Penn State Environmental Law Review

Volume 9 | Number 2 Article 2

9-1-2000

Protecting Nature Down Under: An American Law Professor's View of Australia's Implementation of the Convention on Biological Diversity - Laws, Policies, Programs, Institutions and Plans, 1992-2000

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ARTICLE

Protecting Nature "Down Under": An American Law Professor's View of Australia's Implementation of the Convention on Biological Diversity—Laws, Policies, Programs, Institutions and Plans, 1992-2000

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Introduction

"*[B]iological diversity is one of the outstanding issues which humankind has to address in order to survive.*"[1] I thought about this policy imperative as I took a few day's break from my research at The Australian National University's Law School to snorkel on the Great Barrier Reef; before me in the crystal clear water were a profusion of unique life forms: Brain Coral; Honeycomb Coral; a surly-looking, green, Surf Parrotfish; a Sergeant Major Damselfish (with perpendicular streaks from its base to the end of it's pointed fins); an exquisite Pyramid Butterfly fish (with a bleached-white body framed in delicate squash-colored hues of yellow tipped with a tar black head); assorted sea urchins and starfish.

While a vast literature exists on both the international importance of biodiversity conservation[2] and the rhetoric of

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1. Sam Johnston, *The Convention on Biological Diversity*: The Next Phase, 6 REV. OF EUROPEAN COMMUNITY & INT'L. ENVRL. L. 219, 219 (1997) (emphasis added). "Environmental law is subdividing into two major objectives: the prevention of pollution, especially toxic pollutants, and the conservation of biodiversity. The two objectives are, of course, related but they raise different ethical issues and often require different policy instruments." ENVIRONMENTAL PROTECTION: LAW AND POLICY 319 (Frederick R. Anderson, Robert L. Glicksman, A. Dan Tarlock, Daniel R. Mandelker eds., 3d ed., 1999). "Biodiversity conservation is driven by efforts to arrest the loss of ecosystems and the extension of flora and fauna. Biodiversity loss is ultimately a function of human population growth and resource consumption. The more immediate threats have been identified as habitat fragmentation, road building, introduction of exotic species into ecosystems, and global climate change." *Id.*

2. *See generally* by way of a selective sampling of the literature, BIODIVERSITY AND THE LAW (William J. Snape III ed., 1996); EDWARD O. WILSON, THE DIVERSITY OF LIFE (1992) ("Biodiversity is our most valuable but least appreciated resource". Wilson describes the biological dynamics involved in the creation of new species as well as the cataclysmic events that have impacted evolution and diminished global biodiversity over the past 600 million years. Repair of the five previous natural blows to earth, such as meteorite strikes and climatic changes—took 10 to 100 million years to occur. Humans have started the sixth great extinction process. While we do not yet know 90% of all species of biota currently inhabiting the planet, in the small minority of groups of plants and animals that are known, extinction is proceeding at a rapid rate, far in excess of pre-human levels. "A 20% extinction in total global diversity, with all habitats incorporated, is a strong possibility of the present rate if environmental destruction continues." According to Wilson a conservative estimate of the current extinction rate is 27,000 species doomed each year; "each day it is 74, and each hour 3"); NORMAN MYERS, THE PRIMARY SOURCE: TROPICAL FORESTS AND OUR FUTURE (1992); COLIN TUDGE, LAST ANIMALS AT THE ZOO: HOW MASS EXTINCTION CAN BE STOPPED (1992); GEORGE B. SCHALLER, THE LAST PANDA (1993) (discussing biodiversity in China with specific focus on the panda bear); WORLD RESOURCES INSTITUTE, GLOBAL BIODIVERSITY STRATEGY: GUIDELINES FOR ACTION TO SAVE, STUDY AND USE EARTH'S BIOTIC WEALTH SUSTAINABLY AND EQUITABLY (1992);

international diplomacy involving the lofty visions and prognoses for the 1992 Convention on Biological Diversity (the "Convention" or the "CBD"),[3] relatively little scholarly attention has been

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ELLIOTT A. NORSE, GLOBAL MARINE BIOLOGICAL DIVERSITY: A STRATEGY FOR BUILDING CONSERVATION INTO DECISION MAKING (1993); SAVING NATURE'S LEGACY: PROTECTING AND RESTORING BIODIVERSITY (REED F. NOSS & ALLEN Y. COOPERRIDER eds., 1994); ENVIRONMENTAL POLICY AND BIODIVERSITY (R. EDWARD GRUMBINE, ed. 1994); CHARLES C. MANN & MARK L. PLUMMER, NOAH'S CHOICE: THE FUTURE OF ENDANGERED SPECIES (1995); BIODIVERSITY: CULTURE, CONSERVATION AND ECODEVELOPMENT (MARGERY L. OLDFIELD & JANIS B. ALCORN, eds., 1991); YVONNE BASKIN, THE WORK OF NATURE: HOW THE DIVERSITY OF LIFE SUSTAINS US (1997); NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (GRETCHEN C. DAILY, ed., 1997); .Daniel M. Bodansky, *International Law and the Protection of Biological Diversity,* 28 VAND. J. TRANSNAT'L. LAW 623 (1995); Neil Gunningham & Mike D. Young, *Toward Optimal Environmental Policy: The Case of Biodiversity Conservation,* 24 ECOL. L. Q. 243 (1997); Holly Doremus, *Comment, Patching the Ark: Improving Legal Protection of Biological Diversity,* 18 ECOL. L. Q. 265 (1991).

3. *See generally,* Convention on Biological Diversity, U. N. Doc. DPI/130/7, June 2, 1992, *reprinted in* 31 I.L.M. 818 (1992). According to the Preamble:

> The Parties to the Convention:
> Conscious of the intrinsic value of biological diversity and the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components,
> Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere,
> Affirming that the conservation of biological diversity is a common concern of humankind,
> Reaffirming that states have sovereign rights over their own biological resources,
> Reaffirming also that States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner,
> * * *
> Noting that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at [the] source,
> Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat,
> * * *
> Aware that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic resources and technologies are essential,
> * * *
> Desiring to enhance and compliment existing international arrangements for the conservation of biological diversity and sustainable use of its components, and
> Determined to conserve and sustainably use biological diversity for the benefit of present and future generations.

Id.

> Article I of the Convention states:
> The objectives of this Convention, to be pursued in accordance with its

devoted to a more prosaic, but extremely important, concern: The

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> relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Id.

According to a recent treatise on international environmental law and policy: The objectives of the Convention [on Biological Diversity] found in Article I clearly reflect a balance between the North and South, providing something for everyone. The North received their objective of biodiversity conservation, but this objective is balanced with the South's emphasis on the sustainable use of biological resources, benefit-sharing with respect to biotechnologies, and new financial support. Article I affirms that these are co-equal and integrated goals. To meet these goals, the Conservation adopts three broad strategies: promoting biodiversity conservation and sustainable use through national law and policy, creating an international institutional structure and policy framework to support implementation and achievement of the Convention's three objectives; and establishing a set of principles for the international exchange of genetic resources and the biotechnologies derived from them.

David Hunter, James Salzman & Durwood Zaelke, Int'l. Envtl. L. and Pol'y 960 (1998) (hereinafter International Environmental Law & Policy). *See also id.* at 956-58 (the negotiating process leading up to the signing of the Convention in 1992); David Downes, *New Diplomacy for the Biodiversity Trade: Biodiversity, Biotechnology, and Intellectual Property in the Convention on Biological Diversity,* 4 Touro J. Transnat'l L. 1 (1993) (discussing "important principles" emanating from the Convention including "genetic resources access and benefit sharing," and "technology transfer" of biotechnology derived from genetic resources); Ashish Kothari, *Beyond the Biodiversity Convention: A View from India,* Biodiplomacy: Genetic Resources and International Relations 67-72 (V. Sanchez & C. Juma, eds. 1994); THE WORLD CONSERVATION UNION & WORLD RESOURCES INSTITUTE, REPORT OF THE FIFTH GLOBAL BIODIVERSITY FORUM (1996) (discussing broad theoretical issues involving investing in biodiversity, integrating biodiversity into land-use planning and management, agricultural biodiversity, and biodiversity and indigenous people); Christopher D. Stone, *Stemming the Loss of Biological Diversity: The Institutional and Ethical Contours,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 231 (1997); Lee A. Kimball, *Institutional Linkages Between the Convention on Biological Diversity and Other International Conventions,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 239 (1997); R. V. Anuradha, *In Search of Knowledge and Resources, Who Sows?, Who Reaps?,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 1997; Alfonso Ascenio, *The Transboundary Movement of Living Modified Organisms: Issues Relating to Liability and Compensation,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 293 (1997); Antonio Rengifo, *Protection of Marine Biodiversity: A New Generation of Fisheries Agreements,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 313 (1997); Charlotte De Fontaubert, *Biodiversity in the Seas: Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, 10 GEO, INT'L. ENVTL. L. REV. 753 (1998); R. David Simpson, *The Price of Biodiversity,* 15 ISSUES SCI. & TECH. 65 (1999); Jessica Bennet Wilkinson, *The State Role in Biodiversity Conservation,* 15 ISSUES SCI. & TECH. 71 (1999); INTERNATIONAL LAW AND THE CONSERVATION OF BIOLOGICAL DIVERSITY (Michael Bowman & Catherine Redgwell, eds. 1996); TIMOTHY SWANSON, GLOBAL ACTION FOR BIODIVERSITY (1997).

specifics of how individual nation-states are (or are not) *implementing* the Convention.[4] Moreover, in a related and perhaps more important way, insufficient scrutiny has been given to examining the nitty-gritty law and policy details of how those few countries that have national sovereignty over the planet's biological "crown jewels"—those "outstanding examples of the Earth's diverse terrestrial, freshwater and marine habitats . . . where the

4. *But see Johnson, supra* note 1 (discussing the need for nations to prepare effective national reports on how they are implementing the Convention, the need for capacity building to help nations implement the Convention, and the need for accurate information for decision-making in implementing the Convention); Lyle Glowka, *Emerging Legislative Approaches to Implement Article 15 of the Convention on Biological Diversity,* 6 REV. OF EUROPEAN COM. & INT'L. ENVTL. L. 249 (1997) (discusses legislative implementation strategies of various nations in realizing the specific goals of Article 15 of the Convention, which deals with access to genetic resources; analysis of specific country policies including the Andean Pact States of Bolivia, Columbia, Equador, Peru and Venezuela; Argentina, Australia (at the Commonwealth level and in the States of Western Australia and Queensland), Brazil, Cameroon, Costa Rica, Eritea, Ethiopia, Fiji, Gambia, Ghana, India, Indonesia, Kenya, Laos, Lesotho, Malawi, Malaysia, Mexico, Mozambique, Nigeria, Philippines, Seychelles, South Africa, South Korea and Tanzania); Wayne Tamangaro King & Janet G. Maki, *The Convention on Biological Diversity: In-Situ Conservation in the Cook Islands,* 6 REV. OF EUROPEAN COM. & INT'L ENVT'L. L. 304 (1997) (discusses how the Cook Islands have addressed its obligations under Article 20 of the Convention regarding in-situ conservation of biological diversity).

The problem of the specific implementation of the Convention on Biological Diversity and compliance by nation-states with specific Convention provisions is a subset of the more general question of nation-state compliance with international treaties. *See generally* ENGAGING COUNTRIES: STRENGTHENING COMPLIANCE WITH INTERNATIONAL ENVIRONMENTAL ACCORDS (Edith Brown Weiss & Harold K. Jacobson, eds., 1998) [hereinafter ENGAGING COUNTRIES] (discussing such topics as how compliance happens and does not happen domestically; environmental compliance in China; environmental compliance in India; environmental compliance in Cameroon, environmental compliance in Brazil; and designing strategies to engage countries); THE IMPLEMENTATION AND EFFECTIVENESS OF INTERNATIONAL ENVIRONMENTAL COMMITMENTS: THEORY AND PRACTICE (David G. Victor, Kal Raustiala & Eugene B. Skolnikoff, eds. 1998) [hereinafter IMPLEMENTATION & EFFECTIVENESS] (the focus of this book is on implementation: the process that turns international environmental commitments into action at both the domestic and international levels. The various authors all agree, in separate chapters, that implementation is the key to effectiveness because international environmental commitment's aim to constrain not just governments but a wide array of actors, including individuals, firms, and agencies whose behavior does not change simply because governments have made international commitments); Edith Brown Weiss, *Understanding Compliance With International Environmental Agreements: The Baker's Dozen Myths,* 32 U. RICH. L. REV. 1555 (1999) (discusses "an international legal system that is in a process of transition from a state-centered, hierarchical, and static structure to one that consists of networks of actors that is non-hierarchical and dynamic"); Joel B. Eisen, *From Stockholm to Kyoto and Back to the United States: International Environmental Law's Effect on Domestic Law,* 32 U. RICH. L. REV. 1435 (1999).

planet's biota is most distinctive and rich, where its loss would be most severely felt, and where we must fight the hardest for conservation"[5] are protecting their (and humankind's) treasures.[6]

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5. FRANS LANTING, GALEN ROWELL & DAVID DOUBLIET, LIVING PLANET, PRESERVING EDENS OF THE EARTH 26 (1999). Indeed, this book discusses one of the most enlightened and synoptic private sector initiatives to preserve and protect the most important biological resources of the planet. As explained by the authors:

> With a new millennium at hand, World Wildlife Fund (WWF) has launched its Living Planet Campaign to safeguard the extraordinary abundance and diversity of life on this planet. This campaign will focus on preserving certain animal species in imminent danger of disappearing, such as tigers, rhinos, giant pandas, and whales, as well as seeking solutions to global threats such as degradation of forests, overfishing, climate change, and toxic pollution. The shining centerpiece of the Living Planet Campaign is the Global 200, a landmark effort to protect those places on Earth with the greatest biological wealth.
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> * * *
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> The concept is simple, yet profound: By conserving the broadest variety of the world's habitats, we conserve the broadest variety of the world's species and most endangered wildlife, as well as higher expressions of life —whole communities and ecosystems. Regardless of where they are located, Global 200 ecoregions are all unique expressions of biological diversity, each with its own highly distinctive species, ecological processes, and evolutionary phenomena.
>
> Consider, for example, the dry tropical forests on the Texas-sized island of Madagascar. Millennia of isolation from the African continent have given the island thousands of species found nowhere else on Earth, including some thirty species of lemur, two-thirds of the world's chameleons, and the angonoka tortoise, one of the world's most threatened reptiles. An astonishing 98 percent of Madagascar's land mammals exist nowhere else on Earth, and many of them inhabit the forests in the western part of the island—forests rapidly being depleted by an expanding human population and logging for fuel wood. Already, thousands of acres have been cleared for agriculture or pasture, and unchecked burning of the surrounding savannas is eating away at the few remaining forest fragments.
>
> * * *
>
> To protect these and other vast ecological treasures, WWF had to formulate a perspective large enough to see the big picture—a picture that presents enormous challenges: How does one balance peoples' livelihood with the need to conserve wildlife and wildlands? How does one integrate social and political concerns so that conservation progress will endure? And how does one forge cooperative alliances between governments, across political boundaries?

Id. at 26-27. *Cf.* Barton H. Thompson, Jr., *People or Prairie Chickens: The Uncertain Search for Optimal Biodiversity,* 51 STAN. L. REV. 1127 (1999).

6. A developing body of international law recognizes the global significance of various regions controlled by individual nation states. *See generally,* INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 1067-75 (discussing the Convention for the Protection of the World Cultural and Natural Heritage, citing the Preamble that states "parts of the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world

This Article (the fruit of a sabbatical pilgrimage to "the Land Down Under" by an American law professor[7]) undertakes a broad evaluation of Australian biodiversity law and policy and offers a few proposals for reform. Part I sets the stage by providing an overview of the history and background of the 1992 Convention on Biological Diversity with brief mention of the baseline of related international wildlife conservation and habitat protection undertakings in place by the early 1990's.[8] Part II examines the exquisite and unique biodiversity of the island continent-nation/state of Australia as it exists today.[9] Part III reviews Australian laws, policies, programs, institutions and plans that have attempted, directly or indirectly, to implement the Convention since its inception in 1992.[10] I shall focus my discussion on initiatives at the Australian federal level, with only passing reference to the most significant state and territorial measures. A vital part of my discussion in this Part will be a brief examination of germane

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heritage of mankind as a whole"); *id.* at 1075-1107 (discussing various treaties protecting the polar regions of Antarctica and the Arctic); *id.* at 1107-1146 (discussing international protection of forests).

7. I view my voyage to Australia as a Visiting Professor and Scholar at The Australian National University's Environmental Law Center in Canberra during the spring semester of 2000 to be the realization of a life-long dream to visit the "Land Down Under" and to be part of a sacred journey. *See generally* PHIL COUSINEAU, THE ART OF PILGRIMAGE: THE SEEKER'S GUIDE TO MAKING TRAVELS SACRED (1998) (discussing such topics as "the longing," "the call," "departure," "the pilgrim's way," "the labyrinth," "arrival," and "bringing back the boon"). As explained by Huston Smith in his excellent *Foreword to The Art of Pilgrimage*:

> The object of pilgrimage is not rest and recreation—to get away from it all. To set out on a pilgrimage is to throw down a challenge to every day life. Nothing matters now but this adventure. Travelers jostle each other to board the train where they crowd together for a journey that may last several days. After that there is a stony road to climb on foot—a rough, wild path in a landscape, where everything is new. The naked glitter of the sacred mountains stirs the imagination; the adventure of self-conquest has begun. Specifics may differ, but the substance is always the same.
>
> *Travel brings a special kind of wisdom if one is open to it.* At home or abroad, things of the world pull us toward them with such gravitational force that, if we are not alert our entire lives, we can be sucked into their outwardness. Attentive travel helps us to see this, because the continually changing outward scene helps us to see through the world's pretensions. With its phantasmagoric, kaleidoscopic characters laid bare, we see it for what it truly is—perpetually perishing *maya*—and the world loses its wager. We can understand how perpetual wandering can be a spiritual vocations [sic.], as with dedicated pilgrims and *sannyasins*.

Id. at xi (emphasis added).

8. *See infra* notes 13-29 and accompanying text.

9. *See infra* notes 30-87 and accompanying text.

10. *See infra* notes 88-516 and accompanying text.

provisions of the recent landmark Commonwealth (federal) legislation enacted by the Parliament of Australia, entitled The Environment Protection and Biodiversity Conservation Act, 1999.[11] Finally, Part IV proposes some specific improvements—from the friendly perspective of an American law professor—to further enhance Australia's already impressive progress and commitment to implementing the terms of the Convention on Biological Diversity.[12]

I. The Convention on Biological Diversity: History and Background

During the early 1980's, a pioneering group of scientists and independent environmental organizations began to seriously advance the idea of a comprehensive global treaty to preserve and protect biological diversity.[13] An intellectual and symbolic antecedent to the 1992 CBD was the 1982 passage, by the United Nations General Assembly, of the World Charter on Nature—A Resolution of the General Assembly.[14] The International Union for the Conservation of Nature (IUCN)—An Independent Non-Governmental Organization (NGO) which had been instrumental in pushing for passage of the World Charter on Nature[15]—"launched a second initiative from 1984 to 1989 when it developed and revised a set of draft articles to be included in a proposed biodiversity treaty."[16] While IUCN's draft was rejected as the basis for international negotiation between the nation-states, IUCN's labors were significant in "sparking international attention on and building supporting for biodiversity conservation."[17]

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11. *See infra* notes 434-516 and accompanying text.
12. *See infra* notes 517-544 and accompanying text.
13. INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 956.
14. *Id.* The International Union for the Conservation of Nature (IUCN) and the nation of Zaire led the effort to pass the World Charter on Nature, UNGARES 37/7; 22 I.L.M. 455 (1983). The World Charter on Nature was passed "partly in honor of the 10-year anniversary of the Stockholm Conference" on the International Environment. INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 956. Indeed,

> The World Charter remains one of the most progressive and innovative international statements of humanity's obligations to the natural world. Despite its mandatory language, however, the World Charter is a soft law instrument with no independent binding force. Although the World Charter did help to shape future negotiations, much of its vision has not carried through to more recent instruments.

Id. at 956-57.
15. *See supra* note 14 and accompanying text.
16. INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 957.
17. *Id.*

The United Nations Environmental Program (UNEP), starting in 1987, convened a working group to determine "the desirability and possible form of an umbrella convention to rationalize current activities in [the] field [of international wildlife and habitat conventions] and to address other areas which might fall under such a convention".[18] While a comprehensive umbrella convention proved to be politically infeasible, the UNEP "Working Group did support the need for a new treaty on biodiversity conservation that reflected existing conventions,"[19] but was more comprehensive and integrated.

Formal international negotiation for a comprehensive and integrated global biodiversity convention commenced in 1991 when the UNEP Working Group[20] was organizationally transformed into the Intergovernmental Negotiating Committee for a Convention on Biological Diversity[21] which, in turn, "folded into the preparations for the UNCED [the United Nations Conference on Environment and Development], with the hope that the Convention could be opened for signature at Rio [de Janeiro] in June, 1982."[22] This evolutionary dynamic, with a focus on "getting to yes"[23] before what was to be the most important international conference on the global environment to date, led to two negotiating effects: "On the one hand, it led countries to make compromises and forced an agreement sooner than otherwise would have been the case. On the other hand, negotiations were rushed resulting in a final text [of the Convention on Biological Diversity] that is sometimes contradictory and often unclear."[24]

On June 2, 1992, the Convention was signed by almost every diplomatic country representative attending the UNCED, entering into force eighteen months later on December 29, 1993.[25] "The major hold-out regarding the Biodiversity Convention has been the United States."[26]

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18. *Id.* (citing UNEP G.C. Res. 14/26 (1987)) (internal quotation marks omitted).
19. *Id.*
20. *See supra* notes 18-19 and accompanying text.
21. INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 957.
22. *Id.*
23. *See generally* ROGER FISHER AND WILLIAM URY, GETTING TO YES (1981).
24. INTERNATIONAL ENVIRONMENTAL LAW & POLICY, *supra* note 3, at 957.
25. *Id.*
26. *Id.* As noted in an authoritative text on international environmental law:
> Even though the United States had registered no complaints with the text as reported out of the May, 1992 [preparatory draft] meeting, EPA Administrator Reilly announced on arrival at UNCED that the United States would not sign the agreement. Initially Reilly identified on-going

The text of the Convention on Biological Diversity consists of 42 articles[27] and two annexes.[28] Article 26 requires each

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disagreement over the financial mechanism as the reason for US opposition, but later the United States also objected to the Convention's treatment of intellectual property rights, the requirements to share benefits and technology gained from biological resources, and even the Convention's limited requirements for domestic conservation.

The failure to sign the Convention proved to be a public relations nightmare for the United States and then-President George Bush. To make matters worse, a memorandum written by Administrator Reilly was leaked to the press by someone close to the President in what was viewed as a deliberate move to undermine the EPA Administrator's negotiating position in Rio. The Reilly memorandum recommended that the United States agree to sign the Convention in return for some modest changes that could be negotiated at UNCED. The President publicly rejected the EPA recommendation, and from that point forward the United States was essentially isolated at the Rio Conference. The United States would be the only industrialized country not to sign the Biodiversity Convention at Rio.

President Clinton signed the Convention soon after entering office, but the [U.S.] Senate has refused to give its advice and consent to ratification, in spite of the support of most pharmaceutical and biotechnology companies as well as environmental organizations.

Id. at 957-58.

27. *See supra* note 3 and accompanying text, for the text of the Convention's Preamble and Article I, dealing with Objectives. The complete text of the substantive provisions of the Convention (in contradistinction to introductory, definitional, jurisdictional, procedural and organizational provisions of Articles 1-5 and 21-42) is as follows:

Article 6: General Measures for Conservation and Sustainable Use

Each Contracting Party shall, in accordance with its particular conditions and capabilities:

(a) Develop national strategies, plans or programs for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programs which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and

(b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies.

Article 7: Identification and Monitoring

Each Contracting Party shall, as far as possible and as appropriate, in particular for the purposes of Articles 8 to 10:

(a) Identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories set down in Annex I;

(b) Monitor, through sampling and other techniques, the components of biological diversity identified pursuant to subparagraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;

(c) Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and

other techniques; and
(d) Maintain and organize, by any mechanism, data derived from identification and monitoring activities pursuant to subparagraphs (a), (b) and (c) above.

Article 8: In-situ Conservation

Each Contracting Party shall, as far as possible and as appropriate:
(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;
(b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;
(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
(d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
(e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;
(f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies;
(g) Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health;
(h) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species;
(i) Endeavor to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components;
(j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;
(k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;
(l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and
(m) Cooperate in providing financial and other support for in-situ conservation outlined in subparagraphs (a) to (l) above, particularly to developing countries.

Article 9: Ex-situ Conservation

Each contracting Party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing in-situ measures:
(a) Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components;

(b) Establish and maintain facilities for ex-situ conservation of and research on plants, animals and microorganisms, preferably in the country of origin of genetic resources;
(c) Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions;
(d) Regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations of species, except where special temporary ex-situ measures are required under subparagraph (c) above; and
(e) Cooperate in providing financial and other support for ex-situ conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of ex-situ conservation facilities in developing countries.

Article 10: Sustainable Use of Components of Biological Diversity

Each contracting party shall, as far as possible and as appropriate:
(a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;
(b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;
(c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;
(d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and
(e) Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.

Article 11: Incentive Measures

Each contracting party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

Article 12: Research and Training

The contracting Parties, taking into account the special needs of developing countries, shall:
(a) Establish and maintain programs for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of developing countries;
(b) promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, inter alia, in accordance with decisions of the Conference of the Parties taken into consequence of recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice; and
(c) In keeping with the provisions of Articles 16, 18 and 20, promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.

Article 13: Public Education and Awareness

The Contracting Parties shall:
(a) Promote and encourage understanding of the importance of, and the

measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programs; and

(b) Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programs, with respect to conservation and sustainable use of biological diversity.

Article 14: Impact Assessment and Minimizing Adverse Impacts

1. Each Contracting Party, as far as possible and as appropriate, shall:

(a) Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures;

(b) Introduce appropriate arrangements to ensure that the environmental consequences of its programs and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account;

(c) Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate;

(d) In the case of imminent or grave danger or damage, originating under its jurisdiction of other States or in areas beyond the limits of national jurisdiction, notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage; and

(e) Promote national arrangements for emergency responses to activities or events, whether caused naturally or otherwise, which present a grave and imminent danger to biological diversity and encourage international cooperation to supplement such national efforts and, where appropriate and agreed by the States or regional economic integration organizations concerned, to establish joint contingency plans.

2. The Conference of the Parties shall examine, on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter.

Article 15: Access to Genetic Resources

1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

2. Each Contracting Party shall endeavor to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.

3. For the purposes of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.

4. Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.

5. Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.
6. Each Contracting Party shall endeavor to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.
7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.

Article 16: Access to and Transfer of Technology

1. Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.
2. Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favorable terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights. The application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.
3. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, through the provisions of Articles 20 and 21 and in accordance with international law and consistent with paragraphs 4 and 5 below.
4. Each Contacting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries and in this regard shall abide by the obligations included in paragraphs 1, 2 and 3 above.
5. The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

Article 17: Exchange of Information

1. The Contracting Parties shall facilitate the exchange of information,

from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.

2. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programs, specialized knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information.

Article 18: Technical and Scientific Cooperation

1. The Contracting Parties shall promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity, where necessary, through the appropriate international and national institutions.

2. Each Contracting Party shall promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, in implementing this Convention, inter alia, through the development and implementation of national policies. In promoting such cooperation, special attention should be given to the development and strengthening of national capabilities, by means of human resources development and institution building.

3. The Conference of the Parties, at its first meeting, shall determine how to establish a clearing-house mechanism to promote and facilitate technical and scientific cooperation.

4. The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention. For this purpose, the Contracting Parties shall also promote cooperation in the training of personnel and exchange of experts.

5. The Contracting Parties shall, subject to mutual agreement, promote the establishment of joint research programs and joint ventures for the development of technologies relevant to the objectives of this Convention.

Article 19: Handling of Biotechnology and Distribution of its Benefits

1. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, to provide for the effective participation in biotechnological research activities by those Contracting Parties, especially developing countries, which provide the genetic resources for such research, and where feasible in such Contracting Parties.

2. Each Contracting Party shall take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties, especially developing countries, to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties. Such access shall be on mutually agreed terms.

3. The Parties shall consider the need for and modalities of a protocol setting out appropriate procedure, including in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.

4. Each Contracting Party shall, directly or by requiring any natural or legal person under its jurisdiction providing the organisms referred to in paragraph 3 above, provide any available information about the use and

safety regulations required by that Contracting Party in handling such organisms, as well as any available information on the potential adverse impact of the specific organisms concerned to the Contracting Party into which those organisms are to be introduced.

Article 20: Financial Resources

1. Each Contracting Party undertakes to provide, in accordance with its capabilities, financial support and incentives in respect of those national activities which are intended to achieve the objectives of this Convention, in accordance with its national plans, priorities and programs.

2. The developed country Parties shall provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfill the obligations of this Convention and to benefit from its provisions and which costs are agreed between a developing country Party and the institutional structure referred to in Article 21, in accordance with policy, strategy, program priorities and eligibility criteria and an indicative list of incremental costs established by the Conferences of the Parties. Other Parties, including countries undergoing the process of transition to a market economy, may voluntarily assume the obligations of the developed country Parties. For the purpose of this Article, the Conference of the Parties, shall at its first meeting establish a list of developed country Parties and other Parties which voluntarily assume the obligations of the developed country Parties. The Conference of the Parties shall periodically review and if necessary amend the list. Contributions from other countries and sources on a voluntary basis would also be encouraged. The implementation of these commitments shall take into account the need for adequacy, predictability and timely flow of funds and the importance of burden-sharing among the contributing Parties included in the list.

3. The developed country Parties may also provide, and developing country Parties avail themselves of, financial resources related to the implementation of this Convention through bilateral, regional and other multinational channels.

4. The extent to which developing country Parties will effectively implement their commitments under this Convention will depend on the effective implementation by developed country Parties of their commitments under this Convention related to financial resources and transfer of technology and will take fully into account the fact that economic and social development and eradication of poverty are the first and overriding priorities of the developing country Parties.

5. The Parties shall take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology.

6. The Contracting Parties shall also take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States.

7. Consideration shall also be given to the special situation of developing countries, including those that are most environmentally vulnerable, such as those with arid and semi-arid zones, coastal and mountainous areas.

DAVID HUNTER, JAMES SALZMAN, DURWOOD ZAELKE, INTERNATIONAL ENVIRONMENTAL LAW & POLICY-TREATY SUPPLEMENT (hereinafter TREATY SUPPLEMENT) at 275-80.

28. Annex I of the Convention is termed "Identification and Monitoring;" this

"contracting party" to provide "at intervals to be determined by the Conference of the Parties [COP] . . . reports [to the COP] on measures which it has taken" in implementing the "provisions of the Convention and their effectiveness in meeting the objectives of [the] Convention."[29]

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annex cross-references the obligations of each contracting party, under Article 7, to identify and monitor "components of biological diversity important for its conservation and sustainable use." TREATY SUPPLEMENT, *supra* note 27, at 275 & 286. Annex I lays out the following "components of biological diversity that require identification and monitoring by nation-states":

> 1. Ecosystems and habitats: containing high diversity, large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or, which are representative, unique or associated with key evolutionary or other biological processes;
> 2. Species and communities which are: threatened; wild relatives of domesticated or cultivated species; of medicinal, agricultural or other economic value; or social, scientific or cultural importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and
> 3. Described genomes and genes of social, scientific or economic importance.

Id. at 286. Annex II of the Convention sets forth detailed procedures for international arbitration and conciliation of disputes arising under the Convention. *Id.* at 287-89.

29. *Id.* at 282. The importance of National Reports under Article 26 of the Convention is emphasized in a recent scholarly article, which states in pertinent part:

> Article 26 of the Convention calls upon each Party to present to the Conference of the Parties reports on measures which it has taken for the implementation of the provisions of the Convention and their effectiveness in meeting the objectives of the Convention. The second meeting of the COP decided that the first national reports by Parties will focus in so far as possible on the measures taken for the implementation of Article 6 CBD, "General Measures for Conservation and Sustainable Use," as well as the information available in national country studies on biological diversity. Guidelines for national reporting on the implementation of Article 6 request a structure consisting of an executive summary, an introduction, background, goals and objectives, the strategy chosen, partners involved, action for implementation, budget, monitoring and evaluation and sharing of national experience. The first national reports are due to be submitted in time for the fourth meeting of the COP which will take place in May 1998. At this meeting, the COP will determine the intervals and form of subsequent national reports based on the experience of Parties in preparing their first national reports.
>
> National reports will be the main way in which the Convention will be able to demonstrate concrete progress toward its objectives, which in turn will be crucial if it is to retain its standing as a major international treaty. National reports in any case have an important part to play, given the responsibility for implementing the Convention largely rests with the Parties themselves. The importance of this element of the Convention has not escaped the COP and the other institutions of the Convention. For example, mindful of the resource limitations on many developing

II. The Exquisite But Threatened Nature of Australian Biodiversity

"Australia has an immense number of unique and unusual plants, animals and micro-organisms."[30] Moreover, "[m]ore than one million species (including microorganisms) are thought to live in Australia, but less than fifteen percent have been formally described."[31] To comprehend Australian biodiversity, at the outset of the 21st century, it is instructive to consider three related levels of biodiversity: (A) ecosystem diversity, (B) species diversity and (C) genetic diversity.

A. Australian Ecosystem Diversity.

Australia consists, by one account, of 80 terrestrial "biogeographic regions representing major environmental units."[32] These regions:

> vary in size from 2,372 [square kilometers] (Furneaux in Bass Strait) to 423,751 [square kilometers] (Great Victoria Desert). The smaller regions occur within 300 [kilometers] of the coastline, have relatively high rainfall in the growing season, and, in many cases, are mountainous. Of the largest [biogeographic] regions, most are in arid or semi-arid areas with broad climatic gradients and little topographic relief. The regions can be progressively subdivided into smaller units based on, for example, major vegetation structural types, vegetation communities, local topographic variations in communities and, at extremely fine scales, water-filled tree hollows and small sections of the soil surface.... Any of these scales of ecosystems can be characterized in terms of distinctive biological and physical patterns and processes.[33]

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country Parties, the second meeting of the COP instructed the financial mechanism to make available financial resources to assist in the preparation of national reports. In response, the financial mechanism developed a fast-track procedure for what has become known as 'enabling activities' under which over 90 developing countries have received financial assistance to develop a national biodiversity strategy and report for COP 4.

JOHNSTON, *supra* note 1, at 227 (footnotes omitted).

30. AUSTRALIAN STATE OF THE ENVIRONMENT ADVISORY COUNCIL, STATE OF THE ENVIRONMENT AUSTRALIA, ISBN 0 643 05830 3, (1996) available at http://www .environment.giv.au/soe/soe96/soe_acrobat.html at 4-4 (last visited Oct. 10, 2000) [hereinafter AUSTRALIAN STATE OF THE ENVIRONMENT REPORT].

31. *Id.*

32. *Id.* at 4-23.

33. *Id.* The north coast of Australia's New South Wales provides an

Moreover, Australia also harbors what one source describes as 19 marine bioregions (such as the Great Barrier Reef and the Tasmanian Coast for instance),[34] which also can be defined at many different spatial scales. For example, the Gulf of Carpentaria, in the north central part of the country, "is a large marine region with much internal variation in physical and biological characteristics." Specifically, "[t]he eastern side contains large estuaries with extensive mangroves, fine sediments, high turbidity and lowered salinity in the monsoon season," while [o]n the western side, much of the coastline is rocky, sediments are mainly coarse, the water is relatively clear and extensive beds of seagrasses grow in sheltered areas."[35]

Specific data exists for each one of Australia's biogeographic terrestrial regions regarding significant disturbances of the land surface from various human activities (like settlements, forestry and farming) compared to native vegetation,[36] and for each marine

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illustration of potentially different ecosystems by use of what Sheila Peck calls "biological scaling" whereby "[d]ifferent levels of biological organization are inherent in any landscape, and each has characteristic [biological] components, patterns and processes." SHEILA PECK, PLANNING FOR BIODIVERSITY 11-12 (1998). Thus, the New South Wales north coast can be:

> subdivided into six major vegetation [ecosystem] structural units . . .— rainforest, most open forest, dry open forest, woodland and sclerophyll complexes on the coast and tablelands. Each of these units can be considered an ecosystem at a finer scale still, forest types [for example] . . . can be distinguished within the major vegetation types. So rainforest in the Dorrigo area can be subdivided into dry, warm temperate, cool temperate and subtropical and the open forest into many more types. [Indeed] [e]ach of these forest types can be characterized by particular environmental variables and physical processes and distinctive flora and fauna. At another level of detail, the ground surface of any one forest type can be mapped as a mosaic of surfaces . . . including bases of trees, accumulated bark nearby, bare rock, disturbed bare soil, litter of leaves and small branches and fallen logs. The different surfaces also have distinctive physical and biological characteristics and large populations of macro-invertebrates and micro-organisms.

AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at 4-23. Another source identifies "five major faunal divisions" in Australia today: (1) "*Tumbunan zone* (subtropical rainforest)," (2) "*Irian zone* (tropical rainforests, vine thickets and mangroves)," (3) "*Torresian zone* (tropical eucalypt woodlands)," (4) "*Bassian zone* (temperate eucalypt forests and heaths)," and (5) "*Eyrean zone* (arid acacia-chnopod-hummock grassland)." THE CAMBRIDGE UNIVERSITY ENCYCLOPEDIA OF AUSTRALIA 30-31 (Ed. Susan Banbrick, 1994) (original emphasis).

34. *See generally* AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at 4-24.

35. *Id.* at 4-25 to 4-26. "Further subdivision of these large areas is also possible using biological and physical data." *Id.* at 4-26.

36. *Id.* at 4-25. Moreover, Australian ecologists have identified eleven

biogeographic region regarding impacts of fishing and industrial activities.[37] A more synoptic perspective of ecosystem diversity can be obtained by considering the change in some of Australia's major ecosystems from the time of first English settlement in 1788 up to 1995. From this perspective the following major terrestrial and marine ecosystem changes have occurred in Australia over its approximate two centuries of Western habitation:

- Seagrass beds in temperate areas have declined significantly.
- About 43 percent of forests have been cleared.
- More than 60 percent of coastal wetlands in southern and eastern Australia have been lost.
- Nearly 90 percent of temperate woodlands have been cleared.
- More than 99 percent of temperate lowland grasses in south-eastern Australian have been lost.
- About 75 percent of rainforests have been cleared.[38]

Despite the substantial decline in key ecosystems, by another measurement, Australia has a number of remarkable "special areas" of diverse biological resources. A recent government study points out that "[t]he rainforest of north Queensland, the South West Botanical Province of Western Australia and the Alps of southeast Australia form diverse assemblages of terrestrial habitats that are important for the extremely rich and endemic biotic communities that they support."[39] The study also describes the current diversity of Australia's freshwater areas:

> The flora and fauna of Australia's inland waters have had to adapt to unpredictable rainfall, seasonal variation in evaporation rates, and high levels of salinity. Overall there is a scarcity of aquatic habitats, particularly in the arid and semi-arid areas. Despite this, Australia has a variety of wetland habitats provided by areas such as the Kakadu wetlands area in northern Australia and the lower Cooper wetlands, including the Koongie

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important "threatening processes" that potentially impact terrestrial ecosystem diversity: agriculture, clearing, ferals, fire, forestry, grazing, mining, salinization, tourism, urbanism and weeds. *Id.* at 4-28.

37. *Id.* at 4-24, 4-29.

38. *Id.* at 4-26.

39. AUSTRALIAN DEPARTMENT OF THE ENVIRONMENT, SPORT AND TERRITORIES, AUSTRALIA'S BIODIVERSITY: AN OVERVIEW OF SELECTED SIGNIFICANT COMPONENTS (Biodiversity Series, Paper No. 2, Biodiversity Unit 9 1994) [hereinafter AUSTRALIA'S BIODIVERSITY] (original italics eliminated). The report goes on to assert that "[t]he rainforests contain one of the highest concentrations of primitive plants in the world and harbor important links in the history of plant evolution." *Id.*

> Lakes, in the center. These wetlands include diverse habitats that vary in the wet-dry cycle, and the flora and fauna inhabiting them are notable for both their diversity and the large fluctuations of abundance that can occur.[40]

Other "special areas" highlighted in the government report as noteworthy ecosystems in Australia include the following extended analysis:

> The gorges and caves of central Australia, the coastal mangroves, the granite outcrops of the southwest of the continent and the mound springs of the Great Artesian Basin all represent specialized habitats where plants and animals have developed unique characteristics and adaptations.
>
> Australia has a number of special marine habitats that are worthy of particular mention. The most well-known and spectacular of these is the Great Barrier Reef, which covers 350,000 square kilometers off the tropical northeastern coastline and has an incredibly rich biodiversity associated with coral reefs and islands.
>
> The giant kelp forests of Tasmania and Victoria and the seagrass meadows found in many of [the] coastal waters provide important habitats for many marine species. Western Australian seagrass meadows, which collectively [contain] as much area as all of the rainforests of Australia, are the most diverse in the world. The "forests" and "meadows" are home to many invertebrates and fish, and provide nurseries for many of their young.[41]

B. Australian Species Diversity.

Australia is one of twelve nations on earth that have been identified as containing major species diversity: Australia is the only developed country in this group of twelve.[42] In a 1996 report on the Australian environment, the expert authors of the report boldly attempted to provide the "estimated extent of Australia's

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40. *Id.* (original emphasis omitted).

41. *Id.* (original emphasis).

42. *See* AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at 4-30. As pointed out in the report, among the other twelve nations having major species diversity are: "Indonesia with its wealth of islands and different habitats, Zaire in equatorial Africa and Brazil with its expanses of rich tropical rainforests, rivers and mountains."
Id.

species diversity and [the percentage] of those formally described."[43] The experts point out that the existing scientific data about species diversity in Australia "illustrates the strong bias in knowledge towards large, conspicuous life forms and shows that most biodiversity is either invertebrate or microbial."[44] Thus, on the one hand, more than 90 percent of all Australian vertebrates have been described in the scientific literature (with an estimate of 5,588 species), more than 90 percent of all Australian higher plants have been described (with an estimated total of 20,000 species), 75 percent of all Australian flies and mosquitoes have been described (with an estimated total of 11,000 species), and 67 percent of all Australian beetles have been described (with an estimated total of 30,000 species).[45] On the other hand, "many [Australian] . . . invertebrate groups are poorly known—both poorly collected and not yet adequately described"[46] in the scientific literature. For example, only one percent of all Australian nematodes have been described (with an estimated total of 150,000 species), only 0.1 percent of all Australian bacteria have been described (with an estimated total of 40,000 species), only 5 percent of all Australian fungi have been described (with an estimated total of 160,000 species), only 5 percent of all Australian crustaceans—crabs and prawns—have been described (with a total of 18,000 species) and only 14 percent of all Australian arachnids—spiders and mites—have been described (with a total of 39,000 species).[47] Indeed, "[f]or some groups [of Australian species] the level of knowledge is so poor that estimates are unavailable."[48] Thus, the categories "other anthropods" and "other invertebrates" are simply a mystery.

A number of descriptive comments can be made beyond the raw numbers discussed above—about Australia's species biodiversity. First, most of the terrestrial vegetation of the continent "is dominated by eucalyptus and acacias."[49]

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43. *Id.*, Table 4.8.
44. *Id.* at 4-30.
45. *Id.*, Table 4.8.
46. *Id.* at 4-30.
47. AUSTRALIA'S BIODIVERSITY, Table 4.8.
48. *Id.*
49. *Id.* at 4-30. In particular:

> Most [Australian] forests and woodlands feature several species of eucalypts, while acacias dominate the extensive shrublands of the inland. Each genus has more than 700 species, almost all of which occur naturally only here. Neither group is distributed evenly across the continent. The acacias are particularly abundant in the semi-arid region of southern Western Australia, while the eucalypts are richest in the south-eastern region. The recent assessment of the Blue Mountains in New South

Second, Australia harbors two of the only three species of monotremes—or egg laying mammals—in the world: the ecidna and platypus.[50] Third, Australia provides a habitat for a substantial portion of the living marsupials[51] and "is the only nation to contain the large arid-adapted kangaroos."[52] Fourth, Australia has an extremely diverse flora of seaweed, with temperate waters alone containing about 1,200 species of which 62 percent are endemic.[53]

Wales for World Heritage Listing showed that parts of this area contain the great variety of eucalypts species anywhere.

Id. Cf. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 19 (describing Australia's number of acacias at "about 950" species and Australia's number of eucalyptus at "more than 800"). *See generally* JOHN VANDENBELD, NATURE OF AUSTRALIA: A PORTRAIT OF THE ISLAND CONTINENT 133-52 (1988) [hereinafter NATURE OF AUSTRALIA] (describing the "ancestry of Australia's most characteristic plant," the eucalyptus, and ecological niches of various fauna to eucalyptus forests); *id.* at 194-96 (describing the ancestry of acacias, or "mulgas," and the unique ecological relationship between mulgas and Australia's 4,000 species of ants).

50. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 23. Interestingly, monotremes were the earliest mammals and they,

> retained many of the features of their reptilian ancestors. The monotremes laid eggs, as do most reptiles, but they also had a very stable internal temperature, fur, and—even more significantly—they suckled their young with milk. Only three monotremes survive, all of them in Australia: the platypus and two species of echidna, of which one is now found only in Papua New Guinea.
>
> Much about the monotremes remains a mystery. They appeared perhaps 120 million years ago, and probably in the Australian part of Gondwana [a "super continent" of some 135 million years ago, which consisted of what is now South America, Antarctica, Australia, India, New Zealand, Africa and Madagascar] for the only fossils have been found there. . . .

NATURE OF AUSTRALIA, *supra* note 49, at 23-24.

51. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 30, at 4-30. Of particular interest:

> The Australian mammal fauna is . . . distinguished by the preponderance and diversity of marsupials compared with other groups. Some 141 marsupial species, of which over 90 percent are endemic, occur on the Australian continent. . . . Marsupials in Australia have radiated into a wide range of habitats and now fill many niches. Australian marsupials include insectivores (e.g. planigates); carnivores (e.g. quolls); saprophages (e.g. the Tasmanian devil . . .); nectivores (e.g. pygmy-possums) and herbivores (e.g. possums and kangaroos, and the koala) in a variety of sizes and types. . . . This diversification has also led to the development of some interesting examples of convergent evolution—such as gliders, the marsupial mole, and the thylacine or Tasmanian wolf . . . which are extraordinarily similar to their placental mammalian counterparts (flying squirrels, moles, and the wolf . . .) that evolved independently in other parts of the world. Of the six endemic mammalian families [in Australia], five are marsupials and include the numbat, . . . the marsupial mole, . . . the koala, . . . wombats, . . . and the honey-possum. . . .

AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 24-25.

52. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 30, at 4-30.

53. *Id.* at 4-31.

Fifth, there are about 30 species of seagrasses in Australia; these aquatic plants perform important ecological functions but have experienced recent environmental stresses.[54] Sixth, Australia contains a large number of bird species, a substantial number of which are endemic.[55] Seventh, the reptiles found in Australia are highly biologically distinct.[56] Eighth, Australia holds a very diverse panoply of frogs; approximately 93 percent of a total of about 200

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54. *Id.* Seawoods are environmentally crucial because they:

> form rich beds in shallow water and are important as nursery grounds for the juvenile stages of many species of crustaceans and fish. Seagrasses have suffered severe reductions in recent years from a variety of causes, including pollution and siltation as well as natural causes such as floods and cyclones. The most recent major loss resulted from the construction of the third runway at Sydney Airport, which destroyed an important eelgrass bed in New South Wales by filling part of Botany Bay.

Id.

55. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 25.

> A recent checklist includes 777 native birds, with 357 endemic species forming more than 45 percent of the total, . . . although this number includes species found in Australian external territories.
>
> Several groups of birds have evolved into many species and occupied many ecological niches. For instance, the honeyeaters, . . . with about 66 species, are the largest Australian family and have colonized all areas of the continent. Over 80 percent of Australia's 51 species of parrots are restricted to Australia and its islands. Australian parrots display a greater variety of form than parrots elsewhere. . . .

Id. (citations omitted).

56. *Id.* at 26. Indeed:

> A remarkable 89 percent of the more than 750 reptile species found in Australia and its external territories occur nowhere else. . . . Furthermore new species (generally endemic ones) are being described every year. Australia has en exceptional lizard fauna in the arid zone, showing a high level of local species richness . . . [for example], 30 or 40 species of lizards can . . . be found in a typical ten hectare patch of spinifex grassland, which is two to three times the numbers found in patches of similar size in southern Africa and North American deserts. . . . Several factors appear to cause this diversity. These may include the wide range of suitable habitats provided by tussock grasses and an abundance and diversity of termites, a primary food source for lizards. Australian lizards have evolved many hunting modes to exploit the number and range of termites, and this has given to Australia an abundant and diverse fauna of legless and reduced-limb lizards as well as many nocturnal and subterranean species. . . .

Id. (citations omitted). Moreover, "Australia's marine and estuarine reptile fauna includes 30 of the world's approximately 50 sea-snake species, six of the seven known species of turtles and the salt-water crocodile." AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 30, at 8-32. *But see* ENVIRONMENT AUSTRALIA, MARINE TURTLES IN AUSTRALIA 1 (1998) ("All marine turtle species are experiencing serious threats to their survival. The main threats are pollution and changes to important turtle habitats, especially coral reefs, seagrass beds, mangrove forests and nesting beaches").

species are endemic.[57] Ninth, despite the relative lack of current knowledge regarding Australian invertebrates,[58] a broad diversity of known invertebrates exists within the country (many of which are endemic) with a total estimated number of invertebrates at 225,000 species.[59]

Among those variegated Australian invertebrate types are insects,[60] ants,[61] springtails,[62] land snails,[63] earthworms,[64] spiders,[65]

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57. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 27.

> Southern frogs, including *Rheobatrachus* (gastric brooding frogs, the only frogs known to incubate young in the stomach) and *Pseudophyrne* (toadlets, including the corroboree-frog), are confined to the Australian region. However, these are closely related to the South American family Leptodactylidae, and this reflects their Gondwanan origin. The family mybobatrachidae contains many [unusual] genera, and an example is provided by the pouched frog, *Asa darlingtoni,* which earns its name through the existence of pouches on the males. The larvae of this species, once hatched, complete their development in these pouches.
>
> Overall, one of the most striking features of the Australian frog fauna is the lack of dependence upon permanent bodies of water. The general trend is to breed in ephemeral pools, and accordingly, the period of larval development is relatively short.

Id. *But see* ENVIRONMENT AUSTRALIA, DECLINE AND DISAPPEARANCES OF AUSTRALIAN FROGS (Alastair Campbell, ed., 1999) at 6 ("With over 200 species, Australia is one of the most diverse frog assemblages in the world. For many Australian frog species however the prognosis is grim. Dramatic population declines in some Australian frog species have been reported since the 1980s, some of them more serious crashes occurring in pristine habitats. Frustratingly the causal factors for many declines remain elusive").

58. *See supra* notes 46 to 48 and accompanying text.

59. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 27. Significantly, a large percentage of the total number of Australian invertebrates: "is restricted to Australia and possibly one-third of Australian terrestrial invertebrates is confined to the tropical forests of northern Queensland. More than half the invertebrate fauna remains to be described, and an estimated third awaits discovery. . . ." *Id.* (citations omitted).

60. *Id.* Many families of Australian insects are endemic, some examples include:

> three families each of beetles . . . and wasps, . . . three of bugs and cicadas, . . . and the monotypic termite family Mastotermitidae. . . . Endemism at genus and species levels is frequently very high: 75 percent of beetle genera are endemic . . . as are 21 of 37 genera of praying mantis. . . . More than half of stick insect . . . genera are endemic, as are over 90 percent of grasshopper genera belonging to the superfamily Acridoidea. . . . Endemism at the species level is even higher than that for genera and approaches 100 percent for some groups.

Id.

61. *Id.* Australian ants are special since:

> [They] are widely distributed, diverse and abundant compared with elsewhere. With at least 4,000 different species, of which only a quarter or less have been formally named, . . . there are more subfamilies and genera of ants in Australia than in any other continent. An indication of this diversity is given by comparing the ant fauna of Britain with that of

and ribbon worms.[66] Tenth, Australia has a proliferation of marine fin fish.[67]

Another way of describing Australia's species diversity is to assess the present conservation status of certain key groups of species. While "[a]ll groups of higher plants and vertebrates have species that are highly threatened,"[68] and some which though existing at the time of Australia's founding in 1788 are now presumed to be extinct,[69] the conservation status of mammals in Australia is particularly alarming. As pointed out in a 1996 environmental report:

> Australia's record of mammal species extinctions is the worst of any country. In the past two centuries, the country has lost ten species of the original marsupial fauna of 144 species and eight of the 53 species of native rodents.... More than one hundred

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> Black Mountain Reserve in Canberra (covering 519 hectares). Whereas all of Britain has fifty *species* of ants, there are at least as many *genera* in the Canberra reserve....

Id. (original emphasis)(citations omitted). Moreover, as pointed out in the NATURE OF AUSTRALIA, *supra* note 49, at 195:

> In sheer numbers—both of species and individuals—ants and termites make up by far the bulk of Australia's animal population. There are... more ant species in Australia's deserts than in any other arid region in the world. As well, many of the primitive ant groups that have died out elsewhere live on beside their modern descendants.
>
> Ants play an immensely important part in shaping Australia's environment, especially its arid zones. Their tireless gathering of plant and animal matter keeps the desert's store of nutrients cycling through the system, and their nests and tunnels combine to form a vast cultivating machine that turns and aerates the soils. Through their many and varied associations with plants, ants often determine which plants will grow well and how well, and so sculpt the landscape itself.

62. AUSTRALIA'S BIODIVERSITY, *supra* note 39, at 27. There are some 2,000 species of springtails, 90 percent of which are endemic to Australia. *Id.*

63. *Id.* There are four families of land snails endemic to Australia. *Id.*

64. *Id.*

65. *Id.* "Twenty-six percent of spider genera are... endemic [to Australia], ... as is the Tasmanian spider family Hickmaniidae...." *Id.*

66. *Id.* "Australia is home to the only continental ribbon worms (Nemertina) and the three species of the endemic genus *Argonomertes* form a quarter of the world's nemertine species. These worms may have an ancient lineage of Cretaceious origins...." *Id.*

67. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 39, at 8-29. "Australia has an estimated 4,000 to 4,500 species of [marine] finfish, of which 3,600 have been described. About one-quarter of the species are endemic and most of these are found in the south...." *Id.*

68. *Id.* at 4-32.

69. For example, among amphibians, 3 species are presumed extinct; among higher plants 76 species are presumed extinct. *Id.* at 4-43, Table 4.12 (amphibians); *id.* at 4-35, Table 4.15 (higher plants). Moreover, a number of Australian birds that were present in 1788 have become extinct. *Id.* at 4-35, Figure 4.18.

> mammal species are considered endangered, vulnerable or potentially vulnerable. This number includes marine mammals such as duogony. Some marine species, like whales and seals, which were hunted in Australian waters until recently, now show signs of recovery.[70]

Significantly, scientists predict that "[t]he cumulative effect on birds of the threatening processes" in Australia "will be accelerated loss of bird species paralleling those of mammal species."[71] Likewise, "[m]any species of frogs are declining in part of their range."[72]

C. Australia's Genetic Diversity.

1. Habitat Fragmentation.—There is selective evidence that Australian genetic diversity has suffered in recent decades due to "genetic effects of habitat destruction and consequent declines in population size" involving various species of animals.[73] A few examples include (a) the Northern Hairy-nosed Wombat, (b) the Koala, (c) the Sleeping Lizard, and (d) the Papilionid Butterfly.

a. Northern Hairy-Nosed Wombat.—One of Australia's rarest mammal species, the Northern Hairy-Nosed Wombat, has suffered "severe loss and degredation of habitat and consequent loss of genetic diversity".[74] Confined, as far as scientists presently

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70. *Id.* at 4-33.

71. *Id.* at 4-32.

72. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 39, at 4-33. *See also supra* note 57 and accompanying text.

73. *Id.* at 4-37.

74. *Id.* The following scientific investigation confirmed the loss of genetic diversity in this species:

> By using a genetic technique known as microsatellite technology, scientists can detect losses in genetic diversity with astonishing accuracy using a tiny amount of DNA—the amount contained in a single wombat hair is enough. Every individual or population has a distinct complement of microsatellite labels and scientists have strong evidence that the northern species has lost significant amounts of the genetic diversity it once possessed.... The genetic diversity of the northern species is less than half that of the southern hairy-nosed wombat. Because the two species are closely related and fill similar ecological niches, it is reasonable to expect that they should have similar measures of genetic diversity.... The fact that they don't is most likely a direct result of the steep decline in the number of animals, together with a process known as genetic drift, which occurs when the breeding population is so small that too few offspring are born in each generation to successfully carry all of the genetic variability in the present population.

Id.

are aware, to a single colony of 65 individuals in Epping Forest, central Queensland, these animals "cannot regain [their] lost genetic variability except by the longterm process of random mutation."[75]

b. The Koala.—The Koala, located in the southeastern part of Australia, "has suffered severe population declines since European settlement due to loss of habitat."[76] Notwithstanding a restocking program of koalas—drawing upon isolated island populations off of Western Port Bay in Victoria which were re-colonized on the mainland—genetic diversity in the restocked mainland colony was severely reduced.[77]

c. The Sleeping Lizard.—This species of lizard "experienced a large-scale natural experiment on the genetic effects of [habitat] fragmentation"[78] which occurred thousands of years ago. "As sea levels rose 6,000-8,000 years ago" off of southern Australia, certain lizard "populations were isolated on offshore islands, preventing gene flow from the mainland."[79] Comparative studies of on-shore and off-shore lizards have demonstrated "significant genetic divergence" between the two populations, with genetic "[c]hanges in the smaller islands populations [being] greater than those between mainland populations."[80] This type of scientific knowledge shows how changes in the genetic composition of a species can take place, over time, by virtue of human-induced habitat fragmentation. Thus, human development activities can result in small populations of animals being "isolated from each other like islands, frequently surrounded by inhospitable 'seas' of urban or rural development."[81]

d. Papilionid Butterflies.—Experimental breeding data of the Papilionid Butterfly, found in the rainforests of northern Australia, illustrate the deleterious biological phenomenon known as "inbreeding depression"[82] as a result of human-induced habitat fragmentation. "Inbreeding depression is the result of a declining population wherein "matings between related individuals become unavoidable;" in many cases this leads to a reduction in biological

75. *Id.*
76. *Id.*
77. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 39, at 4-37. "This work highlights the need to be cautious when reestablishing locally extinct or depleted populations of endangered species." *Id.*
78. *Id.*
79. *Id.*
80. *Id.*
81. *Id.*
82. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 39, at 4-39.

fitness. Moreover, "[t]he decline in health and in reproductive output causes the population to shrink further, often leading to extinctions."[83]

2. Other Human-Related Impacts on Genetic Diversity.—In addition to habitat fragmentation,[84] other human impacts that have led to steep declines in the sizes of certain Australian animal species—and resultant loss of genetic diversity—are "excessive harvesting, as in some fisheries,"[85] "the presence of introduced predators such as foxes and cats," and "introduced diseases."[86] Even when animal populations have not declined, human caused impacts can lead to changes in genetic diversity as exemplified by the introduction of exotic genes caused by "[t]he escape of domestic dogs into the Australian bush and their mating with the dingo [which] has led to a variety of hybrids."[87]

III. Australia's Multifarious Actions to Implement the Convention, 1992-2000

This part of the Article, in section A, summarizes the baseline Australian legal structure and germane biodiversity law and policies in place in 1992, at about the time when the Convention on Biological Diversity was signed.[88] Then, in section B, ten major public or quasi-public actions undertaken by various Australian officials to implement the Convention (expressly or implicitly) from 1992 through 2000, are discussed.[89]

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83. *Id.*

84. *See supra* notes 73 - 83 and accompanying text.

85. AUSTRALIA STATE OF THE ENVIRONMENT, *supra* note 39, at 4-39.

86. *Id.*

87. *Id.*

88. *See infra* notes 90-104 and accompanying text. For an excellent discussion of biodiversity law and policy initiatives under American federal law—notwithstanding the fact that the United States is not a party to the Convention on Biological Diversity—*see* Bradley C. Karkkainen, *Biodiversity and Land,* 83 CORNELL L. REV. 1 (1997).

89. *See infra* notes 104-516 and accompanying text. Another less significant quasi-public action by Australian officials to implement the Convention on Biological Diversity is publication of the following document: AUSTRALIAN HERITAGE COMMISSION, AUSTRALIAN NATURAL HERITAGE CHARTER: STANDARDS AND PRINCIPLES FOR THE CONSERVATION OF PLACES OF NATURAL HERITAGE SIGNIFICANCE (1996) (defining the values of "the principle of existence," the definitions of biological diversity, ecosystem diversity, genetic diversity, and other terms).

A. Australia's 1992 Biodiversity Law & Policy Baseline.

As pointed out by Professor Kenneth M. Murchison, in the early 1990's, while the various Australian state governments were the "primary actors in the environmental arena in Australia,"[90] two important legal changes transpired during the late 1970's, 1980's and early 1990's to enhance the power of the federal Commonwealth to effect environmental policy.[91] The first enhancement of federal power was a line of High Court of Australia[92] decisions which "consistently sustained the Commonwealth's efforts to protect important [Australian] natural resources."[93] The second enhancement of federal power was a 1992

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90. Kenneth M. Murchison, *Environmental Law in Australia and the United States: A Comparative Overview,* 22 B. C. ENVTL. AFF. L. REV. 503, 505 (1995) (citing GERRY M. BATES, ENVIRONMENTAL LAW IN AUSTRALIA 68-74 (3d ed. 1992); R.J. Fowler, *Environmental Law and Its Administration in Australia*, 1 ENVTL. & PLAN. L. J. 10, 22 (1984)).

91. Murchison, *supra* note 90, at 505.

92. "The High Court of Australia is, as its name implies, the highest court in the land in both the State and federal judicial structures." JOHN CARVAN, UNDERSTANDING THE AUSTRALIAN LEGAL SYSTEM 61 (2d ed. 1994). The High Court's jurisdiction exists in three main realms:

- as original jurisdiction, primarily in proceedings between a State and the Commonwealth;
- as the highest court of appeal in the federal court system; and
- as the highest court of appeal in each of the State court systems.

Id. Generally, an appeal can only proceed with the special leave of the High Court. This allows the Court to devote its time to cases that involve important questions of law and justice. There are seven judges of the High Court and on important appeals the bench generally consists of all seven judges. *Id.*

93. Murchison, *supra* note 90, at 505 (citing Queensland v. Commonwealth, 167 C.L.R. 232 (Austl. 1989); Richardson v. Forestry Comm'n, 164 C.L.R. 261 (Austl. 1988); Commonwealth v. Tasmania, 158 C.L.R. 1 (Austl. 1983); New South Wales v. Commonwealth, 135 C.L.R. 337 (Austl. 1975)).
As pointed out by Professor Murchison:

> The modern expansion of Commonwealth power to protect the environment has occurred primarily in the resolution of conflicts over natural resources. In the 1970s, the High Court confirmed Commonwealth power over the territorial sea. The Court also permitted the Commonwealth to rely on the [Australia Constitution's] trade and commerce power to disallow an export license on the basis of the environmental effects of the licensee's mining operations that generated the product to be exported. During the 1980s, judicial decisions further enhanced Commonwealth power. In 1982, the High Court recognized that the Commonwealth could use its external affairs power to protect Aborigines against discrimination by a state government. More recently, the High Court allowed the Commonwealth to use the external affairs and corporations powers to preclude states from damming rivers or allowing forests to be cut.

Id. at 512 (footnote omitted). *See generally* AUSTL CONST. ch. I, pt. v, § 51(i)

Memorandum of agreement between the Australian state governments and the Commonwealth that created a federal Environmental Protection Authority.[94]

As a matter of fundamental legal structure, under the Australian Constitution of 1901, states retain powers not specifically allocated or limited by the Constitution;[95] however, like most other federal constitutions, federal power is given primacy: whenever Australian state law "is inconsistent with the law of the Commonwealth" the Commonwealth law trumps the state law "to the extent of the inconsistency."[96] This background principle of constitutional law is important in the environmental policy area, especially since the High Court of Australia has developed an expansive preemption theory such that it is quite "willing to infer that Parliament has chosen to preempt the entire field that falls within the general scope of an area that is being regulated"[97] by Australian federal law. Yet, a 1992 Intergovernmental Agreement on the Environment between the Australian Commonwealth and the states, as part of the 1992 National Strategy for Ecologically Sustainable Development (NSESD),[98] acted as a voluntary restraint and arguably legal impediment to aggressive centralization of environmental lawmaking power in the Commonwealth. Rather, a "collaborative approach outlined in the... Memorandum of Agreement between the Commonwealth and the states envisions state participation in the deliberative process that will produce national standards"[99] for the Australian environment.

A 1989 document, the *Australian National Strategy for the Conservation of Species and Habitats Threatened with Extinction* ("Australian Conservation Strategy") aims to "conserve the

(Commonwealth interstate and foreign trade and commerce power); *id.* § 51 (xx) (Commonwealth power over foreign and trading corporations); *id.* § 51 (xxix) (Commonwealth external affairs power); *id.* ch. VI, § 122 (Commonwealth power over Australian territories); *id.* ch. I, pt. V, § 51 (xxvi) (Commonwealth power to make special laws for any race that needs protection or assistance).

94. Kenneth M. Murchison, *supra* note 90, at 505 (citing COMMONWEALTH OF AUSTRALIA, NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT, app. A (Summary of the Intergovernmental Agreement on the Environment) at 117 (Dec 1992)).

95. AUSTL. CONST. ch I, pt. V, §§ 51, 52 and ch. V, § 107.

96. AUSTL. CONST. ch. V, § 109.

97. Murchison, *supra* note 90, at 525 (footnote omitted).

98. *See* COMMONWEALTH OF AUSTRALIA, NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT, app. A (Summary of Intergovernmental Agreements on the Environment) at 117 (Dec. 1992). *See infra* notes 105 to 121 and accompanying text for a discussion of the implementation of this Strategy by Australian officials from 1993-95.

99. Murchison, *supra* note 90, at 526 (footnote omitted).

existing range of genetic diversity of all indigenous species in their natural habitat."[100] This policy document, as one Australian author has pointed out, acknowledges that:

> Since European settlement in Australia, about eighteen species of mammal and 100 vascular plants have become extinct. There are also about 209 vascular plants and forty mammal species that are endangered. The main causes of extinction are habitat destruction and modification, the introduction of exotic plants and animals, and direct exploitation through hunting, fishing, and collecting for trade.[101]

The 1989 Australian Conservation Strategy endorses elements of a "precautionary approach" to resolving legal and policy issues of biodiversity because:

> [E]lements of the precautionary approach are evident in the reasons given for preserving [Australian] endangered species. The [*Australian Conservation Strategy*] argues that "other species have a right to exist; the needs and desires of humans should not be the only basis for ethical decisions." The [*Australian Conservation Strategy*] also notes the poor understanding of the role of rarer species in the provision of essential life support systems, and states that such species should be preserved as they may be important in the recovery process following ecosystem disturbance. By recommending that rare

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100. AUSTRALIAN NATIONAL PARKS AND WILDLIFE SERVICE, AUSTRALIAN NATIONAL STRATEGY FOR THE CONSERVATION OF SPECIES AND HABITATS THREATENED WITH EXTINCTION, DRAFT FOR PUBLIC COMMENT 20 (1989) [hereinafter AUSTRALIAN CONSERVATION STRATEGY]. It is arguable that a policy antecedent albeit of an unofficial nature, to the 1989 AUSTRALIAN CONSERVATION STRATEGY as well as the 1992 CBD, itself, was a November 1984 draft resolution by seven major Australian conservation Non-Governmental Organizations (NGOs). As explained by one author:

> If one believes in the long march of history, one could claim that the [CBD] has its roots in a draft resolution . . . by seven major Australian Conservation NGOs. This draft resolution called for internal policies by individual nations and for a broad international treaty. The final, modified resolution was passed unanimously [by the International Union for the Conservation of Nature], with strong support from the Australian Government delegation. Among other things, the resolution called for a preliminary draft of a global agreement on the conservation of the world's genetic resources; that is, biological diversity. Australian NGO's helped in the drafting process and pursued the goals of the resolution for many years until the [CBD] became reality.

GRAEME ALPIN, AUSTRALIANS AND THEIR ENVIRONMENT 259 (1998).

101. Charmian Barton, *The Status of the Precautionary Principle in Australia: It's Emergence in Legislation and as a Common Law Doctrine*, 22 HARV. ENVTL. L. REV. 509, 528 (1998) (citing AUSTRALIAN CONSERVATION STRATEGY, *supra* note 100, at 11-15).

> species be given the benefit of a doubt, the [*Australian Conservation Strategy*] is suggesting that the risk of error be weighted in favor of the environment.[102]

As of 1992 the Parliament of Australia as well as various Australian state and territorial governments had enacted a panoply of statutes that, to one degree or another, prescribed standards and procedures for the protection of various Australian ecosystems, wildlife, and plant life.[103]

B. Implementing the Convention on Biological Diversity in Australia, 1992-2000.

1. The Intergovernmental Committee's Report on the Implementation of the National Strategy for Ecologically Sustainable Development (1993-1995).—Approximately one year after signing the June 1992 Convention on Biological Diversity, Australia ratified the Convention in June 1993.[104] Contemporaneously with the signing and ratification of the Convention, all Heads of Government in Australia endorsed the National Strategy for Ecologically Sustainable Development (NSESD) in 1992.[105] An

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102. *Id.* at 529 (original emphasis omitted) (citing AUSTRALIAN CONSERVATION STRATEGY, *supra* note 100, at 8-9).

103. *See, e.g.,* the following sample of federal legislation enacted by the Parliament of Australia: Environment Protection (Impact of Proposals) Act, 1974 (Austl.); Fisheries Management Act, 1991 (Austl.); The Great Barrier Reef Marine Park Act, 1975 (Austl.); The Natural Resources Management (Financial Assistance) Act, 1975 (Austl.); Environment Protection (Sea Dumping) Act, 1981 (Austl.); Resource Assessment Commission Act, 1989 (Austl.); Endangered Species Protection Act, 1992. For a discussion of the federal Endangered Species Protection Act, see Edward Christie, *The Eternal Triangle: The Biodiversity Convention, Endangered Species Legislation, and the Precautionary Principle,* 10 ENVTL. & PLAN. L. J. 470 (1993).

See, e.g., the following sample of State and Territorial legislation in effect in 1992: National Parks and Wildlife Act, 1974 (N.S.W.); Land and Environment Court Act, 1979 (N.S.W.); Environmental Planning and Assessment Act, 1979 (N.S.W.).

104. AUSTRALIA'S NATIONAL REPORT TO THE FOURTH CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY 1 (1998).

105. INTERGOVERNMENTAL COMMITTEE FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT, SUMMARY REPORT ON THE IMPLEMENTATION OF THE NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT 1993-95, ISBN 0 642 25615 2, (1996) available at http://www.environment.gov.au/psg/igu/nsesd /summary95/html at 2 (last visited Oct. 10, 2000) [hereinafter SUMMARY IMPLEMENTATION REPORT—NSESD]. The Heads of Government in Australia are in "three spheres:" (1) the National Commonwealth Government, (2) the six State governments (New South Wales, Victoria, South Australia, Queensland, Western Australia and Tasmania) and two Territorial governments (the Northern Territory and the Australian Capital Territory at Canberra). *See also supra* note 98 and

initial one year implementation report on the NSESD was published in December 1993.[106] A more comprehensive, three year report covering the years 1993 through 1995 was published in July of 1996 entitled *Report on the Implementation of the National Strategy for Ecologically Sustainable Development (1993-95) ("NSESD Implementation Report").*[107]

Consisting of 206 pages, spread out over 33 chapters and a dense glossary of acronyms, the *NSESD Implementation Report*, on one level of analysis, is a prolix hodge-podge of various Australian governmental actions (at the Commonwealth, state, territorial and local levels) which have some vague connection with the amorphous concept known as "sustainable development"[108]—a concept even broader and more ambiguous than "biodiversity". At this level, the *NSESD Implementation Report* is disappointing and confusing. However, on another, more charitable level of analysis, portions of the *NSESD Implementation Report* provide an over-arching glimpse of the considerable energy and enthusiasm Australians exhibited in trying to preserve and protect their plant and animal treasures during the first three years after the Convention on Biological Diversity went into force.

While only one of the 33 chapters in the *NSESD Implementation Report* is labeled "Biological Diversity,"[109] several themes, issues and concepts discussed throughout the document are relevant in describing Australia's efforts at implementing the Convention during the first half of the 1990's. In the first place, the titles of all 33 chapters of the *NSESD Implementation Report* can be thought of as having some connection with biodiversity protection.[110] In the second place, Chapter 9's discussion of

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accompanying text.

106. *Id.*

107. *See generally* INTERGOVERNMENTAL COMMITTEE FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT, REPORT ON THE IMPLEMENTATION OF THE NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT, 1993-95, ISBN 0 642 25616 0 (1996) [hereinafter "NSESD IMPLEMENTATION REPORT"].

108. *See, e.g.* John C. Dernbach, *Sustainable Development as a Framework for National Governance,* 49 CASE W. RES. L. REV. 1 (1998) (focus on sustainable development as a conceptual framework of law and policy).

109. NSESD IMPLEMENTATION REPORT, *supra* note 107, at 75-81 (Chapter 9).

110. The chapter titles in the Table of Contents are as follows:

1. Agriculture
2. Fisheries Ecosystem Management
3. Forest Resource Use and Management
4. Manufacturing
5. Mining
6. Urban and Transport Planning
7. Tourism

"biological diversity" implementation in Australia is intellectually illuminating because of the way that the text "illustrates the diverse range of intersectoral issues covered by the [*NSESD*], the complexity of interrelationships between the sectors and cross-sectors and between the various spheres of [Australian] government, and the far-reaching implications of the Strategy as a whole."[111] Some of the highlights of Chapter 9 (which provide a nuanced vista of multiple Australian governmental actions at numerous levels addressing the cross-sectoral issue of biological diversity) are as follows:

- A report that "[u]nder the umbrella of [the Commonwealth Endangered Species Protection Act (1992) which came into force on April 30, 1993] and complimentary State and Territory programs,

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8. Energy Use, Energy Production and Transport
9. Biological Diversity
10. Nature Conservation System
11. Native Vegetation
12. Environmental Protection
13. Land Use Planning and Decision Making
14. Natural Resource and Environment Information
15. Environmental Impact Assessment
16. Changes to Government Institutions and Machinery
17. Coastal Zone Management
18. Water Resource Management
19. Waste Minimization and Management
20. Pricing and Taxation
21. Industry, Trade and Environmental Policy
22. Aboriginal and Torres Strait Islander Peoples
23. Gender Issues
24. Public Health
25. Occupational Health and Safety
26. Education and Training
27. Employment and Adjustment
28. Australia's International Cooperation and Overseas Development Assistance Program
29. Population Issues
30. Research Development and Demonstration
31. Conflict Management
32. Community Awareness, Education and Participation
33. Monitoring and Review.

Id. at ii to iii.

111. SUMMARY IMPLEMENTATION REPORT—NSESD, *supra* note 105, at 17. The first eight chapters of the report can be viewed as involving "sectoral" issues (agriculture, fisheries, ecosystem management, forest resource use and management, manufacturing, mining, urban and transport planning, tourism, and energy use, energy production and transport) while other chapters can be considered as involving cross-sectoral implementation issues (biological diversity, native vegetation, land use planning and decision making, environmental impact assessment, etc.).

Australian governments are developing and implementing recovery plans for nationally threatened species and communities;"[112]

- A summary of activities to fund implementation of the Convention on Biological Diversity through a $17 million Commonwealth program with "priorities of implementation" including "improved knowledge of Australia's biodiversity, a biodiversity monitoring program, integrated approaches for biodiversity conservation, enhanced community activities and international activities;"[113]
- A description of "New South Wales' commitment" to Australian biodiversity implementation by "its development of the New South Wales Biodiversity Conservation Strategy and the establishment of a State Biodiversity Unit," its undertaking of biological diversity surveys in conjunction with its preparation of human impact studies on vegetation and its "using [a] State Environmental Planning Policy [SEPP] system to lend weight to its conservation activities;"[114]
- Mention of Victoria's launching of "a Land for Wildlife Program which aims to conserve habitat on private property;"[115]
- A summary of the passage of "a number of pieces of legislation" by South Australia designed to "specifically promot[e] aspects of biological diversity" and the progress of the "Biological Survey of South Australia [in] conduct[ing] surveys in all bioregions within the [inland areas] and [offshore] State waters;"[116]
- Assessment of "Tasmania's *National Parks and Wildlife Act of 1970*" as "provid[ing] protection for certain species and establish[ing] reserves;"[117]
- Mention of the 1994 amendment by the Australian Capital Territory of its *Nature Conservation Act 1980* to reflect national nature conservation strategies;[118]
- Referencing of an "already . . . large number of

112. NSESD IMPLEMENTATION REPORT, *supra* note 107, at 75.
113. *Id.* at 75-76.
114. SUMMARY IMPLEMENTATION REPORT—NSESD, *supra* note 105, at 16.
115. *Id.*
116. *Id.*
117. *Id.*
118. *Id.* at 17.

> programs which interact with biodiversity conservation" including "the National Landcare Program and the National Weeds Strategy . . . activities under the National Forest Policy Statement . . . and the establishment of nature reserve systems . . . to name a few."[119]

In the third place, Chapter 33, entitled "Monitoring and Review" provides an impressive synopsis of Commonwealth efforts in the first half of the 1990's to develop "performance measures" by which to judge the various Australian laws, policies, programs, institutions and plans to achieve sustainable development—and by implication biodiversity protection in accordance with the CBD.[120]

2. Environment Australia's Report: Australia's Biodiversity, 1994.—In 1994, Australia's federal Department of the Environment, Sport and Territories ("Environment Australia") prepared a fascinating 87 page report entitled *Australia's Biodiversity: An Overview of Selected Significant Components.*[121] This document represents an important step in Australia's implementation of the 1992 Convention on Biological Diversity because it provided the first synoptical, official rationale for why Australia's biodiversity is significant on a national and global level.[122] In this regard, *Australia's Biodiversity* discusses the "evolutionary development of Australia's biodiversity," focusing on what it describes as "the highly endemic nature and richness" of Australia's unique flora and fauna, brought about by "the many ancient origins and specific adaptations to" the peculiar environment.[123]

3. Environment Australia's Melbourne Conference on Bioregional Planning, 1995.—From October through November 1 of 1995, Environment Australia, in conjunction with the Australian Local Government Association, the National Biodiversity Council, and the Royal Australian Planning Institute, held a conference in Melbourne entitled: *Approaches to Bioregional Planning: A Framework for Biodiversity Conservation and Ecological Stability.*[124] A year after the conference, Environment Australia published the

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119. SUMMARY IMPLEMENTATION REPORT—NSESD, *supra* note 105, at 17.
120. NSESD IMPLEMENTATION REPORT, *supra* note 107, at 200-01.
121. AUSTRALIA'S BIODIVERSITY, *supra* note 39.
122. *Id.* at 3.
123. *Id. See also supra* notes 39-41, 49-51, 55-66 and accompanying text.
124. AUSTRALIAN DEPARTMENT OF ENVIRONMENT SPORTS & TERRITORIES, APPROACHES TO BIOREGIONAL PLANNING, PART 1—PROCEEDINGS OF THE CONFERENCE, 30 Oct.-1 Nov. 1995, Melbourne 3 (R. Breckwoldt, ed. 1996) [hereinafter "BIOREGIONAL PLANNING"].

conference proceedings in a 208 page report consisting of four major sections: formal sessions,[125] conference dinner speech,[126] workshop sessions and reports,[127] and think tank session reports.[128]

a. Formal Sessions.—Some of the key highlights of these sessions are as follows: clarification that, in Australia, "the bioregional contribution to planning emphasizes the supremacy of natural units over other jurisdictional areas, including political divisions;"[129] mention that "[i]n the early 1970s, [the United Nations Educational, Cultural and Scientific Organization (UNESCO), through its] World Heritage Convention emphasized the universal natural and cultural values of 'sites' meriting a kind of supra-national status . . . [thus] recognis[ing] collective responsibilities which transcended the geographical accidents of politically-defined sovereignty;"[130] mention of two institutional biological protection areas—the Murray-Darling Basin Commission and the Great Barrier Reef Marine Park Authority—as prominent examples of Australian bioregionalism in practice;[131] explanation that "[t]he land mass, coastal, sea and marine area within the Aboriginal domain in northern Australia and the resource wealth within these areas constitute in the late 1990s a significant and urgent management challenge for" Australia;[132] and, emphasis that "Biosphere Reserve[s] [as a principal bioregional planning institution] should perform three complimentary functions: a biodiversity conservation function (with a focus on conserving a representative sample of major ecosystems) [,] a development function (with a focus on humans in the biosphere, emphasising an integrative role for local communities) [,] and a logistical function (combining conservation research, education, training and monitoring)."[133]

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125. *Id.* at 7-107.
126. *Id.* at 109-10.
127. *Id.* at 113-90.
128. *Id.* at 193-206.
129. Joe Powell, *Bioregional Planning in Australia—Past to Present* in BIOREGIONAL PLANNING, *supra* note 124, at 21.
130. *Id.* at 25-6.
131. *Id.* at 29. *See also,* Ian McPhail & Joan Phillips, *Jurisdictional Issues—Legislation, Negotiation and Co-Operation—Working With All Spheres of Government* in BIOREGIONAL PLANNING, *supra* note 124, at 43-47 (discussing both Great Barrier Reef Marine Park and Murray-Darling Basin Commission as "two models [of interactive natural systems that require integrated management] of what might well be an emerging part of the political landscape" in Australia).
132. Marcia Langton, *Bioregional Planning and the Indigenous Context in Northern Australia: An Overview*, BIOREGIONAL PLANNING, *supra* note 124, at 50.
133. Peter Bridgewater, Ian Cresswell & Richard Thackway, *A Bioregional Framework for Planning a National System of Protected Areas,* in BIOREGIONAL PLANNING, *supra* note 124, at 70.

b. *Conference Speech.*—The critical points raised in the speech by Tim Flannery of the Australian Museum dealt with the following: "Biologists are beginning to understand that often the greatest biodiversity is found in the most nutrient poor regions," as exemplified by Australia's being one of the premier "megadiverse" regions on earth;[134] two geographical regions within Australia that illustrate how biodiversity tends to follow nutrient poor regions are the "Sydney sandstone or the Grampians" region where "poor soils derived from sandstones have produced some of the most diverse and spectacular floras to be found in Australia" and the Great Barrier Reef;[135] and, that given potential human technological advances, which might allow the creation of thriving farmlands in Australia's arid, but biodiverse deserts, and the displacement of coastal heathland with "vast urban agglomerations," the *sine qua non* of biodiversity planning is the development of a "strategic population policy."[136]

c. *Workshop Sessions and Reports.*—The important workshop sessions of the Conference examined one international example of bioregional planning (the La Amistad Biosphere Reserve in Costa Rica),[137] in addition to eight instructive Australian examples of successful bioregional planning (Great Barrier Reef Marine Park Authority,[138] the Murray-Darling Basin Commission,[139] the Wet Tropics World Heritage Area in northern Queensland,[140] the Land Conservation Council in Victoria,[141] the South East Queensland Case Study,[142] the Western Australian Case Study of

134. Tim Flannery, *What and Where is Biodiversity*, BIOREGIONAL PLANNING, *supra* note 124, at 109.

135. *Id.* These bioregions are contrasted by the author to the basalt plains of western Victoria which "include some of the richest soils and most reliable rainfall regimes . . . in Australia" but where the "biodiversity is small compared with the poorer regions"—where "[a] few species of grasses and herbs, a scattering of shrubs, . . . and the ubiquitous Red River Gum . . . make up most of the plant species visible to a passer-by." *Id.*

136. *Id.* at 109-10.

137. Kenton Miller, *La Amistad Biosphere Reserve, Costa Rica* in BIOREGIONAL PLANNING, *supra* note 124, at 185.

138. Joan Phillips, *Bioregional Planning in a Marine and Coastal Environment,* in BIOREGIONAL PLANNING, *supra* note 124, at 113.

139. Don Blackmore & Brian Lawrence, *Integrated Catchment Management—The Murray-Darling Basin Commission Case Study* in BIOREGIONAL PLANNING, *supra* note 124, at 117.

140. Peter Hitchcock, *World Heritage Area Management in Australia—The Wet Tropics Management Scheme Model,* in BIOREGIONAL PLANNING, *supra* note 124, at 123.

141. Don Saunders, *The Land Conservation Council,* in BIOREGIONAL PLANNING, *supra* note 124, at 129.

142. Ian Schmidt, *An Environment Framework for Managing Growth—South*

bioregional planning in agricultural regions,[143] the Regional Forest Agreement process between the Commonwealth and state governments,[144] and bioregional planning for the Aboriginal and Torres Strait Islander peoples[145]).

d. *Think Tank Session Reports.*—Among the most vital topics addressed in the final part of *Bioregional Planning* were papers on Australian industries' involvement in bioregional matters;[146] planning methodologies and systems;[147] community involvement;[148] information for effective bioregional planning;[149] and, Australian local, state and federal governmental roles in bioregional planning.[150]

4. The National Strategy For Conservation of Australia's Biological Diversity, 1996.

a. General Overview.—In a landmark document issued in 1996, entitled *The National Strategy for the Conservation of Australia's Biological Diversity* [hereinafter "*National Strategy for Biological Diversity*"],[151] the Prime Minister of the Commonwealth of Australia,[152] the premiers of the six Australian states,[153] and the

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East Queensland Case Study, in BIOREGIONAL PLANNING, *supra* note 124, at 131.

143. Denis Saunders & Robert Lambeck, *Bioregional Planning in Agricultural Regions—Western Australian Case Study,* in BIOREGIONAL PLANNING, *supra* note 124, at 137.

144. Tony Bigwood, *Regional Forest Agreements,* in BIOREGIONAL PLANNING, *supra* note 124, at 143.

145. Henrietta Fourmile, *Pre-Conditions for Effective Involvement of Aboriginal and Torres Strait Islander Peoples in Bioregional Planning,* in BIOREGIONAL PLANNING, *supra* note 124, at 149.

146. Penny van Oosterzee, *Working With Industry in a Bioregional Planning Context,* in BIOREGIONAL PLANNING, *supra* 124, at 193.

147. Barbara Norman, *Planning Methodologies and Systems Appropriate to Bioregional Planning,* in BIOREGIONAL PLANNING, *supra* note 124.

148. Jason Alexander, *Community Involvement, Consultation and Mediation,* in BIOREGIONAL PLANNING, *supra* note 124, at 197.

149. Tricia Kaye, *Information Gathering, Storage Retrieval and Its Use,* in BIOREGIONAL PLANNING, *supra* note 124, at 199.

150. Anne Conway, *Local, State and Federal Government Involvement in Bioregional Planning,* in BIOREGIONAL PLANNING, *supra* note 124, at 201.

151. THE NATIONAL STRATEGY FOR CONSERVATION OF AUSTRALIA'S BIOLOGICAL DIVERSITY (1996) available at http://www.erin.gov.au/portfolio/esd /biodiv/strategy/ cover.htm/ (last modified May 11, 1998) [hereinafter NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY].

152. Paul Keating was then Prime Minister of the Commonwealth of Australia.

153. Bob Carr was then Premier of the State of New South Wales; Jeff Kennett was then Premier for the State of Victoria; Wayne Goss was then Premier of the State of Queensland; Richard Court was then Premier of the State of Western Australia; Dean Brown was then Premier of the State of South Australia; and, Ray Groom was then Premier of the State of Tasmania.

chief ministers of the two Australian territories[154] "committ[ed] [their] respective governments to implement this Strategy as a matter of urgency."[155]

The National Strategy for Biological Diversity had been a long time coming. Earlier drafts of the document, going back to 1992, had foundered because of opposition by New South Wales and Western Australia.[156] *The National Strategy for Biological Diversity*, consisting of a mere 54 pages of text, is embellished with numerous glossy photographs of Australian land forms, fish, birds, corals, flowers, trees, mammals, insects, marsupials and microorganisms. The textual portion of the document, following the foreword,[157] consists of the following subdivisions: (1) Introduction,[158] (2) Goal,[159] (3) Principles,[160] (4) Conservation of Biological Diversity Across Australia,[161] (5) Integrating Biological Diversity Conservation and

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154. Kate Carnell was then Chief Minister of the Australian Capital Territory; Shane Stone was then Chief Minister of the Northern Territory.

155. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at ii.

156. As explained by one commentator:

> Australia actually got in first, so to speak [in taking action which antedated the UNCED Convention on Biological Diversity, signed in June 1992] and established a public advisory committee in 1991 to develop a national biodiversity strategy. This strategy was developed by September 1992. . . .
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> * * *
>
> The National Strategy went to the group comprising all state, territory and federal environmental ministers, ANZECC [the Australian and New Zealand Environment and Conservation Council] at the end of 1992 and did not emerge as a document on which there was consensus until 1996. Federal Cabinet endorsed the document in November 1993, but NSW and WA refused to do so [at that time].

GRAEME ALPIN, *supra* note 100, at 259. The final 1996 NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY:

> was prepared by the Australian and New Zealand Environment and Conservation Council, in consultation with the Agriculture and Resources Management Council of Australia and New Zealand, the Australian Forestry Council, the Australian and New Zealand Fisheries and Aquaculture Council, the Australian and New Zealand Minerals and Energy Council, and the Industry, Technology and Regional Development Council. The views of business, industry and the conservation movement were also sought and the provisions of the Convention on Biological Diversity were sought and the draft national strategy prepared by the Biological Diversity Advisory Committee, were taken into account.

NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at ii.

157. *Id.* at i-ii.

158. *See infra* notes 170-187 and accompanying text.

159. *See infra* note 188 and accompanying text.

160. *See infra* notes 189-190 and accompanying text.

161. *See infra* notes 191-200 and accompanying text.

Natural Resource Management,[162] (6) Managing Threatening Processes,[163] (7) Improving Our Knowledge,[164] (8) Involving the Community,[165] (9) Australia's International Role,[166] (10) Implementation,[167] and (11) An Appendix summarizing Australia's biological diversity.[168]

b. Specific Content.

(1) *Introduction.*—The Introduction to the *National Strategy for Biological Diversity* raises a variety of important points. First, the document aptly observes that biological diversity "is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline, and extinction."[169] Second, the strategy enumerates the multiple human "benefits of conserving biological diversity" including (a) providing "the broadest array of options for sustainable economic activity, for nurturing human welfare and for adapting for change;"[170] (b) "provid[ing] us with all our food and many medicines and industrial products;"[171] (c) "provision and maintenance of a wide array of ecological services" including "hydrological cycles, . . . climate regulation, soil production and fertility, protection from erosion, nutrient storage and cycling, and pollutant breakdown and absorption,"[172] among others; (d) "avoidance of the rising costs incurred through degradation of ecological systems;"[173] (e) maintenance of cultural identity, such as the close link between Australian Aboriginal and Torres Strait Islander peoples and the land;[174] (f) the "aesthetic values of our natural ecosystems and landscapes;"[175] and (g) realization of an "ethical basis" to the natural environment.[176]

Third, the introduction links the *National Strategy for Biological Diversity* with past and contemporaneous international

162. *See infra* notes 201-206 and accompanying text.
163. *See infra* notes 207-211 and accompanying text.
164. *See infra* notes 212-214 and accompanying text.
165. *See infra* note 215 and accompanying text.
166. *See infra* notes 216-219 and accompanying text.
167. *See infra* note 220 and accompanying text.
168. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, App.
169. *Id.* at 1.
170. *Id.*
171. *Id.*
172. *Id.*
173. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 1.
174. *Id.* at 2.
175. *Id.*
176. *Id.*

agreements—"rang[ing] from agreements about the protection of the habitats of migratory species, World Heritage properties, Antarctica, and the South Pacific region to agreements on trade and wildlife and pollution control,"[177] in juxtaposition, of course, with the Convention on Biological Diversity.[178] Fourth, the document's introduction cross-references a variety of Australian governmental and non-governmental activities relevant to conservation of biological diversity including (a) Commonwealth initiatives at the national level,[179] (b) state and territory undertakings,[180] (c) university and research efforts,[181] (d) individual

177. *Id.*

178. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 2. The Strategy's introduction goes on to note:

> The Convention on Biological Diversity is global in scope, covers the full range of biological diversity, and has as its primary aims the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the use of genetic resources. Australia ratified the Convention on 18 June 1993.

Id.

179. *Id.* As the Introduction states:

> At a national level, major initiatives agree to by governments include the National Strategy for Ecologically Sustainable Development, the Inter-Governmental Agreement on the Environment and the National Forestry Policy Statement. The National Strategy for Ecologically Sustainable Development has three core objectives: to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations; to provide for equity within and between generations; and to protect biological diversity and maintain essential ecological processes and life-support systems. It will be used by governments to guide policy and decision making, particularly in those industry sectors that rely on the use of natural resources.
>
> Current Commonwealth efforts for the conservation of biological diversity are aimed at all three levels of biological diversity—genetic diversity, species diversity, and ecosystem diversity—and consist of a number of programs relating to identification, research, management, control of alien species, and rehabilitation. The Commonwealth also has legislation relevant to biological conservation including the import and export of species, endangered species protection, and environmental impact assessment.

Id.

180. *Id.* The introduction summarizes these activities as follows:

> There are many State and Territory initiatives for the conservation of biological diversity, among them: identification and biological survey; the establishment and management of protected areas from nature reserves to multiple use areas; education, extension and support programs outside of protected areas; legislation by some States to protect wilderness areas; and reviews by some States of their policies on native vegetation with a view to including criteria relating to biological diversity for the assessment of proposals to clear land. Increasingly, State, Territory and local governments are adapting more integrated approaches to planning

and community group actions,[182] and (e) private sector involvement.[183] Fifth, the introduction frankly acknowledges that the various efforts to date have not been sufficient in fully realizing biodiversity conservation in Australia.[184]

Sixth, the National Strategy for Biological Diversity's introduction provides the necessary context for full and effective progress in slowing the loss of biological diversity in Australia by emphasizing the importance of directly confronting the underlying causes of biological diversity degradation. As wisely stated in the introduction:

> These underlying causes are extremely complex; they include the size and distribution of the human population, the level of resource consumption, market factors and policies that provide incentives for biological diversity depletion, undervaluation of environmental resources, inappropriate institutions and laws, ignorance about the importance and role of biological diversity, underinvestment in biological diversity conservation, and inadequate knowledge of our biological diversity and the rate at which it is being lost.[185]

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and management on a biogeographic basis or for individual species.

Id.

181. *Id.*

182. *Id.* at 3. The introduction canvasses some of these activities in the following terms:

> Individual and community groups have an increasingly important role in conserving biological diversity through such activities as tree planting, weed eradication, surveying and monitoring. Some 1600 landcare and similar community-based groups now exist in Australia; they are proving extremely effective in disseminating information and in the adopting of ecologically sustainable natural resource management in the rural sector. Community groups also contribute to the debate on such issues as institutional change. Examples of such groups are the World Wide Fund for Nature, the National Parks Association, the Society for Growing Australian Plants, and Greening Australia.

Id.

183. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 3.

184. *Id.* As the introduction admits:

> Conservation efforts are under-resourced, in places uncoordinated, and sometimes inappropriate. There are still many ecosystems, species and communities that are important for biological diversity conservation but that are not represented in protected areas or adequately conserved elsewhere. Large portions of Australia are not managed sustainably. In many cases past economic, social, policy or institutional factors have prevented the adoption of appropriate management practices.

Id.

185. *Id.*

Seventh, the introductory comments reference the establishment of "[f]ormal protocols for interaction between Commonwealth, State, Territory and local governments in environmental management" through an "Intergovernmental Agreement on the Environment."[186]

(2) *Goal.*—Succinctly and elegantly, the *National Strategy for Biological Diversity* provides a one sentence goal that serves to sum up and focus the document: "The goal is to protect biological diversity and maintain ecological processes and systems."[187]

(3) *Principles.*—Nine well-articulated and pithy "principles" are set forth in *The National Strategy for Biological Diversity* "as a basis for the *Strategy's* objectives and actions" and "as a guide for implementation."[188] These nine principles, worthy of full quotation, are:

> [a] Biological diversity is best conserved in-situ.
>
> [b] Although all levels of government have clear responsibility, the cooperation of conservation groups, resource users, indigenous peoples, and the community in general is critical to the conservation of biological diversity.
>
> [c] It is vital to anticipate, prevent and attack at [the] source the causes of significant reduction or loss of biological diversity.
>
> [d] Processes for and decisions about the allocation and use of Australia's resources should be efficient, equitable and transparent.
>
> [e] Lack of full knowledge should not be an excuse for postponing action to conserve biological diversity.
>
> [f] The conservation of Australia's biological diversity is affected by international activities and requires actions extending beyond Australia's national jurisdiction.
>
> [g] Australians operating beyond our national jurisdiction should respect the principles of conservation and ecologically sustainable use of biological diversity and

186. *Id.* at 4. The introduction amplifies this point by stating:

> Further intergovernmental arrangements will be necessary to facilitate the cooperation and coordination required to implement this Strategy including the development of national policies, bioregional approaches and State and Territory and local government strategies.

Id.

187. *Id.* at 5.

188. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 6.

act in accordance with relevant national or international laws.

[h] Central to the conservation of Australia's biological diversity is the establishment of a comprehensive, representative and adequate system of ecologically viable protected areas integrated with the sympathetic management of all other areas, including agricultural and other resource production systems.

[i] The close, traditional association of Australia's indigenous peoples with components of biological diversity should be recognized, as should the desirability of sharing equitably benefits arising from the innovative use of traditional knowledge of biological diversity.[189]

(4) *Conservation of Biological Diversity Across Australia.*—In Chapter 1 of the *Strategy,* nine specific objectives are set forth in order to "implement [ ] integrated approaches to conservation that both conserve biological diversity and meet other community objectives."[190] The nine objectives, each backed up with and elaborated by specific actions, entail: (a) "Identify important biological components and threatening processes;"[191] (b) "Manage biological diversity on a regional basis, using natural boundaries to facilitate the integration of conservation and production-oriented management;"[192] (c) "Improve the standards of management and protection of Australia's biological diversity by encouraging the implementation of integrated management techniques;"[193] (d) "Establish and manage a comprehensive, adequate and representative system of protected areas covering Australia's biological diversity;"[194] (e) "Strengthen off-reserve conservation of

189. *Id.*
190. *Id.* at 7.
191. *Id.*
192. *Id.* at 8.
193. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 9.
194. *Id.* As mentioned in the action portion of this objective:

> A protected area is defined in the Convention on Biological Diversity as a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives. The terminology that applies to protected areas varies from country to country; *in Australia alone there are some 40 different categories of reserves*, from specific-purpose areas such as scientific reserves to very large areas such as the Great Barrier Reef Marine Park, which has zones ranging from multiple use to restricted access.
>
> The World Conservation Union . . . is continuing to refine a protected area classification system for global use.

biological diversity;"[195] (f) "Ensure the maintenance of, and where necessary strengthen, existing arrangements to conserve Australia's native wildlife;"[196] (g) "Enable Australia's species and ecological communities threatened with extinction to survive and thrive in their natural habitats and to retain their genetic diversity and potential for evolutionary development, and prevent additional species and ecological communities from becoming threatened;"[197] (h) "Recognize and ensure the continuity of the contribution of the ethnobiological knowledge of Australia's indigenous peoples to the conservation of Australia's biological diversity;"[198] (i) "To complement in-situ measures, establish and maintain facilities for ex-situ research into and conservation of plants, animals and microorganisms."[199]

(5) *Integrating Biological Diversity Conservation and Natural Resource Management.*—In Chapter 2 of the *Strategy,* eight specific objectives are stated to shift "[c]ommunity attitudes to the use of biological resources" in Australia "from the 'maximum yield' approach to one of ecologically sustainable yield, which recognizes the need for conservation of biological diversity and maintenance of ecological integrity."[200] The most important objectives in this chapter address the adoption of "ecologically sustainable agricultural and pastoral management practices;"[201] "ecologically sustainable fisheries management practices;"[202] "ecologically sustainable forestry management practices;"[203] "ecologically sustainable management practices for tourism and

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Id. (emphasis added) (internal quotation marks omitted).

195. *Id.* at 11. As part of the action portion of this objective, the strategy notes the important fact that "Australia's biological diversity and the threats to it extend across tenure and administrative boundaries. At present more than two-thirds of Australia (some 500 million hectares) are managed by private landholders, while about 40 million hectares are within the terrestrial reserve system." *Id.*

196. *Id.* at 12.

197. *Id.* at 13.

198. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 14.

199. *Id.* at 15. In the action portion of this objective, the strategy notes:

> Some significant steps have been taken to achieve ex-situ conservation of threatened species, among them the establishment of the Australian Network for Plant Conservation and the Australasian Species Management Program, the captive breeding and propagation activities of the State and Territory conservation agencies, and the establishment and maintenance of seed and germplasm banks and microbial collections in a range of institutions.

Id.

200. *Id.* at 17.

201. *Id.* at 18.

202. *Id.* at 19.

203. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 20.

recreation;"[204] and "[e]nsur[ing] that the social and economic benefits of the use of genetic material and products derived from Australia's biological diversity accrue to Australia."[205]

(6) *Managing Threatening Processes.*—In Chapter 3 of the *Strategy*, eight specific objectives are articulated to "minimize the impact of various external factors on biological diversity" including "the effects of alien species, pollutants and altered fire regimes and the longer term changes to climate that may result from various atmospheric omissions."[206] Among the more important specific objectives in achieving this target are to "[e]nsure effective measures are in place to retain and manage native vegetation, including controls on clearing;"[207] to "[c]ontrol the introduction and spread of alien species and genetically modified organisms and manage the deliberate spread of native species outside their historically natural range;"[208] to "repair and rehabilitate areas to restore their biological diversity;"[209] and to "[e]nsure that the potential impacts of any projects, programs and policies on biological diversity are assessed and reflected in the planning processes, with a view to minimizing or avoiding such impacts."[210]

(7) *Improving Our Knowledge.*—In Chapter 4 of the *Strategy*, one stated objective is to improve "knowledge and understanding of Australia's biological diversity in terrestrial, marine and other aquatic environments."[211] The most important and interesting of the implementing actions of this objective is the intent to establish a "joint Commonwealth and State and Territory

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204. *Id.* at 22.
205. *Id.* at 23.
206. *Id.* at 25.
207. *Id.*
208. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 26. In the action segment, discussing this objective, the Strategy mentions some past Australian problems of introduced species in Australia. Part of the discussion in this regard notes:

> A large number of . . . species of plants, animals and microorganisms that have been introduced into Australia over the years have caused significant damage to Australia's biological diversity (including species extinctions). Examples are the European rabbit, which has caused enormous damage to the southern half of Australia, the *weed Mimosa pigra*, which is spreading rapidly on floodplains in northern Australia, and the fungus *Phytophthora*, which has had a devastating effect on the species-rich shrublands in the south of Western Australia.

Id.
209. *Id.* at 30.
210. *Id.* at 31.
211. *Id.* at 33.

program to carry out rapid assessment of Australia's biological diversity."[212] The definition of "rapid biological diversity assessment" in this chapter of the *Strategy* entails use of "a range of methods that facilitate rapid field survey work and classification" by using "a multidisciplinary team, including experienced field scientists and people with local knowledge, in surveying component groups representative of biological diversity."[213]

(8) *Involving the Community.*—Chapter 5 of the *Strategy* states two objectives to achieve "involvement of all Australians [in] conservation of biological diversity."[214]

(9) *Australia's International Role.*—Chapter 6 of the *Strategy* sets forth three objectives to achieve Australian "conservat[ion] [of] its own biological diversity [while] contribut[ing] to the conservation and ecologically sustainable use of biological diversity on a global scale."[215] These three objectives—reinforced by specific action plans—are: (a) "Support and encourage the development of Australia's participation in international agreements for the conservation of biological diversity;"[216] (b) "Seek to ensure that the activities of Australians outside Australia are consistent with the conservation of biological diversity;"[217] and (c) "Ensure continued and effective international cooperation in the conservation of biological diversity, directly between governments or through relevant international governmental and non-governmental organizations."[218]

(10) *Implementation.*—In Chapter 7 of the *National Strategy for Biological Diversity* four overarching objectives, supported by numerous action plans, are articulated with the aim of implementing the Strategy: (a) "Implement the Strategy through priority actions within established time frames;"[219] (b) "Ensure that appropriate arrangements are established to implement [*National Strategy for the Conservation of Australia's Biological Diversity*] and monitor its effectiveness;"[220] (c) "Ensure that the National Strategy is complemented by State and Territory and bioregional strategies,

212. *Id.*
213. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 34.
214. *Id.* at 37.
215. *Id.* at 38.
216. *Id.* Specific reference is made to Australia's ratification of the Convention on Biological Diversity in the supporting action-focused text to this objective. *Id.* at 38-39.
217. *Id.* at 39.
218. NATIONAL STRATEGY FOR BIOLOGICAL DIVERSITY, *supra* note 151, at 39.
219. *Id.* at 41.
220. *Id.* at 43.

supported by effective legislation where necessary;"[221] and (d) "Ensure that the costs of biological diversity protection are equitably shared, such that they reflect contributions to degradation and benefits from protection or use."[222]

The most important and interesting action plans to back up the various objectives concerning implementation are the detailed provisions addressing "priority actions."[223] Three aspects of these particular action plans are worthy of more extensive elaboration. First, the definition and context of "priority actions" is set forth in considerable detail as follows:

> A broad range of human endeavors and natural phenomena affect the future of Australia's biological diversity and the maintenance of essential ecological processes and systems. This is reflected by the large number of objectives and actions in this Strategy. The objectives and their actions do not contribute equally to insuring protection of biological diversity, nor are they equally urgent. Many of the objectives, such as those associated with ecologically sustainable development, are pursued as part of other national strategies or initiatives. Many of the actions are being pursued and will continue to be undertaken without the urgent need for enhanced resourcing from governments. These objectives and actions will provide a guide for determining priorities for expenditure from research funds and private sources and for community actions. Those additional actions deemed to be urgent and having the capacity to make major contributions to the protection and equally sustainable use of Australia's biological diversity will be implemented as quickly as possible.[224]

The priority areas of action, as depicted by their specific outcomes, are listed . . . along with the time frames during which substantive results are to be achieved. These results are broadly defined and many encompass more than one of the Strategy's actions. The Strategy will be reviewed at five-yearly intervals to allow for assessment of progress, evaluation of priorities, and, where necessary, adjustment.[225]

Second, the Year 2000 "priorities" to be achieved by Australia are eighteen in number, listed in the following order:

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221. *Id.*
222. *Id.* at 44.
223. *See supra* note 151 and accompanying text.
224. *Id.* at 41.
225. *Id.*

By the year 2000 Australia will have:

(a) [C]ompleted the identification of its biogeographical regions;
(b) [I]mplemented cooperative ethnobiological programs, where Aboriginal and Torres Strait Islander peoples see them to be appropriate, to record and ensure the continuity of ethnobiological knowledge and to ensure that the use of such knowledge within Australia's jurisdiction results in social and economic benefits to Aboriginal and Torres Strait Islander peoples;
(c) [C]ompleted the identification and description of major ecosystems in each biogeographic region and developed specific priorities for conservation;
(d) [E]stablished mechanisms for resourcing the development and implementation of programs and plans for the continuing management of Australia's biological diversity on public and private lands, including lands managed by Aboriginal and Torres Strait Islander peoples;
(e) [C]ompleted development of a nationwide system of protected areas on public land, and waters, that are representative of the major ecosystems in each biogeographical region;
(f) [I]mplemented management plans for protected areas identified by the Australian and New Zealand Environment and Conservation Council as having major conservation significance because of high biological diversity, high endemicity, or threatened species;
(g) [E]stablished effective mechanisms for providing information to and support for biological diversity conservation projects undertaken by the community;
(h) [C]learly defined elements on the conservation of biological diversity in primary, secondary and tertiary curricula, giving emphasis to interrelationships between disciplines;
(i) [I]mplemented programs consistent with this Strategy designed to encourage local government to play a major role in nature conservation in Australia;
(j) [I]mplemented institutional arrangements and programs to ensure and monitor the ecologically sustainable development of Australian industries based on the extraction or use of natural resources;

(k) [I]mplemented Conservation of Australian Species and Communities Threatened With Extinction—A National Strategy;
(l) [A]rrested and reversed the decline of remnant native vegetation;
(m) [A]voided or limited any further broad-scale clearance of native vegetation, consistent with ecologically sustainable management and bioregional planning, to those instances in which regional biological diversity objectives are not compromised;
(n) [C]ompleted species-specific management plans for major introduced pests and implemented effective controls for at least one introduced species of mammal and at least three major introduced plant pests;
(o) [I]mplemented a nationally coordinated program for long-term monitoring of the state of Australia's biological diversity and the impact of threatening processes;
(p) [E]stablished legislative and administrative mechanisms for control of access to Australia's genetic resources;
(q) [C]onducted an analysis of existing scientific knowledge about Australia's biological diversity and identified knowledge gaps and research priorities;
(r) [F]ully implemented provisions of those international agreements relating to the conservation and sustainable use of biological diversity to which Australia is a signatory.[226]

Third, the Year 2005 "priorities" to be achieved by Australia are nine in number, listed in the following order:

By the year 2005 Australia will have:

(a) [E]stablished effective cooperative mechanisms for bioregional planning and management;
(b) [I]mplemented management plans for the protected area network;
(c) [E]stablished a system of voluntary or cooperative reserves, or both, and other management schemes on private lands to complement the protection provided by the public estate in protected areas;
(d) [E]stablished networks of community groups and volunteers that play major roles in managing and monitoring biological diversity at the district level;

226. *Id.* at 41-2 (Action 7.1.1).

(e) [L]ocal governments that have assumed a major role in the conservation of Australia's biological diversity;
(f) [D]emonstrated maintenance of regional and district floras and faunas;
(g) [S]uccessfully rehabilitated at least 10 endangered or vulnerable species;
(h) [S]uccessfully controlled three introduced mammals, 10 introduced plants and one pathogen that pose major threats to biological diversity;
(i) [S]ufficient information from long-term monitoring and other research to identify and understand the nature and extent of threats to Australia's biological diversity to develop actions dealing with those threats.[227]

5. *State of the Environment Advisory Council's Report: Australia State of the Environment, 1996.*—In 1996 the independent State of the Environment Advisory Council (the "Advisory Council") presented to the Australian Commonwealth Minister for the Environment a thick, heavy document entitled *Australia State of the Environment—1996.*[228] Acknowledging that *The National Strategy for Ecologically Sustainable Development* "called for the introduction of regular national state of the environment reporting,"[229] noting that "[i]n the past two decades the governments of many countries . . . have published reports on national environmental conditions,"[230] and stating that "[s]tate of the environment reporting is one of the most powerful tools for informing the public about their environment,"[231] the Advisory Council submitted its findings. Of the many "broad aims" that the Advisory Council referenced in making the report, two of them were "to contribute to the assessment of Australia's progress in protecting biological diversity and maintaining ecological processes and systems,"[232] and "to contribute to Australia's international environmental reporting obligations."[233]

The Australia State of the Environment Report consists of ten substantive chapters (preceded by a foreword and executive summary). These ten chapters are:

227. *Id.* at 42 (Action 7.1.1).
228. AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30.
229. *Id.* at 1-4.
230. *Id.*
231. *Id.*
232. *Id.* at 1-5.
233. AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at 1-5.

- Chapter 1: Introduction
- Chapter 2: Portrait of Australia
- Chapter 3: Human Settlements
- Chapter 4: Biodiversity
- Chapter 5: The Atmosphere
- Chapter 6: Land Resources
- Chapter 7: Inland Waters
- Chapter 8: Estuaries and the Sea
- Chapter 9: Natural and Cultural Heritage
- Chapter 10: Towards Ecological Stability.[234]

Two appendices complete the document: Appendix 1 "International Treaties Relating to the Environment, Conservation and Heritage;"[235] Appendix 2—"Australia's Extinct, Endangered and Vulnerable Plants and Animals."[236]

In the course of the Executive Summary to the report, amplified by Chapter 4's in-depth discussion of biodiversity, the following, vitally important, stark conclusions about the state of Australian biodiversity are articulated:

- The loss of biological diversity is perhaps our most serious environmental problem. Whether we look at wetlands or salt-marshes, mangroves or bushland, inland creeks or estuaries, the same story emerges. In many cases, the destruction of the habitat, the major cause of biodiversity loss, is continuing at an alarming rate.[237]
- In cities, transport systems, stormwater and sewage and other waste disposal continue to have substantial adverse impacts on the environment, including biodiversity and water quality.[238]
- The hole in the protective ozone layer over the Antarctica is growing larger and deeper, exposing humans and other species to increased levels of harmful ultra-violet radiation. Present indications suggest that the layer will slowly recover.[239]

234. *Id.* at vii.
235. *Id.* at A-2.
236. *Id.* at A-10.
237. *Id.* at ES-8
238. AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at ES-8.
239. *Id.*

- The status of some marine species, including mammals, reptiles and some types of fish, is of concern.[240]
- Some types of forest are threatened with disappearance and we cannot be certain that others are adequately protected to ensure their survival.[241]
- Our system of reserves is patchy, with areas of poor biodiversity being better protected than areas of high biodiversity, because the poorer areas also have less economic value.[242]
- The listing of natural areas and cultural landscapes under the World Heritage Convention, and their subsequent protection, is a real success story, as is the increasing provision for other forms of reserve status, and the strengthening of State and Territory heritage legislation.[243]
- Some of our structural solutions to complex management problems such as the Great Barrier Reef Marine Park Authority, the Murray-Darling Basin Commission and the Board of Management of Uluru-Kata Tjuta, are recognized internationally as good models of response.[244]
- New Fisheries Acts have recently been introduced throughout Australia with the aim of managing resources within the principles of ecologically sustainable development and economic efficiency in the face of increasing fishing pressure. This has resulted in much improved fisheries management, but it is too early to judge the effectiveness for those species which were overfished.[245]
- The national ability to manage the environment is continually hamstrung by structural problems between different areas of government. Standards vary from State to State, and State and Commonwealth governments frequently battle over environmental

240. *Id.*
241. *Id.*
242. *Id.*
243. AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at ES-8.
244. *Id.*
245. *Id.*

issues. The recently established National Environment Protection Council will address some of these issues.[246]

- Adequate measures are not yet in place to combat the threats to biodiversity.[247]
- Despite the commitment to ecologically sustainable development, some government agencies still see their primary role as promoting economic development, with little regard to environmental costs.[248]
- While land clearing is restricted in some States, in others it continues to be tolerated and even encouraged.[249]
- In the past 200 years, introduced species of plants, animals and micro-organisms have caused dramatic and irreversible changes to the natural ecology. They range in size from the Asian buffalo to disease-causing viruses. Introduced animals such as the fox, cat, rabbit, goat and pig have been directly or indirectly responsible for Australia's native mammal extinctions. Exotic fish such as the European carp and trout have damaged fresh water environments. Introduced plants such as *mimosa* and rubber vine are taking over large tracts of land and waterways. An introduced fungus, *Phytophthora cinnamoni*, is a major cause of dieback, a disease threatening whole ecosystems.[250]
- For the land animals and plants about which we know enough to assess their current state, the trends [of human impact] are disturbing. Some 5 percent of higher plants, 23 percent of mammals, 9 percent of birds, 7 percent of reptiles, 16 percent of amphibians and 9 percent of freshwater fish are extinct, endangered or vulnerable. Australia has the world's worst record of mammal extinctions. In the past 200 years [Australia] ha[s] lost 10 of 144 species of marsupials and of 53 species of native rodents.[251]
- Australia lacks major, co-ordinated programs for the discovery, monitoring, management and sustainable

246. *Id.* at ES-9.
247. *Id.*
248. AUSTRALIAN STATE OF THE ENVIRONMENT REPORT, *supra* note 30, at ES-9.
249. *Id.*
250. *Id.* at ES-11.
251. *Id.* at ES-14.

> use of biodiversity. New strategies, particularly ecologically sustainable development, give us the opportunity to provide world leadership in the wise use of natural resources, including their conservation for future generations. Without this comprehensive approach, the future is bleak for much of Australia's unique flora and fauna.[252]

6. *Consultant's Report to Environment Australia on Incentives for the Conservation of Biodiversity, 1996.*—In a remarkable, two part document, published in 1996, entitled *Reimbursing the Future: An Evaluation of Motivational, Voluntary, Price-Based, Property Right and Regulatory Incentives for the Conservation of Biodiversity* ("*Biodiversity Incentives*"),[253] a number of Australian government officials, academics, and community consultants reported to Environment Australia on their findings and research. The principal discussion in *Biodiversity Incentives* is contained in Volume 1, which includes the following chapters (preceded by an Executive Summary, Recommendations, Preface and Project Brief and Methodology):

- Chapter 1: Introduction
- Chapter 2: Threats, Instruments and Mechanisms
- Chapter 3: What People Tell Us
- Chapter 4: Summary of Case Studies
- Chapter 5: Institutional Design Principles
- Chapter 6: Design Principles for Policy Instruments
- Chapter 7: Designing Optimal Policy Mixes
- Chapter 8: Opportunities and Recommendations[254]

There are several remarkable aspects of *Biodiversity Incentives*. First, the document flatly concludes that "Australia has a very bad record in the area of biodiversity conservation," noting

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252. *Id.* at ES-15.

253. AUSTRALIAN DEPARTMENT OF THE ENVIRONMENT, SPORT AND TERRITORIES, REIMBURSING THE FUTURE: AN EVALUATION OF MOTIVATIONAL, VOLUNTARY, PRICE-BASED, PROPERTY-RIGHT AND REGULATORY INCENTIVES FOR THE CONSERVATION OF BIODIVERSITY [Biodiversity Series Paper No. 9, Biodiversity Unit (1996) (2 vols.) (hereinafter BIODIVERSITY INCENTIVES].

254. *Id.*, vol. 1 at iii-iv. Volume 2 of BIODIVERSITY INCENTIVES consists of three major appendices: (a) an annotated literature review; (b) a detailed account of seven case studies addressing biodiversity conservation issues in Australia (the Western Australia Wheatbelt Case Study, the Macquarie Marsh Case Study, the Rangeland Case Study, the New South Wales Fisheries Case Study, the Kangaroo Island Tourism Case Study, the Wet Tropics Case Study, and the Top End and Kimberly Tourism Case Study); and (c) a descriptive consultation report, listing of workshop participants, and listing of people who contributed a submission. *Id.*, vol. 2 at iii-iv.

that "[m]ore than half of [Australia's] major biogeographic regions are either not represented or are poorly represented in a national park or nature reserve" while "[a]t least six animal species have become extinct in the last 50 years."[255] Second, the report exhibits a nuanced and sophisticated understanding of "a number of distinguishing features which differentiate [biodiversity conservation] from more conventional resource management issues."[256] These "special features" of biodiversity are described in *Biodiversity Incentives* as (a) the irreversible nature of biodiversity;[257] (b) the fact that "[m]uch of the biodiversity loss that is occurring is in the form of species we have yet to discover;"[258] (c) the collapsible nature of ecosystem diversity;[259] (d) the dearth and extreme limitations of knowledge "about the responses of species to biodiversity loss;"[260] (e) the fact that "many biodiversity problems cannot be solved merely by proscribing certain behavior, but only by ensuring positive ongoing management [reflecting a] custodianship ethic;"[261] (f) the problem that "much of biodiversity has no immediate economic value, giving rise to substantial tensions between public and private interests"[262] and (g) the problem that "the causes of genetic, species and ecosystem losses are extremely diffuse" while they "involve many different sectors and forms of activity" and public policies necessarily "address a variety of threats caused by actions both on and off the site where the valued attribute exists."[263]

A third noteworthy quality of *Biodiversity Incentives* is what it evaluates as "[t]he most important conclusion reached in [the] report;"[264] "there are no simple solutions to the complex problem of protecting [Australian] biodiversity and using biodiversity in ecologically sustainable ways."[265] "Rather," according to the study, "strategies need to be developed by communities, industry and government, working together with scientists and taking account of

255. *Id.*, vol. 1 at v. Another, somewhat less significant, fact was mentioned in the report to justify the poor assessment of Australia's biodiversity conservation, to wit: "In 1990 land clearing for agriculture contributed an estimated 27% of Australia's total net emissions of greenhouse gases." *Id.*
256. *Id.*
257. *Id.*
258. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at v.
259. *Id.*
260. *Id.*
261. *Id.*
262. *Id.*
263. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at v-vi.
264. *Id.* at vi.
265. *Id.*

specific biodiversity threats, development opportunities and local and national community aspirations."[266] A fourth impressive feature of *Biodiversity Incentives* was the use of a project team that reflected both depth and breadth of expertise "in the areas of ecology, economic assessment, regulatory control, institutional change, natural resource management and community consultation."[267] Fifth, the report provides an appropriate level of detail and comprehensiveness in (a) offering "[t]wenty-six General Recommendations . . . which canvass the broad directions to be undertaken in addressing biodiversity protection,"[268] juxtaposed with (b) "[s]ixty-three Specific Recommendations [that] propose more detailed action," many of [which] "could be put into place immediately."[269]

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266. *Id.*
267. *Id.*
268. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at vi.
269. *Id.* The General Recommendations and Specific Recommendations are combined in a useful format, worthy of complete quotation, as follows:

A Policy Framework

General Recommendation 1

> That consistent with agreed government policy, Commonwealth and State Governments develop and implement a plan of action to expand the terrestrial and marine protected areas network so that it is comprehensive, adequate and representative of Australia's biodiversity.

Specific Recommendation 1.1

> That the target of completing the protected area network by the year 2000 be maintained and that funds be set aside to complete this task.

Specific Recommendation 1.2

> That funds be set aside to manage the existing protected area network and that the budget for its expansion include an allocation for adequate management.

General Recommendation 2

> That Commonwealth, State and local governments develop and integrated package for the conservation of biodiversity "off-reserves" that makes use of incentive instruments and mechanisms and contains implementation timelines that support and stimulate community-based initiatives.

General Recommendation 3

> That in formulation of Commonwealth, State, regional and local development programs, protection of biodiversity is recognized explicitly as a goal which is as important as economic development.

Opportunities for Building Institutional Capacity

General Recommendation 4

> That government devolve greater responsibility for biodiversity protection to local communities and industries.

General Recommendation 5

> That governments at all levels use and adapt existing

administrative structures to include explicit consideration of the protection of biodiversity.

General Recommendation 6

That Commonwealth, State and local governments review existing and proposed community-based and regional development programs to ensure that, consistent with the principles of ESD, each makes explicit the need to maintain biodiversity values.

Specific Recommendation 6.1

That, as biodiversity conservation is one of the 3 core objectives agreed for ecologically sustainable development, the Commonwealth Government require explicit consideration of biodiversity implications in all Commonwealth Cabinet proposal papers and that it encourage States to adopt the same practice.

Specific Recommendation 6.2

That governments at all levels encourage staff transfers between government agencies to improve communication and understanding between professionals working in related but different disciplines, and to encourage multi-disciplinary approaches to biodiversity problem solving.

General Recommendation 7

That government agencies at all levels develop biodiversity conservation programs which involve members of the community and industry in initiating, designing and implementing projects.

Specific Recommendation 7.1

That governments at all levels make far greater use of co-management structures as a means to make decisions about resource use.

Specific Recommendation 7.2

That in anticipation of greater devolution of responsibility to industry, peak resource industry bodies develop protocols and structures which encourage members at all levels in their structure to interact with both communities and other industries affected by biodiversity considerations.

Specific Recommendation 7.3

That through the Council of Australian Governments, the Australian Local Government Association and the Municipal Conservation Association, Regional Organizations of Councils (ROCs) be encouraged to include the conservation of regional biodiversity among their priority objectives.

Specific Recommendation 7.4

That governments at all levels reimburse community representatives for the costs of formal participation in consultation processes associated with biodiversity protection.

General Recommendation 8

That both within its own programs and in collaboration with State and local governments, the Commonwealth Government encourage the delineation of bioregional boundaries appropriate to the various aspects of planning within each region.

Specific Recommendation 8.1

That bioregions be used as the basis on which to develop the information necessary to ensure that ecosystem biodiversity is

protected.

Specific Recommendation 8.2

That information on the biodiversity within each bioregion be included in all stages of strategic and land-use planning at local level.

General Recommendation 9

That much greater emphasis be given to the role of local government in conserving biodiversity, and this be achieved by making them more accountable for the effects of their decisions on biodiversity.

Specific Recommendation 9.1

That the Commonwealth and State governments specify which areas require special management arrangements and set formal targets for the conservation of biodiversity at the local level.

Specific Recommendation 9.2

That the formulas used to allocate money to local government be reviewed with a view to reimbursing them for some of the costs of conserving biodiversity in their area. The revised formula should take into account:

- area within the national park system;
- area under a conservation covenant or easement;
- area of roads that contain relatively undisturbed native vegetation and adjoin a conservation covenant or easement on private land; and
- the number of threatened, rare or endangered species in the area and outside the national park system that are being protected under a council endorsed and state approved management plan.

Specific Recommendation 9.3

That local governments be asked to provide annual biodiversity audits which demonstrate their progress towards protection of diversity, and that the data generated be used in the development of the Commonwealth Government Grants Commission funding 'formula'.

General Recommendation 10

That non-government organizations be adequately resourced to enable their greater use as a cost effective means to implement biodiversity conservation programs.

Specific Recommendation 10.1

That government agencies, both State and Commonwealth, ensure that adequate resourcing is provided by way of research support, travel costs, sitting fees and other cost reimbursement, to enable community participation in all aspects of policy development and implementation for the conservation of biodiversity.

Specific Recommendation 10.2

That funding bodies support Aboriginal people who are carrying out biodiversity conservation initiatives, by removing the disincentive of funding only community but not individuals.

Specific Recommendation 10.3

That ATSIC funding for land management and tourism plans be provided on a 3-5 year basis (rather than annually) and that ecological sustainability criteria be included in those plans.

Specific Recommendation 10.4

That Aboriginal tourism programs funded by ATSIC, DEET and the Department of Tourism be linked with other regional programs in which biodiversity conservation forms a basis, such as the innovative 'Land and Learning' and Galtha Rom multimedia projects used to teach school children in east Arnhem Land.

Developing a Range of Incentive Instruments

General Recommendation 11

That where information is lacking, instruments which increase the extent and relevance of research be used as one of the main mechanisms to enhance dependable, efficient and equitable biodiversity conservation.

Specific Recommendation 11.1

That the terms of reference of the Land and Water Resources Research and Development Corporation and other relevant R&D Corporations be expanded to include biodiversity criteria among those used to allocate research funds.

Specific Recommendation 11.2

That a Biodiversity Research and Development Corporation be established under the auspices of the Commonwealth Environment portfolio to expand the allocation of funds directed to biodiversity research and to work in collaboration with other R&D Corporations.

Specific Recommendation 11.3

That local extension and State agency staff be encouraged to have a greater involvement in bringing end-user views to the setting of research priorities, and as members of research teams.

Specific Recommendation 11.4

That the $500,000 limit on the amount of money necessary to obtain a 150% tax deduction for syndicated research be lowered to $100,000 for research projects on matters related to the protection of biodiversity and approved by the Minister for Environment.

General Recommendation 12

That information on biodiversity be made accessible and relevant at the local level and, wherever possible, delivered by people having credibility with the target audience.

Specific Recommendation 12.1

That the Commonwealth, in association with the states, fund a biodiversity awareness campaign to include:

- a review of the terminology they use with a view to drawing attention to the importance of conserving biodiversity;
- a major effort to teach the benefits of biodiversity conservation in schools which might include revised curricula, education packs and the organization of 'wilderness camps' so that urban children can learn more about biodiversity; and
- a major effort to increase awareness about the means to obtain access to the incentive programs available for the conservation of biodiversity.

Specific Recommendation 12.2

That the existing work of both ERIN and NRIC be extended to provide an informational base on ecosystem status at the bioregional and local level, and it be made compatible with

existing state and government databases and made available for incorporation as an integral part of the planning process from an early age.

Specific Recommendation 12.3

That the Commonwealth Government continue to resource the Community Biodiversity Network and other community-based networks seeking to expand public awareness of and participation in biodiversity conservation.

Specific Recommendation 12.4

That State and local governments encourage the creation of local biodiversity monitoring groups, and the participation of other community groups in monitoring activities by employing biodiversity extension officers with a mandate to undertake this work.

Specific Recommendation 12.5

That the Commonwealth government support the long-term employment of biodiversity extension officers by state and local governments on a cost sharing basis.

Specific Recommendation 12.6

That existing research and extension programs be expanded to highlight the economic value of local native species as saleable products, as well as the benefits of remnant vegetation to the farming system.

General Recommendation 13

That award programs which extend community awareness and understanding be expanded to encourage communities to protect, develop and restore biodiversity values.

General Recommendation 14

That governments at all levels establish, sponsor and develop and extend voluntary mechanisms for biodiversity protection, particularly in circumstances where these can be targeted and involve low monitoring costs.

Specific Recommendation 14.1

That governments develop and extend programs which give ongoing encouragement and advice to landholders who are committed to biodiversity conservation, and which make uncommitted landholders aware of the social, environmental and economic benefits which can be obtained from biodiversity conservation.

Specific Recommendation 14.2

That property management plans, use a prerequisite for some forms of government assistance be required to include specific actions to prevent the loss of biodiversity values.

Specific Recommendation 14.3

That an accreditation process, which includes biodiversity criteria, be used to reduce the costs for land holders who wish to participate in drought assistance and other programs that affect biodiversity values and generally to provide incentive and encourage to Australia's leading land mergers.

Specific Recommendation 14.4

That the eco-tourism industry develop accreditation schemes and voluntary codes of practice which include criteria relating to the conservation of biodiversity and which offer financial advantage to participating operators.

Specific Recommendation 14.5

That the Commonwealth and States jointly develop a roadside vegetation and corridor enhancement program.

General Recommendation 15

That management agreements be used as the prime mechanism for reimbursing people for the cost of site specific works of a non-market nature.

Specific Recommendation 15.1

That management agreements be used as a transitional means to obtain voluntary acceptance of the need to conserve biodiversity, but whenever possible, be phased out once this transition has been achieved.

Specific Recommendation 15.2

That state conservation agencies investigate the use of management agreements with local landholders to undertake specified management actions within public conservation reserves.

Specific Recommendation 15.3

That state conservation agencies investigate the use of management agreements with local landholders to undertake specified management actions on private land adjacent to public conservation reserves.

General Recommendation 16

That conservation covenants be used to underpin management agreements to ensure that the long-term benefits of work implemented under an agreement are realized.

Specific Recommendation 16.1

That, as many of the benefits of biodiversity conservation are long term, all conservation covenants should be in perpetuity.

Specific Recommendation 16.2

That the perverse effects of rating systems on vegetation clearance be reduced by recording the presence of conservation covenants and easements in land valuation data files and indicating on land valuation notices that the valuation has been adjusted to account for this.

Specific Recommendation 16.3

That where land tax or rating systems can not be adjusted to recognize restrictions on use or clearance of native vegetation, land holders be reimbursed for the difference between the assumed and actual land-use potential. This rebate should be in proportion to the difference between the rated value and the actual value of the land. If the restrictions are changed then the value of the rebate should be repaid to the government. Wherever possible, rate rebates should only be paid for land protected by a conservation covenant or other similar mechanism.

Specific Recommendation 16.4

That the Commonwealth government fund State conservation-covenant acquisition and management agreement programs on a cost sharing basis.

Specific Recommendation 16.5

That state governments implement and where necessary enact legislation that empowers local governments and non-government organizations to acquire and hold conservation

covenants and easements and enter into management agreements. Dealings of this nature should be exempt from stamp duty.

General Recommendation 17

That in the design of license systems, emphasis be placed on dependability in protecting biodiversity in an efficient and equitable manner.

Specific Recommendation 17.1

That tradeable license and permit systems be linked to periodically revised bioregional or ecosystem management plans and be designed to maximize the incentive to protect biodiversity.

Specific Recommendation 17.2

That for the purpose of raising acceptance of the use of property-rights systems as a means to protect biodiversity values, the Taxation Commissioner make it unequivocally clear that any new individually-tradeable property rights associated with property held before 20 September 1984 will be exempt from capital gains tax.

Specific Recommendation 17.3

That licenses, leases and permits to use biodiverse resources be conditional, and resource security be limited to those who comply with these conditions.

Specific Recommendation 17.4

That the mechanisms being developed for the establishment of water allocations for the environment under the National Water Industry Reforms adequately reflect the need to maintain biodiversity values.

Specific Recommendation 17.5

That additional funding be provided to current research programs to ensure scientific determination of adequate timing and volume of water flows to be delivered to the environment.

Specific Recommendation 17.6

That conservation easements be promoted as a mechanism to enable tourist access to private land and provide incentives to the landholder to maintain biodiversity values.

General Recommendation 18

That conservation easements be promoted as a mechanism to enable tourist access to private land and provide incentives to the landholder to maintain biodiversity values.

General Recommendation 19

That each level of government set precautionary standards and use precautionary regulations to protect those aspects of biodiversity for which it is accountable.

Specific Recommendation 19.1

That no level of government should undermine the precautionary standard set by another level of government, or a community or industry.

Specific Recommendation 19.2

That the onus and cost of providing the information necessary to access whether or not precautionary standards are achieved be placed on the party proposing action that may threaten biodiversity values.

Specific Recommendation 19.3

That the Commonwealth introduce Biological Diversity Conservation legislation, using the model developed by the Australian Committee of IUCN as a basis for consultation.

Specific Recommendation 19.4

That the Commonwealth and state governments amend existing legislation to ensure that development proposals consider the aspects on endangered and vulnerable species and ecological communities, and that cumulative impacts of development on other aspects of biodiversity within a region are also considered as part of comprehensive environmental impact assessment.

Specific Recommendation 19.5

That endangered and vulnerable species, endangered ecological communities and threatening processes within the marine environment be added to the schedules of the Endangered Species Protection Act 1992.

General Recommendation 20

That 'any person' be allowed to appeal against contestable decisions made under biodiversity conservation legislation.

Opportunities to Finance Biodiversity Conservation

General Recommendation 21

That in the interests of biodiversity conservation Commonwealth, State and local governments make greater efforts to apply the Polluter-Pays and User-Pays Principle.

Specific Recommendation 21.1

That some of the money collected through pollution charges be allocated to biodiversity conservation.

Specific Recommendation 21.2

That water prices be adjusted to reflect the full cost of supply.

General Recommendation 22

That wherever necessary, industry and community contributions to the costs of protecting biodiversity be supplemented by those supplied from government sources.

General Recommendation 23

That levies and charges be used so that identifiable direct beneficiaries of biodiversity conservation recognize the full costs of supplying services to them.

Specific Recommendation 23.1

That levies and charges be used as the main means to recover the cost of providing access to nature based and ecotourism.

Specific Recommendation 23.2

That entrance fees to public National Parks and Nature Reserves should at least reflect the cost of supplying visitor facilities and infrastructure but the cost of supplying non-use benefits should not be levied against visitor fees.

Specific Recommendation 23.3

That a Roadside Vegetation and Corridor enhancement program, be developed by State and Commonwealth governments and be financed through a levy on funds directed to road and other infrastructure development and maintenance.

General Recommendation 24

That perverse incentives be removed or mitigated as a precursor to the introduction of a range of positive incentive mechanisms.

Specific Recommendation 24.1

That publicly-funded assistance programs—such as those used

for drought assistance, rural adjustment and production support for sugar—use cross-compliance mechanisms to ensure that these programs do not have perverse effects on biodiversity conservation.

Specific Recommendation 24.2

That the existing opportunity for land holders to claim a 20% rebate on expenditure on prevention of land degradation be restricted to that identified in an approved management plan which also considers opportunities to protect biodiversity and the means to reduce threats to biodiversity values.

Specific Recommendation 24.3

That when vegetation is cleared using a farmer's own equipment and labor, these 'land development' costs be depreciated in a manner similar to other capital developments and not written-off in the year that expenditure occurs.

Specific Recommendation 24.4

That the list of eligible land care expenditure be expanded to include the cost of habitat rehabilitation and tree planting off-farm so farmers are encouraged to contribute to the cost of controlling threats like dryland salinity and its upland source.

General Recommendation 25

That revenue raised for the purpose of financing biodiversity conservation be placed in conservation funds managed by the community or industry that raised that money.

Specific Recommendation 25.1

That revenue raised through the use of charges and levies as a means to pay for pollution control and prevention costs be allocated to that purpose in a transparent manner.

Specific Recommendation 25.2

That revenue raised through charges and levies on industry for the purpose of biodiversity and conservation be allocated to that purpose in a transparent manner.

General Recommendation 26

That taxation incentives be recognized as the most cost-effective means of encouraging altruistic investments in biodiversity conservation by the private sector, especially when implemented in association with non-government organizations.

Specific Recommendation 26.1

That the 20% rebate for the cost of work on buildings and structures recorded on a prescribed heritage list and approved by the Minister for Communication and the Arts be extended to include work approved by the Minister for the Environment on the rehabilitation or protection of areas identified as being of significance for biodiversity conservation.

Specific Recommendation 26.2

That donations of land to approved environmental organizations and for the purpose of extending Australia's conservation network be deductible from assessable income irrespective of the date when the land was purchased.

Specific Recommendation 26.3

That the Income Tax Assessment Act 1936 be amended to include donations of conservation covenants or easements to the Nation of Australia or an organization listed on the Register of Environmental Organizations.

A sixth noteworthy quality of the report is its exciting "new vision for biodiversity in Australia"[270] that is succinctly stated in the following words: "The Australian community of the next generation, and future generations, will benefit from development of processes that integrate biodiversity protection and ecologically sustainable development at the earliest possible stages. Community and industry participation will occur at all levels of government decision making. . . ."[271]

A seventh impressive feature of *Biodiversity Incentives* is the way the project team went about researching the report. The project team followed a tripartite process: (a) "an exhaustive review of available information on the use of incentives both within Australia and overseas;"[272] (b) "[a]n extensive consultation process was undertaken at thirteen locations around Australia;"[273] and (c) "six case studies were conducted" that "show that specific mixes of [policy] instruments will be required to address specific sets of threats."[274] An eighth attractive aspect of the report is the use of a practical and comprehensive set of "evaluation criteria" for the purpose of judging policy "instruments and mechanisms."[275] These criteria are:

- economic efficiency;
- dynamic and continuing incentives that encourage innovation and improvement through time;
- equity;
- dependability or certainty in delivering desired objectives;
- precaution;
- administrative feasibility and cost; and
- community and political acceptability.[276]

Id. at xiii to xx (original emphasis omitted).

270. BIODIVERSITY INCENTIVES, *supra* note 253, at vi.

271. *Id.*

272. *Id.* at vii.

273. *Id.*

274. *Id.*

275. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at viii.

276. *Id.* (original emphasis omitted). Moreover, as explained by the Project Team:

> As well as the evaluation criteria, four key guidelines were developed to help in the design of policy mixes that promote the *active* conservation of biodiversity. These are that (all things being equal):
>
> - policy changes should seek to reduce underlying threats to biodiversity such as institutional failure, market failure or incompletely specified property, right structures, as well as the direct threatening processes;

Ninth, the report, in admirable fashion, articulates a series of six "National Goals"[277]—consistent with "the National Strategy for the Conservation of Australia's Biological Diversity, the Intergovernmental Agreement on the Environment and other relevant initiatives,"[278] while the report also elaborates a series of helpful "National Guidelines" intended "to assist decision making about appropriate incentive mixes, and improving institutional capacity."[279]

- preference should be given to mixes that motivate communities and industry to conserve biodiversity, less interventionist instruments should be preferred to more interventionist instruments; and
- where an ongoing and active contribution to the conservation of biodiversity is desired, financially-attractive instrument mixes should be preferred to those that reduce the net welfare of those asked to conserve biodiversity.

Id. at viii (original emphasis).

277. *Id.* at ix. The National Goals, suggested by the Project Team, that "Australia show work towards" are the following six measures that would ensure that:

- biodiversity conservation and protection is undertaken as a fundamental part of and necessary precondition for ecologically sustainable development and the implementation of the precautionary principle;
- responsibility for maintaining biodiversity is shared between government, community and industry in a transparent manner;
- appropriate incentives are put in place to encourage the protection of biodiversity and to encourage its use only in ways which are ecologically sustainable;
- appropriate mixes of incentives are developed and appropriate weightings given to motivational, voluntary, property-right, price-based, and regulatory instruments in ways which vary according to the biodiversity threat and bioregional and social characteristics;
- the institutional capacity at all levels of government and within the non-government sector is capable of supporting a national approach to biodiversity protection through the use of incentives; and
- the Australian community as a whole—as well as users and beneficiaries of biodiversity—contribute towards the provision of incentives to land managers charged with primary responsibility for biodiversity protection.

Id. at ix.

278. *Id.* at viii.

279. *Id.* The complete set of proposed "National Guidelines" are as follows:

When considering trade-offs

- as information about biodiversity is uncertain and adverse consequences are irreversible, the emphasis in choosing between efficiency, equity and ecological considerations should be on ensuring that maintenance of biodiversity values is the priority.

With regard to institutional considerations

- biodiversity conservation should be fully integrated into regional plans and sectoral plans such as those for forestry, agriculture, coastal zones and rural development;
- rather than expecting accountability to result simply from reporting mechanisms and processes, accountability mechanisms should also

Tenth, another remarkable feature of *Biodiversity Incentives* is its balanced and focused identification throughout the report of six kinds of "opportunities for action"[280]: (a) opportunities "to build institutional capacity;"[281] (b) opportunities "to develop motivational

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be built into the funding mechanisms available at all levels of government;
- authority and accountability for implementing the various aspects of the National Biodiversity Conservation Strategy should be given to the lowest level of government at which it can be effectively exercised;

With regard to the instrument mix
- fundamental to any policy mix to address threats to biodiversity are motivational incentive which work to involve communities and industries in biodiversity protection and ecologically sustainable use, at planning, decision-making and implementation levels;
- precautionary standards, enforced by regulation, are a necessary underpinning of any incentive mix;
- since no single instrument or type of instrument has dependability, more than one instrument and instrument type will usually be necessary;
- each level of government should set precaution standards for biodiversity protection, and no level of government should be empowered to undermine any precautionary standard set by another level of government, a community or an industry.

With regard to financial considerations
- the Australian community as a whole should take financial responsibility for protecting biodiversity when the costs of doing so cannot be recovered by the use of market mechanisms;
- the cost of controlling and preventing threatening processes should be borne primarily those who cause these processes;
- all of those who benefit from non-market dimensions of biodiversity conservation, either directly and indirectly, should contribute to the cost of its maintenance;
- in using the attributes of biodiversity, provision must be made for ongoing management to control the threats that will arise from that use;
- landholders who draw attention to the presence of an endangered species or other important attributes of biodiversity not previously identified on their land should be eligible for commercial opportunities foregone;
- as most property ownership embodies a speculative dimension, compensation for the loss of a private land development option should be used only as a transitional measure when absolutely necessary to obtain community acceptance of a change in property rights; and
- when compensation is paid it should be associated with a clear change in property rights guaranteeing the protection of biodiversity values in perpetuity via a conservation covenant or other similar mechanism.

Id. at ix-x.

280. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at x.

281. *Id.*

incentives;"[282] (c) opportunities "to develop voluntary incentives;"[283] (d) opportunities "to develop property-right incentives;"[284] (e) opportunities "to develop regulatory incentives;"[285] and (f) opportunities "to finance biodiversity conservation."[286]

7. *Australia's First National Report to the CBD Conference of the Parties, 1998.*—As part of its responsibilities under the Convention on Biological Diversity, Australia's national government prepared a document in 1998 entitled *Australia's National Report.*[287] The 91-page report provides a sophisticated and detailed description of the following topics: the Australian context,[288] State of Australia's Biodiversity,[289] the National Strategy for the Conservation of Australia's Biological Diversity,[290] strategies and actions adopted in response to the Convention on Biological Diversity,[291] and monitoring and evaluation of the Strategy.[292] The analysis which follows is divided into two principal parts: (a) background information[293] and (b) Australian measures in response to the Convention.[294]

a. Background Information.

(1) *The Australian Context*—The report candidly admits that "[m]uch of Australia's biodiversity is yet to be described and there is a dearth of knowledge about almost every major ecosystem type in Australia."[295] Yet, significant current biodiversity knowledge is summarized with precision. By way of example, the report notes that Australia, as a nation state, "has the planet's second highest number of reptile species (686), is fifth in

282. *Id.* at xi.
283. *Id.*
284. *Id.*
285. BIODIVERSITY INCENTIVES, *supra* note 253, vol. 1 at xii.
286. *Id.*
287. ENVIRONMENT AUSTRALIA, AUSTRALIA'S NATIONAL REPORT TO THE FOURTH CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY (1998) [hereinafter AUSTRALIA'S NATIONAL REPORT]. The report was prepared to fulfill Australia's obligation as a Party to the Convention under Article 26 of the Convention. *See supra* notes 28 to 29 and accompanying text.
288. *Id.* at 7-14.
289. *Id.* at 15-16.
290. *Id.* at 17-18.
291. *Id.* at 19-86.
292. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 19-87. Moreover, AUSTRALIA'S NATIONAL REPORT also contains two appendices. Appendix 1 is entitled Summary of the National Strategy for the Conservation of Australia's Biological Diversity. *Id.* at 89-90. Appendix 2 is entitled Suggested Guidelines for National Reporting on Article 6. *Id.* at 91.
293. *See infra* notes 295-316 and accompanying text.
294. *See infra* notes 317-397 and accompanying text.
295. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 10.

flowering plant species (23000) and tenth in amphibian species (over 180),"[296] as well as observing that "[t]he Australian continent and its islands have an estimated 146 (52%) of the world's 280 marsupials."[297] By way of another illustration, the report highlights the significance of the appreciable endemism rate—"the high percentage of organisms that occur only in Australia, with this endemism extending up to the higher taxonomic categories of genus and family."[298]

The report acknowledges the importance of Australia's biodiversity to its economic welfare, particularly "through such industries as forestry, pastoralism and fisheries" juxtaposed with eco-tourism.[299] Australian government regulation and management of environmental and natural resource policy, however, is dispersed. As described by the report, "[m]ost legislative responsibilities rest with [six] State and [two] Territory Governments," with "State and Territory Governments hav[ing] primary responsibility for land management and pollution control legislation."[300] Yet, the Federal Commonwealth government, according to the report, "does have some powers to enact laws affecting the environment and sustainable development through its responsibility under the [Australian] Constitution for areas such as international trade, external affairs and commerce."[301] The report summarizes the role of the 750 local Government councils in Australia as "the form of government closest to the landholders and the community," charged with implementing community projects funded by the Commonwealth Government and the State Governments.[302] Furthermore, *Australia's National Report* identifies "several forums through which the Commonwealth

296. *Id.*
297. *Id.*
298. *Id.* The report notes:
> Seven families of mammals, including those of the platypus and the koala, and 12 of flowering plants are endemic, giving Australia far more endemic families than any other country. At the species level, the mean percentage of endemism for terrestrial vertebrates and flowering plants is 81%. Approximately 88% of Australia's reptiles, 70% of birds, 94% of frogs, and 99% of non-marine molluscs occur nowhere else in the world.

Id.
299. *Id.* The reports points out that:
> International visitor surveys show[ ] that the majority of major tourist attractions in Australia are environmentally important areas.

Id.
300. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 12.
301. *Id.*
302. *Id.*

Government and State and Territory Governments can develop a coordinated approach to national environmental issues."[303] These forums include the Council of Australian Governments,[304] the Australian and New Zealand Environment and Conservation Council,[305] the Agricultural and Resource Management Council of Australia and New Zealand,[306] the Ministerial Council for Forestry, Fisheries and Aquaculture,[307] the Australian and New Zealand Mining and Energy Council,[308] and the Intergovernmental Committee on Ecologically Sustainable Development.[309]

(2) State of Australia's Biodiversity.—Referencing and relying upon the earlier official document, *Australia: State of the*

303. *Id.* at 13.

304. The Council of Australian Governments "is the peak intergovernmental body represented by Heads of Governments from the Commonwealth, State, Territory and Local Governments. Whil[e] this is a general forum for developing agreements between governments, the agreements reached set the context for environmental policy direction." *Id.*

305. "The Australian and New Zealand Environment and Conservation Council comprises the Commonwealth, State, Territory and New Zealand Ministers responsible for the environment and conservation. It provides a forum for member governments to exchange information and experience and develop coordinated policies in relation to national and international environmental and conservation issues." *Id.*

306. The Agricultural and Resource Management Council of Australia and New Zealand "comprises the Commonwealth, State, Territory and New Zealand Ministers responsible for agriculture, soil, water (both rural and urban) and rural adjustment policy." *Id.*

307. The Ministerial Council for Forestry, Fisheries and Aquaculture "comprises Commonwealth, State, Territory and New Zealand Ministers responsible for forestry, fisheries and aquaculture. The council is a consultative forum which seeks to ensure that government actions promote effective management and the exchange of information on all aspects of forestry, fisheries and aquaculture." *Id.*

308. The Australian and New Zealand Mining and Energy Council "comprises Commonwealth, State, Territory and New Zealand Ministers responsible for minerals and energy. Its mission is to promote the general welfare and progressive development of the Australian mining and minerals industry, and to consult on the nation's energy needs, resources and policies." *Id.*

309. The Intergovernmental Committee on Ecologically Sustainable Development "comprises senior representatives of the Prime Minister and of State and Territory leaders. It oversees implementation of the National Strategy for Ecologically Sustainable Development and other matters requiring a broad range of government expertise, covering environmental, economic and social considerations." *Id.*

This Committee is to be distinguished from the multi-governmental machinery under the 1992 Intergovernmental Agreement on the Environment, "which defined a framework of environmental responsibilities and interests for each level of government" while also "establish[ing] agreed processes and principles to be put in place to accommodate those interests." *Id.* at 12.

Environment, 1996,[310] *Australia's National Report* admits that biodiversity loss is probably Australia's "most serious environmental problem."[311] The report puts this loss of biological diversity, however, into both geological time perspective,[312] as well as the perspective of over 200 years of western governmental control of Australia.[313] The most significant description of past negative impacts on Australian biodiversity states:

> Clearing for agriculture, drainage of wetlands and the spread of urbanization are major factors in the change of vegetation patterns and the loss of habitat for native species of wildlife. Changed fire regimes, salination resulting from agriculture, altered plant species compositions as a result of grazing by introduced herbivores, and contamination of waterways by fertilizers and pesticides have also contributed to change in biotic and abiotic composition of habitats, diminishing their ability to sustain the full range of indigenous species. Altered water regimes of aquatic systems are considered a major factor in habitat change.
>
> The introduction of alien species may appear to increase species diversity, but in general these species have serious negative effects on native species, including loss of genetic variation, reduction in distribution and abundance, and extinction. Many introduced species, which are without predators or disease to control them, have increased rapidly in number and range and have had a devastating impact on other species or native vegetation. Introduced species now constitute up to 15% of Australian flora; the proportion is as high as 31% in Tasmania.[314]

(3) *The National Strategy for the Conservation of Australia's Biodiversity.—Australia's National Report* mentions that the 1996 *National Strategy for the Conservation of Australia's Biological Diversity*[315] "became the principal means for coordinated

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310. *See supra* note 30.

311. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 15 (quoting AUSTRALIAN STATE OF THE ENVIRONMENT REPORT 1996).

312. *Id.*

313. *Id.*

314. *Id.* Other biodiversity issues discussed in this section of the report include the potential impact of the "greenhouse effect" on Australian flora and fauna, *id.*, the loss of genetic diversity, *id.* at 15-16, and the patchwork nature of past Australian laws to protect biodiversity.

315. *See supra* note 151.

implementation of the Convention [on Biological Diversity]"[316] after Australia's ratification of the Convention in June 1993.

b. Australia's Measures in Response to the Convention—The major part of *Australia's National Report* is a 67 page section entitled "Strategies and Actions Adopted in Response to the Convention on Biological Diversity."[317] The report examines Australia's response to Articles 6 through 20 of the Convention.

(1) *Article 6: General Measures for Conservation and Sustainable Use.*—The report, quoting from relevant language of Article 6(b) of the Convention, indicates that analysis focuses on Australian "cross-sectoral" and "sectoral" plans, programs and policies which seek "conservation and sustainable use of biological diversity."[318] Following this approach, the report initially describes five national cross-sectoral measures: *The National Strategy for Conservation of Australia's Biological Diversity,*[319] the *National Strategy for Ecologically Sustainable Development,*[320] *The National*

316. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 17.

317. *Id.* at 19-86.

318. *Id.* at 20 (quoting Article 6(b) of the Convention, to wit, the requirement that parties "[i]ntegrate, as far as possible and appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies").

319. *Id.* As stated in the report:

> The Strategy recognizes the need to integrate the conservation and ecologically sustainable use of biological diversity into relevant sectoral and cross-sectoral activities. Australian Governments have agreed that these policies will require:
> - implementation on a bioregional basis;
> - improved coordination and integration mechanisms between all levels of government, industry and community groups;
> - better planning to overcome incremental decision-making;
> - effective monitoring and development of performance indicators;
> - rapid dissemination and application of new information;
> - implementation measures, including regulatory arrangements, legislation, standards and economic instruments;
> - proper evaluation of the full environmental, social and economic benefits and costs of the protection of biological diversity;
> - •greater public accountability.

Id.

320. *Id.* As explained in the report:

> The National Strategy for Ecologically Sustainable Development was developed in 1992 after discussion between industry groups, unions, environmental and community groups and all levels of government. Australia's three tiers of government, Commonwealth (federal), State and Local, adopted the strategy in December 1992 at a meeting of the Council of Australian Governments.
>
> The goal of the strategy is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. Its core objectives are:

Forest Policy Statement,[321] the *Australian Oceans Policy,*[322] and *The National Heritage Trust.*[323] Moreover, as part of this cross-sectoral

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- to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations; and
- to protect biological diversity and maintain essential ecological processes and life-support systems.

The National Strategy for the Conservation of Australia's Biological Diversity is consistent with this strategy and is an important mechanism for achieving the above objectives.

Id.

321. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 21. This document, as explained in the report:

> [was] signed by the Commonwealth and all States and Territories [and] sets out a vision for Australia's forests and forest industries into the next century. It also provides an agreed policy framework for achieving that vision, based on the principles of ecologically sustainable development, and details broad conservation and industry goals for the management of Australia's forest estate. The National Forest Policy Statement is the primary means by which the objectives of the National Strategy for the Conservation of Australia's Biological Diversity will be met in forest habitats.

Id.

322. *Id.* The report notes that:

> Australia is currently developing a comprehensive and integrated national policy for marine areas under its jurisdiction. The Australian Oceans Policy is being developed by the Commonwealth in partnership with State and Territory Governments, and in consultation with Local Government, environmental, industry and more broadly based groups within the Australian community. The Australian Oceans Policy will provide the strategic framework for planning, management and ecologically sustainable ocean use, including fisheries, shipping, oil and gas, and other seabed resources, while conserving the biological base and maintaining the underlying ocean ecosystem processes.
>
> The consultation phase is focusing on an initial consultation paper and a series of commissioned papers on issues such as indigenous interests, the conservation of marine biological diversity, integrated planning and management, best practice and incentive mechanisms.

Id.

323. *Id.* The report observes that:

> The Natural Heritage Trust is a major government initiative introduced in 1997 and will be the most important mechanism by which the Commonwealth will contribute to implementing the National Strategy for the Conservation of Australia's Biological Diversity. The trust aims to accelerate activities in the national interest directed towards achieving the conservation, sustainable use and repair of Australia's natural environment. The objectives of the trust are to:
>
> - provide a framework for strategic capital investment which will be used to stimulate additional investment in the natural environment;
> - achieve complimentary environmental protection, including biodiversity conservation, sustainable agriculture and natural

assessment, the report also provides a summary of two Australian State policies: the Victorian Biodiversity Strategy[324] and the Total Catchment Management Framework in New South Wales.[325]

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resource management outcomes consistent with agreed national strategies; and

- provide a framework for cooperative partnerships between communities, industry and all levels of government.

Id.

324. *Id.* at 24. As detailed in the report:

> The State Government of Victoria released its Biodiversity Strategy in December 1997. The strategy comprises three documents, each of which performs a specific function in the overall promotion and achievement of better biodiversity outcomes in the State.
>
> *Victoria's Biodiversity: Our Living Wealth* describes, with texts and pictures, the State's broad ecosystems and the plants and animals they support. *Victoria's Biodiversity: Sustaining Our Living Wealth* demonstrates how all Victorians—government, industry, landholders, interest groups and individuals—can integrate biodiversity conservation into actions throughout the community.
>
> *Victoria's Biodiversity: Directions in Management* documents the methods which will be used to achieve the aspirations for conserving biodiversity into the future. This presents a systematic and robust approach to defining biodiversity assets and for reporting on performance management across the State. It presents a practical application which has been foreshadowed both internationally and nationally as an appropriate framework for planning and management of biodiversity. Descriptions of the landscape, its values, management, condition and management responses are detailed for each of the Victorian bioregions.

Id.

325. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 24. The report describes this approach as follows:

> Total catchment (TCM) in New South Wales seeks to conserve land and waterways and to achieve the sustainable management of natural resources. It is recognized in the Natural Heritage Trust Partnership Agreement as being the underlying institutional arrangement for the National Landcare Program. In most cases, TCM uses the natural boundaries of catchments as the logical framework for identifying the issues and solutions for the whole range of natural resource issues. TCM provides an overall vision for natural resource management in New South Wales and recognizes that the management of the natural environment is complex, broad scale and interdependent.
>
> Because TCM encompasses a wide range of issues, it integrates the activities of government agencies and local councils, communities, industries and individuals. TCM therefore seeks to coordinate resources, knowledge and effort towards healthy, productive and biologically diverse waterways and catchments. TCM recognizes that each local area has its own sets of conditions and issues.
>
> TCM is an umbrella policy under which a number of other natural resource management initiatives fit. Mechanisms for native vegetation management that will be effectively integrated into catchment planning have been developed. The State Rivers and Estuaries Policy and the Coastal Policy are also key components of the overall TCM framework.

Id.

Subsequent to the cross-sectoral analysis,[326] the report analyzes six "sectoral plans, programs and policies": agriculture and pastoralism,[327] fisheries,[328] water,[329] forests,[330] tourism and recreation,[331] and mining.[332]

(2) *Article 7: Identification and Monitoring.—Australia's National Report* observes that "[e]nhancing knowledge and understanding of biological diversity and the impacts on it are important measures addressed in the Convention on Biological Diversity" and that Action 4.1.7 of the *National Strategy for the Conservation of Australia's Biological Diversity* addresses this international legal mandate.[333] The report then proceeds to describe what it calls "[k]ey Commonwealth programs that will help to achieve" biodiversity monitoring in Australia.[334] These federal programs are identified in the report under the following assorted categories: Australian Biological Resources Study,[335] State of the

326. *See supra* notes 319 to 325 and accompanying text.
327. AUSTRALIAN NATIONAL REPORT, *supra* note 287, at 25.
328. *Id.* at 25-26.
329. *Id.* at 27-29.
330. *Id.* at 29-30.
331. *Id.* at 30-31.
332. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 31.
333. *Id.* at 33.
334. *Id.* at 34.
335. *Id.* According to the report:

> The Australian Biological Resources Study provides fundamental and comprehensive information on all forms of Australian biota for present and future generation. It provides this vital information to all sectors of the Australian community to improve understanding of our environment and encourage its responsible and sustainable management.
>
> The aim of the study is to provide the underlying taxonomic knowledge necessary for the conservation and utilization of Australia's biodiversity. Its objectives are to:
>
> - coordinate at a national level the collection, description and classification of Australian biota;
> - support studies of the origins, evolution and relationships of Australian biota;
> - promote and fund research and training in taxonomy and biogeography;
> - gather and disseminate information on taxonomic and biogeographic research and documentation in Australia;
> - publish a series of books on Australian flora, fauna and other organisms;
> - develop interactive identification tools and electronic information systems on Australian biota;
> - maintain information on the scope and status of distributed taxonomic collections;
> - develop partnerships to foster knowledge on Australian biodiversity.

Id.

Environment Reporting,[336] National Heritage Trust,[337] the Register of the National Estate,[338] National Wilderness Inventory and Commonwealth Wilderness Programs,[339] Forests,[340] Agriculture,[341]

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336. *Id.* According to the report,

> The aim of state of the environment reporting in Australia is to:
> - describe the Australian environment;
> - monitor and report on change in environmental quality over time;
> - identify the agents responsible for change;
> - monitor and report on the effectiveness of policies and programs responding to change, including progress towards achieving targets;
> - report on future implications of any identified trends.
>
> The purpose for such work is to provide information which will:
> - increase public understanding of the state of the environment;
> - improve the quality of public debate on environmental issues;
> - improve the quality of decisions which may affect the environment;
> - assist in meeting international reporting obligations (for example, to the Organization for Economic Co-operation and Development and the Commission for Sustainable Development).
>
> The first *National State of the Environment Report* was produced by an independent advisory council and presented to the Commonwealth Environment Minister in 1996.

Id. at 34-35.

337. *Id.* at 35.

338. *Id.* As described in the report:

> The register is an inventory of all those parts of Australia's natural, historic, and Aboriginal and Torres Strait Islander heritage which have special value for present and future generations. Any part of Australia, its territories or its territorial sea may be entered in the Register of the National Estate if it meets specified criteria. Of relevance to biological diversity is that a place may be entered on the register:
> - because of its importance in the course, or pattern, of Australia's natural history;
> - because it possesses uncommon, rare or endangered aspects of Australia's natural history;
> - because it has potential to yield information that will contribute to an understanding of Australia's natural history;
> - because the place is important in demonstrating the principle characteristics of:
>   - a class of Australia's natural places, or
>   - a class of Australia's natural environments.
>
> Entry in the register alerts planners, decision-makers, business interests, researchers and the community at large to the existence and location of national estate places and to the heritage value of those places. This enables people to take heritage factors into consideration when they are making land management decisions.

Id.

339. *Id.* As explained in the report:

> The Wilderness and Wild Rivers Section of Environmental Australia, through the National Wilderness Inventory and the Commonwealth Wilderness Program, is identifying and delineating areas of wilderness in non-forest regions of Australia. It is also providing substantial input into

Fisheries,[342] and other National Programs.[343]

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the wilderness identification and reserve selection component of the joint Commonwealth-State Comprehensive Regional Assessment/Regional Forest Agreement process for forested regions.

Id.

340. *Id.* The report states that:

Australia is a member of the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (the 'Montreal Process' Working Group).

The Montreal Process Criteria and Indicators will be used as a basis for assessing the sustainability of forest management as part of the comprehensive regional assessments currently being undertaken under the National Forest Policy Statement. As the criteria and indicators have been developed for use at the national level, they will require adaptation for application in Australia. The framework of regional indicators is being developed for Australia which will provide:

- a basis for assessing progress towards the achievement of sustainable forest management at a regional (sub-national) scale;
- a mechanism for collecting information at a scale and in a manner so that it can be aggregated to a national level in a transparent and credible way for reporting against the Montreal Criteria and Indicators;
- direction to the regional assessment process concerning data collection and reporting on sustainable forest management.

Id. at 35-36.

341. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 36. As explained in the report:

The Commonwealth Government and State and Territory Governments are collaborating to develop indicators for sustainable agriculture through the National Collaborative Project on Indicators for Sustainable Agriculture. Indicators developed will be reported on at the national level and across 11 broad agro-ecological regions. The first project report is due for release in early 1998.

The indicators and attributes developed by the National Collaborative Project on Indicators for Sustainable Agriculture are aimed at providing a tool to assist policy-makers and managers at the national and regional scales. However, other applications may evolve, for example, in reporting on Australia's agricultural performance in international forums and in promoting trade in Australian agricultural produce.

At all scales, consideration is given in the development of indicators, attributes and measures of the sustainability of Australian agriculture to the need for integration between projects where this will result in more efficient, effective and appropriate outcomes, for example, the Land and Water Resources Audit (see the section o the National Heritage Trust, Article 6). Consideration is also being given to integration of indicators across industry sectors, for example, agriculture and forestry.

Id. at 36.

342. *Id.* The report states:

Australia collects information on the distribution, population dynamics and abundance of fish stocks and attempts to estimate the likely impact of fishing on a stock. These assessments of fish stocks rely on scientific research and regular data collection from fishing activities. In particular, information on fishing levels and catch levels are important.

The Commonwealth Government and State and Territory Governments

Following the aforementioned analysis of Commonwealth programs,[344] the report describes some State and Territory initiatives for the identification and monitoring of Australian biodiversity. These State and Territory initiatives, explained in considerable detail in the report as examples, are the New South Wales Biodiversity Survey Program,[345] the South Australian Biological Survey of the Anangu Pitjantjatjara Lands,[346] and the existence in "[e]ach of the Australian States and Territories [of] an herbarium and/or museum" which "[t]ogether . . . hold over five million specimens of Australian plants and over 25 million specimens of fauna, both native and naturalized."[347]

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are currently investigating methods for determining whether the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with principles of ecologically sustainable development (as required under the Fisheries Management Act 1991). Such methods may include the development of indicators, but at this stage no system of assessment has been adopted.

Id.

343. *Id.* As explained in the report:

The Coastal Monitoring Strategy and the proposed National Rangeland Monitoring Program will also contribute to biodiversity monitoring. In addition, significant progress has been made over recent years in the use of remote sensing, including satellite imaging to reveal changes in land cover. Recent work has focused on land cover change in agricultural areas, broad-scale land cover change, and mapping woody and non-woody vegetation in the Murray-Darling Basin.

Id.

344. *See supra* notes 334 to 343 and accompanying text.

345. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 38. According to the report:

The New South Wales Biodiversity Survey Program aims to improve the knowledge and understanding of biodiversity in New South Wales. The primary role of the program is to provide a mechanism for a whole-of-government approach to biodiversity research in the State. The program coordinates the establishment of a comprehensive and cooperative suite of biodiversity inventories and monitoring projects that make best use of existing data and avoid duplication of the effort.

Id.

346. *Id.* at 39. As explained in the report:

Since the late 1970s, the South Australian Department of Environment, Heritage and Aboriginal Affairs has been undertaking a systemic biological survey of South Australia on a region by region basis. In 1991 a regional biological survey was begun of the Anangu Pitjantjatjara (AP) Lands that constitute just under 10% of the land area of the State, in its relatively remote north-west corner. This Survey has differed from all other regional surveys in that it has been a joint effort between departmental biologists and traditional Aboriginal owners, along with representatives of AP Land Management.

Id.

347. *Id.* at 38.

(3) *Article 18: In-situ Conservation.—Australia's National Report* inventories and discusses a variety of federal and State undertakings in Australia "to give emphasis to in-situ conservation,"[348] defined as "the conservation of ecosystems, natural habitats and species in their natural surroundings."[349] The report addresses significant federal and State initiatives which are part of the *National Strategy for the Conservation of Australia's Biological Diversity.*[350] This document, as explained in the report:

> focuses on bioregional planning and management; management for conservation; the establishment and management of a comprehensive, adequate and representative system of protected areas; the improvement of biological diversity conservation outside reserves; and is concerned with recognising the contribution of ethnobiological knowledge of indigenous peoples to the conservation of biological diversity.[351]

(4) *Article 9: Ex-situ Conservation.*—The report discusses how Australia, through the *National Strategy for the Conservation of Australia's Biological Diversity* addresses Article 9 of the Convention on Biological Diversity, which deals with ex-situ conservation.[352] Ex-situ conservation, as defined in the report, "means conservation outside natural habitats, for example, in zoos, botanic gardens and seed banks."[353] Among the assortment of Commonwealth and State programs mentioned in the report as examples of Australia's compliance with the Convention's ex-situ conservation mandate are the Animal Gene Storage Resource Center of Australia, the Australian Network for Plant Conservation, and the Australasian Species Management Program.[354]

(5) *Article 10: Sustainable Use of Components of Biological Diversity.—Australia's National Report* describes the various efforts that are underway to integrate consideration of sustainable use and conservation into national decision making, pursuant to the dictates of Article 10 of the Convention.[355] The basic governmental mechanisms for this integration, according to the report, are the sectoral and cross-sectoral approaches to

348. *Id.* at 41.
349. *Id.*
350. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 41-59.
351. *Id.* at 41.
352. *Id.* at 60-62.
353. *See id.* at 60.
354. *Id.* at 60-61.
355. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 63-65.

conservation and sustainable use outlined in the *National Strategy for Ecologically Sustainable Development*[356]—applicable as well, to meeting Article 6 of the Convention.[357]

(6) *Article 11: Incentive Measures.*—Building on the 1996 *Reimbursing the Future* consultants' report,[358] *Australia's National Report*, in addressing Australia's implementation of Article 11 of the Convention which encourages parties "to adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity,"[359] highlights the range of such incentive programs in place at various levels of government. Among the federal and state/territorial programs mentioned in the report are what are characterized as "motivational, educational and information instruments,"[360] "voluntary instruments,"[361] "regulatory instruments,"[362] "property right-based instruments,"[363] and "price-based and financial instruments."[364]

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356. *Id.* at 63.

357. *See supra* notes 319 to 333 and accompanying text.

358. *See supra* notes 253 to 287 and accompanying text.

359. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 66.

360. *Id.* The report further describes these programs as "education and public awareness" programs, explained in further detail under the report's assessment of Australia's compliance with Article 13 of the Convention. *See infra* notes 372-375 and accompanying text.

361. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 66. An example of such a voluntary instrument, referenced in the report, is the Land for Wildlife scheme in Victoria which "seeks to encourage attitudinal change and adoption of an ethic of conserving nature on private land" through a state government registration scheme which "provides advice to landholders via a team of extension officers" supported by state conservation officers, "volunteers, newsletters, technical notes and field days." *Id.* at 49.

362. *Id.* at 66. Examples, given in the report, of "regulatory instruments in place," at the Commonwealth State/Territorial levels, "which seek to achieve the conservation and sustainable use of biodiversity" are "controls on clearing native vegetation on private land," "fishing quotas and restrictions, land use controls which restrict development in areas of high conservation value, and export controls over wildlife." *Id.*

363. *Id.* at 66. Examples of "property-right-based instruments," given in the report, are "covenants over private land which restrict certain land uses and which bind subsequent owners," "granting ownership rights to resources," "transferable fishing quotas," "transferable development rights," and "transferable water entitlements." *Id.*

364. *Id.* at 67-68. Examples provided in the report of "price-based and financial instruments" at the Commonwealth State/Territorial levels of government include "Bushcare—the National Vegetation Initiative" (providing "incentives for land users to conserve biodiversity outside the reserves system, in particular, by encouraging the sustainable management of remnant vegetation"); "rate rebates and concessions;" "donations," and "income tax" deductions for biodiversity-appropriate activities. *Id.*

(7) *Article 12: Research and Training.*—Pursuant to the call in Article 12 of the Convention on Biological Diversity for signatories to "establish a research and training base which contributes to the conservation and sustainable use of biological diversity and promotes international cooperation in research,"[365] *Australia's National Report* identifies a number of institutions and programs that purportedly meet this international obligation. The research institutions and programs mentioned in the report include the Commonwealth Scientific and Industrial Research Organization (CSIRO),[366] Cooperative Research Centers,[367] the Australian Antarctic Division,[368] the Australian Geological Survey Organization,[369] and a miscellany of other Australian research institutions.[370]

(8) *Article 13: Public Education and Awareness.*—*Australia's National Report* details the panoply of government actions, at all levels of government, taken to comply with Article 13 of the Convention on Biological Diversity's requirement that all parties "promote and encourage understanding of the importance of, and the measures required for, the conservation and sustainable

365. *Id.* at 69.

366. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 69. CSIRO "is Australia's largest research organization, with a staff of 7,200 located throughout Australia and a budget exceeding $700 million." *Id.* Recent CSIRO research work on biodiversity issues, mentioned in the report, include "integration of biological control of *Salvinia* water weed into the management system at Kakadu National Park, Northern Territory;" "monitoring of the health of freshwater ecosystems using bio-indicators;" and "adoption of fire and animal management plans, developed with Aboriginal people, at Uluru-Kata Tjuta National Park." *Id.* at 70.

367. According to the report, Cooperative Research Centers (CRCs) "are collaborative research ventures bringing together researchers from universities, the public sector and business." *Id.* Among the Australian CRCs that the report claims "have particular relevance to biodiversity" are the "CRC for Biological Control of Vertebrate Pest Populations," the "CRC for Ecologically Sustainable Development of the Great Barrier Reef," the "CRC for Freshwater Ecology," the "CRC for Tropical Rainforest Ecology and Management," the "CRC for the Sustainable Development of Tropical Savannas," and the "CRC for Conservation and Management of Marsupials." *Id.* at 70-71.

368. *Id.* The Australian Antarctic Division, according to the report, "undertakes research programs in glaciology, terrestrial and marine biology, human impacts, atmospheric and space physics, and polar medicine." *Id.*

369. *Id.* at 71. According to the report, this organization "is heavily involved in geomorphological research of terrestrial and marine environments" and "has developed a number of highly specialized remotely sensed technologies for enhancing shallow-water habitats and coastal lowland environments." *Id.*

370. *Id.* at 72. Among the other programs highlighted in the report are the Australian Biological Resources Study, the Commonwealth's Climate Change and National Greenhouse Research Program and the Australian Museum. *See id.*

use of biodiversity."[371] A wide assortment of measures are discussed including national curriculum statements,[372] public awareness programs,[373] and improvement of meaningful state of the environment reporting indicators.[374]

(9) *Article 14: Impact Assessment and Minimizing Adverse Impacts.*—In analyzing Australia's attempts at implementing Article 14 of the Convention, mandating "appropriate procedures for environmental impact assessment of projects, programs and policies that are likely to have significant adverse effects on biological diversity,"[375] *Australia's National Report* identifies numerous laws and government programs. These measures include the *Commonwealth Environment Protection (Impact of Proposals) Act 1974*,[376] the Australian and New Zealand Environment and Conservation Council's *Guidelines and Criteria for Determining the Need for and Level of Environmental Impact Assessment in Australia*,[377] the *Quarantine Act 1908*,[378] and the environmental impact laws and regulations of two representative Australian States—Western Australia and Victoria.[379]

(10) *Article 15: Access to Genetic Resources.*—This portion of *Australia's National Report* describes recent efforts "for managing access to Australia's biological resources" and a government proposal to develop "a nationally consistent approach" regarding these resources.[380]

(11) *Article 16: Access to and Transfer of Technology.*—The report briefly describes, in vague and general terms, the role of Australian government "in setting the standards and creating enabling conditions for technological development," in partial compliance of Article 16 of the Convention on Biological Diversity.[381] Moreover, *Australia's National Report* describes the

371. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 73.
372. *Id.*
373. *See id.* at 74.
374. *See id.* at 75.
375. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 77.
376. *Id.*
377. *Id.*
378. *See id.* at 79. According to the report, "[m]any Australian Quarantine and Inspection Service Programs by their nature incidentally protect Australia's biological diversity. For example, ballast water is managed because it is a possible vector for unwanted marine pests and diseases. This management also helps prevent the entry of other organisms which may threaten biological diversity. . . ." *Id.*
379. *See id.* at 78.
380. *Id.* at 80.
381. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 81.

Australian Center for International Agricultural Research as an institution designed "to assist partner countries to identify and solve their major agricultural problems and, at the same time, to strengthen their own research capacity, including in areas associated with biodiversity conservation and sustainable use."[382]

(12) *Articles 17 & 18: Exchange of Information and Technical and Scientific Cooperation.*—Article 17 of the Convention on Biological Diversity calls on parties "to facilitate information exchange" of research on conservation of biological diversity.[383] Article 18 of the Convention urges parties to "promote international technical and scientific cooperation, particularly with developing countries."[384] *Australia's National Report* identifies the following key programs for information exchange and international scientific cooperation: the Environment and Resource Information Network,[385] the National Resource Information Center,[386] the Clearing-house Mechanism,[387] a Memoranda of Understanding between Environment Australia, numerous other national environmental agencies on biological diversity conservation and sustainable use,[388] and the Valdiva Group which is "a coalition of temperate southern hemisphere nations formed to facilitate information exchange" on international environmental and related science issues.[389]

(13) *Article 19: Handling of Biotechnology and Distribution of its Benefits.*—Article 19 of the Convention is concerned chiefly with regulation of genetically modified or manipulated organisms as described in *Australia's National Report,* which briefly discusses Australia's efforts in complying with Article 19 of the Convention.[390] Key initiatives include Australia's "active

382. *Id.*
383. *Id.* at 82.
384. *Id.*
385. *Id.* The Network "is a national environmental information facility which is available on the Internet," providing interested individuals with "key information on the Australian environment." *Id.*
386. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 82. This multidisciplinary scientific research organization "analyses national sustainable development issues, such as drought, land degradation, hazardous waste and multiple land use, in areas such as the Murray-Darling Basin, Cape York Peninsula, Lake Eyre, south-east forests and the coastal zone." *Id.*
387. *Id.* at 83. This is an international entity which was established by various countries, including Australia, after the first meeting of the Conference of the parties. *Id.*
388. *Id.*
389. *Id.*
390. *Id.* at 84.

participa[tion] in the negotiation of a Biosafety Protocol, currently under way under the auspices of the Convention on Biological Diversity" and Australia's establishment of a "Genetic Manipulation Advisory Committee as a non-statutory body to oversee the development and use of novel genetic manipulation techniques in Australia."[391]

(14) Article 20: Financial Resources and Financial Mechanism.—In assessing Australia's compliance with the Convention's mandate in Article 20, *Australia's National Report* frankly admits that "[t]he funding allocated to the conservation and sustainable use of biodiversity in Australia is very difficult to quantify."[392] The report, however, goes on to argue that all sectors of Australian Government, the private sector and the community groups "contribute significant resources, some of it in kind."[393] Specific, albeit relatively modest, monetary commitments by Australia to provide "new and additional resources to assist developing countries to meet their obligations under the Convention"[394] are detailed in the report under headings of "Strengthening Human and Institutional Resources,"[395] "Direct Efforts to Conserve Biodiversity,"[396] and "Supporting Multilateral and Regional Efforts."[397]

8. Consultants' Reports to Environment Australia: Environmental Indicators for National State of the Environment Reporting, 1998—In an effort to "advance state of the environment reporting in Australia,"[398] Environment Australia commissioned expert study reports on seven interconnected environmental reporting themes:[399]

- Biodiversity,
- Human settlements,
- The atmosphere,
- The land,

391. *Id.*
392. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 82.
393. *Id.*
394. *See id.*
395. *Id.*
396. *Id.* at 86.
397. AUSTRALIA'S NATIONAL REPORT, *supra* note 287, at 86.
398. ENVIRONMENT AUSTRALIA, ENVIRONMENTAL INDICATORS FOR NATIONAL STATE OF THE ENVIRONMENT REPORTING—BIODIVERSITY, at iii (1998) [hereinafter BIODIVERSITY INDICATOR REPORT].
399. Seven separate reports were prepared by panels of experts and conveyed to Environment Australia. *Id.* at 68. *See also* http://www.environment.gov.au/soe/soe96/soe96.html (last visited Oct. 15, 2000).

- Inland waters,
- Estuaries and the sea, and
- Natural and cultural heritage.[400]

While "none of these [seven environmental reporting] themes is independent of the others,"[401] analysis contained in the *Biodiversity Indicator Report*[402] is the one most germane to this Article and discussion is limited to this particular report.

Ultimately, the *Biodiversity Indicator Report* suggests 65 "environmental indicators for biodiversity" in Australian state of the environment reporting.[403] Of these 65 indicators, (a) 14 indicators "relate to pressures on biodiversity," (b) 16 "to the condition of biodiversity," and (c) 34 "to responses to loss of, or perceived threats to, biodiversity."[404]

a. Indicators of Pressures on Biodiversity.—The *Biodiversity Indicator Report* suggests that the following 14 "indicators of pressure" on Australian biodiversity be included in future national environmental reports:

- Human population distribution and density,
- Change in human population density,
- Extent and rate of clearing or major modification of natural vegetation or marine habitat,
- Location and configuration or fragmentation of remnant vegetation and marine habitat,
- Rate of extension of exotic species into each relevant biodiversity region,
- Pest numbers,
- Distribution and abundance of genetically modified organisms,
- Pollution,
- Areal extent of altered fire regimes,
- Human-induced climate change,
- Lists and numbers of organisms being trafficked and legally exported,
- Number of permits requested and issued for legal collecting or harvesting by venture,

400. *Id.*
401. BIODIVERSITY INDICATOR REPORT, *supra* note 398, at iii.
402. *See supra* note 398 and accompanying text.
403. BIODIVERSITY INDICATOR REPORT, *supra* note 398, at iv.
404. *Id.*

- Proportion of numbers collected over the size of the reproducing population,
- Ratios of bycatch to target species.[405]

b. Indicators of Condition of Biodiversity.—The Biodiversity Indicator Report recommends the following 16 "indicators of condition" regarding Australian biodiversity and upcoming national environmental reports:

- Number of sub-specific taxa,
- Population size, numbers and physical isolation,
- Environment amplitude of populations,
- Genetic diversity at marker loci,
- Number of species,
- Estimated number of species,
- Number of species formally described,
- Percentage of number of species described,
- Number of subspecies as a percentage of the number of species,
- Number of endemic species,
- Conservation status of species,
- Economic importance of species,
- Percentage of species changing in distribution,
- Number, distribution and abundance of migratory species,
- Demographic characteristics of target taxa,
- Number and extent of ecological communities of high conservation potential.[406]

c. Indicators of Responses to Pressures and Condition of Biodiversity.—The *Biodiversity Indicator Report* proposes 34 "indicators of responses to pressures and condition of biological diversity" regarding Australian biodiversity to be included in future national environmental reports:

- Integrated bioregional planning,
- Extent of vegetation type and marine habitat type in protected areas,
- Number of protected areas with management plans,
- Number of interest groups involved in protected area planning,
- Resources committed to protected areas,
- Proportion of bioregions covered by biological surveys,
- Number of recovery plans,
- Amount of funding for recovery plans,

405. *Id.* at 18-26.
406. *Id.* at 27-40.

- Number of ex-situ research programs,
- Number of releases to the wild from ex-situ breeding,
- Number of management plans for ecologically sustainable harvesting,
- Effectiveness of bycatch controls,
- Area of clearing officially permitted,
- Area cleared to area revegetated,
- Number of lending institutions considering biological diversity,
- Number of management plans for exotic/alien/genetically modified organisms,
- Number of research programs into impact on exotic and genetically modified organisms,
- Funding for research and control of exotic/alien/genetically modified organisms,
- Control over the impacts of pollution,
- Reducing the impacts of altered fire regimes,
- Minimizing the potential impacts of human-induced climate change on biological diversity,
- Number of local governments with management plans for biological diversity,
- Number of companies with management plans for biological diversity,
- Number of species described per reporting cycle,
- Number of taxonomists involved per reporting cycle,
- Amount of funding for taxonomy,
- Number of research programs into surrogates,
- Number of research programs into role of biological diversity in ecological processes,
- Number of long-term ecological sites,
- Percentage of budgets spent on conservation,
- Amount of indigenous ethnobiological knowledge,
- Local government management of biological diversity,
- Involvement of community groups in conservation,
- Australia's international role in conservation.[407]

9. ANZECC'S Guidelines and Strategic Plan of Action For Marine Protected Areas, 1998-99.—In December 1998, the Australian and New Zealand Environment and Conservation Council (ANZECC) Task Force on marine protected areas prepared an important document for the protection of Australia's ocean biodiversity. The document is entitled *Guidelines for*

407. *Id.* at 41-58.

Establishing the National Representative System of Marine Protected Areas (hereinafter "*ANZECC Marine Guidelines*").[408] In the prefatory portion of the *ANZECC Marine Guidelines*, the importance of Australia's oceanic life—"some of the most diverse, unique and spectacular marine life in the world"[409]—is emphasized. *ANZECC Marine Guidelines* also stress the need to wisely preserve and protect this exquisite marine biodiversity:

> [Australia's] marine environment includes extensive coral reefs in the tropical north, rocky shores in the temperate south, sandy beaches, seagrass beds, and mangrove forests, the open ocean, seamounts and the habitats of the continental shelf and slope. The diversity and productivity of Australia's seas provide vital social and economic benefits. Australians depend on marine resources for income, employment, food, recreation and many other uses. Continuation of these benefits over the long term will require that marine biodiversity is conserved and resources used sustainably.[410]

The *ANZECC Marine Guidelines* acknowledges Australia's past international and national commitments to use its marine resources in a sustainable fashion.[411] The *ANZECC Marine Guidelines*, also indicates that the federal Commonwealth government, the state governments, and the Northern Territory government are in the process of finalizing a National Representative System of Marine Protected Areas for Australia.[412] Importantly, these multiple levels of the Australian government have agreed to follow a comprehensive and scientific approach in the ultimate identification and selection of Australia's Marine Protected Areas.[413] This identification and selection criteria will entail assessment of the following factors: "representativeness,"[414]

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408. AUSTRALIAN AND NEW ZEALAND ENVIRONMENT AND CONSERVATION COUNCIL TASK FORCE ON MARINE PROTECTED AREAS, GUIDELINES FOR ESTABLISHING THE NATIONAL REPRESENTATIVE SYSTEM OF MARINE PROTECTED AREAS (1998) [hereinafter ANZECC MARINE GUIDELINES].

409. *Id.* at 3.

410. *Id.*

411. *Id.*

412. *Id.* The ANZECC GUIDELINES defines "marine protected area," as follows:

> • An area of land and/or sea dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources and managed through legal or other effective means.

Id. at 4 (citations omitted).

413. ANZECC MARINE GUIDELINES, *supra* note 408, at 9.

414. *Id.* at 10. The specific questions raised in the ANZECC MARINE

"comprehensiveness,"[415] "ecological importance,"[416] "international or national importance,"[417] "uniqueness,"[418] "productivity,"[419] "vulnerability assessment,"[420] "biogeographic importance;"[421]

GUIDELINES to judge "representativeness" are whether the area will do the following:

- Represent one or more ecosystems within [a specific] bioregion, and to what degree,
- Add to the representativeness of the [specific bioregion] and to what degree.

Id.

415. *Id.* at 10. The specific questions raised in the ANZECC MARINE GUIDELINES to assess "comprehensiveness" are whether the area will do the following:

- Add to the coverage of the full range of ecosystems recognized at an appropriate scale within and across each bioregion;
- Add to the comprehensiveness of the [specific bioregion].

Id.

416. *Id.* The specific questions posited in the ANZECC MARINE GUIDELINES to consider "ecological importance" are:
Does the area:

- Contribute to the maintenance of essential ecological processes or life-support systems;
- Contain habitat for rare or endangered species;
- Preserve genetic diversity [,] i.e. is diverse or abundant in species;
- Contain areas on which species or other systems are dependent, e.g., contain nursery or juvenile areas or feeding, breeding or resting areas for migratory species;
- Contain one or more areas which are a biologically functional, self-sustaining ecological unit.

Id.

417. *Id.* The specific question raised in the ANZECC MARINE GUIDELINES to judge "international or national importance" is:

- Is the area rated, or have the potential to be listed, on the world or a national heritage list or declared as a Biosphere Reserve or subject to an international or national conservation agreement.

Id.

418. ANZECC MARINE GUIDELINES *supra* note 408, at 10. The specific points raised in the ANZECC MARINE GUIDELINES to assess "uniqueness" are whether the area contains the following:

- Unique species, populations, communities or ecosystems;
- Unique or unusual geographic features.

Id.

419. *Id.* The specific inquiry raised in the ANZECC MARINE GUIDELINES to judge "productivity" is:

- Do the species, populations, or communities of the area have a high natural biological productivity?

Id.

420. *Id.* The specific inquiry raised in the ANZECC MARINE GUIDELINES to judge "vulnerability assessment" is:

- Are the ecosystems and/or communities vulnerable to natural processes?

Id.

"naturalness,"[422] "economic interests,"[423] "indigenous interests,"[424] "social interests,"[425] "scientific interests,"[426] "practicality/feasibility,"[427] "vulnerability assessment"[428] and "replication."[429]

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421. *Id.* The specific question raised in the ANZECC MARINE GUIDELINES to determine "biogeographic importance" is:

- Does the area capture important biogeographic qualities?

Id.

422. *Id.* The specific point articulated in the ANZECC MARINE GUIDELINES to assess "naturalness" is:

- How much has the area been protected from, or not been subjected to human induced change?

Id.

423. ANZECC MARINE GUIDELINES *supra* note 408, at 11. The specific points articulated in ANZECC'S MARINE GUIDELINES to assess "economic interests" are whether the area:

- Makes an existing or potential contribution to economic value by virtue of its protection, e.g. for recreation or tourism, or as a refuge or nursery area, or source of supply for economically important species;
- Has current or potential use for the extraction of or exploration for resources;
- Has importance for shipping and/or trade;
- Has usage by traditional users including commercial fishers;
- Has value due to its contribution to local or regional employment and economic development.

Id.

424. *Id.* The specific points raised in ANZECC'S MARINE GUIDELINES to determine "indigenous interests" are whether the area has the following:

- Traditional usage and/or current economic value;
- Indigenous cultural values;
- Native title considerations.

Id.

425. *Id.* The specific question articulated in ANZECC'S MARINE GUIDELINES to assess "social interests" is whether the area has the following:

- Existing or potential value to the local, national or international communities because of its heritage, cultural, traditional [,] aesthetic, educational, recreational or economic values.

Id.

426. *Id.* The specific point raised in the ANZECC MARINE GUIDELINES for determining "scientific interests" is:

- Does the site have existing or potential value for research or monitoring?

Id.

427. *Id.* The specific factors articulated in the ANZECC MARINE GUIDELINES for judging "practicality/feasibility" are whether the area has the following:

- A degree of insulation from external destructive influences;
- Social and political acceptability, and a degree of community support;
- Access for recreation, tourism, education;
- Compatibility between an [Marine Protected Area] declaration generally and existing uses;
- Relative ease of management and compatibility with existing management regimes.

In July 1999, the ANZECC Task Force on Marine Protected Areas followed up its initial set of guidelines[430] with a document entitled *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A Guide For Action by Australian Governments* (hereinafter "*ANZECC Marine Strategic Plan of Action*").[431] This document essentially provides more detail and amplification of basic concepts discussed in the *ANZECC Marine Guidelines*,[432] while detailing the "current status" of Commonwealth, State and Territorial efforts to develop a final National Representative System of Marine Protected Areas in Australia.[433]

10. The Parliament of Australia's Environment Protection and Biodiversity Conservation Act, 1999—In a hefty 534 page, eight chapter piece of legislation, the Parliament of Australia, in July 1999, passed what one commentator referred to as "the second wave" of Australian environmental law—following up on the "first wave" of multiple, disjointed legislative enactments going back to the early 1970's.[434]

The Environment Protection and Biodiversity Conservation Act (hereinafter "The Act")[435] is subdivided into 23 Parts and spans eight chapters. The structure of the Act is as follows:

Id.

428. ANZECC MARINE GUIDELINES *supra* note 408, at 11. The specific point raised in the ANZECC MARINE GUIDELINES for determining "vulnerability assessment" is:

- Is the site vulnerable and susceptible to human induced changes and threatening processes.

Id.

429. *Id.* The specific factor articulated in the ANZECC MARINE GUIDELINES for judging "replication" is:

- Will the site provide replication of ecosystems within the bioregion.

Id.

430. *See supra* notes 408-429 with accompanying text.

431. ANZECC TASK FORCE ON MARINE PROTECTED AREAS, STRATEGIC PLAN OF ACTION FOR THE NATIONAL REPRESENTATIVE SYSTEM OF MARINE PROTECTED AREAS: A GUIDE FOR ACTION BY AUSTRALIAN GOVERNMENTS (July 1999) (hereinafter ANZECC MARINE STRATEGIC PLAN OF ACTION).

432. *See supra* notes 408-429 and accompanying text.

433. *See* ANZECC MARINE PLAN OF ACTION, *supra* note 431, at 17-22.

434. Lee Golden, *Australia's Environmental Protection and Biodiversity Conservation Act: The Second Wave*, 2 ENVIRONMENTALLY FRIENDLY (Pace Center for Environmental Legal Studies) (1998).

435. Parliament of Australia, Environment Protection and Biodiversity Conservation Act of 1999, No. 91, 1999 available at http://scaleplus.law.giv.au /html/comact/10/6006/top.htm (last modified July 11, 2000) (hereinafter the Act).

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  - Part 1 - Preliminary
- Chapter 2: Protecting the Environment
  - Part 2 - Simplified Outline of This Chapter
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  - Part 5 - Bilateral Agreements
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  - Part 13 - Species and Communities
  - Part 14 - Conservation Agreements
  - Part 15 - Protected Areas
- Chapter 6: Administration
  - Part 16 - Application of Precautionary Principle in Decision-Making
  - Part 17 - Enforcement
  - Part 18 - Remedying Environmental Damage
  - Part 19 - Organizations
  - Part 20 - Delegation
  - Part 21 - Reporting
- Chapter 7: Miscellaneous
  - Part 22 - Miscellaneous
- Chapter 8: Definitions
  - Part 23 - Definitions.[436]

In an accompanying publication by Environment Australia entitled *An Overview of the Environment Protection and*

436. *Id.* at i-xxvii (Contents).

Biodiversity Conservation Act,[437] the Act is described as landmark environmental legislation for Australia:

> The [Act] represents the most fundamental reform of Commonwealth environmental laws since the first [Australian] environment statutes were enacted in the early 1970s. In particular, it is the first comprehensive attempt to define the environmental responsibilities of the Commonwealth.
>
> The Act enables the Commonwealth to join with the States (including Territories) in providing a truly national scheme of environmental protection and biodiversity conservation, recognizing our responsibility to not only this generation, but also future generations. It does so by providing for Commonwealth leadership on the environment, while also recognizing and respecting the responsibility of the States for delivering on-ground natural resource management. It does so also in a way that is "user friendly" with predictable, transparent and timely assessment processes.
>
> The Act focuses Commonwealth interests on matters of national environmental significance, puts in place a streamlined environmental assessment and approvals process and establishes an integrated regime for biodiversity conservation and the management of important protected areas.[438]

The effective date of the Act is July 16, 2000. On that date it replaced five existing Commonwealth statutes: *The Environment Protection (Impact of Proposals) Act of 1974, the Endangered Species Protection Act of 1992, the National Parks and Wildlife Conservation Act of 1975, the World Heritage Properties Conservation Act of 1983 and the Whale Protection Act of 1980.*[439]

A comprehensive review and analysis of the Act is beyond the scope of this Article. The remaining portion of this Section will (a) discuss key provisions of the Act which explicitly address conservation of Australia's biodiversity and (b) provide differing Australian perspectives of the likely effectiveness of the Act's biodiversity standards and procedures.

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437. ENVIRONMENT AUSTRALIA, AN OVERVIEW OF THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT (1999) [hereinafter OVERVIEW].

438. *Id.* at 2.

439. *Id.* at 3.

a. Key Biodiversity Conservation Provisions of the Act—Eight key provisions of the Act, which address biodiversity conservation issues, are worthy of extensive commentary.

(1) *Biodiversity Objects, Means & Principles.*—Four vital "objects" of the Act, which focus on biodiversity conservation are:

- "to promote the conservation of biodiversity;"[440]
- "to assist in the co-operative implementation of Australia's international environmental responsibilities;"[441]
- "to recognize the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity;"[442] and
- "to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and co-operation with, the owners of the knowledge."[443]

In the preliminary portion of the Act, the Parliament of Australia identifies various means, embedded in the legislation, that can purportedly "achieve its objects." These means entail:

- "Enhanc[ing] Australia's capacity to ensure the conservation of its biodiversity by including provisions" that will:
  - "protect native species (and in particular prevent the extinction, and promote the recovery, of threatened species) and ensure the conservation of migratory species,"
  - "establish an Australian Whale Sanctuary to ensure the conservation of whales and other cetaceans,"
  - "protect ecosystems by means that include the establishment and management of reserves, the recognition and protection of ecological communities and the promotion of off-reserve conservation measures,"
  - "identify processes that threaten all levels of biodiversity and implement plans to address these processes;"[444]
- "includ[ing] provisions to enhance the protection, conservation and presentation of world heritage properties

440. The Act, *supra* note 435, ch. 1, pt. 1, § 3(1)(c).
441. *Id.* at § 3(1)(e).
442. *Id.* at § 3(1)(f).
443. *Id.* at § 3(1)(g).
444. *Id.* at § 3(2)(e).

and the conservation and wise use of RAMSAR wetlands of international importance;"[445]

- "promot[ing] a partnership approach to environmental protection and biodiversity conservation through" the following:
  - "bilateral agreements with States and Territories;"
  - "conservation agreements with land-holders;"
  - "Recognizing and promoting indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity;"
  - "The involvement of the community in management planning."[446]

Among the "principles of ecologically sustainable development," articulated in the preliminary part of the Act, the most explicit principle which identifies biodiversity conservation is the principle that "the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making."[447]

(2) *Assessment and Approval Process for Matters of National Environmental Significance.*—The linchpin of the Act is a "rigorous assessment and approval process"[448] by the Commonwealth Minister of the Environment for matters "of national environmental significance,"[449] subject to exceptions. There are six essential matters of national environmental significance which are "triggers for the Commonwealth assessment and approval regime."[450] These matters are: (a) "activities that have or will have or are likely to have a significant impact on a declared World Heritage property;"[451] (b) "activities that have or

445. The Act, *supra* note 435, ch. 1, pt. 1, § 3(2)(f).

446. *Id.* at § 3(2)(g).

447. *Id.* at § 3A(d). The other four principles of ecologically sustainable development, however, implicitly support biodiversity conservation. These other principles are: "decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations," *id.* § 3A(a); "if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation," *id.* § 3A(b); "the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations," *id.*
§ 3A(c); and "improved valuation, pricing and incentive mechanisms should be promoted," *id.* § 3A(e).

448. OVERVIEW, *supra* note 437, at 4.

449. The Act, ch. 2, pt. 3, Div. 1.

450. OVERVIEW, *supra* note 437, at 5.

451. The Act, ch. 2, pt. 3, Div. 1, § 12. "World Heritage property" is property in

will have or are likely to have a significant impact on a declared Ramsar wetland;"[452] (c) "actions that have or will have or are likely to have significant impact on [a] listed threatened species or an endangered ecological community;"[453] (d) "activities with a significant impact on a listed migratory species;[454] (e) "activities involving the marine environment;"[455] and (f) "nuclear actions."[456]

There are two major exceptions to the approval process by the Commonwealth Minister of the Environment relating to matters of national environmental significance:[457] (a) when a "management plan" is in place that is accredited by the Commonwealth Minister of the Environment under a "ministerial declaration" and approval of a proposed action has been made by another Commonwealth official;[458] and (b) when a "management plan" is in place that has been authorized by the Commonwealth Minister of the Environment under a "bilateral agreement,"—a delegation of authority, with an Australian State government.[459]

(3) *Species and Ecological Communities.*—The Act provides for the listing of Australian threatened native species and ecological communities, internationally protected migratory species and marine species.[460] Moreover, "processes" that pose a threat to native Australian species may also be listed. For example,

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Australia recognized by the World Heritage Convention. *See* the Act, *supra* note 435 at ch. 8, pt. 23, § 528.

452. The Act, ch. 2, pt. 3, Div. 1, § 16. A "declared Ramsar wetland" is property in Australia designated pursuant to the Convention on Wetlands of International Importance especially as Waterfowl Habitat done at Ramsar, Iran on February 2, 1971. *See,* the Act, ch. 8, pt. 23, Div. 2, § 528.

453. The Act., ch. 2, pt. 3, Div. 1, § 18. A "listed threatened species" includes a wide assortment of extinct, endangered, wild, and vulnerable biological species listed by the Australian Minister of the Environment. The Act, ch. 5, pt. 13, Div. 1, § 178. *See* the Act, ch. 8, pt. 23, Div. 2, § 528. An "endangered [ecological] community" is an ecological community listed by the Australian Minister of the Environment. The Act, ch. 5, pt. 13, Div. 1, §§ 181 & 182. *See* the Act, ch. 8, pt. 23, Div. 2, § 528.

454. The Act, ch. 2, pt. 3, Div. 1, § 20. A "listed migratory species" is a migratory animal species listed by the Australian Minister of the Environment. The Act, ch. 5, pt. 13, Div. 2, § 209. *See* the Act, ch. 8, pt. 23, Div. 2, § 528.

455. The Act, ch. 2, pt. 3, Div. 1, § 23-24.

456. The Act, ch. 2, pt. 3, Div. 1, §§ 21-22.

457. Minor exceptions to the approval process by the Commonwealth Minister of the Environment involved (a) "forestry operations permitted by regional forest agreements," the Act, ch. 2, pt. 4, Div. 4, § 38, and (b) actions "taken in accordance with permission" of the Great Barrier Reef Marine Park, the Act, ch. 4, pt. 4, Div. 5, § 43.

458. The Act, ch. 2, pt. 4, Div. 2, § 32.

459. The Act, ch. 2, pt. 4, Div. 1, § 29.

460. OVERVIEW, *supra* note 437, at 3. *See* the Act, ch. 5, pt. 12, Div. 1, §§ 171-175, 178-182.

predation by fox and feral cats[461] may also be listed as key "threatening processes."[462]

For each non-extinct and non-conservation dependent species that are threatened, the Commonwealth Environment Minister, must ensure that a "recovery plan" is made.[463] In addition a "threat abatement plan" must be made for a key "threatening process"[464] if the Environment Minister "believes that having and implementing a threat abatement plan" is a feasible, effective and efficient way to abate the process."[465]

The Act delineates consultation procedures that the Commonwealth Environment Minister must engage in with the States before making plans for species, ecological communities, ecological processes or threat abatement.[466] The new Commonwealth legislation establishes various gradients of punishable offenses for the non-permitted taking, killing, injuring, moving, trading or keeping of a member of a listed species or ecological community.[467] Certain exceptions exist, however, for actions that would otherwise be offenses. One example is, "an action that is taken in a humane manner and is reasonably necessary to relieve or prevent suffering by a member of a listed threatened species or listed threatened ecological community."[468] Another example is, "an action that occurs as a result of an unavoidable accident, other than an accident caused by negligent or reckless behavior."[469]

The Act establishes "the Australian Whale Sanctuary,"[470] which cover Australia's entire exclusive economic zone. The statutory language indicates that the Australian Parliament's intention is "to give formal recognition of the high level of protection and management afforded to cetaceans in Commonwealth marine areas and prescribed waters."[471]

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461. OVERVIEW, *supra* note 437, at 12.
462. The Act, ch. 5, pt. 13, Div. 1, §§ 183, 188.
463. OVERVIEW, *supra* note 437, at 12. The Act, ch. 5, pt. 13, Div. 5, § 269A(1)-(3).
464. OVERVIEW, *supra* note 437, at 12. The Act, ch. 5, pt. 13, Div. 5, § 270A(1).
465. OVERVIEW, *supra* note 437, at 12. The Act, ch. 5, pt. 13, Div. 5, § 270A(2).
466. OVERVIEW, *supra* note 437, at 12.
467. The Act, ch. 5, pt. 13, Div. 1, §§ 195-196E.
468. The Act, ch. 5, pt. 13, Div. 1, § 197(e).
469. The Act, ch. 5, pt. 13, Div. 1, § 197(i).
470. The Act, ch. 5, pt. 13, Div. 3, § 225.
471. The Act, ch. 5, pt. 13, Div. 3, § 225(1). According to a report prepared by Environment Australia:

> The [Australian Whale] Sanctuary provides strict protection for all whales, dolphins, and porpoises. The creation of the Sanctuary

Other important provisions of the Act, which address species and ecological communities, are sections that authorize federal regulations "to control access to biological resources in Commonwealth areas"[472] and that authorize federal regulations to control non-native species that may threaten Australian biodiversity.[473]

(4) *Conservation Agreements.*—The Act creates an important tool for Australia's effort to "promote off-reserve conservation of biodiversity":[474] conservation agreements—voluntary agreements between the Commonwealth and landowners "for the protection and conservation of biodiversity."[475] A conservation agreement is only authorized under the statute if it will "result in a net benefit to the conservation of biodiversity."[476] An interesting aspect of conservation agreements is the use of incentives, financial or otherwise;[477] "[f]or example, an agreement could provide for the Commonwealth to pay for fencing off remnant vegetation, on the basis that the landowner agrees to take steps to protect... biodiversity values."[478] A conservation agreement binds not only the Commonwealth and the contracting landholder, but also "anyone else who is a successor to the whole or any part of any interest" of the contracting landholder.[479]

(5) *Protected Areas.*—Under the Act the Commonwealth is authorized under the Act to nominate areas in Australia for inclusion as a World Heritage property,[480] RAMSAR wetland,[481]

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compliments Australia's initiative at the international level to establish a truly global whale sanctuary covering all of the world's oceans. Australia's goal is to secure a permanent international ban on all commercial whaling. The... Act also closes "loopholes" in the existing legislation by providing that a permit cannot be given to kill a whale or dolphin or catch a whale or dolphin for live display.

ENVIRONMENT AUSTRALIA, ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT: BENEFITS FOR THE ENVIRONMENT 3 (1999) [hereinafter BENEFITS FOR THE ENVIRONMENT].

472. The Act, ch. 5, pt. 13, Div. 6, § 301. In the definition section "biological resources" is defined as including "genetic resources, organisms, parts of organisms, populations and any other biotic component of an ecosystem with actual or potential use or value for humanity". *Id.*, ch. 8, pt. 23, Div. 2, § 528.

473. The Act, ch. 5, pt. 13, Div. 6A, § 301A.

474. OVERVIEW, *supra* note 437, at 13.

475. The Act, ch. 5, pt. 14, § 305(1).

476. The Act, ch. 5, pt. 14, § 305(2).

477. The Act, ch. 5, pt. 14, § 306(1)(e).

478. OVERVIEW, *supra* note 437, at 13.

479. The Act, ch. 15, pt. 14, § 307(c).

480. The Act, ch. 5, Div. 1, § 314.

481. The Act, ch. 5, Div. 2, § 326.

or biosphere reserve;[482] however, before making such a nomination the Commonwealth—except with regard to a biosphere reserve—must consult relevant States, Territories and private landholders.[483] As part of this process, the Commonwealth is mandated to use its best efforts to prepare and implement management plans for the protected areas.[484]

A Commonwealth reserve can be proclaimed over areas of the land or sea owned or leased by the Commonwealth or in a Commonwealth marine area.[485] Examples of existing Commonwealth reserves are Kakadu and Booderee National Parks.[486] When establishing a Commonwealth reserve, the content of the Proclamation to be signed by the Governor-General of Australia (the Queen of England's official representative and Head of the Australian Government) must, among other things, assign the reserve, or particular zones within the reserve, into one of the following conservation categories: strict nature reserve, wilderness area, national park, national monument, habitat or species management area, protected landscape or seascape, or managed resource protected area.[487] Management plans are expected to be prepared for Commonwealth reserves;[488] separate, additional regulations, which control various activities, may be promulgated by the Commonwealth.[489] Various special provisions deal with the Commonwealth reserves that are part of indigenous Aboriginal lands.[490] In the event that Commonwealth lands are in the process of being assessed for possible designation as a Commonwealth reserve, interim protection of such land is authorized by means of the designation of a Conservation zone by the Governor-General.[491]

(6) *Advisory Committee.*—The Act creates three advisory committees to advise the Commonwealth Environment Minister: (a) the Threatened Species Scientific Committee, which is charged with advising on listing and making plans for species,

482. The Act, ch. 5, Div. 3, § 338.
483. The Act, ch. 5, Div. 1, § 314(2), § 326(2).
484. The Act, ch. 5, pt. 15, Div. 1, § 316 (World Heritage properties); ch. 5, pt. 15, Div. 2, § 327 (Ramsar wetlands); ch. 5, pt. 15, Div. 3, § 338 (Biosphere Reserves).
485. The Act, ch. 5, pt. 15, Div. 4, § 344.
486. OVERVIEW, *supra* note 437, at 13.
487. The Act, ch. 5, pt. 15, Div. 4, § 346(e).
488. The Act, ch. 5, pt. 15, Div. 4, § 354.
489. The Act, ch. 5, pt. 15, Div. 4, § 356.
490. The Act, ch. 5, Div. 4, § 363.
491. The Act, ch. 5, Div. 4, §§ 390C, 390D.

communities and threatening processes;[492] (b) the Biological Diversity Advisory Committee, which is directed to provide advice on matters relating to the conservation and ecologically sustainable use of biodiversity;[493] and (c) the Indigenous Advisory Committee, mandated to provide input on the operation of the Act "taking into account the significance of indigenous peoples' knowledge of the management of land and the conservation and sustainable use of biodiversity."[494]

(7) *Enforcement.*—A wide range of government enforcement tools is available in the Act—strengthening and expanding enforcement mechanisms under earlier federal legislation.[495] New enforcement authority,[496] by way of example, is as follows: (a) the Commonwealth Environment Minister may direct, under Section 458 of the Act, that an "environmental audit"[497] be performed "if the Minister believes or suspects on reasonable grounds" that the holder of an environmental approval or permit has violated or is likely to violate an approval or permit;[498] (b) civil or criminal penalties for environmental infractions;[499] and (c) assessment of liability against an environmental "wrongdoer" in favor of an "affected party" for the "person's loss or damage."[500]

(8) *Environmentally Sustainable Development Reporting and Review.*—Extensive government reporting responsibilities are demanded by the Act of the Commonwealth Environment Minister and related environmental bodies.[501] The Commonwealth must

492. The Act, ch. 6, pt. 19, Div. 1, §§ 502-503.
493. The Act, ch. 6, pt. 19, Div. 2, §§ 504-505.
494. The Act, ch. 6, pt. 19, Div. 2A, §§ 505A-505B.
495. OVERVIEW, *supra* note 437, at 14.
496. Traditional environmental enforcement authority in the Act includes monitoring and search powers, seizure and forfeiture powers, and injunctive relief. *See* the Act, ch. 6, pt. 17, Div. 3, §§ 407-412A (monitoring powers); ch. 6, pt. 17, Div. 4, §§ 413-444 (search powers); ch. 6, pt. 17, Div. 10, §§ 445-457 (seizure and forfeiture powers); ch. 6, pt. 17, Div. 14, §§ 475-480 (injunctive relief powers).
497. The Act, ch. 6, pt. 17, Div. 12, § 458-462 (environmental audit powers). The environmental audit may include "all or any of the following": (a) "an evaluation of the nature of the environment that is or will be affected by the holder's activities;" (b) "an assessment of the risks to the environment resulting from the activity;" (c) "an assessment of the holder's existing capacity to comply with the authority and requirements of this Act and the regulations in carrying on the activities;" and (d) "an assessment of what the holder will need to do, or continue to do, so to comply".
498. The Act, ch. 6, pt. 17, Div. 12, § 458(1).
499. The Act, ch. 6, pt. 17, Div. 15, §§ 481-496.
500. The Act, ch. 6, pt. 18, §§ 499-501.
501. The Act, ch. 6, pt. 21, Div. 1. §§ 516-516A.

prepare a State of the Environment Report every five years, beginning with a report due at the end of 2001.[502]

b. Differing Perspectives on the Likely Effectiveness of the Biodiversity & Conservation Provisions of the Act.—In a set of conference papers, published in October 1999 under the title *A New Green Agenda*, a variety of knowledgeable Australian observers articulated their particular reaction and assessment of the Act and its likely effectiveness.[503] At the outset, the Commonwealth Minister for the Environment and Heritage, Senator Robert Hill, extolled the virtues of the Act, stating:

> In terms of the division of power between the Commonwealth and the States, the legislation is by far the most significant piece of environmental legislation enacted by the Commonwealth Parliament. For the first time the environmental responsibilities of the Commonwealth in terms of assessment and approval processes have been finally recognized in legislation. After July [2000] the Commonwealth legislation will rely on direct environmental triggers, and not the ad hoc and ineffective triggers, such as foreign investment approval, relied upon by existing law. [I] believe that this reform, the replacement of indirect triggers with direct environmental triggers, will deliver substantial benefits for the environment, the community and for industry. The direct environmental triggers are of course referred to as matters of national environmental significance. These triggers are world heritage properties, Ramsar wetlands, nationally threatened wetlands, nationally threatened species and ecological communities, migratory species, [the] Commonwealth marine area and nuclear actions.[504]

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502. The Act, ch. 6, pt. 21, Div. 2, § 516B. *See supra* notes 30-77 and accompanying text for a discussion of the seminal 1996 Commonwealth-prepared STATE OF THE ENVIRONMENT report.

503. NATIONAL ENVIRONMENT DEFENDER'S OFFICE NETWORK, A NEW GREEN AGENDA—CONFERENCE PAPERS (October 1999, Sydney). [Hereinafter GREEN AGENDA]. The papers were grouped into one of five of the following categories: (a) opening address, (b) Commonwealth environment powers, (c) environmental impact assessment, (d) protection of biodiversity, and (e) future directions. *Id.*, table of contents.

504. Senator Robert Hill, *Opening Address* in GREEN AGENDA, *supra* note 503, at 1 (emphasis added). Senator Hill goes on to observe:

> The [Commonwealth] Government is also committed to consulting State Government, industry, environmental groups and the community at large on the issue of a greenhouse trigger as an additional specified area of national environmental significance. We are also committed to amending our new legislation to include provisions dealing with the assessment of environmentally significant releases of genetically modified organisms, [GMOs] and we'll do that in conjunction with a new regulatory

Minister Hill's enthusiastic praise for the biodiversity aspects of the Act are not shared by several other observers. For instance, Katherine Wells, a solicitor with the New South Wales Environmental Defender's Office, contends that the Act will create an environmental assessment system with a "completely inadequate list of matters of national and environmental significance . . . included as . . . triggers, . . . in particular the failure to include triggers relating to climate change, the clearance of native vegetation, land degradation, water allocation and forestry operations."[505] Moreover, Ms. Wells criticizes the following additional features of the Act: "[T]he failure to retain Commonwealth funding [of various development projects] as one of the new triggers;" "the failure to include a ministerial 'call-in', or 'reserve' power [allowing the Commonwealth Minister to designate, on a discretionary basis, new categories of nationally significant environmental impacts requiring assessment];[506] the [Commonwealth Environment] Minister can delegate his or her assessment and approval powers back to the relevant 'Action' Minister;"[507] and "the potential for the Commonwealth to delegate its [environmental assessment and approval] powers . . . to the States [using bilateral agreements with insufficient State Standards]."[508]

Another critic, Professor Rob Fowler, Director of the Australian Center for Environmental Law at the University of Adelaide Law School, is also critical of the biodiversity conservation aspects of the new Act. His overarching criticism is that "the vigorous promotion of the view by some commentators that the Act is comparable with the best environmental legislation in the world" ignores the "potential capacity [of the Act] to facilitate a substantial Commonwealth withdrawal from environmental management functions" in Australia.[509] Specifically,

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environment that's been developed for GMOs. We'll change our environmental law to complement that.

Id.

Hill's upbeat view of the biodiversity provisions of the Act is generally shared by the Deputy Secretary and Head Biodiversity Group, Commonwealth Department of Environment and Heritage. *See* Stephen Hunter, *Overview of Biodiversity (Species and Protected Areas) Provisions* in GREEN AGENDA, *supra* note 503, at 41.

505. Katherine Wells, *An EDO Critique of the Environmental Impact Assessment Provisons of the EPBC Act* in GREEN AGENDA, *supra* note 503, at 29, 30.

506. *Id.*

507. *Id.* at 31.

508. *Id.* at 31.

509. Rob Fowler, *Where to From Here? The Next Ten Years* in GREEN

Professor Fowler asserts that while a strict "legal view" of the Act makes it "possible to read its terms optimistically and conclude that it is 'world-class' in various aspects," this view is Pollyannish in that it ignores a more compelling "political view": "A 'political' view of the [Act], based on the actual performance by the Commonwealth of its environmental functions over the past ten years, strongly suggests that the Commonwealth does not wish to have an extensive involvement in environmental assessment and approvals and would prefer to hand over those functions to the States."[510] Moreover, according to Fowler, "[t]his political record, which it must be acknowledged extends across Federal governments of different political persuasions, provides reasonable grounds for suspicion and distrust concerning the motives of the Commonwealth in providing within the Act for the bilateral agreement mechanism—particularly in relation to environmental approvals."[511] Professor Fowler argues, in this regard:

> It is difficult to understand why the Commonwealth has set in place the elaborate machinery in the . . . [Act] for environmental assessment and approval of actions relating to "matters of national environmental significance," only then to provide an equally elaborate mechanism for divesting itself of the responsibility to exercise these functions.
>
> * * *
>
> Why would the Commonwealth contemplate such a course and how extensive could this be? Altruistically, it might be argued that the Commonwealth wishes to push the States to achieve "best practice" levels of performance concerning both environmental assessment and approvals. If so, it has chosen a very complex means of doing so.[512]

Fowler's critique of the Act, also is directed at the multitudinous biodiversity "instruments" required in the legislation to give substantive protection to biodiversity conservation. He identifies nine such "plans and other instruments which are required to be assembled under [the Act's] biodiversity conservation provisions":[513]

AGENDA, *supra* note 503, at 61.

510. *Id.*

511. *Id.* at 61-62.

512. *Id.* at 62.

513. *Id.* at 64.

(i) recovery plans for threatened species and ecological communities;
(ii) threat abatement plans for each listed threatening process;
(iii) wildlife conservation plans for listed migratory species, marine species and cetaceans;
(iv) regulations prescribing management principles for World Heritage sites and Ramsar wetlands;
(v) management plans for Commonwealth reserves and areas outside the Commonwealth which it is obliged internationally to protect [e.g. the "Antarctic Islands");
(vi) the creation of "Conservation Reserves" pending their establishment as Commonwealth reserves;
(vii) regulations to control activities in both Commonwealth and Conservation reserves;
(viii) the entry into conservation agreements with private parties; and
(ix) bioregional plans, inventories and surveys of various kinds.[514]

Indeed, Professor Fowler notes: "Whether this industry [in the generation of biodiversity instruments which will give further effect to its provisions] proves to be an effective regime for biodiversity conservation, or a prescription for 'death by a thousand plans', remains to be seen."[515] Fowler's concern is echoed by Michael Kennedy—Director of the Humane Society International who observes:

> We are now undoubtedly presented with a set of legislative circumstances that can significantly enhance the future prospects of properly managing and conserving Australia's biological diversity. This is particularly so for listed species and communities. However, it is crucial to remember that the law cannot achieve all. In the case of threatened species and communities, unless broad national recovery and threat abatement plans are implemented "on the ground" in the most practical, efficient and effective manner possible and backed by the resources required, then any legislative obligations, no matter how strong, may not provide the ultimate solution.[516]

514. Rob Fowler, *Where to From Here? The Next Ten Years* in GREEN AGENDA, *supra* note 503, at 64.
515. *Id.*
516. Michael Kennedy, *The EPBC Act & Biodiversity Protection: A Conservation Organization Perspective,* in GREEN AGENDA, *supra* note 503, at 45-52.

IV. An American Law Professor's Synoptic Reactions and Constructive Criticisms

A. The Need for Better Biodiversity Conservation Coordination.

Reading through and absorbing the various plans, programs, laws and policies promulgated by various public and quasi-public entities in Australia over the last decade, or so, dealing with biodiversity, leaves me with the feelings that Hercules must have experienced when his completed his "labors."[517] This leads to my first reaction: the sheer amount of policy analysis of Australian biodiversity issues and cognate biodiversity conservation policy responses is mind-boggling. While I detected some measure of national biodiversity policy coordination in the 1996 *National Strategy for Conservation of Australia's Biological Diversity,*[518] the 1998 *Australia's First National Report to the CBD Conference of the Parties,*[519] and the 1999 *Environmental Protection and Biodiversity Conservation Act,*[520] I am struck by the great number, prolix volume, and uncoordinated nature of the policy instruments I have examined, which span most of the 1990s.[521] My initial constructive criticism, in this regard, is that it would be advisable for the Australian Commonwealth government, driven by the Australian Parliament and the Minister of the Environment, to synthesize and simplify the existing official, eclectic biodiversity conservation policies in Australia. In undertaking this centripetal reexamination of Australian biodiversity policies, Parliament should (1) make sure that all governmental biodiversity conservation proposals are "logical, well considered and consistent with other governmental initiatives,"[522] (2) that "the required money [for accomplishing these proposals is] properly targeted and fully budgeted,"[523] (3) that "the employment, industrial, equity and fairness consequences" of these proposals have "been worked through,"[524] and (4) that "other

517. *See generally,* EDITH HAMILTON, MYTHOLOGY 231-34 (1942) (discussing the twelve labors of Hercules, which ranged from killing the lion of Nemea to going to the lower world to free Theseus from the Chair of Forgetfulness).
518. *See supra* notes 151-227 and accompanying text.
519. *See supra* notes 287-398 and accompanying text.
520. *See supra* notes 435-517 and accompanying text.
521. *See supra* notes 105-517 and accompanying text.
522. PETER BRIDGMAN & GLYN DAVIS, THE AUSTRALIAN POLICY HANDBOOK 155 (2d ed. 2000).
523. *Id.*
524. *Id.*

factors which might influence attainment of policy objectives" have "been identified."[525]

B. The Need for Better Biodiversity Conservation Policy Implementation.

I am impressed by the energy and commitment of Australian policymakers and governmental officials in attempting to implement biodiversity conservation policies on State, Territorial, National and international levels. Clearly, many governmental initiatives and laws have been launched in the last decade. Yet, one gets a sense of a type of policy vertigo from the blur of official activity to conserve Australian biodiversity. Focusing my comments on implementation of the International Convention on Biological Diversity, it would be advisable for the Parliament of Australia in cooperation with the Minister of the Environment and the Heads of Australian State and Territorial governments to (1) seek in future Conferences of the Parties to the CBD, and by reasonable interpretation of the admittedly ambiguous and far ranging language of the CBD text, to clarify the core objectives of the CBD and to make sure that the "underlying causal model" for achieving this specific objectives of the CBD in Australia is "reliable and tested;"[526] (2) determine through extended, honest dialogue whether "a top-down or bottom-up approach" is the most appropriate for achieving the objectives of the CBD in Australia;[527] (3) review whether—and to what relative extent—government, quasi-governmental and NGO representatives referenced in the various biodiversity conservation policy documents are "the most appropriate to implement" international biodiversity conservation policy;[528] (4) reconsider whether the "implementation steps and players" in Australian biodiversity conservation policy have been "kept to a minimum;"[529] (5) analyze whether or not a "clear chain of accountability" exists for governmental and private actors involved in measures which impact biodiversity in Australia;[530] (6) ensure that Australian "street level bureaucrats [have] been included in the implementation plan" to achieve international biodiversity

525. *Id.*
526. *Id.*
527. PETER BRIDGMAN & GLYN DAVIS, THE AUSTRALIAN POLICY HANDBOOK 155 (2d ed. 2000).
528. *Id.*
529. *Id.*
530. *Id.*

objectives under the CBD;[531] (7) see to it that "an evaluation strategy [has] been included in the implementation plan" to achieve CBD objectives;[532] (8) revisit the structure and content of the Environment Protection and Biodiversity Conservation Act of 1999 to determine whether or not the national legislation empirically advances the process of biological diversity conservation in Australia;[533] and (9) revisit the enforceability and enforcement results of Australia's policies to achieve the CBD's biological diversity conservation objectives.[534]

C. *The Need for Better Integration of Biodiversity into Land-Use Planning and Management.*

My sense is that Australia could improve the way that biodiversity policy is integrated into land use planning and management in three ways. First, Australia should substantially move beyond biodiversity conservation via special reserves; while protected reserves are necessary for effective biodiversity conservation, they are not sufficient. "Only a minor part of biodiversity conservation can be accomplished through the establishment and management of protected areas. The major challenge lies in areas of multiple use, where biodiversity conservation is embedded into a scenario of competing land-use opportunities."[535]

Second, Australia should more vigorously embrace and include incentives for biodiversity conservation, and not necessarily prohibit sustainable uses of biodiversity resources within protected areas. "The social and economic context of biodiversity conservation is very important and people may need to derive concrete gains from biodiversity as an incentive for conservation."[536] In a related way, Australia should ensure that "[p]rotected areas [do] not interfere with the sustainable management practices of indigenous peoples. They should be involved in the land-use planning process from the first stage on."[537]

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531. *Id.*
532. PETER BRIDGMAN & GLYN DAVIS, THE AUSTRALIAN POLICY HANDBOOK 155 (2d ed. 2000).
533. *Id.*
534. *Id.*
535. WORLD RESOURCES INSTITUTE & WORLD CONSERVATION UNION (IUCN), REPORT OF THE FIFTH BIODIVERSITY FORUM—1996 (Buenos Aires, Argentina) (1997) [hereinafter FIFTH BIODIVERSITY FORUM] at 23.
536. *Id.*
537. *Id.*

Third, Australia should redouble its efforts and amend its biodiversity conservation policies to more fully involve and consult with local Australian communities before protected areas or ecological corridors are promulgated.[538]

D. The Need For Better Protection, Promotion and Reward of the Rights of Aborigines and Torres Islander Straits Peoples.

The Convention on Biological Diversity's "prioritization of the rights of national governments over the rights of sovereign peoples stands in the way of the Convention becoming a truly effective tool of support for indigenous peoples' knowledge systems."[539] I discern that following the CBD's existing priority scheme, the Commonwealth, State and Territorial governments of Australia have generally sought to advance their respective interests to Australian biodiversity resources over the interests of Aboriginal peoples. Yet, it must not be forgotten that:

> From a Western market perspective, some of the indigenous knowledge is of limited value because it cannot directly be converted into monetary benefits. But this knowledge is of central value to the lives of indigenous peoples. First, there are many economic values that relate to the local consumption of goods and services inside the communities, without entering the market economy sphere. Second, the value of nature in indigenous systems is often attached to the functional part of nature and it is conceived as part of a holistic system, the elements of which cannot be attached individual monetary values.
>
> However, it must be stressed that traditional knowledge includes sacred knowledge that is not intended at all to be shared, and the commercial exploitation of this knowledge is thus not a subject for negotiation. Much of this knowledge is unwritten and even unspoken. The way in which indigenous knowledge is taken up and used in the non-indigenous world is often contrary to indigenous peoples' values, and ultimately it is destructive of the knowledge systems themselves. This is particularly true of patents on life, such as [for example] the patent granted to a U.S. corporation on the sacred Amazonian plant Ayahuasca.[540]

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538. *Id.*
539. *Id.* at 43.
540. FIFTH BIODIVERSITY FORUM, *supra* note 535, at 43.

Australia should intensify its efforts to protect, promote and reward the rights of Aboriginal peoples regarding Australian biological resources. Australia should avoid the temptation of merely "facilitat[ing] [the] appropriation of knowledge of indigenous peoples and traditional communities;"[541] rather, Australia should exercise international leadership in interpreting and implementing the CBD to more vigorously "address the livelihoods, well-being and survival of [its] indigenous peoples."[542]

Conclusion

Implementation of international environmental commitments "is a complex and difficult process."[543] Indeed, "[t]he difficulty is compounded when policies are negotiated internationally, requiring coordination and at times integration of already complex political and economic elements."[544] Moreover, "[a]t times international commitments yield none of the intended changes in behavior: officials do not anticipate that some activities will need regulation, they make efforts but choose ineffective policy instruments, or they simply do not have adequate control over their subjects."

Australia's implementation of the Convention on Biological Diversity—through the numerous laws, policies, programs, institutions and plans it has promulgated since 1992—is impressive and, practically speaking, even exemplary. Procedurally, Australia appears to be in full compliance with the Convention. On substantive treaty matters, however, this is less clear, but one must realistically conclude that Australia is, at least, in substantial compliance with these substantive commitments.

In the final analysis, the difficult question is an international one: is the Convention on Biological Diversity effective in achieving its lofty purposes and goals? This is the crux of the matter. I sincerely hope that my Australian "mates" will set a further example for the international community in pressing for future changes in the Convention that make it more specific regarding the obligations that Parties must undertake to achieve the flourishing of global biodiversity.

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541. *Id.*
542. *Id.*
543. Kal Raustiala & David G. Victor, *Conclusions* in IMPLEMENTATION AND EFFECTIVENESS, *supra* note 4, at 697.
544. *Id.*