

the Philippines suggests that when cyanide fishers are introduced to cyanide-free techniques for live-fish capture and ensured a fair price for their catch, they are willing and often eager to give up using the poison and are equally enthusiastic to talk about ways to ensure the long-term sustainability of their local reefs and fisheries. Development of reliable alternative sources of income strengthens these incentives and strict government enforcement of anti-cyanide fishing laws further reinforces them.

**Live Reef Fish Exporters.** The number of companies involved in the live-fish export business in Southeast Asia is also unknown, but it appears to be expanding rapidly. In the early 1960s, for example, there were only three companies exporting aquarium fish from the Philippines and export of live food fish did not yet exist. By the 1990s there were some 45 aquarium fish exporters in the country and 8 companies exporting live food-fish. At least 10 companies run holding tanks for live food-fish in Bali, Indonesia, a major transshipment point. Conservative estimates of the annual volume of Asian trade in live food-fish alone range between 20,000-25,000 metric tons, mostly from Indonesia, and the real total may be far greater. Philippine government statistics show that as many as 6 million aquarium fish were exported in 1996 and Indonesia is catching up quickly.

**Live Reef Fish Importers.** Businesses that import live food and aquarium fish are in essentially the same position as exporters, without government pressure to ensure that the fish they import were not caught with cyanide, they have little incentive to take action on the issue. As one large importer of live food fish argued: “We the Hong Kong importers do not participate in any catching of fish or its activities. We

just finance the people by equipping them with boats and fishing gear. We just buy fish from them. The production side is left to them.”

**Live Reef Fish Consumers.** Consumers have an important role to play in this trade. Publicity and consumer pressure may move the aquarium-fish industry to take action on imports of cyanide-caught fish. Consumer pressure against cyanide fishing is virtually non-existent among the Chinese consumers of live food fish, though. As one Hong Kong observer noted, “being endangered actually seems to spur demand.”

**Divers and Dive Operators.** Scuba diving and snorkeling on tropical reefs is a big and growing business throughout the Indo-Pacific. Divers and dive operators have a strong interest in maintaining healthy reefs and fish populations and are often vocal in their support for marine conservation. Effective mechanisms have not yet been developed however, to fully tap this group for political and financial support in combating cyanide fishing, although some efforts such as PADI’s (Professional Association of Diving Instructors) Project Aware are working to instill greater general environmental consciousness in divers and dive operators.

Engaging these divers to combat cyanide fishing requires two elements: a) government policies must provide a structure of negative and positive incentives which make cyanide fishing unattractive for the whole range of actors involved in the trade and make sustainable alternatives attractive; and b) partnerships must be directly developed with fishing communities to assist them in abandoning the cyanide fishing tradition and instead, to adopt techniques, technologies and economic strategies that would improve their

livelihood while protecting their rich marine environment.

## **Policy Reforms to Combat Cyanide Fishing**

Cyanide fishing will not end until governments set in place effective policies to eradicate it and encourage sustainable live-reef fisheries. “Policy reform” in this context therefore, means establishment of effective institutions to monitor the live reef fish trade, enforce the laws and provide economic incentives for fishers, traders and consumers to shift to ecologically sustainable, cyanide-free reef fisheries. Experience with the Philippines’ DFRP suggests the following priority areas for policy reforms to combat cyanide fishing in the many countries of the Indo-Pacific region where it is a growing threat.

### **Policy Reforms in Live Reef Fish Source Countries**

Establish cyanide detection test (CDT) laboratory facilities at all major live-fish collection and transshipment points. A simple test to determine the presence of cyanide in live fish was developed by IMA and BFAR and has been in use for over five years in the Philippines. Currently, CDT laboratories (see map on page ?) test over 6,000 samples annually. An effective CDT testing network is key for a strong effort to reduce cyanide fishing. Without testing, authorities cannot determine whether fish have been caught with cyanide or obtain convincing evidence to prosecute violators.

To be successful, CDT labs must also be backed up by a larger network of agencies and monitoring posts, and staff trained in sampling prospective live fish shipments and rapid sample transport. Such a network requires directives on participating in sampling and monitoring from central agencies to

their local offices and training in correct sampling and shipping-to-lab procedures. Although testing is not a panacea, it is the best technical tool presently available to identify cyanide-tainted fish and provide hard evidence with which to prosecute violators.

Establish a national system of data gathering and monitoring that provides useful data for regulating the live fish trade. In order to monitor and regulate the live-fish trade, governments need accurate and appropriate data on how many individuals of a particular species were collected in a particular location, exported in a given month or year, or who did the collecting and exporting. There is no way to regulate cyanide use in the live-fish trade until such data are regularly collected.

The Philippines now collects live-fish data in ways that allow the government to keep a watch over total numbers of particular fish species moving through domestic and international airports and major international seaports, activities of exporters and other relevant information. IMA collects the data through its CDT and monitoring network and provides it to all relevant national and provincial government offices.

Establish a firmer legal framework to detect and prosecute cyanide fishing and trade in cyanide-caught fish, ultimately requiring mandatory testing and certification of all live reef fish exports. While fishing with cyanide and other poisons is banned in virtually every country in Southeast Asia and the Pacific, a much firmer legal framework is needed to make these bans effective. Once a CDT laboratory and monitoring network is established, all prospective exporters should be required to submit to random sampling and testing,

inspection and government licensing. All shipments should require a certificate showing the origin, volume and species composition of the shipment and that it has been subject to random CDT procedures and is cyanide-free.

A mandatory certification system (as will be established by law in the Philippines by the end of 1998, when draft regulations are finalized) provides key positive as well as negative incentives for exporters. Uncertifiable fish become liabilities while certified fish can obtain an “environmental market premium” in markets where importing governments regulate imports and consumers prefer fish caught without cyanide.

Local cyanide divers should be educated that what they are doing, for whatever reasons, is illegal, and that repeat offenders will be punished harshly. Targeting the big cyanide fishing interests also reduces incentives for local divers to join in the trade.

Ban or restrict the export of especially vulnerable species such as the napoleon wrasse (*Cheilinus undulatus*). Blanket bans on the live reef fish trade are both unwise and unworkable and just drive the trade underground. When the Philippines attempted a ban in parts of Palawan province several years ago, cyanide fishers continued to use the poison but killed the fish after capture and sold them in the fresh fish market.

Also, bans deprive local communities of one of the most lucrative sources of income to be found in the coastal zone. The cyanide-free capture of live fish at sustainable levels with a fair return to local fishers should be the objective of live fishery policy.

That said, the pressures on particular species may become so great that governments may want to ban altogether their capture and



*The entire family gets involved in making nets and other gears in the barrier net collection method.*

export. For the napoleon wrasse, highest-valued of the live food-fish species, over-exploitation may soon reach critical levels, warranting a complete ban. A ban is unlikely to stop the napoleon wrasse trade altogether, but it may reduce the total volume of catch.

Regulate the import, distribution and use of cyanide. Cyanide has many legitimate uses in industry but a considerable amount of the poison is diverted into the live-fish collection business. In most countries of the Indo-Pacific region, import, distribution and use of

cyanide is virtually unregulated. To remedy this problem, a draft “Sodium Cyanide Act” that would strictly regulate the import and use of cyanide was introduced in the Philippine House of Representatives in late 1996. The draft bill requires all cyanide imports to be authorized in advance by the government and that the poison’s sale to be “strictly controlled.”

While this type of law will undoubtedly be difficult to enforce, it should nonetheless increase the price of cyanide on the black market thus, making non-destructive techniques of live fish capture more economically attractive to fishers.

Address corruption within vulnerable government units such as fisheries, the navy, customs and police forces. Governments can only eliminate corruption if officials at the highest levels take firm public stands against it and when corrupt officials are dealt with harshly under the law. The media can help by exposing instances of corruption related to cyanide fishing in the press. Finally, an effective CDT lab and monitoring network, backed up by community-based monitoring, can provide government with a great deal of information about potential corruption problems.

Mount public awareness campaigns in the media and schools. NGOs and government leaders should work systematically to build public awareness about the threat of cyanide fishing and the steps that must be taken to stop it. Press releases, symbolic public events and the steady provision of information to journalists are all tools that can raise public awareness and strengthen other anti-cyanide fishing incentive measures.

Cyanide fishing is a learned behavior that becomes a tradition over time. By teaching the cyanide-free tradition in coastal-area schools

from an early age, countries can help to ensure that children are fully aware of the alternatives to cyanide fishing and their positive consequences.

Divers are also potential allies in raising awareness and gathering information. In the Philippines in 1994, IMA initiated a voluntary Status of Coral Reefs survey, or SCORE, using a simple questionnaire on reef conditions which divers were asked to complete and return by mail. This provided the first new primary data on the condition of Philippine coral reefs since a survey done in 1983 including reports on suspected cyanide fishing locations.

#### ***Policy Reforms in Live Reef Fish Importing Countries***

As in any transnational trade, source countries for live reef fish need the cooperation of importing country governments if their efforts to stem cyanide use at home are to be effective. At present, no importing country requires proof that imported live fish were not caught using cyanide or penalizes firms that import fish caught with the poison. Key steps for setting up more helpful incentives in importing countries include the following:

Monitor imports of live fish and provide data to exporting countries. Importing country governments should establish data collection and storage systems to keep track of the number by species of live fish imported and the country of origin. They should then share that data with relevant government agencies in source countries. In this way, monitoring agencies in source countries can compare their own export statistics with import statistics and thus determine the validity of those export statistics—provided exporting countries begin to collect detailed export data as the Philippines is already doing.

Phase in a legal requirement that all live reef fish imports be certified as cyanide-free. When live fish exporting countries require cyanide-free certification for all exports, as the Philippines is about to do, importing countries should reciprocate by requiring all live-fish importers to provide certification from the source-country government that the fish they are importing have been certified as cyanide-free. Although, Indonesia and other exporting countries do not currently have testing and certification systems in place, importing country governments, and importers, can move in this direction by gradually phasing in a prohibition on non-certified live-fish imports, simultaneously working with exporting countries to develop testing and certification procedures, laws and technical capacities.

Provide donor assistance to live-fish exporting countries to help them combat cyanide fishing. Live-fish importing countries that are providers of development assistance (e.g. United States, Canada, Japan and the countries of the European Union) should offer financial and technical assistance to exporting countries to assist them in developing Destructive Fishing Reform Programs and certification procedures. The Asian Development Bank has set a good example in this regard, providing nearly \$1 million for the Philippines’ DFRP as part of a new Fisheries Sector Loan slated for implementation in mid-1998. The United States Agency for International Development is also providing support through a cooperative agreement with IMA in the Philippines and Indonesia.

Strengthen consumer awareness about the impacts of cyanide fishing. As in other areas of environmental certification, it is crucial to build consumer awareness.

It is also important to note that **testing of live-fish imports on their arrival in importing countries is not an effective strategy and is likely to be counterproductive.** Cyanide metabolizes out of fish relatively rapidly and tests conducted at import destinations are likely to be negative for cyanide, regardless of whether the fish was caught with cyanide or not.

### **Community -based Strategies**

Without fishers in the equation, there is simply no solution to the cyanide fishing problem. There is no policy, law, or technology that can replace the need to work directly with cyanide fishers. Training, community organization, income enhancement and establishment of community-based coastal management systems in communities currently using cyanide or in those vulnerable to its introduction is the core partnership necessary to end cyanide fishing.

***Train fisherfolk in cyanide-free fishing technologies.*** When fishers are presented with effective cyanide-free technologies for capturing live-food and aquarium fish and given greater awareness about the legal, health and ecological risks of cyanide fishing, many choose to convert to cyanide-free techniques.

In the Philippines, IMA has trained over 2,000 cyanide fishers in cyanide-free live-fish capture techniques. A typical one-week local training program targets 20-30 fishers who are currently using cyanide to catch either live food or aquarium fish and have developed an interest, whether through IMA awareness activities or their own experiences, in learning cyanide-free techniques.

These sessions are specialized to address specific types of live-fish capture. Fishers who primarily collect aquarium species are trained

in the use of fine-mesh barrier nets. Fishers for whom food fish are the target species are trained in hook-and-line techniques for capturing groupers and, importantly, simple techniques for decompressing the air bladders of captured fish to ensure their post-harvest survival and health. Because particular grouper species favor distinctive bait sizes and shapes, bait preparation is a key part of the hook-and-line training as well.

Following the “classroom” sessions, the fishers and trainers carry out four days of in-water training in either net or hook-and-line techniques. The intensive one-week training is followed by a three-week follow-up period of monitoring by the trainers to ensure that trainees have mastered fishing techniques and proper post-harvest care. Other activities such as organizing local fishing associations and cooperatives and developing value-added livelihood activities take more time and involve periodic follow-up participation by the trainers over months or years.

#### ***Enhance local income from the live-fish trade and other sources.***

Fishers’ incentives to forsake cyanide fishing increase—and partnerships between fishing communities and outsiders such as IMA grow stronger—when local income from sustainable use of marine and other local resources rises. Beyond training in cyanide-free fishing techniques, IMA therefore, works with fishing communities to promote a variety of livelihood enhancement activities.

When fishers can get more money for cyanide-free live fish, they are extremely enthusiastic about converting to cyanide-free techniques. By helping fishers obtain post-harvest equipment and know-how and assisting them develop their own marketing

cooperatives and outlets, the local share of the profits can be increased.

In the area of North Sulawesi, Indonesia where IMA initiated a training program in July 1997, for example, the local partner organization is the provincial cooperative of retired military veterans. By providing the fishers with diving compressors (previously, the only one in the village was owned by a live-fish broker with a local monopoly on the trade) and offering higher prices for fish through the cooperative, the program will break the power of the middleman and help the fishers obtain higher prices for the cyanide-free aquarium fish they capture. Fortunately, the cooperative’s director is also a dive-tour operator concerned about the effects of cyanide on the reefs which have made the province a premier dive destination.

Few fishing communities however, subsist wholly from the live-fish trade. They pursue a “portfolio” of economic strategies combining live fish, fresh and dried fish, agriculture, wage labor and other activities. An effective livelihood enhancement strategy needs to target all of these activities and introduce new ones where an opportunity exists.

#### ***Strengthen community-based management of local fisheries and reefs.***

Partnerships with fishing communities must go beyond training and income enhancement. Sustainable coastal management requires the participation and support of the local communities that directly earn their living from the sea, in cooperation with government agencies—an arrangement often called “co-management.” Cyanide fishing, blast fishing, coral mining, mangrove destruction and many other sources of coastal degradation can only be slowed when the

communities on the front line become central players in protection efforts and beneficiaries of sustainable management.

In some areas of eastern Indonesia and the western Pacific, long-standing customary systems of marine tenure and management provide a sound institutional basis for community-based efforts. Where they exist, governments should recognize and support these customary systems and provide technical and financial inputs to assist traditional communities in adapting to rapid economic and technological changes.

Most coastal communities in Southeast Asia however, do not possess functioning customary systems for managing and conserving coastal resources. Many are comprised of a heterogeneous mix of immigrants and natives who lost such systems long ago. This loss does not mean that viable community management systems cannot be nurtured. The Philippines, where customary coastal management systems have vanished, has the most extensive and active community-based coastal resources management (CBCRM) initiatives in Southeast Asia.

***Build the capacity of local communities to serve as front-line agents in anti-cyanide monitoring and enforcement.*** Building on training, community organization and livelihood enhancement initiatives, an effective destructive fishing reform program needs to enlist local communities as partners in the specific tasks of monitoring and enforcement. Local fishers are on the water far more regularly and know their areas better than government fisheries officers. With minimal training, these groups can serve as an “early warning network,” letting officials know when cyanide fishing operators appear in an area.

In the Philippines, members of local fishers’ organizations and cooperatives have been deputized as “fish wardens” to patrol and monitor their fishing grounds.

Although, local community groups cannot be expected to directly confront well-organized—and often well-armed—cyanide fishing vessels, they can perform important norm-setting and self-policing activities within the community. After all, a “community” does not decide to renounce cyanide fishing. More often, one group of individuals within a community may make that decision, while others continue using cyanide. Peer pressure is thus important in spreading the cyanide-free tradition throughout the community.

## **Conclusion**

Cyanide fishing is not the only threat to the coral reefs and other coastal ecosystems of the Indo-Pacific region. But the training and community-organization strategies essential to stopping cyanide fishing also provide an important catalyst for communities to address a broader range of threats to their local reef environment. Four unique characteristics of cyanide fishing provide hope that it can be stopped or at least significantly reduced faster than some of the other threats to coral reefs.

- Cyanide fishing is relatively localized and a discrete target for control efforts since it is generally focused on isolated reefs far from the effects of coastal habitat conversion and sedimentation.
- Cyanide fishing is a relatively recent technique and the practice is not yet deeply embedded in local cultures and economies.
- Cyanide fishing targets a very

specific and “high-end” market—live food and aquarium fish—with some food species selling for as much as \$180 per kg and some aquarium species fetching \$350 per individual making the consumers and their suppliers an identifiable and a fairly limited group.

- There is a clear and not-too-complicated set of actions to address the problem if governments set the right incentives in place and partnerships are developed among fishing communities, exporters and importers of live-fish, scientists and NGOs.

The difficulties in stopping cyanide fishing should not be underestimated. It is important to note though, that people have long captured and sold live fish without using cyanide, and they still do in many places such as the Caribbean and Hawaii where live aquarium fish have been collected with fine-mesh nets for decades. But cyanide fishing is fast becoming a deadly tradition in the Philippines, handed down from father to son. It will soon be just as firmly established in Indonesia and other countries throughout the Indo-Pacific. Our challenge is to eradicate the growing cyanide tradition and replace it with a cyanide-free fishing tradition.

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# The Fisheries Code of 1998: Something Old...Something New... Something Better?

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For fishery resource stakeholders and for the broader sector encompassing integrated coastal management, the passage of Republic Act (RA) 8550 or “The Philippine Fisheries Code of 1998” (hereinafter referred to as the “Code”) by the Tenth Congress on February 19, 1998 is the culmination of many years of feverish research, critical analyses, representations, “mis”representations, compromises, consultations, technical working group meetings and hearings. After all, two past congresses, the equivalent of at least ten years, have attempted to pass a Fishery law of the same scope and breadth. The fact that the Code was passed now, and not later, attests to the urgency of improving the legal and institutional framework for fishery management, going beyond the developmental thrust of its predecessor notably, Presidential Decree (PD) 704.

## Something Old

The “old” features of the Code comprise two facets. First is the consolidation of the body of fishery laws by incorporating existing ones. This facilitates enforcement, research, and local legislation. For example, the Code

has consolidated previous laws dealing with electrofishing (RA 6541); blast and cyanide fishing (PD 704 as amended by PD 1058); use of fine mesh nets (Fishery Administrative Order or FAO 155, series of 1986 and FAO 155-1, s.1994); gathering of corals (PD 1219 as amended by PD 1698); and the use of superlights (Department of Agriculture [DA]-Department of Interior and Local Government [DILG] Joint Administrative Order of April 1996).

The second deals with prevailing interpretations of existing laws that are upheld by the Code. Notable here are the forms of limiting access, the jurisdiction of local government units (LGU), priority on assigning use rights and enforcement.

**Forms of limiting access.** The establishment of closed seasons and closed areas, specifically fish refuges and sanctuaries, is a form of limiting access (temporal and spatial). Before the Code, the *Sangguniang Bayan* (Municipal Council) and Mayor had jurisdiction over the establishment of closed seasons and closed areas within municipal waters and the concerned government agency, through its Secretary, in waters beyond the municipal boundaries. This has been reiterated by

**BOX 1****Functions and Responsibilities**

- prepare and implement a Comprehensive National Fisheries Industry Development Plan;
- issue licenses for the operation of commercial fishing vessels;
- issue identification cards free of charge to fishworkers engaged in commercial fishing;
- monitor and review joint fishing agreements between Filipino citizens and foreigners who conduct fishing activities in international waters, and ensure that such agreements are not contrary to Philippine commitment under international treaties and convention on fishing in the high seas;
- formulate and implement a Comprehensive Fishery Research and Development Program, such as, but not limited to, sea farming, sea ranching, tropical/ornamental fish and seaweed culture, aimed at increasing resource productivity, improving resource use efficiency, and ensuring the long-term sustainability of the country's fishery and aquatic resources;
- establish and maintain a Comprehensive Fishery Information System;
- provide extensive development support services in all aspects of fisheries production, processing and marketing;
- provide advisory services and technical assistance on the improvement of quality of fish from the time it is caught (i. e. on board fishing vessel, at landing areas, fish markets, to the processing plants and to the distribution and marketing chain);
- coordinate efforts relating to fishery production undertaken by the primary fishery producers, LGUs, FARMCs, fishery and organizations/cooperatives;
- advise and coordinate with LGUs on the maintenance of proper sanitation and hygienic practices in fish markets and fish landing areas;
- establish a corps of specialists in collaboration with the Department of National Defense, Department of the Interior and Local government, and the Department of Foreign Affairs for the efficient monitoring, control and surveillance of fishing activities within Philippine territorial waters and provide the necessary facilities, equipment and training therefore;
- implement an inspection system for import and export of fishery/aquatic productions and fish processing establishments consistent with international standards to ensure product quality and safety;
- coordinate with LGUs and other concerned agencies for the establishment of productivity enhancing and market development programs in fishing communities to enable women to engage in other fisheries/economic activities and contribute significantly to development efforts;
- enforce all laws, formulate and enforce all rules and regulations governing the conservation and management of fishery resources, except in municipal waters, and to settle conflicts of resource use and allocation in consultation with the national FARMC, LGUs and local FARMCs;
- develop value-added fishery-products for domestic consumption and export;
- recommend measures for the protection/enhancement of the fishery industries;
- assist the LGUs in developing their technical capability in the development, management, regulation, conservation and protection of the fishery resource;
- formulate rules and regulations for the conservation and management of straddling fish stocks and highly migratory fish stocks; and
- perform such other related functions which shall promote the development conservation, management, protection and utilization of fisheries and aquatic resources.

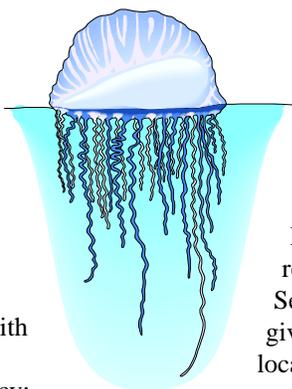
the Code, with additional clarification: a) that of prior consultation with the Fisheries and Aquatic Resources Management Council (FARMC); and b) in cases where the concerned government agency wishes to establish a closed season within municipal boundaries, concurrence and approval has to be secured from the appropriate LGU and FARMC.

***Jurisdiction of local governments.*** The Code reiterates the responsibilities of municipal/city governments including the:

- a) enactment of appropriate ordinances in accordance with the National Fisheries Policy;
- b) enforcement of all fishery laws, rules and regulations as well as valid fishery ordinances;
- c) issuance of licenses for the operation of fish pens, cages, traps and other structures within duly designated areas in municipal waters.

The ordinance-making function of local governments is enumerated by the Local Government Code (LGC) in Sections 447(a)(1)(vi) for the *Sangguniang Bayan* and 468(a)(1)(vi) for the Provincial Board or *Sangguniang Panlalawigan*. It is not necessary for LGUs to seek approval of such ordinances from national agencies (Sec. 534(f) of the LGC which repeals Sec. 4 of PD 704); and LGUs may enact ordinances which have not been dealt with sufficiently by any national law provided that it does not contradict any other. Enforcement of all fishery laws, rules and regulation, both nationally and locally promulgated,

is within the jurisdiction of the LGU as provided for by Section 17 of the LGC. The issuance of licenses for the operation of fish pens, cages, traps and other structures, municipal fishing vessels, concessions and the delineation of demarcated fishing areas are within the purview of the LGU through the local council. The Code has not changed these provisions although the consultative role of FARMCs has been stressed.



***Priority to municipal fisherfolk.*** The preferential use rights to subsistence fishers for the use of communal fishing and marine areas is guaranteed by the Constitution (Art. XIII, Sec. 7) and also by the LGC (Section 149). This is reiterated by the Code in Section 7, priority should be given to resource users in the local communities adjacent to municipal waters; and in Section 17, through organized fisherfolk organizations.

***Enforcement.*** The full breadth of the enforcement spectrum is dealt with sufficiently by the Code. The lowest level of enforcement begins with the citizenry's vigilance in averting crimes and where such are committed, to act as responsible resource stewards. Strengthening the FARMCs is a thrust that will enhance vigilance amongst fisher communities.

The next level of enforcement occurs when the crimes are actually committed. The Code maintains the multiplicity of government agencies and other entities tasked to enforce fishery laws. Persons and deputies who are authorized to enforce the code include: law enforcement officers of the DA, Navy, Coast Guard, Philippine National Police-Maritime Command, law enforcement officers of the LGU and other government enforcement agencies,

and deputy fish wardens (government officials and employees, *Punong Barangay* or Barangay chairpersons, and officers and members of fisherfolk organizations). Such sharing of responsibilities enhance strength and coverage of enforcement; nevertheless, such sharing, without clear delineation of tasks both from the geographical and legal perspective can be a bane.

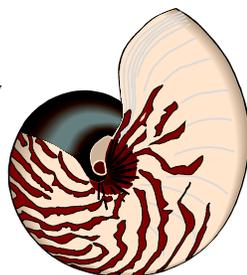
## **Something New**

The section on definition of terms is an indication of the breadth and magnitude of the Code. A total of 73 definitions are provided including those that have been previously defined in existing national laws and fishery administrative orders (e.g. fine mesh net, electrofishing, superlight, artificial reef). Definitions have also been provided for key management concepts such as catch ceiling, fishery management areas, limited access, maximum sustainable yield (MSY), resource rent and total allowable catch.

***Limiting access.*** More than mere definitions, these concepts represent the institutionalization of limiting access and use rights. For example, fees and other fishery charges shall be based on **resource rent**. This concept considers social benefits from using the fishery as a resource, over and above financial profits of users. By considering only the latter, there is a tendency to expand fishing effort (both labor and capital) to levels at which society is suffering a net loss. Akin to the paradigm of resource rent is that of MSY which is related to quotas and total allowable catch. Estimating such parameters has traditionally involved a huge and lengthy time series of data; moreover, the expertise is lodged in very few institutions. It becomes essential to develop appropriate and

understandable guidelines to be used by both national as well as local level institutions preferably with the use of available data.

The Code also provides for some relatively “radical” procedures to limit access including the limited entry of both commercial and municipal fishing vessels in areas deemed as overfished by either the DA or the concerned LGU. The term overfishing however, is not defined



in the Code; thus, it is presumed that guidelines on determination of overfishing should be developed. Another type of control is the absolute prohibition on the use of active (e.g. trawl, purse seine, Danish seine and bag net) fishing gears in municipal waters.

**People empowerment.** The Code highlights the need for people empowerment by consolidating and strengthening Executive Order (EO) 240, the creation of FARMCs (Table 1). FARMCs act as consultative bodies to LGUs in: a) determining priorities on fishing activities of municipal fisherfolk; b) maintaining a registry of municipal fishing vessels by gear and boat; c) assisting the LGU in formulating mechanisms to include or exclude fisherfolk or groups in the use of municipal

TABLE 1. ASSESSMENT OF INTERPRETATIONS OF SELECTED FISHERY MANAGEMENT ISSUES BASED ON PRE AND POST FISHERIES CODE REGIMES.

Issue	Laws existing prior to the Fisheries Code and interpretations thereof	New Fisheries Code
1. Commercial fishing in municipal waters	Commercial fishing is not allowed within the 15-km municipal waters (Jurisdictional Guidebook, Q 5.1.4, pp. 5-6).	The municipal or city government may, through its local chief executive and acting pursuant to an appropriate ordinance, authorize or permit small and medium scale commercial fishing vessels to operate within the 10.1 to 15 kilometer area (Sec. 18).
2. Municipal fisherfolk fishing in waters beyond their municipal boundaries	There is no national law that prohibits municipal fishers from fishing beyond their municipal boundaries; however, the <i>Sangguniang Bayan</i> may promulgate rules and regulations regarding the issuances of fishing boat licenses and the possibility of prohibiting non-resident municipal fishers from fishing in said municipal waters (Jurisdictional Guidebook, Q. 5.1.5, pp. 5-7).	The LGU shall maintain a registry of municipal fisherfolk, for the purpose of determining priorities among them, of limiting entry into the municipal waters, and of monitoring fishing activities and/or other related purposes; <i>and</i> The LGU, in consultation with the FARMCs, shall formulate the necessary mechanisms for inclusion or exclusion procedures that shall be most beneficial to resident fisherfolk (Sec. 19).
3. Disposition of public lands for fishery purposes	Public lands suited for fishpond operations shall not be disposed or alienated; There is no express provision on the granting of priority rights to fisherfolk organizations (PD 704).	Public lands suited for fishpond operations shall not be disposed or alienated; Lands that are declared as available for fishpond development will be turned over to qualified fisherfolk cooperatives/associations; However, upon expiration of existing FLAs, the current lessees shall be given priority and be entitled to an extension of 25 years in the utilization of their respective leased areas (Sec. 45).
4. Lease area for fishponds	For individuals, 50 hectares; for associations and corporations, 500 hectares, with possibility to extend lease area subject to approval of the Secretary (PD 704)	For individuals, 50 hectares ( <i>unchanged</i> ); for corporations, or fisherfolk organizations, 250 hectares (Sec. 45 a)
5. Establishment of FARMCs	EO 240 recommends the creation of FARMCs in coastal barangays, cities and municipalities. However, in the absence of penal provisions to the contrary, the LGU is not obligated to establish a FARMC (Guidebook, Q. 5.7.1, pp. 5-46).	The establishment of FARMCs is obligatory; FARMCs should be established at the national level and in all municipalities abutting municipal waters; FARMCs shall be formed by fisherfolk organizations/cooperatives and non-government organizations in the locality and be assisted by LGUs and other government entities (Sec. 69).

waters; d) determining license fees, catch ceilings, closed seasons, fish sanctuaries and/or refuges; and e) the enactment of appropriate ordinances.

***Integrated management.***

Within the purview of integrated management is the Code’s realization and acceptance of a broader environment that nurtures the fishery resource. This is affirmed by the Code’s subscription to the Environment Impact Statement system (Sec. 12) and supported by the drafting of a code of practice for sustainable aquaculture. The imposition of penalties against entities causing aquatic pollution (presumably including point and non-point sources!) further reinforces the wider environmental framework. In the area of habitat management, the Code provides that at least 25% but no more than 40% of bays, foreshore lands, continental shelves or any fishing ground shall be set aside for the cultivation of mangroves to strengthen the habitat and spawning grounds of fish. Lastly, the Code further posits that management of contiguous fishery areas should not be made based on political subdivisions but resource management systems.

***Institutional strengthening.***

The Bureau of Fisheries and Aquatic Resources (BFAR) could not be considered as a “new” creation, albeit, the restoration of its line functions and a general institutional strengthening can very well be an improved feature. Among the general provisions of the Code in relation to BFAR are:

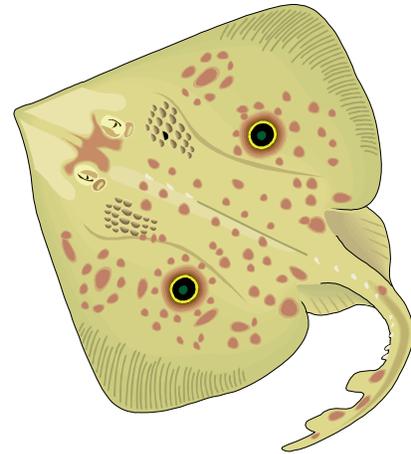
- the appointment of an Undersecretary of Fisheries and Aquatic Resources;
- its reconstitution as a line bureau under the DA with functions outlined in the Box on page??; and

- that as a line bureau, the BFAR shall be headed by a Director and assisted by two assistant Directors, one each for administrative and technical services; regional, provincial and municipal offices are to be established if deemed appropriate and necessary.

***Caveat: the need for implementing guidelines.*** These new concepts and provisions imply the necessity of developing implementing guidelines or mechanisms to avert confusion and varying interpretations. Specific sections in the code explicitly mention the need for developing implementing guidelines for the :

- licensing of fishing gear for commercial fishing vessels (Sec. 29);
- duty and tax rebates on fuel consumption for commercial fishing operators engaged in high seas fisheries (Sec. 35c);
- operation of radio communication facilities in coordination with the National Telecommunications Commission (Sec. 43);
- number and wattage of superlights to be regulated by the DA (Sec. 44);
- identification of species which are by nature small but already mature in relation to exemption in using fine mesh net; also, the mesh size to be fixed by the DA (Sec. 89);
- determination of gears destructive to coral reefs and other marine habitats (Sec. 92);
- list of endangered species outside of CITES (Convention on the International Trade of Endangered Species) (Sec. 97); and

- list of breeders/spawners (Sec. 98).
- Other sections implicitly state the need to develop or affirm existing guidelines such as:
- Guidelines on reversion of abandoned, undeveloped and underutilized fishponds (Sec.



49). The DA-Department and Environment and Natural Resources (DENR) Joint General Memorandum of Agreement Order No. 3, s1991, prescribes the guidelines for the reversion of Fishpond Lease Agreements (FLA) into mangrove forest lands and the DA-Department of Agrarian Reform AO No. 18, s1991, prescribes the guidelines to be followed in the redistribution of cancelled and/or expired FLAs to agrarian reform beneficiaries.

- Determination of catch ceilings (Sec. 101) which emanates from the DA.
- Guidelines on determining point and non-point sources of aquatic pollution and of monitoring and enforcement thereof. Collaboration with other government agencies such as the DENR and Coast Guard need to be specified.

Illegal Fishing Activity	Pre-RA 8550 Law	RA 8550 Law	Comment
Blast or dynamite fishing	<p><b><i>PD 704; as amended by PD 1058</i></b></p> <ul style="list-style-type: none"> <li>Mere possession of explosives: imprisonment ranging from 12 to 25 years</li> <li>Fishing with explosives: imprisonment from 20 years to life imprisonment provided that if the use of explosives results in <ul style="list-style-type: none"> <li>Physical injury to any person; the penalty shall be imprisonment ranging from 25 years to life imprisonment.</li> <li>The loss of human life, the penalty shall be life imprisonment to death.</li> </ul> </li> <li>Knowingly possessing, dealing in, selling or in any manner disposing of, for profit illegally caught/gathered fisheries: imprisonment ranging from 5 to 10 years.</li> </ul>	<ul style="list-style-type: none"> <li>Mere possession of dynamite, other explosives, and chemical compounds which contain combustible elements: imprisonment ranging from 6 months to 2 years.</li> <li>Fishing with explosives: imprisonment ranging from 5 to 10 years without prejudice to the filing of separate criminal cases when the use results to physical injury or loss of human life.</li> <li>Dealing in, selling, or in any manner disposing of, for profit illegally caught/gathered fisheries: imprisonment ranging from 6 months to 2 years.</li> <li>The fishing vessels, fishing equipment, and catch shall be forfeited.</li> </ul>	<ul style="list-style-type: none"> <li>Penalty has decreased.</li> <li>Penalty has decreased.</li> <li>Penalty has decreased but ignorance of the fish condition is not an alibi.</li> <li>Additional penalty.</li> </ul>
Cyanide fishing	<p><b><i>PD 704; as amended by PD 1058</i></b></p> <ul style="list-style-type: none"> <li>Fishing with noxious or poisonous substances: imprisonment ranging from 8 to 10 years, provided that if the use of substance results in</li> <li>Physical injury to any person; the penalty shall be imprisonment from 10 to 12 years; or</li> <li>The loss of human life, the penalty shall be imprisonment from 20 years to life or death.</li> <li>Knowingly possessing, dealing in, selling or in any manner disposing of, for profit illegally caught/gathered fisheries: imprisonment ranging from 5 to 10 years.</li> </ul>	<ul style="list-style-type: none"> <li>Mere possession of noxious or poisonous substances such as sodium cyanide: imprisonment ranging from 6 months to 2 years.</li> <li>Fishing with noxious or poisonous substances such as sodium cyanide: imprisonment ranging from 5 to 10 years without prejudice to the filing of separate criminal cases when the use results to physical injury or loss of human life.</li> <li>Dealing in, selling, or in any manner disposing of, for profit illegally caught/gathered fisheries: imprisonment ranging from 6 months to 2 years.</li> <li>The fishing vessels, fishing equipment, and catch shall be forfeited.</li> </ul>	<ul style="list-style-type: none"> <li>New prohibition and penalty.</li> <li>Penalty has decreased.</li> <li>Penalty has decreased but ignorance of the fish condition is not an alibi.</li> <li>Additional penalty.</li> </ul>
Electrofishing	<p><b><i>RA 6541</i></b></p>	<ul style="list-style-type: none"> <li>Imprisonment ranging from 2 to 4 years.</li> <li>Mere possession of equipment or device for electrofishing: imprisonment ranging from 6 months to 2 years.</li> <li>Imprisonment ranging from 5 to 10 years without prejudice to the filing of separate criminal cases when the use results to physical injury or loss of human life.</li> <li>Dealing in, selling, or in any manner disposing of, for profit illegally caught/gathered fisheries:</li> </ul>	<ul style="list-style-type: none"> <li>New prohibition and penalty.</li> <li>Penalty has increased.</li> <li>New prohibition and penalty.</li> <li>Additional penalty.</li> </ul>