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TITLE :
CURRENT INFORMATION ON INLAND CAPTURE FISHERY IN SABAH, MALAYSIA

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1.0 INTRODUCTION

1.1 PROFILE OF SABAH

Sabah is situated on the northern tip of the island of Borneo (Figure 1). It is the second largest state in Malaysia covering an area 73,711 square km with a coastline of 1,600 km. The average temperature and rainfall is 23 C to 32 C and 2,400 mm per annum respectively.

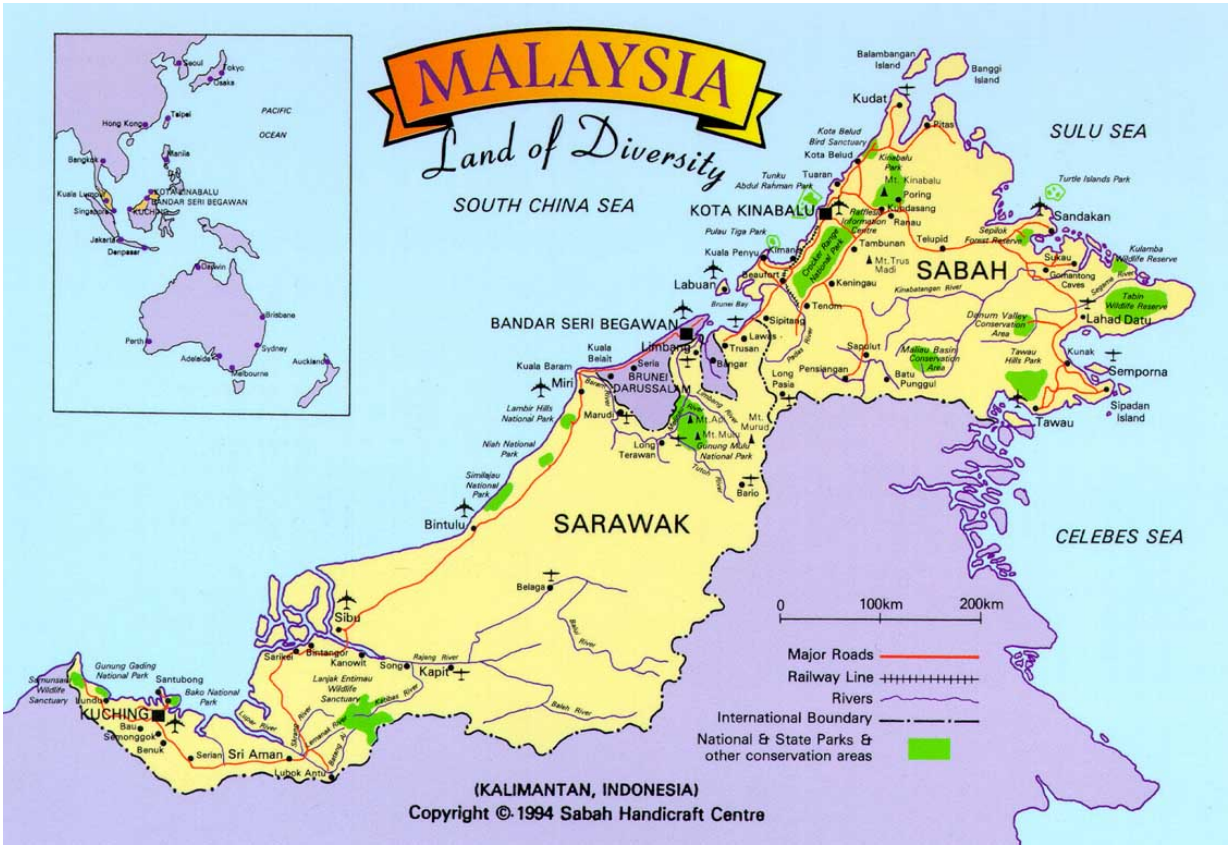

Figure 1. Map of Sabah

The population of Sabah is approximately 2.6 million. It is basically an agricultural state. Over 70% of population live in rural area and the majority are dependent directly or indirectly on agriculture, livestock and fisheries for their livelihood and which contribute very significantly towards the export earnings of the state. Sabah is a net exporter of marine fish products.

Administratively Sabah is divided into 24 districts where Department of Fisheries Sabah have set up offices in all these districts. Collection of fisheries statistics are done by the district fisheries offices.

1.2 SABAH FISHERIES SECTOR

The fisheries sector of Sabah is divided into four sub-sectors :

- Marine capture fisheries
- Marine aquaculture
- Inland capture fisheries
- Freshwater aquaculture

The economic contribution of these sub-sectors to the state is shown in Table 2. Of the four sub-sectors, the marine capture fisheries gives the highest economic contribution and the inland capture fisheries , the least of the four.

1.2.1 INLAND CAPTURE FISHERIES

The nature of the inland capture fisheries of Sabah are mainly from the rivers and there are very little from the lakes, reservoirs and the flood plains. The major rivers in Sabah are shown in Table 1. Kinabatangan river is the biggest and the longest river in Sabah with a length of more than 560 km.

No.	Type of inland water bodies	Drain into	Length or Size (hectares)
1	Kinabatangan river	Sulu Sea	560 km
2	Padas river	South China Sea	420 km
3	Labuk river	Sulu Sea	Not available
4	Segama river	Sulu Sea	Not available
5	Kalabakan river	Celebes Sea	Not available
6	Paitan river	Sulu Sea	Not available
7	Sugut river	Sulu Sea	Not available
8	Ox-bow lake, Kinabatangan	Kinabatangan river	Not available

Table 1. Major rivers of Sabah contributing to the landing of inland capture fishery

2.0 CONTRIBUTION ON INLAND CAPTURE FISHERY TO ECONOMY

According to the 2001 Sabah Annual Fisheries Statistic as shown in Table 2, the inland capture fishery only contributed less than 1% of the Sabah gross fishery production. However, it still plays an important role in the socio-economic conditions of the rural people through generation of employment, income and a higher source of protein. The demand for freshwater fish has always been high in the rural areas.

Fisheries sector	Production (tonne)	% production	Wholesale value (RM million)	% value
Marine capture fisheries	178,045.53	91.97	651.488	74.35
Marine aquaculture	6,422.53	3.32	176.063	20.09
Seaweed culture	4,715.71	2.44	7.545	0.86
Freshwater aquaculture	4,325.18	2.23	56.227	6.42
Inland capture fisheries	*77.09*	*0.04*	*0.848*	*0.10*
Total	**193,586.04**		**892.171**	

Table 2. Gross Fish Production, Sabah 2001
(Source: Sabah Annual Fisheries Statistics 2001)

3.0 STATUS OF INLAND CAPTURE FISHERIES

The historical landings trend by weight, value and major species from 1990 to 2002 are shown in Table 3 and 4. According to Inger & Chin(2002), Sabah has 168 species of freshwater fish species. The major freshwater fish species of commercial value caught and sold in the markets are giant freshwater prawn (*Macrobrachium rosenbergii*), ikan patin (Pangasius spp.), lampam sungai (*Puntius spp.),* ikan tapah (*Wallago maculatus*), ikan baung (Mystus sp.), ikan lais (*Kryptopterus sp.,)* ikan kokok (Leiocassis spp.,) marble gobby (Oxyeleotris marmorata), Snakehead (*Ophicephalus spp*.), tilapia (*Tilapia spp*.), catfish (*Clarias spp*.) and ikan pelian (*Tor duoronensis*) as shown in the Table 3 and 4.

However, it is sad to say that the landing from the inland capture fishery are fast declining mainly due to habitat destruction from logging activities, pollutions from extensive agricultural plantations, overfishing and illegal fishing (poison and electrical fishing).

Year	Landing (tonne)	Value(RM millions)	Major species caught
1990	1,200	7.200	*Macrobrachium rosenbergii, Pangasius spp., Puntius spp., Wallago maculatus, Mystus spp., Kryptopterus spp., Leiocassis spp., Oxyeleotris marmorata, Ophicephalus, Tilapia spp., Clarias spp., and Tor duoronensis*
1991	1,400	8.400	-ditto-
1992	1,500	9.000	-ditto-
1993	1,600	9.600	-ditto-
1994	1,700	10.200	-ditto-
1995	1,700	10.200	-ditto-
1996	1,700	10.200	-ditto-
1997	1,700	10.200	-ditto-
1998	1,700	10.200	-ditto-
1999	89.58	0.985	-ditto-
2000	51.00	0.572	-ditto-
2001	77.09	0.847	-ditto-
2002	74.45	0.818	-ditto-

Table 3. The quantity and major freshwater fish species of landed in Sabah from 1990-2002

Figure on estimated number of fishing boats from 1990 to 2003 is not available. However it is estimated there were about more than one hundred units of fishing boats in the inland waters of Sabah; mostly small wooden boat with and without outboard engines. These data were not easily available because all the inland water fishers were not licensed. Before the year 2003, the state had no fisheries law to compel the fishers to have license. The state has only recently in May, 2003, enacted a Sabah Inland Fisheries and Aquaculture Enactment 2003 which provides for the sustainable development and management of inland fisheries and aquaculture in the state of Sabah.

The most commonly type of fishing gears used and the species caught are shown in Table 4. Besides using the gill net, trammel net, portable trap and hook & line; the use of

destructive methods of fishing are also quite common in rural areas such using electrical and poison fishing (rotenone).

No.	Local Name	Scientific/English name	Type of gear
1	Giant freshwater prawn	*Macobrachium rosenbergii*	Portable trap/cast net
2	Patin	*Pangasius spp.*	Hook & line/gill net/trammel net
3	Tapah	*Wallago maculatus*	Gill net/hook &line
4	Pelian	*Tor douronensis*	Gill net/Trammel net
5	Lampam Sungai	*Puntius sp.*	Gill net / Trammel net
6	Baung	*Mystus planiceps*	Gill net/ Trammel net
7	Haruan	*Ophicephalus spp.*	Gill net/trap/hook & line
8	Keli	*Clarias spp.*	Bubu
9	Lais	*Kryptopterus parvanalis*	Gill net/ Trammel net

Table 4. Major freshwater fish species and gears used in Sabah

Figures 2 to 8, show some of the photographs of freshwater fish species, boat and type of fishing gears/methods used in the state inland capture fisheries.

Figure 2. Portable trap for catching fish in Kinabatangan River, Sabah

Figure 3. Portable trap for catching giant freshwater prawn in Kinabatangan river, Sabah

Figure 4. Catching fish using Hook & Line in Kinabatangan River, Sabah

Figure 5. Fishers setting the portable traps using wooden boat powered with outboard engine in Kinabatangan River, Sabah

Figure 6. Selling freshwater fish *Pangasius sp*. at the wet market in Bukit Garam, Kinabatangan district, Sabah

Figure 7. *Putius sp*. caught from Labuk Rriver in Sabah

Figure 8. Harvesting fish (*Tor douronensis*) using gill net from Tuaran river, Sabah (West Coast of Sabah) managed by the villagers under Community- Based Resource Management

The catches vary throughout the year. During the rainy season, the major species caught are udang galah (*Macrobrachium rosenbergii*), patin (*Pangasius spp*.), tapah*(Wallago sp.*) , baung(*Mystus sp.*) and during the dry season, the major species caught are the lampam sungai (*Puntius spp*.), Lais (*Kryptopterus parvanalis*), catfish(*Clarias spp*.), and pelian(*Tor duoronensis*) .

4.0 ENVIRONMENTAL CONDITIONS

The average rainfall of Sabah is 2,400 mm per annum though not uniformly distributed throughout the year.

The dry seasons are normally in the months of February to April/May and the wet seasons during the monsoon seasons. The north-east monsoon usually from October to January or February, bringing the heaviest rains of the year to the eastern coast of Sabah. Whereas, the southwest monsoon usually from May to August or September bringing heavy rains to the western coast of Sabah.

Habitat destruction and pollution, due to the logging activities and extensive agricultural development in Sabah in recent years, had somehow greatly affected the inland capture fisheries of Sabah. Sabah is the largest oil palm producer in Malaysia. Unfortunately, it has caused negative impact on freshwater fish habitat in the state, especially in the east coast region where most of the oil palm plantations are found. Thus, the fish population and the landing of freshwater fish in the state has been dwindling rapidly over the years.

5.0 SOCIO-ECONOMY

Even though the production of fish from the inland fisheries contributed for only nearly 1% of the total state fish production in 2001, it still plays an important role in the socio-economic conditions of the rural people through generation of employment, income and a higher source of protein. The demand for freshwater fish has always been high in the rural areas.

And in two villages along the Kinabatangan river, the livelihood of the villagers greatly depend on the income from the catches of the freshwater giant prawn *Macobrachium rosenbergii*. Most of their catch are sold to the middle men from Sandakan and quite a large percentage of this prawn are exported out of Sabah.

However, no in-depth study have yet been carried on the socio-economy of the people involved in the inland capture fisheries in the state, thus this paper therefore will not be able to discuss much on this topic.

6.0 STATISTICAL DATA COLLECTION

The Sabah fisheries department is responsible on the inland fisheries data collection in the state.

However, no proper statistical data collection been carried out in the past. The main reason is that no proper or formal training have ever been given to the inland fisheries staff in the past if compared to the staff on the marine capture fisheries. Only in the middle of this year, with the help of the the department of fisheries Malaysia, a proper training have been given to inland fisheries staff of the state. So, due this factor coupled with the remoteness of most the landing sites, the state data collection on the inland capture fisheries in the previous years, might be under reported or over reported.

In the past, the main method of data collection are carried out by observation from the fish market or from the landing sites by the inland fisheries staff. This is done daily during the working days. The data are then compiled in the district fisheries offices. Every month

the data are then send to the state fisheries department head office in Kota Kinabalu. The yearly data are then send to the department of fisheries, Malaysia , Kuala Lumpur at the beginning of every year.

The state fisheries department therefore hopes that, with the holding of this first regional technical consultation on information for inland capture fisheries in the ASEAN countries; it will able to formulate program to strengthen the collection and compilation on the inland capture fisheries data in the state in the near future.

7.0 INLAND FISHERIES MANAGEMENT SYSYEM

The management of the inland aquaculture and capture fisheries in Sabah is under the responsibility of State Fisheries department.

However, in the past the state fisheries department had been handicapped in the sustainable management of the inland aquaculture and inland capture fisheries due to the lack of a state fisheries law.

The state government of Sabah has only recently passed a new fisheries law; the Sabah Inland Fisheries and Aquaculture Enactment 2003. This enactment gives the state fisheries department wide power to manage and regulate all the fisheries activities in the inland waters of the state. So with this new law available to the state fisheries department, it is hoped that the sustainable management of the inland fisheries resources in the state will be more successfully implemented in the near future.

Even though the state has no adequate fisheries law in the past, the state fisheries department have somehow successfully implemented a Community-Based ResourceManagement (CBRM) program on many of the riverine fish in Sabah. The CBRM program empowers the local community to rehabilitate / restore and manage the river fish resource in their rivers. The local community are allowed or empowered to make rules of how to manage their riverine fish resources. For example, nobody is allowed to catch fish during the closed season in their rivers and all offenders, be he a local or outsiders, will be fined in accordance with the local customs. The local politicians, local community leaders , the state government and most of government enforcement agencies in the state have given very strong support on this system.

At present, the CBRM system had successfully rehabilitated many of the river fish resources in the up-stream rivers in Sabah, with indigenous species like ikan pelian *Tor duoronensis*.

We are also glad to inform that, this CBRM system has also been incorporated in the Sabah Inland Fisheries and Aquaculture Enactment 2003, where the state fisheries director was given the power to appoint community leaders to manage the Community Fisheries Management Zone in the inland waters of the state.

8.0 LIST OF PUBLICATIONS AVAILABLE ON INLAND CAPTURE FISHERIES

List of publication available on:

- List of freshwater species/ Biology of major freshwater fish :

    a) *Inger, R.F. and and Chin, P.K.(2002). The freshwater fishes of North Borneo. Natural history Publications (Borneo).*

- List of fishing gears : non available

- Management on inland capture fisheries:

    a) *Wong, J.Z. (2002). An introduction to the Tagal system: A traditionally Community-Based Resource Management on riverine fish resource in Penampang, Sabah, Malaysia. Paper presented at the 7th SABAH INTER-AGENCY TROPICAL ECOSYSTEMS (SITE) RESEARCH SEMINAR organized by the Sabah Fisheries Department, 2-5 November, 2002 at SEAFEST HOTEL, Semporna, Sabah, Malaysia..*