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International Law and the Protection of Biological Diversity

Daniel M. Bodansky*

ABSTRACT

This article provides a general overview of international environmental law and biodiversity. First, the article argues that biodiversity is an international issue because international cooperation is necessary to implement national preservation policies effectively and because the benefits of biodiversity accrue in part to the international community. Second, the article discusses existing international law relevant to biodiversity, including wildlife and habitat protection treaties, the 1992 Convention on Biological Diversity, and general principles of international environmental law such as the precautionary principle, the principle of intergenerational equity, and the principle of differentiated responsibilities. Finally, the article recommends that the international community use incentives rather than trade bans to encourage Third World nations to protect their biological resources. Professor Bodansky suggests expanding the recognition of intellectual property rights in biological resources and the use of transfer payments to compensate poorer countries for protecting biodiversity.

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Wildlife protection is one of the oldest subjects of international environmental law.¹ Only relatively recently, however, has the focus of international law broadened from the protection of particular species or groups of species to the conservation of biological diversity as such.²

This article provides a general overview of international environmental law and biodiversity as a framework for the other articles in this Symposium, which address more specific issues relating to the protection of biological diversity. It focuses on three general questions: First, why is the protection of biological diversity an international issue? Second, how does international law presently protect biological diversity? Finally, what are some of the future directions the protection of biodiversity might take?

I. THE INTERNATIONAL DIMENSIONS OF THE BIOLOGICAL DIVERSITY ISSUE

To begin with, why is the protection of biodiversity an international problem? In some cases, the answer to this question is obvious. Some species cross national boundaries, migrating from place to place (e.g., certain species of birds and land animals such as polar bears). Other species are found in areas of the global commons, such as the oceans (e.g., whales and fish). In both of these cases, an obvious need exists for international management, as no single country can protect these species on its own. If the United States were to stop whaling, for example, as it has done, or to stop fishing salmon, and other countries continued to exploit these species, biodiversity would still be threatened. Because of the international distribution of these species, they were the first types of biological resources to be addressed internationally, in migratory bird and fishery protection treaties.³

1. See LYNTON K. CALDWELL, *INTERNATIONAL ENVIRONMENTAL POLICY: EMERGENCE AND DIMENSIONS* 30-40 (2d ed. 1990) (discussing early cooperative efforts in environmental matters); SIMON LYSTER, *INTERNATIONAL WILDLIFE LAW* at xxi (1985) (discussing early laws to protect wildlife and the move towards international treaties).

2. PATRICIA W. BIRNIE & ALAN E. BOYLE, *INTERNATIONAL LAW AND THE ENVIRONMENT* 420, 484 (1992); ALEXANDRE KISS & DINAH SHELTON, *INTERNATIONAL ENVIRONMENTAL LAW* 240-41 (1991).

3. See, e.g., Convention for the Protection of Migratory Birds, Aug. 16-Dec. 8, 1916, U.S.-Gr. Brit., 39 Stat. 1702; Convention for the Regulation of Whaling, Sept. 24, 1931, 49 Stat. 3079, 155 L.N.T.S. 349; Convention for the Northwest Atlantic Fisheries, Feb. 8, 1949, 1 U.S.T. 477, 157 U.N.T.S. 157.

Most species, however, do not migrate from country to country and are not found within the global commons. Most are found within particular countries.

It may seem odd that the protection of seemingly local species of plants and animals is an international issue, particularly given the traditional rule of international law that countries have national sovereignty over their natural resources.⁴ One would expect, given this rule, that habitat and wildlife protection would be an individual matter for each country to undertake and enforce—that land use and wildlife law would be legislated at the local level rather than the international level.

There are two reasons why the problem of protecting even seemingly local species has an international dimension.⁵ One reason is that, in some cases, the threats to species have an international character. For instance, international trade can lead to poaching and other activities that deplete a species that the source country wishes to protect. In these types of situations, international cooperation is needed to effectively implement national conservation measures. The rationale for international cooperation is similar to the rationale for international cooperation in law enforcement. Although punishment of crimes is ordinarily a national matter, international cooperation is often required in order to gather evidence, obtain custody of the offender, and thereby make national laws more effective. This interest in international cooperation was the rationale for Appendix III of the 1973 Convention on International Trade in Endangered Species (CITES).⁶

The other reason for international concern about biological resources found within a particular country is that the benefits of

4. *Permanent Sovereignty over Natural Resources*, G.A. Res. 1803, U.N. GAOR, 17th Sess., Supp. No. 17, at 107, U.N. Doc. A/5217 (1962), reprinted in 2 I.L.M. 223 (1963); *Permanent Sovereignty over Natural Resources*, G.A. Res. 3171, U.N. GAOR, 28th Sess., Supp. No. 30, at 52, U.N. Doc. A/9030 (1973), reprinted in 13 I.L.M. 238 (1974).

5. Cf. BIRNIE & BOYLE, *supra* note 2, at 448-52 (discussing the international community's interest in the protection of biodiversity).

6. Convention on International Trade in Endangered Species of Wild Fauna and Flora, *opened for signature* Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243 [hereinafter CITES]. Appendices I and II contain lists of endangered species agreed upon collectively by the parties to the Convention. *Id.* art. II, XV. In contrast, Appendix III consists of species identified by an individual party to the Convention as being subject to regulation within its jurisdiction. *Id.* art. XVI. These species are subject to export restrictions by the listing party; but, to be effective, the export restrictions require the cooperation of importing countries. *Id.* art. V.

conservation are, in part, global in character.⁷ To the extent that the benefits of conservation are global, they are a positive externality. International action helps internalize that externality, giving states where the resources are found an incentive to conserve, by sharing in the benefits of conservation.⁸

There are several global benefits of biodiversity that the international community should seek to internalize.⁹ First, biological resources are a repository of valuable information in the form of genetic codes.¹⁰ Preserving that information may eventually make possible the development of new drugs or crops. Second, biodiversity provides insurance against events that might devastate a particular species (e.g., pests or disease). Just as diversifying an investment portfolio reduces risk, maintaining biological diversity, in essence, provides insurance against catastrophes that might befall a particular species.¹¹ Finally, ecosystem diversity provides global benefits in terms of ecological services, such as purifying water supplies and preventing land degradation.¹²

It is this broader perspective on the global benefits of conserving biological diversity that, in part, underlies the 1992 U.N. Convention on Biological Diversity.¹³ One of the principal functions of the Biodiversity Convention is to allow countries where biological resources are found to realize or recapture some

7. The following discussion of the global values of biodiversity draws heavily on Timothy M. Swanson, *Economics of a Biodiversity Convention*, 21 *AMBIO* 250 (1992). In his article, Swanson stresses the need for an international agreement that brings the global benefits of biodiversity into the local decisionmaking process. *Id.* at 256-57.

8. Michael Wells, *Biodiversity Conservation, Affluence and Poverty: Mismatched Costs and Benefits and Efforts to Remedy Them*, 21 *AMBIO* 237 (1992).

9. See generally Clifford S. Russell, *Two Propositions About Biodiversity*, 28 *VAND. J. TRANSNAT'L L.* 689 (1995). See also JEFFREY A. MCNEELY ET AL., *CONSERVING THE WORLD'S BIOLOGICAL DIVERSITY* 25-35 (1990).

10. According to the distinguished biologist, Edward O. Wilson, "[e]very microorganism, animal and plant contains on the order of from one million to 10 billion bits of information in its genetic code, hammered into existence by an astronomical number of mutations and episodes of natural selection over the course of thousands or millions of years of evolution." Edward O. Wilson, *Threats to Biodiversity*, 261 *SCI. AM.* 108, 114 (1989).

11. Swanson, *supra* note 7, at 253-54.

12. MCNEELY ET AL., *supra* note 9, at 32.

13. *Opened for signature*, June 5, 1992, 31 *I.L.M.* 818 (entered into force Dec. 29, 1993) [hereinafter *Biodiversity Convention*]. See Lee A. Kimball, *The Biodiversity Convention: How to Make It Work*, 28 *VAND. J. TRANSNAT'L L.* 763 (1995) (discussing the Convention in greater detail); Jeffrey A. McNeely et al., *The Convention on Biological Diversity: Promise and Frustration*, 4 *J. ENVTL. & DEV.* 33 (1995).

of the value of those resources, and thereby provide them an incentive to engage in conservation.

II. PRESENT INTERNATIONAL LAW AND THE PROTECTION OF BIOLOGICAL DIVERSITY

Over the last twenty to twenty-five years, international environmental law has developed a number of general principles that are relevant to biodiversity protection.¹⁴ Whether these general principles constitute customary international law is a morass into which this article will not delve.¹⁵ Regardless of whether these principles have the status of customary international law, however, they represent an orientation or framework for international discussions of environmental issues.

The three principles most relevant to biological diversity are: (1) the precautionary principle, (2) the principle of intergenerational equity, and (3) the principle of differentiated responsibilities. The precautionary principle says that the international community need not await scientific certainty before taking action to protect the environment, particularly when the potential environmental harms are irreversible.¹⁶ This principle is clearly relevant to the biodiversity question, given the substantial uncertainties about the magnitude of the problem. Some skeptics argue that there is insufficient evidence to conclude that the world is on the brink of mass extinctions.¹⁷ However, the precautionary principle, which is explicitly recognized in the preamble to the Biological Diversity Convention,¹⁸ responds that certainty is not necessary before undertaking action.

The second relevant principle is intergenerational equity,¹⁹ which says that people have a duty to conserve resources for the benefit not only of the present generation but of future

14. See Philippe Sands, *The "Greening" of International Law: Emerging Principles and Rules*, 1 *IND. J. GLOBAL LEGAL STUD.* 293, 297-311 (1994) (analyzing basic principles of international environmental law).

15. See Daniel M. Bodansky, *Customary (and Not So Customary) International Environmental Law*, *IND. J. GLOBAL LEGAL STUD.* (forthcoming).

16. Daniel M. Bodansky, *Scientific Uncertainty and the Precautionary Principle*, *ENVIRONMENT*, Sept. 1991, at 4, 4-5.

17. Andrew R. Solow & James M. Broadus, *Issues in the Measurement of Biological Diversity*, 28 *VAND. J. TRANSNAT'L L.* 695 (1995).

18. Biodiversity Convention, *supra* note 13, pmbi., para. 9.

19. See generally EDITH BROWN WEISS, *IN FAIRNESS TO FUTURE GENERATIONS* (1989) (discussing the theory of intergenerational equity and its application to environmental issues).

generations as well. Intergenerational equity is relevant to the biological diversity problem because some of the values of biological diversity mentioned previously, namely as a source of information and as an insurance policy, largely benefit future generations.

Finally, the principle of differentiated responsibilities addresses the concerns of developing countries, where most biodiversity is found. According to this principle, countries should contribute differently to international environmental efforts, depending on their capabilities and their historical responsibility. In practice, this principle has meant preferential treatment of poor, developing countries, and a greater contribution by wealthy, developed countries.

These three principles provide the general framework for efforts to conserve biological resources. However, they are not a panacea.²⁰ They do not answer the hard questions about exactly how much evidence is needed before undertaking conservation measures or how much protection is warranted, nor do they dictate any particular regulatory policies.²¹

The more specific rules and mechanisms to conserve biological diversity are found primarily in treaties.²² Over the last fifty to sixty years, a whole range of treaties has been negotiated. One general category includes wildlife protection treaties addressing particular species²³ or groups of species, such as migratory birds²⁴ or whales.²⁵ The primary purpose of these treaties is to protect against over-exploitation of species by humans. They attempt to achieve this objective by establishing procedures for listing species that may be threatened or endangered and that require some kind of international protection, and by providing for the development of a regulatory

20. Russell, *supra* note 9, at 691-92.

21. Bodansky, *supra* note 16, at 5.

22. See generally Lyster, *supra* note 1.

23. *E.g.*, Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918, 13 I.L.M. 13; Convention for the Conservation and Management of the Vicuna, Dec. 20, 1979, reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, 2 SELECTED MULTILATERAL TREATIES IN THE FIELD OF THE ENVIRONMENT 74 (Iwona Rummel-Bulska & Seth Osafo eds., 1991) [hereinafter MULTILATERAL TREATIES].

24. *E.g.*, Convention for the Protection of Migratory Birds, Aug. 16-Dec. 8, 1916, U.S.-Gr. Brit., 39 Stat. 1702; Convention for the Protection of Migratory Birds and Game Mammals, Feb. 7, 1936, U.S.-Mex., 50 Stat. 1311.

25. International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, 161 U.N.T.S. 72. The most general wildlife protection treaty is CITES. CITES, *supra* note 6.

system to protect those listed species against human uses (e.g., a permitting system).²⁶

The bigger threat to species, however, is not over-harvesting by humans but rather habitat loss.²⁷ To protect biological diversity, emphasis needs to be placed not simply on protecting particular species, but on protecting the broader ecosystems in which they live. A number of international treaties have been developed to address the need for habitat conservation. The first global convention to do so was the 1971 Ramsar Convention on the protection of wetlands of international significance.²⁸ Ramsar was followed in 1972 by the World Heritage Convention,²⁹ which provides for the protection of cultural and natural sites of universal value, including habitats such as the Great Barrier Reef, the Everglades, and the Olympic Rainforest. These habitat protection treaties generally establish a system of protected areas under which countries can designate areas for inclusion on an international list.³⁰ After the areas are listed, the conventions attempt to encourage protection measures.

A final category of wildlife treaties are regional treaties that address nature conservation in a comprehensive fashion through both species protection and habitat protection. The first of these regional conventions was developed for Africa.³¹ Subsequently, regional treaties have been developed for the Western Hemisphere,³² Europe,³³ and Southeast Asia.³⁴

26. See BIRNIE & BOYLE, *supra* note 2, at 454-59 (describing this approach and analyzing its use in various treaties).

27. WORLD RESOURCES INSTITUTE ET AL., *WORLD RESOURCES 1994-1995*, at 149 (1994).

28. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 996 U.N.T.S. 245, 11 I.L.M. 969 [hereinafter Ramsar Convention].

29. Convention for the Protection of the World Cultural and Natural Heritage, Nov. 23, 1972, 27 U.S.T. 37, 1037 U.N.T.S. 151 [hereinafter World Heritage Convention].

30. WORLD RESOURCES INSTITUTE ET AL., *supra* note 27, at 152. See, e.g., Ramsar Convention, *supra* note 28, art. 2; World Heritage Convention, *supra* note 29, art. 11.

31. Convention Relative to the Preservation of Fauna and Flora in Their Natural State, Nov. 8, 1933, 172 L.N.T.S. 241. This convention has been superseded by the African Convention on the Conservation of Nature and Natural Resources, Sept. 15, 1968, 1001 U.N.T.S. 3.

32. Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, *opened for signature* Oct. 12, 1940, 56 Stat. 1354, 161 U.N.T.S. 193.

33. Convention on the Conservation of European Wildlife and Natural Habitats, Sept. 19, 1979, Eur. T.S. No. 104.

When the idea of developing a global biodiversity convention first began to gather momentum in the late 1980s, some suggested that it should serve as an umbrella agreement, consolidating and subsuming the many wildlife treaties developed since the turn of the century.³⁵ Ultimately, this plan did not prove practicable. Instead, the 1992 Convention on Biological Diversity has served as a framework agreement that builds upon, rather than subsumes, existing treaties.³⁶ In contrast to earlier treaties, it does not include any lists or annexes of protected species or areas. The Biodiversity Convention, however, goes beyond previous treaties by dealing with the problem of biodiversity in a more comprehensive fashion, addressing all aspects of biodiversity including access to biological resources, biotechnology, and financial resources.³⁷

"Contractual obligations" are the final general source of international law relating to biodiversity. Generally, these agreements are not between different countries (i.e. treaties), but between countries and private enterprises. The two general types of contractual undertakings are "debt for nature swaps," under which a country agrees to engage in conservation measures in return for the forgiveness of some of its foreign debt,³⁸ and "access agreements," under which a country makes available its biological resources to others in exchange for transfers of money (e.g., royalty payments) or technology. The first of these access

34. ASEAN Agreement on the Conservation of Nature and Natural Resources, July 9, 1985, reprinted in MULTILATERAL TREATIES, *supra* note 23, at 343.

35. UNEP Governing Council Decision 14/26: Rationalization of International Conventions on Biological Diversity, U.N. Environment Programme, 14th Sess., Annex I, at 58, U.N. Doc. UNEP/GC.14/26 (1987); Françoise Burhenne-Guilmin & Susan Casey-Lefkowitz, *The Convention on Biological Diversity: A Hard Won Global Achievement*, 3 Y.B. INT'L ENVTL. L. 43, 44-45 (1992).

36. One of the issues that arose both during the negotiation of the treaty and subsequently has been the relationship between the Biodiversity Convention and the other more specific treaties on biodiversity discussed above. This is addressed in article 22 of the Convention. Biodiversity Convention, *supra* note 13, art. 22.

37. Burhenne-Guilmin & Casey-Lefkowitz, *supra* note 35, at 45-46. See also Melinda Chandler, *The Biodiversity Convention: Selected Issues of Interest to the International Lawyer*, 4 COLO. J. INT'L ENVTL. L. & POL'Y 141 (1993); Clare Shine & Palitha T.B. Kohona, *The Convention on Biological Diversity: Bridging the Gap Between Conservation and Development*, 1 REV. EUR. COMMUNITY & INT'L ENVTL. L. 278 (1992).

38. Marianne Lachman, *Debt-for-Nature Swaps: A Case Study in Transactional Negotiation*, 2 J. CONTEMP. LEGAL ISSUES 139 (1989); Catherine A. O'Neill & Cass R. Sunstein, *Economics and the Environment: Trading Debt and Technology for Nature*, 17 COLUM. J. ENVTL. L. 93 (1992).

agreements was an agreement between Merck Pharmaceutical and Costa Rica.³⁹

The various sources of international law relating to biodiversity have a number of common themes. One theme is respect for national sovereignty.⁴⁰ The state in which the biological resources or habitat are found has sovereignty over those resources. To some extent, national sovereignty has had negative implications. For example, before a habitat can be listed under an international convention, the country where the habitat is found must propose the area for listing.⁴¹ Similarly, states have a right to opt out of regulations with which they disagree, and cannot be bound against their will. International action thus depends on the consent of the source state. On the other hand, national sovereignty can also be a tool for conservation, by allowing the source state to charge access fees and thereby recapture some of the value of its resources, which would otherwise be an externality. The Merck-Costa Rica agreement provides an example of how this process might work.⁴²

A second theme of these agreements is that they are facilitative in nature. They generally do not try to coerce, but simply encourage states to conserve biological diversity. This emphasis on facilitation rather than coercion is a corollary of the principle of national sovereignty.

The final theme of the agreements is their flexibility. They allow their lists of species or protected areas to be amended, not through a formal amendment process, involving ratification by each party, but generally by a simple super-majority vote. This allows for the lists to change in response to new information and new problems.⁴³

39. See Edgar J. Asebey & Jill D. Kempenaar, *Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention*, 28 VAND. J. TRANSN'L L. 703, 724-29 (1995). See also Elissa Blum, *Making Biodiversity Conservation Profitable: A Case Study of the Merck/INBio Agreement*, ENVIRONMENT, May 1993, at 16.

40. See, e.g., Biodiversity Convention, *supra* note 13, pmbi., para. 4 & art. 15(1); Ramsar Convention, *supra* note 28, art. 2(3). Cf. Susan H. Bragdon, *National Sovereignty and Global Environmental Responsibility: Can The Tension Be Reconciled for the Conservation of Biological Diversity?*, 33 HARV. INT'L L.J. 381 (1992) (arguing that conservation of biological diversity will require changes in the traditional principle of national sovereignty).

41. See, e.g., Ramsar Convention, *supra* note 28, art. 2(1), (5); World Heritage Convention, *supra* note 29, art. 11(3).

42. Michael D. Coughlin, Jr., Recent Development, *Using the Merck-INBio Agreement to Clarify the Convention on Biological Diversity*, 31 COLUM. J. TRANSNAT'L L. 337, 339 (1993).

43. See, e.g., CITES, *supra* note 6, art. XV.

III. FUTURE DIRECTIONS IN BIODIVERSITY PROTECTION

In trying to further develop international law relating to biodiversity, the international community should not try to impose duties on states and coerce them into undertaking conservation measures. First of all, this is unlikely to work. The international community has few means at its disposal to force states to do things they do not otherwise want to do. Moreover, a coercive approach would not be fair, given the fact that most biodiversity is found in relatively poor countries in the southern hemisphere.⁴⁴ It is unreasonable to expect these countries to spend a lot of money to protect biological resources, the main benefits of which accrue not to them directly but to the international community.⁴⁵ Rather than require states to conserve biological resources, the preferable approach is to give states an incentive to engage in conservation measures, making conservation preferable to the alternatives.⁴⁶

The incentives-based approach has a number of implications for the legal mechanisms that should be developed to protect biological resources.⁴⁷ One implication is that the global community should try to roll back or eliminate international policies that prevent source countries from realizing the full market value of their biological resources. For example, prohibitions on trade in species, or products from species, that have an economic value and that can be utilized in a sustainable way make it impossible for the source country to reap the full value of its biological resources. As a result, the source state has less incentive to conserve. This is the reason many economists argue that, in the long run, the blanket ban on trade in elephant ivory will actually be detrimental to elephant conservation efforts.⁴⁸ Arguably, the blanket ban eliminates one of the main

44. Coughlin, Jr., *supra* note 42, at 339.

45. Regardless of the merits of unfunded mandates imposed by the United States federal government on the individual states of the Union, unfunded mandates imposed by the industrial North on poorer countries in the South in order to protect biological resources are fundamentally unfair.

46. See Jon H. Goldstein, *The Prospects for Using Market Incentives to Conserve Biological Diversity*, 21 ENVTL. L. 985 (1991) (discussing attempts to establish markets in wildlife, and obstacles to doing so).

47. See generally Swanson, *supra* note 7 (discussing the need for these mechanisms to compensate countries that generate global benefits through the conservation of their biological resources).

48. *E.g.*, EDWARD B. BARBIER ET AL., ELEPHANTS, ECONOMICS AND IVORY 132-38 (1990); Randy Simmons & Urs Kreirler, *Save an Elephant-Buy Ivory*, Wash. Post, Oct. 1, 1989, at D3. See also DAVID HARLAND, KILLING GAME: INTERNATIONAL LAW AND THE AFRICAN ELEPHANT 167-75 (1994) (suggesting alternatives allowing for "shadow trade" or trade based on exclusive marketing agreements).

economic incentives (i.e., sale of elephant ivory) for source countries to engage in conservation measures to protect against the loss of elephant habitat.

A second implication is that the international community may need to expand the property rights of countries or individuals to their biological resources. Specifically, the international community may need to create intellectual property rights to the informational value of biodiversity. Current intellectual property law does not recognize any rights to the information contained in natural genetic resources.⁴⁹ If the international community were to create an intellectual property right in these resources, the source countries would have a greater incentive to protect that information.⁵⁰

A final implication is that in some cases Northern industrialized countries will need to make financial payments to source countries in the South. Even if source countries were able to realize the full market values of their biological resources through free trade, access agreements, and recognition of intellectual property rights to genetic resources, these market values are unlikely to provide source countries with a sufficient incentive to take strong conservation measures.⁵¹ Some of the benefits of biological diversity are essentially public goods. Countries or individuals cannot be excluded from these benefits.⁵² Unless the international community forces the beneficiaries of public goods to contribute to conservation measures that help produce those goods, the classic problems of public goods will result—namely, under-production and over-consumption. The Biological Diversity Convention constitutes a preliminary attempt to make countries that benefit from biodiversity resources contribute to efforts to preserve those resources by requiring developed countries to provide new and additional financial resources to enable developing countries to meet their incremental costs of implementing the Convention.⁵³

In conclusion, there is currently a good deal of international law that relates in some fashion to biological diversity. The task is not just to develop the law further, but to consolidate the current law, eliminate inconsistencies, and make the treaties that

49. Jeffrey P. Kushan, *Biodiversity: Opportunities and Obligations*, 28 VAND. J. TRANSN'L L. 755 (1995).

50. Swanson, *supra* note 7, at 256.

51. See Christopher D. Stone, *What to Do About Biodiversity: Property Rights, Public Goods, and the Earth's Biological Riches*, 68 S. CAL. L. REV. 577, 616 (1995).

52. *Id.* at 583.

53. Biodiversity Convention, *supra* note 13, art. 20.

have been developed over the last fifty or sixty years function more harmoniously and effectively.