



General Assembly Plenary Topic Background Guide
Biodiversity and Development¹

27 September 2012

Biological diversity (often shortened as “biodiversity”) refers to “the variability among living organisms from all sources including ... terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”²

According to the 1,360 scientists and other experts involved in the UN-sponsored Millennium Ecosystem Assessment (MA), biodiversity can be measured at four levels of analysis -- genes, populations, species, and ecosystems.³ At each level, assessing diversity requires consideration of three factors: variety, quantity and quality, and distribution.

- Variety refers to “the number of different types. For example, this could refer to different species or genes, such as how many bird species live in a particular place or how many varieties of a genetic crop strain are in production.”
- Quantity and quality refers to “how much there is of any one type. Variation on its own will only rarely meet people’s needs. For example, for many provisioning services (food, fresh water, fiber) the quantity or the quality matter more than the presence of a particular genetic variety, species, or ecosystem.”
- Distribution refers to “where that attribute of biodiversity is located. For example, having all the world’s pollinators present but only in a single location will not meet the needs of the plants that depend on them. Many ecosystem services are location-specific. For instance, human and natural communities need to be close to wetlands to benefit from their regulatory roles.”⁴

Biodiversity is important for both instrumental (practical) and normative (values-based) reasons. For example, having a variety of genetic strains of an important food crop such as corn is vital to protecting world food production. Similarly, preserving a variety of plant and animal populations and species has the instrumental value of conserving human food and medical supplies. Finally, preserving a variety of ecosystems makes it more likely that a variety of genes, populations, and species will survive and, as a result, that humans too will survive and prosper. In addition to these instrumental reasons, preserving genetic, population, and species diversity has the normative value of preserving the Earth and enabling humans to enjoy and be inspired by nature.

Today, biodiversity is discussed and assessed at each of these levels. Of them, the most important is the ecosystem level. An ecosystem is “the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space.” Ecosystems include living organisms (plants, animals and microbes) and the nonliving components of their environment (minerals, climate, soil, water, sunlight), as well as the energy

¹ This background guide was written by Kedra Hildebrand, research assistant, and Karen Ruth Adams, faculty advisor. Copyright 2012 by Kedra Hildebrand and Karen Ruth Adams.

² Convention on Biological Diversity (CBD), “Text of the CBD,” 1993, Article 2, <http://www.cbd.int/convention/text/>

³ Georgina Mace, *et al.*, “Biodiversity,” in *Ecosystems and Human Well-Being*. (Washington: Island Press, 2005), p. 81, <http://www.maweb.org/documents/document.273.aspx.pdf>. See also Millennium Ecosystem Assessment (MA), “Overview of the Millennium Ecosystem Assessment,” 2005, <http://www.maweb.org/en/About.aspx#1>

⁴ Mace, *et al.*, “Biodiversity,” p. 80.

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and nutrient cycles that connect them.⁵ When ecosystems are healthy, they offer many vital instrumental benefits to humans, including breathable air, potable water, fertile soils, and productive forests and fisheries. According to the World Health Organization, “People depend on biodiversity in their daily lives, in ways that are not always apparent or appreciated. Human health ultimately depends upon ecosystem products and services (such as availability of fresh water, food and fuel sources).”⁶

According to the scientists involved in the Millennium Ecosystem Assessment, the continued health of Earth’s ecosystems depends on the preservation of biodiversity.⁷ Yet biodiversity is in decline. How can the General Assembly address this problem so ecosystems can continue to provide the means for human prosperity and inspiration, as well as national and international development?

History and Current Events

Addressing this problem requires an understanding of current and historical levels of biodiversity and biodiversity loss, the causes of biodiversity loss, and possible protective measures.

Current Knowledge about Biodiversity and Biodiversity Loss

Most estimates place the total number of species on Earth between 5 and 30 million; of these, just 2 million species (mostly plants and animals used by people in developed countries and temperate ecosystems) have been formally named and described. To develop a better understanding of current biodiversity, scientists must pay more attention to describing and naming plants and animals that are important to people in tropical areas. In addition, it is important to learn more about the diversity and functioning of species not currently used by humans, as well as about the worldwide variety of genes, populations, and ecosystems. Without this knowledge, there will be gaps in protection against biodiversity loss in tropical, marine, freshwater, and subterranean ecosystems, as well as among plants, invertebrates, micro-organisms.⁸

For decades, scientists have been working to develop this knowledge. As a result, in the world’s tropical rainforests, new species of trees, plants, animals, birds, and insects are “found every year.”⁹ According to scientists, “tropical forests such as the Amazon have the greatest concentrations of animal and plant species of any terrestrial ecosystem. Perhaps two-thirds of Earth’s species live only in these forests.”¹⁰ Yet, at current rates of deforestation, few if any tropical forests will remain by the end of the 21st century, making it difficult for the genes, populations, and species that live in those ecosystems to survive.¹¹ Similar trends are evident in temperate, desert, and other ecosystems.

According to the UN Food and Agricultural Organization, “three-quarters of biodiversity in crops has been lost in the last century... Eighty percent of maize types that existed in the 1930s are gone... In the United States, 94

⁵ “Ecosystem.” *Encyclopedia Britannica*, accessed 23 September 2012, <http://www.britannica.com/EBchecked/topic/178597/ecosystem>

⁶ World Health Organization, “Biodiversity,” accessed 14 October 2011, <http://www.who.int/globalchange/ecosystems/biodiversity/en/index.html>

⁷ Mace, *et al.*, “Biodiversity,” p. 80.

⁸ Mace, *et al.*, “Biodiversity,” pp. 79-81.

⁹ Jeremy M.B. Smith, “Tropical Rainforest,” *Encyclopaedia Britannica*, accessed 14 October 2011, <http://www.britannica.com/EBchecked/topic/606576/tropical-rainforest>

¹⁰ Stuart L. Pimm, “Deforestation,” *Encyclopaedia Britannica*, accessed 14 October 2011, <http://www.britannica.com/EBchecked/topic/155854/deforestation>

¹¹ Pimm, “Deforestation.” See also Karen Ruth Adams, “Deforestation,” Montana Model UN General Assembly Plenary Background Guide, 14 October 2011, pp. 4-5.

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percent of peas are no longer grown.”¹² Moreover, according to UN data from the 2010 International Year of Biodiversity,

- Trends of some 3,000 wild populations of species show a consistent decline in average species abundance of about 40% between 1970 and 2000. Species present in rivers, lakes and marshlands have declined by 50%.
- Declines are alarming in amphibians, mammals, birds in agricultural lands, corals and commonly harvested fish species.
- In the North Atlantic, fish have declined by 66% in the last 50 years.
- Since 2000, 6 million hectares of primary forest have been lost each year.
- In the Caribbean region, hard coral cover has declined from 50% to 10% in the last three decades.
- 35% of mangroves have been lost in just 20 years.¹³

Historical Biodiversity Loss

Fossil dating suggests that, over the last 3.5 billion years, the Earth has experienced a series of mass extinctions. With the development of agriculture about 10,000 years ago, extinction rates of genes and species became 15-100 times greater than they were in the previous 100,000 years.¹⁴

An example of early biodiversity loss occurred between 1,000 and 3,000 years ago in Polynesia, where humans are thought to have caused the extinction of over 2,000 species of birds when they colonized tropical islands and began harvesting birds, removing habitat, and introducing predatory species. More recently, from the 1400s through the 1800s, European colonization had massive impacts on biodiversity loss through the exchange of species, the conversion of habitat, especially through deforestation, and the overall harvesting of species.¹⁵ Trends that started under colonization increased during the industrial revolution from 1750 to 1850. As the push for modernization and development continues in the current era, biodiversity losses have increased.¹⁶

According to geography professor Jared M. Diamond, the decline of many past civilizations was related in part to ecosystem damage and biodiversity loss through overfishing, over hunting, habitat destruction, and other human activities.¹⁷

Causes of Biodiversity Loss

Historically, most extinctions have been caused by human introduction of non-native species to small island ecosystems such as Polynesia. By contrast, contemporary biodiversity loss is generally the result of habitat loss and overharvesting. Moreover, about half of the extinctions of the past 20 years have occurred on continents.¹⁸

¹² Elisabeth Rosenthal, “Near Arctic, Seed Vault Is a Fort Knox of Food,” *New York Times*, 29 February 2008, <http://www.nytimes.com/2008/02/29/world/europe/29seeds.html>

¹³ Countdown 2010, “What is Biodiversity,” 2010, <http://www.countdown2010.net/biodiversity>

¹⁴ Alan Molumby, “The History of Biodiversity of Life on Earth,” PowerPoint slides from the University of Illinois, Chicago, 13 May 2004, <http://www.uic.edu/classes/bios/bios101/historyoflife/>

¹⁵ Petra Tschakert, Karl Simmerer and Brian King, “A Historical Perspective of Biodiversity Loss,” Department of Geography at Penn State-e-Education Institute, 2012, <https://www.e-education.psu.edu/geog030/node/393>

¹⁶ Mace, *et al.*, “Biodiversity,” pp. 79-81.

¹⁷ Jared M. Diamond, *Collapse: How Societies Choose to Fail or Succeed* (New York: Viking, 2005). For a summary and review of the book, see Malcolm Gladwell, “The Vanishing,” *New Yorker*, 3 January 2005, http://www.newyorker.com/archive/2005/01/03/050103crbo_books

¹⁸ Mace, *et al.*, “Biodiversity,” pp. 79-81.

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Habitat loss occurs in two ways. The first is through the conversion of forest and other ecosystems to cropland. Today, 20-50 percent of Earth's ecosystems are used to grow crops. Tropical dry forests have been the most reduced by cultivation, with almost half of the ecosystems natural habitats replaced with cultivated lands. Temperate grasslands, broadleaf forests, and Mediterranean forests have also experienced losses of 35 percent or more.¹⁹

Habitat loss also occurs through damage and pollution. For example, 30-35 percent of critical marine environments – such as seagrasses, mangroves, and coral reefs – have been damaged by overuse or industrial development, or polluted by chemicals or debris.²⁰ In recent years, the Gulf of Mexico and other parts of the world's oceans have been affected by chemical fertilizers, which create “dead zones.”²¹ In addition, huge rafts of floating trash trap fish and alter their biochemistry.²²

Overharvesting refers to the practice of harvesting plants and animals at a faster rate than they reproduce. To avoid this requires knowledge of the species in question and alternative food and income sources. According to the scientists and other experts involved in the Millennium Assessment, commercial over-exploitation of the world's fish stocks has led to more than half the global fisheries being exhausted and a further third depleted.²³ According to conservation groups, demand for ivory is so high that in the Democratic Republic of the Congo, “poachers are wiping out tens of thousands of elephants a year, more than at any time in the previous two decades.”²⁴

While habitat loss, exploitation and pollution have replaced the introduction of exotics (non-native species) as the main cause of extinction, invasive alien species continue to threaten biodiversity world-wide by causing severe problems in the ecosystems they invade or into which they are purposefully introduced. Virtually all ecosystems have suffered from invasion. This problem is likely to increase with global trade and tourism.²⁵

A more recent cause of biodiversity loss and extinction is climate change. According to the Millennium Assessment team, mountain, island, and peninsula species are vulnerable to changes in weather patterns, and coastal habitats such as mangroves, coral reefs and wetlands are at risk from rising sea levels.²⁶ In addition, marine environments and fish have already been affected by increasing water temperatures. Because climate change predictions are tentative, the exact long-term consequences are difficult to predict and protect against.²⁷

¹⁹ Mace, *et al.*, “Biodiversity,” pp. 79-81.

²⁰ “On Biodiversity day, UN Chief Calls for Greater Protection of the World's Oceans,” UN News Centre, May 22, 2012, available at http://www.un.org/apps/news/story.asp?NewsID=42057&Cr=Biodiversity&Cr1=#.UF3_8o2PXSg

²¹ Monica Bruckner, “The Gulf of Mexico Dead Zone,” Carlton College Science Education Resource Center, accessed 23 September 2012, <http://serc.carleton.edu/microbelife/topics/deadzone/index.html>

²² Paul Rogers, “Giant vortex of floating trash swirls in Pacific,” *San Jose Mercury News*, 4 August 2009, http://seattletimes.com/html/nationworld/2009593728_garbage04.html

²³ “On Biodiversity day, UN Chief Calls for Greater Protection of the World's Oceans,” UN News Centre, May 22, 2012, available at http://www.un.org/apps/news/story.asp?NewsID=42057&Cr=Biodiversity&Cr1=#.UF3_8o2PXSg

²⁴ Jeffrey Gettleman, “Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits,” *New York Times*, 3 September 2012, <http://www.nytimes.com/2012/09/04/world/africa/africas-elephants-are-being-slaughtered-in-poaching-frenzy.html?ref=elephants>

²⁵ “What Threatens our Biodiversity,” Natural History Museum, London, 2012, <http://www.nhm.ac.uk/nature-online/biodiversity/what-is-threatening-biodiversity/index.html>

²⁶ Mace, *et al.*, “Biodiversity,” p. 80.

²⁷ “What Threatens our Biodiversity.”

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Protecting Biodiversity

Given the causes of biodiversity loss, the means to protect it are clear. Scientists, citizens, businesses, and UN member states could cooperate to prevent the introduction of non-native species, to preserve and restore habitats, to prevent overharvesting, and to prevent and respond to climate change. Yet this is often easier said than done, due to lack of scientific knowledge, lack of economic incentives, and other political priorities.

One way to spur cooperation could be to educate people and states about the contribution that biodiversity makes to human prosperity. According to environmental economist Pavan Sukhdev, biodiversity loss costs the world between L2.4 and L5 trillion (\$1.9 to \$4.5 trillion) per year. These effects are the result of lost consumption of food and drink, loss of medicinals and industrial materials, and loss of “ecological services” such as clean air and water. In addition, there is the intangible contribution of biological diversity to leisure and culture.²⁸ With global GDP estimated at \$80 trillion in 2011, this represents a loss of about 4 percent of global GDP per year.²⁹ Over time, the size of this economic loss is likely to grow as biodiversity losses accumulate and climate change accelerates.

In 2005, the scientists and other experts involved in the Millennium Ecosystem Assessment (MA) argued that to ensure that ecosystems continue to provide “services” that contribute to human well-being, it is vital to maintain “stocks” of “natural capital.”³⁰

In 2007, environment ministers from the governments of the G8+5 countries agreed to “initiate the process of analyzing the global economic benefit of biological diversity, the costs of the loss of biodiversity and the failure to take protective measures versus the costs of effective conservation.” The result was the creation of The Economics of Ecosystems and Biodiversity Study (TEEB), which has delivered a series of reports addressing the economics of biodiversity and specifically measuring economic costs of biodiversity loss versus protection.³¹

Traditionally, biodiversity preservation has involved domestic legislation and international treaties to protect certain genetic strains, populations, and species, either by penalizing their overuse or destruction or by establishing seed banks, natural parks or reserves, and zoos. Many countries now have some legislation to protect their endangered species and have set aside land to prevent further biodiversity loss. In addition, some countries have launched conservation biology degrees and jobs to increase understanding and seek answers. According to Thomas Lovejoy, an American conservation biologist, in 1965, when he first starting working in the Amazon, “there was one national forest and one demarcated indigenous reserve. Now, 50 percent [of the Amazon] is under some form of protection.”³² According to Lovejoy, education and activism have been vital to slowing biodiversity losses in that region.

According to experts on biodiversity conservation, growing understanding of the role of each species in its native ecosystem and of the likely effects of climate change mean that current notions of conserving communities

²⁸ “Why Conserve Biodiversity,” Natural History Museum, London, 2012, <http://www.nhm.ac.uk/nature-online/biodiversity/why-protect-biodiversity/index.html>

²⁹ CIA World Factbook, “World: Economy,” accessed 23 September 2012, <https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>

³⁰ Mace, *et al.*, “Biodiversity,” p. 80.

³¹ Pavan Sukhdev *et al.*, “Mainstreaming the Economics of Nature: A Synthesis of the Approach,” *The Economics of Ecosystems and Biodiversity Study* (TEEB), 2010, p.3 http://www.teebweb.org/Portals/25/TEEB%20Synthesis/TEEB_SynthReport_09_2010_online.pdf

³² Simon Romero and John M. Broder, “Progress on the Sidelines as Rio Conference Ends,” *New York Times*, 23 June 2012, http://www.nytimes.com/2012/06/24/world/americas/rio20-conference-ends-with-some-progress-on-the-sidelines.html?_r=1

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through reserves and zoos will soon be obsolete. Instead, “new, dynamic conservation strategies” are needed.³³ For example, to protect the whales and other marine predators that now migrate along the California coast, it is insufficient to declare a fixed reserve because as water temperatures rise and weather patterns change, the animals will venture farther afield.³⁴

Given the contribution that biodiversity makes to human prosperity, one of the key challenges is to enable humans to continue to use biological resources without impeding the ability of plants, animals, and ecosystems to survive at sustainable levels. An example of this approach is the concept of natural forest management. Natural forest management modifies current logging and farming practices by supporting restoration of degraded lands and non-timber uses for some forests.³⁵

Involving business in biodiversity preservation is also essential, both because of the demand businesses present for biological resources and because of the funds they possess that could be used to preserve biodiversity and prevent and respond to climate change. Several major multinationals including Microsoft, Emi (an Italian oil firm), and Femsa (a Latin American soft-drink bottler) have made commitments to reduce their carbon emissions.³⁶

Previous Committee Work on This Topic

In 1988, the United Nations Environment Program (UNEP) convened the Ad Hoc Working Group of Experts on Biological Diversity to explore the need for an international convention on biological diversity. In May 1989, it established an Ad Hoc Working Group of Technical and Legal Experts to prepare a treaty on the conservation and sustainable use of biological diversity.³⁷

The work of the Ad Hoc Groups culminated at the 1992 Rio Earth Summit, where the Convention of Biological Diversity (CBD) was written and negotiated to encourage national and international strategies for the conservation and sustainable use of biological diversity. In 1993, the CBD entered into force.³⁸ The Convention “recognizes that biological diversity is about more than plants, animals and microorganisms and their ecosystems. Biodiversity according to the convention includes the need for food security, medicines, fresh air and water, shelter and a clean and healthy environment.”³⁹ In addition, the CBD calls for the equitable worldwide sharing of the benefits of genetic resources.⁴⁰ At the same time, however, the CBD acknowledges each country’s right “to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”⁴¹

³³ L. Hannah, *et al.*, “Conservation of Biodiversity in a Changing Climate,” *Conservation Biology*, 16, January 18, 2012.

³⁴ Juliet Eilperin, “Climate change will shift marine predators’ habitat, study says,” *Washington Post*, 23 September 2012, http://www.washingtonpost.com/national/health-science/climate-change-will-shift-marine-predators-habitat-study-says/2012/09/23/3dbc5ae8-0507-11e2-8102-ebee9c66e190_story.html

³⁵ Kamaljit Bawa and Reinmar Seidler, “Natural Forest Management and Conservation of Biodiversity in Tropical Forests,” *Conservation Biology*, 12(1): February 1998.

³⁶ Romero and Broder, “Progress on the Sidelines as Rio Conference Ends.”

³⁷ Convention on Biological Diversity (CBD), “History of the Convention,” available at <http://www.cbd.int/history/>

³⁸ CBD, “History of the Convention.”

³⁹ “Rio+20: Interview with Ed Norton, UN Goodwill Ambassador for Biodiversity,” UN News Centre, (June 21, 2012), available online at <http://www.un.org/apps/news/story.asp?NewsID=42302#.UF31oY2PXSg>

⁴⁰ CBD, “Text of the CBD,” Article 1.

⁴¹ CBD, “Text of the CBD,” Article 3.

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UN agencies that monitor biodiversity challenges and compliance with the CBD and that raise funds to improve protection include the UN Development Program (UNDP), the UN Environment Program (UNEP) and the Global Environmental Facility (GEF), all which report regularly to the General Assembly..

In 2010, state parties to the CBD established the Aichi Biodiversity Targets, five goals to be reached between 2011 and 2020. The goals, each of which has subsidiary targets, are to:

- A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- B. Reduce the direct pressures on biodiversity and promote sustainable use
- C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- D. Enhance the benefits to all from biodiversity and ecosystem services
- E. Enhance implementation through participatory planning, knowledge management and capacity building.⁴²

Aichi participants also agreed to develop and submit National Biodiversity Strategies and Action Plans (NBSAPs). As of September 2012, most UN member states (176 of the UN's 193 member states and 91% of CBD participants) have developed NBSAPs.⁴³

In 2010, some states also negotiated the Nagoya Protocol, a binding commitment to the CBD's goal of equitable sharing of genetic resources. The Protocol will come into effect when 15 countries have ratified it. As of September 2012, just five states (Gabon, Jordan, Mexico, Rwanda, and Seychelles) have ratified it.⁴⁴

In support of the Aichi Targets, the General Assembly has proclaimed 2011-2020 to be the International Decade of Biodiversity.⁴⁵ In addition, since 1993, the GA has proclaimed each May 22 to be the International Day for Biological Diversity. In May 2012, Secretary-General Ban Ki-moon marked the day by highlighting the fragile state of the world's oceans and urging greater protection for marine biodiversity. Ban also called for action at the June 2012 conference on sustainable development in Rio de Janeiro to achieve an Aichi target of conserving 10 percent of marine and coastal areas by 2020.⁴⁶

On June 2012, the UN hosted the Conference on Sustainable Development in Rio de Janeiro, Brazil. The purpose of the conference, also called Rio+20, was to extend and enforce the CBD and other environmental agreements first made at the 1992 Rio conference. The gathering included nearly 50,000 participants and 100 heads of state and resulted in a 283 paragraph agreement entitled "The Future We Want."⁴⁷ With regard to biodiversity, conference participants stated that:

⁴² CBD, "Aichi Biodiversity Targets," <http://www.cbd.int/sp/targets/>

⁴³ CBD, "National Biodiversity Strategies and Action Plans (NBSAPs)," accessed 24 September 2012, <http://www.cbd.int/nbsap/>

⁴⁴ CBD, "Status of Signature, and ratification, acceptance, approval or accession," Nagoya Protocol, Convention on Biological Diversity, accessed 24 September 2012, <http://www.cbd.int/abs/nagoya-protocol/signatories/>

⁴⁵ United Nations, "United Nations Decade on Biodiversity, 2011-2020," <http://www.cbd.int/2011-2020/goals/>

⁴⁶ "On Biodiversity day, UN Chief Calls for Greater Protection of the World's Oceans," UN News Centre, (May 22, 2012), http://www.un.org/apps/news/story.asp?NewsID=42057&Cr=Biodiversity&Cr1=#.UF3_8o2PXSg

⁴⁷ UN Conference on Sustainable Development, "The Future We Want," June 23, 2012, <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf>

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We reaffirm the intrinsic value of biological diversity, as well as the ecological, genetic, social, economic, scientific, educational, cultural, recreational, and aesthetic values of biological diversity and its critical role in maintaining ecosystems that provide essential services, which are critical foundations for sustainable development and human well-being. We recognize the severity of the global loss of biodiversity and the degradation of ecosystems and emphasize that these undermine global development, affecting food security and nutrition, the provision and access to water and the health of the rural poor and of people worldwide, including present and future generations...⁴⁸

While there were some promising unilateral commitments at Rio+20, including Maldives' announcement that it would become the "world's largest marine reserve...by 2017," due to financial problems and other political priorities the US and other developed countries refused to make any new or binding multilateral commitments. As a result, the conference met with "withering criticism."⁴⁹ In July 2012, the General Assembly Plenary endorsed the Rio+20 outcome document, "despite reservations." According to the GA President, "Member States have their work cut out for them."⁵⁰

Conclusion

According to environmental economist Pavan Sukhdev, "Experiments with controlled environments have shown that we cannot easily build ecosystems to support ourselves."⁵¹ Biosphere2, the most advanced of these experiments, quickly failed due to lack of food, insufficient oxygen, and conflict among the participants.⁵²

How can the GA encourage UN member states to make concrete commitments to protect biodiversity loss and restore damaged ecosystems so that human and Earth survival and prosperity can be assured for centuries to come? As you write your position paper on this topic, consider the following questions:

- What are the biological resources and challenges of your country? How much biodiversity does it have now, how much has it lost, and how much is threatened by habitat loss, overharvesting, introduction of non-native species, and/or climate change?
- What is your country currently doing to protect its biodiversity and the stability of the regional ecosystems it inhabits? For example, has your country passed laws protecting certain species? Has it cooperated with its neighbors to establish transboundary reserves?
- What is your country doing to contribute to biodiversity loss? Does it purchase oil drilled from offshore platforms that contribute to loss of coral reefs? Do its citizens overconsume endangered species?
- Has your country ratified the Convention on Biological Diversity? If not, why not and what would it take to encourage your country to do so? If so, is it complying with CBD provisions?
- Does your country support the recent Aichi agreements and the Nagoya Protocol? Why or why not?
- What can the GA do to address biodiversity loss while at the same time considering the economic and other needs of member states?
- How should the GA balance the need for equitable sharing of the world's biological resources with the right of each nation to exploit its own resources?

⁴⁸ United Nations, "Report of the United Nations Conference on Sustainable Development," Rio de Janeiro, Brazil, 20-22 June 2012, item 197, p. 38, <http://www.uncsd2012.org/content/documents/814UNCSD%20REPORT%20final%20revs.pdf>

⁴⁹ Romero and Broder, "Progress on the Sidelines as Rio Conference Ends."

⁵⁰ UN General Assembly "Despite Reservations, General Assembly Endorses Rio+20 Outcome Document: Will Study Modalities for its Implementation, Budgetary Implications," UN Department of Public Information, 27 July 2012, <http://www.un.org/News/Press/docs//2012/ga11264.doc.htm>

⁵¹ Why Conserve Biodiversity."

⁵² Kara Rogers, "Two Years Under Glass: The First Biosphere 2 Mission," *Encyclopedia Britannica* blog, 26 September 2011, <http://www.britannica.com/blogs/2011/09/years-glass-biosphere-2-mission/>

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- What should UN member states' priorities be: to increase scientific knowledge, reduce habitat loss, reduce overharvesting, reduce introduction of non-native species, and/or address climate change? In pursuing these objectives, what specific policies and programs should the GA endorse?

Recommended Reading

“Biogeographic Region: The distribution boundaries of flora and fauna.” *Encyclopaedia Britannica*. Available at <http://www.britannica.com/EBchecked/topic/65890/biogeographic-region/70681/The-distribution-boundaries-of-flora-and-fauna?anchor=tc70681>

This page discusses and provides a map of the major floral regions of the world. On the *Encyclopaedia Britannica* page for your country, you can read about its climate, flora, and fauna.

Convention on Biological Diversity (CBD). “National Biodiversity Strategies and Action Plans (NBSAPs).” Available at <http://www.cbd.int/nbsap/>

This page provides access to information about the UN member states that have developed NBSAPs in compliance with the Aichi Biodiversity Strategy. From other pages on the CBD site, you can read about the plans for the region your country inhabits, as well as your country's compliance with the CBD and the Nagoya Protocol.

Rosenthal, Elisabeth. “Near Arctic, Seed Vault Is a Fort Knox of Food.” *New York Times*. 29 February 2008. Available at <http://www.nytimes.com/2008/02/29/world/europe/29seeds.html>

This article and related slide show discuss the formation of the Global Seed Vault, an international effort to protect as many plant seeds and sprouts as possible to protect biodiversity and food availability from war, natural disaster, and climate change.

Sukhdev, Pavan, *et al.*. “Mainstreaming the Economics of Nature: A Synthesis of the Approach,” *The Economics of Ecosystems and Biodiversity Study (TEEB)*. 2010. Available at http://www.teebweb.org/Portals/25/TEEB%20Synthesis/TEEB_SynthReport_09_2010_online.pdf

This study is an international initiative to call attention to the global economic benefits of biodiversity, highlight the growing costs of biodiversity loss and ecosystem degradation, and coordinate expertise.

UN Conference on Sustainable Development. “The Future We Want.” June 23, 2012. Available at <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%2012%2030pm.pdf>

Paragraphs 197-204 of this document summarize the unbinding statements about biodiversity that UN member states endorsed at the recent Rio+20 Conference.

UN General Assembly. “Despite Reservations, General Assembly Endorses Rio+20 Outcome Document: Will Study Modalities for its Implementation, Budgetary Implications.” UN Department of Public Information. July 27, 2012. Available at <http://www.un.org/News/Press/docs//2012/ga11264.doc.htm>

This press release summarizes the most recent GA discussion of commitments that will be required to halt biodiversity losses.

United Nations Development Programme (UNDP). “Millennium Development Goals: Tracking Country Progress.” Available at <http://www.undp.org/mdg/countries.shtml>

On this site, you can read country reports on the Millennium Development Goals. Goal 7 directly addresses biodiversity issues such as deforestation and overfishing. Other goals pertain to challenges (such as hunger, poverty, and health) that could worsen with further reductions in biodiversity.