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## July - October 1993

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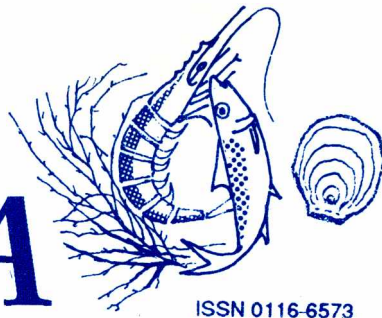
# AQUA FARM NEWS

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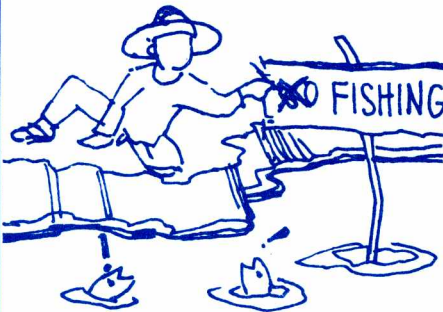
Vol. XI Nos. 4-5

July-October 1993



**When a cad  
goes fishing ...**

by Sid Tendencia



**... he goes to jail.**



**Respect the law!**

## Policing Fisheries

*"The citizenry should have up-to-date knowledge of the country's fishery laws, rules and regulations if they are to perform their vital role in conserving the fishery resources for posterity."*

*- Former Director Felix Gonzales  
Bureau of Fisheries and Aquatic Resources  
Department of Agriculture, Philippines*

Is the sad state of the country's fisheries resources a matter of passing more laws or policing the laws already on hand? In this issue, we take a look at the various regulations — on fishing gears and methods, limitations in catch and closed seasons for some fish and aquatic species — that are contained in the Fisheries Administrative Orders (FAO) of the Philippine Department of Agriculture, in Presidential Decree (PD) 704, as well as the 1987 Constitution. The proposed Fisheries Code pending in the Philippine Senate is also presented.

### Special Feature

The territorial-use rights in fisheries (TURF) as a management tool in Japan is discussed. TURF and fisheries management in Asia are contrasted with those of developed countries'. TURF in the context of the Philippine Local Government Code may be possible.

# ***The law of the land***

All lands of the public domain, waters, minerals, coal, petroleum and other mineral oils, all forces of potential energy, fisheries, forests or timber, wildlife, flora, and fauna, and other natural resources are owned by the State. With the exception of agricultural lands, all other natural resources shall not be alienated. The exploration, development, and utilization of natural resources shall be under the full control and supervision of the State. The State may directly undertake such activities, or it may enter into co-production, joint venture, or production-sharing agreements with Filipino citizens, or corporations or associations with at least 60% capital owned by such citizens. Such agreements must not exceed 25 years, although they are renewable for another 25 years. For water rights

for irrigation, water supply, fisheries, or industrial uses other than the development of water power, beneficial use may be the measure and limit of the grant.

The State protects the nation's marine wealth in its archipelagic waters, territorial sea, and exclusive economic zone, and reserve its use and enjoyment exclusively to Filipino citizens. Small-scale utilization of natural resources by Filipino citizens, as well as cooperative fish farming, with priority to subsistence fishermen and fishworkers in rivers, lakes, bays, and lagoons may be allowed.

- *1987 Constitution of the Republic of the Philippines*

## **Utilization and exploitation of fishery or aquatic resources: basic principles**

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- Fish is one of the major and cheap sources of protein in the diet of the Filipino people.
- More than two million Filipinos depend directly on fisheries for their livelihood.
- The Philippines imports fish and fishery products in substantial quantities.
- There is a need to increase the production of fish to bring prices within the reach of our people.
- There is a need to insure the continued productivity of our fishery resources through wise utilization and proper conservation.
- No person shall exploit, produce, culture, capture, or gather fish, or fry or fingerling of any fishery or species or engage in any fishery activity in Philippine waters without a license, lease, or permit.

- *Fisheries Act of 1975 or Presidential Decree No. 704*

# Fishing guidelines

## Commercial fishing

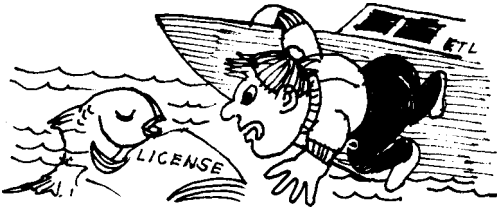
No person shall operate in Philippine waters any fishing boat, motorized or non-motorized, of more than three gross tons without a license. (Boats used for transporting fish from the fishing ground to the market are included.) Licenses are for a year of operation. Special permits may be granted for fishing boats used exclusively for scientific, educational and research purposes.

Commercial fishing boats are not allowed to operate in areas declared restricted, e.g., overfished grounds.

Fishing boat operators are obliged to record fish catch, fishing grounds, and places of unloading fish.

No person shall seek employment as a fisherman without a license.

- PD 704; FAO 144, Series of 1983

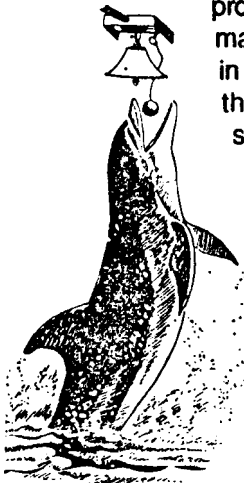


## Dolphins

It is unlawful to take or catch dolphins in Philippine waters or to sell, purchase, possess, transport, or export the same whether dead or alive, in any state or form whether raw or processed. Special permits, however, may be issued to institutions engaged in research on dolphins, including those to be used for exhibition or show purposes.

It is likewise unlawful to wound or kill dolphins in the course of catching fish. Dolphin accidentally caught by any gear must be immediately released unharmed.

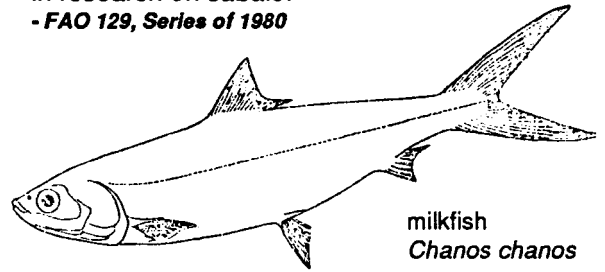
- FAO 185, Series of 1992



## Milkfish

It is unlawful to take or catch adult milkfish (sabalo) in all waters of the Philippines or to sell, possess or transport them whether dead or alive. Special permits may be issued in favor of government agencies and institutions engaged in research on sabalo.

- FAO 129, Series of 1980

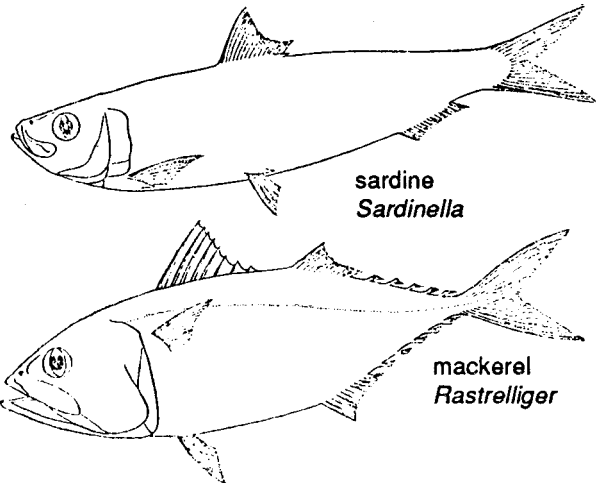


milkfish  
*Chanos chanos*

## Sardines, herrings and mackerels

It is unlawful to catch sexually mature sardines, herrings and mackerels or their larvae, fry or young (known locally as lupoy, silinyasi, linatsay, or manansi) during the closed season from November 15 to March 15, inclusive, of every year, in the Visayan Sea and adjoining waters.

- FAO 167, Series of 1989

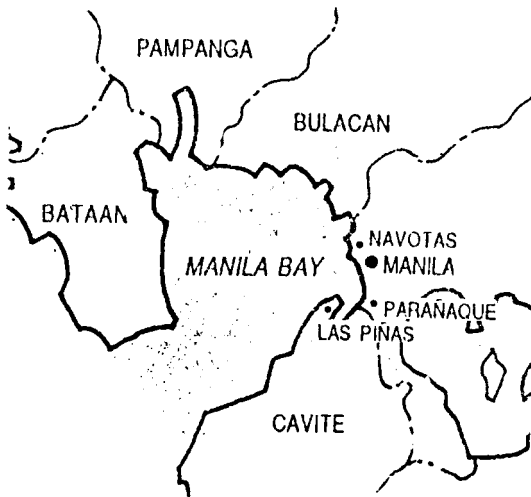


sardine  
*Sardinella*

mackerel  
*Rastrelliger*

Illustrations from: AF Umali, 1936. *Edible fishes of Manila*. Department of Agriculture and Commerce, Manila.

# Five-year fishing ban in Manila Bay



The Department of Agriculture announced the ban on commercial fishing in Manila Bay for five years beginning May 1991.

The order was in response to a petition by the National Coalition of Fisherfolk for Aquatic Reform, an organization of more than half a million fishermen in the country. They noted that Manila Bay used to have over 200 kinds of fishes, but this dwindled to 140 in 1967, finally to 20 at present. The causes for the decline include overfishing and pollution. Among the fishes that disappeared are jacks, Spanish mackerel, sardine, striped mackerel, and shark. Consequently, the average fisherman's haul decreased from 120 kg in 1975 to about 3 kg or less at present.

- *The New Chronicle*, 22 May 1991

## Small-scale fishing

The highest qualified bidder has the exclusive privilege of constructing and operating fish corrals, oyster culture beds, or of gathering milkfish and other fry for five years. However, one-fifth of the area shall be designated fry reservation, and no fishing is allowed.

No fish corral shall be constructed within 60-200 m of another in marine waters or 60-100 m of another in inland waters.

Fishing boats of three gross tons or less can fish in municipal waters with nets, traps, or other fishing gears. - PD 704

## Corals

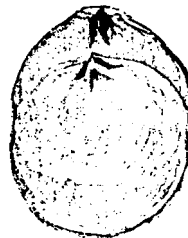
It is prohibited to harvest, transport, possess, sale or export ordinary coral either raw or processed without a permit. The use of corals in buildings and other man-made structures such as piers, dams and dikes is likewise prohibited.

Export of precious and semi-precious corals is prohibited, unless they are first processed and manufactured into finished products.

Coral reefs protect the shore and adjacent infrastructure against wave erosion. They also provide natural breeding grounds and habitats for fishes and other marine organisms.

Special permits may be granted for research. - PD 1219

## Window-pane oyster



It is unlawful to gather kapis (the windowpane shell *Placuna placenta*) in Philippine waters without a permit. Kapis of less than 80 mm in diameter (measured from the base perpendicular towards the top edge of the shell) may not be collected. Mechanical rakes and dredges, or the use thereof on board a motorized boat are also prohibited. Specific reserve areas will be designated where the gathering, taking, removing or collecting of kapis are prohibited.

- FAO 157, Series of 1986

## Trumpet and helmet shells

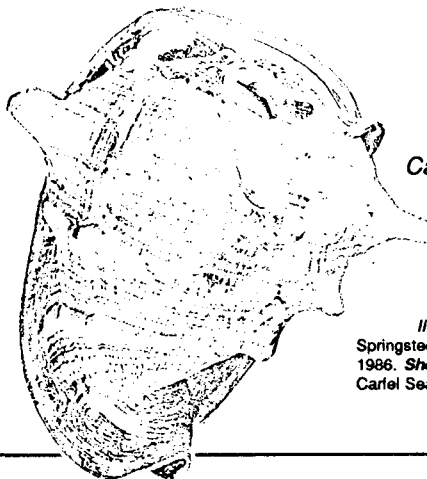
It is unlawful to gather mollusks of the genera *Triton* or *Charonia* (trumpet shells) and *Cassis* (helmet shells). Special permits may be issued to research and educational institutions.

- *FAO 158, Series of 1986*

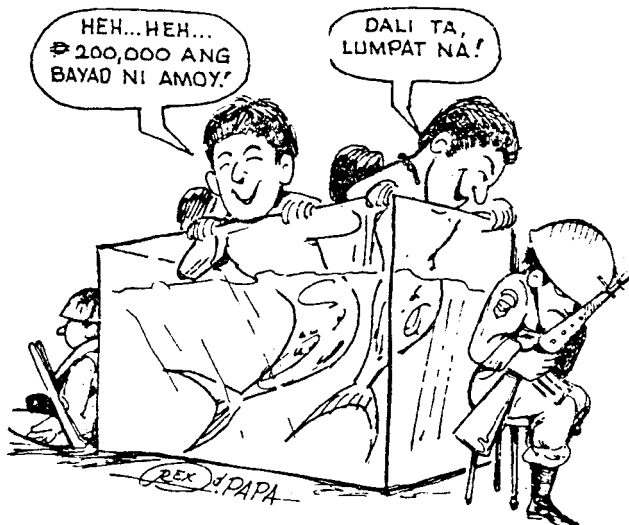
*Charonia*



*Cassis*



Illustrations from: FJ Springsteen and FM Leobrera. 1986. *Shells of the Philippines*. Carcel Seashell Museum, Manila.



HEH...HEH...  
₱200,000 ANG  
BAYAD NI AMOY!

DALI TA,  
LUMPAT NA!

REX J. PAPA

### Evil triumphs because good men do nothing about it.

Two men were caught fishing illegally, jailed, and "released":  
"He! he! My boss paid ₱200,000."  
"Okey, let's go!"

-Panay News, 2-4 July 1990

### What can ordinary citizens do to police illegal fishing?

- Inform the authorities about persons engaged in illegal fishing.
- Support the government's information campaign against illegal fishing.  
Talk with family, neighbors, and community about the hazards and adverse effects of illegal fishing.

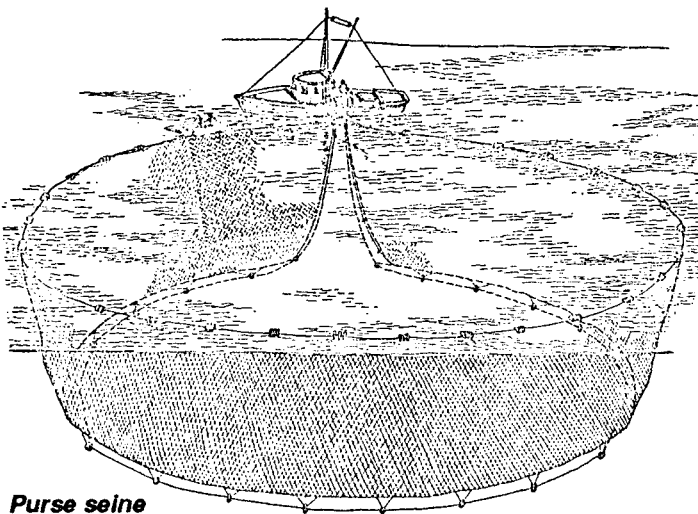
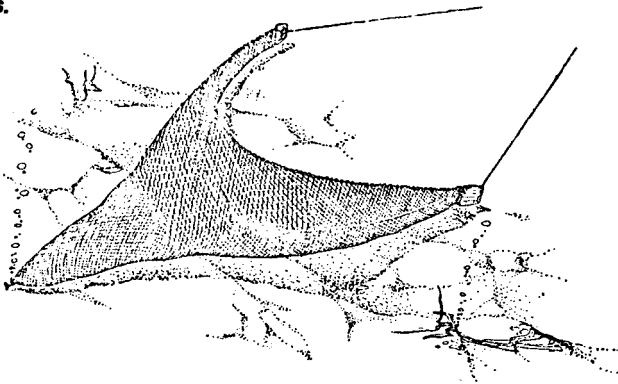
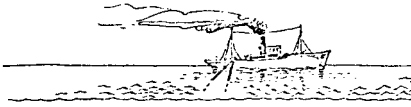
Source: Department of Agriculture - Bureau of Fisheries and Aquatic Resources. 1988. *Primer on illegal fishing*. Manila, Philippines. 11 pp.

# Restricted fishing methods

## Trawl and purse seine

Commercial trawl and purse seine are prohibited in marine waters within 15 km from the shore. This provides small-scale fishermen a wider area to operate their fishing boats 3 gross tons or less. In coastal areas 7 fathoms or deeper where sustenance fishermen do not operate, commercial trawl and purse seine may be allowed on a yearly or seasonal basis.

**Trawl is destructive when operated in shallow areas where fishes breed and feed. The massive scraping action removes algae and seagrasses that are the refuge of fishes.**



**Purse seine**

- *FAO 156, Series of 1986; DA-BFAR. 1988. Primer on Illegal fishing. Manila, Philippines. 11 p.; 1992 Local Government Code*

## Hulbot-Hulbot

It is unlawful to operate hulbot-hulbot using fine-meshed net (less than 3 cm) and fishing boats more than 3 gross tons within 15 km from the shoreline. Hulbot-hulbot (pahulbot-hulbot, palisot, patangko bira-bira, or hula-hoop) is a fishing gear consisting of a conical net with a pair of wings and two ropes with buri, plastic strips or similar materials for scaring or herding fish.

- *FAO 164, Series of 1987; 1992 Local Government Code*

Nor should hulbot-hulbot or buli-buli be used in the waters off Quezon, specifically Lamon Bay, Lopez Bay and Calauag Bay during the five-year closed season (1989-1994).

- *FAO 165, Series of 1989*

## Fine-mesh nets

It is unlawful to fish in Philippine waters with the use of fine-mesh nets (all nets or webbings made of natural, synthetic or other fibers that have mesh sizes of less than 3 cm) except when catching the following:

- rabbitfish fry (Siganidae), milkfish fry (*Chanos chanos*), shrimp fry (Penaeidae), mullet fry (Mugilidae), eel fry (Anguillidae), and goby fry (Gobiidae);
- marine aquarium or ornamental fishes; and
- other species that are small when mature, abundant, and not endangered.

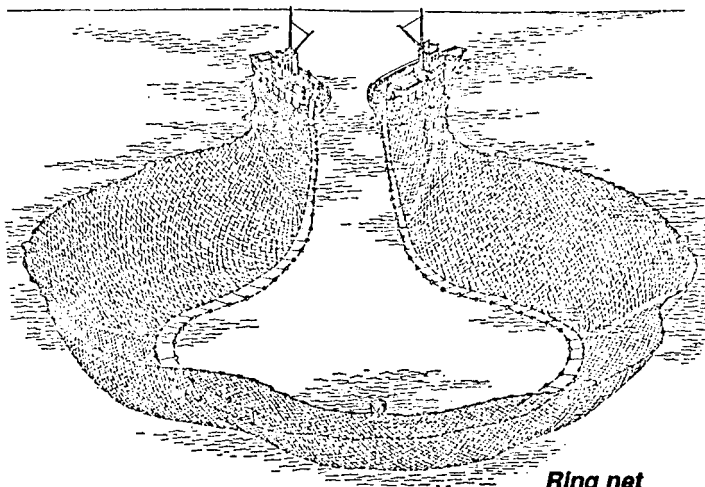
- *FAO 155, Series of 1986*

## Ring net (sinsoro, likum-likum, or kubkub)

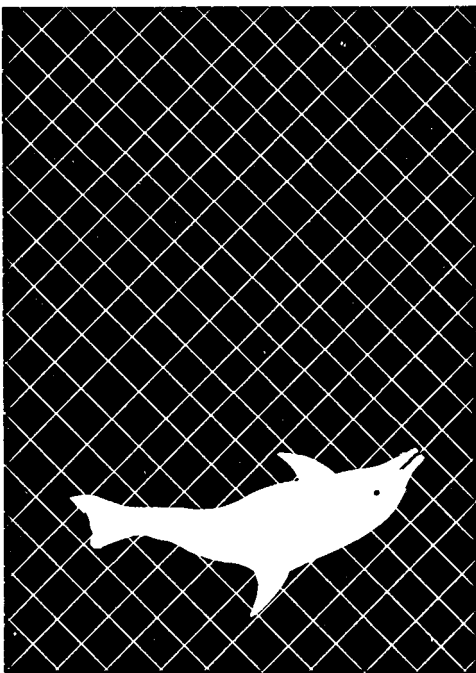
It is unlawful to operate a ring net using a fishing boat more than 3 gross tons within 15 km from the shoreline of Camiguin Province during the 5-year closed season beginning March 1991. Special permits may be granted for research purposes.

- *FAO 174, Series of 1991; 1992 Local Government Code*

*Illustrations from: AF Umail, 1950. Guide to the classification of fishing gears in the Philippines. US Department of the Interior Fish and Wildlife Service Research Report 17.*



## The Wall of Death



Driftnets are walls of plastic netting 10 m high and 50 km long kept afloat from the water surface. Although squid, cuttlefish, tuna and salmon are the primary targets, driftnets indiscriminately catches

every living creature in the ocean including turtles, seabirds, and dolphins. The London- and Washington-based Environmental Investigation Agency says that at least half a million dolphins, porpoises, and small whales are killed annually worldwide. Hence, ecologists call driftnets the "walls of death."

The United Nations has banned driftnets in the Pacific Ocean since December 1989.

### A new driftnet

Japan, which has been denounced as using the "wall of death" together with Korea and Taiwan, has developed a driftnet that reduces the number of dolphins killed from an average of 2 per haul to 1 per 10 hauls. The new driftnet can be kept 1-3 m below the water surface, allowing dolphins to swim above the nets. Turtles and seabirds are not netted.

The new method was developed to meet the U.N. regulation.

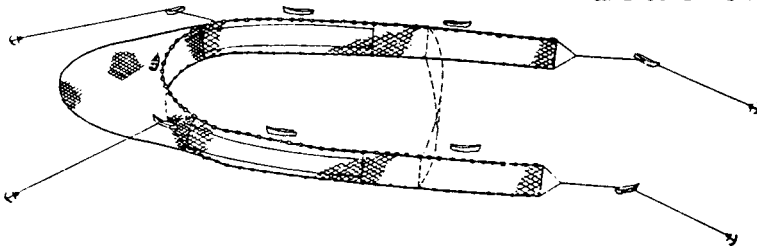
Sources: *Manila Standard*, 23 Aug 1990; *Philippines Journal*, 5 Oct 1989; *The Manila Chronicle*, 8-14 Feb 1992.



# Illegal fishing methods

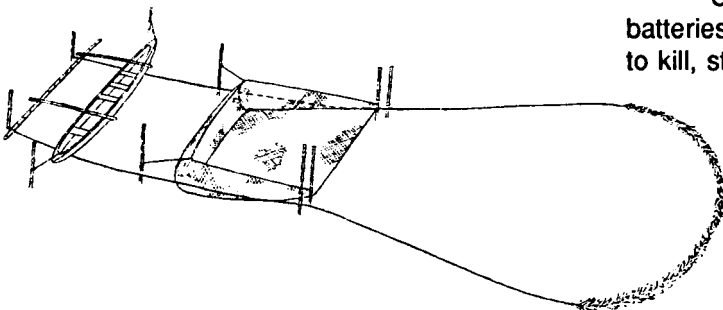
It is unlawful for any person, corporation, association, partnership, or cooperative to fish in Philippine waters with these gears:

## Muro-ami (drive-in net)



A Japanese fishing gear consisting of a movable bagnet and two detachable wings. The net is spread in and around reefs or shoals. With the aid of scaring devices, a cordon of fishermen drives the fish from the reefs toward the bagnet.

## Kayakas (bahan, bahig lukay, lukayan, gill net, ring net, or bahan)



The local smaller version of the "muro-ami" with bamboo or tree trunks and coconut leaves or other materials as scarelines to drive the fish out of the coral reefs.

- FAO 163, Series of 1986

Illustrations from: A von Brandt. 1972. *Fish catching methods of the world*. Fishing News (Books) Ltd, London.

## Explosives

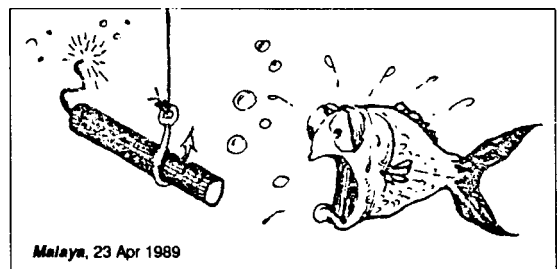
Dynamites and other combustible chemicals that upon ignition by friction, concussion, percussion, or detonation kill, stupefy, disable, or render unconscious fish and other aquatic animals. Explosives also destroy coral reefs and other fish habitats.

## Obnoxious or poisonous substances

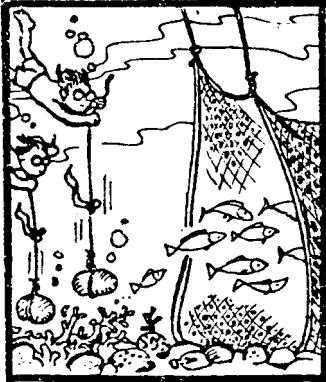
Plant extracts, chemicals (such as cyanide) and other substances, raw or processed, that kill, stupefy, disable or render unconscious fish and other aquatic animals. Use of plant extracts to eradicate predators in fishponds must be within accepted limits and not cause poisoning in neighboring waters. Synthetic pesticides (Brestan, Aquatin) are not allowed in fishponds.

## Electro-fishing

Using electricity generated by dry-cell batteries, electric generators, or other sources to kill, stupefy, disable or render unconscious fish and other aquatic animals. The possession of any of the above shall constitute a presumption that the same were used for fishing. - PD 704; Department of Agriculture - Bureau of Fisheries and Aquatic Resources. 1988. *Primer on Illegal fishing*. Manila, Philippines. 11 p.



# Muro-ami: the destruction it brings



Coral reefs produce some 30% of the fish supply in the Philippines. Muro-ami fishing on reefs contributes 0.5% of the more than 2.1 million tons from capture fisheries and aquaculture.

## Effects on coral reefs

Although muro-ami is effective in catching elusive reef fish, it is also very destructive. Reef damage is caused by the scareline weights hitting fragile coral.

The extent of the damage depends on the number of swimmers, the frequency with which the weights hit the corals, the mass of the weights, and the number of times a particular reef is visited. On the average, one muro-ami operation destroys 17 m<sup>2</sup> of coral. There are at least 42 muro-ami vessels that operate 10 months a year, so the level of destruction is immense. Coral growth does not suffice to counteract the damage as corals grow very slowly — 1 cm per year, or about 50 years for sizes about a man's head.

## Employment of minors and violation of labor laws

Muro-ami operators employ children below 18 years old in violation of labor laws. The children are underpaid, not paid on time, not paid for work on holidays, and not allowed leaves. They are also not given protective equipment, medical and dental services, nor adequate food and accommodation.

A muro-ami vessel has 200 swimmers.

Sources: Report of Philippine Senator AS Aquino, *The Philippine Star*, 8 Feb 1990; *The Philippine Star*, 27 Oct 1989.

## VIDEO ON MURO-AMI

**The Coral Triangle** — a 57-min, U-matic format, dubbed copy of the US Public Television documentary about the destruction of coral reefs in the Philippines through blast fishing, muro-ami, and cyanide fishing — can be viewed at SEAFDEC/AQD. Includes footage of UP Marine Science Institute in Bolinao, Pangasinan.

# Farming guidelines

## Seaweed farming

Seaweeds are marine algae used for food, or that produce agar, agrums, algin, carrageenan, or other extracts of commercial value. Some of the most important seaweeds in the Philippines are: *Gracilaria* (gulaman dagat), *Caulerpa* (lato), *Eucheama* (guso), and *Porphyra* (gamet).

No person, partnership, association, corporation, or cooperative shall gather seaweed in restricted areas without a license. Licenses can be issued to:

- Citizens of the Philippines
- Duly-registered partnerships, associations, or corporations that have at least 60% of capital stock belonging to Filipinos
- Duly-registered cooperatives

**Size of seaweed farm:** Not more than 1 hectare for individuals, and not more than 30 ha for partnerships, associations, corporations, or cooperatives. These limits may be changed depending on (1) the financial capacity and qualification of the applicant; (2) the socio-economic importance of the project or industry in the locality; and (3) other applications for a license in the locality.

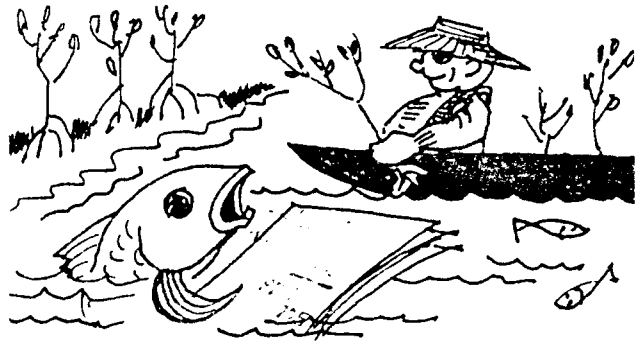
**Location of seaweed farm:** No seaweed farm may be established within 60 meters of another. Farms should not obstruct navigation.

**Duration of license:** Not to exceed ten years for farming seaweed, 1 year for gathering seaweed, and six months for gratuitous permits. Licenses may be renewed.

- *FAO 146, Series of 1983*

introduce improvements in the area within 180 days, develop 50% of the area within three years, and completely develop the remaining within 5 years.

- Fishponds may not interfere with free navigation in any river or stream adjoining or flowing through the area nor impede the rise and ebb of the tide to and from the interior of the swamps.
- The lessee must exclude from the proposed fishpond a strip of land 40 m wide from the adjoining river or banks of streams. This strip must remain forested or, if denuded, must be planted with appropriate mangrove species to prevent bank erosion.



***The Forestry Code, PD 705, requires pond owners to retain or plant a mangrove greenbelt 20-100 m wide around the ponds.***

## Fishponds

Persons who have been issued 1-year fishpond permits and 10-year fishpond lease agreements can apply for a 25-year fishpond lease agreement.

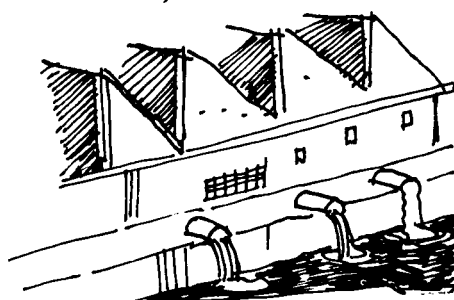
- The lessee determines the leased area, submits a development plan for the fishpond, and pays the rent. (Rental was ₱300 per ha in 1992, ₱600 in 1993, and ₱1,000 in 1994 and following years.) The lessee must

- The lessee reports on the fishpond's development, operation and production. The government is allowed to inspect or verify the records.
- The lessee is not allowed to sub-lease the contracted area without the approval of the government.
- The lessee assumes responsibility for any injury or destruction in the area which may be caused by the development or operation of the fishpond.

*Continued next page ...*

# Export-import guidelines

- Export and import of aquatic animals, whether adult, juvenile, fry, or eggs for propagation or other purposes is prohibited, unless a permit is obtained beforehand. - PD 704
- Export of bangus (*Chanos chanos*) fry is banned. - PD 704
- Export of molluscs, except the giant clam *Tridacna crocea*, is allowed.  
- FAO 168-1, Series of 1991
- Export of live mud crab (*Scylla serrata*) less than 10 cm in carapace length or 200 g in weight is prohibited.  
- FAO 162, Series of 1986
- Import of yellowfin tuna (*Thunnus albacares*) and tuna products from Mexico and Venezuela is banned.  
- FAO 183-1, Series of 1992



# Water pollution guidelines

It is unlawful to discharge into Philippine waters any substance or material deleterious to fish and other aquatic life: petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or residue products of petroleum; carbonaceous material or substance; mine tailings; or any refuse, liquid or solid, from any refinery, gas house, tannery, distillery, chemical works, sugar central, mill, or factory of any kind.  
- PD 704



## Farming guidelines ...

- The government can reduce the area covered by the lease, modify the terms and conditions, or terminate the same at an earlier date when public interest so requires.
- The area leased is public land, hence the government is not responsible for losses or claims occasioned by legal awards resulting from judicial litigation.

## Fishpens

No person shall construct or operate a fishpen without a license. The license is for five years, renewable for another five years. The maximum area is 10 ha for individuals and 50 ha for associations, partnerships, cooperatives or corporations.

- PD 704; FAO 125, Series of 1979;  
FAO No. 125-2, Series of 1991

# Constraints in policing fisheries

Fisheries production in the Philippines has enjoyed a reasonable growth in volume over most of the past 35 years. However, the volume has perceptively declined. The communities dependent on fishing for livelihood have remained poor, and the resources on which they have been dependent — the inshore and offshore marine waters, the coral reefs, the mangrove and seagrass areas, and the fresh-water lakes, swamps, and rivers — have deteriorated. Why such problems?

Several reasons have been identified:

- Pressure of increasing population on decreasing resources
- Inadequate fishery resource management, development and conservation
- Use of destructive methods of exploitation
- Constraints in enforcing fishery laws and regulations
- Pollution of marine and inland waters with industrial effluents, sewage, garbage and persistent poisons
- Inequities in the distribution of benefits
- Resource-use conflicts — municipal vs. commercial fishing, aquaculture vs. capture fisheries in lakes, mangrove stands vs. brackishwater fishponds, fishing vs. sanctuaries on coral reefs, etc.
- Insufficient marketing infrastructure
- Low quality of fisheries education in particular, and environment-ecology education in general

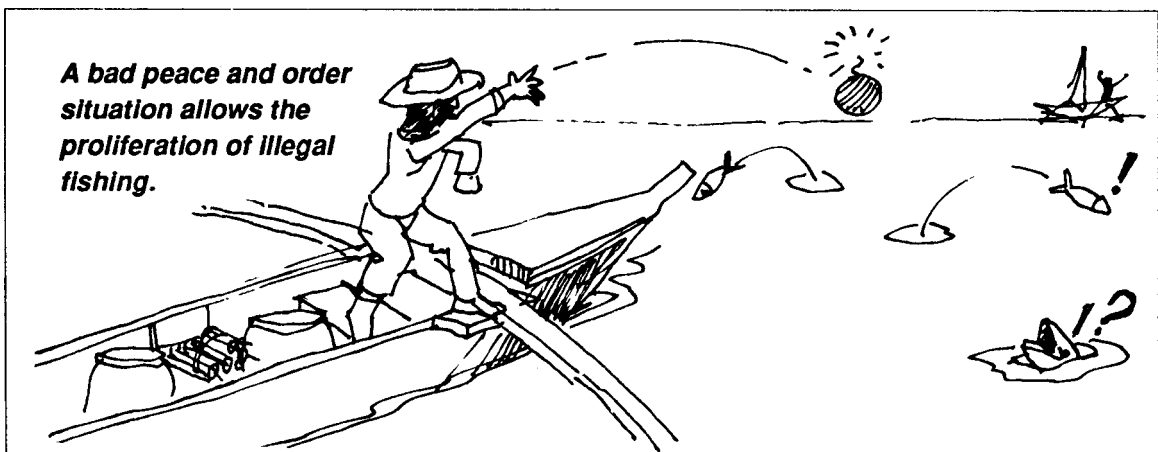
## Constraints in fishery laws, regulations, and enforcement

There are substantial regulations for the protection of fisheries and aquatic resources. The Bureau of Fisheries and Aquatic Resources has the primary responsibility for the conservation of aquatic resources. The Department of National Defense extends law enforcement assistance through the Coast Guard and the National Police. The Barangay and fishermen's association officials, and other qualified individuals are designated as Deputy Fish Wardens to help enforce fishery laws, rules, and regulations.

However, severe problems are encountered in the enforcement of the laws.

- Some laws are very vague.
- Some laws do not reflect the current situation, realities, and problems.
- The political situation in the country (peace and order problems) allows the proliferation of illegal fishing.
- Fishery enforcement facilities and funds are inadequate.
- Documentation of fishermen and other seagoing individuals is lacking.

Source: UNDP-FAO-DA-BFAR. *National Conference on Fisheries Policy and Planning*, 16-20 Mar 1987; Baguio City. Vol. 1, 115 p.



## In search of a coherent fisheries policy

*Dr. Romeo Fortes is Professor of Aquaculture and Director of the Institute of Fisheries Policy and Development Studies at U.P. in the Visayas. The Institute conducted a National Seminar-Workshop to Evaluate and Review Philippine Fisheries Policy on 27-28 Sept 1993 at U.P. Dillman, Quezon City. Dr. Fortes notes the inadequacy of fisheries policies in the country.*

In March 1987, the *National Conference on Fisheries Policy and Planning* was held in Baguio City and the reasons for the underperformance of the fishery sector were identified. Two years later, a roundtable discussion on *Philippine Fisheries Policies* was organized by the Philippine Council for Aquatic and Marine Research and Development of the Department of Science and Technology (PCAMRD/DOST). Among the topics were: the proposed Philippine Fisheries Code; territorial use rights; the shrimp industry; fisheries and environment; investment policies; the ADB-assisted Fisheries Sector Program; and the importation of aquaculture commodities. Then, PCAMRD/DOST organized a separate workshop on *Territorial Use Rights in Fisheries (TURF)* to discuss: fisheries laws, rules and regulations; lake management; legal implications of TURF; territoriality in the use of coastal resources; socio-economic considerations; and policy dimensions of TURF. In December 1992, the National Economic Development Authority (NEDA) conducted a nationwide consultation for the Medium Term Philippine Development Plan (1993-1998). A commitment to "environment-friendly" policy was made. NEDA noted that the "envisioned economic transformation requires a package of policies and strategies" where fisheries plays a very important role.

None of the recommendations of these several workshops was given serious attention except those of the Baguio Conference which formed the basis of the ADB-assisted Fisheries Sector Program. The Department of Trade and Industry's Board of Investment (DTI/BOI) tapped a foreign consultancy firm to come up with a Philippine Shrimp Policy. Thus, specific policies on fisheries commodities are made in the absence of a clear and general policy. The general policy framework under the 1987 Philippine Constitution provides the basic direction towards the proper exploration, development and utilization of our natural resources. However, the Fisheries Act of 1975 (P.D. 704), based primarily on Fisheries Act 4003 under the 1932 Commonwealth Constitution, is still the basis of all Fisheries Administrative Orders and other regulations. In short, the projections of Philippines 2000 for the development and management of fisheries and aquatic resources are based on the general framework of the 1932 Commonwealth Constitution and do not consider recent global realities particularly the degradation of natural resources. There is therefore a need to review, evaluate and probably formulate a Philippine Fisheries Policy that is attuned to the general framework of the new constitution and the needs of the time.

# Recommendations for a fisheries policy

Nearly a million fisherfolk in some 10 000 barangays depend on the seas. It is necessary to **allocate municipal fishery use rights to small fisherfolk**. Local communities can adequately manage, develop and conserve fishery resources. (See p. 18 for Japan's experience in Territorial Use Rights in Fisheries.) Amendment of fishery legislation must reflect this.

The **organization of private fisheries groups** would strengthen the position of the fisheries sector and allow participation in the fisheries programs of the government. These groups can be of artisanal fishermen, commercial fishermen, aquaculturists, or members of ancillary industries.

**Incentives for the commercial fisheries sector to fish farther in the EEZ** can reduce the conflict between commercial and municipal fishermen. These can include tax credits and exemptions from duties and taxes on imported equipment.

**Fisheries conservation and law enforcement must be strengthened** through:

- Designation of fisheries as a strategic resource
- Recognition of fisherfolk as the defacto managers of fishery resources
- Expansion of the information campaign on fish conservation and wise resource use
- Outlawing the use of persistent poisons in aquaculture and agriculture
- Review and improvement of fisheries laws to improve efficacy of enforcement and success in convicting offenders
- Formation of composite surveillance and enforcement units composed of the Navy, Coast Guard, National Police, and municipal fishermen associations to combat illegal fishing
- Increasing the operating budget of the Coast Guard and Navy to provide adequate tactical strength and enhance mobility
- Retraining, upgrading, and enhancing the competence of fishery law enforcers

**A rational research, development, and management program for the tuna fishery** can contribute to economic recovery. The tuna fishery is the most important of all marine fisheries in the Philippines.

The fisheries education system must be relevant and responsive to the needs of the fishing industry. **The manpower needs of the industry must be determined, and fisheries education must be upgraded**. The proliferation of fisheries schools must be stopped. Fisheries schools should give quality education and equip students with desirable skills and competencies.

**Fish marketing infrastructure such as ice plants and cold storage must be made available in the primary production areas**.

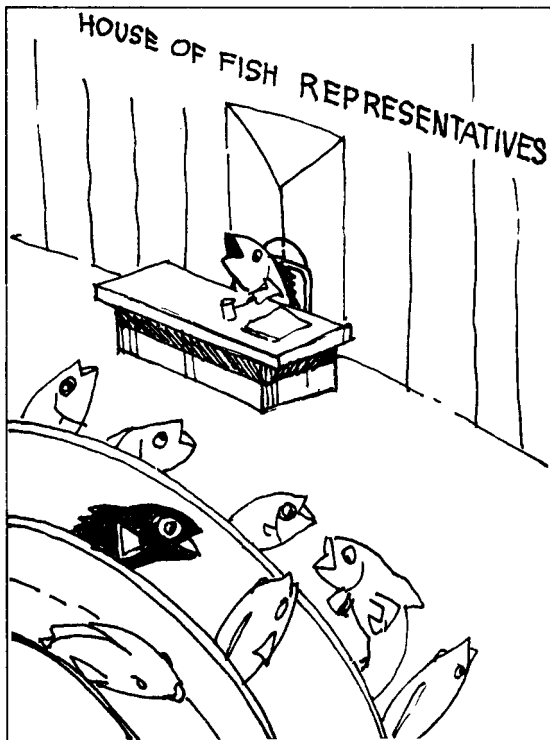
The domestic fish trade must be protected. **Importation must be regulated to prevent unfair competition**. Increased tariff rates and seasonal quotas for imports may be imposed.

**Aquaculture expansion is necessary to provide a reliable fish supply for domestic consumption and to increase foreign exchange**. Expansion should not be done by opening new mangrove areas but by improving production techniques, using genetically superior species or strains and efficient feeds, and by extending credit to fishfarmers.

**Fisheries is a growth sector which needs a strong organization — a Department of Fisheries — to service it**. The Department will coordinate all agencies involved in fisheries work, and undertake cost-effective development, management, and conservation programs. The Department can be built around the Bureau of Fisheries and Aquatic Resources and other government agencies performing fisheries-related functions.

Source: UNDP-FAO-DA-BFAR. *National Conference on Fisheries Policy and Planning*; 16-20 Mar 1987; Baguio City. Vol. 1, 115 p.

# The proposed Fisheries Code



The Philippines is potentially a leading fisheries country. Sadly though, the country's fishing industry suffers from neglect, abuse, and a lack of comprehensive policy and development plan by the government.

Philippine fisheries is also full of ironies. The waters within 100 km from the shore are heavily exploited but the vast Philippine Sea and the exclusive economic zone (EEZ) remain untapped. Fish provides 60% of the protein requirement of Filipinos but the fisherfolk who supply the fish have the highest incidence of malnutrition and are among the poorest of the rural people. Fisherfolk earn a gross monthly income of P2 000 on the average.

Six bills and a resolution dealing with fisheries are pending in the Philippine Senate. These contain new provisions consolidated with existing laws, lessons taken from foreign fisheries laws, and the principles of ecological protection, conservation, and effective resource management. (Some of the provisions are based on the problems and recommendations noted on pp. 12 and 14.)

## Principles

The proposed Fisheries Code promotes optimum sustainable yield and optimum utilization of fisheries resources and ensures ecological balance. It advances the rights of subsistence fisherfolk and fishery workers. It provides Filipino ownership, use and control of fisheries industries and resources. It promotes popular and equitable participation of citizens in the use, management and development of aquatic resources in order to accelerate and sustain national growth.

## Fishery areas

- Municipal fisheries areas extend 15 km from the coastline. These are reserved for small-scale or subsistence fisherfolk who use passive fishing gears and who are exempted from paying license fees. Commercial trawls, baby trawls, and all forms of active fishing gears are prohibited. (The 1991 Local Government Code empowers municipalities to regulate and manage the municipal fisheries.)
- Commercial fishery areas extend to the EEZ from the seaward border of the municipal fisheries areas. These are reserved for the exclusive use of Filipino citizens or associations and corporations wholly owned by Filipino citizens. Filipino-Foreign Business Agreements are regulated to ensure that the benefits from fisheries accrue to Filipinos, but incentives in the form of soft loans, limited tax holidays, tax rebates, exemption from import quota restrictions, duties, taxes and fees may be provided.

## National standard for fishery conservation and management

- Conservation and management policies are based on the best available scientific and technological information.
- Optimum sustainable yield considers the biological, economic, and social aspects of permissible fishing efforts.



- Individual and interrelated stocks of fish are managed as a unit.
- Recognized resource management techniques such as fish sanctuaries, closed seasons, limited access, and catch ceilings are institutionalized.
- Mangrove conversion, coral gathering, and coral reef exploitation are totally banned.

### Alternative to capture fisheries

The Code promotes and regulates aquaculture as an alternative to capture fisheries.

### Ancillary industries

Post-harvest and other industries such as shipbuilding and on-site processing are regulated.

### Science and technology

The Code provides for a reorientation of current research efforts to gather relevant information for sound policy formulation, effective

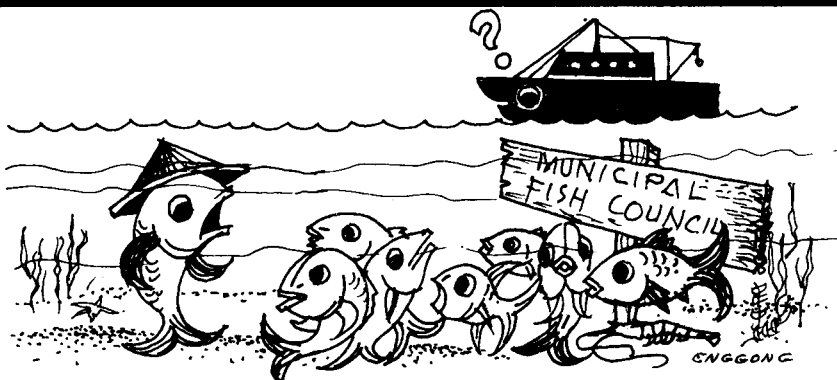
dissemination of appropriate technology, and improved extension services.

### Other provisions

- Assignment of radio frequencies and designation of navigational lanes for non-fishing vessels
- Upgrading of fisheries schools
- Severe penalties for illegal fishing with the use of explosives, obnoxious substances, and other ecologically destructive methods; for conversion of mangroves; for exploitation of corals and coral reefs; for illegal foreign fishing; and other violations
- Empowerment of the national government to regulate the grant of new concessions and to impose moratoriums where necessary.

Source: RC Tillah. 1991. *The proposed Philippine fisheries code*. In: MP Garcia Jr (ed). *Policies and Issues on Philippine Fisheries and Aquatic Resources*. PCAMRD/DOST Book Series No. 14.

## The Philippine Local Government Code



The passage of the Local Government Code of 1991, which took effect on 1 January 1992, sets the stage for the granting of TURFs to fisherfolk associations. Section 149 of the code states that "municipalities have the exclusive authority to grant fishery privileges in the municipal waters (defined as within 15 km from the coastline) and impose rentals, fees, or charges." Registered organizations and cooperatives of marginal fishermen have the preferential right to establish fish corrals, oyster, mussel, and seaweed beds, or milkfish fry collection areas.

# Fishing Rights

Common property resources such as fisheries, wildlife, forests, and surface and groundwater share two characteristics: excludability and subtractability. Excludability means control of access of potential users (which may be costly or virtually impossible). Subtractability means that each user is capable of reducing the welfare of others.

There are four property rights regimes within which common property resources are held: (1) open access, (2) private property, (3) communal property, and (4) state property. Open access is the absence of well defined property rights. Under private property, rights are usually exclusive and transferable. Under communal property, the resource is held by an identifiable community of interdependent users. Rights to the resource are unlikely to be exclusive and transferable; they are often of equal access and use. Under state property, rights to the resource are vested exclusively in government which makes decisions concerning access to the resource and the level and nature of exploitation.

The prevailing open access in fisheries has resulted in wasteful exploitation of the resource. Each fisher is unable or unwilling to regulate his catch. Economic waste is brought about by too much effort on too small a resource. Fishers' income decline. Conflict develops among fishers using the same gear or those using different gears for the same resource.

In small-scale fisheries, this condition of open access could be removed by institutionalizing exclusive use rights for small-scale fisher groups. Where there is territorial use rights in fisheries (TURF), the user group can determine how best it wishes to use the resources in the area. The group can perform all the functions of fisheries management: control entry, allocate capital and labor, determine how much and what kind of fish to harvest, regulate fishing gear, extract rents if desired, and distribute benefits in whatever manner it wishes. In addition, there is both the *incentive* and, if the group is sufficiently cohesive, the *means* for self-regulation.

Source: D Feeny, F Berkes, BJ McCay, and JM Acheson. 1990. The tragedy of the commons: twenty-two years later. *Human Ecology* 18 (1): 1-19.

The State shall protect the rights of subsistence fishermen, especially local communities, to the preferential use of communal marine and fishing resources, both inland and offshore. It shall provide support to fishermen through appropriate technology and research, adequate financial, production and marketing assistance, and other services. The protection shall extend to offshore fishing grounds of subsistence fishermen against foreign intrusion. Fishery workers shall receive a just share from their labor in the utilization of marine and fishing resources.

— 1987 Constitution of the Republic of the Philippines

# *Exclusive fishing rights in Japan*

Fishing communities, through local fisheries cooperative associations or FCA, are granted exclusive rights to harvest sedentary resources in the waters immediately adjacent to their community. Access to waters further offshore, however, is granted to a number of different user groups.

## **Fishing rights and fishing communities**

There are at least 5 000 fishing communities in Japan. Fishing communities tend to be close-knit homogeneous social units. Members of a fishing community often speak a distinct dialect, interact daily, and participate in community rituals such as the annual Shinto festival. Thus under ideal conditions, the Japanese exclusive common rights are granted to a highly cohesive social unit of fishermen. Fishermen can then subdivide access to fisheries and allocate resources among themselves according to long-established traditions and social processes. In addition, social sanctions are far more effective than legal sanctions as a force for compliance. A fisherman who flagrantly or repeatedly violates regulations is sure to be discovered, and risks censure, isolation within the community, loss of face and reputation, or even outright social banishment.

Another important feature of the Japanese system is that FCAs are permitted, to a large degree, to determine management policies for the resources specified under their common rights. FCAs formulate a set of official Fishery Right Management Rules for each right that they have been granted.

This is not to say that government fishery regulations do not exist. Based on the Fisheries Resources Conservation Law, each prefecture has established a set of regulations stipulating seasonal and areal closures, as well as minimum capture length and other restrictions. These regulations, however, are general in nature, and the prefecture does not set annual quotas for each individual target species. Thus the FCAs enjoy considerable freedom in deciding management policies for the resources and

fisheries covered by their rights, and the Management Rules are usually a combination of prefectural and FCA-initiated regulations.

Almost all Japanese fishing communities have a long history. Coastal fishing in Japan is an occupation passed down from father to son, with little outside recruitment. As a result, fishing communities have produced a long continuity of fishing in the local area. They have developed fishing techniques ideally suited to local environmental conditions, and have amassed over generations an enormous knowledge regarding local resources and ecological relationships.

Seen from these perspectives, the advantages of the Japanese exclusive common rights are obvious. Giving a group of local fishermen exclusive rights to utilize and manage demersal resources allows them to continue their traditional practices. The fishermen employ their detailed knowledge and understanding of the local marine ecology in the formulation of appropriate policies.

This special privilege awarded to fishermen would perhaps be politically unacceptable and unpopular in other nations. The Japanese, however, have been exceptionally tolerant of the privileged position of coastal fishermen. One reason is that self-sufficiency in food production is an accepted national priority. Another is that Japanese consumers realize, to a degree unknown in other countries, that the fishing industry is responsible for providing the high-quality seafood products they desire.

The fishing rights system legally recognizes the traditional system of sea tenure. It allows fishermen to utilize their detailed knowledge of the local marine ecosystem, their traditional rules for allocating access to grounds and resources, and their traditional conservation practices, as the basis for resource management. The relative success of the Japanese coastal fishing industry must be understood in terms of this resource management system.

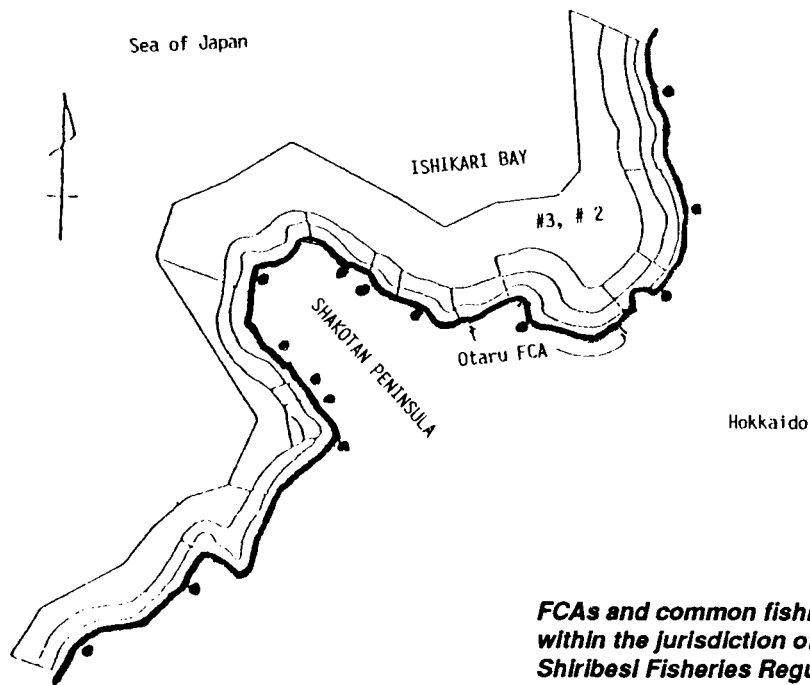
## Hokkaido: an example

Hokkaido is divided into 14 districts with the island capital at Sapporo. Ultimate responsibility for managing fishery resources in Hokkaido rests with the Hokkaido Fisheries Agency, which has its main office in Sapporo and branches in each of the districts and in major coastal cities. The Fisheries Regulatory Department of the Agency maintains a set of general fishery regulations, and is responsible for the issuance and renewal of fishing rights and prefectural licenses.

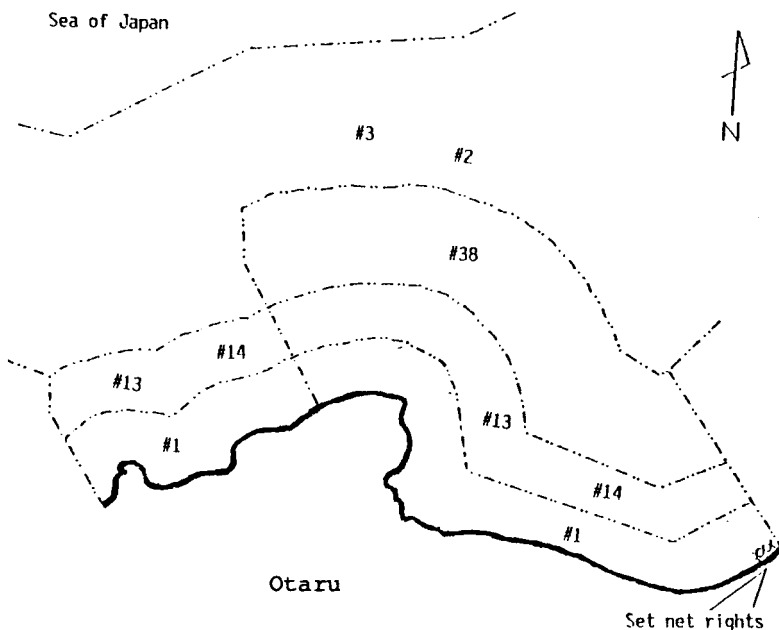
In deciding whether to issue or renew an application for a right or a license, the Fisheries Regulatory Department is required to seek the advice of a Fisheries Regulatory Commission. Normally, there is only one such Commission per prefecture, but Hokkaido, with a comparatively large area and high fisheries production, has ten. Each Commission advises the Fisheries Regulatory Department on rights and license applications within its jurisdiction. There is also a Hokkaido United Commission, consisting of one representative from each of the ten local Commissions, which advises the prefecture on matters such as the general regulations.

**Distribution of fishing rights.** Otaru is the largest coastal city and most important fishing port within Ishikari-Shiribeshi in Hokkaido. The figure below shows the various common fishing rights held by FCAs in the region. The FCAs are indicated by dots; the three sets of lines, 2 500, 5 000 and 10 000 m from shore, show areas of common fishing rights. One of the FCAs is that of Otaru, shown enlarged in the figure next page.

The common fishing rights of the Otaru FCA fall into two basic categories. Most are exclusive common rights that can be used only by Otaru FCA members. Others are joint common rights issued to and managed by Otaru and a number of other nearby FCAs. Right #1 is a Type 1 Right (the right to harvest sedentary animals and plants) issued for several species of bivalves, abalone, sea cucumber, two species of sea urchin and various marine algae from the shore to 2 500 m. Right #1 gives Otaru FCA members exclusive access to these resources. Right #13 and Right #38 are also exclusive Type 1 Rights, issued for octopus within 5 000 m and mantis shrimp within 10 000 m. Right #14 is a Type 2 Right (the right to operate small-scale set net and bottom gill net) for flatfish and other



**FCAs and common fishing rights within the jurisdiction of Ishikari-Shiribeshi Fisheries Regulatory Commission. Dot indicates location of a FCA.**



**Common fishing rights held by Otaru FCA. Numbers indicate rights established by the Hokkaido Prefectural Government.**

fishes within 5 000 m. Right #3 is a Type 1 Right for octopus from 5 000 to 20 000 m, held jointly by Otaru and a number of neighboring FCAs. Right #2, for gill netting of flatfish and other fishes, covers the same area as #3 and is held jointly by the same group of FCAs. The full extent of these two rights can be seen in the previous figure.

**Management of common fishing rights.**

For each of the common rights, the Otaru FCA is required to establish a set of Fishing Right Management Rules. These Rules are submitted to the Fisheries Regulatory Department whenever the rights come up for renewal or when changes or additions are desired. The Rules stipulate gear restrictions (net mesh sizes, net length), seasonal and areal closures, and other regulations for each of the fisheries specified under the Right. The Department is required to seek the advice of the Ishikari-Shiribeshi Fisheries Regulatory Commission when acting on the applications for Rights.

**Self-management of fishing rights.**

The Otaru City FCA is a city-wide organization encompassing several distinct fishing communities within the boundaries. The common rights are held by the FCA as a whole, and do not

specify special privileges for any of the specific communities. In other words, final division of access to resources among FCA members is left to the fishermen themselves.

The first level at which this sub-division is accomplished is through written intra-FCA Agreements that specify rules for participation in the fisheries. The sea urchin and abalone fisheries, for example, are open to all members, with the qualification that a fisherman must have been a full member for three years before participating. The octopus trap-line fishery, on the other hand, is broken down so that each community has exclusive rights to adjacent spots.

The next level of resource allocation is even more informal and is based on traditional practices within each community. Some communities, for example, allocate octopus trap line spots on a first-come first-serve basis, while others employ a lottery or rotating system for assigning spots.

In this manner, final allocation of access to resources is delegated to a closely knit social group. An interesting example of this process was observed in the sea-urchin fishery. Sea urchin fishing is accomplished by leaning over the side of a small boat and peering into the water through a large glass face mask. A long pole fitted with a round net is used to scoop up

the urchin. Two species of urchin, horse dung and purple spiny, are taken. Horse dung urchins lie camouflaged among rocks and under kelp fronds and are thus difficult to spot and retrieve. Purple spiny urchins rely on their spines for defense and tend to be in more open areas where they are easily found and captured.

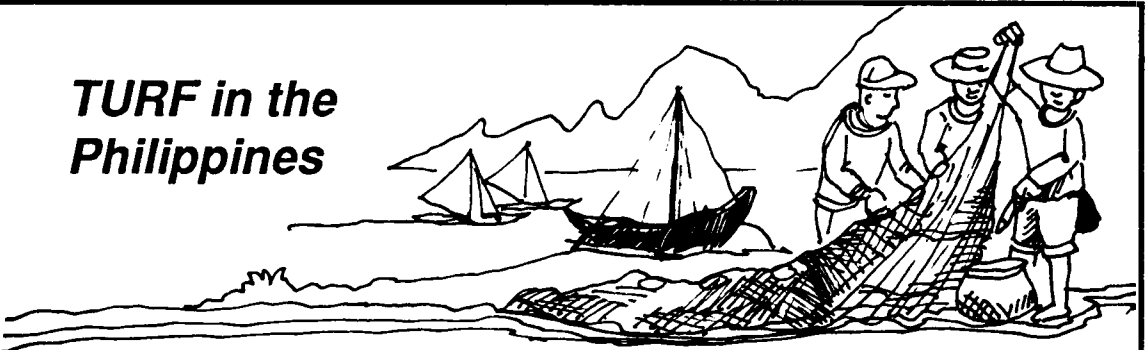
Neither the Management Rules nor any of the Agreements specify who can harvest which species. But there is a clear consensus among the fishermen that the purple spiny urchins should be left to inexperienced fishermen who lack the skill, and to elderly fishermen whose failing eyesight and arm power hamper their ability to find and retrieve the horse dung urchins. Experienced fishermen in their prime refrain from harvesting the purple spiny urchins, although they could easily increase their daily income by doing so.

### Advantages of fishermen-initiated resource management

- Artisanal fishermen are not displaced by larger, more heavily capitalized vessels.
- Livelihood and access to resources are secured.
- Artisanal fishermen can self-determine fishery management policy. They are able to incorporate their experience and knowledge into resource management policy. Also, traditional management in use for centuries can continue.
- Traditional conservation practices assure that important species are not overharvested.

Source: K Short. 1991. *The Japanese coastal fisheries management system based on exclusive fishing rights*, pp. 44-65. In: T Yamamoto and K Short (eds.). *International Perspectives on Fisheries Management; Proceedings of the JIFRS/IIFET/ZENGYOREN Symposium on Fisheries Management*; 26 Aug - 3 Sept 1991; Tokyo, Japan. National Federation of Fisheries Cooperative Associations.

## TURF in the Philippines



*"Careful, guys, we're all in this together."*

The granting of territorial use rights in fisheries (TURF) to fisherfolk associations, similar to that practiced in Japan, is recommended as a management tool for small-scale fisheries in the Philippines. A study by the SEAFDEC Aquaculture Department in five municipalities in Panay Island, central Philippines, showed that coastal dwellers perceived the practice of TURF as acceptable in that it would lead to an improvement of their catch. The present predicament of low catch and poor livelihood provides just the rationale for community-based management of coastal marine resources.

Source: SV Siar, RF Agbayani, JB Valera. 1992. *Acceptability of territorial use rights in fisheries: towards community-based management of small-scale fisheries in the Philippines*. *Fisheries Research* 14: 295-304.

# Catch quotas in developed countries

## Total allowable catch

Rather than allocating fishing areas as is the case with territorial use rights, many of the rights-based approaches in developed countries allocate shares of a total allowable catch.

Perhaps the most common allocation system is that used by the United States in its Pacific trawl fisheries. Total allowable catch is set for several species and groups of species. These TACs may also be defined for times and areas. For example, in 1989 the Pacific Fishery Management Council established a total allowable catch for all shortbelly rockfish caught off the coasts of California, Oregon, and Washington at 10 000 metric tons. They set a coastwide TAC for Pacific cod at 3 200 mt, for Pacific whiting at 300 000 mt, for sablefish at 9 000 mt, for English sole at 1 900 mt, and for jack mackerel at 12 000 mt. The TACs for lingcod, other species of rockfish, other sole species, and other fishes were established separately for five management areas, where those areas coincided with statistical areas defined by the International North Pacific Fisheries Commission several years ago.

In some fisheries, separate quotas are assigned to foreign fishing fleets, joint ventures (domestic fishermen delivering their catch at sea to foreign processing vessels), and to domestic fishermen delivering to domestic processors. As some fisheries become nationalized, TAC is allocated among competing domestic groups. In those fisheries, such as sablefish, the fish is fully utilized by domestic fishermen delivering to domestic processors. Even here, allocation occurs as some of the harvest is set aside for the Makah Indians -- an aboriginal group with special rights -- and the rest of the harvest is divided between trawl and non-trawl gears. When the allocation for each group is reached, that group must close its fishery unless special provisions are made for the continuation of the fishery.

## Individual transferable quotas

The Australian southern bluefin tuna fishery uses individual transferable quotas. Southern bluefin tuna spawn in the Indian Ocean and migrate along the southern coast of Australia and eastward to New Zealand. The largest shares of the harvest are taken by Japanese high-seas fishermen and by the Australians, and a smaller amount by New Zealanders. The drop in the 1970s of the average age and size of the catch created great scientific concern. By 1982, the decline of the biomass to one-third of its original size raised fears of a recruitment failure. Agreement in 1983 among the three major harvesting nations to an overall quota and national shares of that quota forced Australia to sharply reduce tuna harvests at a time when the fishermen's real incomes were falling.

Australia adopted an individual transferable quota program that would reduce fleet capacity voluntarily. Fishermen faced three options: harvesting shares of the new overall quota in proportion to their historical catch patterns; buying additional quotas from other fishermen to make fishing more economical; or selling part or all of their quota and reducing their level of activity in this fishery. Selling quotas meant that the fishermen who left the fishery received compensation for doing so. Although the program is too new to judge completely, a sense of optimism accompanied its introduction. Fishing effort declined and shifted toward the capture of larger fish.



Source: RB Rettig, 1991. *Recent changes in fisheries management in developed countries*. In: T Yamamoto and K Short (eds.). *International Perspectives on Fisheries Management; Proceedings of the JIFRS/IIFET/ZENGYOREN Symposium on Fisheries Management*; 26 Aug - 3 Sept 1991; Tokyo, Japan. National Federation of Fisheries Cooperative Associations.

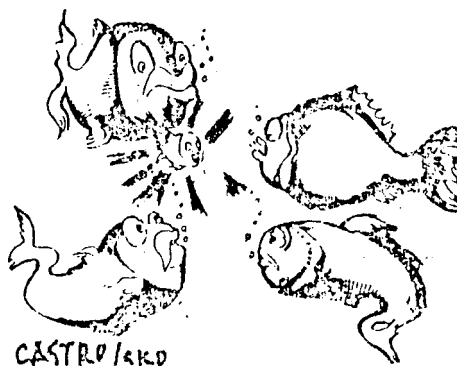
# Fisheries management in Asia

Marine fisheries in Asia are dual in nature, i.e., the small-scale fishery and the commercial fishery. Due to the great difference in the type and location of the resources being exploited, a separate management system should be established for each. The small scale fishery operates in coastal waters, exploiting sedentary, shallow-water fishes, shrimps, crabs, abalone, top shell, clams, seaweeds, etc. Conversely, the commercial fishery operates in off-shore and distant waters, aiming at migratory fishes.

In Asia, numerous small-scale fishing households are scattered along the coast and employ a variety of fishing gears. Under such situation, nothing can be done in terms of fisheries management unless the fisherfolk are organized at the community level. On the other hand, a fishermen's organization for the commercial fishery may be established at the state or provincial level. Fishery licenses should be issued only through the fishermen's organizations.

## Management of small-scale fisheries

A fisheries management system for small-scale fisheries could be effective only if all fishermen participate. Ideally, the system should be based on the experience and ideas of fishermen. Such a system can be implemented when all fishermen are organized and if governments grant fishing property rights to the fishermen's organization. Such a system has been successfully implemented in Japan (see separate story, this issue), but modifications are required when applied to the rest of Asia.



Philippine Times Journal, 13 Feb 1991

## Management of commercial fisheries

Catch limit systems without restrictions on the number of fishing boats are too costly and troublesome to implement in Asia. Individual transferable quotas are also too complex (See separate story on ITQs in developed countries.)

A feasible solution is to develop a restricted license system, by which the number and size of fishing boats, fishing area, fishing season, etc. are restricted. When a country has different sea areas, these restrictions have to be established separately for each area. For example, in Thailand these restrictions must be determined separately for the Gulf of Thailand and the Andaman Sea.

Source: T Yamamoto. 1991. *An overview of fisheries management in ASEAN countries*. In: T Yamamoto and K Short (eds.). *International Perspectives on Fisheries Management; Proceedings of the JIFRS/IIFET/ZENGYOREN Symposium on Fisheries Management*; 26 Aug - 3 Sept 1991; Tokyo, Japan. National Federation of Fisheries Cooperative Associations.

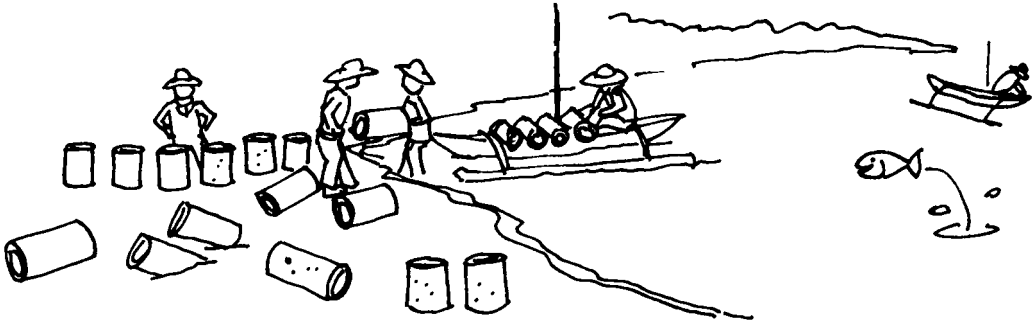
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# SUPPORT *sustainable* AQUACULTURE

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# The Visayas Experiment



The Central Visayas Regional Project (CVRP-1) addresses the problems of rural poverty and declining productivity caused by the continuing degradation of the region's natural resources. The project aims to stabilize and improve the resource base through community-based resource management. It develops local capabilities and generates employment opportunities in the rural areas.

CVRP-1 recognizes the fisherfolk as the real day-to-day managers of the coastal resources. Strategies were developed to make coastal fishing opportunities more profitable. First, fishing communities undertook the restoration and management of the highly productive nearshore fish-producing habitats such as coral reefs, mangrove swamps and sea grass beds. Second, low-cost fishing and seafarming opportunities were developed to allow more fisherfolk to earn more income from limited marine stocks. Third, community-based mechanisms were used to regulate different fishing gears.

Implementation of these strategies began in July 1984 at four Central Visayas sites. Fisherfolk were assisted in a series of resource management activities: (1) family-managed artificial reef clusters; (2) protection and management of coral reefs including the establishment of municipal marine sanctuaries; (3) mariculture on protected and managed reefs; and (4) local control of illegal and destructive fishing. The protection and management of coral reefs by coastal communities created many opportunities for farming a wide variety of native marine life.

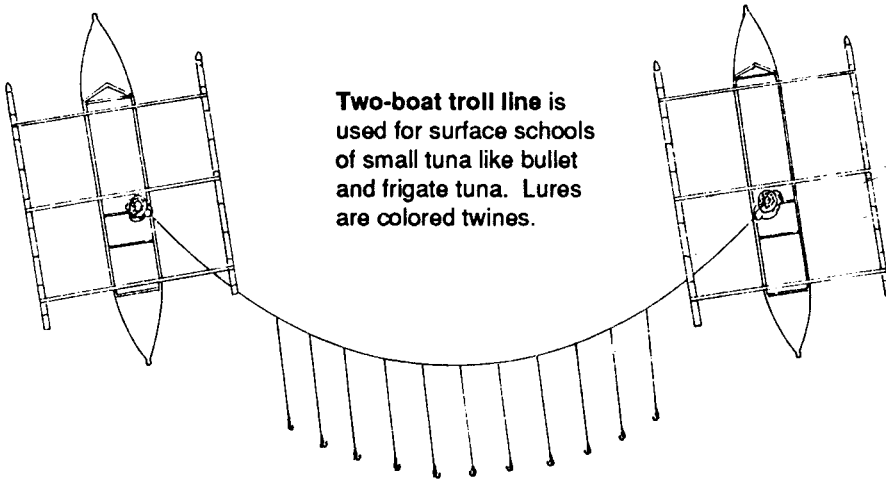
To date, the small-scale fisherfolk have assumed a very positive role in the management of coastal marine resources. There is a pressing need for government to provide the promised regulatory framework to allow community-based resource management to prosper. Such framework needs to be flexible and allow the coastal communities to adopt basic strategies suitable to local conditions. Regulations are needed to: (1) allow municipal licensing of family-managed artificial reef clusters; (2) provide for the creation and management of municipal marine sanctuaries; and (3) provide for regional-level approval of municipal fishing ordinances.

Source: RM Bojos, Jr. 1992. *Territorial use rights in fisheries: policies and strategies for coastal area management*. In: MP Garcia, Jr (ed.). *Policies and Issues on Philippine Fisheries and Aquatic Resources*; PCAMRD/DOST Book Series No. 14.

# The tuna fishermen: *how they fish*

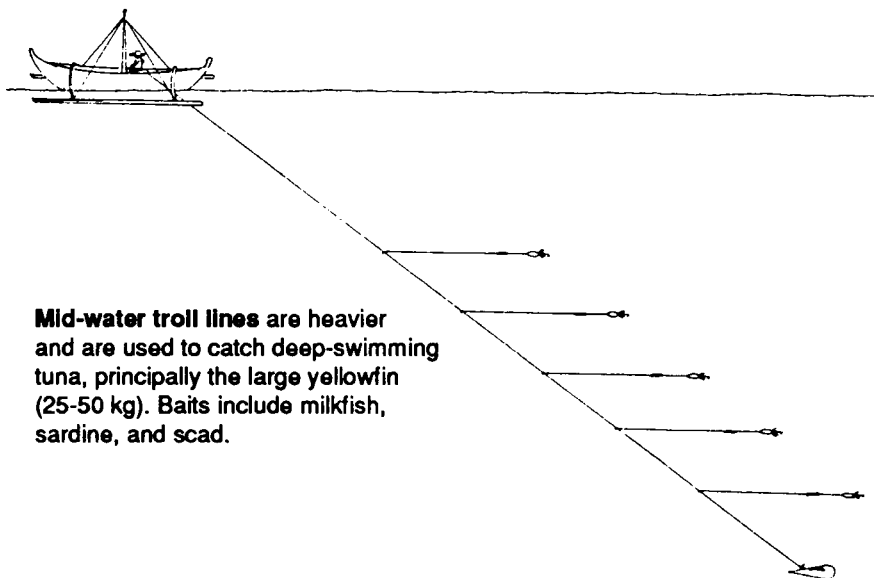
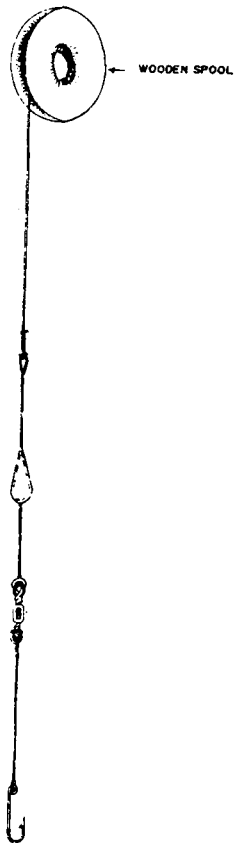
The tuna fishery is the most important (in terms of volume and value of landings) of all marine fisheries in the Philippines. There are eight commercial fishing gears and twelve municipal fishing gears for tuna. The most

productive (% landings) are: hook and line, 30% (see three examples below); purse seine, 22%; ring net, 19%; bagnet, 12%; gill net, 9%; beach seine, 4%; fish corral, 2%; trawl, 1%; and longline, 1%.



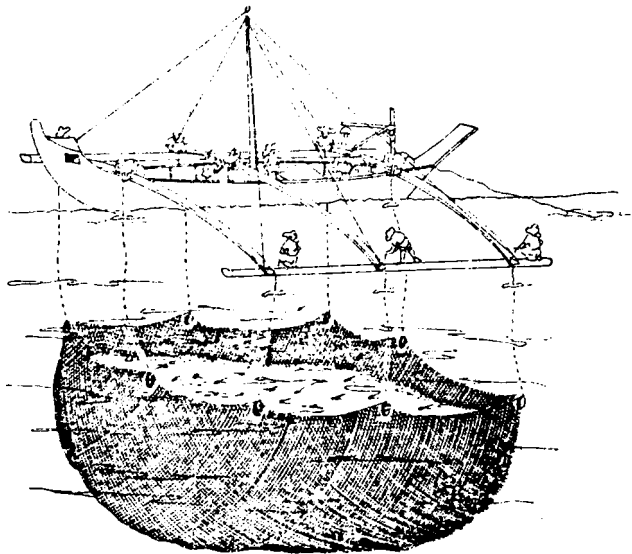
**Two-boat troll line** is used for surface schools of small tuna like bullet and frigate tuna. Lures are colored twines.

**Handlines** can capture deep-swimming tuna like the yellowfin and big-eye. They are dangled from outrigger bancas and baited with scad and squid.

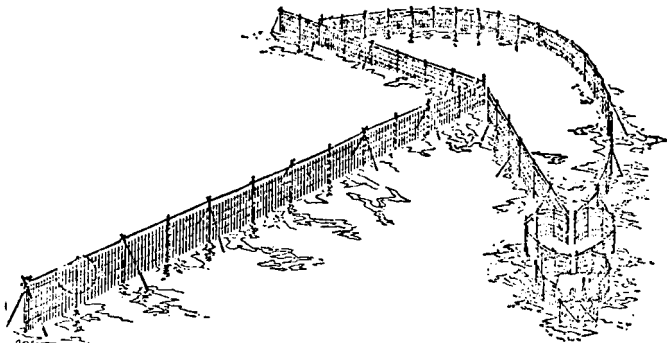


**Mid-water troll lines** are heavier and are used to catch deep-swimming tuna, principally the large yellowfin (25-50 kg). Baits include milkfish, sardine, and scad.

**Bagnets** are used for anchovy, sardine, mackerel, scads, and squids. Juveniles of surface-swimming tuna such as frigate, bullet, and eastern little tuna are captured incidentally. The bagnet banca is anchored in a suitable location at night. It is equipped with lights to attract fishes and squids.

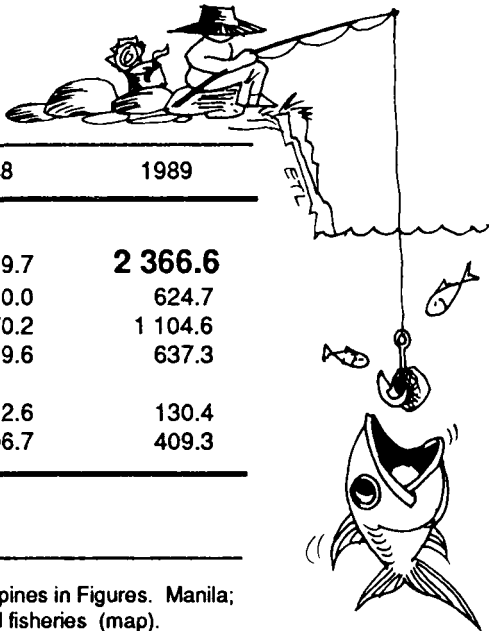


**Fish corrals** act as barriers to migratory surface-swimming fishes particularly tunas and jacks. The fish that are impounded are then caught with a surrounding net.



Sources: (1) A de Jesus. 1982. *Tuna fishing gears in the Philippines*. Indo-Pacific Tuna Development and Management Programme (INT/81/034). Colombo, Sri Lanka. 13 p. (2) AF Umali. 1950. *Guide to the classification of fishing gears in the Philippines*. US Department of the Interior Fish and Wildlife Service Research Report 17.

## What the figures show



Fisheries Production	1980	1988	1989
<b>Production</b>			
(x 1000 metric tons)	1 672.3	2 269.7	<b>2 366.6</b>
Commercial	488.5	600.0	624.7
Municipal	894.6	1 070.2	1 104.6
Aquaculture	289.2	599.6	637.3
<b>Exports</b>			
Quantity (x 1000 mt)	70.2	112.6	130.4
Value (F.O.B. US\$ M)	138.1	406.7	409.3

Per capita consumption in the country: 33.7 kg

**Actual need: 2 005 453.3 mt of fish**

Sources: National Statistics Office. 1990. *The Philippines in Figures*. Manila; International Centre for Ocean Development. 1991. *World fisheries* (map).

# Fishing grounds and mangrove areas

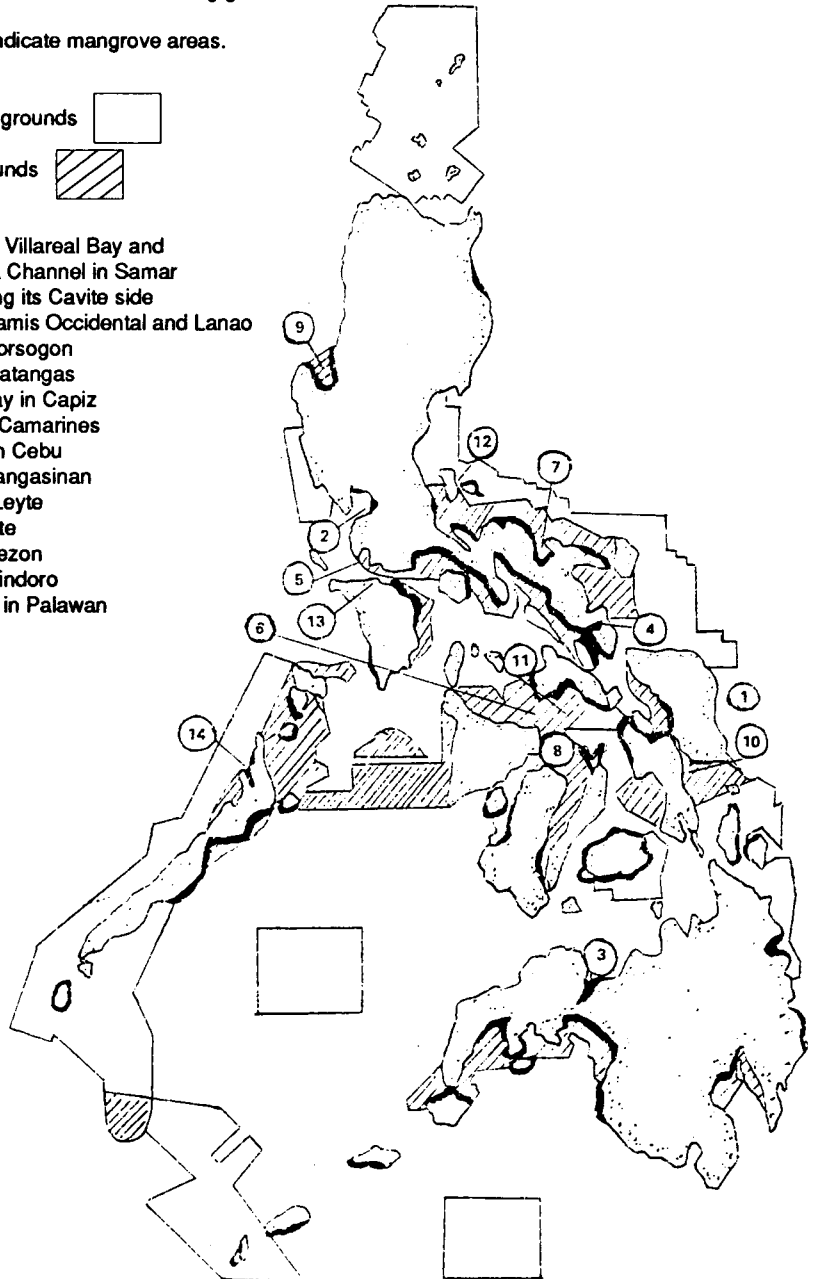
Many of the traditional fishing grounds in the Philippines are in, or contiguous with, mangrove swamps and forests. With the Local Government Code in effect, many of these traditional fishing grounds are now off limits to commercial fishing. The government is also encouraging operation in non-traditional fishing grounds.

Darkened coastlines indicate mangrove areas.

Non-traditional fishing grounds 

Traditional fishing grounds 

- 1 - Maqueda Bay and Villareal Bay and part of Zamarraga Channel in Samar
- 2 - Manila Bay including its Cavite side
- 3 - Panguil Bay in Misamis Occidental and Lanao
- 4 - Sorsogon Bay in Sorsogon
- 5 - Pagaspas Bay in Batangas
- 6 - Tinagong Dagat Bay in Capiz
- 7 - San Miguel Bay in Camarines
- 8 - Bantayan Islands in Cebu
- 9 - Lingayen Gulf in Pangasinan
- 10 - San Pedro Bay in Leyte
- 11 - Asid Gulf in Masbate
- 12 - Polillo Island in Quezon
- 13 - Puerto Galera in Mindoro
- 14 - Malampaya Sound in Palawan



Source: RC Serrano and M Fortes. 1987. *Perspective on World and Philippine Mangrove Resources*. In: *State of the Art Mangrove Research*. US Agency for International Development and Department of Science and Technology Forestry Research Series No. 4.

# Where fishermen fish

Fishing ground	Species	Method	Season
Northern Luzon	Tuna and tuna-like fish	Handline	June to Oct
	Crabs	Crab pots and corral	Throughout the year
	Shrimps	Seine, banwar	July to Jan
	Croaker, hairtail, snapper	Hook and line	Throughout the year
	Goby and goby fry	Cast net, seine, trap	July to Mar
	Clams	Dredge, picking and diving	Throughout the year
Ilocos Coast	Goby fry	Fish basket, beach seine	Nov to Mar
	Milkfish fry	Saplad	Apr to July
	Tuna and mackerels	Handline	Mar to June
	Sardines, anchovies	Beach seine, gillnet	Mar to June
	Squid	Hook and line, jigger	Mar to June
Cagayan Gulf	Sardines, anchovies	Round haul seine, gillnet	Jan to June
	Siganids	Corral, sakag	Throughout the year
	Slipmouth, croaker	Otter trawl	Throughout the year
Zambales Coast	Tuna and mackerels	Handline, beach seine	Jan to June
	Groupers, snappers	Handline	Throughout the year
	Milkfish fry	Beach seine, saplad	Apr to July
	Spiny lobster	Trap, diving	Throughout the year
Ragay Gulf	Mackerels, sardines	Handline, gillnet	Dec to May
	Anchovies, scad	Round haul seine	Dec to May
	Slipmouth, threadfins, shrimps	Trawl	Throughout the year
Lagonoy and Albay Gulf	Round scad, halfbeaks, tuna, rays, goatfish	Beach seine, handline, round haul seine, gillnet	May to Oct
Sorsogon Bay and Bulan Bay	Mackerels	Hook and line	May to Oct
	Squid	Jigs, bagnet with light	Jan to May
Butuan and Gingoog Bay	Tuna and mackerels	Handline	Jan to May
Calajan Bay	Tuna and mackerels	Handline	Jan to Apr
	Goby fry	Dip net, beach seine	Jan to Mar
Murcielagos Bay	Siganid	Fish basket, seine	Jan to Mar
	Reef fishes	Fish basket	Throughout the year
Northern Zamboanga	Sardines and herrings	Gillnet	December to May
Around Zamboanga	Tuna	Fish corral	Throughout the year
	Sardines, anchovies	Round haul seine	Jan to Apr
	Mackerels	Handline	Jan to Apr

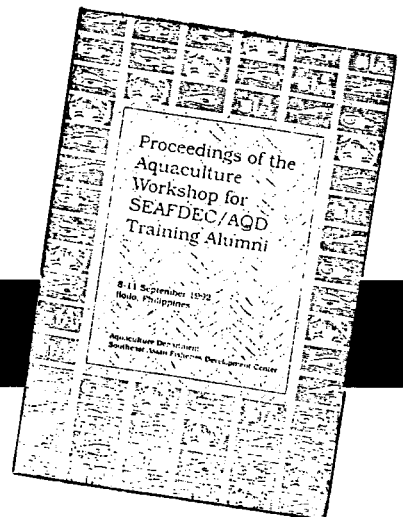
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Fishing ground	Species	Method	Season
Laguna de Bay	Catfish	Beach seine	Jan to May
	Goby	Beach seine, hook and line	Throughout the year
	Mudfish	Traps, hook and line	Throughout the year
	Carp, tilapia and gourami	Fish corral, push net	Throughout the year
	Clams and snails	Dredge and rake	Throughout the year
Taal and Naujan Lake	Mullet	Fish corral, gillnet	Nov to Mar
	Milkfish	Fish corral, gillnet	Jan to Mar
	Caranx	Fish corral, gillnet	Jan to Mar
	Goby, climbing perch, hito, gourami	Hook and line, fish basket, gillnet, fish corral	Throughout the year
	Snapper	Fish corral, gillnet	Feb to May
	Sardine	Gillnet	Apr to July
Batangas	Barracuda	Handline	Jan to June
	Spanish mackerel	Handline	Jan to June
	Snapper	Handline	Jan to June
	Tuna and mackerels	Handline	Jan to June
	Milkfish fry	Saplad	Mar to July
	Anchovies	Beach seine, round haul seine	Nov to May
	Round scad	Beach seine, round haul seine	Dec to Apr
Southern Iloilo	Milkfish fry	Sweeper, seine	Apr to July
Antique	Tuna and mackerels	Handline, fish corral	Nov to June
	Milkfish fry	Sweeper, seine	Apr to Oct

Source: *Philippine fisheries: a guide to fishing grounds, kind of species, fishing gear, and fishing season*. Deep-Sea Fisheries Section, Technology and Services Division, undated.

## OFF THE PRESS

*Proceedings of the Aquaculture Workshop for SEAFDEC/AQD Training Alumni*



For more information, write: Training and Information Division, SEAFDEC/AQD, P.O. Box 256, Iloilo City 5000 Philippines

# Aquaculture clinic

**QUERY** Does SEAFDEC/AQD pursue research on fisheries resource management? If so, what progress has been made?

**REPLY** SEAFDEC/AQD has little to do with resource management itself but it has, and will continue to, develop aquaculture technologies that are environmentally friendly. Research has focused on breeding, nursery, nutrition and feeds, disease prevention and control, and culture of economically important fishes like milkfish, sea bass, tilapia, and siganids. Research on shrimps and seaweeds are also pursued. SEAFDEC/AQD research priorities are identified by SEAFDEC Member Governments, cooperating agencies, and the private sector, and are reviewed every three years in response to industry needs. The next review of research priorities will be in July 1994 during the *Third Seminar-Workshop on Aquaculture Development in Southeast Asia*.

There is, however, one special project on seafarming that looks at resource management as a function of an island community (see *Aqua Farm News* Vol. X, No. 5, September-October 1992). You may also write the Project Leader, Mr. Renato Agbayani, SEAFDEC/AQD, P.O. Box 256, Iloilo City 5000.

## ***National Seminar-Workshop on Fish Nutrition and Feeds***

Advance registration is on-going for the *National Seminar-Workshop on Fish Nutrition and Feeds* that will be held 1-2 June 1994. Please contact: Ms. Myrna Bautista, SEAFDEC/AQD, P.O. Box 256, Iloilo City 5000, Philippines or Fax: 63-33-271008.

The seminar-workshop will discuss feeds for small-scale aquaculture. There will be papers and posters on nutritional requirements, indigenous feed resources, feed formulation and evaluation, equipment, and feeding techniques.

The seminar-workshop is sponsored by SEAFDEC/AQD and the Government of Japan.

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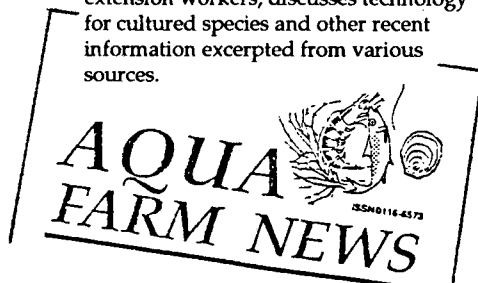
<i>Fish Health Management</i>	20 Apr - 30 May
<i>Marine Fish Hatchery</i>	31 May - 20 Jul and 02 Aug - 21 Sep
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<i>Aquaculture Management</i>	07 Sep - 06 Oct
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For more information, contact: TRAINING AND INFORMATION DIVISION,  
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In citing information from AFN, please cite the institutional source which is not necessarily SEAFDEC/AQD. Mention of trade names in this publication is not an endorsement.

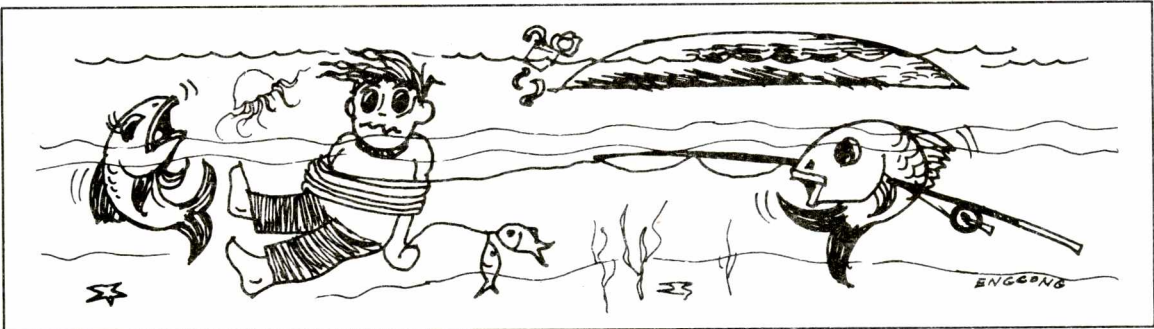
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### To catch a thief



by E. LEDESMA



Better life through aquaculture