

**Statement and Recommendations from the
UNESCO International Year of Biodiversity Science Policy Conference
(UNESCO Headquarters, Paris, 25-29 January 2010)**

A. The Context

1. In the framework of the United Nations' International Year of Biodiversity (IYB), the UNESCO IYB Biodiversity Science Policy Conference (UNESCO Headquarters, Paris, France, 25-29 January 2010) brought together more than 250 participants from all continents to present new scientific findings on biodiversity relating to several key thematic and crosscutting issues, and to assess implications for policy-making. The Conference followed the UNESCO high-level launch of IYB in Paris on 21 and 22 January 2010. It took place five years after the International Conference on Biodiversity Science and Governance, also held at UNESCO Headquarters in Paris in January 2005.
2. While taking into account the priorities expressed by the Parties to the Convention on Biological Diversity (CBD), the Conference gave special attention to the voice of the scientific community so as to highlight new knowledge that could be used in the context of biodiversity-related decisions. As such, the statement and recommendations from the Conference will be presented to a number of relevant meetings in the course of 2010, including: the Trondheim Conference on the post-2010 Biodiversity Target to be held in February; the special session on biodiversity of the United Nations General Assembly to be held in New York on 25 September; the 185th session of the Executive Board of UNESCO to be held in Paris in the fall; and the meeting of the Conference of the Parties to the CBD to be held in Nagoya, Japan, in October. The outcomes of the Conference will also be disseminated widely and presented at other relevant fora.

B. The Global Biodiversity Challenge

3. Biodiversity, the variety of life on Earth, provides us all with the critical goods and services on which our lives depend. Provision of food, fibers, energy and medicines, purification of air and water, moderation of floods and droughts, stabilization of climate – these are just some of the vital services provided by biodiversity. The goods and services supplied by biodiversity constitute the basis upon which the economy, including trade, is built. As such, biodiversity has acted as a unique ingredient of sustainable development and is essential for achieving the Millennium Development Goals.
4. Biodiversity's contribution to human life and well-being is not just practical, physical and utilitarian, but also cultural and spiritual. The diversity of the natural world has been a constant source of inspiration throughout human history, influencing traditions and the way our society has evolved. Yet, in recent decades, biodiversity has been lost at an unprecedented rate, mostly due to unsustainable human activities, and the 2010 Biodiversity Target that was agreed upon at the World Summit on Sustainable Development and later by the Parties to the CBD in 2002 has not been achieved. Given the importance of biodiversity to human development and well-being, the reversal of biodiversity loss has become one of the major challenges that society faces today.

C. The Vision

5. Despite widespread scientific and other evidence for the current global biodiversity crisis, and the inadequate response to earlier calls to halt it, participants in the Conference were united in their resolve to effect positive change. Recognizing the importance of all different scales to ecosystem function, we need to broaden our vision and our spheres of action. A technological revolution is underway, changing the way that we exchange and process information. We are living in an increasingly interconnected world, biologically, culturally and scientifically. This is having major impacts on the ways in which we can work and communicate. It offers an opportunity to rise to the challenge of addressing an issue that needs to be tackled on multiple scales simultaneously. We must embrace these new technologies and develop efficient mechanisms for structuring and using them, while better acknowledging the valuable contributions that indigenous and local knowledge can provide.

Biodiversity itself can provide the inspiration for survival. In a changing world, we need to adapt. We need to inspire action, through connection with nature and its stories at all levels. Biodiversity is dynamic, and flexible on multiple spatial and temporal scales, responding to the biotic and abiotic environment in which it finds itself. Therefore, we too must be dynamic and flexible in our response, balancing local and global, current and future needs.

6. We recognize the crucial importance of local diversity, both biological and cultural, in maintaining global stability. More substantive research on the links between biological and cultural diversity should be supported in order to better understand the impacts of biodiversity loss on human life and well-being, as well as the impacts of cultural transformation on status and trends of biodiversity. In this regard, interdisciplinary approaches to biodiversity research and collaboration between natural and social sciences have to be enhanced. Participatory approaches to biodiversity research (as opposed to top-down approaches) need to be favored, while respecting social organization, natural worldviews and land/sea tenure systems. This will provide for better integration of the 'human component' in the study of ecological processes, closely linked to socio-economic and cultural processes and vice-versa.

D. Priorities for and Modalities of Action

7. The following section reflects major sessions and related topics of the Conference. It does not attempt to provide a list of all the most urgent issues related to biodiversity. Rather, it reflects the presentations and discussions at the Conference with regard to the themes dealt with and the priority actions identified and recommended.

Taxonomy

8. Taxonomy, the discovery, naming, distinguishing and classification of natural organisms by scientists and people everywhere provides the foundation of the biodiversity knowledge base and underpins all efforts in biodiversity research, conservation, and management.
9. Taxonomic science is at the start of a 21st Century renaissance. Even though resources are not yet widely available, there are projects and initiatives serving as examples of a new taxonomy and the impact it will have.
10. For scaling-up taxonomy, business as usual is not an option in the face of the grand challenges, with the great majority of species remaining undiscovered, most countries and areas lacking comprehensive biodiversity inventories, and a critical lack of relevant expertise and capacities in most biodiversity rich countries.
11. A key component will be to strengthen and give increased support to natural history museums and *in situ* and *ex situ* biological collections as an essential infrastructure for biodiversity knowledge generation, as well as for education and outreach, and to respond to the need to establish and maintain such infrastructures in all regions. The regular addition and upgrading of biological specimens and samples in these collections is essential for their efficient functioning for research and education, and possible regulations for international access of biological materials must not unnecessarily impede the regular transfer and exchange of such materials for non-commercial purposes.
12. **Scaling-up and sustaining taxonomy may best be achieved through:**
 - **Supporting indigenous and local communities in capturing and preserving their taxonomic knowledge;**
 - **Applying cybertaxonomy, molecular and other innovative approaches to accelerate the taxonomic work flow of discovery and description;**
 - **Using digital and molecular infrastructure tools to integrate taxonomic data with other types of life science information, thus also broadening the products available to support identification and other services;**
 - **Prioritization of taxonomic efforts according to scientific knowledge gaps and user needs;**

- **Making communication and outreach standard practice, and using Internet media platforms to reach the public and others;**
- **Training a new generation of taxonomists, able to work flexibly and collaboratively, and taking stock of new and emerging technologies and tools;**
- **Appreciating the valuable contributions of taxonomy and recognizing it as a branch of cutting-edge science.**

Conservation Biogeography

13. Conservation biogeography is the study of the spatial distributions of patterns and processes of life through time, in relation to threats and impacts at multiple and interlinked scales. Drawing from historical and present-day ecological information, it can inform mitigation and proactive strategies for biodiversity conservation, as well as help predict potential future impacts. As a tool for citizen science, it can help connect people with their environment and further their understanding, while generating cost-effective global datasets that can inform biodiversity monitoring and conservation planning. It is especially useful in informing policy-makers on scales, dynamics, and uncertainty surrounding biodiversity impacts from climate change and other anthropogenic forces in marine and terrestrial ecosystems.
14. **So that Conservation Biogeography can most effectively inform biodiversity policy-making, the Conference recommends :**
- **Use biogeographical data and tools at all scales, from local to global models, explicitly in conjunction with economic, social and cultural data, to aid in planning for a sustainable future and mitigating the impacts of environmental change;**
 - **Using biogeographic knowledge, increase efforts to strengthen protected areas networks in light of environmental change, and to encourage biodiversity-friendly landscapes outside of protected areas;**
 - **Seize opportunities to create and restore ecosystem function in degraded landscapes, possibly by judiciously applying proactive approaches such as rewilding and assisted migration;**
 - **Increase the biogeographical knowledge-base in terrestrial, freshwater, and particularly marine ecosystems, as a basis for producing biogeographical tools for policy guidance**
 - **Increase explicit communication networks and interaction between policy-makers, scientists, educators, practitioners and local stakeholders in order to facilitate and stimulate useful scientific knowledge for mitigating impacts on biodiversity and guiding proactive conservation strategies.**

The role of indigenous and local knowledge in biodiversity conservation

15. Indigenous peoples, who often live in diverse and fragile ecosystems, have developed ancestral indigenous knowledge, innovations, practices, values, language, culture and spirituality through their special relationship with biodiversity and their natural surroundings. In turn, this knowledge and practice guides the sustainable use and management of landscapes and ecological dynamics, while also providing a special contribution to the science of biodiversity conservation. Recognition of this important contribution and the dynamic exchange of knowledge under a fair and equitable framework and protocol will support biodiversity conservation and healthy ecosystem services.
16. Anthropological research, management experience and local voices teach us that many indigenous and local communities shape, create and manage biodiversity through their actions and social organization. Traditional agriculture, fishing, pastoralism and other occupations have created unique milieus through their actions, and through selection on plants and animals. Research has begun to elucidate this role through historical ecology, and is nowadays taken into account by national parks that had previously failed to manage anthropogenic ecosystems through the exclusion of human populations. Tenure and stewardship organization, combined with knowledge and know-how, worldview and ethics, have a very important role conserving a mosaic of ecosystems created through co-evolution between human beings and other forms of life. Biodiversity cannot be separated from cultural diversity. Therefore they

must be understood and studied together through interdisciplinary research, including social sciences in cooperation with traditional local and indigenous knowledge holders.

17. Recommended actions include:

- **Enhance the linkages between scientific and traditional local and indigenous knowledge related to biodiversity, for the benefit of local knowledge holders, scientists and decision-makers;**
- **Promote transmission of local and indigenous knowledge on biodiversity, particularly within and through intercultural education, so as to ensure the continuity of local and indigenous taxonomy, knowledge and know-how.**

Biodiversity and gender

18. The gendered division of labour has resulted in women and men in many societies having distinct forms of traditional knowledge related to biodiversity. Women are increasingly seen as embodying specific biodiversity knowledge, and there are many examples of the sustainable manner in which women use biodiversity. Nevertheless, their role in biodiversity management and decision-making process is often ignored.

19. To ensure the equal participation of women and women's organizations in decision-making processes related to biodiversity, the Conference recommends that:

- **Special consideration is given to the pivotal role of gender in addressing biodiversity challenges, notably in the formulation of conservation policies, strategies, and projects at all levels;**
- **The Gender Plan of Action of the CBD is fully implemented;**
- **Appropriate measures are taken to ensure that gender equality is mainstreamed in the actions, activities and initiatives conducted under the CBD;**
- **National capacities are developed to facilitate the understanding of the importance of including gender issues in biodiversity initiatives;**
- **Appropriate measures are taken to guarantee that the benefits derived from access to and use of biodiversity resources are equitably distributed between women and men.**

Priority-setting in conservation: strengthening site-scale approaches

20. Sites are areas, large or small, that can potentially be delimited and conserved as a unit. Safeguarding sites is a well-established and effective conservation approach that is appropriate for many species. While sites must be viewed as part of landscapes (thus connected and buffered where appropriate and treated in the context of an ecosystem approach), protection of individual sites is an important starting point.

21. Where are the most important sites for conservation? Studies show that most Protected Area networks have serious gaps. While there have been numerous efforts to set priorities at a broad scale, these do not identify the actual sites to conserve. However, site-scale priority setting exercises, for example the key biodiversity areas (KBAs) approach, directly address this need.

22. KBAs are identified using internationally consistent criteria based on vulnerability and irreplaceability, but through a nationally-led process involving a range of stakeholders and drawing extensively on local knowledge. KBAs make use of the best available data, while at the same time anticipating improved datasets in the future and thus the need to refine KBA inventories over time. Recent advances, led by a range of organizations, have improved KBA documentation and extended the approach to further taxa and to the marine and freshwater realms. Sites holding the only populations of highly threatened species form an important subset of KBAs. These have been identified by the Alliance for Zero Extinctions for several taxonomic groups that are fully assessed on the IUCN Red List.

23. The KBA process identifies key sites, but does not prescribe how these should be conserved (for example, through a formal protected area or community-based conservation) nor which particular KBAs are priorities for action. KBAs must be used alongside and complementing other approaches, but they are nevertheless a powerful tool for conservation. They directly inform policy, including commitments under international agreements, and form the building blocks for systematic conservation planning. Because of its participatory nature, the KBA process has demonstrated effectiveness as a means of building scientific and institutional capacity, fostering effective government-civil society partnerships, and as a focus for engaging local communities in conservation and monitoring.

24. The Conference recommends that:

- **The post-2010 CBD targets should recognize the need to conserve the most important sites for biodiversity, not just a percentage area of land and sea;**
- **One effective way to halt further extinctions, and to conserve important centres of endemism, is to protect sites that hold the only populations of highly threatened species. These should be a top priority for conservation attention;**
- **National, sub-national and regional Protected Area planning exercises should incorporate the most important biodiversity sites (such as KBAs) as fundamental building blocks;**
- **Site-scale conservation priorities should be brought to the attention of, and taken account of by, voluntary standard and certification schemes that aim to safeguard biodiversity;**
- **There should be further co-ordination and consolidation of existing KBA approaches, including the provision of KBA information.**

Managing Biodiversity at the Landscape Scale

25. Socio-ecological production landscapes have an important role in biodiversity conservation, and can help to optimize ecosystem services and improve human well-being in a sustainable manner. Management that relates biodiversity to other landscape functions valued by society – ecosystem services – is central to this issue.

26. Recommendations on managing biodiversity at the landscape level include the following:

- **Identify socio-ecological production landscapes for optimizing ecosystem services and human well-being in a sustainable manner, for example through the Satoyama Initiative;**
- **Recognize the role of indigenous and local communities in conserving biodiversity, and find ways to record and transfer their knowledge so that it can be used by newcomers, who can also bring knowledge, skills and investments important for adaptive management;**
- **In changing biophysical or social environments, find ways to maintain landscape characteristics that are beneficial to biodiversity, either by conserving traditional practices or through novel approaches;**
- **Recognize the practices, perceptions and values of different groups in the population regarding biodiversity and other landscape functions in managing and valorizing biodiversity at the landscape level;**
- **The biodiversity of the urban environment, where more than 50% of humans now live, should be inventoried, conserved and enhanced in a way that allows the rich human-nature interaction that is so essential for well-being.**

Biodiversity and development

27. Access to biodiversity is vital for the basic needs of many of the world's poorest people. It is critical as a form of insurance, as well as being the foundation for local, regional and global economies. However, when discussing trade-offs in conservation versus extractive resource use, we often do not fully account, in economic terms, for all the goods and particularly the non-market ecosystem services that biodiversity provides. This commonly results in policies that, although intended to improve human livelihoods, actually do the opposite. While the rich can often afford to replace ecosystem services, the poor cannot. Economic models, appropriate evaluation metrics, and transparent accounting methods for tangible and intangible biodiversity benefits, can contribute to redressing this imbalance. It is

important, however, to recognize that economic approaches also have their limitations and cannot capture all the values of biodiversity.

28. Recommendations arising from the Conference include the need to:

- **Incorporate explicit economic accounting of non-market value goods and services when developing plans for a sustainable future;**
- **Promote and apply, where appropriate, methodological tools (e.g. as outlined in The Economics of Ecosystems and Biodiversity Report) that can facilitate full economic accounting of alternative scenarios for biodiversity use;**
- **Mainstream biodiversity into all development, agriculture, fisheries, industry, business and policy decisions;**
- **Establish rewarding partnerships at all economic levels, from micro to global, and be creative in raising and using funds.**

Communication, education and public awareness

29. Both scientists and educators facilitate a process that leads actors to discover the world around them, to further explore it, gain insights and take action, the results of which are to be shared around the world.

30. Given this common interest, all those actively involved in biodiversity communication, education and public awareness should:

- **Engage in dialogues to better understand how they can inform and support each others' work;**
- **Mobilize inspirational personalities and biodiversity symbols to communicate biodiversity issues to the general public;**
- **Take advantage of the opportunities offered by information and communications technologies, including the Internet, radio and television, to foster explicit communication networks and interaction between policy-makers, stakeholders and scientists**
- **Partner with others, including intergovernmental organizations, governments, education and research institutions, civil society organizations, indigenous and local communities and the private sector;**
- **Identify demonstration projects, illustrating good practices, suitable for scaling-up and increase explicit mechanisms for scale-matched, and cross-scale information sharing;**
- **Work with existing frameworks including *inter alia* the United Nations Decade of Education for Sustainable Development (2005-2014);**
- **Recognize citizen science as an important, but often underfunded, tool for implementing biodiversity communication, education and public awareness.**

E. The Way Forward

31. It is necessary to highlight for the benefit of decision-makers and stakeholders the full value of biodiversity, not least its role in ecosystem functioning and maintenance of ecosystem services, thus helping society adapt to climate change, underpinning food and health security and adding value to the global economy.

32. The integration of biodiversity concerns into political strategies, action plans and implementation measures requires mechanisms to ensure the delivery of sound, reliable and targeted information in support to these policies.

33. Recommendations from biodiversity science need to be developed in close consultation with other stakeholders and policy experts to ensure that the public and the decision-makers understand the range of possible options, their likely outcomes, and what specific interventions can achieve them.

34. There is a need for a more systematic use of existing tools that can convey biodiversity knowledge in forms understandable and usable by decision-makers, such as indicators, models, scenarios, economic

Deleted: developing

valuation techniques and maps, as well as to increase literacy among decision-makers as to the usefulness and limitations of such tools.

35. In this regard, there was general support expressed for an effective mechanism to link biodiversity science and policy, such as that being discussed in the context of an intergovernmental and multi-stakeholder process on an Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).
36. Improved and expanded mechanisms for funding are of central importance, including funding for biodiversity research, conservation and citizen science. Funding should take into account issues related to scale. Funding mechanisms need a clearly defined relationship with, and appropriate involvement in, a future IPBES.

- - -