

Indonesia is one of marine ornamental fish exporters in the global market as well as suppliers for domestic market, for the beauty and uniqueness species of its marine ornamental fish. Unfortunately, a number of the marine ornamental fish traded were collected by using *potassium cyanide* which has been destroying the marine habitat. To solve the problem LEAD has introduced a program "Conserving Reefs for Community Ownership and Enterprise" to promote eco-friendly fishing practices and trade.

The efforts to conserve the marine habitat and to develop eco-friendly marine ornamental fish have been conducted in Buleleng District, Bali Province, Indonesia, since 2005 until 2008 with the support from UK Government's Darwin Initiative. The fishermen and exporters trained by Marine Aquarium Council (MAC) on the eco-friendly fishing practices, post collection treatment and shipping. Those who meet the standard are certified by MAC, for the collected and treated marine ornamental "eco fish." The next step is to develop the eco-friendly supply or "eco fish green supply chain." The green supply chain is to ensure that for the whole process from the fish collection until the fish get to the hobbyists, "eco fish" is the option for the market to choose from, maintaining the richness of Indonesia marine species, and ensuring sustainable fishery.

The first step to conserve Indonesia marine habitat has been started by the certified fishermen and exporters. The next step will be to develop "green supply chain" at the retailer and hobbyist level to meet the objective of preserving the richness of Indonesia marine bio-diversity and of sustainable fishery. It is expected that the fishermen will have a fair profit sharing throughout the supply chain to support the living of the fishermen and the family, as incentive toward sustainable livelihood, and to maintain sustainable marine resources of Buleleng District.

A Case Study from Buleleng, Bali



Towards Green & Fair Trade for Eco Fish



LEAD Indonesia
Based at Yayasan Pembangunan
Berkelanjutan
Jl. BDN II No. 35 Cilandak Barat
Jakarta 12430, Indonesia

Tel. +62 (0) 21 7695491
+62 (0) 21 75816941
Fax. +62 (0) 21 75816938
Email lead@lead.or.id
www.lead.or.id

LEAD International
Sundial House
114 Kensington High Street
London, W8 4NP
United Kingdom

Tel. + 44 (0) 207 938 8707
Fax. + 44 (0) 207 938 8710
www.lead.org

A Case Study from Buleleng, Bali: Towards Green & Fair Trade of Eco Fish

Written by Nusya Kuswantin

The challenge

The district of Buleleng, located on the northern coast of the island of Bali, may be unknown by tourists in Denpasar and Kuta Beach, but it has an important international connection. This peaceful region of Indonesia is at the heart of the global ornamental fish trade, and the fish are exported through Denpasar and Jakarta to many countries around the world.

The communities living in coastal villages such as Penyabangan, Pejarakan and Sumberkima have been catching ornamental fish since the 1970s. In the early days, the fishermen caught their fish the traditional way, using nets, a practice that was gentle on the environment. But by the 1980s, fishermen had begun to adopt a more aggressive technique, using poisonous potassium cyanide, locally known as 'potass'.

This method involves spraying liquid cyanide on the coral reefs. The poison stuns the fish hiding inside the reef, and moments later, they float out from their hiding places. After this, the fishermen simply scoop the valuable ornamental fish into a net bag.

With the introduction of this technique, the commercial trade of ornamental fish began to flourish. The fishermen, delighted with their success, used cyanide without thinking about the effects it might be having on their health or the health of the ocean in which they were fishing. What mattered to them was that cyanide doubled their yields and doubled their income.

"All of us used cyanide because it was the most efficient tool to catch fish with," says Mohamad Halil, a fisherman from the village of Penyabangan. In the Buleleng district there are an estimated 500 fishermen that depend on the ornamental fish business.

But the growth of the ornamental fish business revealed a darker side to this profitable fishing technique. Cyanide was causing the coral reefs to bleach and eventually die. These reefs are where ornamental fish and

other marine plants and animals live, eat, and breed. With their habitat destroyed, the fish began to vanish.

The fishermen were forced to search the reefs of islands further afield, and in turn began to destroy more reefs, some of them very remote and untouched. Not only did this destruction affect the fishermen, who were traveling longer and spending more time and money to find their fish; local people, whose lives depended on the coral reefs, also felt the loss of the reef.

Years of exposure to cyanide has seriously damaged the coral reefs along the district's 144 kilometers of coastline. The once abundant and diverse fish community has dwindled to almost nothing. The remaining sections of reef are under threat from people bombing the coral reefs to catch fish for consumption. A few minutes is all it takes to kill a coral reef, but it takes decades or even centuries for the reef to recover.

The response so far

LEAD International and LEAD Indonesia are coordinating efforts to stop destructive fishing in Buleleng district. From April 2005 until April 2008, they ran a pilot project – "Conserving Coral Reefs through Community Ownership Enterprise" – to introduce a new approach of reef conservation to the district's ornamental fishermen. The project was supported by the UK government's Darwin Initiative, and run in collaboration with the Marine Aquarium Council (MAC), Reef Check Foundation Indonesia, and Lembaga Pilang, an environmental non-governmental organization in Buleleng, Bali.

The project targeted four areas for development:

1. building local capacity
2. improving governance
3. developing new policies
4. introducing economic incentives

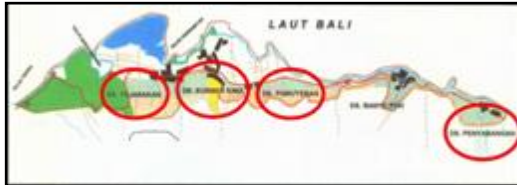
The project has selected fishermen from Penyabangan, Pejarakan and Sumberkima villages (see map), in the Gerokgak sub-district to participate in a series of training sessions.



Bali Province, Indonesia, with Buleleng district in the north.



Gerokgak sub-district



The project took place in four villages: Sumberkima, Pejarakan, Penyabangan and Pemuteran

The fishermen learned about the importance of coastal and marine conservation, practiced eco-friendly catching and handling of ornamental fish according to MAC's international standards, and field-tested Reef Check's methods of monitoring ornamental fish.

The project team assisted the fishermen to form certified enterprises that ensure ornamental fish are collected using the MAC standard. Fishermen in Penyabangan formed the *Sinar Baru* (New Light) Ornamental Fishermen Group, those in Pejarakan formed the *Laut Lestari* (Sustainable Sea) Group, and the fishermen in Sumberkima formed the *Segara Indah* Group.

The fishermen also established community-based coastal and marine management institutions: LPLP¹ in Penyabangan, LP3LP² in Pejarakan and BPWLP³ in Sumberkima. These institutions monitor the area to ensure the community is using the coastal and marine resources sustainably, and prohibit any activities that damage the reef, such as using cyanide.

The fishermen participated in public policy dialogue regarding the conservation of coastal and marine areas, negotiating with the government on a bill on fishing activities to manage coastal and marine areas at the village level. The local government of Penyabangan has already issued a village decree (*Perdes Pembentukan LPLP*) which legally authorizes the LPLP to monitor the management of coastal and marine area in the village. Pejarakan's community based institution also has legal basis through *Perdes*, while in Sumberkima *Perdes* is in the process of finalising its bills.

But conservation efforts alone are not enough. The fishermen, whose only source of income is collecting ornamental fish, earn less when they use nets. If they are to fish sustainably, they need to find a way of increasing their income.

The pilot project addressed this by introducing innovative measures to strengthen the fishermen's financial status. The project team identified the fishermen's dependency on money lenders and local loan sharks as a major impediment to their financial success. To free the fishermen from entrapment in high interest loans, the project team introduced them to micro-finance institutions and provided them with business training. The project also helped strengthen the community-based 'Wana Agung' cooperative, which is expected to support the fishermen in making their business environmentally sound and financially viable.

This project also experimented with a new, shorter supply chain for eco fish by cutting out the role of middlemen and putting the fishermen directly in touch with exporters so they can get a higher price for their eco

¹ LPLP - Lembaga Pengelola Laut dan Pesisir (Coastal Marine Institution)

² LP3LP - Lembaga Pendiri, Pengawas dan Pengelola Laut dan Pesisir (The Institution of the Founders, Monitoring, and Management of Coastal and Marine Area)

³ BPWLP - Badan Pengelola Wilayah Laut dan Pesisir (Costal and Marine Area Organization)

fish. Retailers in Jakarta who are committed to selling eco fish at their kiosks are also participating in the experiment. LEAD has provided promotional material to raise consumer awareness of sustainable ornamental fisheries.

How successful has it been?

Three years of integrated efforts have helped the fishermen gain a new appreciation of sustainable fishing. In particular, the fishermen of Penyabangan village have shown tremendous commitment, transforming from 'destroyers' of their coastal and marine habitats to 'guardians' of eco fish. Considering the clear profitability of using cyanide, this transformation has not been easy. With the assistance of the LPLP – a local community-based coastal and marine institution which has various functions including law enforcement -, they have been able to apply moral peer-pressure on wayward fishermen, into obeying the new ethics.

Fortunately their efforts have not been in vain. In October 2007, the fishermen of Penyabangan found fish species, such as the blue/gold stripe snapper or Ketambak Kucir as known locally in Bahasa Indonesia (*Symphoricthys spilurus*), barracuda or Barakuda (*Sphyraena barracuda*) and blue-girdled angelfish or Angel Piama (*Pomacanthus navarchus*), which had not been seen for many years in their local waters. Shortly afterwards, MAC conducted a survey to determine the abundance and diversity of ornamental fish in the Buleleng district. The waters near Penyabangan showed the best results. The findings are remarkable as that area in Penyabangan is not a 'no-take' zone where fishing or any other resource extraction would be prohibited.



The appearance of the blue-girdled angelfish or "piama" (the local name for *Pomacanthus navarchus*) in the waters near Penyabangan village is a sign that the marine habitat has started to recover from the use of potassium cyanide

Regular surveys are required, however, to better understand the recovery of the coral reefs in Buleleng including the seasonality of abundance and diversity.

Some fishermen have been inspired by the message of the project and the potential of eco fish. Abu Kasim, a young fisherman, has been experimenting with new, eco-friendly methods for catching ornamental fish. He uses palm leaves to attract herbivorous fish, and thin sticks

to trap fish and sea-worms that hide in the sand. Abu Kasim belongs to the Sinar Baru group from Penyabangan and has been sharing his successes with his fellow fishermen. This is a great example of how local ecological knowledge can contribute to sustainable natural resource management.

LEAD assisted the 'Wana Agung' cooperative to obtain a grant worth IDR 45 million (£2,500) from the state-owned Indonesia Power company. With this revolving fund, the cooperative is in a better position to support fishermen to continue eco-friendly fishing and improve their lifestyles and the well-being of their families. Through a savings and credit scheme from 'Wana Agung', members of Sinar Baru have bought themselves a motor bike, mobile phones, and have opened a snack shop to bring in additional income.

Lesson learned and recommendations

The pilot project achieved significant and positive results in coastal and marine conservation in a relatively short timeframe. This approach can be replicated in other ornamental fish areas throughout the Buleleng district and the Bali province, even on a national scale throughout the entire country of Indonesia.

There is much to learn from this project:

- The ornamental fish trade can be a sustainable enterprise so long as it is regulated at local, national and international levels. These regulations need to be harmonized.
- Cooperation between multiple stakeholders is necessary to maintain sustainable ornamental fisheries at any level.
- Collaboration between stakeholders at the local level is critical for harmonizing conservation goals with poverty alleviation, i.e. improving fishermen's income and their families' livelihood.
- Deeper seas – deeper than 10 meters - should remain unexploited for ornamental fish collection as deeper waters provide refuge for many aquarium reef species that have already less abundance due to over-exploitation.

- Eco fish – fish harvested and handled according to MAC standards - should sell for at least double the normal price and be paid for in cash. This will act as incentive to encourage fishermen to apply MAC standards in the harvesting and handling of ornamental fish. Other market players, including exporters, retailers and the hobbyists, must also commit to paying more for eco fish.
- Increased networking with exporters and retailers can help raise the price of eco fish.
 - There exists an opportunity to create a new supply chain for eco fish where fishermen work directly with exporters. But the obligations of both parties must be clarified for the relationship to run smoothly and to ensure fair payment for the fishermen.
 - Intensive promotion and public awareness campaigns could increase the popularity of eco fish among hobbyists.
- Financial support from cooperatives or other institutions can help fishermen avoid high interest loans.
- Financial institutions should adopt sustainable procurement practices by promoting credit schemes that comply with MAC policies. E.g. approval of purchasing compressors with appropriate health and safety features; discouraging the purchase of motor boats to harvest in deep sea. This part has not been trained to micro finance institution and it can be the next agenda.
- Fishermen need assistance in diversifying their sources of income outside of coastal and marine activities. This will help them adjust to any losses in income that result from limitations on the number of fish they can catch, or bad weather, such as during the January/February western monsoon period, when strong waves prevent them from fishing.
- Community-based coastal and marine resource management institutions and certified fishermen enterprise groups ensure the conservation of coastal and marine resources and provide a way of involving the community at a village level in managing their

marine resources. We recommend the formation of similar institutions in other coastal villages.

Contacts

Andrea Deri: andreaderi@btinternet.com

Darwina Widjajanti: darwina@lead.or.id

Ni Made Indrawati: pilang_2004@yahoo.co.id

Nusya Kuswanti: nusyokuswanti@yahoo.com

Acknowledgement

We are most grateful to Gayatri Reksodihardjo-Lilley, MAC Indonesia, Bali, Indonesia for peer-reviewing the case study.