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Maggie Parks

American University Washington College of Law

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Coral Reefs in the Philippines

By Maggie Parks*

INTRODUCTION

Coral reefs, rich in biological diversity, are generally located in shallow waters and support a wide variety of reef fish species as well as coral species.¹ There are over 800 species of reef-building coral and at least 4,000 species of fish supported by reefs.² Scientists estimate that there could be between one and nine million reef-associated species, and as many as one million of these could become extinct within 40 years due to human-caused reef degradation.³ The health of coral reefs is important not only for protecting the biological diversity within coral species, but also for protecting the biological diversity of fish supported by coral reef ecosystems.

While many human activities cause damage to coral reefs, scientists find that cyanide fishing is especially problematic because it destroys the coral it is sprayed upon,⁴ the fish that are targeted, and many non-target fish.⁵ Fishers use different methods to apply toxic cyanide to fish habitats. Some fishers, equipped with water bottles containing a solution of crushed cyanide tablets mixed with water, dive around coral reefs and squirt the solution onto coral reefs.⁶ Other fishers dump cyanide into the water from 55-gallon drums before collecting the fish.⁷ The cyanide solution stuns reef fish, enabling fishers to easily capture them. Once caught, the fish are then either transported to floating pens, awaiting further transport to importing countries, or packed in bags of seawater containing anesthetics and transported by air to their final destination.

Coral reef degradation due to cyanide fishing implicates the Convention on Biological Diversity ("CBD").⁸ The CBD, signed in 1992, developed a framework for protection of the world's biological diversity, including marine biological diversity.⁹ Currently, 65 metric tons of

* J.D. Candidate, May 2002, American University, Washington College of Law. The author would like to thank Vaughan Pratt of the International Marinelife Alliance, and Tony La Vina and John Parks of the World Resources Institute for providing resources and valuable input.

¹ See Bryant et al., **Reefs at Risk: A Map-Based Indicator of Threats to the World's Coral Reefs** 9 (World Resources Institute, 1998).

² See *id.* at 8-9.

³ See *id.*

⁴ See Charles Victor Barber & Vaughan R. Pratt, *Poison and Profits: Cyanide Fishing in the Indo-Pacific*, **Environment**, Oct. 1998, at 8 (discussing the negative effect of cyanide on coral reefs); See also Ross J. Jones, *Effects of Cyanide on Coral*, in 3 **Secretariat of the Pacific Community Live Reef Fish Information Bulletin** 3, 3-8 (Dec. 1997) (providing detailed results of experiments subjecting coral to cyanide).

⁵ See *What Price Coral?*, **The Economist** (Nov. 4, 2000) <http://www.economist.com/displayStory.cfm?Story_ID=410947> Visited Nov. 19, 2000 (noting that cyanide indiscriminately kills reef fish along with all other organisms it confronts).

⁶ See Bryant, *supra* note 1 at 15 (describing the cyanide fishing process); Nancy MacKinnon, *Destructive Fishing Practices in the Asia-Pacific Region*, in **Coral Reefs: Challenges and Opportunities for Sustainable Management** 32 (Marea E. Hatzios et al. eds., World Bank 1998).

⁷ *Id.*

⁸ See Convention on Biological Diversity 1992 (entered into force Dec. 29, 1993), 30 I.L.M 818. [hereinafter "Biodiversity Convention"].

⁹ See *Report of the First Meeting of the Conference of the Parties to the Convention on Biological Diversity*, Decision I/8, U.N. Doc. UNEP/CBD/COP/1/17 (Feb. 28, 1997) (describing the CBD as the "primary legal instrument for advancing the conservation of biological diversity"); Alan E. Boyle, *The Rio Convention on Biological Diversity*, in **International Law and the Conservation of Biological Diversity** 33, 34-37 (Michael

cyanide is used annually to catch reef fish in the Philippines,¹⁰ severely damaging coral reefs and limiting the ability of residents to rely on fish as a source of food and income.¹¹ As a Contracting Party to the CBD, the Philippines is obligated to guard against the unsustainable use of coastal and marine resources.¹²

In 1995, the Conference of the Parties (“COP”)¹³ agreed to a coastal and marine action plan, the Jakarta Mandate on Marine and Coastal Biological Diversity (“Jakarta Mandate”), for implementing the CBD. Action item three of the Jakarta Mandate provides direction for the Parties on implementation of the CBD with regard to sustainable use of coastal and marine resources.¹⁴ The Programme of Work on Marine and Coastal Biological Diversity (“Program of Work”), adopted by the COP in 1998, describes specific activities the Parties should undertake to implement action item three of the Jakarta Mandate.¹⁵

This article analyzes whether the Philippines has effectively implemented its obligations under the CBD with respect to the problem of cyanide fishing in its waters. Specifically, it addresses whether the Philippines has provided for the sustainable use of coastal and marine resources, as called for by the Jakarta Mandate and outlined in the Program of Work.

I. THE PHILIPPINES

A. Coral Reef Biological Diversity and Cyanide Fishing

Southeast Asia, of which the Philippines is a part, contains approximately 30 percent of

Bowman & Catherine Redgwell eds., 1996) (detailing how the CBD developed as a result of growing recognition of the value and importance of the world’s natural resources).

¹⁰ See Cesar M. Drilon, Jr., *Live Reef Fish Trade in the Philippines*, in **Proceedings of the First Asia-Pacific Seminar/Workshop on the Live Reef Fish Trade** 9, 9 (1999) [hereinafter “Proceedings on the Live Reef Fish Trade”] (describing on the impact the live reef fish trade has had on the marine environment of the Philippines).

¹¹ See Bryant, *supra* note 1, at 27 (remarking on the poor condition of the Philippines’ coral reefs). **Philippine Biodiversity: An Assessment and Action Plan** xii (Dep’t of Env’t and Natural Resources & U.N. Env’t Programme, 1997) (reporting on the biological diversity of coral reefs in the Philippines). Coral reef ecosystems in the Philippines support a total of 3,967 species. *Id.* See also Charles Victor Barber & Vaughan R. Pratt, **Sullied Seas: Strategies for Combating Cyanide Fishing in Southeast Asia and Beyond** 7 (World Resources Inst. and Int’l Marinelifa Alliance, 1997) [hereinafter “Barber & Pratt, **Sullied Seas**”] (discussing the impact of cyanide fishing on human health).

¹² See *Report of the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity*, Annex II, Decision II/10, at 6, U.N. Doc. UNEP/CBD/COP/2/19 (Nov. 30, 1995) (noting the Philippines was represented at the Second Meeting of the COP and did not object to the Jakarta Mandate). See *Report of the Fourth Meeting of the Conference of Parties to the Convention on Biological Diversity*, Annex, Decision IV/5, at 16, U.N. Doc. UNEP/CBD/COP/4/27 (June 15, 1998) [hereinafter “Report of the Fourth Meeting of the COP”] (noting the Philippines also attended the Fourth Meeting of the COP and did not raise objections to the provisions contained in the Program of Work).

¹³ See Biodiversity Convention, *supra* note 8, Art. 23. The CBD authorizes the COP to take any additional action necessary to achieve the purposes of the CBD.

¹⁴ See *Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, Annex, Recommendation I/8, at 36-44, U.N. Doc. UNEP/CBD/COP/2/5 (Sept. 21, 1995) (developing an action program in five thematic areas).

¹⁵ See *Report of the Fourth Meeting of the COP*, *supra* note 12, at 85; *Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity*, Annex 3, Decision V/3, at 76, UNEP/CBD/COP/5/23 (June 22, 2000) (requesting the SBSTTA further analyze coastal and marine biological resources, and provide advice to the COP).

the reefs in the world.¹⁶ The Philippines is comprised of approximately 7,000 islands, and is one of the largest archipelagos in the world.¹⁷ Coral reef ecosystems are located generally within the municipal waters of the Philippines. Currently, however, the coral reefs of the Philippines are almost all considered to be at risk.¹⁸ Cyanide fishing is one reason for this high-risk status, being one of the most destructive fishing practices placing pressure on the health of the Philippines coastal biological diversity.

The live reef fish trade drives expansion of the use of cyanide, with trade in live food fish and aquarium fish totaling around \$1 billion per year.¹⁹ Consumers are willing to pay high prices for live food fish and aquarium fish.²⁰ Worldwide demand for aquarium fish, dominated by the United States, is strong, and the Philippines plays an active role in meeting this demand, exporting approximately six million aquarium fish in 1996.²¹ Chinese demand drives the restaurant trade in live reef food fish, and in Hong Kong, consumers pay up to \$350 for single live fish.²² The attractiveness of cyanide fishing increases as fishers strive to meet the increasing consumer demand for live reef fish.²³

Cyanide fishing threatens not only directly the biological diversity inherent in coral reefs, but also the long-term economic benefits provided by coral reefs.²⁴ Inhabitants of coastal

¹⁶ Loke Ming Chou, *Status of Southeast Asia Coral Reefs*, in **Status of Coral Reefs of the World: 1998** 79, 83-84 (Clive Wilkinson ed., 1998) (providing details on the status of coral reefs in the Philippines).

¹⁷ See Antonio G. M. La Vina, **Management of Fisheries, Coastal Resources and the Coastal Environment in the Philippines: Policy, Legal and Institutional Framework** 5 (Int'l Ctr. for Living Aquatic Resources Mgmt., Working Paper No. 05, 1999) (reporting that the Philippines coastline extends 17,460 km, the area of the territorial water is 1.7 million km², and the area of the exclusive economic zone ("EEZ") is around 2.5 million km²).

¹⁸ See Bryant, *supra* note 1, at 27 (explaining that most Philippines coral reefs are highly threatened by disturbance, with more than 80 percent of them at risk, and over half of them at high risk); Marlito L. Cardenas & Teresita Liao, *Control of the Use of Cyanide Fishing: A Philippine Management Policy*, in **Proceedings on the Live Reef Fish Trade**, *supra* note 18, at 46 (noting that only 5 percent of the Philippines reefs are in excellent condition).

¹⁹ See **Creating a Sea Change: The WWF/IUCN Marine Policy** 21, 22 (1998) [hereinafter "Creating a Sea Change"] (noting that trade in live food fish and aquarium fish is around \$1 billion per year).

²⁰ See Barber & Pratt, **Sullied Seas**, *supra* note 11, at 1-2 (detailing a shipment of cyanide caught reef fish transported from Indonesia to Hong Kong for sale in a restaurant, where one fish sold for \$350); Johannes & Michael Riepen, *Environmental, Economic, and Social Implications of the Live Reef Fish Trade in Asia and the Western Pacific* (1996) <<http://www.tnc.org/infield/State/Hawaii>> Visited Nov. 15, 2000 (noting that Chinese demand drives the restaurant trade in live reef fish).

²¹ See B.A. Best, Abstract, *Shifting the Burden of Proof: Approaches to Sustainable and Non-Destructive Collection of Coral Reef Resources*, in **Ninth Annual Coral Reef Symposium: Abstracts** 275 (2000) (noting that the United States is the leading consumer of reef fish); See also Cardenas & Liao, *supra* note 18, at 46 (linking the increase in the demand for aquarium fish with the increase in the use of cyanide in fishing).

²² See Barber & Pratt, **Sullied Seas**, *supra* note 11, at 1 (emphasizing the high price consumers in Hong Kong are willing to pay for live food fish); See also Johannes & Riepen, *supra* note 20 (discussing the importance of fish in Chinese cuisine).

²³ See Ferdinand Cruz, Abstract, *Destructive Fishing Reform in Poor Communities in the Philippines: Addressing Village Economic Issue*, in **9 International Coral Reef Symposium: Abstracts** 277 (2000) (describing the relationship between poverty and cyanide fishing). Most cyanide fishers are poor and will not give up cyanide fishing unless they can increase their income through other means. *Id.* See also Barber & Pratt, **Sullied Seas**, *supra* note 11, at 16 (noting that consumer demand for live reef fish does not decline as environmental impacts increase). Demand for live reef fish actually increases when a reef fish is referred to as endangered. *Id.*

²⁴ See Bryant, *supra* note 1, at 8-10 (describing the importance of coral reefs and the benefits that will be lost if they are destroyed). The value of the goods and services provided by coral reefs was estimated in 1997 to be nearly \$375 billion per year. The value of yearly benefits generated by coral reefs includes living resources and services such as tourism and coastal protection. *Id.* at 8.

villages in Philippines rely upon fish for their principal source of income and food.²⁵ There is disparity, however, between the production growth rate of fish and the human population growth in the Philippines.²⁶ This disparity contributes to the increased scarcity of reef fish in the Philippines, and has resulted in poverty, particularly among artisanal fishers in coastal villages.²⁷ With the constant threats of limited fisheries resources and poverty, fishers are driven to tap into the live reef fish trade by the least costly means available, making cyanide fishing a viable, albeit unsustainable, option.

B. The Philippines Destructive Fishing Reform Program (DFRP)

The problem of cyanide fishing in the Philippines has not gone unrecognized. In the mid-1980s, the International Marinelife Alliance-Philippines (“IMA”), a non-governmental organization (“NGO”) instituted a campaign to raise both worldwide and Filipino awareness of the threats posed by cyanide fishing.²⁸ This public awareness campaign helped raise consciousness of the problem within the Philippines government, and eventually resulted in governmental cooperation with the IMA to reduce cyanide fishing in the Philippines.²⁹ For instance, government cooperation with the IMA during the late 1980s and early 1990s resulted in the legalization of the use of fine mesh nets for collecting aquarium fish, the creation of a training program for cyanide-free fishing techniques, the development of “alternative livelihood programs”, and the development of a computerized cyanide detection testing procedure to detect the presence of cyanide in fish tissues.³⁰

A more formal collaboration began in 1992 when the Department of Agriculture’s (“DA”) Bureau of Fisheries and Aquatic Resources (“BFAR”) and the IMA created the DFRP.³¹ The DFRP has resulted in the creation of a Cyanide Detection Test (“CDT”) network of laboratories, the establishment of Monitoring, Inspection, and Sampling (“MIS”) teams,³² the creation of a training program that focuses on education of cyanide-reliant fishers in sustainable fishing methods,³³ the promotion of public awareness and of anti-cyanide policies for the

²⁵ See *Fisheries Project Reports Alarming Resource Cut Due to Overfishing, Destruction*, **BusinessWorld** 17 (May 25, 2000) (stressing the reliance of the coastal Filipinos on fish).

²⁶ See *id.* (noting that the growth rate of the Philippine population is 2.3% per year, while the growth rate of fish production is only 1.25% per year).

²⁷ See *id.* (discussing poverty in coastal areas); *To Take a Stand; Alternative Fishing*, **BusinessWorld** 4 (June 6, 2000) (remarking that artisanal or “low-tech” fishers are among the poorest people in the Philippines); See also *Creating a Sea Change*, *supra* note 19, at 21 (describing the links between poverty and destructive fishing).

²⁸ See Barber & Pratt, *Sullied Seas*, *supra* note 11, at 27 (describing the role of the IMA in raising global and Philippines awareness of the problem of cyanide fishing in the Philippines).

²⁹ See *id.* at 27-28.

³⁰ *Id.*

³¹ See *id.* at 28 (discussing the partnering between the IMA and BFAR which resulted in the creation of the DFRP); See also Drilon, *supra* note 18, at 10 (describing the DFRP as a balanced program that focuses on reforming the live reef fish industry in the Philippines); *The Indo-Pacific Destructive Fishing Reform Initiative (DFRI): Program Description 2*, 10 (Int’l Marinelife Alliance and World Resources Institute, 1999) (describing the success of the Philippines program). The DFRP has also been termed the “Cyanide Fishing Reform Program.” *Id.*

³² See *id.* (stating that MIS teams conduct data collection and enable the BFAR to regulate the Philippines live reef fish trade).

³³ See *id.* at 31-32 (reporting that the DFRP has resulted in the training of over 2000 fishers throughout the Philippines).

aquarium fish industry in the United States and Europe,³⁴ and the promotion of reforming Hong Kong's live reef fish importation policy. The DFRP recognizes the breadth of action necessary by holding liable not only countries that supply live reef fish, but also by those countries that import live reef fish.

II. LEGAL STANDARDS

A. International Standard: The Convention on Biological Diversity (CBD)

The CBD addresses the problem of threats to the earth's biological diversity by advancing the concepts of the sustainable use of natural resources and the equitable sharing of the benefits of natural resources.³⁵ The CBD seeks to balance the competing interests of economics and conservation.³⁶ It explicitly recognizes the sovereign rights of nations over their resources.³⁷ There are limits, however, to these rights, and Parties may not act in a manner that will damage the environment outside of their national jurisdiction.³⁸ Marine ecosystems are included in the CBD definition of biological diversity and are protected by its provisions.³⁹

The CBD encourages Parties to take action domestically to curb threats to biological diversity.⁴⁰ Article 8(c) provides for the management and regulation of resources that are important for conserving biological diversity. Article 8(l) calls for the regulation and management of activities that have a significantly adverse impact on biological diversity. Article 10(a) requires Parties to integrate concepts of sustainability of biological resources into their national policy. Article 10(b) calls upon Parties to adopt resource use measures that minimize or avoid negative impacts on biological diversity. Contracting Parties are left, however, with considerable discretion in determining how to apply the CBD domestically.⁴¹

³⁴ See *id.* at 34-35 (presenting a discussion on the promotion of anti-cyanide policies focused on the demand side of the aquarium trade). The DFRP recognizes that effort must be made to increase awareness among consumers of aquarium fish, and that the demand side must be addressed to adequately affect change. *Id.*

³⁵ See Biodiversity Convention, *supra* note 1, Art. 1 (listing conservation of biological diversity, the sustainable use of the components of biological diversity, and the fair and equitable sharing of the benefits resulting from genetic resource use as the objectives of the Convention). See also Boyle, *supra* note 8, at 33 (remarking on as an effort to comprehensively globalize the conservation and sustainable use of biological diversity).

³⁶ See *id.*, at 38 (noting that the CBD's inherent trade-off between economics and conservation makes it unusual compared with other environmental agreements).

³⁷ See Biodiversity Convention, *supra* note 1, art. 3 (stating that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies . . .").

³⁸ See *id.* arts. 5, 20(2). Article 5 urges Parties to "cooperate with other Contracting Parties . . . in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity." *Id.* Article 20(2) calls upon developed country Parties to assist developing country Parties in meeting the costs of implementing the measures necessary to fulfill the CBD. *Id.*

³⁹ See *id.*, Art. 2.

⁴⁰ See *id.* Art. Art. 6-8 (presenting general conservation measures). Art. 6 calls upon Parties to "[d]evelop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned." *Id.* Art. 7 requires Parties to identify and monitor the components of their biological diversity. See *id.* Art. 8 presents several measures to be taken by Parties to manage and protect biological resources. See *id.*

⁴¹ See *id.*, Art. 10 (qualifying the responsibilities of Contracting Parties to integrate conservation and sustainable use into national policy as being necessary only "as far as possible and as appropriate"); David Hunter et al., **International Environmental Law and Policy** 961 (Foundation Press, 1998) (commenting on the flexibility Contracting Parties have in implementing the CBD).

Since the CBD was enacted, it has evolved to address the broad issues encompassed by the term “biological diversity.” Based on advice provided by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), the COP, at its second meeting, developed the Jakarta Mandate, a plan that presents action items to guide Contracting Parties on implementing the Convention as it applies to the coastal and marine biological diversity.⁴² Action item three of the Jakarta Mandate encourages Contracting Parties to take measures to support the sustainable use of coastal and marine resources.⁴³

At the fourth meeting of the COP in 1998, the COP adopted the Program of Work, developed by the SBSTTA, which outlines methods for implementing each action item of the Jakarta Mandate, including how to implement sustainable use of living coastal and marine resources.⁴⁴ The Program of Work promotes an ecosystem approach to implement action item three of the Jakarta Mandate.⁴⁵ In addition, the Program of Work describes activities that should provide for the effective implementation of action item three, including collaboration among related institutions, sharing of knowledge, identification of ecosystem components and key threats, capacity-building, and studies on stock enhancement.⁴⁶

B. National Standard: The Philippines Fisheries Code of 1998 ("Fisheries Code")

The Philippines signed the CBD on June 12, 1992, and is one of 176 countries to have ratified it.⁴⁷ The Philippines also attended the second meeting of the COP, endorsing the Jakarta Mandate. As a Contracting Party to the CBD, the Philippines is responsible for conforming to the requirements set forth in the CBD, and is bound to implement it, as called for in the Jakarta Mandate, “as far as possible and appropriate.”⁴⁸

Resource exploitation has been a large element of past Philippines fisheries policy.⁴⁹ The

⁴² See *Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, *supra* note 14, at Recommendation I/8, 36.

⁴³ See *id.* at Recommendation I/8, 40 (recommending that the Parties ensure that management decisions reflect the precautionary approach, be based on sound scientific data, and consider ecosystem impacts; that mortality in trade is reduced; and that monitoring mechanisms are used to ensure sustainable management of marine biological resources); See also Charlotte de Fontaubert et al., *Biodiversity in the Seas: Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, 10 *Geo. Int'l Env'tl. L. Rev.* 753, 782 (1998) (interpreting action item three of the Jakarta Mandate as encouraging CBD Parties to set ecologically sustainable use levels, to manage from an ecosystem approach, to reduce by-catch, to reduce negative effects on non-target species, and to abolish subsidies promoting over-fishing).

⁴⁴ See *Report of the Fourth Meeting of the COP*, *supra* note 12 at Annex, Decision IV/5, 84 (adopting the SBSTTA's work program and urging Parties, donor agencies, and relevant organizations to contribute to its implementation).

⁴⁵ See *Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity*, *supra* note 15, at Decision V/6, 103-04 (describing the ecosystem approach as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.”)

⁴⁶ See *id.* at 90 (presenting the activities that Parties should undertake to promote an ecosystem approach to the sustainable use of coastal and marine biological diversity).

⁴⁷ See Maria Clara Maffei et al., **Participation in World Treaties on the Protection of the Environment: A Collection of Data** 268 (1996) (listing signatories to the Convention and dates of deposit).

⁴⁸ See *Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, *supra* note 16, at Recommendation I/8, 40 (recommending that the Parties should include management elements on sustainable use of coastal and marine resources “as far as possible and appropriate”).

⁴⁹ See The Philippine Fisheries Code of 1975, Presidential Decree 704, § 2 (Phil.) [hereinafter “Fisheries Code of 1975”] (focusing more on resource productivity than sustainability). See generally Philippine Environment Code of 1988, Presidential Decree 1152, Title IV, § 26 (advocating rational fisheries exploitation). The Environment Code of 1988 states that the government “shall establish a system of rational exploitation of fisheries and aquatic resources

Philippines Fisheries Code of 1998 (“Fisheries Code”), the most recent codification of Philippines fisheries law, is no exception.⁵⁰ The Fisheries Code, however, embodies a shift from past policy by its incorporation of the concept of sustainability of biological diversity into its provisions on fishery resources.⁵¹ While productivity and resource exploitation are still highlighted in the Fisheries Code as they were in earlier Filipino fisheries law, conservation of fishery resources is now also an objective.⁵²

The Fisheries Code expressly bans fishing methods that are destructive to coral reefs in Chapter VI, § 92.⁵³ Imprisonment and large fines are potential penalties for violating this provision. Additionally, under Chapter VI, § 88, the use of noxious or poisonous substances, such as cyanide, to catch fish is expressly prohibited, with severe penalties established for violators.⁵⁴ Illegal possession of cyanide⁵⁵ by fishers is also punishable under Filipino law by imprisonment of six months to two years.⁵⁶ The use of cyanide to catch fish is punishable by imprisonment from five to ten years.⁵⁷

In addition to placing limitations on the allowable fishing methods in the Philippines, the Fisheries Code also places limitations on the use of coastal and marine biological resources in municipal waters. Local Government Units (“LGUs”) have authority, under Chapter II, § 6, to establish license fees for fishery activity in municipal water. The DA may also, upon approval by the LGU, impose catch ceilings for ecological or conservation purposes on individual species in municipal waters under Chapter II, § 8.

The Fisheries Code also provides for the establishment of a system to monitor, control, and survey⁵⁸ the waters in the Philippines to promote the sustainable use and management of this valuable resource. Chapter II, § 14 empowers the DA to establish this system in coordination with other agencies. In general, the DA's BFAR is authorized to enforce the Fisheries Code in all Philippine waters except municipal waters, a task which entails developing rules and regulations regarding fishery resource management and conservation.⁵⁹ For municipal waters, the power of enforcement of fisheries' laws rests with the LGUs.⁶⁰

within the Philippine territory and shall encourage citizen participation therein to maintain and/or enhance the optimum and continuous productivity of the same.” *Id.*

⁵⁰ See The Philippine Fisheries Code of 1998, Republic Act 8550, § 2 (Phil.) [hereinafter “Fisheries Code of 1998”].

⁵¹ See *id.* (It is the policy of the Philippines “to ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine water[s] . . . consistent with the primordial objective of maintaining a sound ecological balance, [and] protecting and enhancing the quality of the environment”).

⁵² See *id.* (listing conservation and sustainable management of the Philippines fishery resources as objectives).

⁵³ See *id.* at § 92 (providing in the § heading that fishing with muro-ami, “other methods” and gear destroying coral reefs and other habitats is banned). § 92 fails to elaborate on “other methods” in the text of the §, and instead focuses on fishing methods which involve pounding of coral reefs in order to entrap fish. *Id.*

⁵⁴ See *id.* at § 88 (indicating that it is unlawful “for any person to catch, take or gather . . . fish or any fishery species in Philippine waters with the use of . . . noxious or poisonous substance such as sodium cyanide . . . which will kill, stupefy, disable or render unconscious fish or fishery species”).

⁵⁵ See *id.* (noting that cyanide on a boat or in the possession of a fisher constitutes prima facie evidence of illegal cyanide fishing.)

⁵⁶ See *id.*, at § 88(2) (delineating the penalties for possession of noxious or poisonous substances for fishing).

⁵⁷ See *id.*, at § 88(3).

⁵⁸ See *id.* at § 4 (defining monitoring, control and surveillance). Monitoring is the process of observing fishing efforts, resources harvest levels and the attributes of fishery resources; control is the process of establishing the regulatory framework by which fishery resources may be utilized; and surveillance is the extent and types of observations necessary to meet regulatory compliance. *Id.*

⁵⁹ See *id.* at § 65(n) (authorizing the BFAR to enforce the Fisheries Code of 1998 in all Philippine waters except municipal waters).

⁶⁰ See *id.* at § 16 (empowering the LGUs to enforce all fisheries laws, regulations and rules).

III. ANALYSIS

A. Incorporation of CBD provisions into the Fisheries Code

The Philippines assumed international obligations with regard to biological diversity by signing and ratifying the CBD, including a commitment to address the threat of cyanide fishing to coastal biological diversity.⁶¹ At the onset of Filipino obligations under the CBD, domestic law already existed banning the use of cyanide as a fishing method and providing for strict penalties.⁶² Enacted nearly five years after the Philippines ratified the CBD, the Fisheries Code incorporates the CBD provisions relevant to the sustainable use of coastal and marine biological diversity.⁶³

Articles 8(c) and 8(l) call upon Parties to take action in the form of regulation and management. These articles require the Philippines to regulate and manage both the biological resources that are important for conserving biological diversity, and the activities and processes which result in a significant negative effect on biological diversity. § 88 of the Fisheries Code, in banning cyanide fishing, provides for the regulation and management of resources and activities as required by CBD Article 8(c) and 8(l).⁶⁴ § 88 of the Fisheries Code satisfies CBD Article 8(l) because it explicitly regulates the activity of cyanide fishing, and § 91 satisfies Article 8(c) by protecting the fisheries resources targeted by this method.⁶⁵

Articles 10(a) and 10(b) urge Parties to adapt their policies to reflect recognition of the importance of biological diversity. Under Article 10(a) of the CBD, the Philippines is obligated to integrate concepts of sustainable use and conservation of biological resources into its decision-making. Article 10(a) required the Philippines to significantly depart from its earlier fisheries law, the Fisheries Code of 1975, by providing measures more protective to biological diversity.⁶⁶ By shifting away from earlier law and integrating the concept of sustainability of coastal and marine biological diversity into its framework, the Fisheries Code of 1998 meets the requirements of Article 10(a) of the CBD.

Article 10(b) of the CBD obligates the Philippines to take action relating to biological resource use in order to avoid adverse impacts on biological diversity.⁶⁷ The Philippines has

⁶¹ See Center for International Environmental Law, Biodiversity and Wildlife Program (last modified April 20, 2000) <<http://www.ciel.org/bwp.html>> Visited April 24, 2000 (noting that cyanide fishing degrades coral reefs and thus implicates international law on biological diversity).

⁶² See Fisheries Code of 1975, *supra* note 49, § 33. Although the Fisheries Code of 1975 did not explicitly include cyanide in the definition of obnoxious and poisonous substances, it covered the use of cyanide because cyanide is a chemical that is extremely harmful to fishery resources. *Id.* at § 3(m).

⁶³ See *infra* text accompanying notes 49-55 (addressing the Philippines incorporation of the CBD arts. 8(c), 8(l), 10(a), and 10(b) into the Fisheries Code).

⁶⁴ See Fisheries Code of 1998, *supra* note 50, at § 88 (regulating the activity of cyanide fishing, and thus protecting the biological resources targeted by cyanide fishing); Biodiversity Convention, *supra* note 1, art. 8 (urging Parties to manage and regulate both resources important to the conservation of biological diversity, and activities negatively affecting these resources).

⁶⁵ See Fisheries Code of 1998, *supra* note 50, at §§ 88, 91 (satisfying CBD arts 8(c) and 8(l) by protecting coral reef species from exploitation, and banning the use of fishing methods that destroy coral reefs).

⁶⁶ See *supra* note 49 (describing the Fisheries Code of 1975 and presenting the Philippines fishery policy as contained in the Fisheries Code of 1998). The earlier fisheries law, the Fisheries Code of 1975, emphasized development of the fisheries industry and promoted optimal productivity. *Id.*

⁶⁷ See Biodiversity Convention, *supra* note 1, art. 10(b) (urging Contracting Parties to adopt measures which ensure the sustainable use of the components of biological diversity); See also *supra* note 64 and accompanying text (elaborating on the requirements of art. 10(b)).

taken measures to limit the use of fishery resources so that coastal and marine biological diversity is protected.⁶⁸ Chapter II, § 6 of the Fisheries Code limits the use of fishery resources by requiring the DA to issue licenses allowing access to fishery resources, subject to MSY. Chapter II, § 8 of the Fisheries Code also enables the DA, in conjunction with LGUs, to establish catch ceilings for individual species for purposes of conservation. In addition, Chapter II, § 14 of the Fisheries Code allows for control of resource use by establishing a monitoring, control and surveillance system to ensure that coastal and marine resources are managed and utilized sustainably. The provisions on resource use in the Fisheries Code reflect compliance with Article 10(b) of the CBD.⁶⁹

B. Implementation of Action Item Three of the Jakarta Mandate: The Philippines DFRP

The Jakarta Mandate was agreed upon in 1995, two years after the Philippines ratified the CBD. Further direction by the COP on how to implement the Jakarta Mandate did not materialize until the COP endorsed the Program of Work in 1998. Prior to the commencement of its international obligations under the CBD, the Philippines took action to curb the problem of cyanide fishing in its waters by initiating the CFRP in 1992. Bound by its international obligations under the CBD, the Philippines DFRP is required to satisfy action item three of the Jakarta Mandate by undertaking the activities outlined in the Program of Work.

The Program of Work calls for several activities to be undertaken by Parties in order to promote an ecosystem approach to the sustainable use of the components of coastal and marine biological diversity, including: collaboration with related institutions and organizations; sharing of knowledge and experience on the use of appropriate mechanisms; development of ecosystem approaches which are compatible with the concept of sustainable use; identification of ecosystem components and key threats; and promotion of capacity building.⁷⁰

The activities espoused in the Program of Work are incorporated into the DFRP. The DFRP was formed as a response to the threat to coral reef ecosystems posed by cyanide fishing. The approach of DFRP focuses on sustainable use of the biological resources targeted by the live reef fish trade. The DFRP's CDT initiative, its fisher training program in cyanide-free techniques, and its Hong-Kong import reform program are examples of ways in which the DFRP promotes capacity building.

Additionally, the DFRP represents a successful collaborative effort between NGOs, donor organizations, and the Philippines government.⁷¹ Governmental collaboration between the DA, the Philippines Department of Environment and Natural Resources (“DENR”) and LGUs spurred the creation of CDT labs. The collaborative partnership between the DA's BFAR and the

⁶⁸ See *supra* Fisheries Code of 1998, *supra* note 22, at § 6 (authorizing LGUs to establish license fees for fishery activities within municipal waters to protect fishery resources). Under Chapter II, Section 7, municipal fishery licenses, issued by the DA, limit the total fishery catch to the maximum sustainable yield. *Id.* at § 7.

⁶⁹ See Biodiversity Convention, *supra* note 1, art. 10(b) (urging Parties to adopt measures to avoid adverse impacts on biological diversity); Fisheries Code of 1998, *supra* note 22, at §§ 6, 8, 14 (presenting provisions limiting fishery resource use in the Philippines).

⁷⁰ See Report of the Fourth Meeting of the COP, *supra* note 12, at Decision IV/5, Annex, 90 (listing the activities that Parties should commence in order to meet the objective of promoting sustainable use of coastal and marine living resources); See also *supra* text accompanying note 72 (presenting the six activities listed in the Program of Work).

⁷¹ See Drilon, *supra* note 18, at 10-11 (discussing the institutional linkages of the DFRP).

IMA produced additional financial support from other NGOs and donor agencies.⁷²

Finally, the DFRP supports the sharing of knowledge and experience through the creation of publications aimed at increasing knowledge and awareness of the problems posed by cyanide fishing in the Philippines.⁷³ The DFRP, considered a model program, forms the basis for DFRI, which focuses its activities in Southeast Asia, Micronesia, and the South Pacific.⁷⁴ The DFRI builds on the Philippines DFRP model, and incorporates the knowledge and lessons learned from the DFRP.⁷⁵ Yet, given the gravity of the problem, educating fishing villages about cyanide fishing requires an even larger effort.

IV. RECOMMENDATIONS

A. International Effort

1. Increasing Parties' Liability for Adverse Impacts on Foreign Biological Diversity Resulting from Domestic Consumption

The Philippines must recognize that international action is necessary to attain sustainable development and good trade relations may entail taking precautions to ensure the integrity of coral reefs. For example, environmentalists in the United States have drawn attention to the country's "critical responsibility to address the degradation and loss of coral reef ecosystems that may arise from commerce in coral reefs species and products, and to encourage more responsible trade."⁷⁶ Currently, the United States is evaluating trade measures that would "shift the burden of proof of sustainable use and non-destructive collection practices onto commercial users."⁷⁷

In order to better reflect the principles of the CBD, action item three of the Jakarta Mandate should be amended to require that Parties ensure that domestic consumption of foreign biological resources does not adversely impact the coastal and marine biological diversity of the country supplying those resources, regardless of whether the source country is a Party to the CBD.⁷⁸ Such a provision is consistent with the tenets of cooperation and shared financial responsibility contained in Article 5 and 20(2). In addition, it effectively incorporates Article 14(c), which

⁷² See *id.* (remarking on the international support that materialized through the BFAR's partnership with IMA, including funding from the World Resources Institute ("WRI") and the United States Agency for International Development ("USAID")).

⁷³ See International Marinelifelife Alliance, *The Indo-Pacific Destructive Fishing Reform Initiative*, 5, 1 *Marinelifelife* 11 (1999) (discussing publications about the DFRP in the context of the origination of the Indo-Pacific Destructive Fishing Reform Initiative ("DFRI")).

⁷⁴ See *id.* at 10-11. The knowledge and information obtained through the DFRP is utilized by the DFRI and implemented in Indonesia, Malaysia, Thailand, Vietnam, the Republic of the Marshall Islands, the Federated States of Micronesia, Kiribati, Guam, the Commonwealth of the Northern Mariana Islands, Papua New Guinea, the Solomon Islands, Fiji, and Vanuatu. *Id.*

⁷⁵ See *id.*

⁷⁶ See generally Best, *supra* note 21, at 275 (discussing the responsibility of the United States, as the primary importer of coral reef fish for the aquarium trade).

⁷⁷ *Id.*

⁷⁸ See Biodiversity Convention, *supra* note 1, art. 3 (presenting the principle of the CBD); Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, *supra* note 16, at Annex, Recommendation I/8, 40 (presenting action item three). Action item three fails to address one of the driving factors in resource use: trade. *Id.* See also International Marinelifelife Alliance, *supra* note 73 (discussing that "attention to the 'demand side' of the issue is essential to any durable solutions").

urges Parties to promote open communication when activities under their jurisdiction are likely to have a significant adverse impact on biological diversity beyond their jurisdiction.⁷⁹

2. Broadening the CBD Program of Work on Marine and Coastal Biological Diversity to Specifically Counter Destructive Fishing

The inclusion of a more detailed Program of Work under the CBD, with specific measures addressing the issue of cyanide use and other forms of destructive fishing, would provide Contracting Parties a more directed basis for national action. In particular, such measures should include the following activities: 1) biological and socio-economic studies should be conducted to determine whether foreign trade and consumption activities under the jurisdiction or control of the Party result in a significant negative impact on the biological diversity of areas outside the Party's jurisdiction or of another State; 2) when extractive processes of resource use within a source country's jurisdiction are determined to be unsustainable, the Party should provide viable economic alternatives that promote livelihood security and resource sustainability; and 3) education of local communities on issues of long-term sustainable use and economic benefits of coastal and marine resources should be promoted.⁸⁰

B. National Effort

The Fisheries Code protects the biological diversity impacted by destructive fishing techniques and reflects strict government policy against cyanide fishing.⁸¹ While it conforms to the CBD, enforcement of the ban against cyanide fishing has been problematic.⁸² While national policies and programs should ensure that the activities outlined by the Program of Work are undertaken and that enforcement activities are more effective, the government in the Philippines must also balance the concept of sustainable use of coastal and biological resources with the need of fishers to maintain secure livelihoods.⁸³

1. Increasing the Capacity of the Existing DFRP by Expanding the CDT Network

Implementation of the DFRP in 1992 was a positive response to the problem of inadequate enforcement, increasing enforcement of the cyanide ban.⁸⁴ To facilitate broader enforcement of the Fisheries Code, the Philippines should increase the capacity of the existing DFRP and expand the program.⁸⁵ Additional CDT laboratories should be built in the more remote areas of the Philippines to minimize the opportunities for illegal fishers to avoid the cyanide detection testing procedure.⁸⁶

⁷⁹ See Biodiversity Convention, *supra* note 1, Art. 14(c) (presenting measures for impact assessment).

⁸⁰ See Report of the Fourth Meeting of the COP, *supra* note 12, at Annex, Decision IV/5, 89-90 (advocating activities to be undertaken by Parties to achieve sustainable use of coastal and marine living resources).

⁸¹ See Fisheries Code of 1998, *supra* note 22, at § 88 (banning cyanide fishing); Fisheries Code of 1975, *supra* note 76, at § 33 (banning the use of chemicals for fishing).

⁸² See Barber & Pratt, *Sullied Seas*, *supra* note 11, at 25 (remarking that enforcement of the Philippines policy on cyanide fishing between 1975-1990 was infrequent in spite of the strict policy contained in the Fisheries Code of 1975). See also Johannes & Riepen, *supra* note 20 (alluding to the danger faced by officials trying to enforce ban against cyanide fishing).

⁸³ See Cruz, *Abstract, Destructive Fishing Reform in Poor Communities in the Philippines: Addressing Village Economic Issue*, *supra* note 38, at 277 (remarking on the difficulty of reforming destructive fishers in the Philippines).

⁸⁴ See Johannes & Riepen, *supra* note 20.

⁸⁵ See *id.* (noting that the DFRP has led to increased enforcement of the Fisheries Code).

⁸⁶ See Barber & Pratt, *Sullied Seas*, *supra* note 11, at 38 (recommending that CDT labs be expanded). See also *supra* note 163 (noting that illegal fishers attempt to circumvent the law).

2. Funding the Expansion of the DFRP

The burden of protecting coastal and marine biological diversity from the devastation resulting from the live reef fish trade should not rest solely with the Philippines. The biological diversity that is negatively affected by cyanide fishing is important not only to the Philippines, but to those countries that import Philippines reef fish, in the form of both live-food fish and aquarium fish.⁸⁷ In accordance with the principles of shared responsibility and equity embodied in CBD Article 3 and 14(c) of the CBD, importing countries that rely upon the Philippines as a source for their demand should play a role in the protection of the Philippines' coral reefs.⁸⁸ Recommendation IV.A.1 above calls for importing country financing in accordance with CBD Article 3, 5, 14(c), and 20(2).⁸⁹ Accordingly, the Philippines should pursue financing mechanisms and establish a national fee system for all live coral reef organism exports to subsidize the costs of expanding the DFRP and CDT labs, thereby encouraging sustainability in the live reef fish trade while sharing the financial burden of such efforts with importing countries.⁹⁰

3. Emphasizing the Issue of Cyanide Fishing Uniformly

The Philippines Fisheries Code bans cyanide fishing and calls for stringent enforcement. For the sake of effectiveness, LGUs must uniformly enforce the law and promote alternative methods for collecting reef fish.⁹¹ People are more motivated to monitor, maintain and protect coral reefs when they retain rights over their coral reef resources.⁹² LGUs have the authority to enforce the provisions of the Fisheries Code within their municipal waters, which is a movement toward more effective resource management.⁹³

Currently, the capacity of the over 800 LGUs in the Philippines to effectively enforce the Fisheries Code is limited and varies. Many LGUs must deal with insufficiencies in funding, personnel, knowledge of the law, and/or boats.⁹⁴ The political will on the part of local officials is also, at times, weak. While some LGUs strictly enforce the cyanide ban, the majority of LGUs do not have the capacity to effectively and uniformly enforce the law.⁹⁵ It follows that if one locality strictly enforces the ban on cyanide fishing, fishers would fish in areas that do not enforce the ban. Meanwhile, there are loopholes in the law. For example, cyanide fishers work

⁸⁷ See notes 21 & 34 (remarking on the demand aquarium and live food fish).

⁸⁸ See Biodiversity Convention, *supra* note 1, arts. 3, 14(c) (presenting the principle of the CBD and measures for impact assessment). Under the CBD, Parties to the CBD whose activities adversely impact the biological diversity of another country have a responsibility to remedy the problem. *Id.*

⁸⁹ See *supra* notes 139-141 and accompanying text (recommending that liability be increased for importing country Parties whose importing activities negatively affect the biological diversity of areas outside their jurisdiction).

⁹⁰ See Biodiversity Convention, *supra* note 1, arts. 3, 5, 14(c), & 20(2) (promoting equity and shared responsibility); See also Maffei et al., *supra* note 73, at 268 (listing signatories to the CBD). The main importer in the live food fish trade, Hong Kong, is now a part of China, who is a Party to the CBD. The primary importer in the aquarium trade, the United States, however, is not a party to the CBD. *Id.*

⁹¹ See E-mail from Alan White, *supra* note 105. In the Philippines, there is a "tremendous gap between national law and what actually happens in the local context or out in the field where fishing occurs." *Id.* See Johannes & Riepen, *supra* note 6 (remarking on the poor performance of the courts in prosecuting illegal fishers).

⁹² See Johannes & Riepen, *supra* note 6 (noting that cyanide fishers work toward circumventing regulation).

⁹³ See *What Price Coral?*, *supra* note 5 (discussing privatization as one answer to coral reef degradation due to destructive fishing, and citing Fiji as a successful example). *Id.* See also Rebecca Pestano-Smith et al., **Into the Mainstream: Promoting Coastal Resource Management on the Philippine National Agenda 4** (1999) (describing resource management as being "most effective when brought close to the resources used").

⁹⁴ See E-mail from Alan White, Deputy Chief of Party, Coastal Resource Management Project, to Maggie Parks, Law Student, Washington College of Law, American University (Oct. 16, 2000, 10:10:05 EST) (on file with author).

⁹⁵ *Id.*

around regulations requiring cyanide testing before air-freighting fish out of the country by sending their cyanide-caught fish out of the country by boat.⁹⁶

IV. CONCLUSION

The Philippines Fisheries Code complies with the CBD. The Philippines has also taken substantial and progressive steps towards conforming to the requirements of the Jakarta Mandate, as outlined in the Program of Work. These efforts have led to an increased awareness of the issue of cyanide fishing in the Philippines, and increased enforcement of the ban against cyanide fishing.

The Philippines alone, however, cannot solve the problem of cyanide fishing in its waters. Because cyanide fishing and subsequent coral reef and associated coastal and marine biological diversity degradation is driven by the overseas demand from importing countries of live coral reef organisms, particularly by North America and Asia, importing countries are obligated to play a role in combating cyanide fishing. Broadening the Program of Work to include specific measures relating to eradicating destructive fishing methods, including cyanide fishing, would provide Parties with enhanced guidance, and would allow for a more effective expansion of the Philippines DFRP. The countrywide expansion of the DFRP in the Philippines would also ensure broader understanding and education on the issue of cyanide fishing.

As the population of the Philippines more becomes more knowledgeable and aware of this issue, LGUs stand a better chance at enforcing the law uniformly. Local government officials and fishers alike need to not only be aware that cyanide fishing is illegal, but they must also grasp the environmental implications of cyanide fishing. While strong international and national laws are necessary for long-term global coral reef sustainability, they alone are insufficient. The law must be supported by programs promoting viable economic and social welfare options enabling fishers to exit destructive fishing practices.

⁹⁶ See also Johannes & Riepen, *supra* note 6 (remarking on NGO efforts at controlling cyanide fishing).