

Les Village, Bali, Indonesia: When Conservation Becomes a Way of Life

Humayra Secelia Muswar and Arif Satria

Bogor Agricultural University; humayramuswar@gmail.com, arifsatria@gmail.com

Key Messages

- Les Village's marine environment was devastated by a traditional local use of cyanide for catching marine ornamental fish, leading to a decline in the local economy and fishers' livelihood.
- Local conservation began when eco-friendly approaches to catching fish were introduced to restore local marine resources.
- Local fishers easily adapted to these new community-based conservation approaches as they were in line with karma (Hindu-Bali's belief) and their way of life.

Community Introduction

Les Village is a fishing community located in the east of Buleleng Regency of Indonesia (Figure 1). Les Village consists of 25.57km of coastline comprised of rock, gravel, and sand beaches. Locals mostly depend on fishing for their livelihood, as the land is very dry and not fertile enough for agriculture. However, residents can find other work as construction workers, merchants, businessmen or in the non-formal employment sectors of farming and animal husbandry. Tourism is not a significant livelihood source for locals.



Figure 1: Map of Les Village (circled), Buleleng district (outlined). (Adapted from Google Map).

Les Village fisheries consists of the seafood sector and the ornamental sector. About 100 fishermen are active in the seafood sector, while fifty fishermen

are active in the ornamental fisheries sector (with the village being a significant contributor to the local marine ornamental fish trade). There are four main groups of fishermen in this village, one of which, specializing in the ornamental fish sector, were the actors who inadvertently caused damage to the local marine environment by using cyanide to catch fish.

Marine ornamental and seafood fishers have fundamental differences in the way they fish, such as fishing gear, fishing time, fishing pattern, fishing location, the post-capture treatment of fish, and their income scheme (Table 1, next page). One important characteristic of the marine ornamental fishers of Les Village is their closeness to God. One of the most fundamental belief system for Hindu-Bali is Karma, the idea of which is a balance of life: if you respect Mother Nature, nature will give you the best of what it has, and vice versa. The belief system also plays a role in characterizing the fishers, such as their knowledge, role of women, social structure, and fisher's social position¹.

Conservation and Livelihood Challenges

Initially, nets were used to catch ornamental fish in Les Village. However, an increasing demand in the 1980s prompted the fishers to look for ways to improve their catch. In 1985, the cyanide method of



Table 1: Differences between seafood fishing and ornamental fish fishing.

	Seafood Fisher	Ornamental Fish Fisher
Fishing methods and gear	<ul style="list-style-type: none"> • Bottom trawl • Dredge • Gillnetting • Harpooning • Midwater trawl • Pole/troll 	<ul style="list-style-type: none"> • Cyanide (old method) • barrier net • scoop net • bucket decompression
Fishing time	Night.	Early morning in clearer waters, making fish more visible.
Fishing Pattern	Fishers go out on a boat, and use their gear to catch the fish.	Fishers dive to coral reef areas (ornamental fish habitat), then line fish with a barrier net. Fish are herded and trapped in the net. Then, with a scoop net, fish are taken and put in a decompression bucket.
Location	Usually middle of the sea where pelagic fish congregate at night. Use motor boat.	Usually only a few kilometers from the beach. They reach the location by swimming or by small boat.
Post-capture Treatment	Captured fish are put into cool storage.	Release from decompression bucket to a plastic container. Oxygen added for the fish. Live fish is a must.
Income scheme	Fisher's income depends on catch, a set selling price, and market demand.	Income depends on catch and price determined by the middlemen.

fishing was introduced to help meet this demand^{2,3,4}. Fishers discovered that cyanide makes fish lethargic, thereby making them easier to catch^{2,3}. Fishers kept the cyanide in a bottle (Figure 2) and sprayed the cyanide in the ornamental fish habitats⁴.



Figure 2: Fisher sprays the cyanides directly to the reefs to make fish lethargic.

Beginning in the 1990s and into the 2000s, marine ornamental fish began to be a lucrative commercial commodity. Fishers concentrated on fulfilling their household needs and generating income, while exploiting Mother Nature to market demand⁵. The use of cyanide made fish easier to catch; however, environmental deterioration began to be felt by fishers in the 2000s. The use of cyanide negatively impacted the local marine environment as live coral coverage fell below 10%, ornamental fish population decreased to under 20% and population of all species decreased to an estimated 10% of their 1986 population⁶.

Coral reefs became bleached and only unique ornamental fish were left. Not being able to meet market demand, this development depleted fisher's income and devastated their social life. Lack of government concern created a sense of abandonment among marine ornamental fishers. Fishers said that the government is only punishing them because of their use of cyanide, but gave no instructions on how to change their ways or help the environment. Three reasons, in particular, relate to the root causes of the destructive fishing methods:

1. **Fisher's Knowledge.** Les Village fishers did not know of any other way to catch fish. Locals possessed limited information about fishing



methods, especially since they have no senior high school or higher education. This concern was most frequently raised by fishers. Using cyanide had become hereditary knowledge. Fishers faced a dilemma to survive and had to choose to keep catching fish with cyanide or not be able to eat at all. The use of cyanide eventually became unlawful and Les Village fishers were often detained for violation of the law of using cyanide in an attempt to catch fish. Still, the government offered no solution. Without a solution, fishers would continue to violate the law in order to support themselves and their families. The combination of lack of education and lack of state's guidance established a livelihood dilemma for fishers.

- 2. Market demand.** The ornamental fish trade is part of the global and international market, and whether wanted or not, local fishers are a part of a capitalist and globalized system. To maintain a livelihood, they must meet a demand that comes from first-world countries. The greater the market demand – in this case, via the middlemen (Figure 3) – the more fish that are caught. Thus, Les Village fishers, and the local environment, are exploited and marginalized in order to meet the demand of more powerful countries and peoples⁵.



Figure 3: The middlemen and the collected fish.

- 3. Lack of public and stakeholder awareness and involvement.** The marine ornamental fish trade is part of international trade, which involves stakeholders. This means that capitalist

industrialization brings constant pressures on individual firms (big or small) to keep down costs⁷. One of the main ways firms do this is by “externalizing” the costs of their impacts (including environmental, social, and health impacts) – in other words, finding a way to make someone else pay those costs. In fisheries, firms benefit from the environment – they profit from the fish – but they do not pay the full costs of the impact their fishing has on the local fisheries or the environment. In the case of Les Village, fishers were pressured to continue to use cyanide in order to meet market demand. Fishers were put in a difficult dilemma: wanting to conserve the environment when it began to degrade, but lacking the education to know the negative impacts of cyanide, and without support or knowledge about solutions. However, fishers continued to fish as they needed to support their livelihood. Others would profit from their environment and take whatever they conserved if they did not^{5,7}.

Community Initiative

This situation continued for nearly 20 years. In the early 2000s, when reefs were already damaged and degradation reverberated, government still did not come to help; however, the NGO Yayasan Bahtera Nusantara (YBN) came and provided much needed support to the fishers. Originally engaging the fishers under the guise of a buyer, the YBN provided fishers with training and new equipment for environmentally friendly fishing, thus moving from cyanide to using nets and barriers only. The approach that the NGO helped to implement was particularly successful since it acknowledged the fisher's belief system, thus helping Les Village fishers transform from the destroyer to the guardian.

This approach touched the village's fishers. The value of environmentally friendly fishing that was implemented brought back fishers consciousness about the balancing of life. They realized that using cyanide meant demolishing their own natural



resources, since they suffered from the effects of using cyanide: fish stocks diminished, coral reefs gone, and economically broke. Thus, Les Village's ornamental fishing community worked with the NGO to recover their marine livelihood.

The initiative was as follows:

1. Established a new marine ornamental fish group that committed to ecologically-friendly fishing practices (no cyanide), and community-based marine environmental management.
2. Creating artificial reefs to enhance Les Village's marine diversity.
3. Designing a community-based no-take zone.
4. Improving their beliefs that "Karma" does exist, and that "if we treat our nature good, nature will give us good fish".

YBN worked with the Marine Aquarium Council (MAC) around 2005 to legitimate the environmental-friendly transformation on marine ornamental fish trade in Les Village. Not only fishers, but also the middlemen and exporters were certified as eco-friendly actors. Although the certification expired in 2008, fishers continued to apply the sustainable eco-friendly fishing methods. Now, LINI (Indonesian Nature Foundations), an environmental NGO, works with Les Village fishers to continue this sustainable way.

Practical Outcomes

The success of this conservation movement by Les Village's communities of marine aquarium fishers was not independent. Several factors and important actors were involved:

Leadership – The NGO's leadership was the most powerful tool for motivating this community to move from using cyanide to using environmental friendly fishing practices.

Community Social Capital - The community has very high social capital and unity due to their inter-relatedness and common history (Figure 4). They, inadvertently, destroyed their marine environment together, suffered together, and are recovering their livelihood together. Togetherness and trust is the biggest part of this community's social capital.

Fisher's Belief System – Their beliefs as Hindu-Bali teach them to put trust on "karma".

Support Networks - The village has an extensive support network with NGOs, researchers (from universities) and trade chain actors that buy and sell their eco-fish.

Timing - The conservation was done just in time. The NGO came in at a critical ecological time, when fishers were getting more confused and frustrated from suffering from their sinking livelihood and questioning what they were doing to their environment.



Figure 4: Fisher's family starts their day.

References

1. Satria, Arif. 2009. *Ekologi Politik Nelayan*. Yogyakarta: LKis.
2. Muswar, Humayra and Satria, Arif. 2011. *Dampak Pelabelan Ramah Lingkungan (Ecolabelling) Perikanan Bagi Nelayan Ikan Hias*. ISSN: 1978-4333, Vol. 05, No. 03 (2012).
3. Pasaribu-Guzina, Stella. 2013. *Assessment of an Environmentally-Friendly Method Of*



- Ornamental Fishing Associated with Revenues of Fishers In Tejakula Sub-District, Buleleng Region, Bali, Indonesia. Thesis. Royal Roads University.
4. Sentosa, Putu. 2004. Pengusahaan Ikan Hias Laut Secara Berkelanjutan: Studi Kasus Cara Tangkap Ikan Hias Laut dari Sianida ke Non-Sianida di Kecamatan Tejakula, Kabupaten, Bali. Thesis: Universitas Indonesia.
 5. Bryant, Raymond and Bailey, Sinead. 2005. Third World Political Ecology. New York: Routledge.
 6. Frey, James B. 2012. A community-based approach to sustainable ornamental fishing on coral reefs, Bali, Indonesia. Thesis. University of Manitoba.
 7. Mansfield, Becky. 2011. "Modern" industrial fisheries and the crisis of overfishing. Global Political Ecology. New York: Routledge.

Acknowledgements



Community Conservation
Research Network



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada

Correspondence:

Community Conservation Research Network

Saint Mary's University
Halifax, Nova Scotia
B3H 3C3 Canada
Phone: 902.420.5003
E-mail: ccrn@smu.ca

