



# CORAL TRIANGLE INITIATIVE

ON CORAL REEFS, FISHERIES AND FOOD SECURITY

A publication supporting the **Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)**

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## MOVING TOWARDS SUSTAINABLE MANAGEMENT OF LIVE REEF FISH TRADE IN SABAH, MALAYSIA



**April 2011**

This publication was prepared by Kenneth Kassem and Irwin Wong (WWF-Malaysia) with partial funding from the United States Agency for International Development's Coral Triangle Support Partnership (CTSP).





# Moving Towards Sustainable Management of Live Reef Fish Trade in Sabah, Malaysia

April 2011

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**Prepared by:** Kenneth Kassem and Irwin Wong (WWF-Malaysia) with partial funding from the United States Agency for International Development's Coral Triangle Support Partnership (CTSP).

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Front cover photo: Humphead wrasse in a Singamata Aquarium. © WWF-Malaysia/Eric Madeja

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This report would not have been possible without the support of many people. We would like to convey our heartiest gratitude and appreciation to:

- Traders within the live reef fish trade industry in order to obtain an understanding on the status of the industry
- Members of *Persatuan Pemilik Kapal Nelayan Kudat* – PPKNK (Kudat Fishing Boat Owners Association) for connecting the dots with traders
- Local and State government agencies such as Department of Fisheries Sabah for their support

Finally, this report would not have been possible without the support of WWF-Malaysia Sulu-Sulawesi Marine Ecoregion (SSME) Programme's team members.

## EXECUTIVE SUMMARY

The live reef fish trade is a major issue for coral reef conservation in the Asia Pacific region. The trade targets high value predatory coral reef fish to be sold live in restaurants primarily in East and Southeast Asia. Several species of groupers and wrasse dominate the trade. The live reef fish trade was introduced to Sabah in the early 1980s. Ever since its introduction, a large number of coastal communities have gained short term financial benefits from the trade through the sale of fish, keeping of grow out cages, sale of fish food, and as contracted fishers. However, in the pursuit for the highly prized fish, destructive fishing methods have been introduced. Uncontrolled and prolonged use of these destructive fishing methods has resulted in extensive damage to the reefs which support the prized species which are traded.

The demand for fish of the right size has led to concentrated size harvesting being done beyond the capacity of the fish populations to replenish themselves. This market driven demand has indirectly led to the practice of “grow out” aquaculture whereby undersized juveniles are captured from the wild to be grown-out in land-based or sea cages until they reach the high priced size.

Stakeholders involved in the live reef fish trade are coastal fishermen, cage operators, and local exporters. Coastal fishermen were introduced to the destructive fishing method which enables them to target the desired species desired by the market in Hong Kong and were benefiting from the good monetary incentives upon successful capture. While the fish stocks declined as consequences of the destructive fishing method, the fishermen are forced into some sort of indebted servitude as they struggle to repay debts for their boats and basic necessities.

Cage operators are the middlemen that set up cages within or in the vicinity of a group of coastal fishing villages and act as a trading post for these coastal fishermen. These cage operations are usually funded by local or foreign Chinese businessman and usually operated by locals in order to breach the language barrier. Under-size and juvenile fish are kept in the cages until they reach a marketable size. Cage operators normally pay the coastal fishermen in cash or goods form. Cage operators often sell the fish holdings directly to larger live fish carrier boats which frequent the waters of Sabah from Hong Kong. The other route is to send the fish by air or road to a regional airport hub for direct air export.

Exporters with packing facilities buys fish from cage operators and pack the live fish and export the fish to the consuming country. Most exporters are located in cities or town which are accessible by air. Local exporters will select the best fish which fetches the best price in the consuming market and prepare those for exports. Fish rejected from the selection process will be sold to local restaurants for the consumption of domestic consumers and tourists alike. The boom in live reef fish export has also led to a boom in the capacity of seafood restaurants in cities and towns.

Over the past 3 years, WWF Malaysia has been engaging the traders within the live reef fish trade industry in order to obtain an understanding on the status of the industry. A series of dinner, formal and informal discussions were held in 3 major cities and town in Sabah (Kota Kinabalu, Tawau, Kudat). As a result from the meeting, the traders mapped out their own problem tree for the live reef fish trade industry with inputs from Kudat, Tawau and Semporna.

Subsequently, a series of discussions for a localised version of the International Standard for the Trade in Live Reef Food Fish were held in the major towns which are engaged in the trade of live reef fish. A number of issues were discussed and best management practices are proposed for considerations resulting in the Workshop on "Moving Towards Sustainable Management of Live Reef Fish Trade in Sabah" held in 2011 with participation from private sector representatives from the major cities and towns engaged in live reef fish trade, government departments and agencies, Universiti Malaysia Sabah, representatives from Philippines and staff from WWF-Malaysia. The

workshop discussed the current issues in the trade with suggested possible solutions, management model in the trade as well as possible public-private partnership opportunities.

In the nutshell, traders strongly believed that strong commitment from government is needed to implement a sustainable live reef fish management plan. Moving forward from the workshop, traders have suggested for WWF-Malaysia to facilitate a dialogue with Department of Fisheries Sabah on the management plan.

## 1.0 INTRODUCTION

### Introduction to the trade

The live reef fish trade is a major issue for coral reef conservation in the Asia Pacific region. The trade targets high value predatory coral reef fish to be sold live in restaurants primarily in East and Southeast Asia. Several species of groupers and wrasse dominate the trade. These are top predators and important indicators of reef health. On many reefs in the region populations of these fish have been reduced to remnants. They are vulnerable to over-exploitation because they tend to be slow-growing, late-maturing, and aggregate to spawn. The fishing techniques for these fish have become destructive as the fish become increasingly scarce. Fishing with poison, to stun the fish, destroys coral reefs and results in the death of surrounding corals and other organisms. The trade has started to collect juvenile fish to be kept in captivity until they reach a marketable size. This form of culture often employs trash-fish as feed. The trash-fish is produced by destructive trawling and, in worst cases, by fish-bombing.

The live reef fish trade was introduced to Sabah in the early 1980s. Ever since its introduction, a large number of coastal communities have gained short term financial benefits from the trade through the sale of fish, keeping of grow out cages, sale of fish food, and as contracted fishers.

However, in the pursuit for the highly prized fish, destructive fishing methods have been introduced. Uncontrolled and prolonged use of these destructive fishing methods has resulted in extensive damage to the reefs which support the prized species which are traded.

The demand for fish of the right size has led to concentrated size harvesting being done beyond the capacity of the fish populations to replenish themselves. The highest priced are the smaller to mid-sized individuals that cater for small families in the consuming market. This is followed by “table sized” fish which is extensively used for traditional Chinese wedding banquets where a typical table seats 10 guests.

This market driven demand has indirectly led to the practice of “grow out” aquaculture whereby undersized juveniles are captured from the wild to be grown-out in land-based or sea cages until they reach the high priced size.

### Stakeholders

#### Coastal fishermen

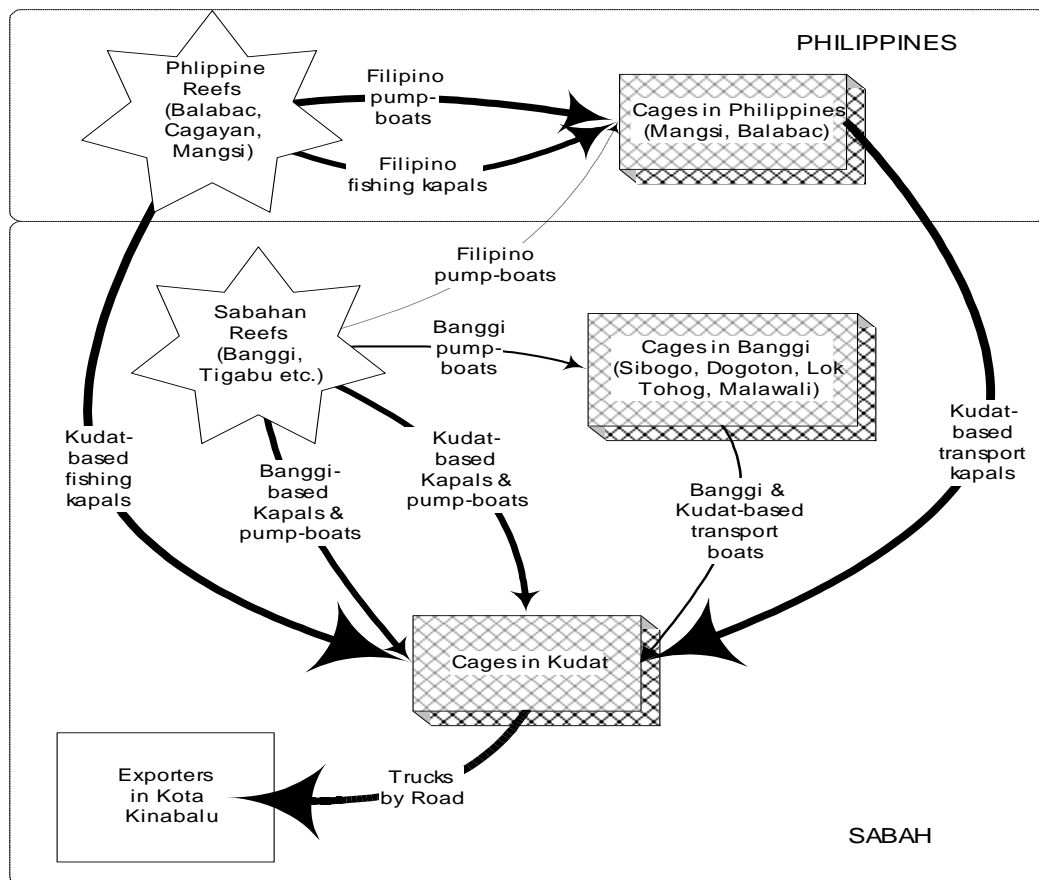
Coastal fishermen along the coast of Sabah were introduced to the trade by Hong Kong traders in the early part of 1980s. The Hong Kong traders introduced the destructive fishing method which enables them to target the desired species desired by the market in Hong Kong. Local coastal fishermen are offered good monetary incentives for successful capture of targeted species of the right size. As such, the local coastal fishermen suddenly experience a considerable increase in their income.

Coastal fishermen are not told of the consequences of the destructive fishing method which damages the reef they rely upon. Fishermen are also not warned of the health hazard related to compressed-air diving practices in order to catch the targeted species. With the new found wealth, coastal fishermen improve their standards of living. However, their relentless harvesting of fish stocks eventually lead to the decline of fish stocks and the damage of their reefs.

With depleting fish stocks and the desire to sustain their standard of living, coastal fishermen often resort to borrowing advances from middle-men, usually in the form of fuel to power their boats and basic necessities to feed their family. This will eventually led to some sort of indebted servitude as the coastal fishermen struggle to repay the debts that they build to go further and deeper to find



more fish. The debt will further snowball as coastal fishermen continue to seek advances to feed their family while the fish stocks are not able to naturally replenish.



**Figure 1: The supply chains of the live reef fish trade in Sabah, Malaysia (Muldoon 2007)**

### Cage operators

Middlemen set up cages within or in the vicinity of a group of coastal fishing villages and act as a trading post for these coastal fishermen. Cage operations are usually funded by local or foreign Chinese businessman and usually operated by locals in order to breach the language barrier. Under-size and juvenile fish are kept in the cages until they reach a marketable size. Fish caught at a desirable fish spend less time in the cages as they wait for export or transport to another trading post.

Cage operators normally pay the coastal fishermen in cash or goods form. Because some of the coastal fishing villages are located in far and remote places, the availability of a trading post is often welcomed as the trading post provides them with the basic daily necessities.

Cage operators will operate a transport vessel to re-supply the trading post. The frequency of the transport vessel will often depend on the stock of the cages, which again depends on how fast the coastal fishermen catch their fish. It is often a love-hate relationship as cage operators will indirectly twist the arms of the fishermen in order to obtain sufficient amounts of the right sized fish so that certain necessity goods are re-supplied quickly.

As fish stocks and catches dwindle, cage operators began buying undersized fish for grow-out operations. When the situation becomes no longer viable to operate the trading post, the Chinese businessman will tow the cage to a new location with more fish stocks. More wealthy coastal

fishermen are usually forced to fill in the position of collector which had been left behind by the mobile cage operators.

Cage operators often sell the fish holdings directly to larger live fish carrier boats which frequent the waters of Sabah from Hong Kong. The other route is to send the fish by air or road to a regional airport hub for direct air export.

### **Local exporters**

Exporters with packing facilities buy fish from cage operators and pack the live fish and export the fish to the consuming country. Most exporters are located in cities or town which are accessible by air. The growth in the trade can always be closely linked to the introduction of air routes originating from the consuming country.

Local exporters will select the best fish which fetches the best price in the consuming market and prepare those for exports. Fish rejected from the selection process will be sold to local restaurants for the consumption of domestic consumers and tourists alike. The boom in live reef fish export has also led to a boom in the capacity of seafood restaurants in cities and towns.

Air freight export involves a process of cooling the live fish, packing them in oxygen-enhanced water-filled plastic bags packed into polystyrene boxes. Due to the stresses of sea and land transport, live reef fish are often injected with antibiotics in order to ensure the fish survives the final jet leg to the consuming market. Dead fish only fetches 10% of its live fish price. As such, local exporters are exposed to extremely high risks and will take all the necessary steps to ensure the fish survives.

Antibiotics used on the live reef fish are not locally registered nor is it the suitable type for live reef fish. In the early stages of the trade (pre 1985), death rates of fish in transit to Hong Kong were generally considered high. Local traders were then introduced to the administering (via needle injection) of antibiotics from former government officers and have been in practice ever since.



**Figure 2: Polystyrene boxes with live reef fish being loaded at Tawau airport.**

During the packing process, live fish are given anaesthetics in order to prepare them for the 10 hour journey. The anaesthetics administered are also not locally registered but are available at all aquarium outlets.

The numbers of local exporters are few and many of them have gone out of business due to the Asian economic crisis in 1998 as well as the SARS outbreak in 2002. These external factors have also led to a number of exporters seeking financial assistance from their overseas clients. This has resulted in a reverse-takeover of business operations from the overseas clients.

A high percentage of local exporters have some form of capital control from overseas clients and this has led to the loss of livelihood of the local exporters. Upon the takeover by the overseas clients, the business model shifts as the overseas clients have no interest whatsoever in safeguarding the local fish stocks, the habitat, nor the local fishermen's livelihood.

This setup often filters directly to the cage operators and oppression of the coastal fishermen becomes inevitable.

## 2.0 WWF-MALAYSIA'S EFFORT

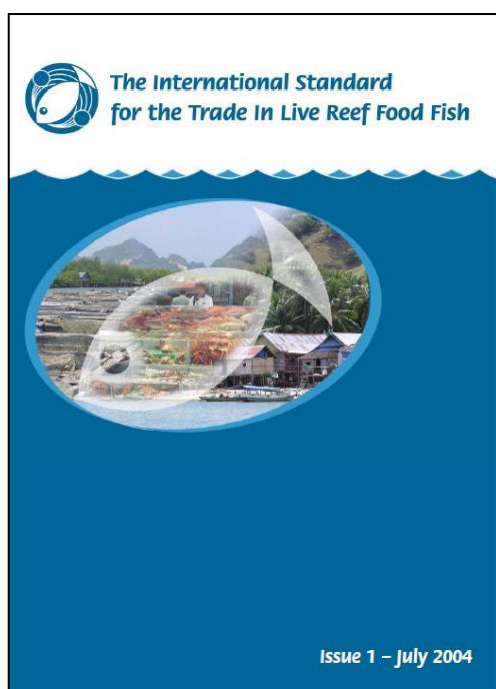
Over the past 3 years, WWF Malaysia has been engaging the traders within the live reef fish trade industry in order to obtain an understanding on the status of the industry. A series of dinner, formal and informal discussions were held in 3 major cities and town in Sabah (Kota Kinabalu, Tawau, Kudat).

A total of 5 meetings were held in Kota Kinabalu were carried out between November 2009 to February 2011. In Kudat, 4 meetings were carried out between January 2010 and January 2011. A total of 5 meetings were held in Semporna & Tawau between February 2010 and March 2011.

During one of the meeting in Kota Kinabalu, the traders mapped out their own problem tree for the live reef fish trade industry. The very same problem tree was presented to the traders in Kudat, Tawau and Semporna. Traders, cage operators and exporters from the three areas have added new dimensions to the problem tree.

Although differing in views, traders in all the locations generally agreed that the fish stocks in Sabah waters have dwindled resulting from overfishing in the past decade. (Figure 3)

## 2.1 BEST MANAGEMENT & PRACTICES



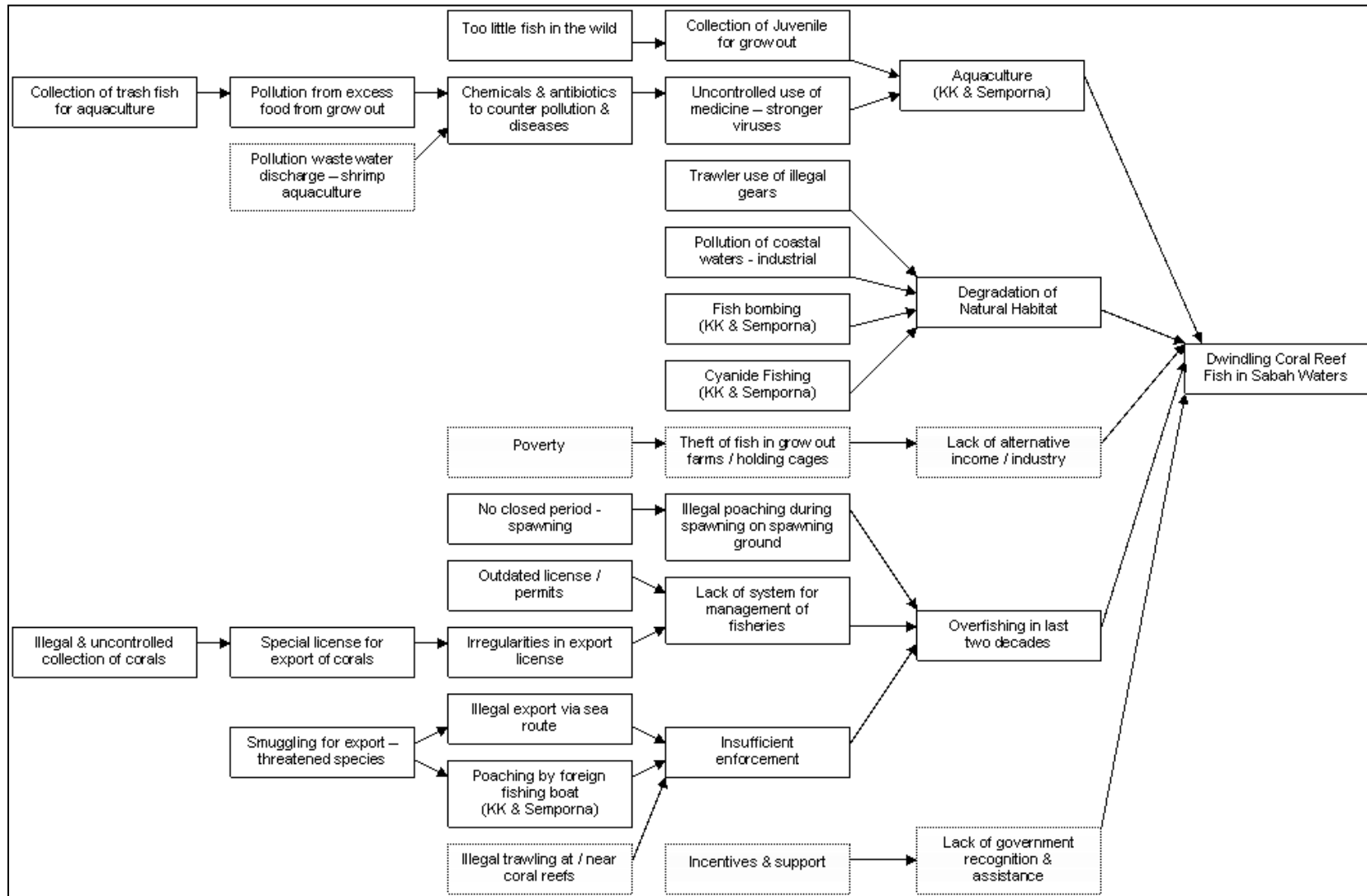
A copy of the International Standard for the Trade in Live Reef Food Fish was circulated to the traders at formal or informal discussions. The standard was printed in multiple languages to suit the needs of the traders.

Discussions about the International Standard were made during informal engagements. A number of issues were raised by the traders with regard to the standard which they deem not appropriate for the application in the Malaysia context.

A group of traders felt that a localised version of the standard should be drawn up to suit the local conditions not previously covered in the International version.

Therefore, a series of discussions were held in the major towns which are engaged in the trade of live reef fish and a number of issues were discussed and best management practices are proposed for the consideration of the other traders.

**Figure 3: Problem tree as developed by the traders**



### 3.0 WORKSHOP ON “MOVING TOWARDS SUSTAINABLE MANAGEMENT OF LIVE REEF FISH TRADE IN SABAH”

The workshop held on 25th April 2011, in Boutec International Hotel, Kota Kinabalu, Sabah had participation from private sector representatives from the major cities and towns engaged in live reef fish trade, government departments and agencies, Universiti Malaysia Sabah, representatives from Philippines and staff from WWF-Malaysia.



Figure 4: Group photo of participant during the workshop

### 3.1 AGENDA AND OBJECTIVES

The workshop had the following objectives:

1. To understand a sustainable management concept of Live Reef Fish Trade.
2. To present Public-Private Partnership opportunity case studies.
3. To assess the currently available management models of Live Reef Fish Trade.
4. To speculate on the future of Live Reef Fish Trade without any intervention.

The following is the agenda of the workshop held on 25th April 2011

Time	Title	Speaker
0900-0910	Welcome note from the organising team	Robecca Jumin
0910-0930	Presentation: Scientific background of the species involved in the Sabah Live Reef Fish Trade	Dr. Mabel Manjaji
0930-0950	Presentation: Government policies on the management of Live Reef Fish Trade in Sabah	Mr. Lawrence Kissol Jabatan Perikanan Sabah
0950-1020	Question and Answer Session	
1020-1040	Coffee Break & Group Photo session	
1040-1200	Group discussion I a. What are the current issues faced by the industry?	Facilitator

	<ul style="list-style-type: none"> <li>b. How to improve and strengthen the industry?</li> <li>c. What are traders' aspirations?</li> </ul>	
1200-1300	Lunch	
1300-1320	Presentation: Management model in Live Reef Fish Trade	Irwin Wong WWF Malaysia
1320-1340	Presentation: Impact on local coastal community resulting from Live Reef Fish Trade	Irwin Wong WWF Malaysia
1340-1400	Presentation: Public – Private Partnership towards the sustainable management of Live Reef Fish Trade – Taytay, Palawan, Philippines case study	Palawan Sustainable Development Council
1400-1410	Question and Answer Session	
1410-1530	Group Discussion 2 <ul style="list-style-type: none"> <li>a. After witnessing management models and impact on coastal communities, what are the key criteria to be considered for management models?</li> <li>b. Discuss current LRFT model in Sabah. What is currently working and what is not?</li> <li>c. How to improve on current model? What are the next steps to achieve sustainability?</li> </ul>	Facilitator
1530	Coffee Break & End of workshop	

## 3.2 DISCUSSION OUTPUTS

### 3.2.1 Group Discussion One

#### a. What are the current issues faced by the industry?

Issues raised by the traders include the issue of rezoning. Kudat traders are particularly vocal with regard to the issue. According to them, previously fishing licenses from Kudat (KT) are allowed to fish at places include Pulau Mantanani. Now they are not allowed as the area is under the jurisdiction of the West Coast. They are afraid the establishment of Tun Mustapa Park will further reduce their fishing area.

From the aquaculture stand point, the lack of suitable land is an issue plaguing the growth of the industry. Although it is reported that there are lands available, in reality the land is not available or not suitable without even the bare necessities and infrastructures. There is also an apparent shortage of workers for the industry.

Apart from that, the aquaculture industry also suffers the shortage of fish fingerlings to restock their cages. The lack of consistent and quality fish hatcheries often hampers the aquaculture effort. Feed is also a problem as cage operators have to compete with feed mills in purchase of trash fish as feed

source. There are months where trash fish is not available in the market and the usage of pellets is not desired as it affects the end product.

Encroachment of purse seiner into reef areas also hampers the industry as small fish which is the food source for the species traded in live reef fish trade are overly exploited. Traders have witnessed the reduction in growth rate of species traded in the industry.

Traders also emphasise the existence of “shadow traders” or proxy of overseas clients who exploit the rent seekers within the industry. These shadow traders operates in the background and undetected by the government authorities.

### **b. How to improve and strengthen the industry?**

Traders suggest the strengthening of the government and its agencies in order to combat the exploitation by irresponsible groups. Traders also suggested that the strengthening of enforcement an entry and exit points by Department of Fisheries, Royal Customs Department and Malaysia Maritime Enforcement Agency must be further enhanced.

Representatives from Philippines suggest that an establishment of a trade body will assist the regulation of the industry.

Kudat traders suggests that frequent dialogue session between the Department of Fisheries Sabah and the traders must be carried out as currently, traders only engage with the government department once or twice a year for license renewal and data collection.

Traders suggests restructuring of the fuel subsidy issue as most of the fuel allocated for fishing effort are not actually going into fishing. This issue has been raised by traders during the APEC Fisheries Working Group in Bali in March 2011.

### **c. What are traders’ aspirations?**

Kudat traders under the umbrella of PPKNK have suggested the formation of a group mainly for traders dealing in live reef fish and grouper aquaculture.

However, the same sentiment is not shared by traders in Kota Kinabalu as they are unsure of the government’s mandate on the formation of such a group. Furthermore there are existing groups formed before and many fishing related issues remained unsolved. As such they questioned the effectiveness of forming another group.

During the Department of Fisheries Sabah presentation, Mr Lawrence Kissol has implied that the government supports the formation of a group; however the level of authority or mandate available to the group was not discussed.

## **3.2.2 Group Discussion Two**

### **a. After witnessing management models and impact on coastal communities, what are the key criteria to be considered for management models?**

Grow-out aquaculture which is widely practiced in Malaysia is a critical issue. Unlike other management models in place, coastal fishermen in Malaysia often take monetary advances. The advance will be net off upon their return from the fishing trip. This practice inevitably creates a grow-out aquaculture industry because in order to make up for the losses or shortfall in fish value, bosses are obliged to take young juvenile fish and grow them out to market size.



Closed season for certain species can be considered, but for all species is strongly opposed. Fishermen, cage operators and exporters quoted an example of lobster closed season enforced in Sabah. Traders agree that it is fortunate that they still can export fish to survive in those months. If the proposed date of close season coincides with the lobster closed season, it will greatly affect their livelihood.

**b. Discuss current LRFT model in Sabah. What is currently working and what is not?**

The practice of catch and release will not work here in Malaysia. Although the cage operators do not buy the young juveniles, coastal fishermen will build their own pen underneath their house and grow-out the juvenile to marketable size.

KK traders felt closed season are not entirely good as fishing effort still continues with the catch being stored in cages while awaiting the end of closed season. Unlike the model in Australia whereby no fish cages were allowed in the entire marine park which makes closed season a success.

**c. How to improve on current model? What are the next steps to achieve sustainability?**

Traders agree that there must be a strong commitment from the government in order to implement a sustainable live reef fish management plan. The government and the traders must agree to sit down and discuss on the new management model for live reef fish trade as the current model is out-dated. Traders would like to discuss the outcome of today's workshop with their counterpart and a dialogue between the traders and Department of Fisheries Sabah is proposed. Traders suggest WWF Malaysia to assist and facilitate this dialogue session. It is agreed that 3 traders (one each from Kudat, Tawau and Kota Kinabalu) to attend the dialogue with the Department of Fisheries Sabah.

## APPENDIX I: LIST OF WORKSHOP PARTICIPANTS

	Name of Participants	Organisation	Location
1	Dr. Mabel Manjaji	UMS – BMRI	UMS
2	Mr. Lawrence Kissol	Department of Fisheries Sabah	DOF HQ
3	Mr. Bonnyface Jintoni	Department of Fisheries Sabah	DOF HQ
4	Kenneth Kassem	WWF Malaysia	Kota Kinabalu
5	Robecca Jumin	WWF Malaysia	Kota Kinabalu
6	Iswanshah Mustapa	WWF Malaysia	Kota Kinabalu
7	Irwin Wong	WWF Malaysia	Kota Kinabalu
8	Betty Gaisong	WWF Malaysia	Kota Kinabalu
9	Angela Lim	WWF Malaysia	Kota Kinabalu
10	Ernest Chiam	WWF Malaysia	Kota Kinabalu
11	Choong Lip Woon	Ocean Seafood Trading	Kota Kinabalu
12	Danny Yong		Kota Kinabalu
13	Jacky Ngai	Syarikat Pantai Barat Laut S/B	Kota Kinabalu
14	Alvin Wong	PKM Aquaculture Sdn Bhd	Kota Kinabalu
15	Kong Yu Fook	Tong Huat Trading	Kudat
16	Steven Tingan	Sri Bankawan Akuakultur	Kudat
17	Chong Nyen Hon	Ocean City Enterprise	Kudat
18	Chung See Yin	Richocean Seafood Enterprise	Kudat
19	Johnny Wong	PPKNK	Kudat
20	Lim Sau Liong	Million Ocean Fisheries Sdn Bhd	Tawau
21	Mohd Ali Wong	Perniagaan Wawasan	Semporna
22	Watie Ambu	Innoprise Corporation Sdn Bhd	Semporna
23	Maureen Tinun	Innoprise Corporation Sdn Bhd	Semporna
24	Ooi Kam Wah	UMS Student	Kota Kinabalu
25	Casper Ng	UMS Student	Kota Kinabalu

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