UNEP

2010 International Year of Biodiversity

State of Biodiversity

in Latin America and the Caribbean

Introduction

1. Latin America and the Caribbean is the region with the greatest biological diversity on the planet and it hosts several of the world's megadiverse countries. The region holds almost one half of the world's tropical forests, 33 per cent of its total mammals, 35 per cent of its reptilian species, 41 per cent of its birds and 50 per cent of its amphibians.[1] Levels of endemism are very high in the region: thus, 50 per cent of the plant life of the Caribbean is unique. This biodiversity also represents a source of abundant genetic resources for Latin America and the Caribbean. In other words, the region is endowed with exceptionally rich biodiversity and its countries are keen to harvest benefits from the sustainable use of that biodiversity and their ecosystems, in order to promote social and economic growth and equality. There is a growing recognition of the value of this biodiversity and of its associated ecosystem services, a number of protected areas have been created and many countries have adopted regulatory frameworks and policies designed to ensure the protection of their biodiversity and the sustainable use of its components.

A. Biodiversity in 2010

2. The report entitled "Millennium Development Goals: advances in environmentally sustainable development in Latin America and the Caribbean",[2] launched in February 2010, highlights considerable advances achieved in the region in some environmental areas, such as the increase in protected areas that are rich in biodiversity: thus, between 1990 and 2008 the number of gazetted marine and terrestrial protected areas in Latin America and the Caribbean more than doubled (ECLAC, 2009). The region, however, continues to face major challenges such as halting deforestation. Between 1990 and 2005, it lost nearly 69 million hectares of forest, equivalent to 7 per cent of the

1 UNEP, 2010. "Environment Outlook of Latin America and Caribbean (GEO-Latin America and the Caribbean 3)", forthcoming.

2 United Nations, 2010. "Millennium Development Goals: advances in environmentally sustainable development in Latin America and the Caribbean", Santiago, Chile.

region's entire forest cover: the region now has the highest deforestation rate in the world (ECLAC, 2005). Notwithstanding, the lack of official historical data evidence points to a concomitant loss of biodiversity. If that loss is to be reversed, strengthened arrangements are required to internalize the benefits of conserving biodiversity.

1. Terrestrial ecosystems

3. The biological diversity of Latin America and the Caribbean constitutes one of its essential features. As noted above, the high rates of deforestation place a large number of species at varying levels of risk, both regionally and nationally. Deforestation has a considerable impact on the region's environment and economies. At the same time, in recent years the pace of deforestation has slowed in some parts of the region, including the Brazilian Amazon forest and Mexico. Thus, recent satellite data suggest that annual deforestation of the Brazilian portion of the Amazon has slowed significantly, from a peak of more than 27,000 square kilometres in 2003–2004 to just over 7,000 square kilometres in 2008–2009, a decrease of over 74 per cent. Cumulative deforestation of the Brazilian Amazon is nevertheless substantial, representing more than 17 per cent of the original forest area.3 In Mexico, deforestation rates have declined: thus, the annual rate of change of the country's forest area fell by 20 per cent over the period 2000–2005, by comparison with the period 1990–2000. In recent years, the Mexican Government has substantially increased the allocation of resources to the forest sector, with a positive impact on sustainable forest management.4

4. In 2005, the most recent year for which data are available, Latin America and the Caribbean accounted for

3 CBD, 2010. "Global Biodiversity Outlook 3", Nairobi, Kenya.

Dendrobates Auratus (also known as the Green and Black Poison Dart Frog) at Panama Canal forest, Panama
Source: Laurencio Martínez, 2009

23 per cent of the world's forested areas, equivalent to some 915 million hectares.[4] The region has both the largest unfragmented tropical forests (Amazon region) and some of the most fragmented and endangered ones.5 Highly fragmented terrestrial habitats threaten the viability of species and their ability to adapt to climate change. For example, the remaining South American Atlantic forest, largely comprises fragments of less than one square kilometre in area and more than 50 per cent of this forest lies within 100 metres of the forest edge. When ecosystems become fragmented they may be too small for some animals to establish a breeding territory, or force plants and animals to breed with close relatives

2. Inland waters ecosystems

5. Latin America and the Caribbean holds more than 30 per cent of all the planet's available freshwater and some 40 per cent of its total renewable water resources.1 Although it is one of the world's most water-abundant regions, the resource is distributed very unequally and subject to multiple pressures, including increasing pollution, degradation of watersheds and the depletion and unsustainable

4 FAO, 2009, State of the World's Forests, 2009, Rome.Ilure 3utor baselines and well ryitain and Northern IrelandD.

5 UNEP, 2004, "GEO América Latina y el Caribe: perspectivas del medio ambiente", 2003, Mexico City.

Tife waterfall at Omar Torrijos Herrera National Park – this park is one of the protected areas that integrates the Mesoamerican Biological Corridor
Source: Laurencio Martínez, 2009

use of aquifers as a result of population growth, climate change, social and economic development and societies' increasing interference in the hydrological cycle.

6. Water quantity and quality are a cause for particular concern in some parts of the region, especially the Caribbean. The subregion faces serious water quantity challenges with a per capita water availability level that measures less than one third of the global average; this situation has been exacerbated by water pollution. Almost one quarter of the world's inland water fish species are found in Latin America and the Caribbean region: however, human pressures on freshwater resources and water pollution have adversely affected catches, with negative effects for local populations who depend on this source of protein for their nutrition.[6]

7. The Andes hold 90 per cent of the world's tropical's glaciers, producing 10 per cent of the planet's freshwater.1 The glaciers of the Andes are a vital source of water for this subregion and, according to the Intergovernmental Panel on Climate Change, most Andean glaciers will melt over the coming 10–20 years.6 It is expected that many vulnerable communities throughout the subregion will suffer from water shortages. Glacier melting and a drop in the availablility of water are currently two of the major concerns facing Andean countries.

6 UNEP, 2010 "Atlas of our Changing Environment of Latin America and the Caribbean", forthcoming.

Traditional fishermen returning to the port at Arcadins Islands – Haiti
Source: Antonio Pereira, 2009

3. Marine and coastal ecosystems

8. A large percentage of the region's population and its development activities are concentrated in the coastal area. This concentration of population and activities has resulted in increased pressure on these ecosystems, which are being severely degraded. This degradation poses a threat to the very resources that directly or indirectly attracted people to the coastal regions in the first place. The eastern Atlantic coast of South America, the western coast of Central America, and the Caribbean are the worst affected shorelines in the region.6

9. Some of the most degraded ecosystems in Latin America and the Caribbean are mangroves, wetlands and coral reefs, resulting in the loss of valuable ecosystem services, such as sewage treatment by mangrove wetlands systems and the eco-tourism essential for many Caribbean economies. These coastal habitats also play an important protection and stabilization role. Almost two thirds of the Caribbean coral reefs are threatened by coastal urbanization, sedimentation, contamination by toxic substances, water acidification and overfishing.

In the Caribbean region 30 per cent of coral reefs have either been wiped out or are at serious risk. In a business-as-usual scenario it is expected that 20 per cent more will be lost over the coming 10–30 years.[7]

10. Over the past 10 years the marine and coastal ecosystems of the region have provided between 15 and 30 per cent of the world's total fish supply. GEO Uruguay[8] reports that in 30 years' time 90 per cent of fisheries will be overexploited or at maximum capacity. GEO Barbados[9] reports that all fisheries whose status is known are being overexploited.

4. Species populations and extinction risks

11. Recent assessments suggest that the immense biodiversity of Latin America and the Caribbean is being lost or seriously threatened by human activities at all levels and practically throughout the region's territory. The region includes 5 of the 20 countries with the highest numbers of species of fauna endangered or threatened, and 7 of the 20 countries whose plant varieties are the most threatened.

12. The most severe recent increase in extinction risk has been observed among coral species, probably due in large part to the widespread bleaching of tropical reef systems in 1998, a year of exceptionally high sea temperatures. The region is among those with the greatest numbers of tree species in danger of extinction, threatened or vulnerable. Amphibians are suffering the ravages of the chytrid fungus owing to changes in macroclimatic and microclimatic conditions, and similar situations obtain in a variety of

Agalychnis callidryas (Red-Eyed Tree Frog) from Mesoamerican rain forest at Soberania National Park, Panama
Source: Laurencio Martínez, 2009

groups of organisms. According to the estimations, over the past 100 years Latin America and the Caribbean has lost 75 per cent of the genetic diversity of its agricultural crops.

5. Genetic diversity

13. Latin America and the Caribbean region is the world's richest genetic reservoir, for which ecosystems are vital as sources of new useful traits in food crops, active components for pharmaceutical products, potential industrial (chemical) applications, and useful genes and their corresponding functions. For example, many of the currently most important and widely cultivated crops, such as potato, tomato, cocoa and maize, are native to the region, where they were domesticated by native Americans. Notwithstanding this, genetic diversity in the region is being lost in natural ecosystems and in systems of crop and livestock production. Countries of the region aim to make major strides in conserving genetic diversity, in particular by using ex situ seed banks, and the regions is already endowed with several species diversification centres (namely, in Colombia, Brazil, Mexico and Peru).

14. Access and benefit-sharing and traditional knowledge, associated with genetic resources, are issues of crucial importance for the region and Latin

7 Sherman, K. and Hempel, G (Eds.) 2009. "The UNEP Large Marine Ecosystem Report: A perspective of changing conditions in LMEs of the world´s Regional Seas". UNEP Regional Seas Report and Studies No. 182. UNEP, Nairobi.
8 UNEP and CLAES, 2008 "GEO Uruguay", Uruguay
9 UNEP, 2002 "GEO Barbados", Barbados

Andean biodiversity food products at organic fair in Lima, Peru
Source: Alex Pires, 2009

American and Caribbean countries have been very active in the design of the international regime on access and benefit-sharing. The countries have also reaffirmed the importance of respecting the rights of indigenous and local communities over their traditional knowledge associated with genetic resources, and ensuring their participation in the benefits resulting from its use. The future regime will pose many implementation challenges at the domestic level, which will require regional and subregional cooperation. Important incentives for the conservation of biodiversity can emerge from systems that ensure fair and equitable sharing of the benefits arising out of the use of genetic resources.

6. Current pressures on biodiversity

15. The region presents a generally rising trend in all the five main pressures on biodiversity (land degradation, climate change, pollution from nutrients, unsustainable use and invasive alien species). The third Global Environment Outlook report for Latin America and the Caribbean underlines, however, that the greatest risks to biodiversity stem from the change of land use, with the consequent reduction, fragmentation and even loss of habitats (Alkemade et al. 2009). Land-use change has often been unregulated and not been based on environmental criteria. Large tracts of tropical forests (wet and dry), temperate forest, drylands and coastal areas have been – and continue to be – converted to such extent that in Latin America and the Caribbean many species are threatened or endangered.1

16. In Latin America and the Caribbean, the most important driving force of change in the area of land use and habitat loss has been the significant expansion, in recent years, of commercial agriculture for exportation (e.g., soya, biofuels, livestock, fruits, vegetables and flowers)[10] that is responsible for close to one half of the deforestation in the region.4 Infrastructure, particularly roads, represents an important factor in increasing deforestation rates, mainly in Central and South America. Roads open the way for agriculture to expand, but also for illegal logging – as a rule, deforestation takes place less than 30 kilometres away from an official road.6 Along the coast and in marine areas, the main pressures come from tourism and unplanned urban expansion, inland contamination and aquaculture. Attempts to safeguard the coastal and marine zone by gazetting protected areas remain very modest. Only 0.1 per cent of the exclusive economic zone of Latin America and the Caribbean countries is under some sort of protection and most of the 255 marine reserves are not properly managed.1

17. The reduction in the pressures on biodiversity is one of the goals pursued by Latin American and Caribbean countries, which aim to integrate biodiversity issues into broader policies, strategies and programmes. Governments and local stakeholders in Latin America and the Caribbean region are promoting the application of best practices in agriculture, sustainable forest management and sustainable fisheries. Measures to address the underlying driving

10 World Bank, 2007 "América Latina y el Caribe: una región sumamente vulnerable a los efectos del cambio climático".

forces of biodiversity loss, including demographic, economic, technological, social, political and cultural pressures, in meaningful ways, have to be handled with long-term strategies and short-term and medium-term specific actions.

B. Regional biodiversity trends for the twenty-first century

18. In view of the high vulnerability of Latin America and the Caribbean to climate change, ecosystem-based adaptation approaches and mechanisms (such as reducing emissions from deforestation and forest degradation – known as "REDD") could support efforts by countries of the region to build essential links and to harness greater synergies between the needs to safeguard biodiversity and to mitigate and adapt to the impacts of climate change. Such efforts will help meet the need for functional approaches designed to improve the flow of resources to those people whose lives are most closely affected by both climate change and biodiversity loss and whose futures stand to be most significantly improved through such efforts.

19. Because of their valuable biodiversity assets, Latin American and Caribbean countries have a comparative advantage that could be harnessed to stimulate much needed economic growth and social development. There are some clear examples in the region of how biodiversity-related sources, including tourism, timber and non-timber forest products, can produce important revenues. It has been estimated that Guatemala receives over $50 million annually from these sources and Ecuador $100 million from nature-based tourism alone.[11] Indeed, tourism accounts for around 12 per cent of gross domestic product (GDP) in Latin America and the Caribbean, employing approximately 10 million people.[12]

20. Payment for ecosystem services (for example, the maintenance of a forest to provide water to the supply of a city, reforesting degraded areas to capture the atmospheric carbon dioxide, etc.) is a mechanism that contributes to the creation of green jobs and provides an income to the rural population that preserves and takes care of these services. Countries such as Colombia, Costa Rica, and Nicaragua that promoted agro-forestry practices have reported increases of between 10 and 15 per cent in farmers' income levels. Examples such as these suggest that a global shift towards a new economic model could generate large numbers of jobs and help build social equality.[13]

1. Terrestrial ecosystems

21. Protected areas have increased in the region, together with regulatory tools for their integrated management. A number of challenges relating to representativeness, management and resource availability, however, must be overcome for these safeguards to be genuinely effective. Even in conjunction with other strategies to contain biodiversity losses, such as afforestation and community forest management, payment for environmental services and land management and certification, it has not been possible to stem the loss of biodiversity. Biodiversity is endangered by strong pressure exerted on natural habitats. The number of protected areas, however, does not provide a complete picture of the issue. To reduce biodiversity loss, better management of protected areas and more resources are needed. For protected areas

11 USAID, Latin America and the Caribbean. http://www.usaid.gov/locations/latin_america_caribbean/issues/biodiversity_issue.html

12 UNDP, 2010 "Status Report – Biodiversity and Ecosystems: Why these are Important for Sustained Growth and Equity in Latin America and the Caribbean", internal report.

13 UNEP, 2008. "Green jobs: towards decent work in a sustainable, low-carbon world". Nairobi, Kenya

Hummingbird at Omar Torrijos Herrera national Park, Panama – They contribute to pollination and are an environmental indicator of ecosystem state.
Source: Laurencio Martínez, 2009

Free flight of a *Ramphastos sulfuratus* (Tucan) at Omar Torrijos Herrera national Park, Panama - Tucan is a symbol of nature tourism and conservation at several LAC countries.
Source: Laurencio Martínez, 2009

to be an effective mechanism for biodiversity conservation, they must be representative of biomes and ecosystems. In addition to protected areas, other conservation techniques must be used, and national and international regulatory and financial structures must be reoriented to internalize the environmental and social cost of the loss of biodiversity or of the benefits of its conservation.

2. Inland water ecosystems

22. Latin America and the Caribbean will continue to face challenges related to water availability and quality, as the region's growing water demands are exacerbated by a combination of climate change, the introduction of alien species, pollution and unsustainable dam construction, putting further pressure on freshwater biodiversity and the services which it provides. The state of the water ecosystem is directly related to the capacity to promote adequate management of the watercourse and its related terrestrial ecosystem. Accordingly, the countries of the region are strengthening the governance of the integrated water resource management process. To achieve this aim, their national legislation must take due account of three essential elements: participation, transparency and accountability. To that end, effective measures are being implemented to ensure participation by all stakeholders, including economic resources, help in capacity-building among participants and the creation of effective opportunities for interaction. At the regional level, it is also important to promote the integrated management of transboundary water resources, formalizing the relevant mechanisms by means of international instruments. The Trifinio plan is an example of an effort to implement transboundary integrated water management in Central America (El Salvador, Guatemala and Honduras), taking into consideration not only the environmental aspect but also the economic, social and political dimensions related to the main shared water basin of the region – the Lempa river.

3. Coastal and marine ecosystems

23. Combined pressures threaten many coastal ecosystems in the region. The reduction of some forms of stress on coral systems (i.e., land-based contamination and invasive species) may render them less vulnerable to the impacts of acidification and warmer waters. In the case of other coastal ecosystems, planning policies that allow marshes, mangroves and lagoons to migrate inland will make them more resilient to the impact of sea-level

rise, and thus help to protect the vital services that they provide.

24. The sounder management of coastal fisheries can follow a number of paths, including the stricter enforcement of existing rules to prevent illegal, unreported and unregulated fishing. The development of low-impact aquaculture, dealing with sustainability issues, would also help to meet the rising demand for fish without adding pressure on wild stocks.

C. Strategy and vision for reducing biodiversity loss

25. Effectively integrating the principles of biodiversity conservation and sustainable use into policies and programmes is a long and complex process in which the specific features of individual countries and Governments and each type of policy should be taken into account. Some relevant applicable guidelines include the following:

    a. Need to improve decision makers' understanding of the economic and social importance of the biodiversity and ecosystems as part of a country's wealth;

    b. Need to lay the foundations for a development model that incorporates the external costs of biodiversity loss, alongside the external benefits of activities that do not damage the integrity of ecosystems;

    c. Need to improve the coordination and consistency of public action to guarantee the conservation and sustainable use of biodiversity;

    d. Need to strengthen the national and regional systems for data collection, analysis and monitoring related to biodiversity and ecosystems in order to ensure the availability of adequate, structured and comparable data, statistics and information;

    e. Need to promote the science-policy interface on the links between biodiversity, ecosystem services and human well-being.

26. Although Latin American and Caribbean countries have adopted policies and strategies for biodiversity conservation, their biological heritage is threatened by the loss of natural habitats. This is occurring mostly in high mountain areas, drylands, cloud and tropical moist forests and coastal and marine ecosystems.

27. Some trade-offs between conservation and development are inevitable, and it is important that decisions are informed by the best available information and that the tradeoffs are clearly recognized up front. It is more evident than ever that decision makers should expand their knowledge about the social and economic importance of biodiversity

Emberá indigenous community at Panama Chanel river basin, Panama
Source: Carmen Schloeder, 2009

and ecosystems and consider it as a part of the countries' strategic assets. It is also important to expand this knowledge beyond the environment sector and environment ministries to include relevant and related economic sectors such as planning, finance, development, agriculture, fishing, health, transportation, infrastructure and mining. Mainstreaming therefore needs to be seen as the genuine understanding by the government machinery as a whole that the future well-being of society depends on defending natural infrastructure.

28. The debate at the regional level about the post-2010 targets on biodiversity is also providing impetus to countries to redouble their efforts to conserve biodiversity. It will be crucial for baselines and well-articulated targets to be clearly defined using agreed metrics. An agreed suite of indicators will then enable the monitoring of progress and the early adjustment of key policies and actions based on the assessment of achievements along the way. This work could be greatly assisted through improved access to and sharing of existing biodiversity-relevant data and information, making it more readily and openly available to a wider community of users, including policymakers. These targets must also be translated into action at the national level though national biodiversity strategies and action plans, and treated as a mainstream issue throughout all sectors of the Government.

Angaricales - Fungi (also known as the "*Paraguas de Sapo*") typical from Latin American low land tropical forest – they provide valuable decomposition services on our ecosystems
Source: Laurencio Martínez, 2009

29. The implementation of the intergovernmental science-policy platform on biodiversity and ecosystem services is an initiative that could help to reduce biodiversity loss. The need to strengthen the generation of knowledge at the national, regional and global levels and the general agreement on the importance of capacity-building for the generation, assessment and use of knowledge at various levels has been recognized and represents a significant issue for the region. Capacity-building for scientists, policymakers and members of civil society, including local communities, should be catalysed to enable them to participate more effectively in the science-policy interface and to increase the participation of scientists from the least developing countries.[14]

14 UNEP/IPBES/2/4/Rev.1.

30. Changes in the global climate and biodiversity are closely linked. While climate change is a significant driving force in biodiversity loss, healthy biodiversity and resilient ecosystems provide a natural means of adapting to climate change. The concept of REDD is swiftly developing and could contribute to preserve our forests and maintain their ability to regulate carbon. In addition, reducing emissions from deforestation and forest degradation, together with the sustainable management of forests and enhancing forest cover – known as "REDD-plus" – is undoubtedly of great importance to Latin America and the Caribbean region, and could become an important mechanism for the integration of the sustainable use of biodiversity and climate change adaptation and mitigation measures.

31. In summary, of all the world's regions, Latin America and the Caribbean has the greatest biological diversity. To reduce the rate of biodiversity degradation, we need a better understanding of the value asset that we are losing. In Latin America and the Caribbean region, habitat alteration and transformation are generating the current biodiversity crisis. Protected areas and conventional conservancy strategies alone will not suffice to mitigate the consequences of this massive change. Biodiversity needs to be properly recognized and valued by political and market systems in order to reverse this trend. At the same time, existing and new sustainable practices need to be applied when producing goods and services, especially to address the needs of the rural poor, who are particularly reliant on the sound functioning of local and regional ecosystems.

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