates of mangroves by 2010, populated with all available information. Actors include EOL, taxonomists, Census of Marine Life, OBIS, Clearing-House Mechanism.

Output 4.9.2. Create a centre for exchange of information on taxonomic guides and other identification tools for ballast water organisms by 2010, populated with all available information. Actors: Smithsonian, EOL, taxonomists, Clearing-House Mechanism.

Output 4.9.3. Produce a guide to the major groups of marine algae. Actors include taxonomic institutions, OBIS.

Planned Activity 10: Dry and sub-humid lands biodiversity.

Output 4.10.1. Produce and trial one identification toolkit for one dryland habitat, including lichens and other crustal biota, by 2012.

Planned Activity 11: Inland waters biological diversity.

Output 4.11.1. Create centre for exchange of information on taxonomic guides and other identification tools for fresh-water fish by 2010, populated with all available information. Actors include EOL, taxonomists, the Clearing-House Mechanism.

Output 4.11.2. Generate a gap analysis on a global basis of identification guides to freshwater fish by 2010.

Planned Activity 12: Agricultural biological diversity.

Output 4.12.1. Create a centre for exchange of information on taxonomic guides and other identification tools for pollinators by 2010, populated with all available information. Actors include FAO, EOL, GBIF, ITIS, CBOL, BioNET-INTERNATIONAL, taxonomists, Clearing-House Mechanism

Output 4.12.2. Produce keys to all genera of bees of the world by 2012. Actors include FAO, taxonomic institutions.

Output 4.12.3. Develop and begin testing by 2010 identification systems for pilot taxa (e.g. tephritid fruit flies or scale insects) using DNA barcodes that can be used by agricultural border inspectors Actors include CBOL, BioNET-INTERNATIONAL, taxonomists.

Planned Activity 13: Mountain biological diversity.

Output 4.13.1. Create working lists of organisms known to be occurring in mountain areas. Actors: GBIF, GMBA.

Output 4.13.2: Using specimen occurrence data, identify risks from climate change for existing protected areas in mountain regions and provide information to reduce impact of climate change on small protected areas. GBIF, ecological institutions, CONABIO.

Output 4.13.6: Identify 6-10 priority areas to better research Mountain Biodiversity on each continent.

Planned Activity 13b: Island biological diversity

Operational objective 5: Within the work on cross cutting issues of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.

Planned Activity 14: Access and benefit-sharing (ABS).

Output 5.14.1. Provide guidelines on benefits of taxonomy in the context of ABS, and outline requirements for Prior Informed Consent and Material Transfer Agreements for taxonomic institutions, by COP 10.

Output 5.14.2. Convene an international workshop of Competent National Authorities and National Focal Points for GTI and Access and Benefit Sharing to discuss the obstacles to international transfer of biomaterials for non-commercial research, and to develop efficient and mutually beneficial approaches to creating Prior Informed Consent, Mutually Agreed Terms, and Material Transfer Agreements. Actor: SCBD, EDIT, CETAF, NSCA, taxonomic institutions, CBOL, BioNET-INTERNATIONAL.

Output 5.14.3: Guarantee free and open online access of the ABS-relevant information as soon as possible, consistent with legal obligations, through mechanisms such as the GBIF-mediated architecture, protocols and standards.

Planned Activity 15: Invasive alien species

Output 5.15.1: Provide IAS lists/information for all countries by 2010. 1. Actors: GBIF, IUCN-ISSG, BioNET-INTERNATIONAL, GISIN.

Output 5.15.2: Provide relevant taxonomic information (ID tools, including keys and DNA-barcodes) for customs & quarantine services on IAS at national and regional levels, by 2012.

Output 5.15.3: Identify species with high potential to become IAS and prepare customs/quarantine information by 2012, as described in the annex of VIII/3 as additional planned activities. Actors: GISP, GISIN, Fishbase, GBIF, BioNET-INTERNATIONAL.

Output 5.15.4: Complete the online information system for actual and potential invasive species for each continent and assess threats by future potential invasive species by 2010. Actors: GISIN.

Output 5.15.8: Correlate and manage updated taxonomy for all known invasive species, following the call in the Global Invasive Species Programme (GISP) Global Strategy by 2010. Actors: GBIF, COL

Output 5.15.9: Develop protocols (including precision and rapidity) for IAS identifications, perhaps building on relevant IPPC standards already in place and being developed. Protocols should be agreed by 2010. Actors include IPPC.

Output 5.15.10: Produce and disseminate working identification keys for known IAS associated with at least one key invasion pathways by 2010. Actors include IPPC, BioNET-INTERNATIONAL.

Planned Activity 16: Support implementation of Article 8(j).

Output 5.16.1: Working with indigenous communities, identify indigenous taxonomic knowledge to be incorporated under the Global Names Architecture by 2020. Actors: GBIF

Planned Activity 17: Support for ecosystem approach and CBD work on assessment including impact assessments, monitoring and indicators.

Output 5.17.1: Provide metadata information on geo-referenced species occurrence to assist GIS mapping of ecosystems by 2012. Actors: GBIF

Planned Activity 18: Protected Areas.

Output 5.18.1: Provide inventories for each Protected Area for at least mammals, birds, reptiles, amphibians, fish, and butterflies by 2010 (decision VIII/24, paragraphs 44(a) and 44(c)).

Output 5.18.2: Automate the development of lists of the IUCN-The World Conservation Union (IUCN) Red List taxa for all Protected Areas with Categories Ia, Ib, and II by 2010, and for all Protected Areas by 2016. Actors: IUCN, GBIF

Output 5.18.3. Create a pilot project to demonstrate identification of habitats and priority setting for establishing new Protected Areas, through plotting distributions of species at local, national and regional levels to be identified and disseminated through the Clearing-House Mechanism by 2009.
