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The Haribon Netsman Training Program

The net training programme of the Haribon Foundation was conceived in 1989 as a result of the growing problem of cyanide use and its effects on coral reefs.

In 1984, Steve Robinson, a professional fish collector from the Sea of Cortez, Mexico, returned to the Philippines to participate in a programme to train Filipinos in the use of nets for collecting marine fish. Sponsored by the Environmental Center of the Philippines, a 10-day training course was developed and implemented for two classes of fishermen from Santiago Island, Bolinao and Pangasinan. A third training course was held in Bohol.

Since then, a number of international agencies have shown interest in supporting the net training pro-

gramme. In January 1989, a grant from the International Development and Research Center of Canada was obtained to implement a nationwide training programme. The Haribon Foundation and International Marinelife Alliance Canada were chosen to implement the programme then known as the Netsman Training Program.

Local conditions indicated that training alone was not sufficient to ensure conversion of cyanide users to net use, and that the training programme must be part of a holistic approach that helped steer communities toward community-based coastal resource management. Thus a combination of approaches—community organising, training, and research—was used to effect resource management, with the net training as the entry point to the community.

Operational framework

Community organisers and resource specialists are assigned in the selected sites to persuade the community of the importance of the training project and to meet with cyanide fishermen and their families. Logistical preparations and invitations, courtesy calls to local Department of Agriculture offices, local government officials and exporters are undertaken.

The preliminary social investigation includes identification of participants, visits and meetings with aquarium fisherfolk and their operators and managers, and the conduct of a baseline survey. A questionnaire is used to assess the trainees' knowledge, skills and attitudes in fish collection, handling, packing and diving safety to guide the trainers.

After the preparation phase, the training team visits the area to begin the training proper. A training site is set up for seven days, usually in schools, public spaces, or under the trees. Blackboards, enlarged drawings and slides are used to convey ideas, usually in Tagalog. The theoretical instruction lasts for three days. The next four days are allotted for open-water training exercises where the trainees are taken to the reefs and shown how to use nets, then allowed to try the net method themselves.

As a way of ensuring family and community support for conservation efforts, wives are encouraged to participate in selected activities together with boat operators, barangay officials, and other residents.

After training, participants are evaluated on the basis of attendance, performance in open-water sessions, and written examinations. Before members of the community, each graduate recites an oath to completely stop cyanide use. The list of successful graduates are submitted to the Department of Agriculture provincial office for accreditation.

Post-training activities

Immediately after the training, a community organiser is deployed to continue activities that lead to the formation of local organisations. Core groups are organised, trained and motivated to increase their membership, thereby facilitating wider participation and collective action on community problems. Networks with local, national and international agencies were also established. Due to lim-

ited resources, only three sites in Patnanungan, Quezon, Matalbis, and Palauig, Zambales were selected for intensive organising activities.

After the actual training sessions, the trainers were deployed to different sites to monitor the progress of the trainees. Whenever possible, they went fishing with them, retraining them when needed, or engaged trainees in one-on-one discussions. Catch and effort data were also collected from the trainees.

The feasibility of establishing marine sanctuaries and reserves was also looked into. Local officials were consulted to introduce this concept and gain their support.

Underwater surveys were conducted to check on the recommended sites and to establish baseline information. Marine sanctuaries were set up in San Salvador, Zambales and proposed in Isla Verde, Batangas and Bolinao, Pangasinan.

Training results and evaluation

From 1990 to 1992, 475 trainees participated in 15 training sessions from eleven different sites on the island of Luzon. Of the 176 trainees monitored, 29 per cent were fully converted, 40 per cent remained questionable, and 31 per cent admitted to continued cyanide use but at a reduced rate (50–90% less than their usual consumption) (See Tables 1 and 2).

Factors restraining net use

A number of restraining factors to net use have been identified, highlighting the need to fine-tune assumptions and theories underlying the net training programme, and improve the course curriculum. External factors that contribute to persistent cyanide use are examined so that adequate policy and other forms of responses can be formulated.

Table 1: Post-training monitoring results (Pajaro, 1992)

Training site	Number of trainees	Not using cyanide		Admittedly using cyanide
		Sure	Doubtful	
San Salvador Is.	30	30	0	0
Other sites	146	21	71	54
Total	176	51 (29%)	71 (40%)	54 (31%)

Middlemen and exporters

It is often said that the 'economics of the stomach' is the overwhelming reason that drives fishermen in the Philippines to engage in illegal fishing. In their daily struggle for survival, poor collectors fall prey to middlemen-cum-creditors where money is made available for lending, but under usurious terms. According to fishers interviewed, the use of cyanide is also imposed upon them. These middlemen not only earn from trading fishes but also from peddling cyanide tablets.

These middlemen buy fishes from collectors at very low prices. This drives collectors to catch more fish in order to compensate for the lower prices. Since the collectors have to pay for the boat and the owner's share of the catch, they are forced to adopt means that are expedient and cheap, in order to generate a larger catch and bring home a reasonable sum for their efforts.

Collectors have few alternative channels for selling their fishes except through local middlemen. Otherwise they would have to transport their fishes directly to Manila to avoid them. The temptation to use cyanide is hard to resist under a trading system that imposes low prices, compounded by high costs of operation and inequitable sharing of the produce. This serves to highlight the oppressive trading system faced by the collectors and the need for holistic solutions (other than net training) to eradicate the cyanide problem.

Lack of market incentives

The absence of a price differential for net-caught fishes in the rural areas does not encourage trainees to shift to nets, especially if prices for net-caught and cyanide-caught fish remains the same. Why bother using nets if their catch will be bought at the same price anyway? A price premium for net-caught fish above current prices may convince fishers to shift to net use, but current market forces that operate in the field do not allow for such incentives.

Exporter members of the Philippine Tropical Fish Exporters Association (PTFEA) have banded together to standardise their purchase prices from collectors in the hope of averting price wars among them. Whether there is compliance among their members is difficult to determine. The demand for cheap

Table 2: Variations in cyanide consumption of trainees who admitted using it (Pajaro, 1992)

Number of users	Cyanide use* (in kg)	
	Before	After
15	4–5	0.25–1.5
25	3–4	0.25–1.5
8	2–3	< 0.5

* Calculated for a 5-day fishing trip with 2 divers

Table 3: Fishes identified as difficult to catch with nets

Pomacanthidae (Angelfishes)	
<i>Centropyge bispinosus</i>	Coral beauty
<i>Pomacanthus imperator</i>	Imperator
<i>Centropyge flavissimus</i>	Yellow angelfish
<i>Pomacanthus semicirculatus</i>	Blue koran
<i>Holocanthus venustus</i>	Halfmoon
Serranidae (Groupers, Anthiids)	
<i>Anthias pleurotaenia</i>	Square anthias
Labridae (Wrasse)	
<i>Pseudocheilinus hexataenia</i>	Six-lined wrasse
Gobiidae (Gobies)	
<i>Stonogobiops xanthorhinica</i>	Bamboo spot
Pseudochromidae (Dottybacks)	
<i>Pseudochromis diadema</i>	Diadema
<i>Pseudochromis porphyreus</i>	Strawberry
Plesiopidae (Longfins)	
<i>Callopleksiops altiveles</i>	Cometa

fishes from abroad is huge, and many dealers rake in money by selling cheap fishes which they compensate for through higher inventory turnover. This demand is served by a significant number of Philippine exporters who, by competing on the basis of lower prices and shipping larger volumes, tolerate or even encourage the use of more efficient but destructive methods which cyanide fishing provides.

Difficult-to-catch fishes

For selected species (Table 3), cyanide use is persistent due to higher prices (e.g. imperators, blue koran, etc.) and their elusive nature (e.g. cometa and half moon angels). For higher-priced species, fishermen are driven by the knowl-

edge that if they didn't catch the fish, somebody else would. Fisherfolk with prized catches are able to bargain forcefully with middlemen in negotiating prices and selling their entire stock.

Some fishes (e.g. imperators) were reported by divers to suffer from scale and fin damage when subjected to net capture methods. Their struggle in the barrier nets causes some of their fins and scales to fall off. This deters net-use by some collectors because these fishes, although very healthy, are rejected by exporters for aesthetic reasons.

Lack of enforcement

In areas where local organisations are weak and police enforcement is absent, cyanide use proliferates and continues. This is true in some barangays, where local officials tolerate (and benefit) from the illegal fishing activities in the area. Attempts to conduct follow-up net-use training in these barangays were thwarted by traders, who have a firm hold with the native collectors in the area.

By contrast, a significant number of conversions (100% for 30 trainees) is noted among trainees from San Salvador Island where a community-managed sanctuary is in place and where fishing regulations are enforced by local officials. It is on this site that ongoing community support and enforced regulations sustain the net-use method.

Lack of common property rights

The nomadic nature of fisherfolk does not provide a sense of ownership or 'home' to their fishing grounds. Most collectors in Luzon are migrants from the Visayas, with no sense of ownership or affinity to the marine resources on which they depend, and they therefore lack the motivation to conserve and protect their coral reefs. If an area is degraded, they merely move on. Attitudinal factors such as these are difficult to address in any net training programme.

The theory behind the Tragedy of the Commons (Hardin, 1968) suggests that the open access nature of fisheries or any other common property does not invite self-restraint among fishermen to conserve dwindling resources but rather encourages maximisation of resources for self gain, sometimes by using destructive methods. Similarly, the exclusivity principle in open fisheries suggests that one fisherman's gain is another one's loss, which under game theory is a zero-sum or win-lose game. Under such a scenario, there is no incentive for one fisherman to forego catching a high-priced fish since he knows somebody else will. This drives the fisherman to carry cyanide for 'emergency' purposes. The success of the net training method may be impeded without

corresponding exclusive use rights granted to fishermen to their fishing grounds, which could provide long term incentives to conserve resources.

Lack of nets

Persistence in cyanide use may also be due to the lack of fine-meshed nets of good quality available locally. The knotless, transparent nets which can last for two years are imported from Japan and are not accessible to ordinary fisherfolk. The local variety are less durable, and can last only two months. Fine-mesh net-making was introduced as a livelihood option to the local communities, but proved to be too laborious and an inferior substitute to imported nets. Some exporters who embark on their own net training programmes import and distribute nets to their suppliers.

Recommendations

Enforcement

Current policies on the capture of marine ornamentals need to be enforced more vigorously. Fisheries Administrative Order No. 148 regulates the gathering, catching, taking or removing of marine tropical aquarium fish. The logistical requirements to enforce the law in an archipelagic country such as the Philippines make enforcement virtually impossible. Cyanide detection tests are implemented in airports in selected sites throughout the country. As a deterrent, their reliability needs to be improved so that courts can prosecute on the basis of the evidence that the tests provide.

Penalties for cyanide use must be imposed not only on collectors, but also on their buyers (exporters) who must assume the burden of ascertaining the source of their fishes. As an adaptation of the anti-fencing law, both seller and buyer of cyanide-laced fishes could be punished.

Fair trade

For some time, fishermen, who are the primary suppliers and foot soldiers of a multi-million dollar industry, have been left out in the cold. The prices of their catches are driven by external forces beyond their control, while the traders, exporters and overseas dealers make vast sums of money. Until now, these collectors remain poor and marginalised and have to suffer the disdain of other fishing groups, local officials and NGOs who label them as 'killers of the reefs' within their community. They have to contend with local bans, which forces them to seek their livelihood elsewhere.

Fair trade brings collectors to the decent footing that they deserve. By forming local cooperatives

and linking themselves to lucrative markets, fishermen can be rewarded adequately and be motivated to conserve the reefs. Fishermen are entitled to the equitable sharing of the benefits from resource use alongside the traders, exporters and hobbyists.

Price competition

Competition based on quality and healthy fishes is a better business strategy, as it drives fish prices upwards, and that will benefit the industry (and the net fisherman) in the long run. Hobbyists and fish importers must realise that competition to sell more fishes cheaply regardless of quality cannot continue, as this drives the use of destructive methods of fish collection. Some exporters encourage the use of cyanide as it enables them to sell fishes more cheaply and in greater volumes to the market.

Eco-labelling

Eco-labelling schemes should be encouraged to differentiate net-caught fishes and establish a firm market niche. This entails monitoring of fishes from the collector to the exporter and establishing the paper trail to document the fishes to the point of shipment. However, the use of accountable forms are non-existent in the provinces, where most traders operate informally, often without receipts and proper documentation of fishes traded.

Resource management

The conservation status of the fishery resources has long been ignored, and does not enter into the economics of the aquarium industry. The depletion of fishery stocks may lead to local extinction, reducing local marine biodiversity. Evidence of local extinction for certain species (blue tang, majestic angel, blue faced angels) was noted by local collectors in Luzon.

The establishment of marine reserves and sanctuaries ensures that fishery habitats are conserved for the benefit of future generations. The monitoring of fishery stocks should be continuously undertaken to facilitate managing the resources effectively.

Education

Education to the net method should be expanded to bring the technology within reach to as many collectors as possible, especially in remote areas. Many collectors are not aware of the technology that is readily available.

Regulation

Left on its own, the trade will continue to exploit the fishery resources in an unsustainable manner

as reef destruction from cyanide use and overfishing continues. A purge of the industry is needed as well as a re-accreditation process for exporters and collectors. Exporters should be required to install appropriate aquarium systems that meet the highest standard of operations of fish husbandry. Their staff must meet the technical knowledge and skills requirements to operate and maintain a holding facility. Fish collectors must be trained in net use before a permit to collect is given by the Bureau of Fisheries. Fish exporting countries such as Palau and Australia have progressive laws which govern their aquarium industry. Compliance with established standards is monitored closely by their fishery agencies.

Conclusion

The cyanide issue underscores the interrelatedness of other issues where holistic (not bandaid) solutions are needed. This requires the cooperation of all concerned agencies and stakeholders.

The success of the net method relies on shifting incentives to net use combined with other remedial measures, most important of which is the strict enforcement on the use of poisonous substances. Without the latter, there will be little conversion from fishermen to more friendly methods.

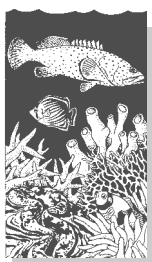
It is encouraging to note that a local federation of aquarium collectors (aka Pederasyon ng Mag-aakwaryum sa Pilipinas) has taken steps to protect reef resources and has embarked on activities on its own—marine sanctuary establishment, net-use training, environmental education, livelihood development, advocacy, data collection and peer monitoring on net use. The sustainability of the trade and its future depends on such efforts. This will ensure that fisherfolk, businessmen, hobbyists and coral reefs can co-exist in harmony under the banner of sustainable development.

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Who can challenge them? Lessons learned from attempting to curb cyanide fishing in Maluku, Indonesia

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Introduction

While the practice of fishing with *bius* (i.e. intoxicant), the vernacular name of cyanide, was public knowledge in a Maluku regency where I did a year's field research in 1995 and 1996, it was nevertheless treated in official discourse as if it did not exist. The practice was well known publicly for several reasons. It had been carried out since the early 1990s, and had generated various conflicts

between villagers and outside fishing companies, as well as among villagers themselves. In addition, some companies employed local people whom it proved impossible to keep silent concerning cyanide fishing.

Yet cyanide fishing had attracted no official attention, and not a single case had been brought to court. We may wonder why. The following experience helps shed some light on the question.