



REPORT

End-of-Project Meeting of the Working Party on Information Collection for Economically Important Species as Surimi Raw Materials in the Southeast Asian Region

SEAFDEC Training Department,
Samutprakarn, Thailand
1-2 July 2009



TD/RP/130
September 2009



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REPORT
**End-of-Project Meeting of the Working Party on Information Collection for Economically
Important Species as Surimi Raw Materials in the Southeast Asian Region**

SEAFDEC Training Department, Samutprakarn, Thailand
1-2 July 2009

INTRODUCTION

1. The End-of-Project Meeting of the Working Party on Information Collection of Economically Important Species as Surimi Raw Materials in the Southeast Asian Region was organized at the SEAFDEC Training Department (SEAFDEC/TD) in Samut Prakarn, Thailand from 1 to 2 July 2009. The Meeting was attended by representatives from the participating Southeast Asian countries in the Project on Information Collection of Economically Important Species as Surimi Raw Materials in Southeast Asian Region, namely: Malaysia, Myanmar, Thailand, and Vietnam. As one of the participating countries, Indonesia was not able to send a representative to the Meeting. Senior officials from the SEAFDEC Secretariat and SEAFDEC/TD also attended the Meeting. The SEAFDEC Marine Fisheries Department (MFRD) and Marine Fisheries Research Development and Management Department (MFRDMD) as collaborating partners in the Project were also unable to send participants to the Meeting. The List of Participants appears as **Annex 1**.

2. In his Opening Speech, Dr. Siri Ekmaharaj took the opportunity to thank the participating countries for their full support and good cooperation during the implementation of the Project. He recalled that during the conduct of the Project, SEAFDEC/TD implemented various activities that include meetings, visits to Surimi plants, interviews using questionnaires, and resources survey by research vessels. He also mentioned that the successful implementation of all the activities was made possible with the cooperation of the SEAFDEC Member Countries. After advocating the need for the Meeting to come up with conclusions that would fulfill the objectives of the project for the benefit of the Southeast Asian region, he declared the Meeting open. His Opening Speech appears as **Annex 2**.

3. In the presentation of the background of the Project and specifically the objectives of the Meeting, Dr. Worawit Wanchana of SEAFDEC/TD and Chairperson for the Meeting, mentioned that the Project on "Information Collection for Economically Important Species as Surimi Raw Materials in Southeast Asian Region" was initiated by the SEAFDEC/TD under the ASEAN-SEAFDEC Fisheries Consultative Group collaborative mechanism and funded by the Japanese Trust Fund. The Project, which aims to advance the sustainable development of Surimi industries and the fishery resources for Surimi raw materials in the Southeast Asian region, has been implemented since the 4th quarter of 2005 in collaboration with relevant SEAFDEC Departments, particularly MFRDMD and MFRD. In the implementation of the Project, only five Southeast Asian countries involved in exporting Surimi products, have been considered as participating countries, namely: Indonesia, Malaysia, Myanmar, Thailand, and Vietnam.

4. As the Project would be completed in 2009, SEAFDEC/TD convened the End-of-Project Meeting in order to highlight the key and significant findings from the various Project activities and discuss the probable follow-up activities considering the current status of the relevant fishery resources. Specifically, the Meeting was aimed at: (1) reviewing the major achievements of the Project; (2) assessing the potential fish species that could be used as Surimi raw materials; and (3) formulating recommendations for the future sustainable development of the Surimi industry in the region.

5. The Agenda of the Meeting (**Annex 3**) was adopted.

6. During the review of the Current Surimi Market and Production (**Annex 4**), which was also

presented by Dr. Worawit Wanchana, it was argued that the raw materials for Surimi production are demersal fishes caught by trawlers. In the near future, the raw materials could become more expensive due to various constraints in demersal fisheries specifically the increasing prices of fuel. The Meeting therefore suggested that the findings from the Project should be linked with existing SEAFDEC projects in order to assure the sustainable supply of fish species as raw materials for Surimi production. In this regard, it was also suggested that other potential fish species that could be used as Surimi raw materials should be explored.

MAJOR ACHIEVEMENTS FROM THE PROJECT IMPLEMENTATION

7. The most significant outcomes from the Project include analysis of the trend of Surimi materials in Southeast Asia as well as that of the status of the Surimi industry in Southeast Asia, the results of which have been included in the Report on the Trend of Surimi Raw Materials in Southeast Asia and Report on the Status of Surimi Industry in Southeast Asia.

8. In the report on the Trend of Surimi Raw Material Species in Southeast Asia (**Annex 5**), which was presented briefly by Ms. Penchan Laongmanee of SEAFDEC/TD, the five fish species commonly used as Surimi raw materials, their production trends and their abundance in the Southeast Asian waters were identified. The five species are the threadfin bream (Family: Nemipteridae), lizard fish (Family: Synodontidae), big-eye snapper (Family: Priacanthidae), croaker (Family: Sciaenidae), and goatfish (Family: Mullidae). From the abundance of these fish species, which was assessed through a number of surveys conducted by SEAFDEC as well as from the information contained in the SEAFDEC Fisheries Statistical Bulletin for the South China Sea Area, the areas that have potential resources for Surrimi raw materials include: the Tonkin Bay for the lizard fish; the waters off Sarawak for the threadfin bream, croaker, lizard fish, and big-eye snapper; and the north of Sulu Sea (near Palawan in the Philippines) for the threadfin bream and lizard fish. While the croaker may be considered as minor species as raw materials for Surimi production, the abundance of the larvae specifically in Tonkin Bay showed potentials for further utilization. From the analysis, it was also observed that the waters off Sarawak in West Malaysia, are the main spawning grounds for most species for Surimi raw materials and that the fishing activity in the area is still not heavy. Although in the northern part of Sulu Sea, fishing activity has been noted to be limited due to the narrow continental shelf, the abundance of the larvae of the threadfin bream and lizard fish suggested that this area has the potentials for further resources utilization.

9. While noting that the use of various fish species for Surimi production has been promoted in the Southeast Asian region, the Meeting suggested that the region's Surimi industries should ensure that the fishes are fully utilized and that their operations are environment-friendly. In this regard, the initiative of the Fukuoka Government, Japan was cited as an example where 0% wastage of fish is promoted by processing the fish entrails, skin, bones and head into fish meal, fish oil to run their processing plant, and some end products for fertilizers. The representative from Thailand cited that the Surimi plants in Thailand also make full use of the fish by turning the remaining parts of the fishes into fish meal in order to acquire additional income and gain more profit from their operations. In addition, while fish oil is also being extracted, the wastewater is also utilized in a form of biogas to run the processing plants. However, in some countries like Myanmar and Vietnam, since some factories do not run their own fish meal processing plants, their waste materials are sold to other fish meal plants. In Malaysia, while big Surimi plants make sure that their operations are environment-friendly, small-scale Surimi industries might still need capacity building in order that their operations could also address the various environmental concerns.

10. Based on the report on the Status of Surimi Industry in Southeast Asia as of 2006 (**Annex 6**), which was presented by Ms. Siriporn Pongsorn of SEAFDEC/TD, the number of Surimi plants in the region had increased from 2 in 1983 when the Surimi technology was promoted in the region to 57 as of 2006. Of this total, 8 are in Indonesia, 6 in Malaysia, 5 in Myanmar, 21 in Thailand, and 17 in

Vietnam. The Meeting was informed that in Myanmar, some waste materials are also used as raw materials to further process into lower grade Surimi. From the results of the survey conducted by SEAFDEC on the status of the Surimi industry in the region, the industries have raised concerns related to the sustainability of the industry. These include: decreasing supply of raw materials and the low quality of the raw materials due to poor handling of fish while still in fishing boats and sanitation in many fishing ports; competition with local markets as the fish species are also sold for direct human consumption; increased production cost due to increased fuel costs; shortage of labor due to the massive migration to the manufacturing industries; high competition within one country and from low-priced Surimi producing countries; and Surimi price being controlled and dictated by the buyers.

11. In order to present the real picture of the status of the Surimi industry in the Southeast Asian region as well as the available and potential fishery resources used for Surimi raw materials, the participating countries were requested to update their respective relevant statistical information. As noted during the Meeting, some countries could not present the breakdown of their data due to lack of detailed statistical data collected by the respective countries. In this regard, the Meeting suggested that the countries should try to exert efforts to provide the detailed information and that the countries should also try to make their data collection uniform as much as possible. However, the Meeting also noted that the lack of data could also be due to the fact that most data, e.g. on total Surimi production, are available only with the private sector and that most industries are reluctant to divulge the true information to scrimp on tax payments.

12. The Meeting was also informed on the various materials such as brochures and reports that are being produced reflecting the outcomes of the Project. Such materials are being produced in CD format as well as in hard copies for distribution to the region and other interested countries. Considering that the Project is already in its final stage of completion, the Meeting suggested that relevant SEAFDEC projects should provide a network as side work, to serve as an avenue for updating the information related to the Surimi industry in the Southeast Asian region.

CURRENT STATUS OF SURIMI RAW MATERIALS AND INDUSTRIES IN PARTICIPATING COUNTRIES

Malaysia

13. The report on the status of the Surimi industry in Malaysia (**Annex 7**), presented by Mr. Nik Zakaria of the Department of Fisheries Malaysia, included the major Surimi processing industries in Malaysia, the factors that contributed to the development of the country's fish processing industry, the constraints faced by the country's Surimi industry, and the strategies for the further development of the industry.

14. While noting that Malaysia also imports significant quantity of fish for its processing industry, the Meeting was also informed that such import is aimed at balancing the supply of raw materials used for the production of best grade Surimi which could command higher prices, and that the Malaysian Government is trying to maximize the usage of the raw materials through processing and value-adding and as much as possible avoid if not minimize post-harvest losses. In addition, the Malaysian Government is also promoting important strategies to address the impacts of trade measures and requirements on its Surimi industry such as the strict compliance of HACCP as well as the adoption of Sanitary and Phyto-Sanitary Measures (SPS).

Myanmar

15. The status and trend of total landings of fishes and important Surimi species in Myanmar (**Annex 8**) was presented by Mr. Julius Kyaw of the Department of Fisheries of Myanmar. The report included the country's marine fisheries production, commercial fishes and exportable species, and

specifically the information on the fish species used for Surimi production in Myanmar.

16. While the information on the abundance of fishery resources in Myanmar indicated CPUE of more than 50 kg/hr and that the estimated biomass in the country's waters particularly the western part of Myanmar's waters is still high, the Meeting suggested that Myanmar should exert efforts to properly manage its fishery resources and learn the lessons from Thailand which had CPUEs as high as 100 kg/hr in the past.

17. The Meeting was also informed that the Surimi technology was introduced in Myanmar through the relevant projects and activities of MFRD. Moreover, most of the Surimi plants in Myanmar have been operated in collaboration with its neighboring countries.

Thailand

18. The report on the current status of Surimi raw materials and industries in Thailand (**Annex 9**), presented that Ms. Sunee Payomjansri of the Department of Fisheries of Thailand, included quantity of raw materials used for the country's Surimi production, the quantity of Surimi raw materials by main fishing ports (i.e., Bangkok and Phuket), the present situation of the Surimi industry of Thailand, the list of Surimi processing plants and their respective capacities, and the Surimi export volume of Thailand from 2006 to 2008, meant for Japan, Korea, Singapore, and Taiwan.

19. While noting that processing plants in Thailand also use barracuda for Surimi production, the Meeting was informed that there has been not much detailed information on the extent and quantity of barracuda used by these plants. Considering that Thailand remained as the biggest producer of Surimi in the Southeast Asian region, the other countries in the region could learn from the experiences of Thailand in maintaining the sustainability of its industry. As regards the shortage of raw materials, the Meeting was informed that some processing plants in Thailand are using freshwater fish species as raw materials for Surimi production. However, the raw materials must be of good quality in order that the product is acceptable by the importing countries, not only in terms of smell and taste but also in the texture of the products.

Vietnam

20. A review of the marine fishery resources used for Surimi raw materials in Vietnam (**Annex 10**) was reported by Mr. Vu Viet Ha of the Research Institute of Marine Fisheries in Hai Phong, Vietnam. The review included the species used for Surimi raw materials, the CPUEs of the fish families as sources of Surimi raw materials, the trawlable areas of the country and the trawlable biomass available in the country's fishing areas.

21. Considering that the information on the status of the Surimi industry in Vietnam was not complete, the Meeting suggested that additional information should be provided to SEAFDEC in order to update the relevant reports. On the decreasing CPUE in 2005, the Meeting was informed that such decrease could have been brought about by increased fishing pressure considering the increased number of fishing boats during the said period.

Indonesia

22. Although Indonesia was unable to provide the necessary information, the Meeting suggested that Indonesia would be requested to submit a report on the current status of Surimi raw materials and industries in Indonesia to SEAFDEC. This suggestion should be relayed to the responsible person in Indonesia, in order that the compilation and reports produced from the outcomes of the Project would include the current status of all the participating countries.

DISCUSSION AND RECOMMENDATIONS

23. The Meeting suggested that in order to ensure the sustainability for the use of Surimi raw materials, the data for the following information should be provided by all the participating countries:

- Potential alternative species for Surimi raw materials
- Role of national main players in Surimi industries
- Information sharing among stakeholders
- Enhance/strengthen coordination among key players
- How to obtain updated information related to Surimi industry
- How to ensure the sustainability for the use of raw materials

24. The initial inputs provided by the participants at the Meeting on the above issues shown in **Annex 11**. During the discussion, it was agreed that additional data should be sent to SEAFDEC as soon as possible but not later than end of July 2009.

CLOSING OF THE MEETING

25. The Deputy Secretary-General of SEAFDEC, Mr. Hideki Tsubata in his capacity as Trust Fund Program Manager, thanked the participating countries for their valuable contributions that led to the successful implementation of the Project. He encouraged that in continuing the promotion of the Surimi industry, the countries should always try to put to mind the need to strike a balance between producing additional raw materials for the industry's expansion due to economic reasons and producing fish food for the region's increasing population. He added that addressing these two socio-economic concerns could also put much pressure on the region's fisheries. After assuring the participating countries that SEAFDEC would continue to update the status of the Surimi industry in the region in which case updated inputs from the countries would be necessary, he declared the Meeting closed. His Closing Speech appears as **Annex 12**.

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**OPENING SPEECH
By SEAFDEC Secretary-General**

**At SEAFDEC/TD
1-2 July 2009**

Representatives from the SEAFDEC Member Countries,
Distinguished guests,
Ladies and Gentlemen, Good Morning:

First of all, on behalf of SEAFDEC, I would like to welcome all of you to this End-of-Project Meeting of the Working Party on Information Collection for Economically Important Species as Surimi Materials in the Southeast Asian Region.

The Project on “Information Collection for Economically Important Species as Surimi Raw Materials in Southeast Asian Region” was initiated by the SEAFDEC Training Department (TD) under the ASEAN-SEAFDEC collaborative mechanism and funded by the Japanese Trust Fund. The Project has been implemented since the 4th quarter of 2005 in collaboration with relevant SEAFDEC Departments, particularly the Marine Fisheries Research Development and Management Department (MFRDMD) and Marine Fisheries Research Department (MFRD).

In the conduct of such information collection project, SEAFDEC TD implemented various activities that include meetings, visits to surimi plants, interviews using questionnaires, and resources survey by research vessels. All the activities have been successfully carried out with the cooperation of the member countries. Moreover, during the implementation of the project, SEAFDEC TD has been very fortunate to get the full support and good cooperation from the participating countries such as Indonesia, Malaysia, Myanmar, Thailand and Vietnam. Together with the outcomes of the relevant activities in the participating countries, the results of the project activities have been included in the Report on Trend of Surimi Raw Materials in Southeast Asia and the Status of Surimi Industry in Southeast Asia.








Ladies and Gentlemen, as we are now on the last activity of the project, SEAFDEC TD would like to take this opportunity to thank all those who have contributed for the success of the project. On behalf of SEAFDEC and as the Chief of SEAFDEC TD, I very much look forward to your active participation in the discussions during this meeting. I hope we will come up with conclusions that would fulfill the objectives of the project for the benefit of this region. Thank you very much and good day.

AGENDA AND TIMETABLE

Day 1	Agenda 1: Opening and Introduction	Chairman /facilitator
09:00-09:30	Opening by SEAFDEC Secretary General	
	Workshop objectives/agenda, adoption of agenda – Dr. Worawit Wanchana	
09:30-10:00	Overview of global surimi market and production – Dr. Worawit Wanchana	
10:00-10:30	Group photo and coffee break	
	Agenda 2: Major Achievements from the Project Implementation	
10:30-11:15	Actual Resources Survey of surimi raw material using MV.SEAFDEC2 and trend of surimi raw materials in the Southeast Asia (from statistic) – Penchan Laongmanee	
11:15-12:00	Status of surimi industry in the Southeast Asia during 2001-2006 and Set of Brochure and Documents produced by the Project – Siriporn Pangsorn	
12:00-13:30	Lunch Break	
	Agenda 3: Current Status of Surimi Raw Materials and Industries in the Participating Countries	
13:30-14:00	○ Malaysia - Mr. Nik Zakaria bin Nek Abdul Rahman	Mr. Isara Charachakij
14:00-15:00	○ Myanmar- Mr. S. Julius Kyaw	
15:00-15:30	Coffee Break	
15:30-16:00	○ Thailand - Mrs. Sunee Payomjamsri	
16:00-16:30	○ Vietnam- Mr. Vu Viet Ha	
17:30-19:00	Welcome Dinner	
Day 2	Agenda 4: Discussion	
09:00-12:00	Necessary information that the Member Countries should be overlook to maintain the sustainable of surimi industry and surimi raw material stock and needs for future follow-up activity	Dr. Worawit Wanchana
12:00-13:30	Lunch Break	
13:30-15:00	Agenda 6: Conclusion and closing by SEAFDEC Deputy Secretary General	Dr. Worawit Wanchana

OVERVIEW OF GLOBAL SURIMI MARKET AND PRODUCTION

By Dr. Worawit Wanchana, SEAFDEC/TD

 <p>Overview of Global Surimi Market and Production Worawit Wanchana, TD</p> <p>1</p>	 <p>Surimi...</p> <ul style="list-style-type: none"> • Value-added products <ul style="list-style-type: none"> • Low value/price fish • White meat • Un-utilized fish • World Production <ul style="list-style-type: none"> • 5.5~600,000 MT (Alaska Pollock 25% by US)  <p>2</p>
 <p>Current Situation – Demand and Production</p> <ul style="list-style-type: none"> • Estimated surimi consumption <ul style="list-style-type: none"> • Japan 350,000 MT • Others 250,000 MT • Increased world market, i.e. EU and Southeast Asian • Major exporting of SA & SEA Countries: Thailand, India, Vietnam, and Malaysia <ul style="list-style-type: none"> • Raw materials Thailand → Japan approx. 65,000 MT per year (Nov, 2008) • Japan: 10~20% cheaper to buy from India and Vietnam <p>3</p>	 <p>Global Surimi Raw Materials Supply of Fish Stocks – Decreasing</p> <ul style="list-style-type: none"> • Declining coastal fishery resources <ul style="list-style-type: none"> • Overfished • Increasing... <ul style="list-style-type: none"> • Domestic consumptions • Environmental concerns (short-term) • Concerns on sustainable development and management of fishery resources, and conservation (short-term) • Fuel cost (long-term) <p>4</p>
 <p>Global Surimi Raw Materials Demand – Stable or Increasing</p> <p>Population growth, consumers increasing on frozen products, etc.</p> <p>however...</p> <ul style="list-style-type: none"> • Global economical crisis • Higher price of the fisheries and related products <p>5</p>	 <p>Current Issues</p> <ul style="list-style-type: none"> • Potential (new) species from the unexploited fishing areas/grounds could be further determined, considering low-valued fish, white-meat, utilization of trash fish?, deep-sea resources ? • National government should play important role ? (updated information and data in each country, negotiation, etc.); • How to enhance and strengthen coordination and collaboration work and sharing of information between the government and private sector that will be benefit to the exporting countries. <p>6</p>

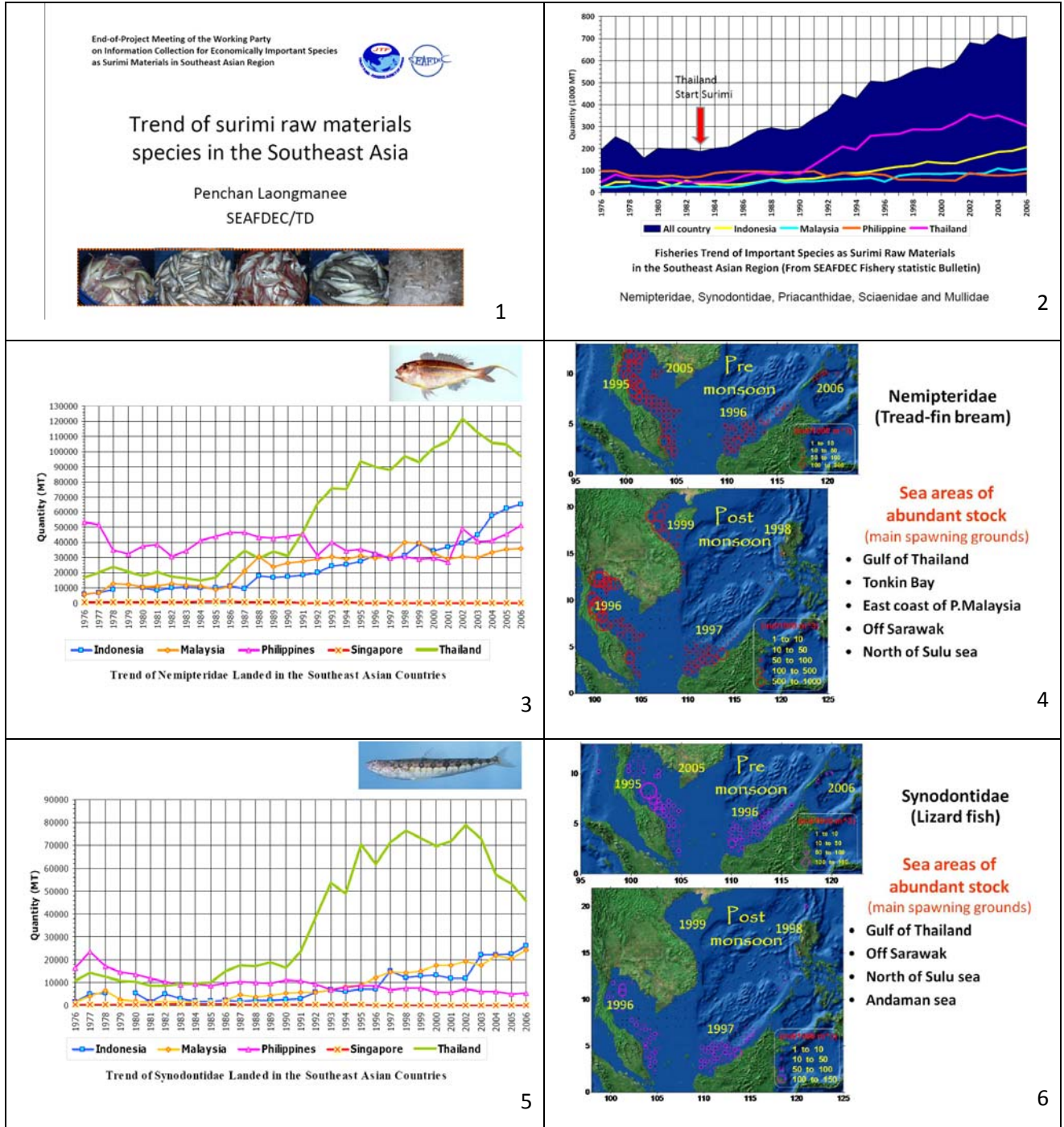
Major Constraints for Seafood Exporting Countries

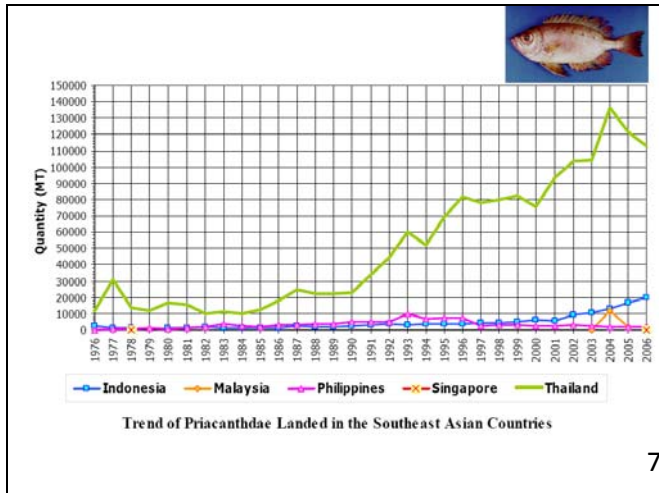
- IUU (ineffective of flag state, port state, other measures...)
 - EU Catch Certification (1 January 2010)
 - US Catch Certification (2012 ?)
 - Korea, Japan, etc. (within few years)
- Eco-labelling scheme
- Etc



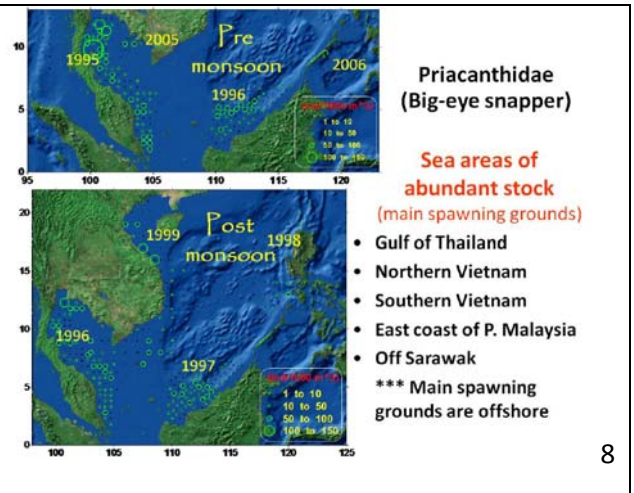
ACTUAL RESOURCES SURVEY OF SURIMI RAW MATERIAL USING M.V.SEAFFDEC AND TREND OF SURIMI RAW MATERIALS IN THE SOUTHEAST ASIA

By Penchan Laongmanee, SEAFFDEC/TD

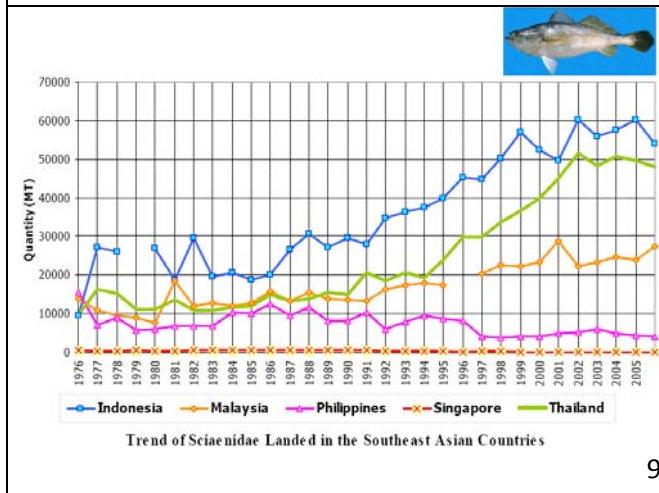




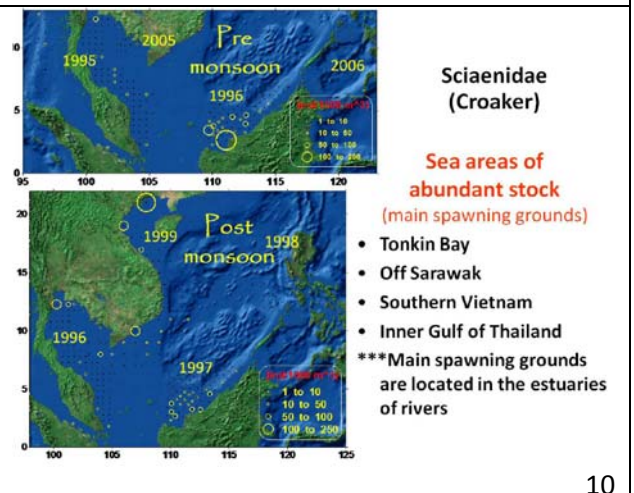
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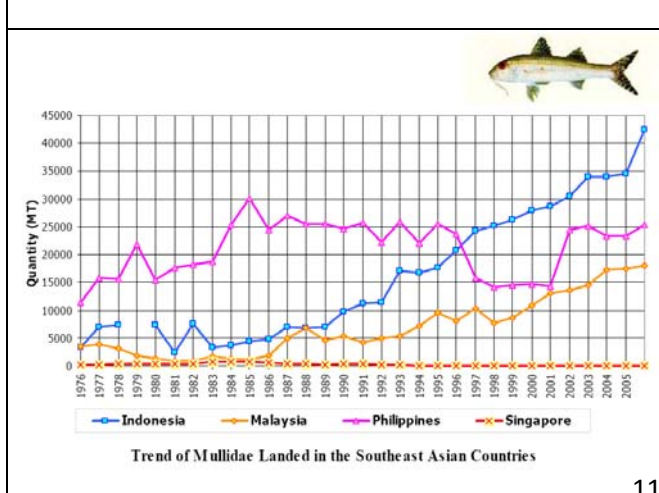
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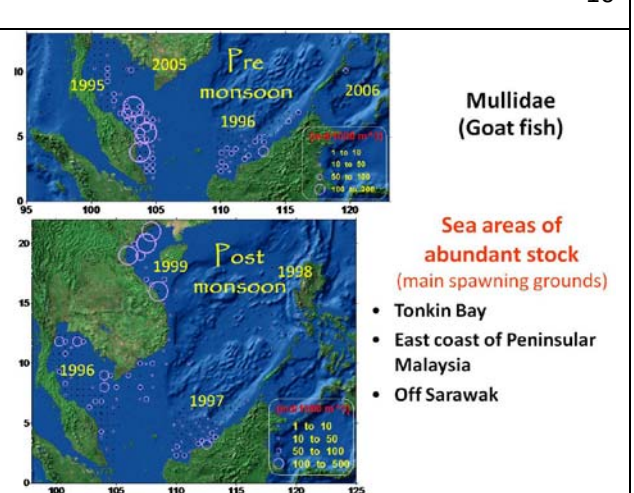
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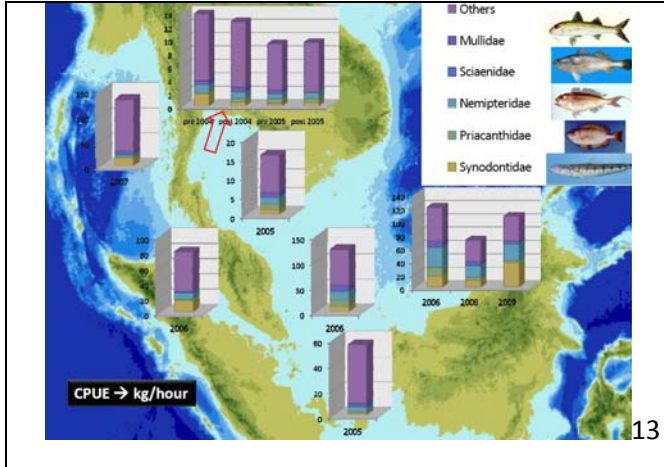
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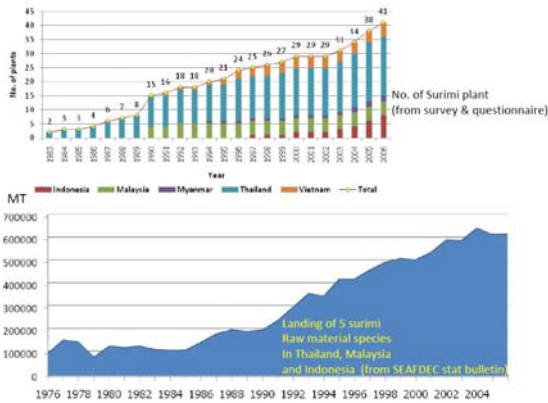


Potential of further resources utilization of surimi raw material

- 1. Tonkin Bay: Sciaenidae**
Sciaenidae → minor sp. for surimi product but the larvae abundance show potential of further resources
- 2. Off Sarawak: Nemipteridae, Sciaenidae, Synodontidae, Priacanthidae**
Off Sarawak is main spawning ground of most surimi raw material sp., while the fishing activity in this area is still not heavy.
- 3. North of Sulu sea: Nemipteridae, Synodontidae**
The fishing activity in this area was limited by narrow continental shelf. But the fish larvae abundance show the potential of further resources

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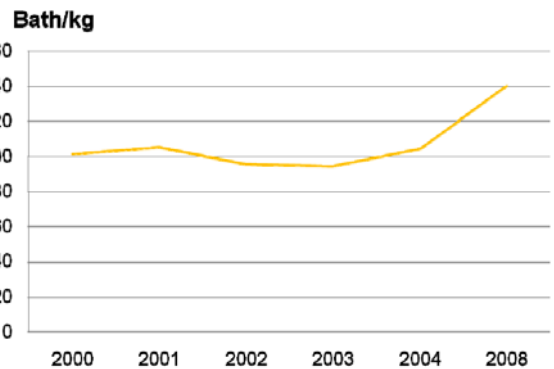


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- Currently, 2-3 million metric tones of fish from around the world, amounting to 2-3 percent of the world fisheries supply, are used for the production of surimi and surimi based products. (Globefish Vol.89, Apr2007)
- In Southeast Asian Country, about 1.5 million ton (Calculate from 20% yield), amounting 6.9% of fisheries supply of the region are used for surimi
- “What will be the future world availability of surimi raw material and its price?”

17

Surimi price




2000-2004 from Thai custom department, 2008 from http://www.bangkokpost.com/241108_Business/24Nov2008_biz39.php SEAFOOD

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STATUS OF SURIMI INDUSTRY IN THE SOUTHEAST ASIA DURING 2001-2006

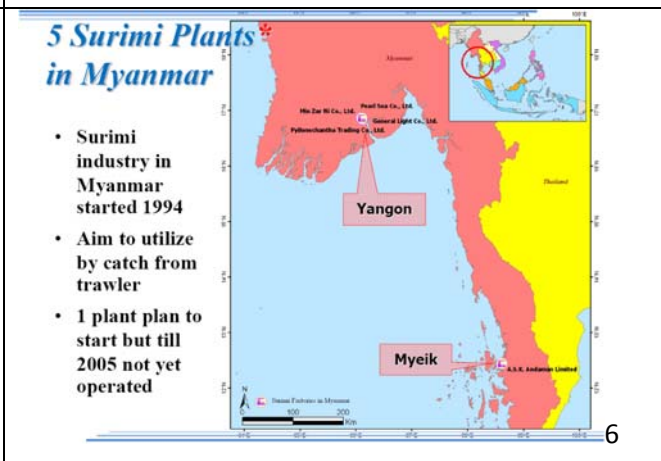
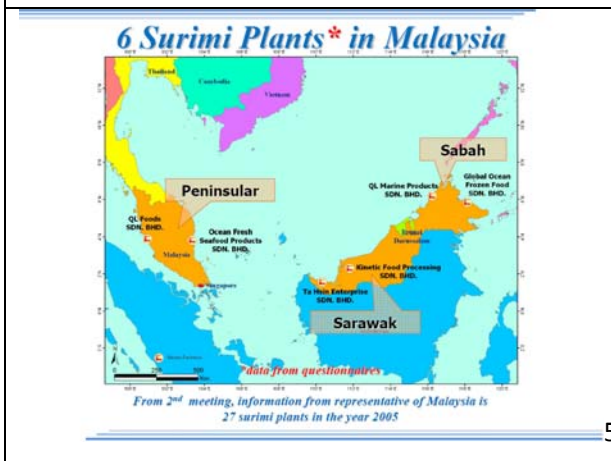
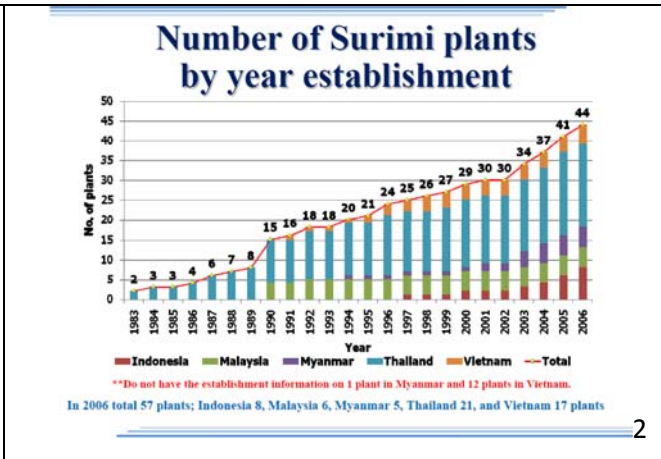
By Siriporn Pangorn, SEAFDEC/TD

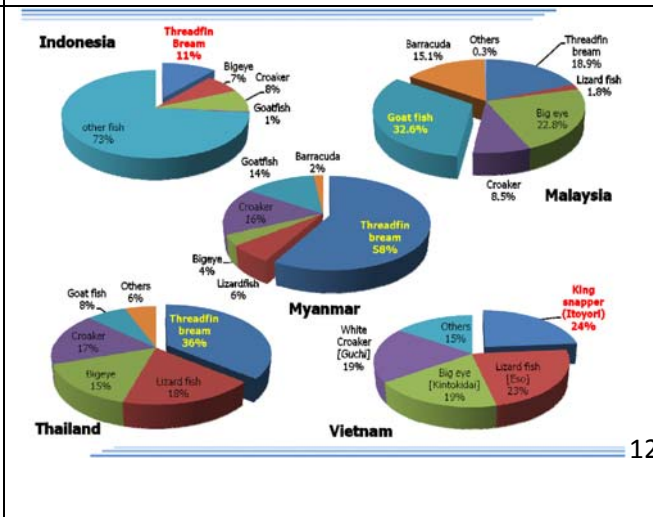
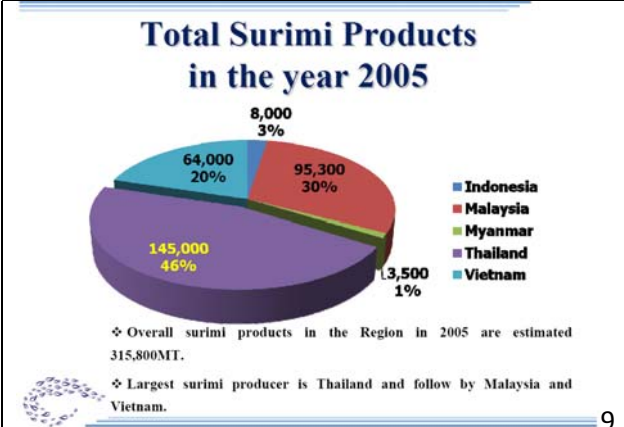
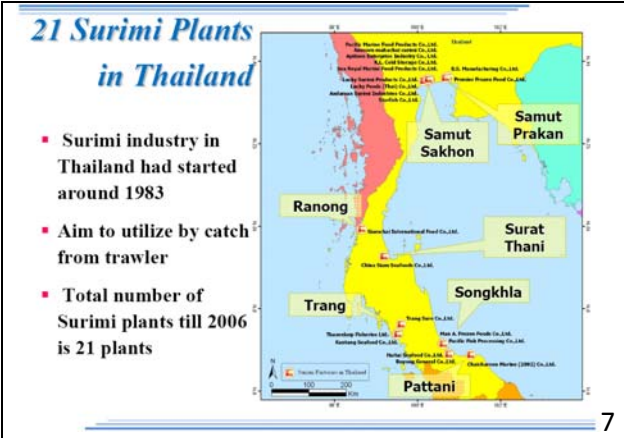
Status of Surimi Industry in the Southeast Asia 2001-2006

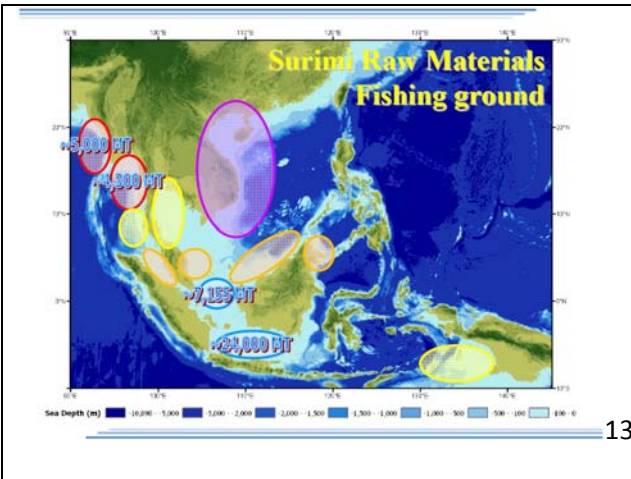


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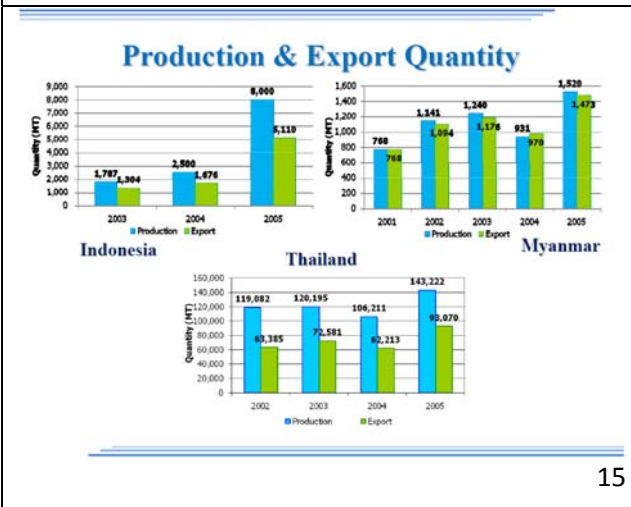




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15

Utilization of the surimi processing waste
 Raw materials for produce a fishmeal.

- In Thailand, mostly have their own fishmeal factories, some sell to other factories.
- In Myanmar, use as raw materials for surimi second meat (lower grade).
- In Vietnam, some have their own fishmeal factories and some are plan to construct the new fishmeal factories.

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- Constraints faced by plants**
- ❖ Raw Materials issues
 - Raw materials decrease, insufficient, unstable
 - Quality of raw materials: fish handling, hygienic of fishing port
 - Competition with local market
 - ❖ Increasing of production cost
 - ❖ Shortage of labor
 - ❖ High competition within country and from low price surimi producer countries
 - ❖ Surimi price controlled by buyer

17

THE SURIMI INDUSTRY IN MALAYSIA

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1. INTRODUCTION

The fisheries sector is an important sector in the Malaysian economy. Malaysia is a fish consuming nation and the fisheries sector in Malaysia is a billion ringgit industry. As such the industry emphasizes on quality products for the domestic and export markets. In 2007, Malaysia produced 268,514 Metric tonnes of fish valued at RM 6.432 billion, or about 1.6% of the total Gross Domestic Product.

Fisheries Production in 2007

Sub sector	Quantity (mt)	Value (RM billion)
Captured fisheries		
• Marine inshore fisheries	1,117,056	4.166
• Deep sea fisheries	264,368	0.873
Aquaculture	268,514	1.393
Total	1,649,938	6.432

Conversion rate : RM 100 = USD 26.31
 RM 100 = EURO 20.40

Fish and fisheries products are an important source of dietary protein for Malaysians. Fish constitutes about 60 – 70% of the national animal intake. Per capita fish consumption in 2007 is 50 kg. National fish consumption is expected to increase in tandem with the increasing population and the growing consciousness of fish and fisheries products as a healthy food. Thus, it is expected that fish consumption per capita will increase to 56 kg/annum in 2010.

1.1 FISH PROCESSING INDUSTRY SCENARIO IN MALAYSIA

The fish processing industry plays a vital role in increasing production and contributes to foreign exchange earnings for Malaysia.

Malaysia produces a wide range of fishery products that are doing well which contributes to commercial value added products. Processed fishery products include surimi based products (crab flavored sticks, breaded crab claws and prawn tail), fish ball, fish cakes, nuggets, battered and breaded products, and other processed / value added products.

Malaysia imports 444,5551.37 metric tons of fish valued at RM 2,151 million (2006). In terms of quantity, the country is a net importer, however, in term of value, Malaysia is a net exporter of fish and fishery products.

Malaysia exports 311,585.01 metric tons of fish valued at RM 2,364 million (2006). In terms of quantity, the country is a net importer, however, in term of value, Malaysia is a net exporter of fish and fishery products.

In order to reduce fish import, the government needs to maximize usage through processing and value addition. And also needs to concentrate on preventing post harvest losses of fish by 30%.

When it comes to the fisheries industry, emphasize is centred on :

- a) Good Handling and Good Manufacturing Practices
- b) Processing / value added products
- c) Underutilization of fish/mixed fish species
- d) Research and development

1.2 **POTENTIAL IN FISHERIES BY 2010**

The potential for expansion in the industry has been charted under the Third National Agricultural Policy (NAP3) with aquaculture as the main engine of growth. Malaysia expects to produce 1.93 million tones of fish by the year 2010 of which about 300,000 tonnes will be exported. The leading products will be surimi-based products, frozen fish, fillets and shrimps.

2 **SURIMI INDUSTRY IN MALAYSIA**

The surimi and surimi-based industry is categorized under a commercial scale, which is export oriented. Even though surimi-based products have been introduced into the country decades ago, it was only a few years back that the processing technology was established in the country despite of the availability of it. This is attributed mainly to the rapid growth of small-scale processor of surimi-based products who previously were highly dependent on fish raw material or surimi imported from neighbouring countries.

In Malaysia, and other Asian countries, there is considerable interest in the production of surimi and surimi based products. Its potential is bright as they are widely accepted as popular foods by consumers world-wide and hence offers export potential.

The amount of surimi and surimi-based products processed in Malaysia in 1998 was 8,396 tonnes, being 8.2 percent of total processed products (Department of Fisheries, 1998). This comprised mainly of fish ball (made from fresh fish) cuttlefish ball and surimi-based fish ball.

2.1 **TRADE PERFORMANCE AND MAJOR MARKETS**

It is difficult to ascertain the usage trend of surimi based products in Malaysia because of incomplete data available on the industry compared to other countries. Total imports and exports are classified under *Fish paste and similar preparation* category which do not show the difference between surimi and the other products.

The total imports under this category for year 2001 was 70 metric tons (mt) valued at RM454,943, a decrease by 93% compared to year 2000 (1,135 mt valued at RM7.8 million). Malaysia's exports peaked in year 1997 recording 4,944 mt with a value of RM45.8 million, but started decreasing from 1998 down to 719 mt in year 1999. The economic recessions which hit the country in the late 90s affected the total export and import products. Exports began showing signs of recovery from year 2000 (1,743 mt valued at RM7.2 million).

Malaysia imported mainly from the United States in year 2000 but switched to Chile as the main supplier in year 2001 with a total import of 65% valued at RM294,612, followed by Japan (16%), Singapore (10%), Thailand (4%), Vietnam (3%) and Denmark (2%).

The main export destinations are the Republic of Korea representing 96.5% of the total exports in year 2001 with a value of RM7.7 million, followed by Taiwan (1.6%) and Singapore (0.85%). Other destinations also included the Philippines, Brunei Darussalam, UAE, Indonesia and Cambodia representing less than 0.5% of the total exports.

Annex 7

Based on the imported surimi and the other near similar products and also the fisheries products market size in Malaysia, it is assumed that the local consumption is minimal and limited, that is only 0.2% of the total fisheries products usage with a market value of RM12.2 million.

Up till end of April 2001, 29 fish-based establishments, including those involved in surimi and surimi-based products have been certified under the Ministry of Health certification programme. Presently there are 27 establishments processing surimi and fish mince for the local food industry and for export, the production capacity ranging from 0.5 to 380 tonnes per month (Department of Fisheries, 2001). These processors are located throughout the country, mainly in the vicinities of urban dwellings.

2.2 SURIMI PRODUCER IN MALAYSIA

The following are the major surimi processing companies:

- QL Food Sdn. Bhd.
This company is a vertically integrated seafood processing company and is one of the three largest surimi producers in the country. The processing plant of this company is located in Hutan Melintang, Perak. Total production volume is about 3,000 tonnes annually valued at about RM 14.5 million.
- Ocean Fresh Seafood Products Sdn. Bhd.
Located in Kg. Baru, Peramu, Kuantan, Pahang. Total production volume is about 500 tonnes annually.
- Kuantan Otoshimi Marine Products Sdn. Bhd.
Located in Jalan Padang Lalang, Kuantan, Pahang. Total production volume was about 474 tonnes annually.

Other surimi processing companies are :

- Technoledge Sdn. Bhd. , Kuala Kedah, Kedah
- Sea Horse Corporation Sdn. Bhd., Kuching, Sarawak.
- KTS Food Industries Sdn. Bhd., Sibul, Sarawak
- Hua Hoon Frozen Seafood, Pontian, Johor
- Sin Hong Heng Fishmeal Sdn. Bhd., Endau, Johor
- Perniagaan Lian Li, Kuantan, Pahang

2.3 SURIMI-BASED PRODUCERS IN MALAYSIA

The larger surimi based producers in Malaysia are as follows :

Companies	Products
1. Seiko Marine Products Sdn. Bhd. Subang Jaya, Selangor	Frozen filament crab stick Surimi-based products
2. Kami Food Service Sdn. Bhd. Kepong, Kuala Lumpur	Frozen filament crab stick Surimi-based products
3. Seapack Food Sdn. Bhd. Seberang Perai Tengah, Penang	Surimi products : filament stick, filament flake, homard claw
4. QL Foods Sdn. Bhd. Hutan Melintang, Perak	Surimi based-products

2.4 SURIMI PRODUCTION – Fish Species

Common species of fish used for processing surimi are those of lesser commercial value as follows :

- ❖ Threadfin Bream (*Nemipterus spp.*)
- ❖ OxOeye Scad (*Priacanthus spp.*)
- ❖ Goatfish (*Upeneus*)
- ❖ Jewfish (*Pennahia or Johnius spp.*)
- ❖ Lizard fish (*Saurida spp.*)
- ❖ Barracuda (*Sphyreana*)
- ❖ Ribbon Fish (*Trichiurus*)

As quality of end products depend largely on the freshness of fish, good quality raw material is very important. All fish species which have white meat are suitable for use. The price of various species of raw materials for surimi production varies form RM 0.50 /kg to RM 1.00 /kg depending on the species, and also the local fishing season.

The South China Sea has an abundant supply of various species of fish ranging from species which are meant to be sold in the market and those suitable for downstream manufacturing activities. Although commercial fishing activity has been going on in Malaysia for many years, the downstream manufacturing activities in the East Cost of Peninsular Malaysia is not fully exploited. As a result these non-table fish species are sent elsewhere to be processed. Table fish or fish sold in the market directly to consumers are popular in demand as it is a cheaper source of protein for Malaysians.

Malaysia as a whole has yet to fully develop its own fish processing industry, in line with other key economic developing sectors. This means that there is great potential for this industry to be expanded Malaysia due to the abundant supply natural resources which will encourage investors to venture into it.

2.5 GRADE AND MARKET PRICE

The average market price for various grades of surimi are:

Grade			Market Price (USD / kg)
Super	Grade	A	- USD 2.40
	Grade AA		- USD 2.30
	Grade A		- USD 2.20
	Grade Mixed Surimi		- USD 1.50

In Malaysia, the grading of quality is based on it texture through organoleptic evaluation (folding and biting test). Malaysian surimi is categorized from medium to low grade.

2.6 SURIMI-BASED PRODUCTS

Other common products produced from surimi in Malaysia are as follows :

- Fish Ball
- Fish Cake
- Kamaboko
- Fish Sausage
- Battered & Breaded Products – e.g. Nugget, Burger, Fish Finger, Patented Shrimp, Imitation Crab Meat, Fish Filament
- Fish Noodles
- Fish Roll
- Chikuwa

Among the potential products for local and international market are fish ball, imitation crab meat, fish cake, fish roll and others.

2.7 FACTORS CONTRIBUTING TOWARDS THE DEVELOPMENT OF THE SURIMI PROCESSING INDUSTRY

The potential for export is bright for Malaysia, whereby the quantity is expected to achieve the 2,000 Mt limit or more by the year 2010. This is attribute to the following factors:

- The estimated increase in total imports by consuming countries in line with the increase by consumers and their population.
- The potential to improve surimi processing extensively by using fish of pelagic species
- Research and Development programmes, improvement in quality and extension services being given full support and due recognition from the government.
- Easy availability of raw materials (capture fisheries & import)
- Potential for export & foreign exchange earnings
- Health awareness – fish-base main protein (less cholesterol) – contains Omega 3, fatty acid
- High demand for fishery products, convenient & ready to-eat
- Availability of modern technologies and equipment
- Technology utilization
- Urban lifestyle – busy & hectic
- Promotions and incentives by government
- Better infrastructures

2.8 CONSTRAINTS FACED BY THE INDUSTRY

Constraints faced by the industry are due to the following factors:

- Supply of raw materials (fish) which is declining especially from the waters in the South China Sea because of intensive fishing efforts employed by Malaysian fishermen and also by fishermen from neighboring countries. But the supply of raw materials in waters from Sabah and Sarawak is still not fully exploited whereby there is an estimated 40,000 Mt of pelagic species (eg. selayang) which can be landed yearly and can be used for processing otoshimi.
- Species of fish landed is only suitable for producing surimi of lower grades.
- Surimi produced using fresh water species of fish is constrained by higher producing cost and lower conversion ratio.
- Lower incentives and lesser basic amenities to attract deep sea fishing vessels to land in Malaysia compared to Thailand. Landing bases in Thailand have modern and better infrastructures including deeper estuaries, providing credit and collateral facilities and also ensuring all catches landed are purchased without taking grade into account.

These constrains forced the surimi based products producers to import surimi for its usage in order to ensure a continuous supply of raw materials, easy handling, better quality products and at a competitive price.

Even though new technologies have been introduced in the surimi processing line, it is still more important to ensure there is a constant supply of fresh raw materials, since it is almost impossible to obtain good quality frozen surimi from frozen fish or from poor quality fresh fish or even from limited resources.

2.9 **FURTHER DEVELOPMENT STRATEGIES**

The strategic direction for further development are based in the Third Agriculture Policy and are as follows :

- To enhance product quality
- To ensure product safety
- To embark on development of new products
- To increase the export market
- To achieve positive Balance of Trade (BOT)
- To maximize utilization of undervalue fish
- To minimize post-harvest losses
- To facilitate the development of SMEs
- To conduct more training programme
- To provide technology support
 - o Introducing modern technology, equipment and techniques to produce quality products
 - o Introduction of fully automotive or semi automotive machinery to reduce labor costs
 - o Provide short term lease on machinery to potential entrepreneurs
- To establish incubator centers
- To improve extension services
- To provide new incentives

3. **CONCLUSION**

Demand for fisheries products especially surimi and surimi-based is expected to increase globally by 7 million metric tons by year 2010.

Malaysia has the capabilities and capacities to cooperate with other countries on the development of surimi and surimi-based industries.

STATUS AND TREND OF TOTAL LANDING OF IMPORTANT SURIMI SPECIES OF MYANMAR

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Introduction

Myanmar is situated in the Southeast Asian Subcontinent, has total land area of 676553 square kilometer (261,228 square miles) bounded in the South by the Andaman sea and in the Southwest by the bay of Bengal. Myanmar occupies a long coast line of approximately 3000 kilometers long from North to South. The coastal wetland mangroves are found along the coastal areas from latitude 20 degree north to 10 degree north and from longitude 92 degree east to 98 degree east. Wetland mangroves are the most important productive ecosystem to marine living organism for shelter and food. Generally we can say that Myanmar is rich in marine resources.

According to the FAO Project's survey report, Myanmar's continental shelf areas (0-200 meter depths) cover approximately 230000 square kilometers for fishing operation; 36000 square kilometer in Rakhine coast (the Northern part of Myanmar), 105000 square kilometer in Delta area (called Ayeyarwady: the wider portion in Myanmar), and 48000 square kilometer in Tanintharyi (including more than 800 islands at the southern part of Myanmar).

The Exclusive Economic Zone is about 486000 square kilometer. A variety of fishing activities can operate in Myanmar waters.

Myanmar has three seasons; Summer (from mid February to mid May), Monsoon or Rainy season (from mid May to mid September) and winter (from mid September to mid February). Myanmar government prohibit fishing during sporing migration period (April and May) and most of the fishing vessels usually take two months off (July and August) for repairing.

Myanmar is one of the highly fish production countries in Southeast Asia due to the oceanographic conditions; 1) delta rivers reach far out to the sea areas, 2) no pollutant come from the land, 3) a lot of nutrients come from the land, 4) most of the fisheries are still traditional fishing, and 5) no dynamite fishing and poisonous fishing.

According to the statistical data, Myanmar produces about 1.3 million tons of marine fish (including shrimp) during 2007- 08. This production helps to provide essential protein sufficiency for people and also for the animal from by-products of fishery production.

Myanmar has a population about 60 millions people and the consumption of fish protein is 33 kilogram per person per year, therefore marine fisheries play an important role in the economic development of Myanmar. The marine fisheries provide employment to thousands people who live in along the coast as well as at the processing factory in the city. And fisheries products are also a valuable source of foreign exchange for the country.

Marine Fisheries Production

In production of the marine fishery provides over sixty percent of the national fishery production. The marine fishery includes inshore and offshore fishery.

Inshore fishing activities means fishery carried out in the area of five nautical miles away from the shore in Rakhine and ten nautical miles in Ayeyawady and Thanintharyi coast. The fishing is done by set fishing gear without boat or fishing gear with non-mechanized boat. If the boat is mechanized to assist moving fishing gear the engine should be not more than 12 horse power and

Annex 8

the over all length of the boat should be not more than 30 feet. The fishing season in inshore fishery is from first of April to last day of March in successive year. Due to severity to weather during monsoon season the actual fishing period is only seven months. That is being operated by active fishing gears (e.g. gill net, long line, trap etc.)

Offshore fishery is operated by active fishing gears (e.g. trawl, purse seine etc.) using fishing vessels over 30 feet in overall length and with engine power more than 12 HP. The offshore fishery fishing grounds are beyond the outer area of the demarcated inshore fishery areas. The main fishing gears, used for this fishery are bottom trawl, purse seining, drift net and long line. The fishing season in the offshore fishery is from the first day of September to last day of August in the following year.

Inshore and offshore fishing vessel and production (1994-2004)

No	Year	Total Landing (Mil MT)	Marine Fishery	
			Volume MT (Mil MT)	Sharing (%)
1	1997-1998	0.91	0.68	75%
2	2000-2001	1.31	0.95	73%
3	2003-2004	1.98	1.10	56%
4	2004-2005	2.22	1.23	55%
5	2006-2007	2.84	1.52	54%

Sources Fishery Statistic (2006-2007) Department of Fisheries

Commercial Fishes and Exportable Species

Fish and shrimp constitute higher group of aquatic animals, having great commercial value and received special attention to scientists all over the world due to their biology and abundance. After the analysis based on trawling surveys and commercial fishing vessels, over 442 species under 153 families of fish, shrimp, prawn and lobster form the continental shelf and slope of deep sea areas of Myanmar Exclusive Economic Zone (EEZ) were collected and named systematically.

Economic species are considered in term of value; abundance, local demand in export potential. Thus, it's very important to know that approximately how much in percentage composition in weight of these fish is present at sea. Taking the catch per hour return trawl catch as the criteria for judging richness of the resource, in this regard, analysis of trawl catches would reflect the composition of fish at sea. During 1980-81, trawl catches analysis was undertaken from fishing logs of commercial fishing vessel belonged to government fishing corporation. Out of 30 fishing vessel, fishing logs from 22 (73%) vessel were analyzed with fishing hours of 11,095 and a total catches of 2,375 metric tons.

In this study, the fish were grouped as 21 sets mostly based on family except for prawn. It was been found that

1. Sea catfish (Nga yaung) stood first with	19.0 %
2. Croakers (Poke thin, Thin wa)	18.0 %
3. Pony fish (Nga waing)	9.0 %
4. Sardines (Nga kone nyo), ilisha (Zinbya)	8.0 %
5. Hairtail/ Ribbon fish (Nga da gon)	7.0 %
6. Javenil/Grunters (Nga gon)	7.0 %
7. Pike congers/Sea eels (Nga shwe)	6.5 %
8. Horse mackerels (Waing phyu gyi, Zar gyan)	4.0 %

9. Threadfins (Shwe nga)	3.0 %
10. Snappers (Nga parr ni)	3.0 %

Detailed compositions are shown in the following table.

Sr No	Family/Group of Fish	English Common Name	Myanmar name	% (Weight)	Position of catch
1	Ariidae	Sea catfish	Nga yaung	18.5	1
2	Carangidae	Horse Mackerel	Waing phu gyi/Zar Gyan	3.7	7
3	Clupeidae	Llisha / Herring	Nga zinn bya, Nga da lar	7.9	4
4	Leiognathidae	Pony Fish	Nga waing	9.3	3
5	Lutjanitdae	Snapper	Nga par ni, Nga ba yin	2.7	10
6	Mullidae	Goat Fish	Kyo war	1.1	-
7	Muraenesocidae	Sea eel	Nga shwe / Nga hauk	6.5	6
8	Nemipteridae	Threadfin bream	Shwe nga	3.1	8
9	Polynemide	Indian Threadfin	Ka ku yan	2.8	9
10	Pomadasyidae	Grunder	Nga gon	6.9	-
11	Seianidae	Croaker	Poke thin, Thin war	18.4	2
12	Scrombridae	Mackerel	Nga kun shut, Pla tu	1.1	-
13	Synodontidae	Lizard Fish	Nga pa lawy	2.5	11
14	Stromateidae	Pomfret	Nga mote phyu	0.8	-
15	Trichiuridae	Hair tail / Ribbon Fish	Nga da gon	7.1	5
16	Carcharinidae	Shark (Plus ray)	Nga mann, Nga late kyauk	2.0	-
17	Penaeidae (1)	Tiger Shrimp	Pazun Kyarr	0.2	-
18	Penaeidae (2)	Banana/White shrimp	Pazun phu	0.1	-
19	Penaeidae (3)	Pink shrimp	Pazun pannyaung	0.3	-
20	Flat Fish	Flat fish(all species)	Shar lay	0.8	-
21	Miscellaneous	Assorted fishes	Yaw / Nga zone	3.9	-
Total				100 %	

For the year 2000-2001, the export amount was 144623.85 MT and export value was USD 218.29 million, the export data increase and shown in the following table.

No	Fiscal Year	Total Export		Increase and Decrease	
		MT	US \$	MT	US\$
1	2000-2001	144623.85	218.291	-	-
2	2001-2002	201666.83	251.533	+57042.98	+33.242
3	2002-2003	212999.60	317.382	+11332.77	+65.849
4	2003-2004	205463.17	318.514	- 7536.43	+1.132
5	2004-2005	255780.18	346.921	+50317.01	+28.407
6	2005-2006	271070.25	359.195	+15290.07	+12.274
7	2006-2007	343426.607	466.159	+72356.357	+106.964
8	2007-2008	351652.00	561.023	+8225.393	+94.864

Biography of Fish Species for Surimi Plant in Myanmar

- Species Name : *Upeneus sulphureus*
 Myanmar name: Kyo war
 Colour of the meat: White meat
 Size: Maximum 23 cm, common 12 – 15 cm
 Weight: Maximum 0.07 kg
 Location/Fishing ground: Main fishing ground of Da wei , trawl catch rate 6 kg/hr off Myeik 7kg/hr
 Depth: 20 – 80 metres
 Fishing season: January, February, March, April, June and November
 Fishing Gear: Bottom trawl and hand lines
- Species Name : *Nemipterus japonicus*
 Myanmar name: Shwe Nga
 Colour of the meat: White meat
 Size: Maximum 35 cm, common 22 cm
 Weight: Maximum 0.55 kg, common 0.2 kg
 Location/Fishing ground: Main fishing ground of Pat their river mouth, trawl catch rate 13 kg/hr, off Da Wei 17 kg/hr, off Myeik 11 kg/hr
 Depth: 60 metres
 Fishing season: February, May, June, July, August and September
 Fishing Gear: Bottom trawl
- Species Name : *Johnius amblycephalus*
 Myanmar name: Nga poke Thin
 Colour of the meat: White meat
 Size: Maximum 25 cm, common 15 cm
 Location/Fishing ground: Main fishing ground of Pat their river mouth trawl catch rate, 55-68 kg/hr, off Ye 17-50 kg/hr, off Myeik 54-61 kg/hr
 Depth: 20 – 50 metres
 Fishing season: January- April, June-August and December
 Fishing Gear: Bottom trawl

4. Species Name : *Pennahia anea*
 Myanmar name: Gaung pwa
 Colour of the meat: White meat
 Size: Maximum 17 cm, common 13-15 cm
 Location/Fishing ground: Main fishing ground of Pat their river mouth trawl catch rate, 55-68 kg/hr, off Ye 50-245 kg/hr, off Myeik 54-61 kg/hr
 Depth: 20 – 40 metres
 Fishing season: January- April, June-August and December
 Fishing Gear: Bottom trawl
5. Species Name : *Illisha megaloptera*
 Myanmar name: Zin bya
 Colour of the meat: White meat with many small bones
 Size: Maximum 28 cm, common 20-22 cm
 Weight: Maximum 0.2 kg, 0.1 kg
 Location/Fishing ground: Main fishing ground of Pat their river mouth trawl catch rate, 19-137 kg/hr, off Ye 25 kg/hr, off Da wei 20 kg/hr , off Myaeik 21 kg/hr
 Depth: 28 metres belt
 Fishing season: January, February, May, July and November
 Fishing Gear: Bottom trawl
6. Species Name : *Saurida elongata*
 Myanmar name: Nga pa lway
 Colour of the meat: White meat
 Size: Maximum 45 cm
 Location/Fishing ground: Main fishing ground of, Da wei trawl catch rate 20 kg/hr, off Myaeik 6-32 kg/hr
 Depth: 20-60 metres
 Fishing season: January, February, May, July and November
 Fishing Gear: Bottom trawl

CURRENT STATUS OF SURIMI RAW MATERIALS AND INDUSTRIES IN THAILAND

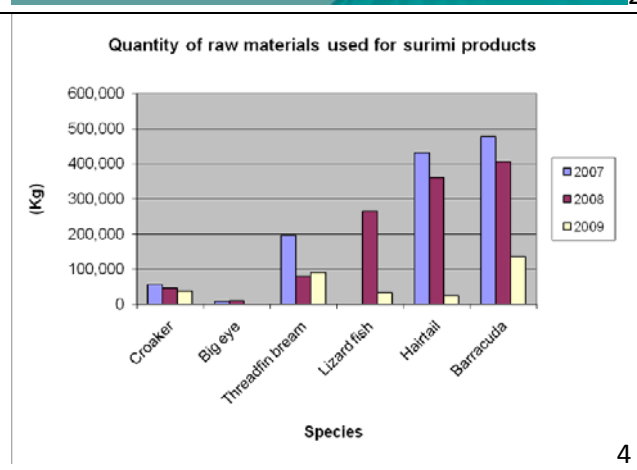
By Sunee Payomjamsri, Department of Fisheries, Fish technological Development Division
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Current Status of Surimi Raw Materials and Industries in Thailand

Total Quantity of demersal fish at Bangkok Fishing port (Kg)

No.	Species	2007	2008
1	Sea bass	907,968	1,070,388
2	Red snappers	138,614	87,337
3	Big eye	8,972	9,823
4	Hairtail	432,057	362,412
5	Rays	4,174	3,825
6	Sea catfish	8,727	16,284
7	Croaker	56,016	47,326

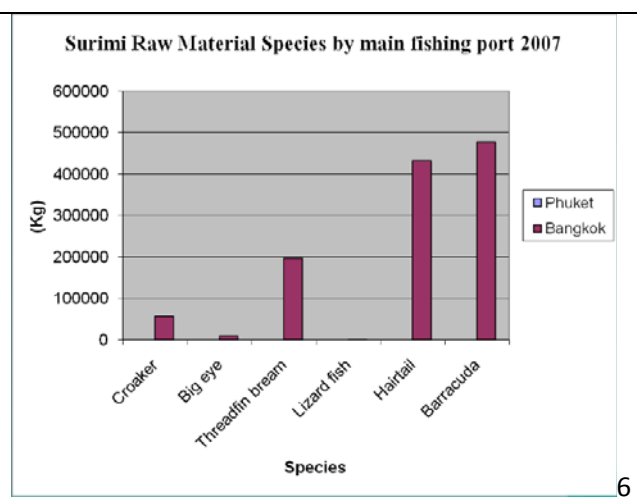
No.	Species	2007	2008
8	Sharks	2,676	1,137
9	Sand whittings	49,564	29,470
10	Monocle breams	30,355	22,029
11	Threadfin bream	195,483	79,788
12	Lizard fish	62	956
13	Flatfish	436,370	319,722
14	Indian halibut	95,528	90,478

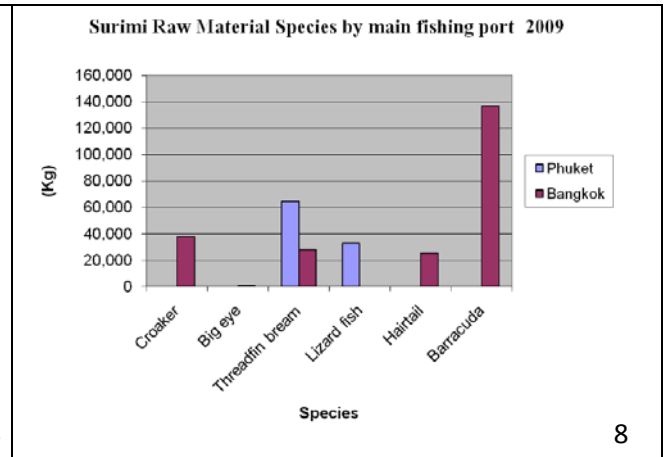
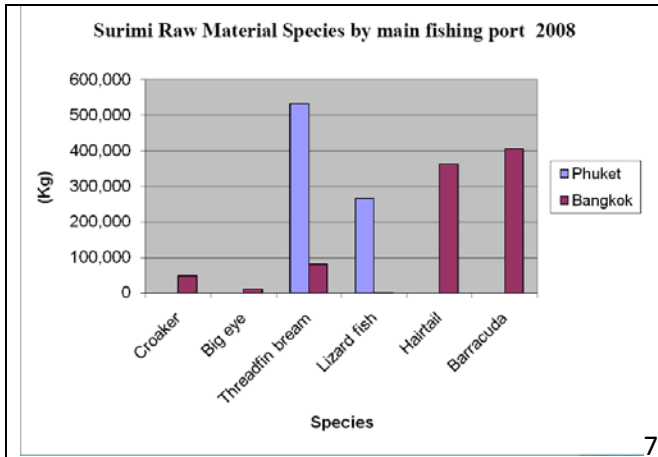


Surimi Raw Material Species by main fishing port

Species	Phuket			Bangkok		
	2007	2008	2009	2007	2008	2009
Croaker	0	0	0	56,016	47,326	37,728
Big eye	0	0	0	8,972	9,823	579
Threadfin bream	0	532,101	64,200	195,483	79,788	27,680
Lizard fish	0	265,103	32,450	62	956	0
Hairtail	0	0	0	432,057	362,412	24,933
Barracuda	0	0	0	476,625	405,174	136,613

Unit: Kg





List of raw materials used for surimi product

No.	English name	Scientific name	Local name
1	Threadfin bream	<i>Nemipterus spp.</i>	ปลาทรายแดง
2	Lizard fish	<i>Saurida spp.</i>	ปลาปากคม ไม้กอก
3	Big eye	<i>Priacanthus spp.</i>	ปลาตาหวาน ตาโต
4	Croaker, Big eye croaker	<i>Pennahia spp.</i>	ปลาจวด
5	Goatfish	<i>Upeneus spp.</i>	ปลาพะ ปลาหนวดฤๅษี
6	Barracuda	<i>Sphyræna spp.</i>	ปลาสาก
7	Sardine	<i>Sardinella spp.</i>	ปลาหลังเขียว

Present Situation of Thai Surimi Industry

- ◆ Percentage of raw materials used
 - ◆ Threadfin bream (40%)
 - ◆ Big eye (15%)
 - ◆ Lizard fish (20%)
 - ◆ Goatfish (15%)
 - ◆ Others (10%)

Present Situation of Thai Surimi Industry

- ◆ Types of raw materials
 - ◆ Others
 - ◆ Ribbon Fish
 - ◆ Croaker
 - ◆ Sardine

Table 1 : List of surimi processing plants and its capacity

No.	Company name	Location	Capacity (MT/year)
1	B.S. Manufacturing Co., Ltd	Samut Prakan	3,000
2	Premier Frozen Product Co., Ltd	Samut Prakan	4,600
3	Andaman Surimi Industries Co., Ltd	Samutsakhon	16,500
4	Anusom Mahachai Surimi Co., Ltd	Samutsakhon	7,500
5	Apitoon Enterprise Industry Co., Ltd	Samutsakhon	12,000
6	K.L. Cold storage Co., Ltd	Samutsakhon	3,000
7	Lucky Food (Thai) Co., Ltd	Samutsakhon	3,000
8	Lucky Surimi Products Co., Ltd	Samutsakhon	9,500
9	Pacific Marine Food Product Co., Ltd	Samutsakhon	15,000
10	Sa Royal Marine Food Product Co., Ltd	Samutsakhon	22,000

Annex 9

No.	Company name	Location	Capacity (MT/year)
11	Starfish Co., Ltd	Samutsakhon	17,000
12	China Siam Seafoods Co., Ltd	Suratthani	2,400
13	Siamchai Internation Food Co., Ltd	Ranong	1,500
14	Kantang Seafood Co., Ltd	Trang	8,000
15	Trang Sure Co., Ltd	Trang	9,500
16	Thaveelarp Fisheries Ltd. Part	Trang	1,100
17	Hai Tai Seafood Co., Ltd	Songkhla	3,200
18	Man A Frozen Food Co., Ltd	Songkhla	4,500
19	Pacific Fish Processing Co., Ltd	Songkhla	20,00
20	Buyong General Co., Ltd	Songkhla	2,400
21	Chaicharoen Marine (2002) Co., Ltd.	Pattani	4,500

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Figures of Thai Surimi and Surimi Seafood Products in 2008

Major Surimi Seafood Product	MT.	Surimi Usage (MT.)
Crab stick, Chikuwa, Kamaboko	60,000	21,000
Fish Cake & Fish Ball (Home made)	20,000	7,000
Dried Fish Snack (Taro, Fisho)	4,000	10,000
Total Surimi (Domestic)	36,000	38,000
Total Surimi Production	84,000	118,000

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Thai Surimi Export Volume

Country	Year (MT)		
	2006	2007	2008
Japan	55,000	50,000	55,000
Korea	9,000	6,600	3,000
Singapore	5,000	3,700	2,500
Taiwan	4,300	3,500	2,000

15

A REVIEW ON THE MARINE FISHERIES RESOURCES AS USED FOR SURIMI RAW MATERIALS IN VIETNAM

By Vu Viet Ha, Research Institute for Marine Fisheries (RIMF), Haiphong, Vietnam, e-mail: vvha@rimf.org.vn

Introduction

Humans have fished since prehistoric times, but in the last 50 years fisheries have expanded faster than ever before. Catch have increased because a growing human population demand more food and because improved technology have simplified capture, processing, distribution and sale (Jennings et al. 2001). Fishing pressure on the fish population increased day by day in most countries and regions. Overfishing has frequently seen in Asian Region, including Vietnam. Thus maximization of utilization of the fisheries resource is one of important objectives of fisheries managers. Therefore, surimi is used as a good solution for the low economically valuable fish species through value added method.

Vietnam has a long coastline, bearing sub-tropical characteristic and high diversity with more than 2000 fish species was reported (Chung et al. 2001). There is a number of fish species can be used for surimi materials, such as Croaker (Sciaenidae), Threadfin bream (Nemipteridae), Lizardfish (Synodontidae), Goat fish (Mullidae) and Red big eye (Priacanthidae). This paper will present an outlook on abundant of these fish groups based on the trawl survey in 2004 and 2005 as revised from V. V. Hà et al (2005) and Đ. M. Son (2005).

Methods

Based on the environmental condition and fish fauna, the sea of Vietnam is divided into five main areas (Figure 1) namely the Tonkin Gulf (from 17°30N up to the north); the Central area (from 11°30N to 17°30N, limitation eastward on 110°00E); the Southeast area (from 11°30N to the south); the Southwest area (from 105°00E to the west) and the Offshore water (from 110°00E to the east). Of which, four sub-areas are trawlable with large fishing grounds and rich fisheries resources.

The demersal fish stock in the continental shelf of Vietnam in 2004 and 2005 was monitored by the trawl surveys using a 500 horse power commercial fishing vessel. Sampling stations were fixed covering all of trawlable areas from North to South (Figure 1). Fishing gear was bottom trawl net with the mouth opening of 16 m and stretched mesh at cod-end of 35 mm.

Catch per Unit Effort or catch rate (kg/h) is used to describe the relative abundant of fish. Trawlable biomass was calculated using "Swept Area Method" (Sparre & Siebren 1995) applied the catch-ability of 0.5. Distribution of fish groups were plotted using MapInfo (MapInfo 2004).

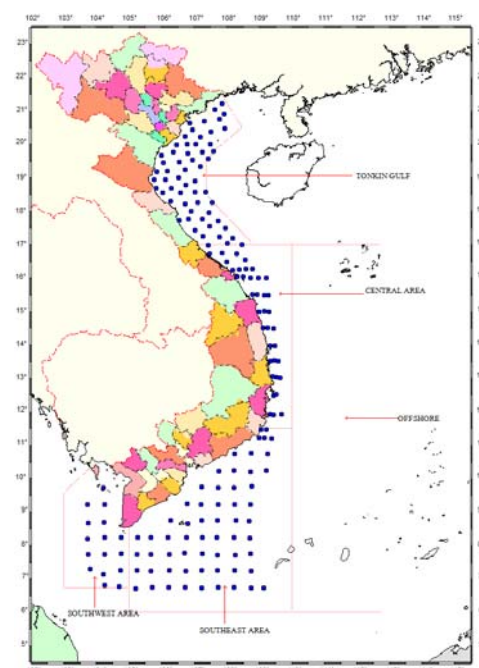


Figure 1. Sampling stations of the trawl survey in 2004 and 2005

Marine Fisheries Resources as used for Surimi Raw Materials

Mean catch rate of five fish groups mainly used as surimi raw materials namely Croaker (Sciaenidae), Threadfin bream (Nemipteridae), Lizardfish (Synodontidae), Goat fish (Mullidae) and Red big eye (Priacanthidae) based on the bottom trawl surveys in 2004 and 2005 are shown in figure 2. Globally, the catch rate of Lizard fish group was highest while other groups were shift up and down between areas. The surveyed results also indicated that the stock abundance of these fish groups decreased, estimated at 210 thousand tons in 2004 and dropped to 160 thousand tons in 2005. The southeast area contributed a relative high percentage in total biomass of these fish groups with 67% in 2004 and 44% in 2005 (Figure 4).

Lizard fish (*Synodontidae*)

Lizard fish is widely distributed in the continental shelf of Vietnam with high concentration in the gulf of Tonkin and the southeast area while they were low distributed in the central and southwest areas (Figure 5). The group mainly comprises of genus: Saurida, Trachinocephalus and Synodus. The catch rate was highest in the southeast area, estimated about 18 kg/h in the survey in 2004 and around 5 kg/h in the survey in 2005. For the other sub-areas, the mean catch rate was stable around 4 kg/h (Figure 2).

Total biomass of the Lizard fish was estimated about 100 thousand tons in 2004 but decreased sharply in the survey in 2005, to be 57 thousand tons (Figure 3).

Threadfin beam (*Nemipteridae*)

The main threadfin bream species caught in Vietnamese waters including *Nemipterus peronii*, *N. bathybius*, *N. nemurus*, *N. mesoprion*, *N. virgatus*, *N. tambuloides*, *N. japonicus* and *N. marginatus*. They were distributed mostly in the middle of the Tonkin gulf and edges of the southern waters (Figure 5).

Overall mean catch rates of Threadfin beam for particular areas are graphically shown in figure 2. It is suggested that the catch rate of this group was not very much different between areas. However, trend in catch rate over time was decreased slightly.

The trawlable biomass of Threadfin beam in the continental shelf of Vietnam was estimated approximately 40 thousand tons in 2004 and 30 thousand tons in 2005, comprised about 15% and 18% in biomass of 5 species groups, respectively (Figure 3).

Croaker (*Sciaenidae*)

A large numbers of different species of Croaker was identified in Vietnamese waters which are belonging to family Sciaenidae. The most economically important species are Greyfin croaker (*Pennahia anea*), Silver croaker (*P. argentata*), Big head pennar croaker (*P. macrocephalus*), Pawak croaker (*P. pawak*) and Belanger's croaker (*Johnius belangerii*).

Distribution of Croaker fishes are species specific. The survey results showed that Crocker fishes were mainly distributed in the mouth of the Tonkin gulf and shallow waters of the southwest area (Figure 5). In the central and southeast areas, they were observed relative low concentration. Regionally, mean catch rate of Crocker group was below 2 kg/h except for the southwest area (Figure 2).

Total biomass of Crocker group was estimated about 11 thousand tons in 2004 and increased to be over 18 thousand tons in 2005, contributed 5% and 12% in total biomass of 5 surimi material fish groups (Figure 3).

Goat fish (*Mullidae*)

Group of Goat fishes caught in the sea of Vietnam by trawl net are mainly comprised of Bensas goat fish (*Upeneus bensasii*), Goldband goatfish (*U. moluccensis*), Freckled goatfish (*U. tragula*) and Sulphur goatfish (*U. vita*).

Results from the bottom trawl surveys in 2004 and 2005 showed that the Goat fishes were distributed in high concentration in the southeast area compared to other areas (Figure 5). The mean catch rates were observed below 2 kg/h in all of Vietnamese waters except for the southeast area (Figure 2).

The trawl-able biomass of Goat fishes were estimated approximately 36 thousand tons in 2004 and sharply dropped in 2005 to be 17.6 thousand tons (Figure 3).

Red big eye (*Priacanthidae*)

The most popular species belonging to Red big eye group (*Priacanthidae*) caught by trawl in Vietnamese waters are Red big eye (*Priacanthus macracanthus*) and Purple spotted big eye (*P. tayenus*). This family distributes widely in Vietnam sea waters especially in the southeast area (Figure 5).

Investigation results from trawl surveys in 2004 and 2005 indicated that the mean catch rate of Red big eye fishes fluctuated between areas, highest in the southeast area and lowest in the gulf of Tonkin (Figure 2).

Total biomass of Red big eye fishes were estimated to be 28 thousand tons in 2004 and increased to over 37 thousand tons in 2005 (Figure 3). It is said that the Red big eye stock in the sea of Vietnam was recovered.

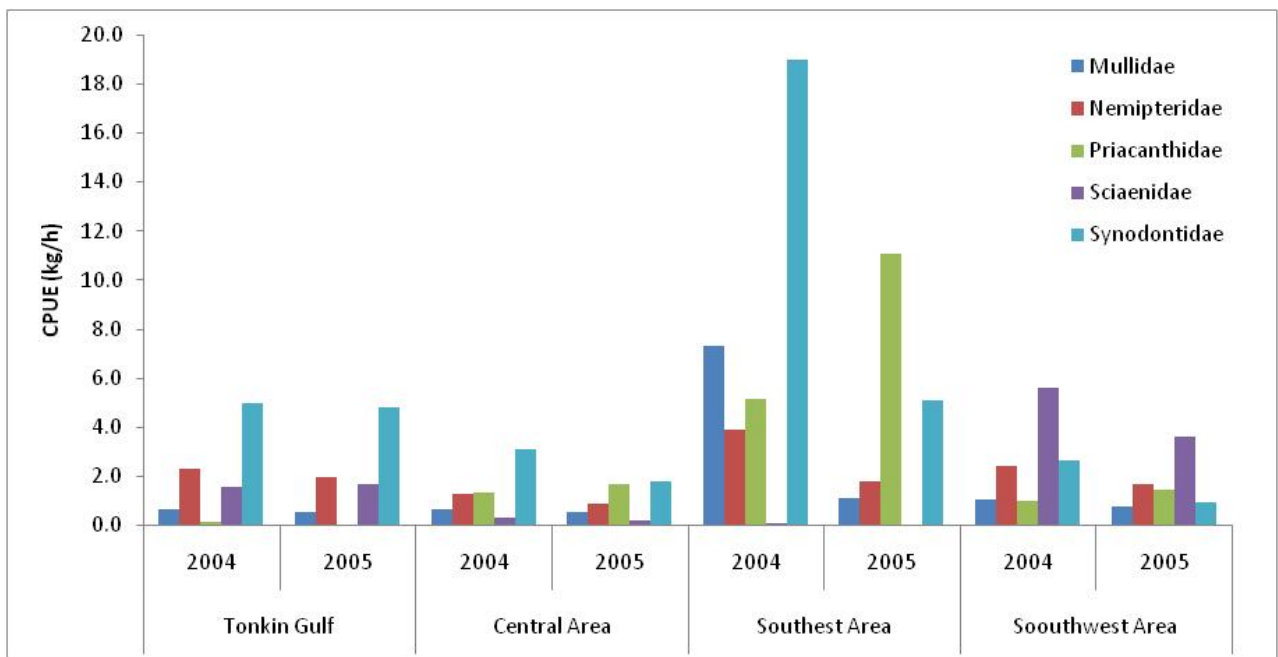


Figure 2. Mean catch per unit effort (kg/h) of fish groups based on the bottom trawl survey in 2004 and 2005

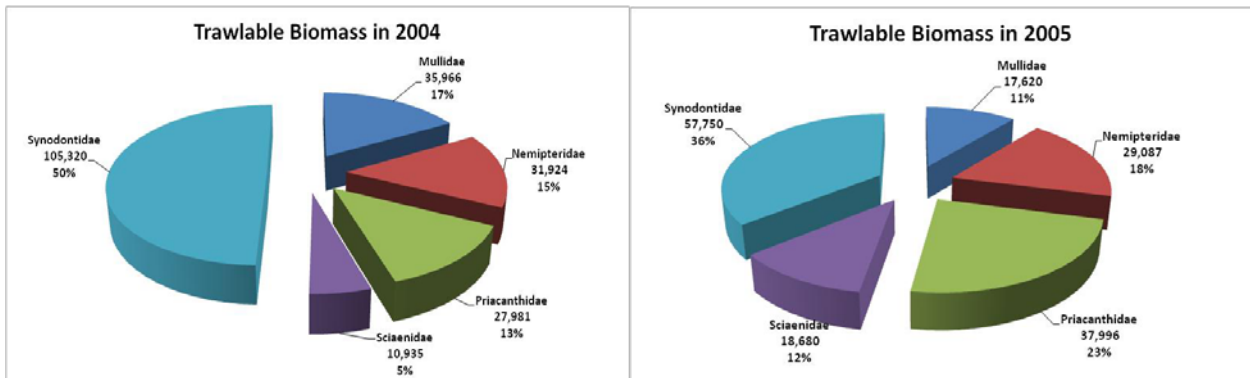


Figure 3. Trawlable biomass (thousand tons) of fish groups (Croaker, Threadfin bream, Lizardfish, Goat fish and Red eye) in Vietnamese water estimated by swept area method.

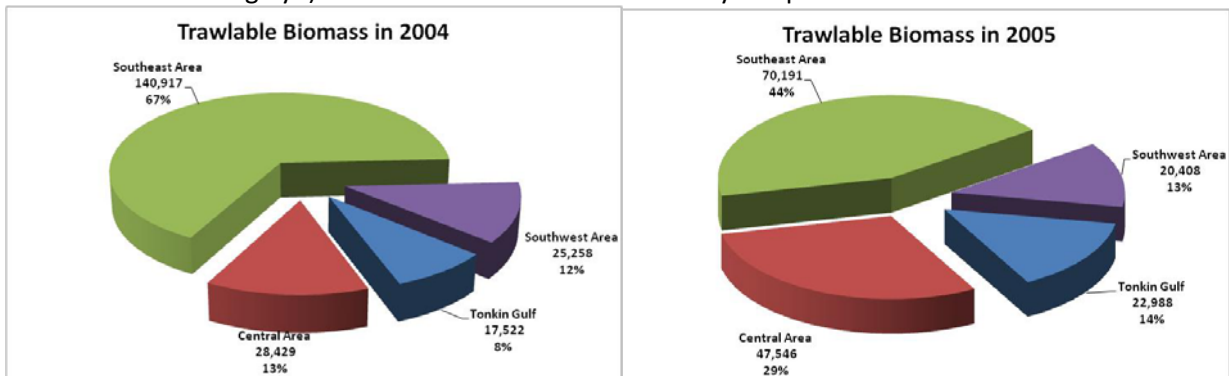


Figure 4. Trawlable biomass (thousand tons) of fish groups (Croaker, Threadfin bream, Lizardfish, Goat fish, and Red big eye) in Vietnamese water estimated by swept area method, stratified by sub areas.

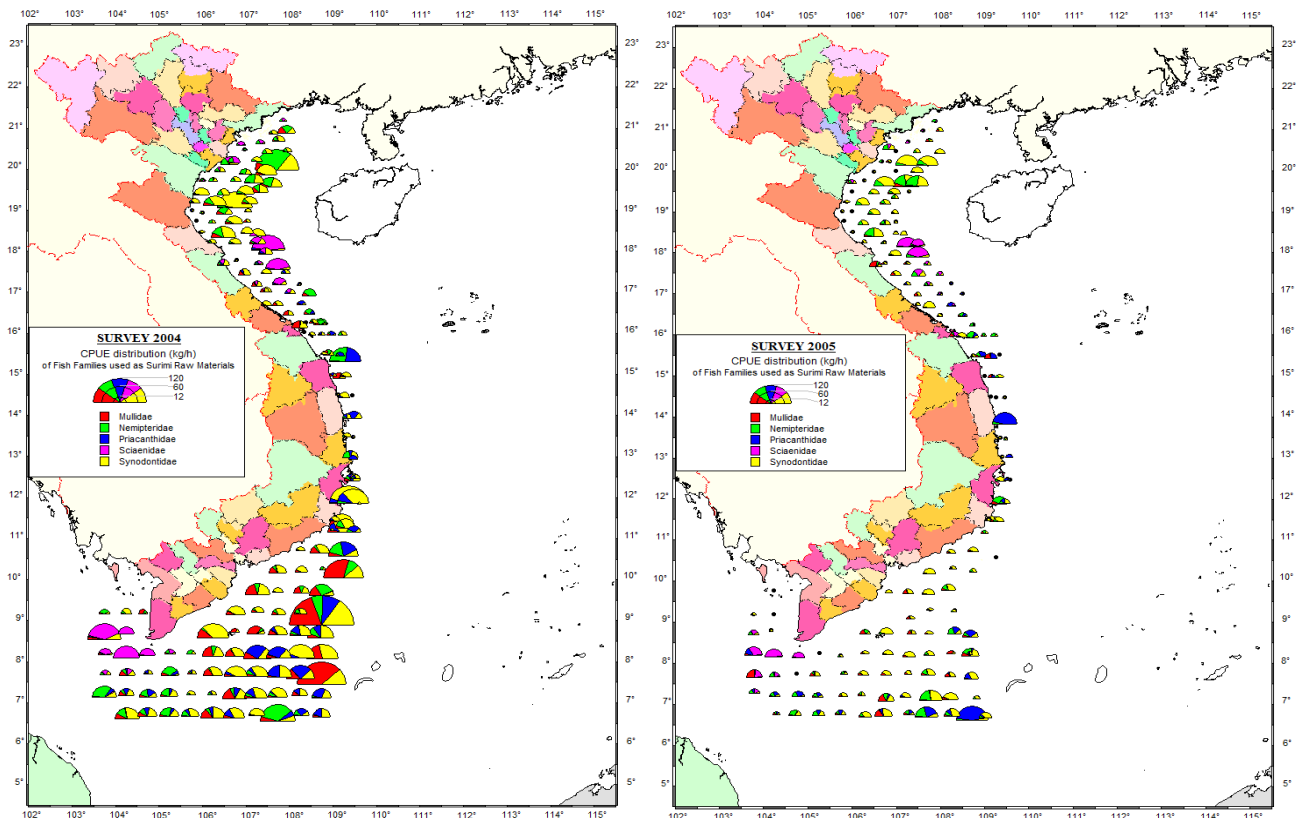


Figure 5. Plots of catch per unit effort of fish groups at sampling station in 2004 (left) and 2005 (right).

Discussion

Lizard fish is a preferable material for Surimi is relatively abundance in Vietnamese waters, especially, in the gulf of Tonkin, the southeast area and the southwest area. However, it had been considerably declined in most fishing ground for trawler and, particularly, the southern waters of Vietnam.

Threadfin bream is comprised of many different species and very abundance in the southeast and southwest areas and the gulf of Tonkin. Unfortunately, this fish resource had been seriously declined in southeast and southwest areas, recently.

Croaker is dominated in southwest area and strongly fluctuated in the others. But, it was also notably decreased monitoring by the bottom trawl surveys.

Group of Goatfish tends to distribute in the Central and the southeast waters and quite abundance in the southwest water. This is not high economically important species, however, it was dramatically decreased in recent years. Strong fluctuation in fish stock of red big eye was observed in the gulf of Tonkin.


General speaking, the fish resources can be used for Surimi processing in Vietnam waters have been notably decreased and this trend perhaps made by the rising fishing pressures in most fishing grounds.

The further assessing on fishing fleets, gears used, and fishing efforts as well as fisheries economics need to be carried out to make the overview picture of the sector. And, management issues should also be considered to drive the sector toward sustainability.

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DISCUSSION AND RECOMMENDATIONS

<p style="text-align: center;">Necessary Information to Maintain Sustainable Development of surimi Industry and Its Raw Materials for SEA Region</p>  <p style="text-align: right;">1</p>	<p style="text-align: center;">Topics</p> <ul style="list-style-type: none"> • Potential (new) species the unexploited fishing areas/grounds could be further determined (low-valued fish, white/dark-meat, utilization of trash fish?, deep-sea resources ?) • Role of Major Players <ul style="list-style-type: none"> – National Government? (update data, negotiation, technology support, etc.); – Private sector (plants, port) – Buyers • Information sharing among stakeholders • Enhance/strengthen coordination and collaboration among key stakeholders • How to obtain up-to-date information • How to ensure sustainability on the use of raw materials of surimi • How to promote information collection (i.e. national statistic) • National needs for processing/capture • Offshore fisheries management issue <p style="text-align: right;">2</p>																												
<p style="text-align: center;">Topics</p> <ol style="list-style-type: none"> 1. How to ensure the sustainability for the use of raw materials 2. Potential alternative species 3. Main players (who?, their role?) 4. How to enhance/strengthen coordination and collaboration among the key stakeholders 5. How to improve national information collection on the issue related to fish stock or fishery resources 6. Offshore fisheries management <p style="text-align: right;">3</p>	<p style="text-align: center;">How to ensure the sustainability for the use of raw materials</p> <ol style="list-style-type: none"> 1. Existing fishery resources <ol style="list-style-type: none"> 1. Sustainable offshore fisheries management (referred to the outcomes from the SEAFDEC-FAO workshop held in 2008, established fishing season, reduce no of trawlers) 2. Sustainable coastal fishery management 2. Information on stock status + catch landing + spawning + migration = national fishery policy 3. Application of CCRF and other management tools 4. Improved trawl fishing gear and techniques 5. Strengthen enforcement 6. Strengthen/promotion of CBFM 7. Business-based fisheries management <p style="text-align: right;">4</p>																												
<p style="text-align: center;">Potential Alternative Species for Surimi raw materials</p> <table border="1" data-bbox="204 1350 791 1720"> <thead> <tr> <th>Countries</th> <th>Alternative Species</th> <th>MSY/MEY</th> </tr> </thead> <tbody> <tr> <td>Malaysia</td> <td>Pike Conger Big-eye Snapper</td> <td>(from long-line fishing, and inshore)</td> </tr> <tr> <td>Myanmar</td> <td>(using only 5 major species will be enough for the 5 plants)</td> <td>(data from trawl)</td> </tr> <tr> <td>Thailand</td> <td>Barracuda Pike Conger (central GoT) Hair-tail Moray ell (Andaman sea)</td> <td></td> </tr> <tr> <td>Vietnam</td> <td>Threadfin Porgy (Eynniss Cardinalis) Hair-tail Spinfoot (siganidae) Barracuda Hagfish</td> <td>(stock of Barracuda...)</td> </tr> <tr> <td>Peru</td> <td>Flying Squid</td> <td>RAC also paid attention</td> </tr> </tbody> </table> <p style="text-align: right;">5</p>	Countries	Alternative Species	MSY/MEY	Malaysia	Pike Conger Big-eye Snapper	(from long-line fishing, and inshore)	Myanmar	(using only 5 major species will be enough for the 5 plants)	(data from trawl)	Thailand	Barracuda Pike Conger (central GoT) Hair-tail Moray ell (Andaman sea)		Vietnam	Threadfin Porgy (Eynniss Cardinalis) Hair-tail Spinfoot (siganidae) Barracuda Hagfish	(stock of Barracuda...)	Peru	Flying Squid	RAC also paid attention	<p style="text-align: center;">Role of the National Main Players in Surimi Industries in Your Countries</p> <table border="1" data-bbox="842 1350 1422 1720"> <thead> <tr> <th>Agency</th> <th>Function/Responsible</th> </tr> </thead> <tbody> <tr> <td>Government and semi-government</td> <td>-Cooperation, annual meeting among key stakeholder (information from industries → national policy) -Take appropriate action to ensure raw materials supply to the surimi plants -Carry out research on the new species for surimi raw materials -Quality and food safety standard -National fishery statistics -Fishery resources survey</td> </tr> <tr> <td>Department responsible for export/import (i.e. Ministry of Industries, Ministry of Agriculture - Department of Fisheries in Malaysia)</td> <td>Marketing</td> </tr> <tr> <td>Fisheries Association related to frozen or seafood products</td> <td>Marketing and processing techniques (technology transferred)</td> </tr> <tr> <td>Academic</td> <td>Research and development</td> </tr> </tbody> </table> <p style="text-align: right;">6</p>	Agency	Function/Responsible	Government and semi-government	-Cooperation, annual meeting among key stakeholder (information from industries → national policy) -Take appropriate action to ensure raw materials supply to the surimi plants -Carry out research on the new species for surimi raw materials -Quality and food safety standard -National fishery statistics -Fishery resources survey	Department responsible for export/import (i.e. Ministry of Industries, Ministry of Agriculture - Department of Fisheries in Malaysia)	Marketing	Fisheries Association related to frozen or seafood products	Marketing and processing techniques (technology transferred)	Academic	Research and development
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<h3 style="text-align: center;">Information Sharing among Key Stakeholders in Your Countries</h3> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4F81BD; color: white;"> <th style="text-align: center;">Agency</th> <th style="text-align: center;">Type of Information</th> </tr> </thead> <tbody> <tr> <td>Department of fisheries</td> <td>Fish stock, quality control, standard and seafood safety, no of fishing boat (trawlers), annual fishery statistics, fishing ground, fishing gear, fish species, no of surimi plants, average price of fish species,</td> </tr> <tr> <td>Department responsible for import/expert</td> <td>Marketing (countries, demand, etc)</td> </tr> <tr> <td>Academy</td> <td>Results of the research</td> </tr> <tr> <td>National fishery association</td> <td>No of surimi plants, marketing,</td> </tr> <tr> <td>National research institute</td> <td>Fishing ground, fish stock assessment, fish biological information</td> </tr> <tr> <td>Regional fishery agency (SEAFDEC)</td> <td>Regional fishery statistics</td> </tr> </tbody> </table> <p style="text-align: right;">7</p>	Agency	Type of Information	Department of fisheries	Fish stock, quality control, standard and seafood safety, no of fishing boat (trawlers), annual fishery statistics, fishing ground, fishing gear, fish species, no of surimi plants, average price of fish species,	Department responsible for import/expert	Marketing (countries, demand, etc)	Academy	Results of the research	National fishery association	No of surimi plants, marketing,	National research institute	Fishing ground, fish stock assessment, fish biological information	Regional fishery agency (SEAFDEC)	Regional fishery statistics	<h3 style="text-align: center;">How to Enhance/Strengthen Coordination and Collaboration among Key Players</h3> <ul style="list-style-type: none"> • Inter-agency coordination (inland and marine, aquaculture, inland and marine capture, processing) through “Industry Cooperation Council” (lead by Department of Fisheries) (in Malaysia, states 2 times/y, national 1 time/y) • Establishment of National Fishery Association lead by Department of Fishery (members include all associations and department responsible) • Regional/National Surimi Forum (encourage by Academy or Ministry) <p style="text-align: right;">8</p>
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<h3 style="text-align: center;">How to Obtain Up-to-Date Information related to Surimi</h3> <ul style="list-style-type: none"> • Improved national statistics • Government incentive to data collector (i.e. Fund for Food – Malaysia) • Established national legislation <p style="text-align: right;">9</p>															

CLOSING SPEECH
By Deputy Secretary-General of SEAFDEC

At SEAFDEC/TD
1-2 July 2009

Representatives from the Participating Countries,
Distinguished guests,
Ladies and Gentlemen, Good Morning:

First of all, I would like to thank you for your active participation in this End-of-Project Meeting of the Working Party on Information Collection for Economically Important Species as Surimi Materials in the Southeast Asian Region.

The information that you have provided to this Meeting are very useful not only for the final compilation of the outcomes from the Project but also for the assessment of the potential fish species that could be used as raw materials for Surimi production in order to achieve sustainability of the region's Surimi industry. We have heard reports from the countries on the various constraints that confront their Surimi industries which focus on the decreasing supply of raw materials. However, in our efforts to promote the Surimi industry, we should always try to put to mind the need to strike a balance between producing additional raw materials for the industry's expansion due to economic reasons and producing fish food for the region's increasing population. Addressing these two socio-economic concerns could also put much pressure on the region's fisheries. This is our food for thought considering the lessons and experience we gained from the implementation of the Project.

Before I bid goodbye, since we are now on the last activity of the project, I wish to assure all of you that SEAFDEC would still continue to update the information related to the Surimi industry in the region by networking this plan with our other relevant ongoing projects. Therefore, we will still be requesting the participating countries to continue updating your data and submitting these to SEAFDEC for compilation, publication, and dissemination.

Lastly, I would also like to take this opportunity to thank the participating countries for their valuable contributions for the successful implementation of the Project. With that note, I now close this End-of-Project Meeting. Thank you once again and I wish that you will have a safe journey back to your homes. Good day.

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