**The Future of IABIN**

**A Report on Strategic Possibilities**


**Prepared for the IABIN Secretariat**


**Draft Version for review and comment – not for circulation or attribution**


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## 1. Background and History of the IABIN Project

The Western Hemisphere enjoys a long tradition of cooperation and regional integration, perhaps originally articulated in the vision of Simon Bolivar of a league of American republics. Formal cooperation extends back to the roots of the world's oldest regional organization, the Organization of American States (OAS) the First International Conference of American States in April 1890. Regional cooperation has focused since the earliest days on peace and security, on the promotion of democracy, and on trade. Regional cooperation evolved through several iterations, culminating in the signing of the Charter of the OAS in 1948 (entering into force in 1951), as the preeminent institution for hemispheric cooperation. Other key elements of Western Hemisphere cooperation, forming the "Tripartite Committee" include the Inter-American Development Bank (IDB) and the UN Economic Commission for Latin America and the Caribbean (ECLAC).

### Regional Cooperation in Biodiversity Conservation

Among the many OAS firsts in regional integration, the Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere (Western Hemisphere Convention, Washington, 1940) stands out, as the first modern international convention for biodiversity conservation. The convention provides for the establishment of a network protected areas and for co-operation between governments in research; it also regulated trade in protected fauna and flora. While the convention set a new course for nature conservation, it did not stipulate a permanent Secretariat or other mechanism to monitor progress and enforce provisions. In 1976, the General Assembly of the OAS passed a resolution calling for cooperation in the implementation of the Western Hemisphere Convention **(cite).** OAS convened several technical meetings to address the resolution, one of which (the meeting on legal aspects) recommended that OAS perform the functions of a Secretariat including the collection and dissemination of relevant information. This recommendation was not however implemented. (Cite International Wildlife Law, Lyster et al, Cambridge). The Western Hemisphere Convention is largely superseded by the Convention on Biological Diversity. Its utility lies in its precedent and in the potential for a role for the OAS in linking biodiversity conservation to its ongoing work in human rights, democracy, economic development and security.

### Summit of the Americas

In 1994 the Summit of the Americas was convened in Miami, Florida USA to consider the reorganization of inter-American relations in light of the changing political, economic and social conditions in the region and around the world.

A proposal for the revitalization of the Western Hemisphere Convention was made by a coalition of North American NGOs calling for use of the Convention to create a comprehensive framework for addressing biodiversity issues in the context of changing social priorities equivalent to the regional trade agreements then under discussion. This proposal called for a joint declaration by heads of state at the first Summit of the Americas (Miami 1994) announcing a renewed commitment to the implementation of the Western Hemisphere Convention and an

announcement by the OAS that it would undertake certain functions, among them technology exchange.

The Miami Summit did not produce the desired result, but heads of state did commit to advance and implement the commitments made in the UN Conference on Environment and Development (Rio de Janeiro, 1992) and the Global Conference on the Sustainable Development of Small Island Developing States (Barbados, 1994), but did include a Partnership for Biodiversity in the Plan of Action. Among other things, the Partnership for Biodiversity aimed to launch a "Decade of Discovery" to promote hemispheric technical and scientific cooperation and to facilitate the exchange of information relevant to the conservation and sustainable use of biological diversity. The Plan of Action called upon the IDB to support the Partnership for Biodiversity, and indicated that public and private sector partnerships should play a key role. [The Partnership for Biodiversity, along with other partnerships, was subsumed under the sustainable development framework after the Summit Conference on Sustainable Development and the Decade of Discovery fell by the wayside.] The heads of state also affirmed support for further regional meetings on sustainable development. Consequently, in 1996 the Summit Conference on Sustainable Development was convened in Santa Cruz Bolivia.

**IABIN and the Santa Cruz Declaration**

The Summit Conference on Sustainable Development (Santa Cruz, Bolivia 1996) was convened to structure and shape the rapidly evolving hemispheric sustainable development agenda. Santa Cruz reformulated the prescriptions made at the Miami Summit focused on specific outputs. One of these was the call for an Inter-American Biodiversity Information Network (IABIN). Initiative 31 of the Santa Cruz Plan of Action calls for the establishment of "an Inter-American Biodiversity Information Network, primarily through the Internet, that will promote compatible means of collection, communication, and exchange of information relevant to decision-making and education on biodiversity conservation, and that builds upon such initiatives as the Clearing-House Mechanism provided for in the United Nations Convention on Biological Diversity, the Man and Biosphere Network (MABNET Americas), and the Biodiversity Conservation Information System (BCIS), an initiative of nine programs of the World Conservation Union (IUCN) and partner organizations."

Santa Cruz also called for a host of related initiatives, including:

- Initiative 3. Promote mechanisms of hemispheric cooperation for the exchange of information and experiences on national policies and measures to reduce the effects of environmental problems on child health.

- Initiative 6. Promote the inclusion of disease outbreak response and disaster planning, preparedness, and mitigation in national development plans; seek to establish, as appropriate, regional emergency response teams and regularly test contingency plans; and promote the establishment of appropriate building construction codes that include regulatory and enforcement mechanisms **through the sharing of technical information and expertise.**

- Initiative 10. Seek to establish, as appropriate, education, information, training, and research programs and promote the exchange of best practices, to foster innovations in agricultural technology, including models for integrated farming systems that emphasize productivity, profitability, efficiency, and environmental protection. These programs should address the needs of small-scale farmers, poverty eradication, improved nutritional standards, and food security.

- Initiative 13. Seek to develop, as appropriate, the capacities of local communities and of rural organizations such as farmer-initiated cooperatives, inter alia **through information and training**, in order to foster conservation and sustainable agriculture through programs in areas such as integrated pest management, soil conservation, water quality, crop diversification, and waste management. (Links with Pollinator and Invasives TNs).

- Initiative 42. Develop a hemispheric framework for the **exchange of information** on and experiences in successful pollution prevention and waste treatment efforts as an appropriate means of managing the environment so as to support national policies in these areas. (Links with IABIN Catalog)

- Initiative 43. Promote the **exchange of information and experiences** among the mayors of the Hemisphere on the most appropriate practices for urban environmental stewardship, promotion of non-polluting consumer practices, sustainable transportation, environmental impact, and sewage treatment. (Links with IABIN Catalog)

- Initiative 50. Promote hemispheric cooperation at all levels, including through the use of existing transboundary agreements and initiatives, in the conservation, management, and sustainable use of water resources and biological diversity. This would include the **exchange of information** and experiences on issues related to inland watersheds, river basins, and sub-basins. (Links with Ecosystem TN)

- Initiative 51. Improve access to appropriate and environmentally sound technologies, including through public-private cooperation and market mechanisms, and promote the **transfer of information on policies and management strategies** to accommodate the growing water resource demands resulting from rural, urban, agricultural, and industrial activities. (Links with Ecosystem TN)

- Initiative 59. Recognize and support the work undertaken to implement the Summit of the Americas energy agenda, coordinated by the Hemispheric Energy Steering Committee, which promotes sustainable energy development and use by: increasing investment in the energy sector; promoting cleaner energy technologies in electrical power markets; advancing regulatory cooperation and training; increasing the economic and environmental sustainability of the petroleum sector; creating new opportunities for natural gas; promoting energy efficiency; developing rural electrification strategies; and **sharing information on policies, programs, and projects to address climate change** (Links with all TNs)

The Summit also called for support for conservation finance policies to facilitate the establishment of national environmental funds and for the development of financial instruments to support biodiversity conservation.  It requested the United Nations Development Programme (UNDP) to "formulate a project supporting the establishment of a hemispheric network of sustainable development information systems (SDIS), as indicated in Agenda 21 and as one of the responsibilities assigned to the Sustainable Development Network Programme (SDNP). The network's objective will be to disseminate among the countries of the Hemisphere the information they require on economic, social, environmental, legal, institutional, scientific, and technological matters at the national, subregional, regional, and hemispheric levels."

**The Connecting the Americas Initiative**

The Third Summit of the Americas (Quebec, 2001) ratified OAS as the main political forum for the inter-American system, and the Secretariat for what had become an ongoing summit process.  OAS was given the responsibility for the coordination of an agenda involving all sectors of society.

The Quebec Summit addressed the "digital divide" through an initiative to "provide all citizens of the Americas with the opportunity to develop the tools to access and share knowledge" for human development.  The heads of state launched the Connecting the Americas Initiative and tasked the Inter-American Telecommunications Union to implement a plan of action aimed at strengthening the capacity in the region to apply information and communications technologies to human development.  They also endorsed a proposal by Canada to establish an Institute for Connectivity in the Americas to be based at the International Development Research Centre in Ottawa, Canada.

Quebec also pledged to create an inter-institutional and inter-sectoral dialogue informed by expert scientific advice, to better define hemispheric conservation goals and identify opportunities for action, especially in a transboundary context and to encourage access to biodiversity information, building upon the IABIN initiative and other major international initiatives.

**IABIN**

IABIN was formalized in September 1998 at a conference hosted in Brazil and supported by the OAS as a forum for the collection, sharing, and use of biodiversity information for natural resources management and conservation, and for education to promote sustainable development in the Western Hemisphere. Thirty-four countries in the Americas have officially named IABIN focal points.

IABIN provides the framework for countries and institutions to share resources and overcome isolated individual efforts that might otherwise lack the capability to address biodiversity conservation at appropriate scales.  This framework includes the standards and protocols and content necessary for effective decision-making, particularly for issues at the interface of human

development and biodiversity conservation. IABIN is developing an Internet-based platform to give access to scientifically credible biodiversity information currently scattered throughout the world in government organizations, museums, botanical gardens, universities, and NGOs, facilitating innovative partnerships to address pressing issues in biodiversity conservation.

In 2004 the OAS was awarded a grant from the Global Environment Facility to build IABIN, which had by this time become the major biodiversity outcome of the Summit process. The stated objective of the GEF project "Building IABIN" is twofold - to build the data network with institutional partners and to provide decision-support tools using the knowledge available through the information in that network.

With the exception of IABIN, the initiatives for information exchange identified in the Summit action plans have not fully borne fruit. The information backbone for sustainable development has not emerged, rendering IABIN the prime example of cooperation in knowledge management in the entire process by default. This creates important opportunities and challenges for IABIN, described in the next section.

## 2. Situation analysis

In considering the options for the further elaboration of IABIN, several dimensions must be considered. Along one plane there is the objective condition of the environment and associated human development requirements. Since IABIN was articulated more than a decade ago, climate change has become visible and is no longer debated as a reality. The world remains slow to grasp the reality and plan for adaptation to a changed world, both in terms of human needs, such as water supply, and in terms of biodiversity.

Economic activity has brought changes as well, including heightened risks of invasive species introduction through international trade, and the demands on ecosystem services portended in ambitious new development schemes. As our societies grapple with the combined forces of global change and the breakdown of our economic system, it is possible, perhaps even likely, that the health of the environment, as the source of tangible productivity, will emerge as the ultimate arbiter of value. In 1817 David Ricardo defined economic rent as "that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible [not to be destroyed] powers of the soil." Those "powers of the soil", it transpires, are, when abused, eminently destructible, as we are learning to our chagrin. Moreover, the powers are derived from biodiversity. Systems of knowledge of biodiversity and its value will be increasingly appreciated in coming years.

At the same time, the science of conservation biology has made significant advances, both in terms of understanding high conservation value areas and in terms of understanding the complexity of ecological processes and systems. The use of remote sensing and Internet technologies still in their infancy when IABIN was first articulated means that data is much more plentiful, and that data custodians are more numerous and better organized. Indeed, the biodiversity informatics field is increasingly crowded, and IABIN's niche is being filled as new entrants develop tools for biodiversity analysis and decision support.

This raises questions about competition, resource availability, and comparative advantage.  In IABIN's first phase, it has been working with what was initially, with a few notable exceptions, a blank slate.  In a new phase, IABIN will be one of many purveyors of species, ecosystem, and conservation measures data.  It is important to understand the particular needs and opportunities for the Western Hemisphere that will not be met through other, more global, processes.

## 2A:  Institutions with activities relevant to IABIN's mission – an indicative list

### Global Biodiversity Information System (GBIF)

  The Global Biodiversity Information Facility (GBIF) is an international organization that is working to make biodiversity data freely and openly available on the Internet.  GBIF's purpose is to compile, link, standardize, digitize and disseminate biodiversity data.   GBIF's members are countries and international organizations who have signed a Memorandum of Understanding that they will share biodiversity data and contribute to the development of mechanisms for making those data available via the Internet.  GBIF is supported mainly by its government members.  GBIF presently has more than 150,000,000 records from 266 data providers and more than 7,000 datasets.  GBIF data, drawn largely from museum collections, include occurrence records, classification and nomenclature, and location of datasets and specimens. www.gbif.org

### Encyclopedia of Life (EOL)

The EOL is a web-based reference source for species, which aims to provide an entry (i.e., individual web page) for every known species.  The EOL will contain information on taxonomy, geographic distribution, collections, genetics, evolutionary history, morphology, behavior, ecological relationships, and importance to humans.  The EOL was launched through major grants from the John D. And Catherine T. MacArthur Foundation and the Alfred P. Sloan Foundation; additional donors include private individuals and smaller foundations. Data partners include the GBIF, IUCN, the Catalogue of Life Partnership (CoLP), and a range of taxa-oriented databases including FishBase, AmphibiaWeb, AntWeb, and national databases.  It presently has more than 30,000 pages of developed reference materials and more than one million basic species records. http://www.eol.org

### The Catalogue of Life (CoL)

A partnership of Species 2000 (a global federation of taxonomic database custodians) and the Integrated Taxonomic Information System (a partnership of federal agencies and other organizations in Mexico, the United States, and Canada), the Catalogue of Life, like its data partner EOL, is a web-based information system.  CoL produces an annual checklist; the 2008 checklist contains 1,105,599 species, slightly more than half of the known species of the world.  The CoL differs from EOL in being focused on taxonomy and distribution. http://www.catalogueoflife.org

**The Barcode of Life Initiative (BOLI)**

BOLI catalogues species using a very short gene sequence from a standardized position in the genome. "DNA barcoding" provides a standard for assigning biological specimens to the correct species. Multiple research projects are sequencing DNA for an open-access database of reference barcodes to aid in species identification. Rapid and accurate identification is essential for regulatory exclusion and oversight in trade, in enforcement of endangered species laws, and in collections. DNA sequences for 50,000 species have been catalogued. The Consortium for the Barcode of Life has more than 160 member organizations, including museums and collections, university departments, government agencies, non-governmental organizations, and private companies. http://www.barcoding.si.edu/

**The Tree of Life (TOL)**

The TOL, a web-based taxonomy information resource, is a collaboration of a global network of biologists. The TOL provides more than 10,000 pages, each describing a taxon or grouping of species, and each curated by a custodian. http://tolweb.org

**NatureServe**

NatureServe is a nongovernmental conservation organization that provides information about rare and endangered species and habitats. It represents a network of natural heritage data centers in the Western Hemisphere. NatureServe's goal is to mainstream biodiversity in natural resource management decisions through ease of access to biodiversity information.

NatureServe focuses on the conservation status of species and ecosystems in its data, through regular assessments and updates over a 25-year period. NatureServe has 11 member programs in Latin America and the Caribbean. These data operate at national levels (Bolivia, Ecuador, Guatemala, Panama, Paraguay, Peru), state levels (Sonora, Mexico), and regional levels (Cauca Valley, Colombia; Northeastern Mexico), as well as within two U.S. territories (Commonwealth of Puerto Rico, U.S. Virgin Islands). http://www.natureserve.org

**IUCN Red List**

The International Union for Conservation of Nature is a global federation of government and non-governmental conservation agencies and organizations. The Santa Cruz Plan of Action's decision concerning IABIN referenced cooperation with IUCN. The Biodiversity Conservation Information System described in the Santa Cruz Plan of Action is defunct, but a core component, the Species Information Service, provides the backbone for the IUCN flagship product, the Red List of Threatened Species. The IUCN Red List is a detailed conservation status assessment for species of plants and animals evaluated using the IUCN Red List categories and criteria to identify those at risk of extinction. http://www.redlist.org

**UNEP World Conservation Monitoring Centre (WCMC)**

WCMC provides biodiversity information services to UNEP, the environmental conventions deposited at UNEP, and to the state parties to UNEP and the conventions. WCMC hosts the World Database on Protected Areas, a joint project of UNEP and IUCN. The WDPA is the authoritative global spatial dataset on protected areas.

WCMC's species database contains records of approximately 165,000 plants and animals of conservation interest, with a particular emphasis on listings of species regulated in international trade.

WCMC also supports the development of biodiversity indicators for the implementation of the Convention on Biological Diversity, and supports valuation of ecosystem services. It also undertakes assessments of critical ecosystems (marine biomes and habitats, including coral reef ecosystems, mangrove ecosystems, and seagrass beds, and terrestrial biomes and habitats including arid lands and freshwater systems). http://www.unep-wcmc.org

**BioNET International**

BionNET is a non-governmental program to promote taxonomy worldwide through partnerships to build capacity in taxonomy, specimen collections, biodiversity information tools and technologies, and communications. www.bionet-intl.org

**Global Invasive Species Network (GISIN)**

A product of the Global Invasive Species Programme (GISP), GISIN is a platform for sharing invasive species over the Internet. GISIN links invasive species data from a variety of sources including the US Geological Survey's National Biodiversity Information Infrastructure and the IUCN Global Invasive Species Database. GISIN develops standards and provides training in the use of its data assets. www.gisinetwork.org

**2.B Drivers of Change in the Americas**

Forty-four per cent of the population of Latin America and the Caribbean still lives in poverty, and inequities in the distribution of wealth are among the highest in the world. These characteristics make the highly culturally and biologically diverse particularly vulnerable to global change forces.

At the same time, Western Hemisphere countries have rapidly growing economies based primarily on natural resources and agriculture. In order to reach global markets, many of them are also entering into market access (free trade) agreements. There is increasing political and social support for large-scale infrastructure development to improve access to regional and global markets and improve global competitiveness. Investment for infrastructure development is coming from multilateral development banks as well as foreign direct investment from North America, Europe and Asia and the governments themselves. However, there is a significant lack of knowledge and awareness about how dramatically the regional development initiatives,

arranged around infrastructure development, might affect the immense diversity of human and natural resources of the region.

## Infrastructure Development

The Initiative for the Regional Integration of Infrastructure in South America, (IIRSA) is an ambitious multi-donor program to improve linkages among all countries of the continent through trade corridors. IIRSA is proposed to integrate and expand economic activities in the interior of the continent through up to 400 projects, organized within 10 trade corridors for multi-modal transportation systems (roads, waterways and rail) and energy transmission (electric grid and pipelines). In addition to investments in ground transportation and energy, IIRSA projects will also develop supporting infrastructure such as port facilities and transfer stations.

IIRSA is a system of hubs and corridors. The Andean Hub, for example, will join the major cities in the Andean states through two north-south road corridors, the Pan American Highway along the Andes and the Peruvian coastline, and the Marginal Jungle Highway at the base of the eastern slope of the Andes in the Amazon basin. This development is targeted to facilitate new investments in extractive industries, particularly hydrocarbons and minerals. Planners also envision new access for tourism and for agriculture. The Amazon Hub, comprising a multimodal transport system linking the Pacific ports such as Paita in Peru with river ports in interior Brazil, will bisect the Andean Hub. Again, hydrocarbon and mineral extraction feature strongly in motivation, in addition to the trade corridor linking Brazil and the Asian markets, and hydropower is contemplated on the eastern slope of the Andes.

In areas of high biodiversity value, major trade corridors will intersect, completely changing the economy and resource demands of entire regions including some of the world's most important biodiversity hotspots. These corridors are likely to become pathways for colonization, followed by legal and illegal resource extraction, pollution, and invasive species introduction. Climate change will add additional environmental, economic and social impacts in the region, and the cumulative and synergistic impacts of such change for the planned infrastructure have not been examined.

## Trade

The majority of new introductions of terrestrial and aquatic invasive species occur along trade pathways. Most of these are associated with international ports of entry where trade volumes are substantial and growing. For example, trade and shipping between the southeastern US, the Caribbean, and Latin America may triple from 2005 levels by the year 2020 as a direct result of the CAFTA/DR trade agreement. Major modernization efforts are underway at key ports in the region that are vying to become the hub for efficient, economic shipping that will be key to competitive success in a free-trade environment. There is little evidence to date of efficient sanitary/phytosanitary measures that will be necessary to manage the risk of introduction of invasive species as a collateral effect of this growth in traffic between countries.

**Health**

The expansion of trade also overcomes barriers to disease vectors, particularly insects, which, when combined with the development of internal trade corridors, land use and land cover change, and a changing climate, creates a heightened risk of the emergence and spread of infectious diseases.  This pattern has already been observed in the case of altitudinal spread of malaria and spread and intensification of dengue fever and Chagas' disease.

**Climate Change**

Climate change impacts on the region are expected to bring negative and cumulative impacts, though not uniformly.  The El Niño Southern Oscillation (ENSO) occurs with warmer water temperatures in the eastern Pacific, and may be intensified through global warming.  ENSO reverses typical weather patterns, bringing drought to higher elevations and heavier precipitation on the coasts.

The Caribbean and Central America are particularly vulnerable to extreme weather events, but the northwestern part of South America and northeastern Brazil are also vulnerable.  ENSO is associated with increased risks of floods in these areas. Changing precipitation patterns are resulting in less snow pack and glacial retreat, creating new water stress to both human populations and habitats.  Scientists estimate that by 2025, seventy percent of the population of Latin America will live in areas of low water supply.

Another environmental impact of climate change is sea level rise.  Sixty of Latin America's largest cities are on the coast.

Finally, there is a risk that, if the $2^{\circ}$C temperature threshold is passed, severe drought will result in large-scale dieback of the one-fourth of the world's forests in Latin America. The transition from a fire-excluded ecosystem to a fire-dominated ecosystem will have catastrophic implications in terms of both biodiversity and development.

**2.C  IABIN strengths and weaknesses**

**Leadership**

Some IABIN Cooperating Institutions are recognized as leaders in their field, and as visionary and committed.  The strongest Thematic Networks have a high level of involvement of consortium members, and a Cooperating Institution with a strong commitment to IABIN.   The involvement of member states is essential to IABIN's success and should be significantly increased in future iterations of IABIN.

**Relevance**

IABIN has a direct relevance to issues addressing human well-being of the highest priority to its stakeholders, its member States, as expressed, for example, in the Millennium Development Goals. This includes the relevance of biodiversity and bioinformatics to food security, energy, trade, and human health. However, IABIN's "brand" identify is obscure, and the links are not as explicit as they could be. Some have argued that IABIN should refocus on core competencies, questioning whether efforts of some of the thematic networks are too dispersed. A countervailing view is that some of the "dispersed" efforts are actually closer to the original vision for sustainable development expressed in the Santa Cruz Plan of Action, as producers of value-added knowledge to address societal challenges based upon the IABIN information infrastructure.

**Implementation**

The strongest Thematic Networks may continue to function with or without IABIN. The potential for mainstreaming biodiversity into decision-making processes is enhanced by government involvement in IABIN, hence their commitment to the IABIN concept. The potential can be better realized when government involvement includes the participation of additional ministries in acknowledgement of the crosscutting nature of biodiversity.

The community of experts that makes up a well-organized thematic network with credibility among governments is one of IABIN's great assets. Another is the strong network of collaborators at the technical, political and scientific level. Partnerships have been identified as both an important opportunity and a possible threat; leveraging IABIN with regional and global programs in an essential aspect of IABIN's evolution, but there is a risk of a possible loss of identity to partners or competitors as the field becomes more crowded. This would impair the ability of IABIN to achieve its mission.

**Content**

The expansion of data requires integration of data from official and unofficial data sources, yet this is discomforting to some. A challenge to IABIN will be in building the bioinformatics assets of the region without compromising the quality of the data and while enhancing the "brand" of IABIN as a provider of abundant and yet highly reliable data. Additional resources are required to address data quality, and in some cases, a lack of data sources, including data hoarded by owners. There is a general lack of high-resolution geospatial data, and few data are digitized or geoferenced.

In some cases, such as protected area data, IABIN has been able to build upon structures developed with the region and link to global datasets, with seamless data integration. In others, IABIN has taken the lead in the development of standards, such as is the case with pollinators. In general, the complexity of the data and the lack of existing standards have posed a significant

challenge.  With the growing need for biodiversity monitoring and national reporting of international commitments, the demand for tools and services of IABIN are projected to grow.

Building upon the experiences in the first phase of IABIN, in which some thematic networks partnered with global processes (e.g., Species and Specimens with GBIF and Protected Areas with the WDPA), a concerted effort should be made to create strategic partnerships and spread the burden of developing analytical tools, freeing IABIN to focus on specifically regional rather than technical needs.  In particular, IABIN should discuss further collaboration with UNEP-WCMC.

 Content grants present an opportunity to expand data catalog holdings.  In particular, gaps have been identified in marine and aquatic ecosystems data.  The integration of data across the thematic networks is a priority for many IABIN stakeholders who look to it for data integration and analysis.   This should continue to be a focus of IABIN in a new iteration.

**Summary**

Changes at the scales described here may have cascading effects that cannot be modeled using available tools.  There is a profound need for the development of the tools and capacities necessary to effectively assess the social and environmental impacts of changes underway in the Americas.   Existing tools and processes are not sufficient.

There are a number of entrants into the field of biodiversity information that can be important allies, but none of them have developed the capability to model the cascading impacts of multiple stressors on complex systems either. The fundamental challenge faced by IABIN and by the people of the Americas is how to understand the implications of choices in a complex world. The gulf in leadership is waiting to be filled.

The anticipated information infrastructure to support initiatives for exchange of information in a variety of related topics, such as pollution control, agriculture, and trade, have not emerged, so there is a continuing challenge to IABIN in terms of intersectoral data exchange.  IABIN is by default the pilot for Inter-American cooperation in information exchange, and has potent demonstration value that should be capitalized upon in the development of a project portfolio for a new iteration.

**3. Options for a New Vision for IABIN**

A further iteration of IABIN will take into account the particular needs of its stakeholders, the member states of the IABIN Council, and the experiences of the past 12 years in terms of successes and failures. In the future, IABIN's niche will differ in that general tools for analysis of biodiversity and conservation data will be available. Our collective understanding of ecological processes and their links to human well-being have deepened considerably since the Rio Earth Summit in 1992. Human security and all its constituent parts, including food security, economic security, and biological security is increasingly understood to be interconnected, and threatened by human activity. IABIN should be repositioned as the repository of knowledge concerning "ecological security". This requires less focus on the data and a greater focus on the application of data to important decisions of the day.

In the interconnected world, sectoral boundaries become permeable. The temptation may exist on the one hand to become experts in everything, or on the other, to adhere rigorously to core competencies to the exclusion of "external" factors. Both strategies are relics of an outdated mode of knowledge production. In today's increasingly complex, highly networked society, not only are more flexible structures are made possible by information technology, but society itself is increasingly understood as being organized as a network of information feedback loops. The ability to collaborate across sectors and regions through partnerships to produce results is essential for institutional viability.

While IABIN extends one arm to the future, it must hold firmly to its foundation; continued and intensified work will be required to fill gaps in data and to build the capacity of stakeholders to use the data effectively in planning.

Innovative applications and gaps in capacity can best be addressed through targeted projects that selectively build capacity around high-priority issues, ranging from environmental impact assessment of infrastructure development to growth in international trade. The priorities identified will be those of the government stakeholders in IABIN.

IABIN's future lies in the provision of value added products undertaken in partnership with competent knowledge-management counterparts in other disciplines. In the Americas these organizations include, *inter alia*, the Pan American Health Organization (PAHO) for health, the UN Food and Agriculture Organization (FAO) and the Inter-American Institute for Cooperation on Agriculture (IICA) for agriculture, the Caribbean Community Climate Change Centre for climate change, and the InterAmerican Development Bank for economic development and infrastructure.

A vision for IABIN could be based upon four objectives:

- IABIN should help stakeholders to <u>predict</u> the consequences of actions (or of inaction) through ecological forecasting.

- IABIN should help stakeholders to <u>prevent</u> the loss of biodiversity through better choices based upon science that appropriately value biodiversity.

- IABIN should inform society about the status of and threats to biodiversity, offering a compelling case to <u>persuade</u> society to take action to reverse the extinction crisis.

- IABIN should <u>empower</u> society by providing public access to information upon which to base actions.

In Spanish, this could translate to:

- Predicer

- Previner

- Persuadir

- Permitir

This vision can be captured in an IABIN "brand identity' that appropriately positions IABIN vis à vis both partners and competitors as an official forum for the application of knowledge about biodiversity to societal choices.  In a sense, IABIN's name works against it.  Not only are there many biodiversity information networks, but the image of an information network is fundamentally passive, invoking images of directories and lists.  Knowledge networks, by comparison, have an active element of learning and doing that is much more consistent with the vision articulated for IABIN.  Biodiversity knowledge in the form of decision-support is fundamental to IABIN and should be captured in its institutional identity.

Understood as a forum, IABIN also presents new possibilities.  Periodic conferences on biodiversity and development in the Americas, convened by IABIN and partners, can serve to raise IABIN's profile and promote intersectoral exchange on trends, challenges, and opportunities.

IABIN also has the capacity to create a standing "College" of eminent biodiversity experts from the region to deliberate on emerging issues and issue recommendations that have the advantage of emanating from a source with both government backing and the highest technical qualifications. "Blue ribbon panels" could be drawn from the College to debate and recommend actions based upon the best available science.

Finally, IABIN has the potential to take capacity-building to a higher level by creating a consortium of universities from the region to establish diploma or degree programs using distance learning and instruction on local campuses to cover gaps in the availability of trained experts in technical fields. Using the Train-X approach developed by the United Nations, IABIN

could create courses at a relatively low cost to each academic partner to help stem gaps in capacity.  Possible areas include species identification for sanitary/phytosanitary inspection, geographic information systems and remote sensing, protected area management effectiveness, pollinator ecology and management, and valuation of ecosystem services.

**Indicative List of Projects**

There is a chance to position IABIN to become the bioinformatics leader in the Americas, a "Google" of biodiversity, through the development of regional strategies and national networks, with reliable data made relevant to the needs of decision-makers.  Demand has been identified for more geographic tools, including mapping applications and visualization tools.  IABIN should become more relevant to decision makers by linking bioinformatics with public health, energy, climate change, and food security programs.  Two areas that stand out as identified weaknesses of IABIN in the first phase are outreach and capacity-building.

Important barriers to implementation include language barriers, weak Cooperating Institutions, inadequate funds for the tasks at hand, complexity of the work, and lack of support from and participation of member governments. Refocusing IABIN may require different types of partnerships; long-term arrangements, possibly with global programs, for more process related functions, such as content development, and shorter, more time-bound projects to develop value-added content. *It is important to ensure that the projects predicated upon IABIN content contribute materially to IABIN content development.*

This is an iterative list of possible future IABIN projects based upon the opportunities identified in this analysis.  It should not be construed however as a list of concrete recommendations; it is intended to stimulate discussion on priorities for IABIN.

- (With the US National Aeronautics and Space Administration) Creation of a pilot "model web" composed of existing, loosely coupled models that developers have retrofitted for interoperability and that communicate using web services, as a path towards the development of a modelling infrastructure to help predict and assess change and answer "what if" questions in complex systems.

- (With the Pan American Health Organization, PAHO), a pilot decision support tool to predict disease emergence due to ecological and climatic change.

- An expert system for the rapid identification of species for use in trade regulation by customs and wildlife authorities, together with social networking tools to facilitate cooperation between authorities at multiple ports and between countries.

- A participatory mapping process (possibly with the Caribbean Community Climate Change Centre) to digitize data on economically and biologically significant natural resources in the islands of the insular Caribbean, and to combine with extant data sources

to create a Caribbean Atlas of Climate Adaptation for use in the development of climate adaptation strategies at very fine scales, including at the community level.

- A project to complete the collection and digitization of data holdings in the Americas for inclusion in all relevant datasets

- (With the Food and Agriculture Organization of the UN) A project to evaluate the role of ecosystem services in food production, building upon the important work on pollinators undertaken under the aegis of IABIN, producing a hybrid eco-agricultural knowledge base and resulting in improved understanding of the factors associated with sustainable agricultural production and improved capacity for food security.

- A "Red List" of unsustainable ecosystems to serve as an early warning system for biodiversity and livelihood impacts.

- An "observatory" on IIRSA, (possibly with the partnership of IUCN) to provide data, tools, and training to assess environmental and social impacts of IIRSA's matrix of infrastructure development projects.

- A "Google" of parks and protected areas data in the Americas (in partnership with UNEP-WCMC, and possibly, Google) to collect all possible data and information concerning parks and protected areas, including unpublished and grey literature, and to create a social network of the users of the data to build a more solid knowledge-network to address the problems of protected areas during a time of rapid change.