

Case Study on Illegal, Unreported and Unregulated (IUU) Fishing off the East Coast of Peninsular Malaysia



**FINAL
REPORT**
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**FINAL REPORT APPROVALS FOR: CASE STUDY ON ILLEGAL,
UNREPORTED AND UNREGULATED (IUU) FISHING OFF THE EAST
COAST OF PENINSULAR MALAYSIA**

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Abbreviations

ALC	Automatic Location Communicator
APFIC	Asia-Pacific Fishery Commission
CEO	Chief Executive Officer
CITES	Convention on International Trade in Endangered Species of Wildlife and Fauna
COFI	Committee on Fisheries
CPUE	Catch Per Unit Rate of Effort
DFID	Department for International Development
DPSIR	Driver-Pressure-State-Impact-Response
DOF	Department of Fisheries, Malaysia
DWFFV	Distant Water Fishing Vessels
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation of the United Nations
FRI	Fisheries Research Institute
GDP	Gross Domestic Product
GOF	General Operations Force
GRT	Gross Registered Tonnage
HIP	High Impact Project
IAZ	Industrial Aquaculture Zone
ICRI	International Coral Reef Initiative
IMB	International Maritime Bureau
IPOA	International Plan of Action
IPFC	Indo-Pacific Fishery Commission
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated
kg	kilogram
KL	Kuala Lumpur
KT	Kuala Terengganu
LKIM	Fisheries Development Authority Malaysia-(Lembaga Kemajuan Ikan Malaysia)
LOSC	Law of the Sea Convention
MCS	Monitoring, Control and Surveillance
MECC	Maritime Enforcement Co-ordinating Centre
MFRDMD	Marine Fishery Resources Development and Management Department
MIMA	Maritime Institute of Malaysia
MITP	Malaysia International Tuna Port
MMEA	Malaysian Maritime Enforcement Agency
MOA	Ministry of Agriculture and Agro-based Industries
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MRAG	Marine Resources Assessment Group
MSO	Merchant Shipping Ordinance



MSY	Maximum Sustainable Yield
MT	Metric Tonne
n/a	Not Available
NAP	National Agricultural Policy
NE	Northeast
NEKMAT	National Fishermen's Association
NEP	New Economic Policy
NFLP	National Fisheries Licensing Policy
nm	Nautical Mile
NOSS	National Occupational Skills System
NPOA	National Plan of Action
NRIC	National Registration Identity Card
Pers Coms	Personal Communications
PNK	Regional Fishermen's Association
RFMO	Regional Fisheries Management Organisation
RHIB	Rigid-Hull-Inflatable-Boats
RM	Ringgit Malaysia
RMAF	Royal Malaysian Air Force
RMN	Royal Malaysian Navy
ROE	Rate of Effort
RPOA	Regional Plan of Action
SEAFDEC	Southeast Asian Fisheries Development Centre
SME	Small and Medium Enterprise
SUFIN	Strait Used for International Navigation
SW	Southwest
TAC	Total Allowable Catch
TCIS	Terengganu Coastal and Islands Study
TRAFFIC	The Wildlife Trade Monitoring Network
TUMEC	Turtle and Marine Ecosystem Centre
UN	United Nations
UNCLOS	United Nations Conference on the Law of the Sea
USD	United States Dollar
VMS	Vessel Monitoring System
WWF	World Wide Fund for Nature





**IUU Fishing
East Coast of
Peninsular
Malaysia**

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Executive Summary

This Final Report on illegal, unreported and unregulated (IUU) fishing off the east coast of Peninsular Malaysia draws primarily upon secondary sources, supplemented with field interviews. The report provides:

- a description of the Malaysian fisheries industry with detailed discussion on the States of Kelantan, Terengganu, Pahang, and eastern Johor;
- analysis of demographics for the fishing sector in east coast States;
- a summary of the nature and extent of IUU fishing in the east coast region;
- an overview of the drivers and impacts of IUU fishing;
- a description of monitoring, control and surveillance (MCS) arrangements for east coast Peninsular Malaysian fisheries; and
- a summary of relevant laws and regulations for the fisheries industry in Malaysia.

The study of demographics indicates that east coast Peninsular Malaysian States are less wealthy than the more industrialised States in the west, and that northern east coast States are poorer than the southern States. Fishing families in the east coast region appear to be amongst the less wealthy segment of society,

with the lowest levels of education and few opportunities for employment diversity.

There are many forms of IUU fishing evident in the east coast region of Peninsular Malaysia, including:

- violation of fishing licence conditions such as encroachment and use of unauthorised fishing gear;
- unlicensed fishing;
- unregulated and unreported harvest of lobster;
- IUU harvest and smuggling of cockle spat;
- IUU turtle egg harvest and unreported turtle by-catch;
- illegal harvest of arowana;
- IUU harvest of grouper fry;
- illegal fishing by foreign vessels;
- possible violent crime against fishing boats;
- illegal fishing within marine protected areas; and
- shark fin fishing.

The drivers, pressures and impacts of IUU fishing are summarised in the form of a 'Driver-Pressure-State-Impact-Response' (DPSIR) model. The use of the DPSIR tool demonstrates well the complexity of the problem, including subtle influences such as cultural tolerance for

rule bending; a highly developed respect for hierarchy, even in the context of evident corruption; the role of ethnicity in market behaviour, and much more. However, some aspects of IUU fishing in the area are far from subtle, such as the smuggling of subsidised diesel fuel and fish, and possibly the trafficking of persons as forced labour on fishing boats.

The financial loss to local communities from IUU fishing in the east coast of Peninsular Malaysia is difficult to calculate, but can reasonably be demonstrated to be considerable. The financial loss from smuggled subsidised fuel alone is estimated conservatively to cost more than RM6 million per year. The smuggling of fish caught in Kelantan waters to Thailand is likely to represent a direct loss of at least RM72m per year (possibly much more) plus additional losses through wasted subsidised fuel, artificially inflated fish prices in local markets, lost fishing boat provisioning business, and unproductive capital expenditure on idle fish cold-store facilities. Other losses through ecosystem harm caused by IUU over-fishing and the use of inappropriate gear in delicate environments would involve extensive observational data and complex models to quantify; nevertheless, such losses can be accepted as occurring at a certain level.



1.0 Overview of the Fisheries Sector in Malaysia

IUU Fishing East Coast of Peninsular Malaysia

Figure 1.1: Map of Malaysia



1.1 Background

Malaysia covers an area of about 329,760 square kilometres occupying the Malay Peninsula, which lies on the southern shores of the Asian land mass, and the States of Sabah and Sarawak in the north-western coastal area of Borneo Island (Figure 1.1). The two regions are separated by about 530 kilometres of the South China Sea.

Peninsular Malaysia, covering an area of 131,600 square kilometres, is located in the south-western area of the South China Sea, which is

known to be one of the world's most fascinating and productive seas.¹

Peninsular Malaysia is bounded by the Strait of Malacca to the west and the South China Sea to the east. The land is connected to Thailand to the north, while Singapore lies at the southern tip of the peninsula. Peninsular Malaysia adjoins the shallow Sunda Shelf, which has an average depth of less than 100 metres. The East coast of

¹ Siry, H.Y. 2007. *Making decentralized coastal zone management work for the Southeast Asian region: Comparative perspectives*. (Accessed 11th June 2008). Available at: http://www.un.org/depts/los/nippon/unhff_programme_home/fellows_pages/fellows_papers/siry_0607_indonesia.pdf.

Peninsular Malaysia encompasses the state of Kelantan on the border of Thailand; followed by Terengganu; Pahang; and Johor, which is the southernmost State of the peninsula (Figure 1.2). The Exclusive Economic Zone (EEZ) of the east coast of Peninsular Malaysia spans an area of 131,250 square kilometres.

For the east coast of Peninsular Malaysia, the monsoon season plays a vital role in the life of fishers. There are two monsoon seasons: the Northeast (NE) monsoon, which occurs between November and March, and the Southwest (SW) monsoon, which occurs between May and September.² Strong NE monsoon winds blowing from the South China Sea towards the east coast of Peninsular Malaysia bring along heavy rains, turbulent winds and extremely strong water currents in this area.³ Fishing effort at this time is minimal or zero. In contrast, the SW monsoon triggers up-welling occurrences that increase the productivity of the area.⁴

Box 1.1: Example of the severity of the monsoon affecting the east coast of Peninsular Malaysia

December 2003 monsoon at Setiu Lagoon, Terengganu

An incident of severe erosion during the monsoon season in December 2003 led to the creation of a new river mouth and inflow of sea water in front of the Kampong Gong Batu jetty. Some aquaculture cages were destroyed. Sea water travelled through the lagoon up to Kampong Beting Lintang in the north. Following the fast current was the transportation and settlement of sediment from the marine area into the lagoon. A high sand bank formed from the open area perpendicular to the land. The lagoon became very shallow and salinity of the lagoon waters increased.

The opening of the new river mouth might be caused by the closure of the opening at Pulau Busung, near Kuala Setiu Baru. The deep water area with healthy mangroves on Pulau Busung was turned into bare sand bank by the strong current that transported coarse sediments into the inlet. The fringing mangroves forest died.

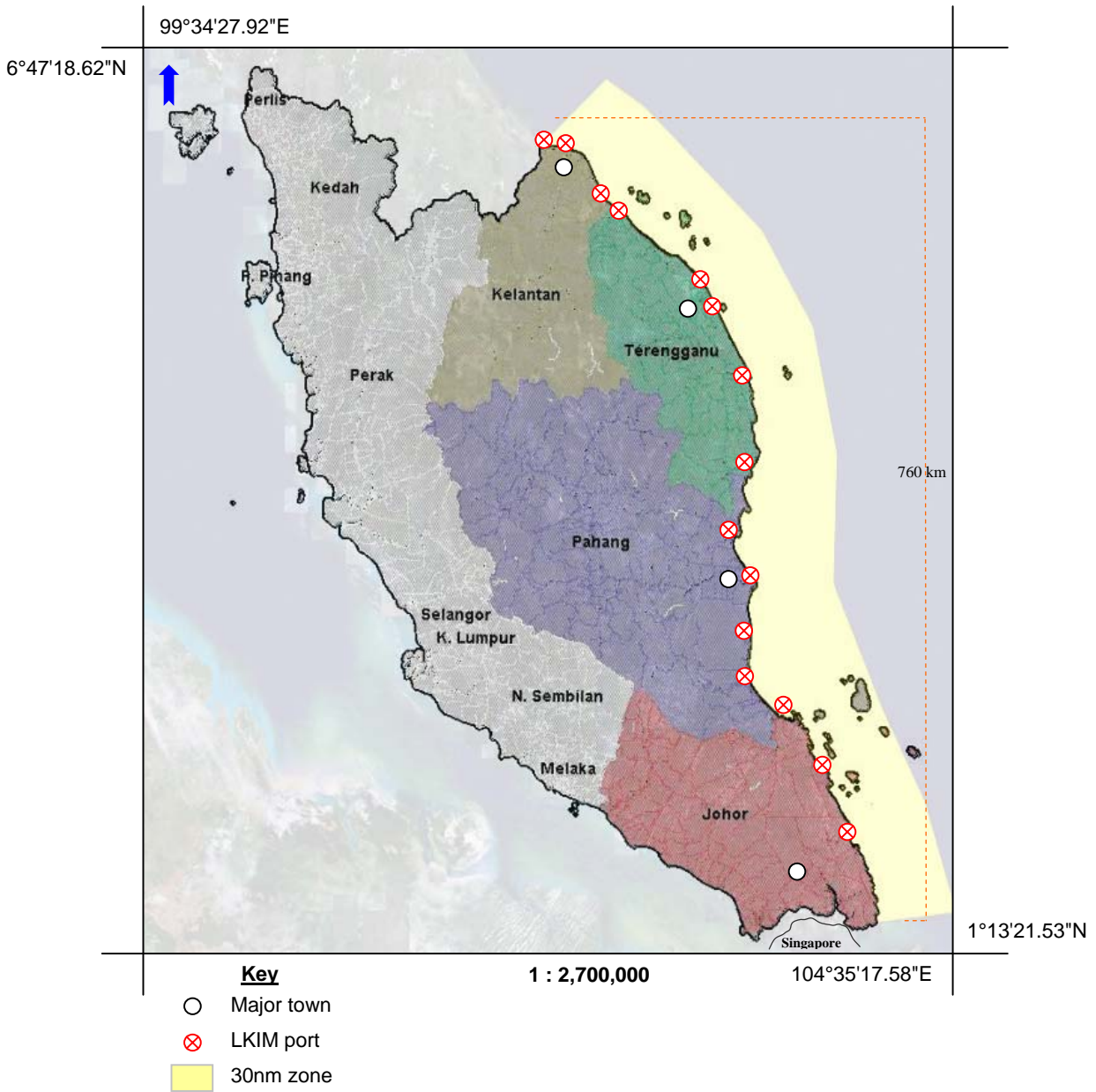
Source: TCIS Progress Report 2 2005. SETIU WETLAND – ISSUES by Dr Zaleha, K. Marine Science Department, Faculty of Science and Technology, University Terengganu Malaysia. On file with SRM.

² Zelina, Z. I., A. Arshad, S.C.Lee, S.B.Japar, A. T. Law, Nik Mustapha, and M. M. Maged, 2000. *East Coast of Peninsular Malaysia. IN: Seas at The Millennium: An Environmental Evaluation*. Charles Sheppard (ed.). Elsevier Science LTD London, UK

³ Nasir, M.S., Camerlengo, A.L., and Kadir, W.H.W. 1997. *Coastal current in the northern region of the East Coast of Peninsular Malaysia*. *Sains Malaysia* 26(2): 5-14.

⁴ Ku-Kassim, K.Y. and Mahyam, M.I. 2002. *Intrusion of the water of the Gulf of Thailand and the upwelling of the east coast of Peninsular Malaysia during Southwest monsoon season*. SEAFDEC.

Figure 1.2 : Map of Peninsular Malaysia – Showing East Coast States and 30nm Zone



1.2 Government Fisheries Policy

The Malaysian fisheries industry is an important part of the agricultural sector in Malaysia; however, in terms of contribution to GDP the fisheries sector is small with reported contributions of 1.08% of total GDP in 2005.⁵ The significance of the sector to the economy is that the sector is a source of animal protein and employment. In 2006, the fisheries industry supported approximately 98,000 fishers, 25,156 of whom were reported to be employed on licensed vessels on the east coast of Peninsular Malaysia (the East Coast States are shown at **Figure 1.2**). In recent years, the contribution to GDP by the fisheries industry has dropped gradually from 1.60% in 2000 to the reported 1.08% in 2005.⁶

Apart from the 25,156 fishers reported to be employed on the east coast in 2006, there are many more fishers (an unknown total) who operate unlicensed fishing vessels, sometimes termed 'traditional fishers'⁷ or 'part-time fishers'.⁸

This is a different sector to those licensed vessels that use traditional gear. Downstream fisheries industry sub-sectors (e.g., processing, wholesaling, retail etc.) provide income and livelihood for many more people. Overall, the agriculture, forestry, livestock and fisheries sector accounted for 12.5% of the workforce in 2006 and 12.1% of the workforce in 2007.⁹

Malaysia's total reported fisheries production in 2005 was 1,421,404.83 metric tonnes (MT), estimated to be valued at RM5,245.68 million.¹⁰ However, the 2005 volume represents an overall decrease in production by 7.58% in quantity and a decrease of 4.23% in value since 2004, with a total contribution to GDP of 1.08%.¹¹ Abdul Rahman, Janib and Wong (1995) reported that the marine fisheries share of GDP was 2.3% in 1970, 3.4% in 1980 and 2.6% in 1990 dropping to 1.8% in 1992. Corresponding to this drop in the share of GDP, the marine fisheries share in the balance of trade also decreased gradually from 1970 to 1992.¹² The reported marine fish landing for 2006 was reported to be 1,379,770 MT, which

⁵ Some data for 2006 Fisheries Landings and the number of fishers and vessels licensed to fish have been released by the Department of Fisheries, Malaysia. However, assessment of the contribution to GDP or other data for the year 2006 had not been released at the time of this report. During site visits in August 2008, some fragmentary data on landings and the number of licensed vessels along the east coast of Peninsular Malaysia were available.

⁶ Department of Fisheries, 2008: Status of Fisheries Sector in Malaysia, in Annual Fisheries Statistics, 2000-2004 and 2005. Extract 22-05-08 from www.dof.gov.my/v2/perangkaan.htm.

⁷ Food and Agriculture Organisation of the United Nations, Fisheries and Aquaculture Department, 2008: "Fisheries and Aquaculture Country Profile, Malaysia", extracted 27-06-08 from http://www.fao.org/fishery/countrysector/Fl-CP_MY/en. FAO reported a significant unknown number of small unlicensed fishing vessels operating in inshore waters using traditional gear types.

⁸ During site visit interviews from 11 -14 August along the east coast of Peninsular Malaysia, officials referred to the existence of many unlicensed fishers (an unknown number but numerous) operating mainly in the near-shore area and often in the Class A vessel fishing zone. Reference to this group was made repeatedly, and officials claimed that these part-time fishers were often related to licensed traditional fishers (family member of Class A license holders). A suggestion was made

that fishing by this group was primarily either a weekend or ad-hoc activity, in part due to an expectation by elders in some villages that traditional fishing methods not be lost by the next generation. Such 'part-time fishers' usually have other occupations, such as teachers etc.

⁹ The Treasury, Ministry of Finance Malaysia, *Economy Report 2007/2008*, Chapter Three, page 71 extracted 16-05-08 from <http://www.treasury.gov.my/index.php?ch=22&pg=165&ac=2053&lang=eng>.

¹⁰ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08. This total includes fish production from aquaculture activities and the nominal volume of inland fisheries landings.

¹¹ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted 16-05-08 from <http://www.dof.gov.my/v2/perangkaan.htm>.

¹² Abdul Aziz Abdul Rahman, Jamali Janib, and Wong Hin Wei, 1995: *The Maritime Sector and the Malaysian Economy*, Malaysian Institute of Maritime Affairs-Monograph, Kuala Lumpur.

was an increase of 170,169MT over that achieved in 2005.¹³

Fisheries industry statistics in this report are based upon the most recent national official published data, and do not reflect an un-quantified rate of fisheries effort, activities, landings and sales outside of this published data-set, in particular as a result of unreported and unregulated traditional fisheries. Discussion with Fisheries Officers suggest that there is an unspoken policy, primarily for political reasons, not to require fishing vessel licenses for traditional fisheries (often small-scale) mainly operating in the coastal zone. However, some interviewees suggested that a moderate change towards requiring licenses for small-scale, traditional fishers may be implemented in the near future. Unlicensed fishers land their catch either at private jetties or on the beach (see **Photo 1.1**).

On the whole, the number of licensed fishing vessels in Peninsular Malaysia gradually declined between 1981 and 2005 (**Table 1.1**). The general decline in numbers reflects a shift in the labour force away from primary production as Malaysia developed at a rapid pace during the 1980s and 1990s. Nevertheless, recent trends show an increase in both licensed vessels and fishers, possibly as a result of previously unlicensed vessels becoming licensed.



Photo 1.1: Small coastal fishing boats - do not necessarily require jetty facilities and often land fish on the beach in many coastal villages: photograph taken at Kampung Kuala Abang, Terengganu on 11 August 2008.

Table 1.1 may also indicate some improvement in fisheries efficiency with a period of aberration in the first few years of this decade. Of notable interest, is a significant increase in fishing effort by 2006, i.e., through an increase in both the number of vessels and fishers, while apparently improving efficiency with less crew per vessel.

Table 1.1: Number of licensed fishing vessels and fishers in Peninsular Malaysia from 1981-2006 (three-yearly interval data as well as 2006 data)

Year in three year increments	Licensed Fishing Vessels (all classes)	Number of Fishers	Average Crew/Vessel
1981	30,390	89,925	2.95
1984	25,673	76,368	2.97
1987	22,138	60,569	2.73
1990	23,134	59,801	2.58
1993	20,020	53,887	2.69
1996	21,250	52,310	2.46
1999	19,343	50,941	2.63
2002	17,817	51,772	2.90
2005	22,041	59,172	2.68
2006	23,483	62,748	2.67

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2005 and 2006 partial data

¹³ Department of Fisheries, Malaysia, partial fisheries Statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

This significant increase appears to reflect a change in Malaysia's political climate at that time as a new Prime Minister (Dato' Seri Abdullah Ahmad Badawi) outlined a policy to emphasise development of the agricultural sector, consistent with the Third National Agricultural Policy (NAP3).¹⁴ F. Ismail (2007) reported that "since poverty was more prevalent in the rural areas where the main source of income was from agricultural activities, the development of ... [this] sector was given priority in the implementation of the New Economic Policy (NEP)".¹⁵ The NAP3 was promulgated in 1998 to promote "...the agricultural sector's strategic role in national development...in light of new and emerging challenges...".¹⁶ This increase in licensed vessels is also likely to be a symptom of the fuel subsidy system implemented in June 2006.¹⁷

The operation of non-licensed fishing vessels is known to officials, and is expected to continue because authorities do not wish to discriminate against low-income socio-economic group.¹⁸ The situation is complex, where IUU fishing

activities occur as a result of limited enforcement and, in many instances, direct disregard for current regulations. Politics and a commonly-felt respect for existing use rights further complicate the matter. However, as the economy develops and socio-economic standards improve, such claims may be less relevant. This is likely to be so especially as the fisheries sector (currently on the whole relying on low levels of technology) develops and modernises.

In 2006, there were 37,350 licensed fishing vessels involved in *coastal fisheries* (operating within 30nm of the coast) in Malaysia, with another 926 larger vessels operating in the *deep-sea fisheries* (outside of the 30 nm zone). Of the total 38,276 vessels, 23,483 operated out of Peninsular Malaysia. Fishing vessels are normally licensed to use one type of gear; however, "... there are fishing operations where more than one licensed fishing gear is being used [on a single vessel]".¹⁹ Therefore, the number of licenses issued for fishing gears will normally exceed the number of licenses for fishing vessels because some vessels use a different gear in different seasons. The difference in number is not great. To illustrate this, there were 36,133 licensed fishing gears recorded in 2005, while the number of licensed vessels amounted to 36,016.²⁰

¹⁴ Third National Agricultural Policy, Ministry of Agriculture Malaysia, 1998-2010: Kuala Lumpur, Ministry of Agriculture, 1999.

¹⁵ Fauzana Hj. Ismail, 2007: "Structural Change of the Agricultural Sector: Analysis Based on Input-Output Tables", Department of Statistics, Malaysia, *Journal of the Department of Statistics*, Volume 2, 2007, p 1, extract 21-05-08 from <http://www.statistics.gov.my/english/product/journal.htm#>.

¹⁶ *Ibid.* A copy of NAP3 is available at <http://www.apfic.org/modules/xfsection/download.php?fileid=108>.

¹⁷ Announced by the Deputy Prime Minister, Najib Razak that effective 1 June 2006, "... coastal fishermen who use petrol-powered outboard motors will only have to pay RM1 per litre for the fuel. And, with immediate effect, those who provide boat services in remote areas of Sabah and Sarawak need only pay RM1.20 per litre of diesel." The Star, Thursday, March 16, 2006, "Cheaper fuel for fishermen and boatmen". Following the increase of fuel in recent months in 2008, the Government issued a statement that fishers will continue to benefit from subsidised fuel despite the increase in petrol/diesel prices. The issue of subsidised fuel is further discussed in Chapter 4 of this report.

¹⁸ Pers Coms – Reported by Fisheries Officers during field trip interviews in December 2007- January 2008.

¹⁹ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted 16-05-08 from <http://www.dof.gov.my/v2/berangkaan.htm>.

²⁰ Fisheries data had incorrectly added licensed fishing gear and had quoted the same number of total fishing gear and vessels in the data spreadsheet.

1.2.1 National Policy Targets

The demand for fish is expected to increase as a result of population growth, health consciousness, and an expanding downstream industry. According to the NAP3,²¹ the total demand for fish in the year 2010 will be 1.591 million metric tonnes based on a per capita consumption of 60 kg.²² Historically, the capture fisheries sector has grown by 3% in volume and 7% in value per annum since 1995 whilst the aquaculture sector grew at 5% in volume, and 18% in value in the period 1995 - 2000.²³

In addition to the growth in demand for fish product arising from population increase, the Government has articulated an objective of maximising national agricultural income through the optimal utilisation of resources, as articulated in NAP3. This includes maximising the contribution of agriculture to national income and export earnings, as well as maximising income for producers.

Specifically, the objectives of the Policy are to:

- enhance food security;
- increase productivity and competitiveness;
- deepen linkages with other sectors;
- create new sources of growth for the sector; and
- conserve and utilize natural resources on a sustainable basis.²⁴

According to NAP3,²⁵ enhancing competitiveness and profitability in the agricultural sector will require that focus be given to promoting globally competitive industries in agriculture and forestry. This would require development of a world competitive outlook within the sector, and an export culture with commitment to meet market needs at competitive prices. The competitiveness of the sector is to be enhanced through *productivity improvement*, developing and strengthening markets, removal of market and trade distorting measures, formulation and implementation of high quality and safety standards and selective development of agricultural and forestry enterprises based on present and potential competitive strengths. Further strengthening of competitiveness and profitability is to be achieved through the development of new and innovative products and capitalising on the product value chain in order to generate sources of future growth and create new higher value-added industries. Reducing labour cost inputs in agriculture and forestry is identified as a means to strengthen the competitiveness and profitability of the sector.

The objectives and broadly outlined strategies in NAP3, imply that agriculture, including fisheries, will undergo major *transformation* in order to achieve the massive productivity gains identified. The scale of this transformation, which is **an average 66 percent increase/sector/annum**, is illustrated at **Table 1.2**.

Of note, the transformational demand required to achieve national aspirations, still measures

²¹ *Third National Agricultural Plan, Op. cit.*, p. 79

²² *Ibid.*, p.12

²³ Based on data from *Malaysian Fisheries Directory 2002*, Asia Medialine Sdn Bhd, 2002 pp 38-39

²⁴ *Third National Agricultural Plan, Op. cit.*, p. 24.

²⁵ *Ibid.*, p.19

output and productivity from a 'tonnage production' perspective, rather than a value output perspective. A consequence of such a policy approach is that production goals are set against assumed rather than calculated and articulated value creation targets.²⁶ Also, in the absence of rigorous science to underpin resource management, production targets appear to be driven by a desired economic and social contribution, rather than a realistic assessment of the level of seafood extraction that nature can bear.

1.2.2 National Fisheries Licensing Policy 1981 and the Fisheries Management Zone

Section 17 of the Fisheries Act, 1985 prohibits fishing vessels from going beyond the limits specified in the licence issued for the operation of a fishing appliance, fishing stake or marine culture system.

The 1981 National Fisheries Licensing Policy was initially formulated to solve problems arising from conflict between traditional fishers and the mini-trawler fishers in inshore waters. The policy has since been extended to encompass fisheries as a whole in marine waters under the jurisdiction of Malaysia specifically to address:²⁷

- elimination of competition and the ensuing conflict between traditional

²⁶ Review of Balance of Trade goals for 2010 indicate that the BOT goals were largely a translation of NAP3 targets at estimated unit price values for that date.

²⁷ 'Controlling Fishing Effort: Malaysia's Experience and Problems' by Shahrom bin Abdul Majid, Department of Fisheries, Ministry of Agriculture, Malaysia; FAO, 1985 Papers presented at the Expert Consultation on the regulation of fishing effort (fishing mortality). Rome, 17–26 January 1983. A preparatory meeting for the FAO World Conference on fisheries management and development. FAO Fish.Rep., (298) Suppl.3:215–470

fishers and mini-trawler fishers in inshore waters;

- prevention of over-exploitation of the fishery resources in inshore waters;
- a more equitable distribution of fishing throughout waters under the jurisdiction of Malaysia;
- restructuring of the ownership pattern of fishing units in accordance with the New Economic Policy; and
- promotion of the development of offshore industrial fisheries.

The National Fisheries Licensing Policy introduced a fishing zonation system that aims to achieve a fair distribution of resources among commercial and traditional fishers. **Box 1.2** and **Figure 1.3** detail the attributes of the fishing zone, which are designated on the basis of specific fishing gear, classes of vessel and ownership.

Under the National Fisheries Licensing Policy, Malaysian fishing boats are categorised as class A, B, C or C2.²⁸ For coastal fisheries, vessels operate within 30 nautical miles from the coastline, and fishing vessels range from small, traditional designs to commercial vessels of less than 70 GRT. Class A vessels include vessels less than 20 GRT, using traditional fishing gear. In addition, a special sub-class of Class A, *Enjin Sangkut* refers to outboard powered vessels. Class B vessels comprise trawlers and purse seiners less than 40 GRT. The boats in this class are required to operate beyond five nautical

²⁸ A further class, class C3, was introduced in recent years for vessels fishing in 'international waters'. See, DOF website: DOF General Licensing procedures for Peninsular Malaysia, Federal Territory of Labuan and Sarawak at <http://www.dof.gov.my/v2/proseduram.htm> Last accessed 16-10-08.

miles from shore. However, during the monsoon season, these vessels can apply for a special licence, which allows them to operate within five nautical miles in order to trawl for prawn near shore.²⁹

Trawlers and purse seiners between 40 and 69.9 GRT categorised under Class C must operate beyond 12 nautical miles from shore. The vessels in this class, which are considered to be medium-to-large boats, are able to withstand rougher weather conditions. Unlike Class B boats, they are not permitted to trawl near shore during the monsoon season.³⁰

At 70 GRT and above, trawlers, purse seiners and drift net commercial vessels are licensed as Class C2, which is a category for deep-sea vessels. Class C2 vessels operate in the EEZ. The closest operating distance from shore allowed for these deep-sea vessels is 30 nautical miles and a fishing trip normally takes about two weeks at a minimum cost of RM12,000 - RM15,000.³¹

However, in reality, many deep sea vessels fish within 30 nautical miles of the coast. Indeed, during investigations in Sarawak, the consensus of industry representatives was that Sarawak deep-sea vessels, including more than 110 licensed Thailand trawlers then operating from Tanjung Manis, never fished beyond 30 nautical miles from the shoreline!³²

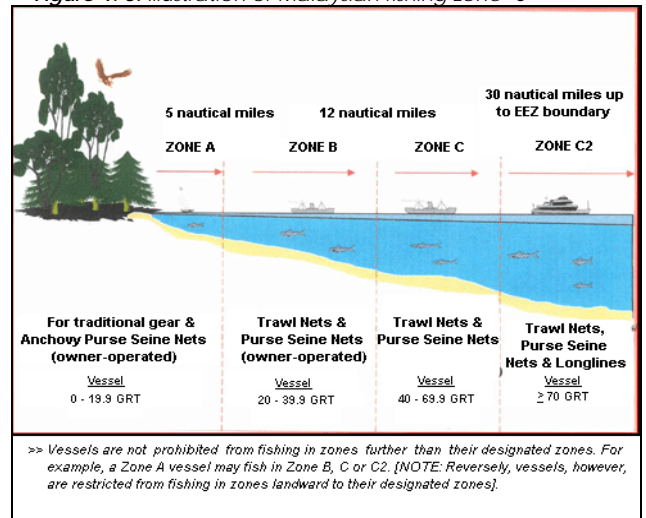
²⁹ Omar Yaakob & Quah Peng Chau, 'Weather Downtime and its Effect of Fishing Operations in Malaysia' *Jurnal Teknologi* 42(A) Jun 2005. p.16 See: <http://eprints.utm.my/1720/1/JTJUN42A2.pdf>

³⁰ *Loc. cit.*

³¹ Pers Coms – Reported by LKIM Officers during field trip interviews in August 2008.

³² Source: Sarawak Field Trip Report. Case Study: Integrated Fishing Company. Operator of 14 fishing boats of Class B, C and C2 size, Exporter, Wholesaler, and Domestic Retailer.

Figure 1. 3: Illustration of Malaysian fishing zone³³s



Box 1.2: Malaysian Fishing Zones

Zone A - less than 5 nautical miles from shore, reserved solely for small-scale fishers using traditional fishing gear and owner-operated vessels under 20 GRT.

Zone B - beyond 5 nautical miles, where owner-operated commercial fishing vessels of less than 40 GRT using trawl nets and purse seine nets are allowed to operate.

Zone C - beyond 12 nautical miles, where commercial fishing vessels of 40 GRT to 69.9 GRT using trawl nets and purse seine nets are allowed to operate.

Zone C2 - beyond 30 nautical miles, where deep-sea fishing vessels of 70 GRT and above are allowed to operate.

Current licensing policy - the procedures of which are available on the department's website³⁴ - states that the DOF no longer provides permits for zones A, B and C. Application for C2 (deep sea) and C3 (international waters) zones are permitted (and encouraged, particularly for tuna fishing.)

Conversion of zones to fish from Zone A to any other zones are also not permitted. Any application to convert operations from Zone B to

Interviews conducted in 18-19 November 2005, Kuching, Sarawak. Report on file with consultant.

³³ Source: Translated and reproduced from the official Department of Fisheries website: www.dof.gov.my. Accessed 27-08-08.

³⁴ DOF General Licensing Procedures, *Op. cit.* correct as at 16-08-08.

Zone C is permitted on condition the vessel is not more than 65 GRT.

New permits for C2 and C3 zones apply to any one of the following vessels:

- i) New wooden vessel (for foreign vessels permit is for C3 zone only);
- ii) Used wooden vessel (for foreign vessels permit is for C3 zone only);
- iii) New steel vessel;
- iv) Used steel vessel;
- v) New fibreglass vessel;
- vi) Used fibreglass vessel.

Interestingly, the DOF only require foreign vessels to be certified sea-worthy by the relevant authority of the Economy of origin.

The DOF official position on the implementation of the published licensing policy is to curb overfishing in Malaysian waters, whilst encouraging deep-sea and distant water fishing efforts. Nonetheless, the moratorium on issuance of coastal fishing licences appear to be at odds with a recent statement by the Minister of Agriculture and Agro-based Industry in August 2008 that the Government is considering “unfreezing” fishing licenses following complaints from small vessel owners on their inability to go to sea as a result of the licence moratorium.³⁵

³⁵ See Box 3.3 and further discussion on the issue of unlicensed local vessels in Chapter 3 of this report.

Table 1.2: Fisheries tonnage, value, and rate of local and foreign fishers for the east coast of Peninsular Malaysia, 2005

State	Foreign Fishers	Local Fishers	Catch Tonnage	Total number of vessels	Tonnes/vessel	Fisheries Value (RM)	Value /tonne (RM)
Kelantan	4,101	1,594	46,495	989	47.01	154,321,137	3,319
Terengganu	2,664	6,042	93,011	2,442	38.08	308,717,917	3,319
Pahang	489	4,050	111,242	1,303	85.37	369,227,526	3,319
East Johor	532	4,681	67,895	1,696	40.03	225,349,874	3,319
Total	7,786	16,367	318,643	6,430	52.62	1,057,616,454	

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2005

Table 1.3: NAP3 2010 Production Targets (Tonnes)

Year	Freshwater Fish Hatchery	Freshwater Prawn Hatchery	Marine Fish Hatchery	Shrimp Hatchery	Aquarium (Million pieces)	Shrimp	Cockle	Marine Cage	Freshwater Pond	Freshwater Cage	Deep-sea Marine Capture Fisheries
2003	35679	627	10984	29309	428	29,309	71,067	10,984	35,679	5896	198453
2004	45669	790	14279	37017	471	37,017	77,463	15,268	43,885	7995	204774
2005	58456	996	46753	46753	518	46,753	84,435	21,222	53,979	10841	211296
2006	74824	1,255	59049	59049	570	59,049	92,034	29,499	66,394	14701	218026
2007	95775	1,581	74579	74579	627	74,579	100,317	41,003	81,664	19934	224970
2008	122592	1,992	94193	94193	690	94,193	109,345	56,995	100,447	27031	232135
2009	156918	2,510	118966	118966	759	118,966	119,186	79,223	123,550	36654	239528
2010	200855	3,162	150253	150253	835	150,253	129,913	110,119	151,967	49702	247157
Increase (mt)	165176	2535	139269	120944	406	120944	58846	99135	116288	43806	48704
% Change	463%	404%	1268%	413%	95%	413%	83%	903%	326%	743%	25%
Annual Increase	66.14%	57.71%	181.14%	59.00%	13.57%	59.00%	11.86%	129.00%	46.57%	106.14%	3.57%

Average Increase = 66.7%/sector/annum

1.3 The Malaysian Fishing Industry and its Contribution to the Economy

The Malaysian fisheries industry has undergone rapid development in the last fifteen years with a gradual shift from artisanal fishing to one that is more commercially orientated. This has been due to active participation by the private sector and the application of new technologies. Despite various setbacks, the fisheries sector is still seen as a strategic sector in the economy, contributing to national income, balance of payments, government revenue, employment and the attainment of sustainable development for Malaysia.

The overall contribution of the fisheries sector to Gross Domestic Product (GDP) amounts to less than two per cent.³⁶ Despite this relatively small contribution, it has been accorded high priority in national development planning for several reasons. Firstly, a pivotal role for this sector is to supply an important source of animal protein to the domestic population, as reflected in the NAP3. In 1998, fish consumption per capita in Malaysia was 40 kg per annum, just behind Singapore and the Philippines. The Department of Fisheries Malaysia (DOF) has projected this figure to increase to 60 kg per year by 2010. Secondly, poverty still prevails among fishers, albeit on a declining trend, from 21 per cent in 1990 to around 12 per cent in 1997.³⁷ Thirdly, in theory, this sector provides employment especially in rural and coastal areas, which is

vital for rural development and for reducing the rural-urban income disparity. However, the importance of these employment figures to Malaysia is softened by the extensive use of cheap, unskilled labour throughout the fisheries industry. The number of jobs provided was approximately 82,200 in 1995,³⁸ which was about one per cent of overall employment in Malaysia. In 2003, this figure stood at approximately 110,000 people including: 73,500 employed in the fisheries sector; 21,000 in the aquaculture grow-out sector; and approximately 1,600 in the hatcheries and aquarium aquaculture sub-sectors.³⁹

Traditionally, Malaysia has been a net importer of seafood in terms of quantity, but a net exporter by value. This is due to the high species value of local seafood and seafood products. The importation of fish and seafood products increased from 200,700 tonnes, valued at RM363.6 million in 1990, to 230,000 tonnes valued at RM762.4 million in 1995.⁴⁰ At the same time, exports increased from 145,500 tonnes, valued at RM606.1 million in 1990, to 185,200 tonnes, valued at RM807.4 million, in 1995. The balance shifted in 1997, when Malaysia imported more fish by value than it exported. However, by 2000 although the importation of seafood had risen to 323,000 tonnes costing RM1.168 billion, Malaysia once again enjoyed a trading surplus by exporting 144,590 tonnes at a value of RM1.349 billion.⁴¹

³⁶ Malaysian Institute Economic Research, *Pushing the Fisheries Sector to the Forefront*, un-dated. p.2

³⁷ 'An Overview of the Concept and Profile of Poverty in Malaysia: An Assessment of the success of poverty eradication', Paper presented by Dato' Dr Zainul Ariff b Haji Hussain at IDS Workshop on Poverty Eradication in the Context of Globalisation, May 23, 2000, Kota Kinabalu Sabah. pg.18

³⁸ *Ibid.*, p.3

³⁹ Source: Ministry of Agriculture, http://agrolink.moa.my/dof/newdof/fperangkaan/Perangkaan_2003/all_2003.html

⁴⁰ *Ibid.*, p.76

⁴¹ Department of Fisheries, http://www.dof.gov.my/fperangkaan/Data_2000/main_ie.html



The fisheries industry also supplies raw materials to the processing industry. Approximately 30 percent of Malaysian fish production is processed. The main products include: chilled, frozen, and canned fish; surimi and surimi-based products; and dehydrated and fermented fish products.

1.3.1 Malaysian Fisheries Production

The Malaysian fisheries industry comprises three sectors, namely: marine capture fisheries sector; aquaculture sector; and inland fisheries sector. The marine capture fisheries sector is further divided into two sub-sectors: the coastal fisheries sector and the deep-sea fisheries sector. The aquaculture sector comprises three main sub-categories, namely: freshwater aquaculture, which includes freshwater pond culture, freshwater cage culture, and freshwater tank and pen culture; brackish water/marine culture, which consists of brackish water pond culture, brackish water cage culture, mussel production (inland fisheries) and oyster production; and ornamental fish production. Fish seed production is a sector that is continuing to develop largely through efforts by government-based hatcheries. Official fisheries statistics released by the DOF are based according to the sectors and sub-sectors.

Malaysian fisheries statistics are produced officially by the DOF and released on the department's website. The latest fisheries report is for the year 2005. Information on the 2006 fisheries status is under preparation with some raw data available on the official website. In 2005, the DOF reported that "... the fisheries sector recorded an overall decrease in

production by 7.58% and value by 4.23%, contributing about 1.08% to the GDP".⁴²

Table 1.4 provides a profile of the fisheries sector for Malaysia from 2002 to 2005. Whilst value of total production steadily increased from RM5.4 billion to RM5.5 billion between 2002 and 2004, by 2005, total fisheries value decreased to RM5.2 billion. Marine capture fisheries tonnage hovered around 1.2 million tonnes during 2002 - 2005 grossing approximately RM4 billion per annum. In 2004, the DOF stated that coastal fisheries had been "optimally exploited, leaving expansion limited only to the deep-sea sub-sector". Coastal fishery in 2004 was the major contributor to the overall fisheries production at 69% of total national production. Although, the total tonnage and value derived from coastal fisheries declined over 2002 to 2005, coastal fisheries continued to be regarded as the major contributor (71.17%) to the total national fish production. In 2005, the DOF reported that, "a large proportion of the marine landings in Peninsular Malaysia came from coastal waters (81.12%)".⁴³

The coastal fisheries sub-sector dominates tonnage with a reported catch (Peninsular and East Malaysia) of 988,313 MT or 71.17% of capture fisheries production in 2005.⁴⁴ Deep-sea fisheries production was 221,288 MT, or 15.94% of capture-fisheries in 2005. Aquaculture

⁴² Department of Fisheries. Status of the Fisheries Sector in Malaysia 2005.

⁴³ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 16-05-08. During site visits along the east coast in August 2008, interviewees stated that landings were dropping significantly in some regions, although no data to support these observations was available.

⁴⁴ Data on catch by fishing zone was not contained within the partial data available for 2006.



production was 207,219.66 MT of total fisheries production, constituting 14.58% of total fish production, valued at RM1,196.00 million. Inland or freshwater fisheries total production was 4,582.17 tonnes or 0.33% of total production valued at RM32.16 million.⁴⁵

In the last five years, the DOF has increased its emphasis in further developing the aquaculture sector as a significant contributor to the national total fish requirement. Development of this sector includes implementation of the “High Impact Project (HIP) Industrial Aquaculture Zone (IAZ)” that was launched in 2007. The objectives of the HIP IAZ include⁴⁶ to:

1. establish permanent Industrial Aquaculture Zones;
2. increase total fish production in line with national Balance of Trade objectives;
3. increase the nett income of aquaculture entrepreneurs to at least RM3,000/month;
4. ensure fish production is of high quality, and is safe for public consumption;
5. increase private sector participation through implementation of the ‘Department Delivery System’ by identifying IAZ areas and providing access to infrastructure; and

⁴⁵ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 16-05-08. These figure do not add up to 1,421,404.83 tonnes, they total 1,421,402.83 tonnes: a discrepancy of two tonnes. The percentages quoted from the 2005 DOF statistics also do not add up (not calculated by the author of this report); e.g., coastal fisheries of 71.17% and deep-sea fisheries of 15.94% provide a total of 87.11% of total capture fisheries. The remainder of 12.89% is not reflected in any capture fisheries statistics for 2005. Furthermore, when all the quoted percentages are added, the total percentage exceeds 100% of total production figures, i.e., the total is 102.02%. This unreliability of Malaysian fisheries data is further discussed in later parts of this chapter.

⁴⁶ See, <http://www.dof.gov.my/v2/zia.htm>.

6. establish an effective aquaculture production chain.

The DOF is equally keen to promote deep-sea fishing as the Government considers this fisheries sub-sector “has yet to be developed to its full potential”. A lack of large sea-going vessels and skilled manpower were cited as the main factors for the underdevelopment of the deep-sea sector. Measures such as expansion and development of the deep-sea fishing fleet enhanced by issuance of new permits and licences have been introduced to encourage participation in deep-sea fishing. The Government also provides training to fishers to reduce dependence on foreign workers for deep-sea fishing vessels.

In 2004, there were 833 licensed deep-sea fishing vessels compared to 813 vessels in 2003. Despite such encouragement from Government for private sector participation in deep-sea fishing, the number of deep-sea fishing vessels increased by only three units to 836 in 2005. Nonetheless, deep-sea fisheries witnessed a steady increase in tonnage from 2002 to 2005.

Marine capture fisheries in 1995 landed 1,108,400 tonnes of fish - an average of four percent annual increase from the 1985 catch of 746,000 tonnes.⁴⁷ By 2003, the total quantity of both coastal fisheries and deep-sea fishing had reached 1,297,000 tonnes valued at RM4.29 billion (wharf landing value), which was a slight increase on 2002 figures as shown in **Table 1.4**. Of note, deep-sea fish landings increased RM22.6 million in a year, whilst coastal fish landings increased by RM570 million,

⁴⁷ NAP3, p. 75



emphasising the national reliance upon coastal fisheries where fish stocks are already being fished beyond their sustainable limits.⁴⁸

By 2006, marine-capture fisheries⁴⁹ production reached 1,379,770 MT (approximately 85% of total fish production) with an estimated value of RM4,939,322,940.⁵⁰ The quantity and value of marine fisheries (coastal and deep-sea) for the east coast of Peninsular Malaysia in 2006 was reported as 386,263 MT valued at RM1,435,074,601.⁵¹



Photo 1.2: A typical Malaysian Class C fishing vessel that engages in coastal fisheries within the 30 nm fishing zone

⁴⁸ Various years DOF Fisheries Statistics.

⁴⁹ Freshwater captures fisheries are limited and do not normally receive much attention in fisheries production data.

⁵⁰ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 16-05-08.

Fisheries market rates and sales prices are based upon sales prices observed at LKIM fisheries landings sites or those reported to LKIM. The sales data do not recognise the often variable prices (often lower) achieved at private fish landing sites operated by 'middle-men' (often referred to as 'tauke') meaning fish wholesalers, or at the numerous village landing sites and jetties.

⁵¹ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.



Table 1.4: Profile of the Fisheries Sector in Malaysia from 2002 to 2005

2002 - 2005 PROFILE OF THE FISHERIES SECTOR IN MALAYSIA											
Fisheries Sector	Fish Tonnage (Tonnes)				Value (RM - Million)						
	2002	2003	2004	2005	2002	2003	2004	2005			
Overall	1,463,921	1,483,958	1,537,988	1,421,404.83	5,405.37	5,300.00	5,505.90	5,245.68			
Marine capture fisheries	1,272,078	1,283,256	1,331,645	1,209,601	4,206.80	4,001.00	4,241.40	4,017.52			
<i>Coastal fisheries</i>	1,081,337	1,084,802	1,060,150	988,313	365.86	3,470.00	NA	NA			
<i>Deep sea fisheries</i>	190,741	198,453	271,495	221,288	548.12	546.55	NA	NA			
Aquaculture	191,843	196,874	202,225	207,219.66	1,081.23	1,172.31	1,264.50	1,196.00			
Inland fisheries	3,565	3,828	4,119	4,582.17	24.39	NA	NA	32.16			
2002 - 2005 WORKFORCE											
Fishers on licensed vessels				West coast Peninsular Malaysia				East coast Peninsular Malaysia			
2002	2003	2004	2005	2002	2003	2004	2005	2002	2003	2004	2005
82,630	89,433	89,453	90,702	32,463	31,939	32,666	35,019	30,858	23,116	22,504	24,153
2002 - 2005 LICENSED VESSELS and FOREIGN FISHERS											
Licensed vessels				Foreign fishers							
2002	2003	2004	2005	2002	2003	2004	2005				
30,751	35,458	36,136	36,016	17,809	30,008	28,154	25,888				

Source: Department of Fisheries Statistics 2002 to 2005, available at www.dof.gov.my/v2/perangkaan



1.4 Issues in Fisheries Management in Malaysia

Figure 1.4: Issues in Malaysian Fisheries Management



1.4.1 The Malaysian Fishing Industry – Trapped

Fishing is an extractive industry that depends upon exploitation by relatively few individuals of marine living resources that are actually owned by all Malaysians. However, because industry participants are generally small to medium enterprises (SME) with little capital, a true-cost, ‘beneficiary pays’ licensing approach cannot be applied. Because the regulatory authorities do not receive such direct revenue from industry, they are unable to conduct the necessary fisheries research science nor rigorous enforcement that would be needed to support a strengthening of the industry. Hence, large corporations and banks are not satisfied that the fish resources needed to support significant investment will be there through the life of their mooted projects. The concomitant allocation of risk to the business

model ensures that industrial-scale business does not go ahead, and the industry remains largely in the hands of SMEs who do not pay full compensation for the resources they exploit.

There is no definitive fishery survey data for the Malaysian maritime estate. Indeed, as Malaysia generally has not settled water-column (as opposed to sea bed) boundary delimitation with its neighbours, the very extent of the maritime estate itself is open to question.⁵² There have been only two fishery surveys conducted of the exclusive economic zone (EEZ). The first was done with the assistance of FAO in 1986 (Figure 1.5), and the second by the Malaysian Fisheries Research Institute (FRI) (under the Department of Fisheries) in 1998 (Figure 1.6). The estimate of maximum sustainable yield (MSY) in the two studies varies widely, with the second study increasing the estimate of sustainable capture fisheries production significantly. However, unlike the 1986 survey, the second study was undertaken on a research vessel that could not take timely samples of pelagic species to confirm acoustic readings. The acoustic equipment used for the study also differed from the earlier survey, and the experience level of those operating the equipment and interpreting the data was not high.⁵³ Lastly, the area included in the survey was expanded by 18 nm towards the shore to include near-shore resources, which precludes effective comparison between the findings of the two surveys.

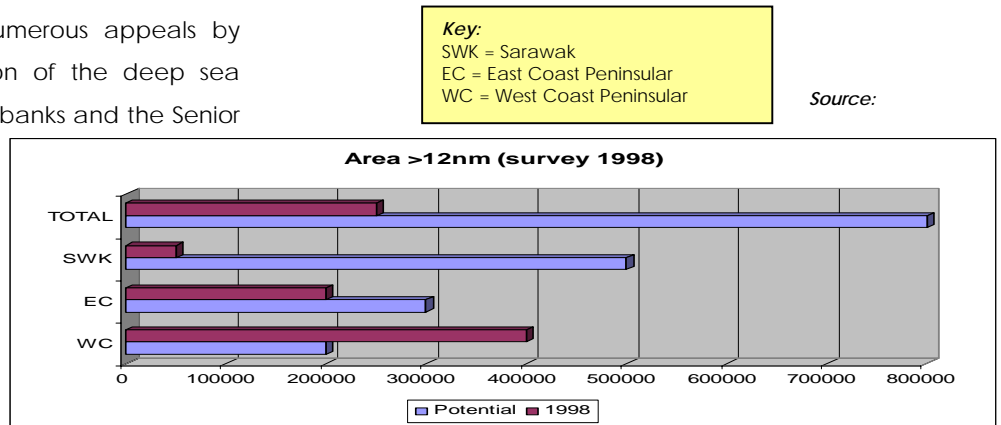
⁵² For example, see, Herriman, M. & Mohamed, R.P., ‘Malacca Straits EEZ Boundary: Factors for Consideration’ in Shariff, M et al (eds), *Towards Sustainable Management of the Straits of Malacca*. Universiti Putra Malaysia, Kuala Lumpur. March 2000. p.755

⁵³ Interview with FRI, Penang, November 2005



The significance of uncertainty over the fisheries resource base is that any investment decision cannot rely upon a known, or even confidently estimated, availability of fish stocks. Consequently, despite numerous appeals by Government for expansion of the deep sea fisheries sector, Malaysian banks and the Senior Management of larger companies have been unwilling to invest in the industry. Most of the Malaysian fisheries industry consists of small to medium enterprises.

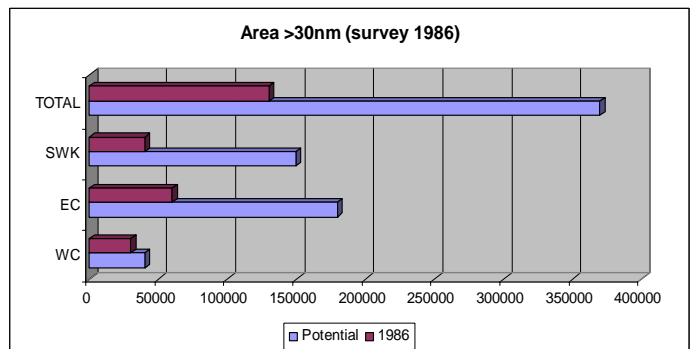
Figure 1.5: Area >12nm (survey 1998) showing actual catch and estimated maximum sustainable yield



Source: FRI, Department of Fisheries

Another important consequence of the weakness of fisheries resource data is that fisheries management and policy must rely primarily on fish landing statistics as an indicator of fish stock health. Such statistics are of marginal use if not considered in the context of fishing rate of effort, i.e., if considerable expansion or improvement in the fishing effort has taken place, the amount of fish landed may remain stable or even expand even though the fish stocks are falling. Malaysia has little data on fishing rate of effort.

Figure 1.6: Area >30nm (survey 1986) showing actual catch and estimated maximum sustainable yield



Source: FRI, Department of Fisheries



1.4.2 Unreliable Estimates of Fishing Rate of Effort

Malaysia does not enjoy good data on the rate of effort that is directed to fishing. Most Malaysian fishing vessels are not equipped with satellite-based vessel monitoring equipment, nor are officials deployed frequently at sea as on-board observers.

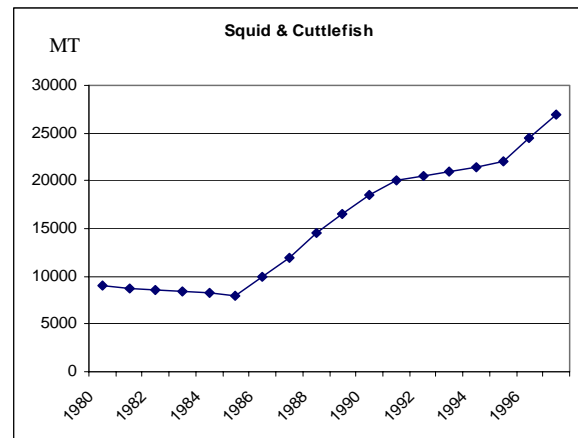
The primary tool used to control rate of effort is to limit the number of fishing licenses that are issued. However, factors other than resource sustainability influence the number of fisheries licenses allocated. In particular, near-shore fisheries are seen as an avenue of employment for coastal populations.

Also, for deep sea fisheries, political patronage has influenced the award of licenses, a number of which have been 'rented' to foreign fishing interests to allow access to Malaysian fisheries resources. The Fisheries Research Institute (FRI) is assigned to recommend the number of licenses to be awarded for each fishery, but their recommendations have been exceeded.⁵⁴ For example, the 1998 fisheries resource survey identified that the fishing rate of effort for the west coast of Peninsular Malaysia (Malacca Strait) was much greater than the maximum sustainable yield, and yet the number of licenses issued for that fishery have *increased* since then. Indeed, following the economic crisis of 1997, many retrenched workers returned to coastal kampongs in Perak and Kedah to take up fishing. FAO reported the existence of a significant proportion of

unlicensed fishers mainly in the nearshore fishery in Malaysia.⁵⁵

Apart from the economic unsustainability of allowing an increasing number of people to catch fewer fish, an excessive fishing rate of effort in the Malacca Strait also appears to be affecting the ecosystem. For example, larger fish predators are removed from the ecosystem, species such as squid and cuttlefish that were their prey have become more abundant (Figure 1.7).

Figure 1.7: Squid & Cuttlefish



Source: Data for Malacca Strait 1980-1998, FRI

A similar phenomenon was reported occurring in the east coast, where an increase in common squid landings was associated with a reduction in predator species. (See further discussion under 'Catch Profile' for incidental catch in the east coast States in subsequent sections of this Chapter).

⁵⁴ Interview with Resource Survey Head, Fisheries Research Institute, Penang, Nov 2005.

⁵⁵ Source: FAO Fisheries and Aquaculture Country Profile, Malaysia, 2008. Extracted 13 February 2008. Available at: www.fao.org/fishery/countrysector/F1-CP_MY/en.



1.4.3 Fish Capture Technology and Human Resource Requirements

Fish capture technology encompasses the process of catching any aquatic animal, using any kind of fishing method, normally operated from a vessel. The fishing methods range from a simple, small hook attached to a line, to large and sophisticated mid-water trawls or purse seines operated by commercial fishing vessels. The wide diversity of targets in capture fisheries, and their complex distribution, requires different technologies for efficient harvest. Such technologies have developed around the world according to local traditions and scientific advances in various disciplines.

In recent decades, significant advances have been made in fibre technology, along with the introduction of other modern materials that have made possible, changes in the design and size of fishing nets. Mechanization of gear handling has also vastly expanded the scale on which fishing operations can take place. Improved vessel and gear designs, using computer-aided design methods, have enhanced the economic viability of many fishing operations. The development of electronic navigational aids and fish-detection equipment has also led to the more rapid location of fish and a lower unit cost of harvesting.

Technological development has contributed to an expansion of fisheries and aquaculture in recent decades. However, in general, technical advances have also led to more efficient and economical fishing operations,

with a concomitant reduction in the physical labour required per unit of output.

International best practice has reduced the crew for a regular trawler to only three to four persons, and sometimes even less. The use of modern technology, as mentioned above, ensures that labour resources are used together with advanced and efficient fish-capture equipment. The initial cost of procuring hydraulic equipment, gear and fish handling machines, fish-finding electronics and efficient vessel designs and engines potentially provides long-term returns to operators through production cost efficiencies.

However, in Malaysia, up to 25 deckhands can be used in purse-seine fishing boats, which often utilise out-dated methods and equipment to catch fish. A reliance on high labour input rather than technology is reflected on other types of Malaysian fishing vessels as well. Also, Malaysian fishing vessels are often of traditional design, and are not optimised for maximum fuel efficiency, speed nor crew comfort. Post-harvest handling technology does not always extend to the use of ice, and few vessels are equipped with modern refrigeration technology.

1.4.3.1 Fisheries Workforce

In 2003, the fisheries industry employed approximately 110,000 people across the marine capture, aquaculture, and inland sectors. This labour force was largely employed by family-owned and operated business, and is generally unskilled.



The majority of licensed vessels operate traditional fishing gear. Licensed fishers on the east coast Peninsular Malaysia increased from 2002 to 2005. In 2005, there were 24,153 fishers licensed on the east coast.

By 2006, 97,947⁵⁶ fishers were reported working on 38,276 licensed vessels in Malaysia. In addition, 13,511 fish culturists were involved in aquaculture.⁵⁷ "These figures do not include thousands more involved directly or indirectly in downstream activities and related industries".⁵⁸

Different vessel size and gear type require varying numbers of crew to operate these vessels. In Malaysia, a commercial purse seine generally employs up to 25 crew each, including a skipper and an engine driver/engineer. Trawlers require a smaller crew of up to six people, plus a skipper and an engine drive (total 8). Below is a summary of crew requirements for purse seine and trawler vessels operating on the east coast of Peninsular Malaysia.⁵⁹

- Trawler 40 - 70 GRT: 4 crew, a skipper and engine drivers;
- Trawler 70+ GRT: 10 crew, skipper and engine drivers;
- Purse seine less than 40 – 70 GRT: a skipper, an engine driver and 20 crew;

- Purse seine 70+ GRT: a skipper, an engine driver and 25 crew;
- Traditional gear vessels less than 40 GRT: an average of 3 crew.

1.4.3.2 *The Use of Foreign Labour*

The Malaysian capture fisheries sector relies extensively upon foreign labour. Mostly, foreign crews are from Indonesia or Thailand. Reports of fish transfers at sea from Malaysian to foreign boats are common, but no data is available to indicate the amount of fish that is lost to Malaysia through this practice. Furthermore, as Malaysia has many near neighbours, foreign boats frequently encroach into Malaysian waters to fish.⁶⁰ In 2002, the Minister of Agriculture estimated that Malaysia loses **one billion ringgit of marine living resources to illegal fishing every year**.⁶¹

According to estimates contained in NAP3, around 41 percent of the agricultural workforce is foreign immigrant labour, which suggests that approximately 45,000 fisheries workers could be untrained immigrant workers. However, discussions with industry representatives, Government officials and industry association representatives indicate that the use of foreign labour on fishing boats is much greater than suggested by the nationally averaged figures. Indeed, the proportion of foreign crew in some sectors has been suggested to be in excess of 90%.

⁵⁶ This total includes 26,167 foreign fishers working on licensed vessels.

⁵⁷ FAO reported that the number of culturists only includes owners, and that there are many more individuals employed by culturists. Extracted 27-06-08 from http://www.fao.org/fishery/countrysector/FL-CP_MY/en.

⁵⁸ The 2005 Annual Fisheries Statistics Bulletin.

⁵⁹ Source: Conceptual Master Plan for a Competency Based Skill and Practice Oriented Fisheries School, Final Report. Prepared for Ministry of Agriculture and Agro-based Industries, Malaysia. May 2007. On file with the consultant.

⁶⁰ See Chapter 3 of this report for further discussion on encroachment of foreign vessels into Malaysian Fisheries Waters.

⁶¹ YB Datuk Dr Effendi Norwawi, Minister of Agriculture. *New Straits Times*. 27th February 2002



Interestingly, the number of foreign fishers witnessed a dramatic rise from the 2002 figure of 17,809 fishers to the 2003 figure of 30,008 fishers. By 2005, there were 25,888 foreign fishers registered with the DOF, representing a decline of 8.05% compared to the figure of the previous year.

Of the 25,156 fishers reported to be working on licensed fishing vessels on the east coast of Peninsular Malaysia in 2006, 8,879 were foreign fishers mainly originating from Thailand (Table 1.5). These fishers were reported to be working on 6,480 licensed fishing vessels on the east coast.⁶²

Table 1.5: Number of approved foreign fishers by State on licensed vessels for the east coast of Peninsular Malaysia, 2006

State	Thai	Indonesian	Chinese	Others
Kelantan	3,614	0	65	0
Terengganu	2,744	0	0	0
Pahang	1,339	10	0	194
East Johor	886	0	0	27
Total	8,583	10	65	221

Data Source: Extracted from Department of Fisheries, Malaysia, Table 1.4 - Fisheries Statistics 2006

Site visits and official fisheries statistics reinforce the observations that foreign low skilled labour forms the majority workforce on larger purse seine and trawlers operating in the northern states (i.e., Kelantan and Terengganu and to a lesser extent Pahang and East Johor). Local fishers generally work on smaller vessels that include many traditional boats employing traditional gear. Often these vessels are

operated by as few as three people, including the skipper.⁶³

The age of fishers along the east coast is often related to the vessel class, where small A and B class vessels are mainly operated by local fishers who are often middle-aged (40 years and above).⁶⁴ Larger Class C and C2 vessels employ mainly younger foreign labourers primarily from Thailand.

In the course of interviews for this study, common reasons given for the low number of Malaysians in the capture fishing industry included: “Malaysians don’t like to go to sea” and “Malaysians don’t like to spend excessive time away from their families”. However, Malaysians do go to sea for extensive duration in the petroleum and maritime transport industries. Therefore, such explanations would appear to be inadequate. A more likely reason could be that the conditions of service at sea on Malaysian fishing boats do not meet the comfort and safety expectations of a modern Malaysian labour force.



Photo 1.3: Class B fish-trap boat, Kuala Besut

⁶² In 2006, no Chinese nationals were reported working on Peninsular Malaysia fishing vessels. In contrast, 21 Chinese nationals worked on Sarawak vessels and a further 101 Chinese fishers were employed by vessels operating out of the Federal Territory of Labuan.

⁶³ Vessel licence conditions for Class A and B require that these vessels must be owner/operator boats (i.e., not foreign owners).

⁶⁴ Pers Coms during site visit interviews, August 2008.



In the late 1990s, the Department of Fisheries sponsored a training program for Malaysian volunteers to go to sea on Chinese Taipei tuna fishing boats based out of Penang. Of the 96 participants, *none* were willing to undertake a second tour of duty. The reasons given for the reluctance to pursue tuna fishing related to low standards of cleanliness and hygiene on the boats, inadequate provision for Muslims to pray, and poor diet.⁶⁵ As most Malaysian fishing boats are traditional wooden boats, operated by SMEs, the quality of life at sea can be harsh.

When a Sarawak fishing company was asked if they would consider employing more Malaysians and in particular Malay fishermen, the company CEO sighed and shook his head. He said that they have a few Malaysian fishermen, but not many. He claimed that Malaysians do not like this type of work and most would not last long even if they could be convinced to try... The company boats go to sea for 14 days at a time, and return to port for only 3 to 4 days before putting back to sea for the next 14 day deployment. The company does not like to let the crew stay ashore for longer than 3-4 days because they fear they will end up drinking alcohol and getting into trouble.

Also, none of the many fishing vessels observed during a 2005 field survey had any obvious safety equipment. A Sarawak fishing company that allowed our field team to observe their operations over a number of days in November 2005 complained that overly demanding bureaucratic requirements relating to firearms control prevented their boats from carrying safety flare guns. Senior management of the company noted that, for this reason, no fishing vessel operating in Sarawak waters carried safety flares. This finding is consistent with observations made during the field trip to the east coast of Peninsular Malaysia. Additionally, no inflatable life-rafts were seen on any fishing boat in Besut, Terengganu; Batu Maung, Penang; or Kuching, Sarawak.

⁶⁵ Interview with the Deputy Director-General of Fisheries, Ibrahim Salleh, 2006.



1.4.4 Poor Post-Harvest Handling of Seafood

Malaysian fishing ports and vessels are not well equipped to achieve high standards of post-harvest handling. Slow, wooden-hulled boats use crushed ice to store fish at sea, sometimes for more than one week, before landing the product at port. Once landed ashore, fish are often sorted on concrete floors in warm, tropical outside air temperatures by workers with no training in hygienic food handling or cold-chain management.

During several field visits⁶⁶, the following scenes were witnessed at a number of ports throughout Peninsular Malaysia:

- Chicken being cut and dressed in the same locality as fish sorting;
- A cat wandering among seafood that was destined for human consumption;
- Fish laying exposed to direct sunlight for extended duration without being packed in ice;
- Fish sorters wearing only rubber thongs on their feet whilst stepping amongst fish that lay on concrete floors during sorting;
- A vessel full of tuna waiting alongside the wharf for a full day waiting for the cool of night to sort fish as a substitute for cool-room facilities;
- Cigarettes being smoked in the vicinity of fish sorting activities.

Although these are common sights at Malaysian fishing wharves, they can reduce the

effective shelf-life for the product, detract from freshness (appearance and taste), harm food safety (increased risk of bacteria-related poisoning) and reduce the price that the product achieves in the market.



Photo 1.4: Fish lying exposed without being packed in ice - Kuala Besut, Terengganu. Photo taken in 2005.

Such less than desirable post-harvest handling practices resulted in recent concerns over Malaysian seafood safety bound for Europe, which led to the suspension of Malaysian seafood exports to the European Union (EU). Malaysian seafood exporters did not meet EU standards on seafood export conditions (**Box 1.3**).⁶⁷ The ban by the EU on Malaysian seafood export was also reported to be a result of a few seafood processors “not meeting EU expectations, while others did meet the standards”.⁶⁸ As a result of the EU ban on Malaysian seafood, the government announced a RM1.5 billion package part of which is being used to hire some 1,200 people to ensure that seafood exporters comply with the standards.⁶⁹ Following the suspension of seafood export to the EU, the Government

⁶⁶ Conducted during 2005, 2006 and 2008 for different fisheries-related projects by SRM.

⁶⁷ “Malaysia seeks more time to meet EU standards”, New Straits Times, June 16, 2008, p4. Reproduced below.

⁶⁸ Personal communications with DOF officials during site visits, August 2008.

⁶⁹ New Straits Times (NST), July 10, 2008, p8.



established a technical committee to assist seafood exporters with upgrading facilities and operations to meet EU standards.⁷⁰

A further weakness of current selling arrangements is that fish must often be sold by fishers to local traders at the prevailing price on the day that it is landed. This is necessary because so many small-scale fishing enterprises have no cold-store room, or are indebted to a local trader and have pre-agreed to deliver all catch to him. Such a system can cause glut or scarcity in small local markets depending on the happenstance nature of the particular catch on the day in question.⁷¹

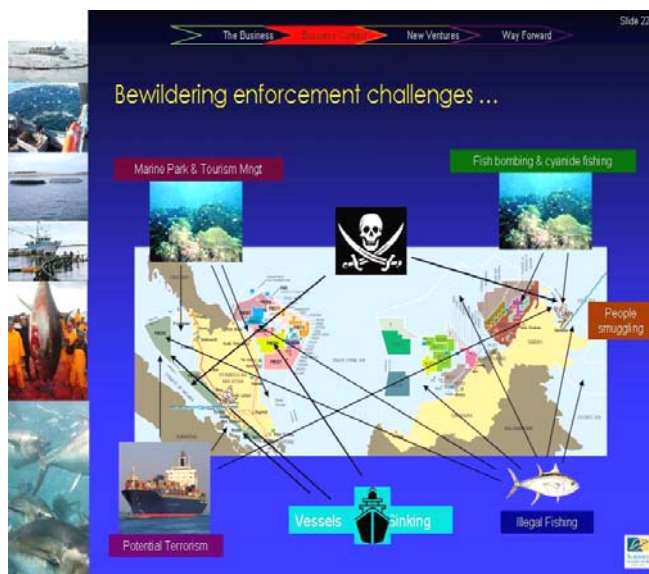
Box 1.3: Malaysia seafood banned by the EU



⁷⁰ NST July 10, 2008, and confirmed by DOF officials during site visits, August 2008.

⁷¹ Discussed in Ishak, 1994, *Loc. cit.*

Figure 1.8: Enforcement challenges for Malaysian fisheries management



1.4.5 Weak Enforcement at Sea

In November 2005, a new para-military body called the Malaysian Maritime enforcement Agency (MMEA) came into operation.⁷² The creation of the MMEA was to provide a single, integrated at sea enforcement agency.⁷³ However, a number of factors have hindered the effective streamlining of maritime enforcement, including continued legislative responsibilities by other Government agencies.

The MMEA was formed using aged assets transferred from the existing enforcement agencies and this has also constrained the effectiveness of the initiative. For a full

⁷² The establishment of the MMEA followed the enactment of the MMEA Act, 2002 (Act 621). The Act, however, failed to establish a clear foundation for MMEA operations as an integrated maritime enforcement agency.

⁷³ The MMEA was formed to overcome the lack of coordination between enforcement agencies as well as overcoming the lack of coordination amongst the agencies. See, Review of the MMEA, 2008 by Admiral Dato' Mohammad bin Nik, Director General of the MMEA. On file with SRM.



discussion on enforcement challenges as an essential component of fisheries MCS arrangements, see Chapter 5 of this report.

1.5 Brief Profile of Licensed Vessels, Fishers and Catch Tonnage in the East coast of Peninsular Malaysia

1.5.1 Ratio of Local/Foreign Fishers, Tonnage by State and Fishing Fleet Profile

In 2006, the east coast of Peninsular Malaysia registered 25,156 local and foreign fishers (Table 1.6) reported to be working on 6,480 licensed fishing vessels (Table 1.7). Out of this figure, the DOF reported that there were 8,879 foreign fishers working on fishing vessels on the east coast of Peninsular Malaysia (Table 1.6), of which 8,583 were reported to be from Thailand (Table 1.5).⁷⁴

Local fishers working on registered vessels on the east coast of Peninsular Malaysia totalled 16,277 in 2006 (Table 1.6), meaning that more than one third (35.3%) of fishers on the east coast are foreign fishers. By State, the ratio of local to foreign fishers varies considerably.

A geographic relationship between the source of labour (primarily Thailand for east coast fisheries)⁷⁵ and distance from each State appears to dictate the total percentage of foreign fishers (the dominant group) in each State; with those States closest to Thailand reporting the highest concentration of foreign

fishers.⁷⁶ In Kelantan, foreign fishers from Thailand⁷⁷ outnumber local fishers.⁷⁸

Table 1.6: Percentage of local and foreign fishers by State on licensed vessels for the east coast of Peninsular Malaysia, 2006

State	Local Fishers	Foreign Fishers ⁷⁹	Total Fishers	% of foreign Fishers
Kelantan	2,328	3,679	6,007	61.0%
Terengganu	5,926	2,744	8,670	31.6%
Pahang	3,954	1,543	5,497	28.0%
East Johor	4,069	913	4,982	18.3%
Total	16,277	8,879	25,156	35.3% in east coast

Data Source: Department of Fisheries, Malaysia, Partial Fisheries Statistics 2006

Anecdotal evidence⁷³ suggests that the influence of the ratio of foreign to local fishers is linked to the nature of IUU fishing taking place on the east coast of Peninsular Malaysia.⁸⁰ In the northern State of Kelantan, vessel owners commented on the difficulty and challenges of maintaining control of foreign crews, particularly to prevent transfer of fish catch at sea and smuggling of subsidised diesel to

⁷⁴ In the Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, a footnote to Table 1.4 of the report states that "the approval given does not necessarily reflect the actual number of fishermen [sic] working on licensed vessels". This statement refers to foreign fishers, indicating a likely higher rate of foreign fishers on the east coast of Peninsular Malaysia.

⁷⁵ The exact nationality of some foreign fishers reported to be working on these licensed vessels along the east coast of Peninsular Malaysia has been brought into question by some industry commentators who suggest that these fishers also include indentured workers from places such as Myanmar and Cambodia, where "the true extent of labour exploitation [and trafficking]..." is not known. See US Department of State www.state.gov/g/tip/rls/tiprpt/2007/82808.htm "Trafficking Persons Report" and Testimony of Thea Mei Lee, Policy Director, American Federation of Labor Congress and Industrial Organisations (AFL-CIO), Written Testimony May 7, 2008, <http://209.85.175.104/search?q=cache:6QG-1J2ior8J:www.dol.gov/ilab/programs/ocft/pdf/20080423e.pdf+fish+smuggling+thailand+gulf&hl=en&ct=clnk&cd=102>. Human trafficking in the east coast fishing industry is further discussed in Chapter 4 of this report.

⁷⁶ *Op. cit.* 2005 Fisheries Statistics.

⁷⁷ Observations made during interviews in August 2006.

⁸⁰ Pers Coms - Reported by Fisheries Officers during field interviews in December 2007 - January 2008.

⁷⁴ *Op. cit.* 2006 Fisheries Statistics.

⁷⁵ Pers Coms during site visit interviews in August 2008.



foreign boats operated by compatriots of the crew.⁸¹

Terengganu has the largest fishing fleet with 2,409 of the 6,480 licensed fishing vessels on the east coast (Table 1.7). However, the largest total marine fisheries catch with the highest value for 2006, was reported for the State of Pahang with 113,063MT of catch valued at RM394,556,225 (Table 1.10).⁸²

Table 1.7: Fishing vessels by State for the east coast of Peninsular Malaysia, 2006⁸³

State	No of vessels below 70GRT	No of vessels above 70GRT	Other vessels ⁸⁴	Total no of vessels
Kelantan	845	138	285	1,268
Terengganu	1,543	58	808	2,409
Pahang	700	99	580	1,379
East Johor	707	42	675	1,424
Total	3,795	337	2,348	6,480

Data Source: Department of Fisheries, Malaysia, Partial Fisheries Statistics 2006

A comparison between the number of large and small vessels in Terengganu and Pahang (Table 1.7 and Table 1.11), and the level of catch tonnage and value (Table 1.8 and Table 1.9) achieved, demonstrates that the rate of effort is substantially lower in Pahang than for Terengganu (e.g. Pahang appears to have a more efficient fishery). Alternatively, such a vast difference in apparent rate of effort may be related to IUU fishing activities, e.g., non-reporting of fish landings in Terengganu or a contribution from unlicensed boats in Pahang.

⁸¹ Pers Coms – Reported during interviews with two separate fishing company owners/directors January - February 2008.

⁸² Landings data by State has been released, whereas neither data on fish value nor the division of landings by fishery, i.e., near-shore or deep-sea, has been distinguished.

⁸³ Note that the number of vessels above 70 GRT in Kelantan (Class C2) increased to 191 by 2008.

⁸⁴ i.e., small vessels with outboard & non-powered boats

Table 1.8: Marine fisheries reported tonnage and value by State for the east coast of Peninsular Malaysia, 2005⁸⁵

State	Coastal Fisheries		Deep-sea Fisheries	
	Tonnes	Value (RM)	Tonnes	Value (RM)
Kelantan	17,160	56,956,827	29,335	97,364,310
Terengganu	82,519	273,890,399	10,492	34,827,518
Pahang	84,965	282,010,542	26,277	87,216,984
East Johor	62,718	208,169,991	5,177	17,179,883

State	Total	
	Tonnes	Value (RM)
Kelantan	46,495 ⁸⁶	154,321,137
Terengganu	93,011 ⁸⁷	308,717,917
Pahang	111,242	369,227,526
East Johor	67,895 ⁸⁸	225,349,874

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2005

1.5.2 Comparison of Catch Tonnage for the East Coast States

The 2005 data on catch tonnage, value per tonne and number of foreign and local fishers by State as supplied by the Department of Fisheries is shown in Table 1.8. Prior to 2006, landings value was averaged out for each State. However, when landings by State are divided by total reported wholesale value the average tonnage value now varies for each State. This was only evident after dividing total tonnage by total value for previous years. In the past, such data did not take into account that different species achieve varying prices at market, and the catch profile for all States is unlikely to be the same, based upon the

⁸⁵ Reported landings for Kelantan and East Johor in 2006 rose dramatically to 71,714MT and 90,092MT respectively; while landings for Terengganu and Pahang rose minimally to 111,394MT and 113,063MT respectively during the same period. Table 1.5 of the 2006 Fisheries Statistics data does not show landings by region unlike that shown in Table 1.4.

⁸⁶ Fisheries Statistics reported total tonnage at 46,494 tonnes. The amended total for Kelantan is based on the sum of reported tonnage in each sub-group column.

⁸⁷ Fisheries Statistics reported total tonnage at 93,012 tonnes.

⁸⁸ Fisheries Statistics reported total tonnage at 67,894 tonnes.



variable nature of each State's marine fishery sub-sectors.

Table 1.9: Fisheries tonnage, value, and rate of local and foreign fishers for the east coast of Peninsular Malaysia, 2006⁸⁹

State	Foreign Fishers	Local Fishers	Catch Tonnage
Kelantan	3,679	2,328	71,714
Terengganu	2,744	5,926	111,394
Pahang	1,543	3,954	113,063
East Johor	913	4,069	90,092
Total	8,879	16,277	386,263

Table 1.10: Fisheries tonnage, value, and rate of local and foreign fishers for the east coast of Peninsular Malaysia, 2006⁹⁰

State	Total no of vessels	Tonnes/vessel	Fisheries Value (RM)
Kelantan	1,268	56.56	257,435,389
Terengganu	2,409	46.24	484,256,998
Pahang	1,379	81.98	394,556,225
East Johor	1,424	63.27	298,825,989
Total	6,480	59.60	1,435,074,601

Data Source: Department of Fisheries, Malaysia, Partial Fisheries Statistics 2006

Of the four fisheries States, Pahang appears to have had the most efficient fishery in 2006 with 5,497 fishers working on 1,379 vessels landing 113,063 MT of fish, an average of 81.98 MT/vessel. Average catch per vessel in the other States ranged between 46.08 - 63 MT/vessel (Table 1.12). The State of Pahang also had the second lowest number of foreign fishers of all the States on the east coast of Peninsular Malaysia in 2006. However, the number of foreign fishers grew from 489 in 2005 to 1,543 in 2006. Foreign fisher numbers in Kelantan dropped slightly from 4,101 in 2005 (Table 1.2) to 3,679 in 2006 (Table 1.9).

An examination of fleet profile is provided below to determine whether these factors may have contributed to the apparent superior

efficiency of the fishery in Pahang State. An analysis of the rate of fishing effort (ROE) cannot be made easily because of a lack of data. Examination of the fleet profile (Table 1.11) shows that the apparent efficiency of fisheries in the State of Pahang may be due to the large number of moderate-to-larger vessels between 40 - 70 GRT and above (i.e. a total of 295 vessels). In contrast, Kelantan had 200 vessels in the same size range. East Johor had the largest number of small licensed outboard powered vessels.

Table 1.11: Fishing vessel profile for east coast of Peninsular Malaysia, 2006

State/Vessel profiles	Kelantan	Terengganu	Pahang	East Johor
Outboard powered vessels	285	808	578	674
Non-powered Vessels	0	0	2	1
Sub-total	285	808	580	675
0-19.9 GRT	713	1,193	409	393
20-39.9 GRT	70	265	95	135
40-69.9 GRT	62	85	196	179
70 GRT and above	138	58	99	42
Total vessels all sizes	1,268	2,409	1,379	1,424

Data Source: Department of Fisheries, Malaysia, Partial Fisheries Statistics 2006

Published ROE data on the Malaysian fishery is limited to data on the number of trips by vessel type and size. During analysis of this data, fishing industry anomalies arose that can only be explained by inaccurate reporting on the ROE as shown in Table 1.12. An examination of the total trips per year and average trips per vessel per year as shown at Table 1.13 calls into question the accuracy and reliability of these

⁸⁹ Department of Fisheries partial data for 2006.

⁹⁰ Department of Fisheries partial data for 2006.



data sets. An example of this is the unlikelihood that vessels 40 - 69.9 GRT managed to undertake 5000 trips/vessel/year during 2005 in Kelantan. Morgan, Staples and Funge-Smith (2007) allude to the inadequate condition of fisheries ROE data in Southeast Asia in the recent Asia Pacific Fishery Commission (APFIC) report, *Fishing Capacity Management and IUU fishing in Asia*.⁹¹

On a State-by-State basis, **Table 1.12** shows some interesting trends for the east coast fishery when tonnage caught, catch value and vessel numbers are analysed. The most noticeable trend (variance) in catch tonnage can be seen in the reported catch for Kelantan. Reported tonnage came to 69,222 MT in 2001, rising to 83,404 MT in 2002, and then dropping off significantly to 49,820 MT in 2004 with a further reported decline in 2005, after which reported landings increased by 35% in 2006 to 71,714 MT. A correlation between increases and decreases in catch does not match the trend in total licensed vessel numbers over this timeline, the total number of which have gradually declined between 2001 from 1,138 and 2005 to 989 licensed fishing vessels (with a short-term increase in 2004). However, a peak in vessel numbers past those reported in past years during 2006 to 1,268 vessels occurred. Interestingly, the most efficient period on a landing by vessel basis was apparent between 2002 and 2003 with an average of 80 MT/vessel, while in 2006 it was 56 MT/vessel. Reported catch tonnage for Terengganu and Pahang also show a gradual decline, with a slight

⁹¹ Morgan, G., Staples, D., and Funge-Smith, S. 2007: *Fishing Capacity Management and IUU Fishing in Asia*, RAP Publication 2007/16, Asia-Pacific Fishery Commission, Food and Agriculture Organisation of the United Nations Regional Office for Asia and the Pacific, Bangkok, 2007.

increase reported for East Johor where total tonnage gradually rose and then dropped then rose again to levels higher than those achieved in 2001. In all cases, variable landings reported took place in the context of an apparent increase in fishing effort as the number of fishing vessels for all States actually increased between 2001 and 2006.

Table 1.12: Annual landing tonnage, licensed vessels and estimated value by State for the east coast of Peninsular Malaysia 2001-2005

State	2001		
	Tonnes	RM	No of Boats
Kelantan	69,222	197,813,268	1,138
Terengganu	107,227	440,908,162	2,280
Pahang	149,990	394,480,860	1,000
East Johor	71,688	193,507,435	1,363
Total	398,127	1,226,709,725	5781
State	2002		
	Tonnes	RM	No of Boats
Kelantan	83,404	227,501,235	988
Terengganu	106,224	436,573,770	2,107
Pahang	132,309	335,632,146	944
East Johor	77,589	198,549,265	1,281
Total	399,526	1,198,256,416	5,320
State	2003		
	Tonnes	RM	No of Boats
Kelantan	75,068	198,667,823	938
Terengganu	90,935	346,328,875	2,158
Pahang	132,590	365,161,944	939
East Johor	77,356	196,707,821	1,248
Total	375,949	1,106,866,463	5,283
State	2004		
	Tonnes	RM	No of Boats
Kelantan	49,820	131,041,787	1,101
Terengganu	107,348	403,906,934	2,408
Pahang	128,272	376,321,288	1,242
East Johor	70,188	195,547,405	1,244
Total	355,628	1,106,817,414	5,995
State	2005		
	Tonnes	RM	No of Boats
Kelantan	46,494	154,321,137	989
Terengganu	93,012	308,717,917	2,442
Pahang	111,242	369,227,526	1,303
East Johor	67,894	225,349,874	1,696
Total	318,462	1,057,616,454	6,430
State	2006		
	Tonnes	RM	No of Boats
Kelantan	71,714	257,435,389	1,268
Terengganu	111,394	484,256,998	2,409
Pahang	113,063	394,556,225	1,379
East Johor	90,092	298,825,989	1,424
Total	386,263	1,435,074,601	6,480

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2000-2005, and 2006 partial data



Table 1.13: Rate of fishing effort by State on the east coast of Peninsular Malaysia

State	Outboard powered vessels	Non-powered Vessels	Sub-total	0-19.9 GRT	20-39.9 GRT	40-69.9 GRT	70 GRT and above	Total Vessels all sizes
Kelantan Number of Vessels	129	5	134	594	70	53	138	989
Trip/Year	-	-	-	274,931		NA ⁹²	153,316	-
Average Trips/Vessel/Yr	-	-	-	414		-	1110	-
Terengganu Number of Vessels	805	0	805	1,228	273	81	55	2,442
Trips/Year	-	-	-	294,725		43,419	39,078	-
Average Trips/Vessel/Yr	-	-	-	196		536	710	-
Pahang Number of Vessels	508	3	511	418	96	191	87	1,303
Trips/Year	-	-	-	344,454		296,290	134,196	-
Average Trips/Vessel/Yr	-	-	-	670		1,551	1,542	-
East Johor Number of Vessels	986	2	988	371	121	180	36	1,696
Trips/Year	-	-	-	428,638		359,173	33,758	-
Average Trips/Vessel/Yr	-	-	-	871		1,995	973	-
Total	2,428	10	2,438	2,611	560	505	316	6,430

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2005

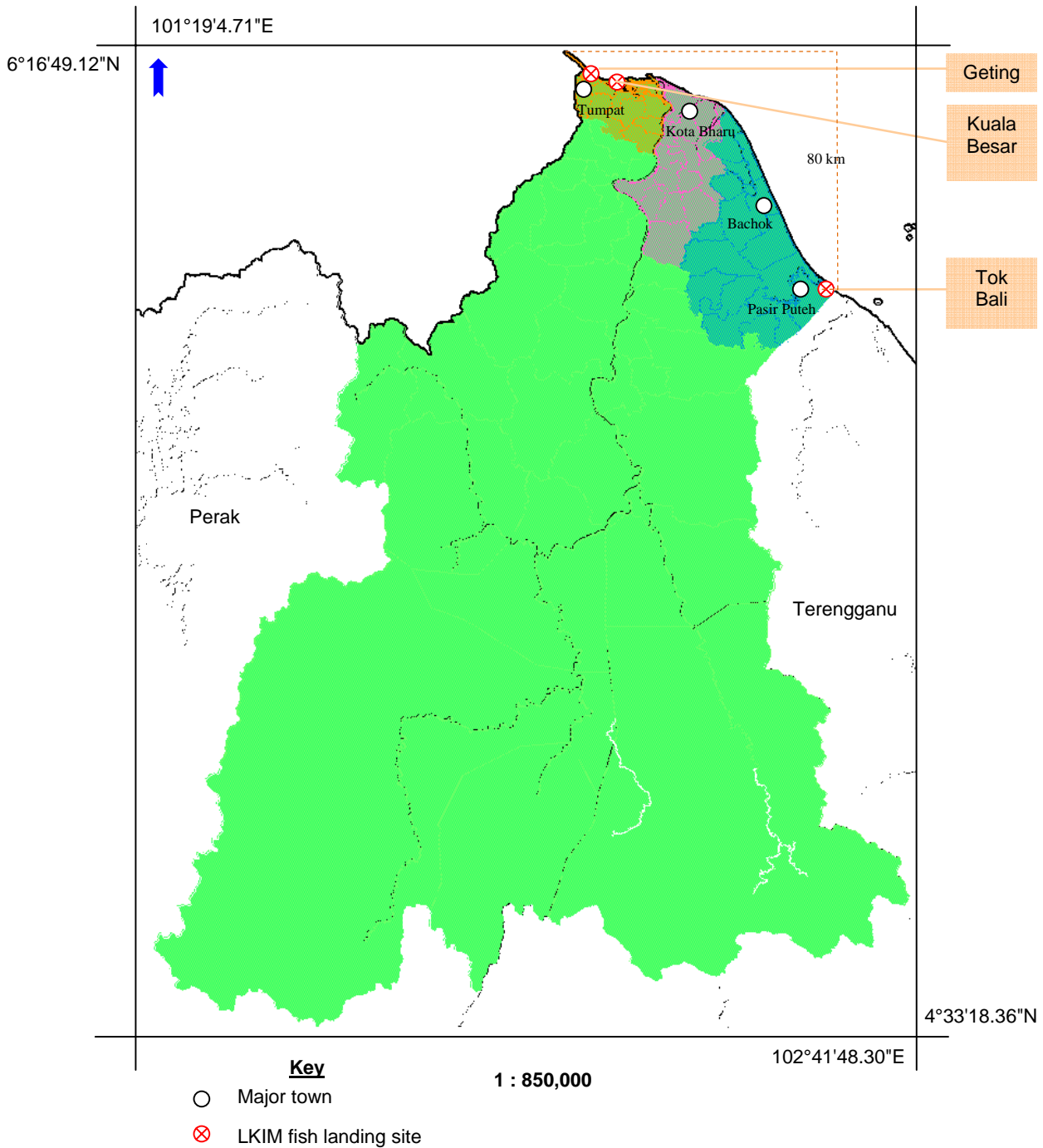


Photo 1.5: An example of an outboard powered coastal fishing vessel: photograph taken at Setiu Lagoon in Terengganu in 2005

⁹² Grossly inaccurate data, indicating more than 5000 trips/vessel/yr for Kelantan



Figure 1.9: State of Kelantan



1.6 Capture Fisheries Industry Kelantan: Industry Practices, Stocks and Types of Fisheries

1.6.1 Overview

Kelantan is located at the northern most part of the east coast of Peninsular Malaysia, bordering Thailand (**Figure 1.9**). Kelantan ranks eight out of the 14 official State fisheries in Malaysia by catch tonnage (including east and west Malaysia), landing a reported 71,714 MT with an estimated wholesale value of RM257,435,389 in 2006.⁹³ Kelantan contributed 5.1% to total national marine fish landings in 2006. In 2006, Kelantan was reported to employ the highest proportion of foreign fishers of any State, where 3,679 of the total 6,007 fishers were mostly from Thailand. As discussed elsewhere, this is likely due to the close geographic proximity to this cheaper source of labour. The total number of licensed vessels in Kelantan had been on the decline in recent years, from 1,138 in 2001 to 989 vessels in 2005. However, 2006 data shows that the number of licensed vessels significantly increased by 279 vessels to 1,268 vessels.

There are three fishing districts in Kelantan; Kota Bharu, Bachok-Pasir Puteh and Tumpat. In terms of total fishers, Bachok-Pasir Puteh reported a total of 3,805 fishers working on licensed vessels in 2004.⁹⁴ Of this total 3,459 fishers were foreigners, most of who were from Thailand.

⁹³ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

⁹⁴ 2004 data had to be used here as the necessary data for Peninsular Malaysia was absent in the 2005 DOF published data. Overall the total number of fishers and profile did not change greatly from 2004 - 2005 when comparing total number of fishers apart from a marginal decrease in total fishers in Kelantan.

Kota Bharu registered 670 fishers, most of whom were local Malays, and Tumpat was reported to have 1,204 fishers, 955 of whom were local Malays. Statistics on the number of fishers for Kelantan between 2000 and 2006 show that between 2000 and 2001, the total number of fishers almost doubled, and then in 2002 for an unexplained reason the number of fishers plummeted to less than half (2,836) the number registered during 2001. During 2003, the number of registered fishers once again increased by more than 100%. From 2004 to 2005 the number of fishers appears to have stabilised, with a slight increase in 2006 (**Table 1.14**). Servicing the three fishing districts are three fish landing ports (owned by Lembaga Kemajuan Ikan Malaysia, LKIM): two near Tumpat and one in Pasir Puteh (**Figure 1.9**).

Table 1.14: Total fishers reported to be working on licensed vessels for Kelantan: 2000-2006

KELANTAN	
2000	3,892
2001	6,426
2002	2,836
2003	7,481
2004	5,616
2005	5,695
2006	6,007

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2000-2005 and 2006 data

Between 2000 and 2005, the number of licensed outboard powered vessels dropped from 201 to 129 increasing again in 2006 to 285, while licensed inboard powered vessels increased from 814 in 2000 to 937 in 2004. However, the number declined slightly in 2005



to 855 and then increase again in 2006 to 983 licensed vessels. As in all parts of Malaysia, both commercial and traditional fishing gear are utilised in Kelantan fisheries. Commercial gear includes trawl nets, fish purse seines and anchovy purse seines, while traditional gears consist of drift nets, lift nets, portable traps and hook and lines. At present, trawl nets are the primary commercial gear in use, and drift nets dominate traditional fishing gear used in Kelantan (Table 1.15).



Photo 1.6: Licensed commercial fishing vessels moored in harbour at Tok Bali, Kelantan: photograph taken December 2007.



Photo 1.7: Class A licensed vessels (red cabin-Kelantan registered and green cabin-Terengganu registered) coming in to land fish at LKIM Tumpat, Kelantan near the Thailand border. The LKIM Tumpat fish wharf is relatively small compared to the facility at Tok Bali, Kelantan; photograph taken 11-08-08.

Table 1.15: No of Licensed Fishers, Fishing Vessels and Fishing Gears in Kelantan (2000-2006)

Year	Number of Fishers	No./Type of Fishing Vessels		Fishing Gears						
		Outboard	Inboard	Commercial			Traditional			
				Trawl nets	Fish Purse seines	Anchovy purse seines	Drift nets	Lift nets	Portable traps	Hook & lines
2000	3,892	201	814	89	103	0	647	23	10	119
2001	6,426	257	881	107	127	10**	654	29	12	165
2002	2,836	182	806	107	152	10*	505	19	11	149
2003	7,481	182	756	170	172	8	392	13	10	164
2004	5,616	164	937	151	109	12***	513	28	36	242
2005	5,695	129	855	159	100	11	523	18	0	119
2006	6,007	285	983	169	96	12****	777	21	11	143

*33 'Other Seines' were reported in this year.

**34 'Other Seines' were reported in this year.

***10 'Other Seines' were reported in this year.

****26 'Other Seines' were reported in this year.

Note: 'Other Seines' refer to a category where most years there are no vessels in the category column. The data does not specify anything more than that they are an "other" type of seine.

Data Source: Department of Fisheries, Malaysia, Annual Fisheries Statistics Bulletin 2000 - 2005 and 2006 partial data



1.6.2 Fish Landings

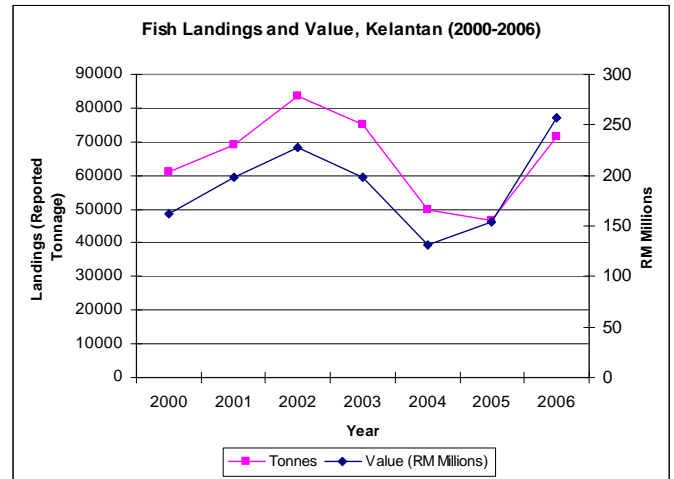
Fish landings in Kelantan show a steady rate of increase between the years of 2000 to 2002, from 60,917 MT to 83,404 MT. A notable decline is apparent between 2002 and 2005 where reported landings dropped to 46,494 MT (Table 1.16 and Figure 1.10). Following this, reported landings significantly increased to 71,714 MT. Commercial fishing gear contributed between 79-90% of total landings from 2000 to 2006. The movement of value of the fishery during this period roughly approximates total landings, apart from an apparent increase in value per tonne in 2005. Of some interest is the substantive increase in landings by “hook and line” vessels, with a more than ten-fold increase between 2005 and 2006 (Table 1.16).

Table 1.16 shows a continued decline in landings from traditional gear up until 2005, however line with this increase in “hook and line” landings, it is apparent that landings overall by traditional fishing gear increased significantly in 2006. However, the weakness of official data is illustrated again by the reported increases in landings from portable traps, which nearly doubled in 2005 when, according to data shown in Table 1.15, no such gear was in use in Kelantan in that year.⁹⁵ Also of interest is the significant fall in catch tonnage for commercial fish purse seines in spite of sustained input in the number of purse seines in

⁹⁵ J.G. Butler noted that Kelantan fisheries statistics as early as those first collected the government of British Malaya in 1931 lacked accuracy and often only reported an estimation of catch. See J.G. Butler, 2004: *The Closing of The Frontier: A History of the Marine Fisheries of Southeast Asia, c. 1850-2000*, Institute of Southeast Asian Studies, Singapore, extract 26-08-06 from http://books.google.com/books?id=LkpGqV69oXIC&printsec=frontcover&dq=kelantan+Thai+fish+trade&source=gbs_summary_s&cad=0#PPP1.M1.

operation (see Table 1.15). Anchovy purse seines were reported to have experienced a similar decline (although, once again, 692 MT were reported to have been landed in 2000 when no such gear was registered to be in use).

Figure 1.10: Fish Landings and Value, Kelantan (2000 – 2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

Table 1.16: Primary landings of Marine Fish by Gear Group, Kelantan (2000-2006)

Year	Commercial			Traditional				Landings (Tonnes) Including minor miscellaneous gear	Value (RM Millions)
	Trawl Nets	Fish Purse Seines	Anchovy Purse Seines	Drift Nets	Lift Nets	Portable Traps	Hooks & Line		
2000	10,422	37,387	692	2,934	6,142	229	2,998	60,917	162.21
2001	15,259	44,193	580	1,852	5,736	603	854	69,222	197.81
2002	24,622	48,691	1,186	2,102	4,326	715	1,607	83,404	227.50
2003	26,295	37,553	1,024	1,817	6,803	452	989	75,068	198.66
2004	27,345	14,634	410	1,403	3,376	489	2,076	49,820	131.04
2005	17,989	23,904	191	1,224	1,172	1,038	1,009	46,494	154.32
2006	26,871	25,688	50	3,113	3,400	532	12,000	71,714	257.43

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Bulletin, including partial 2006 data

1.6.3 Catch Profile

Roughly 60 species of fish, two species of crab, 10 species of shrimp and three species of squid were reported to have been caught in the fishing waters of Kelantan. Of these species, several have considerable commercial value, representing a significant proportion of the overall reported landings. For ease of comparison, a selection of these species that have been caught along the east coast of Peninsular Malaysia are identified for Kelantan in **Table 1.17**. Data on these same species are also presented for the other three East Coast States through the course of this chapter.

Fish landings for finfish species (i.e. mainly pelagic species, *Decapterus sp.*, *Selaroides leptolepis*, *Thunnus sp.*) increased from 2000 to 2002; however, a noticeable decline in

reported catch was apparent from 2003 to 2006 (**Table 1.17** and **Figure 1.11**). An example of a potential crash in fish population is demonstrated in the reported landings of the species, *Atule mate* (locally referred to as pelata or Yellowtail Scad), which has experienced a significant decline from 1,621 MT in 2000 to one tonne in 2005 and 2006. A decline in most other species notably *Stelophorus sp.*, is also evident in **Figure 1.11**. The most dominant demersal species by reported landings was *Nemipterus sp.* (kerisi). The highest landings were contributed by *Decapterus sp.* (selayang) and *Thunnus sp.* (aya).

Table 1.17: Commercial Fish Landings from Kelantan Waters (2000-2006)

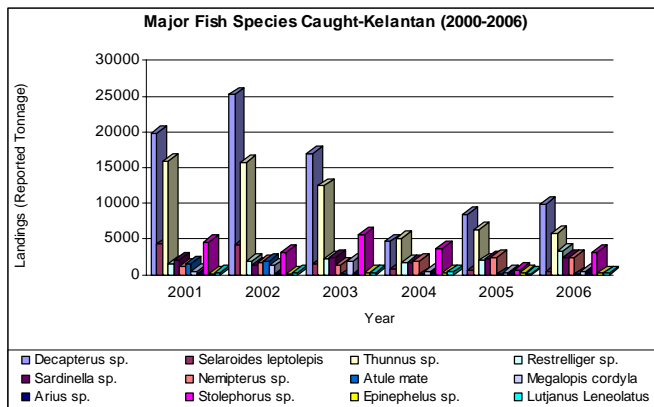
English Name - Fish	Local Names - fish	Scientific Name	Landings (Tonnes)						
			2000	2001	2002	2003	2004	2005	2006
Indian Scad Mackerel Scad Roughear Scad Shortfin Scad Japanese Scad	Selayang	<i>Decapterus sp.</i>	23,144	19,849	25,199	16,907	4,634	8,366	9,829
Yellowstripe Scad	Selar kuning	<i>Selaroides leptolepis</i>	2,612	4,277	4,109	1,513	781	659	378
Kawakawa Bullet Tuna Frigate Tuna	Aya	<i>Thunnus sp.</i>	10,239	15,868	15,648	12,423	5,066	6,367	5,723
Short Mackerel Indian Mackerel	Kembung	<i>Restrelliger sp.</i>	1,033	1,485	1,834	2,266	1,632	1,968	3,241
Fringescale sardinella Blacktip sardinella Smooth-belly sardinella Spotted sardinella	Tamban	<i>Sardinella sp.</i>	1,221	2,031	1,364	2,467	1,640	2,239	2,472
Various Bream species	Kerisi	<i>Nemipterus sp.</i>	918	1,172	1,680	1,304	1,884	2,469	2,383
Yellowtail Scad	Pelata	<i>Atule mate</i>	1,621	1,552	1,922	19	22	1	1
Torpedo Scad	Cincaru	<i>Megalospis cordyla</i>	606	423	1,264	1,809	445	210	384
Catfish	Duri	<i>Arius sp.</i>	176	126	144	101	252	120	207
Commerson's anchovy Indian Anchovy Hardenberg's anchovy	Bilis/bunga air	<i>Stolephorus sp.</i>	4,721	4,469	3,153	5,657	3,699	583	3,115
Numerous Grouper species	Kerapu	<i>Epinephelus sp.</i>	58	56	103	251	245	219	178
Various species snapper	Remong	<i>Lutjanus Leneolatus</i>	231	208	233	231	366	113	194
Flower/Blue/Blue Swimming Crab	Ketam Laut	<i>Portunus pelagicus</i>	61	78	120	41	199	213	117
Giant Mud Crab	Ketam Batu	<i>Scylla serrata</i>	-	-	-	91	70	55	63
White Prawn	Udang Putih	<i>Penaeus merguensis</i>	50	64	57	54	74	68	70
Sharp-rostrum Prawn	Udang Minyak	<i>Parapenaeopsis sp.</i>	12	12	14	32	7	0	13
Tiger Prawn	Udang Harimau	<i>Penaeus monodon</i>	7	7	5	16	3	3	11
	Other Shrimp	<i>Penaeus sp./ Metapenaeus sp./ Solenocera subnuda</i>	316	336	401	283	327	310	508
Common squid	Sotong Biasa	<i>Loligo sp.</i>	1,311	1,723	1,766	1,399	2,423	2,543	14,698
Cuttlefish	Sotong Katak	<i>Sepia sp.</i>	331	479	583	498	773	658	702

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

Landings of *Penaeus merguensis* (white shrimp otherwise known locally as udang putih) and other species including *Penaeus sp./Metapenaeus sp./Solenocera subnuda* remained fairly constant between 2000 and 2006, while squid landings of *Loligo sp.* (sotong biasa) and *Sepia sp.* (sotong katak) rose

steadily for the same period (Table 1.17), and in the case of the common squid, *Loligo sp.* landings rose dramatically between 2005 to 2006, even though landings had been on the increase in prior years (Figure 1.12).

Figure 1.11: Major Fish Species Caught – Kelantan (2000-2006)



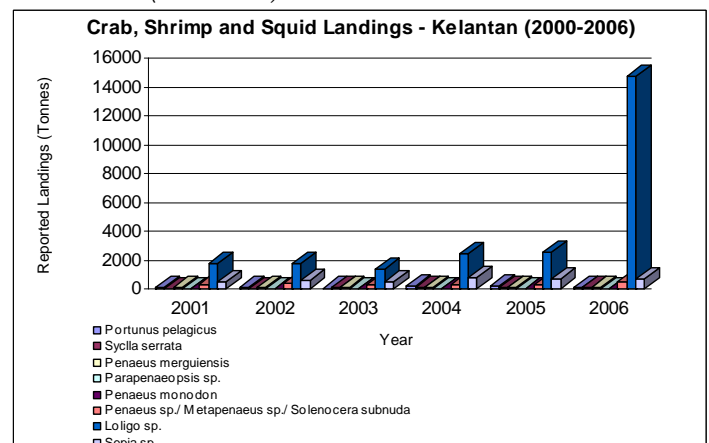
Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

While **Figure 1.11** shows a general decline in all reported landed fish species in Kelantan from 2000-2006, **Figure 1.12** shows a variable trend for reported landings of crab, shrimp and squid during the same period. The increase in reported landings of fish between 2000 and 2002 appears not to correlate with the rate of increase or decrease in commercial fishers and fishing vessels during this period as shown as **Table 1.15** and **Table 1.16**. The increase corresponds with improved effort by inboard traditional boats using traditional drift nets. Nevertheless, increased effort by these traditional fishers in later years produced no obvious rise in fish landings.

Unofficial data for squid landings in 2007 show a drop to 5,230.5919 MT. No conclusive scientific explanation for the sudden increase in common squid landings for Kelantan have been identified, although SEAFDEC-MFRDMD did provide an analysis of fisheries landings for the east coast of Peninsular Malaysia, with a focus on squid. This paper suggested that the sudden spike in landings may be associated

with a reduction in predator species, although it was not conclusive.⁹⁶ Past research by the Fisheries Research Institute (FRI), Malaysia has shown that the removal of predators further up the food-chain has resulted in an ecosystem shift on the west coast of Peninsular Malaysia. The removal of predators was reported to result in population explosion of squid and cuttlefish along the Malacca Straits, and not due to an increase in fishing effort (**Figure 1.12**) showing squid and cuttlefish landings 1980-1998).

Figure 1.12: Crab, Shrimp and Squid Landings – Kelantan (2000 – 2005)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

1.6.4 Processed Marine Fish Products

There are a number of downstream fish processing activities (including dried anchovies, shrimp paste, fish cakes and salted fish) that employ a large proportion of communities in the coastal areas of Kelantan. And like much of the coastal area of Terengganu (the

⁹⁶ Abu Talib bin Ahmad, 2008: *Resources of East Coast Fisheries, Peninsular Malaysia*, SEAFDEC-MFRDMD. Paper written after formal request for information about the apparent increase in squid landings from 2004-2006.

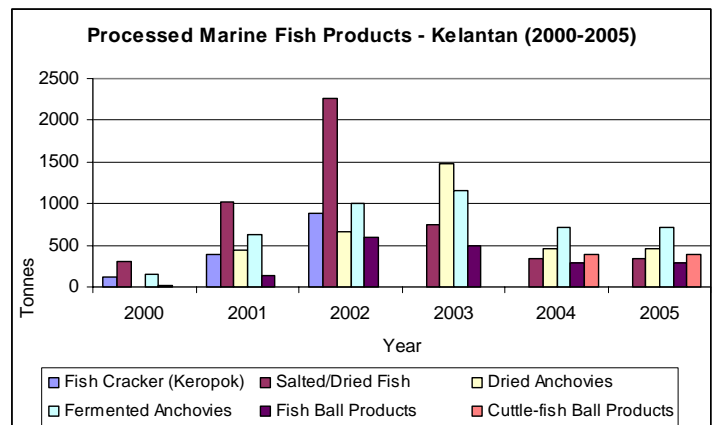
neighbouring State south of Kelantan), agricultural activities dominate this region as a source of income and livelihood. Kelantan is also recognised as the least developed State in Peninsular Malaysia. The highest production of processed fish comprises fermented anchovies (a local delicacy known as 'budu') and dried anchovies, with production in 2005 reported at 706.51 MT and 451 MT respectively. Other processed fish products reported for 2005 include 336.41 MT of salted/dried fish, 283.75 MT of fish balls, and 395 MT of cuttlefish balls.⁹⁷ Nevertheless these statistics may be questionable because the exact same production tonnage (to the decimal point) for all five fish products was reported in 2004 (Figure 1.13).

Consistent with the trends noted in fish landings in Kelantan from 2000 - 2005, the total tonnage of processed fish products has declined significantly since 2003. An example can be seen where reported salted/dried fish production fell from 756.72 in 2003 to 336.41 MT in 2004 and 2005. Additionally, the production of dried anchovies fell from 1,485 MT in 2003 to the 451 MT in 2004 and 2005.⁹⁸

Figure 1.13 shows a spike in processed fish products during 2002 - 2003. The increase in production appears to reflect closely reported landing tonnage trends during this period (Figure 1.11). Given the nature of historic fish marketing and distribution patterns, this increase in processed fish may be a result of

inter-State imports.⁹⁹ An observation from official data shows that fish cracker production ceased since 2003. On the other hand, during field visits along the east coast and in Kelantan, one of the interviewees was an SME who produces fish crackers.¹⁰⁰ The accuracy of this data is questionable.

Figure 1.13: Processed Marine Fish Products – Kelantan (2000 – 2005)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics

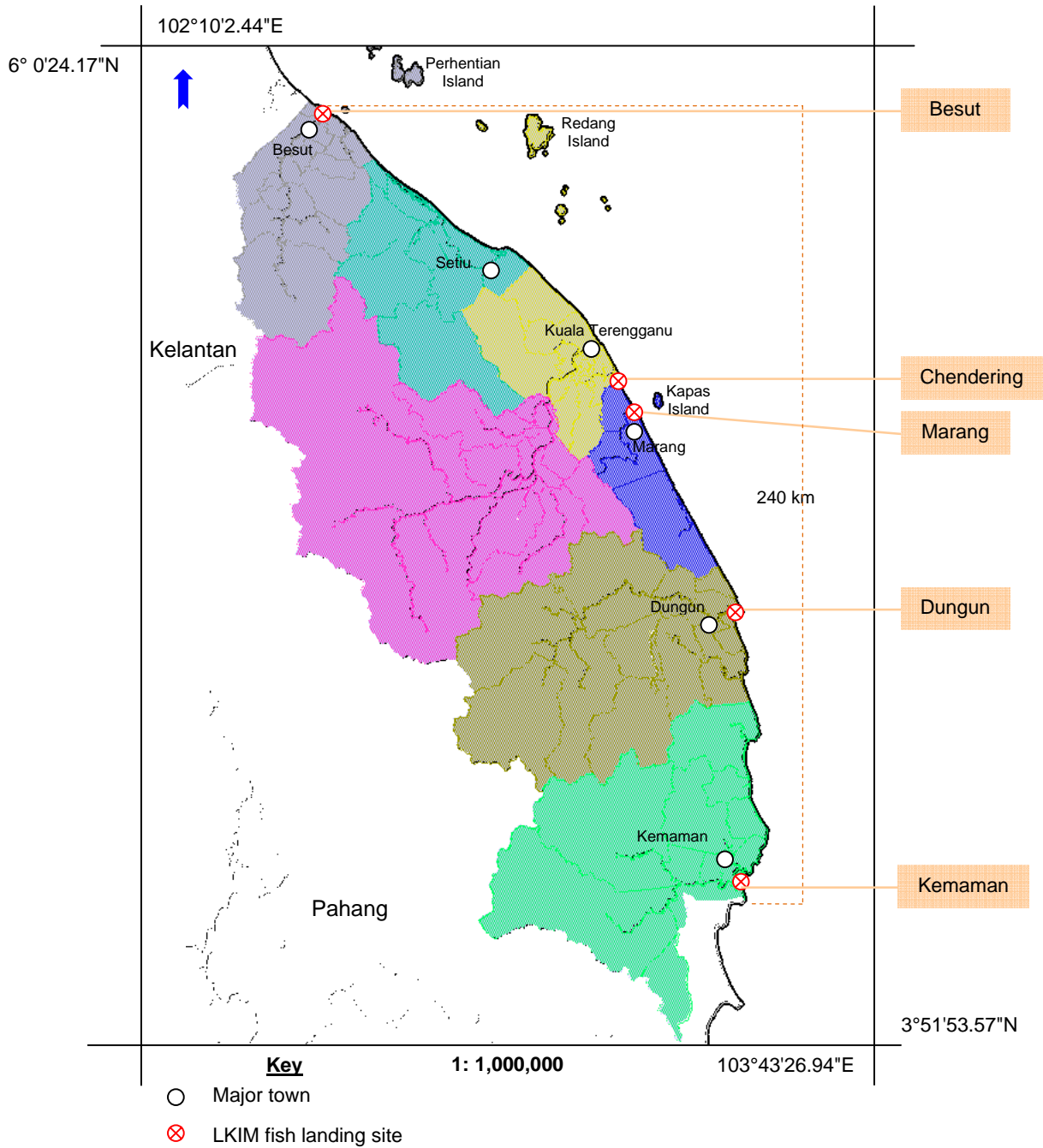
⁹⁷ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

⁹⁸ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2003*, and *Annual Fisheries Statistics Bulletin 2004*. Extracted 16-05-08 from <http://www.dof.gov.my>.

⁹⁹ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York pp 39-41.

¹⁰⁰ This SME, reported that they produce on average 50kg/day of fish cracker, which would result in 1,000kg/month based upon 20 days of production per month.

Figure 1.14: State of Terengganu



1.7 Capture Fisheries Industry Terengganu: Industry Practices, Stocks and Type of Fisheries

1.7.1 Overview

The fisheries industry in Terengganu plays an important part in the national fish supply, ranking among the top seven States in terms of national marine fish production with 111,394 MT contributing 8.07% of total national marine fish landings in 2006, with a wholesale value reported to be RM484,256,998.¹⁰¹ Interestingly, and of some concern is the fact that DOF published fisheries statistics for 2005 show two very different valuations for the Terengganu marine fisheries sector. The first table reported a wholesale value of RM308.7 million, whilst another table reported the value as RM346.9 Million.¹⁰² The fisheries sector in Terengganu provided livelihood for 8,670 fishers, of whom roughly 70% worked on commercial fishing vessels, while the remainder worked on traditional boats.¹⁰³

There are seven fisheries districts in Terengganu, i.e. Besut, Setiu, Kuala Terengganu Utara, Kuala Terengganu Selatan, Marang, Dungun and Kemaman, with a total of 51 official fishing bases (**Table 1.18**). These fisheries district closely correspond with administrative district (see **Figure 1.14**), although Kuala Terengganu is shown as one administrative district. Of the seven districts, Setiu has the largest number of

fishing bases (12), followed by Kuala Terengganu Selatan and Dungun with eight each, seven in Marang, six in Kemaman, five in Kuala Terengganu Utara and three in Besut. (Please refer to **Table 1.19** for productive assets).

The total number of fishers working on licensed vessels operating in Terengganu in 2006 was 8,670. The fishing population has remained fairly stable over the last five years, ranging from a low of 7,730 in 2001 to 8,760 in 2006. The districts of Besut and Kuala Terengganu Selatan recorded the highest number of fishers ranging from 1,727 to 2,752 and 1,382 to 1,598 respectively over the same time frame. The rest of the districts had less than 1,400 fishers in total. The ethnic Malay, *bumiputera*¹⁰⁴ group accounted for 69% of the fishing population of Terengganu, a drop since 2005 where they accounted for 74%. Over recent years there has been a gradual increase in foreign fishers.

Inboard powered vessels are most common in Terengganu and only small numbers of outboard powered boats were used until recently. Licensed outboard-powered boats from 2000 to 2006 ranged from 150 to 808, compared with 1,903 to 1,601 inboards over the same period (**Table 1.19**). However, the overall growth in outboard-powered boats from 2000 to 2006 and the slight reduction in inboard powered (larger) vessels are noteworthy.

In Terengganu, both commercial and traditional fishing gears are employed in the

¹⁰¹ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

¹⁰² RM308.7 million is likely to be the correct estimated fisheries value based on an average tonnage value used by the Department of Fisheries of RM3,319/Tonne.

¹⁰³ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

¹⁰⁴ This term refers those groups of people considered indigenous to Malaysia (i.e. Malay, Iban, Katanan, Orang Asli and others). i.e. excluding the other two main groups in Malaysia of Chinese and Indians.

fishing industry. Commercial gears include trawl nets, fish purse seines and anchovy purse seines, while traditional gears consist of drift nets, lift nets, portable traps and, hook and line

(Photos 1.8 and 1.9). Fish purse seine is the main commercial gear, while the dominant traditional gear is hook and line.

Table 1.18: List of Fishing Bases in Terengganu (2005)

District/ Fishing Base		
Setiu	Besut	Marang
Fikri	Kuala Besut	Kuala Marang
Mangkok	Pulau Perhentian	Merchang
Penarik	Benting Lintang	Gong Balai
Rhu 10	Kuala Terengganu Utara	Jambu Bongkok
Telaga Papan	Batu Rakit	Cendering
Merang	Mengabang Telipot	Rusila
Gong Batu	Seberang Tuan Chick	Pasir Puteh
Pengkalan Gelap	Seberang Bukit Tumbuh	Dungun
Nyatoh	Seberang Takir	Kuala Dungun
Bukit Chalok	Kuala Terengganu Selatan	Pulau Serai
Bari Kechil	Pulau Duyong	Sungai Buaya
Bari Besar	Losong	Seberang Pintasan
Kemaman	Pulau Kambing	Teluk Bidara
Kuala Kemaman	Chendering	Kuala Paka
Geliga	Pulau Redang	Kuala Abang
Chukai	Kuala Ibai	Rantau Abang
Kijal	Batu Buruk	
Kemasek	Pulau Ketam	
Kerteh		

Table 1. 19: No of Licensed Fishers, Fishing Vessels and Fishing Gears in Terengganu (2000-2006)

Year	Number of Fishers	No./Type of Fishing Vessels		Fishing Gears						
		Outboard	Inboard	Commercial			Traditional			
				Trawl nets	Fish Purse seines	Anchovy purse seines	Drift nets	Lift nets	Portable traps	Hook & lines
2000	8,577	150	1,903	213	311	19	526	35	120	801
2001	7,730	493	1,787	218	279	21	711	60	134	837
2002	8,530	334	1,773	212	280	21	629	38	118	828
2003	8,529	466	1,692	195	278	16	614	45	112	863
2004	8,654	722	1,686	182	286	19	557	30	113	1,180
2005	8,706	805	1,637	176	273	16	537	31	112	1,245
2006	9,670	808	1,601	179	267 ¹⁰⁵	16	531	23	107	1,238

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data.

¹⁰⁵ 10 'Other Seines' were reported in this year.



Photo 1.8: Anchovy Purse Seine Vessels Moored in Setiu Lagoon, Terengganu; photograph taken 2005.



Photo 1.9: Bubu (traps) Employed in Setiu Lagoon, Terengganu; photograph taken 2005.

1.7.2 Fish Landings

Reported fish landings varied where they dropped from 120,615 to 93,012 MT over 2000 to 2005, and then increased again in 2006 to 111,394MT (Table 1.20 and Figure 1.15). In 2006, commercial gears contributed 78% of landings while only 22% came from traditional gears (Table 1.20). Figure 1.15 also shows that the overall value of marine fisheries dropped correspondingly with the volume of fish caught, rising again in 2006.

Interestingly, as shown at Figure 1.10, when the volume of fish landings in Kelantan decreased

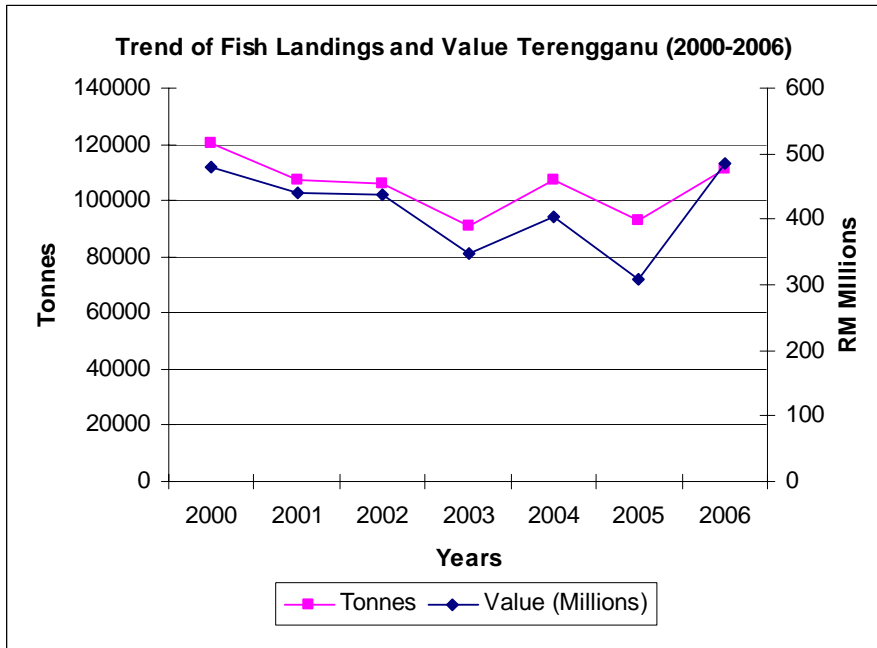
in 2005 the value went up. In Terengganu, the opposite happened, perhaps due to the composition of the catch. Furthermore, when the number of licensed commercial trawl nets decreased in 2005 (see Table 1.19 the volume of reported landing for this gear type increased (Table 1.20). The opposite is seen in landings from the hook and line gear, where landings fell over the years although licensed gear increased.

Table 1.20: Landings of Marine Fish by Gear Group, Terengganu (2000-2006)

Year	Commercial			Traditional				Landings (Tonnes)	Value (RM Millions)
	Trawl Nets	Fish Purse Seines	Anchovy Purse Seines	Drift Nets	Lift Nets	Portable Traps	Hooks & Line		
2000	15,281	78,810	2,992	3,772	1,585	7,232	10,943	120,615	480.39
2001	14,801	67,949	2,406	3,700	1,523	8,494	8,404	107,277	440.91
2002	13,005	70,306	1,826	4,146	939	7,539	8,483	106,244	436.57
2003	15,576	55,339	846	5,028	412	6,050	7,683	90,934	346.33
2004	23,431	54,537	2,360	11,246	349	5,401	10,024	107,348	403.91
2005	26,023	43,001	1,664	6,923	807	6,729	7,865	93,012	308.71
2006	25,090	60,787	1,496	7,454	1,754	5,846	8,966	111,394	484.26

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and partial 2006 data

Figure 1.15: Trend of Fish Landings and Value – Terengganu (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

1.7.3 Catch Profile

About 64 species of fish, 13 species of shrimp, three species of crabs and two species of squids are caught in Terengganu waters. Finfish consist mainly of pelagics, such as *Selaroides leptoleptis* (selar kuning), *Decapterus spp.* (selayang), *Sardinella spp.* (tamban), *Thunnus spp.* (aya) and *Rastrelliger spp.* (kembung) (Table 1.21). The most dominant demersal species was *Nemipterus spp.* (kerisi). The highest landings were contributed by *Decapterus spp.* (selayang) and *Rastrelliger spp.* (kembung). However, in 2000 to 2002, there was a substantive fishery in *Selaroides leptoleptis* (selar kuning/Yellowstripe Scad) which appears to have collapsed in 2003 (Table 1.21 and Figure 1.16). Additionally, as was seen for Kelantan, *Atule mate* (Pelata

or Yellowtail Scad) stocks also appear to have experienced a fisheries crash, with a landings reduction from 6,664 MT in 2000 to 135 MT in 2006 (Table 1.21).

In 2006, squid landings contributed about 6.5% to the State's landings. The main species caught were *Loligo sp.* and *Sepia sp.* However, landings of squid decreased 11% from 4,758MT in 2000 to 4,246 MT in 2004, with an increase to 8,649 MT in 2006 (Table 1.21) and Figure 1.17); primarily due to a more than 100% increase in common squid (*Loligo sp.*) landings. Shrimp consisted mainly of *Penaeus merguensis*, *Penaeus monodon* and *Parapenaeopsis sp.*, which are, caught primarily during November to March. Shrimp

was estimated to contribute about 0.010% to the State's total catch in 2000, increasing by percentage to 0.44% in 2006, although landings of shrimp decreased 70% between 2000 and 2006 (**Table 1.21**). Crab (*Portunus pelagicus*) landings were not stable with an increase from 2000 (336 MT) to 2001 (446 MT), a decrease in 2003 (333 MT) and a further increase in 2004 (395 MT), followed by yet another decline in 2006 to 164 MT. **Figure 1.17** shows a varying pattern in reported crab, shrimp and squid landings over the period 2000-2006, with some landings in decline while others (only squid) were on the rise. Common squid landings have increased nearly three-fold over the six year period.

One explanation for the observed decline of landings of these species is that the fishery may be showing signs of increased unsustainable fishing. Alternatively, the data may also suggest a variation in the rate of IUU fishing activity, where varying levels of catch are not reported and recorded through official landing ports, instead making their way to private jetties (refer **Photo 1.10** and **Photo 1.11**). One supporting observation for the latter hypothesis is that vessel numbers in Terengganu have been increasing continuously over recent years, particularly since 2003/04 when a renewed government emphasis was placed on primary production.



Photo1.10: An example of a private fishing jetty in Terengganu (unregulated); photograph taken 2005.



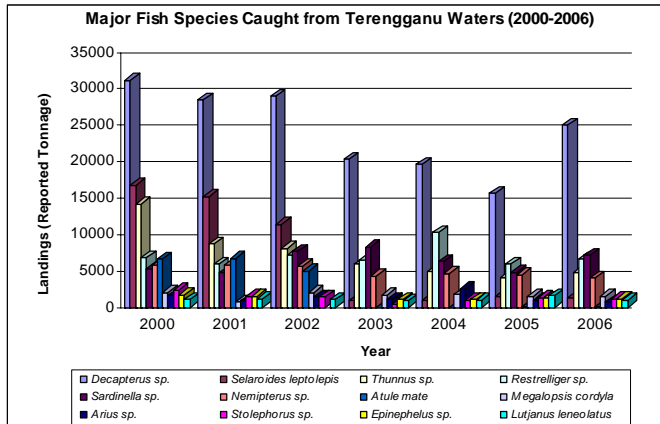
Photo 1.11: Class A vessels moored at a private fishing jetty at Dungan river, Terengganu (unregulated); photograph taken 2008.

Table 1. 21: Commercial Fish Landings from Terengganu Waters (2000-2006)

English Name - Fish	Local Names - fish	Scientific Name	Landings (Tonnes)						
			2000	2001	2002	2003	2004	2005	2006
Indian Scad Mackerel Scad Roughear Scad Shortfin Scad Japanese Scad	Selayang	<i>Decapterus sp.</i>	31,141	28,454	29,015	20,378	19,695	15,717	24,985
Yellowstripe Scad	Selar kuning	<i>Selaroides leptolepis</i>	16,803	15,260	11,443	990	1,096	1,558	1,378
Kawakawa Bullet Tuna Frigate Tuna	Aya	<i>Thunnus sp.</i>	14,196	8,742	8,167	5,972	4,935	4,163	4,883
Short Mackerel Indian Mackerel	Kembung	<i>Restrelliger sp.</i>	6,830	6,034	7,221	6,617	10,311	5,982	6,691
Fringescale sardinella Blacktip sardinella Smooth-belly sardinella Spotted sardinella	Tamban	<i>Sardinella sp.</i>	5,382	4,784	7,720	8,355	6,385	4,836	7,221
Various Bream species	Kerisi	<i>Nemipterus sp.</i>	5,816	5,909	5,762	4,348	4,720	4,569	4,068
Yellowtail Scad	Pelata	<i>Atule mate</i>	6,664	6,805	5,037	2	75	92	135
Torpedo Scad	Cincaru	<i>Megalospis cordyla</i>	2,145	853	2,109	1,727	1,844	1,625	1,600
Catfish	Duri	<i>Arius sp.</i>	1,683	1,025	1,472	1,174	2,624	1,044	792
Commerson's anchovy Indian Anchovy Hardenberg's anchovy	Bilis/bunga air	<i>Stolephorus sp.</i>	2,421	1,573	1,511	577	1,067	1,378	1,218
Numerous Grouper species	Kerapu	<i>Epinephelus sp.</i>	1,722	1,615	-	1,193	1,176	1,300	1,275
Various species snapper	Remong	<i>Lutjanus Leneolatus</i>	1,176	1,223	1,160	979	1,044	1,708	1,031
Flower/Blue/Blue Swimming Crab	Ketam Laut	<i>Portunus pelagicus</i>	336	446	316	271	185	177	164
Giant Mud Crab	Ketam Batu	<i>Syella serrata</i>	-	-	-	62	15	-	-
White Prawn	Udang Putih	<i>Penaeus merguensis</i>	133	122	114	98	56	34	53
Sharp-rostrum Prawn	Udang Minyak	<i>Parapenaeopsis sp.</i>	101	132	84	105	47	33	24
Tiger Prawn	Udang Harimau	<i>Penaeus monodon</i>	43	25	64	26	20	10	3
	Other Shrimps	<i>Penaeus sp./ Metapenaeus sp./ Solenocera subnuda</i>	970	751	563	532	369	319	243
Common squid	Sotong Biasa	<i>Loligo sp.</i>	2,845	2,446	2,685	2,909	3,192	3,064	7,330
Cuttlefish	Sotong Katak	<i>Sepia sp.</i>	1,913	1,888	1,568	1,347	1,054	1,705	1,319

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

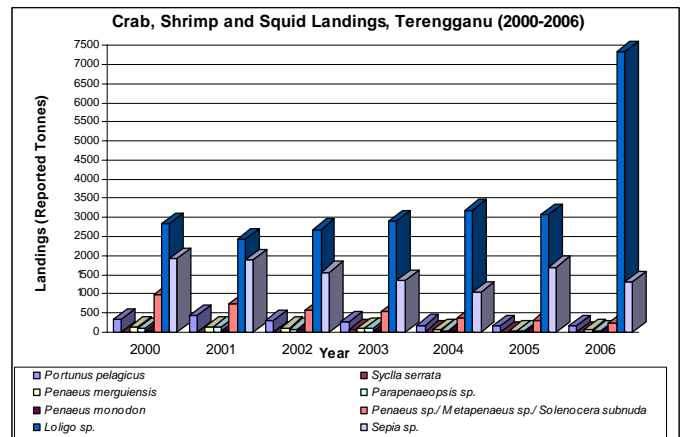
Figure 1.16: Major fish Species Caught from Terengganu Waters (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data

Table 1.21 and more specifically Figure 1.16 show a distinctive decline in the reported landings of major fisheries species for the State of Terengganu. The decline in reported catch may be a result of a decrease in landings at official ports and corresponding increases in landings at private jetties, or it may be an indication of significant pressure on the fishery. There is a fair level of uncertainty on this matter, as the regulatory system grapples with how to best regulate unregulated fisheries. During site visits along the east coast respondents also commented that the general size of near-shore species was reducing and that trash fish landings appears to be on the increase. In 2006, 11,630MT of trash fish was recorded for Terengganu along; equivalent to 10.4% of total reported landings (Photo 1.12).

Figure 1.17: Crab, Shrimp and Squid Landings – Terengganu (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2006 partial data



Photo 1.12: Small fish being sorted for sale at LKIM Tumpat, Kelantan (a typical site at many landing centres); photograph taken 2008.

1.7.4 Processed Marine Fish Products

Traditional processing of marine fish into salted/dried fish, dried anchovies, dried cuttlefish, shrimp paste, fermented anchovies, fish balls and fish cakes is also an important source of income and employment for coastal populations (Photos 1.13, 1.14 & 1.15). Siason, I.M. *et al* (2002) reported that past enquiries had revealed that, "...no census data or documentation on the actual number of women involved in the various fishing activities has been carried out in Malaysia" ...; and that generally, small-scale fishers wives and daughters are often involved in post-harvest activities. Furthermore, women make up the bulk of fish marketers on the east coast of Peninsular Malaysia, particularly in Kelantan.¹⁰⁶ The highest production comes from salted/dried fish and dried anchovies. However, in recent years, the output of processed marine fish products has decreased 62%, from 1,663 in 2002 to 632 MT in 2005 (Figure 1.18).

In 2005, an estimated 274 MT of dried anchovies and 249 MT of salted/dried fish were produced by traditional processors. These products contributed 49% and 39% of the total output of processed products respectively. Dried cuttlefish was only produced in Besut (49 MT) and Marang (8 MT), while shrimp paste (*belacan*) producers were located in Besut, Setiu, Kuala Terengganu and Marang. Fish ball and fish cake manufacturers were found mainly in the south i.e. in the

Dungun and Kemaman districts, and produced an estimated 22 MT of fish ball, 19 MT of fish cake and 11 MT of shrimp paste.



Photo 1.13



Photo 1.14



Photo 1.15

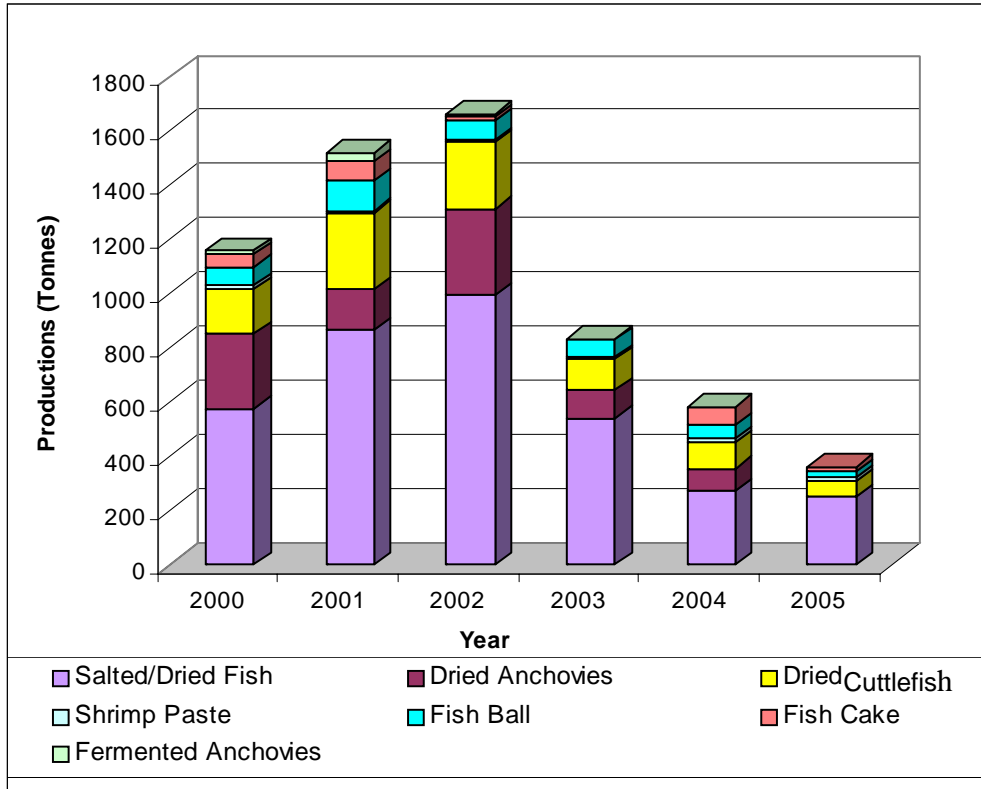
Photo1.13: Budu Factory at Setiu Lagoon, Terengganu; photograph taken 2005;

Photo1.14: Dried Anchovies Production at Setiu Lagoon, Terengganu; photograph taken 2005;

Photo1.15: Belacan Production at Setiu Lagoon, Terengganu; photograph taken 2005.

¹⁰⁶ Siason, I.M. *et al*, 2002: *Women in Fisheries in Asia*, Proceedings of the Global Symposium on Women in Fisheries: Sixth Asian Fisheries Forum, 29 November 2001, Kaohsiung, Taiwan, (Eds) M.J. Williams *et al*. 2002, pp 21-48.

Figure 1.18: Processed Marine Fish Product in Terengganu (2000-2005)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics

1.8 Capture Fisheries Industry Pahang: Industry Practices, Stocks and Type of Fisheries

1.8.1 Overview

The State of Pahang contributed a reported 13.17% of total marine fish landings in 2005, totalling 111,242MT valued at RM369.22 million. In 2006, landings increased to 113,063 MT.¹⁰⁷ Pahang fisheries employed a reported 5,497 fishers in 2006, 3,954 of whom were local fishers, with the majority of foreign fishers (1,339) reported to be from Thailand. A minority of foreign fishers (10 fishers) were reported to be from Indonesia, 194 were classified as being from elsewhere; in all foreign fishers accounted for 28% of the workforce. In 2005, sixty-four percent of fishers worked on commercial vessels, with the remainder working on traditional fishing vessels.¹⁰⁸ As seen in Kelantan and Terengganu, Malays comprised the majority of local fishers (75%), with roughly 25% being ethnic Chinese and no reported local ethnic Indian fishers.¹⁰⁹

There are three fisheries districts in Pahang i.e. Kuantan, Pekan, and Kuala Rompin, all with LKIM fish landing sites (**Figure 1.19**). The fishing population of Pahang State has gradually

increased from the year 2000 to 2005 (see **Table 1.22**) with an initial increase to 2002, followed by a decline in 2003 increasing again in 2005.

Previous discussions with local fishing companies have revealed that although the technology (wooden hulled vessels) may seem dated, they are cheaper to buy and repair than fibre glass, aluminium or iron vessels, and therefore remain the preferred option (**Photo 1.16**).



Photo 1.16: Fishing Vessel dry-docked in Pahang for repairs/refitting: Photograph taken December 2007

¹⁰⁷ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08 and Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted 16-05-08 from <http://www.dof.gov.my/v2/perangkaan.htm>.

¹⁰⁸ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted 16-05-08 from <http://www.dof.gov.my/v2/perangkaan.htm>.

¹⁰⁹ 2004 fisheries data was used, as the 2005 data had a gap that did not show ethnicity of fishers in Peninsula Malaysia. Ethnicity data was provided for West Malaysia only.

Figure 1.19: State of Pahang

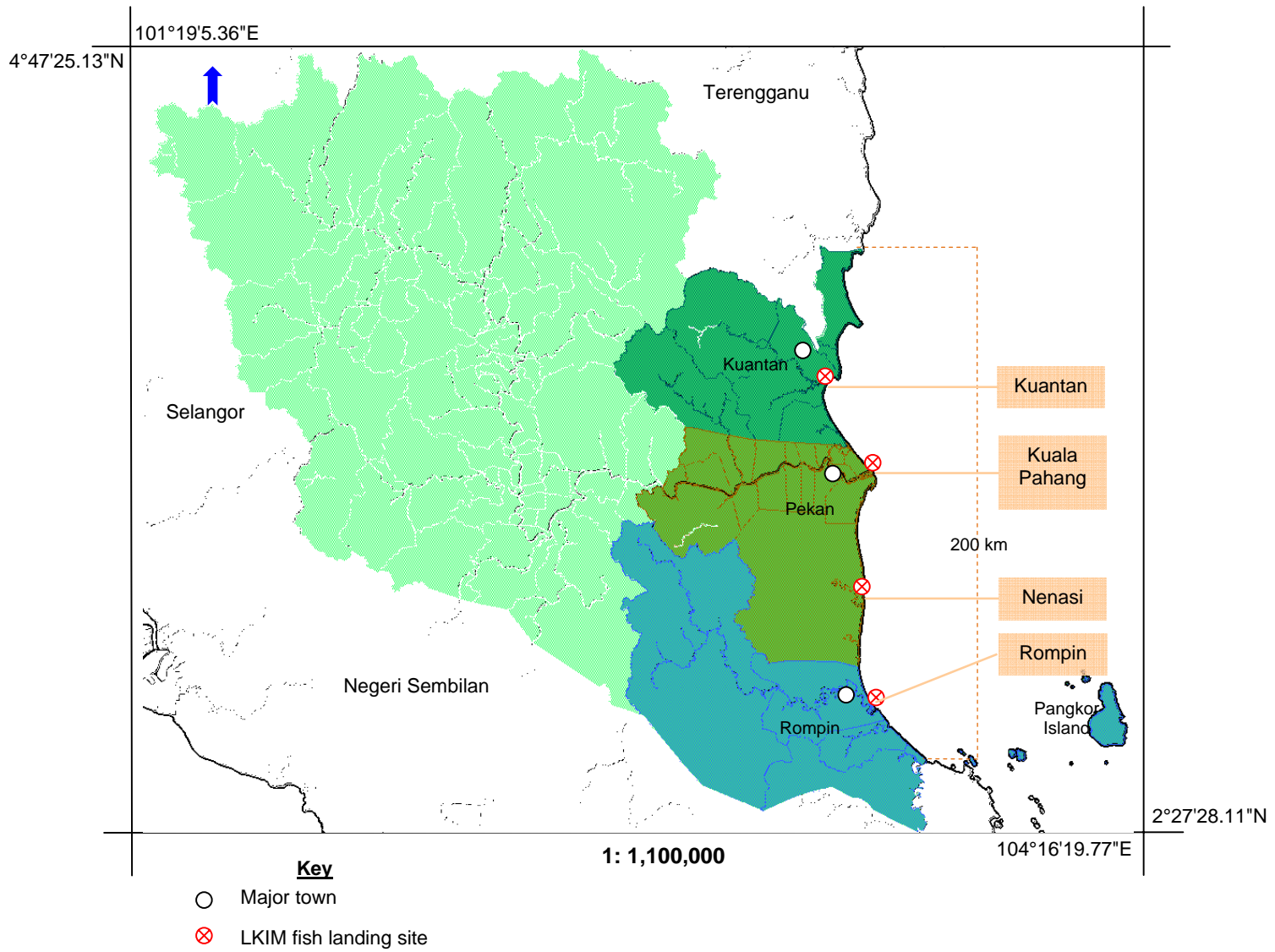


Table 1.22: No of Licensed Fishers, Fishing Vessels and Fishing Gears in Pahang (2000-2006)

Year	Number of Fishers	No./Type of Fishing Vessels		Fishing Gears						
		Outboard	Inboard	Commercial			Traditional			
				Trawl nets	Fish Purse seines	Anchovy purse seines	Drift nets	Lift nets	Portable traps	Hook & lines
2000	3,643	189	845	341	48	14	329	11	100	190
2001	3,903	166	834	336	51	10	311	6	96	189
2002	3,720	154	790	328	45	9	288	6	84	183
2003	2,932	341	598	239	26	7	449	6	71	140
2004	3,848	508	734	309	41	7	589	3	84	208
2005	4,539	508	792	330	56	6	586	3	96	226
2006	5,497	578	799	388	61	5	656	5	68	246

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data



1.8.2 Fish Landings

Between 2000 and 2005, fish landings dropped from 145,828 MT to 111,242 MT (**Table 1.23** and **Figure 1.20**). This represents a drop in reported landings of nearly 24% over a five year timeframe. A slight increase was reported for 2006. Commercial gear contributed 92% of reported landings in 2000 dropping to 88% in 2006. Although an overall decline in reported landings occurred between 2000-2005, there also appears to be a correlation between the decline in the percentage of landings by commercial gear and the corresponding increase in outboard vessels and decline in commercial vessels (with inboard engines; **Table 1.22**) up till 2005.

Over the seven year period, while reported landings declined, the value of landed fish showed varying trends that did not necessarily track in accordance with the rate of landings decline (**Figure 1.20**), and in 2006 revenue equalled that achieved in 2001. The most notable year was 2002, where a significant drop in fisheries income is shown, suggesting an overall drop in unit value or perhaps a change in the ratio of high and low value species landed that year.¹¹⁰ **Figure 1.20** shows an anomaly where the value of fisheries dropped considerably in 2002, with no apparent explanation contained within the available data. The drop in 2002 fisheries value could have been a result of a glut in the market or poor cold-chain management. Alternatively, this drop may also represent yet another error

in the official data given the fact that the total values are calculated for all states using the same formula and tonnage value of RM3,319/Tonne. No such variance in the correlation between landings value and tonnage occurred in Kelantan or Terengganu; although, the data for East Johor's landings and value is also questionable (discussed later in this chapter). Finally, revenue data given for 2006 appears to show an increasing value in unit price although landings only increased nominally in 2006 since the previous year.

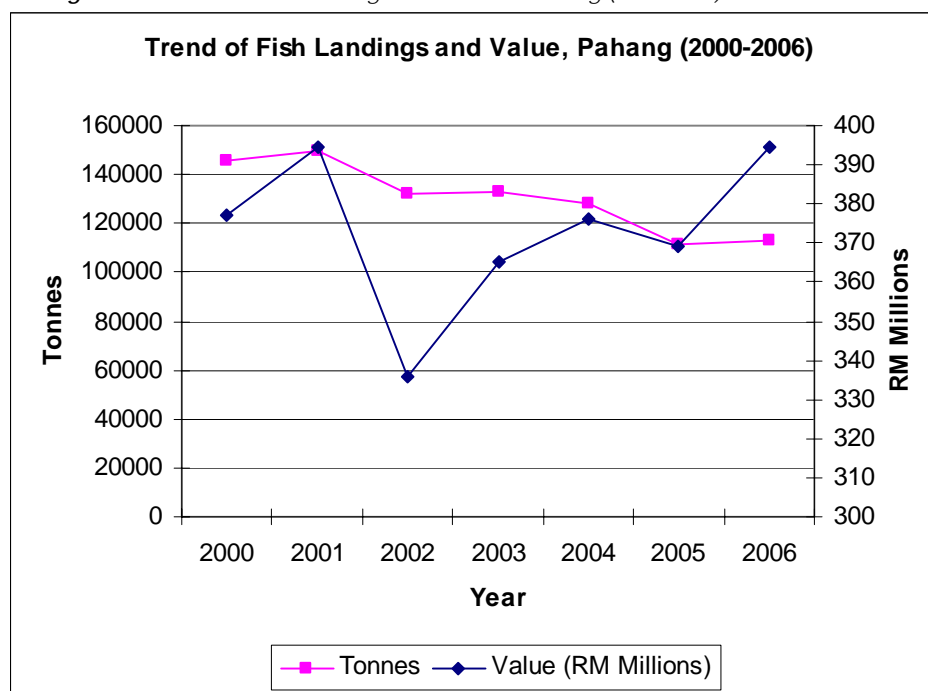
¹¹⁰ This should however be considered cautiously in light of the apparent average tonnage value employed in fisheries statistics until 2005.

Table 1.23: Landings of Marine Fish by Gear Group, Pahang (2000-2006) (Tonnes)

Year	Commercial			Traditional			Landings (Tonnes) Including minor miscellaneous gear	Value (RM'000)	
	Trawl Nets	Fish Purse Seines	Anchovy Purse Seines	Drift Nets	Lift Nets	Portable Traps			Hooks & Line
2000	101,416	32,415	1,546	5,180	223	2,422	2,626	145,828	377.051
2001	92,099	38,106	2,031	9,821	438	3,156	4,330	149,990	394.480
2002	83,531	37,408	1,237	4,100	42	2,267	3,705	132,309	335.632
2003	86,937	30,962	1,144	6,812	105	4,449	2,182	132,590	365.161
2004	83,321	31,862	984	4,372	0	4,999	2,734	128,272	376.321
2005	68,661	25,177	890	8,629	0	6,184	1,701	111,242	369.227
2006	68,448	30,361	738	5,007	0	6,184	2,325	113,063	394.556

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

Figure 1.20: Trend of Fish Landings and Value – Pahang (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

1.8.3 Catch Profile

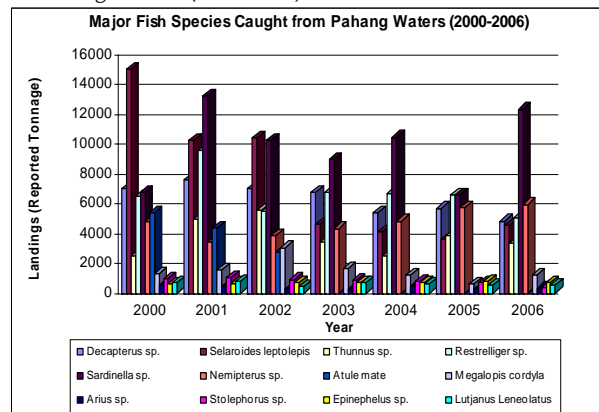
As was seen in the description of catch profile for Kelantan and Terengganu, overall reported landings in Pahang also declined significantly between 2000 and 2005, until 2006 when landings appear to be on an upward trend. The species *Atule mate* (the Yellowtail Scud or pelata the common local name) almost completely disappeared according to reported landings, which were in the thousands of tonnes/year in the first three years falling to no recorded landings. A similar pattern was also observed in Kelantan and Terengganu. This species is considered a mid-value species, commonly sought after as a game species in other parts of the world.¹¹¹ *Atule mate* is a reef-associated, brackish-water species and in this may lay the apparent primary downfall of the stock along the east coast of Peninsula Malaysia between Kelantan and Pahang, where fishing effort in the near-shore coastal zone increased from 2002 to 2005 and mangrove areas declined. "Only a small percentage of Malaysian mangroves fall within legally gazetted protected areas: 0.3% in Peninsular Malaysia; 0.2% in Sarawak; and 1.3% in Sabah."¹¹²

As with neighbouring States the primary finfish pelagic species consist of *Selaroides leptolepis* (selar kuning), *Decapterus spp.* (selayang), *Sardinella spp.* (tamban), *Thunnus*

spp. (*aya*) and *Rastrelliger spp.* (kembung) (Table 1.24). Landings of the demersal species *Nemipterus spp.* (*kerisi*) remained firm and actually increased in tonnage in 2005 and 2006. Several fish species declined significantly in reported landed tonnage, including (selar kuning) *Selaroides leptolepis*, (*cincaru*) *Megalopis cordyla*, and (*duri*) *Arius sp* (Table 1.24 and Figure 1.21).

Crab, shrimp and squid landings also saw a notable decline in reported landings (Figure 1.22) from 2000-2005, most significantly including: *Portunus pelagicus* from 815 to 118MT, *Parapenaeopsis sp.* from 191 to 97MT, and *Sepia sp.* from 3867 to 1,709MT (Table 1.24 and Figure 1.22). Common squid did however buck this trend with landings in 2006 almost equally landings achieved in 2000.

Figure 1.21: Major Fish Species Caught from Pahang Waters (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

¹¹¹ Fishbase.org, Extracted 02-06-08 from <http://www.fishbase.org/Summary/speciesSummary.php?ID=1893&genusname=Atule&speciesname=mate>.

¹¹² FAO & UNEP, 1981: *Tropical forest resources assessment project*. Forest resources of tropical Asia. FAO, UNEP, p 475. and Spalding, M.D., Blasco, F. & Field, C.D., Eds, 1997: *World Mangrove Atlas*. The International Society for Mangrove Ecosystems, Okinawa, Japan. p178. <http://www.fao.org/forestry/20069/en/mys/>

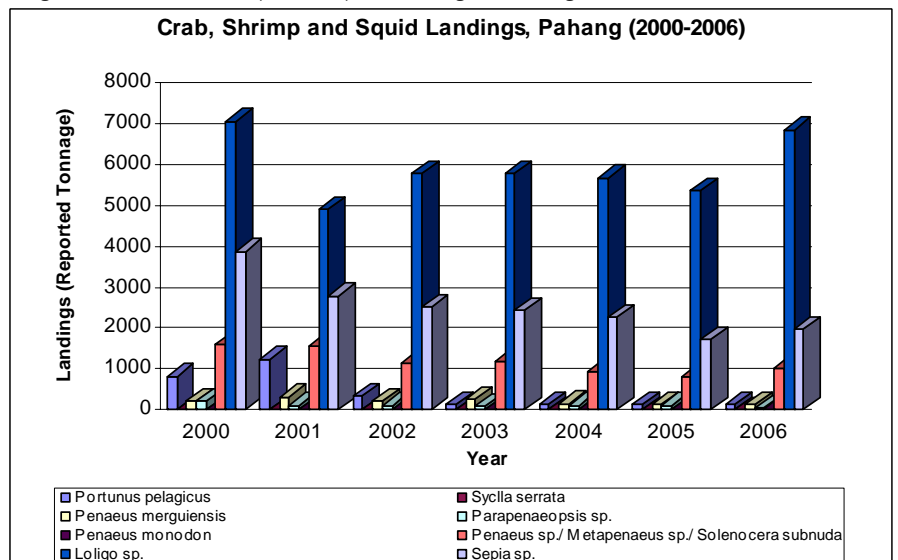
1.8.4 Processed Marine Fish Products

Whereas an overall decline in seafood processing production volume was noted in Kelantan and Terengganu, Pahang production increased between 2000 and 2005. Total production increased from 5,225.91 MT in 2000 to 9,832.0 MT in 2005.¹¹³ However, the dominance of traditional processed products such as dried fish cracker (Keropok), salted/dried fish, and dried anchovies has been replaced by products requiring further processing such as fish ball, squid balls and most notably surimi. In 2005, a sudden shift from traditional products to surimi occurred, when more than 4,700MT was recorded for that year (Figure 1.23). During the same period, fish cracker production declined to little more than 1,500 MT from a high of more than 3,200 MT in 2003 (Figure 1.23). Other products such as shrimp or

fish paste, pickled prawns and frozen seafood (cuttlefish, mussels etc) appear to have emerged during 2005, where previously these products were not reported for Pahang.

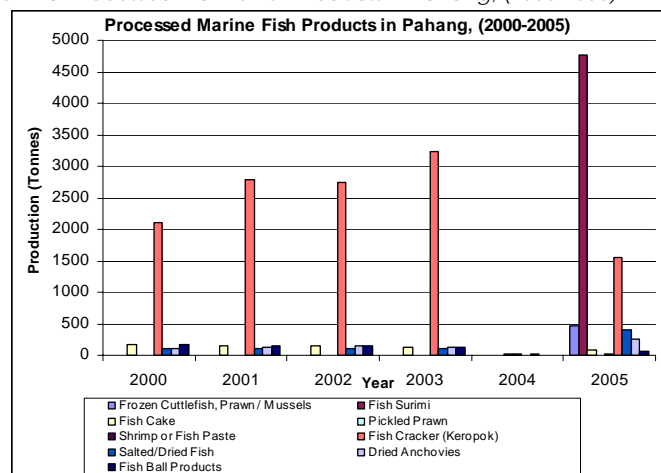
The overall shift in product type and increase in production volume, suggests that the production of processed seafood may be based upon resources sourced from other States to Pahang.

Figure 1.22: Crab, Shrimp and Squid Landings – Pahang (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

Figure 1.23: Processed Marine Fish Products in Pahang, (2000-2005)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics

¹¹³ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08 and *Department of Fisheries Statistics 2000*.

Table 1.24: Commercial Fish Landings from Pahang Waters (2000-2006)

English Name - Fish	Local Names - fish	Scientific Name	Landings (Tonnes)						
			2000	2001	2002	2003	2004	2005	2006
Indian Scad Mackerel Scad Roughear Scad Shortfin Scad Japanese Scad	Selayang	<i>Decapterus sp.</i>	7,030	7,638	7,003	6,782	5,391	5,704	4,843
Yellowstripe Scad	Selar kuning	<i>Selaroides leptolepis</i>	14,999	10,264	10,423	4,620	4,151	3,631	4,516
Kawakawa Bullet Tuna Frigate Tuna	Aya	<i>Thunnus sp.</i>	2,504	4,979	5,596	3,473	2,535	3,904	3,382
Short Mackerel Indian Mackerel	Kembung	<i>Restrelliger sp.</i>	6,483	9,542	5,460	6,746	6,719	6,594	5,045
Fringescale sardinella Blacktip sardinella Smooth-belly sardinella Spotted sardinella	Tamban	<i>Sardinella sp.</i>	6,794	13,211	10,247	8,982	10,467	6,565	12,343
Various Bream species	Kerisi	<i>Nemipterus sp.</i>	4,780	3,411	3,889	4,336	4,848	5,766	5,962
Yellowtail Scad	Pelata	<i>Atule mate</i>	5,394	4,414	2,768	0	0	0	0
Torpedo Scad	Cincar	<i>Megalospis cordyla</i>	1,278	1,539	3,056	1,634	1,232	606	1,230
Catfish	Duri	<i>Arius sp.</i>	542	436	302	298	510	272	332
Commerson's anchovy Indian Anchovy Hardenberg's anchovy	Bilis/bunga air	<i>Stolephorus sp.</i>	988	1,025	936	895	796	722	422
Numerous Grouper species	Kerapu	<i>Epinephelus sp.</i>	613	675	747	694	718	786	746
Various species snapper	Remong	<i>Lutjanus Leneolatus</i>	691	793	494	694	634	563	582
Flower/Blue/Blue Swimming Crab	Ketam Laut	<i>Portunus pelagicus</i>	815	1231	331	124	123	118	112
Giant Mud Crab	Ketam Batu	<i>Sylla serrata</i>	-	-	-	1	3	0	0
White Prawn	Udang Putih	<i>Penaeus merguensis</i>	211	300	197	234	131	116	126
Sharp-rostrum Prawn	Udang Minyak	<i>Parapenaeopsis sp.</i>	191	101	100	64	103	97	26
Tiger Prawn	Udang Harimau	<i>Penaeus monodon</i>	1	3	-	2	1	3	7
	Other Shrimps	<i>Penaeus sp./ Metapenaeus sp./ Solenocera subnuda</i>	1,582	1,562	1,150	1,193	930	809	1,019
Common squid	Sotong Biasa	<i>Loligo sp.</i>	7,073	4,902	5,791	5,794	5,679	5,375	6,846
Cuttlefish	Sotong Katak	<i>Sepia sp.</i>	3,867	2,776	2,507	2,431	2,262	1,709	1,964

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

1.9 Capture Fisheries Industry East Johor: Industry Practices, Stocks and Type of Fisheries

1.9.1 Overview

The fisheries area of East Johor at the southern end of the east coast of Peninsula Malaysia (refer **Figure 1.24**) employed 5,213 fishers working on licensed fishing vessels in 2005 (**Table 1.25**). This number of registered fishers declined in 2006 to 4,982. The social and ethnic composition of the fisheries sector in East Johor shows the direct converse of Kelantan in the north. In East Johor, the majority of fishers as at 2005 (88.6% or 4,681) were local fishers and the minority (532) were foreign fishers. Of the local participation rate in 2005, 3,432 were Malay, 1,247 were Malaysian Chinese, and 2 were ethnic Indian.¹¹⁴ Such a balance in foreign versus local participation in the marine fisheries sector is likely due to a geographic separation from Thailand, which is the primary source of cheaper foreign fisheries labour. Overall, the number of fishers reported to be working on licensed vessels increased from 4,265 in 2000 to 5,213 in 2005, with little variation in the proportion of foreign participation over that period, apart from a slight increase in foreign fishers (381) observed in 2006.¹¹⁵ Most notable,

as seen with other States along the east coast of Peninsula Malaysia, the majority of foreign fishers (886 of 913) came from Thailand.¹¹⁶ The remainder were from Indonesia or other places (not specified).¹¹⁷

Table 1.25: Total fishers reported to be working on licensed vessels for East Johor: 2000-2006

Year	No. of Fishers
2000	4,265
2001	4,337
2002	4,223
2003	4,174
2004	4,386
2005	5,213
2006	4,982

Data Source: Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2000-2005 and 2006 partial data*

In 2006, East Johor contributed 6.5% (90,092MT) to Malaysia's total marine capture fisheries production, reported to be worth RM298.83 Million (**Table 1.27**).¹¹⁸ There are three fisheries districts in East Johor, they are, Mersing, Kota Tinggi Utara (Tanjung Sedili), and Kota Tinggi Selatan (Pengerang). These fisheries districts are served by three Fisheries Development Authority (LKIM) fish landing ports identified in **Figure 1.24**. Given the length of the coastline and the limited range of LKIM fish landing ports, it is not surprising that there are reported to be many private fish landing jetties; furthermore, small-scale vessels need

¹¹⁴ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹¹⁵ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08 and *Department of Fisheries Statistics 2000-2004* and Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

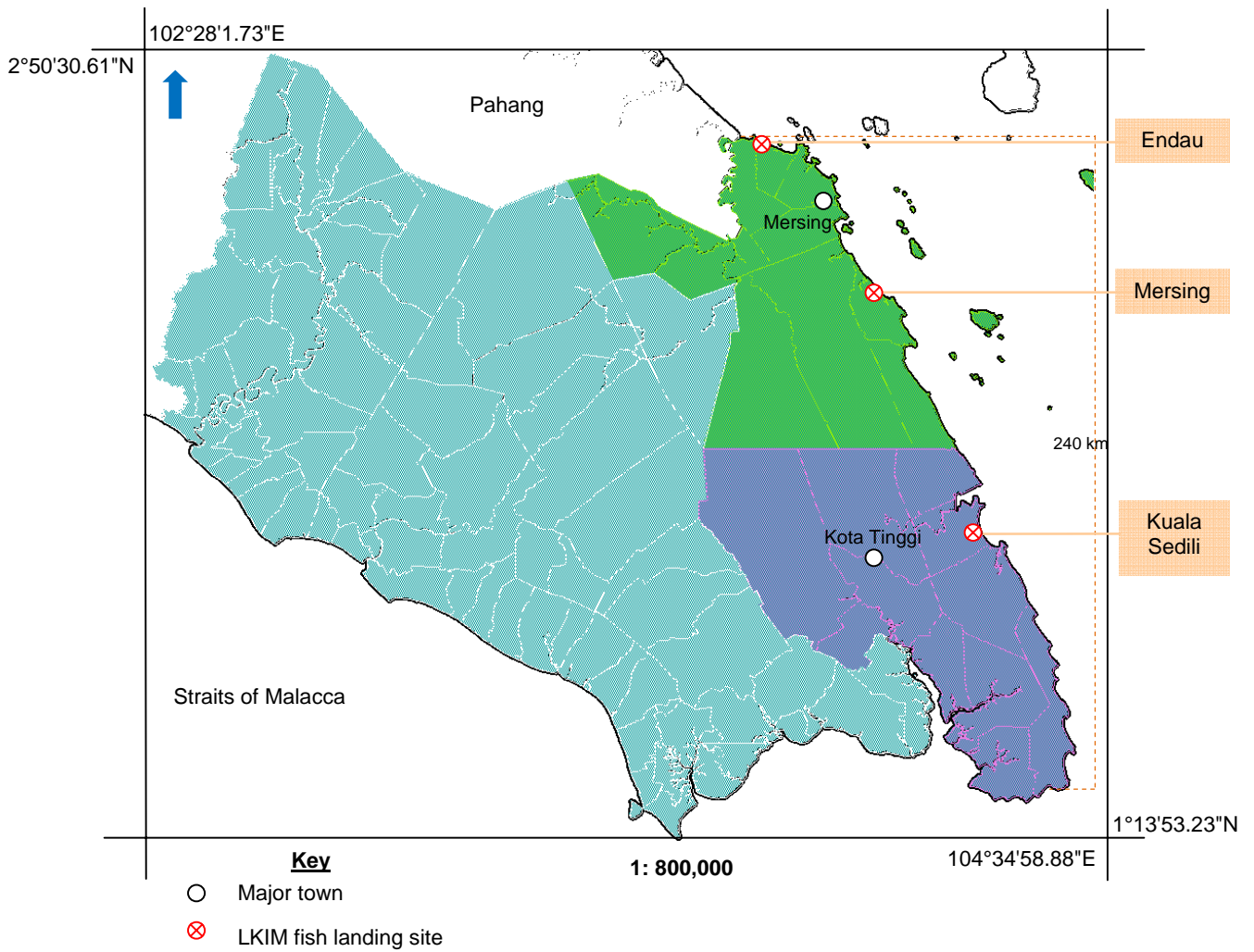
¹¹⁶ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

¹¹⁷ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹¹⁸ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

not have a jetty to unload catches in coastal fishing villages (**Photo 1.17**) from small outboard powered vessels where large numbers are accounted for in the DOF fisheries data (**Table 1.26**).

Figure 1.24: State of Johor



Like Pahang and Terengganu, East Johor experienced a sudden increase in licensed small outboard vessels starting around 500 in 2004 to 986 vessels in 2005 (**Table 1.26**). This number had since decreased to 674 in 2006. The volume of inboard powered larger vessels remained constant at around 800 vessels during the seven year period, from 2000. This difference in the ratio of large and small vessels from that observed in Kelantan (where inboard larger vessels form the bulk of the licensed fishing fleet) would possibly also

contribute to the higher proportion of local participation in fishing activities in East Johor, where due to financial constraints local fishers often operate small outboard powered vessels. The shift to more outboard powered vessels in 2005 also appears to be reflected in a notable increase in the use of drift net traditional gear from 2004 (747 vessels) to 2005 (1,157 vessels) (**Table 1.26**), although dropping again in 2006 to 900. The use of commercial gear remained constant throughout the same period.



Photo 1.17: Small outboard power boats (locally called Sampan), Kuala Besut, Terengganu; photograph taken 2008. These vessels are very common along the east coast and ply the near-shore fishery during calm weather.

Table 1.26: No of Licensed Fishers, Fishing Vessels and Fishing Gears in East Johor (2000-2006)

Year	Number of Fishers	No./Type of Fishing Vessels		Fishing Gears							
		Outboard	Inboard	Commercial			Traditional				
				Trawl nets	Fish Purse seines	Anchovy purse seines	Drift nets	Lift nets	Portable & Stationary traps	Hook & lines	Bag Nets
2000	4,265	551	795	279	59	0	858	0	40	125	0
2001	4,337	537	810	309	48	0	824	1	56	121	1
2002	4,223	447	824	305	50	0	757	1	34	116	13
2003	4,174	477	759	306	48	0	720	1	38	113	14
2004	4,386	503	728	292	56	0	747	1	31	100	9
2005	5,213	986	808	277	63	0	1,157	0	20	115	0
2006	4,982	674	749	275	65*	0	900	0	13	60	42

*One 'Other Seine' was reported in this year.

Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics, and 2006 partial data



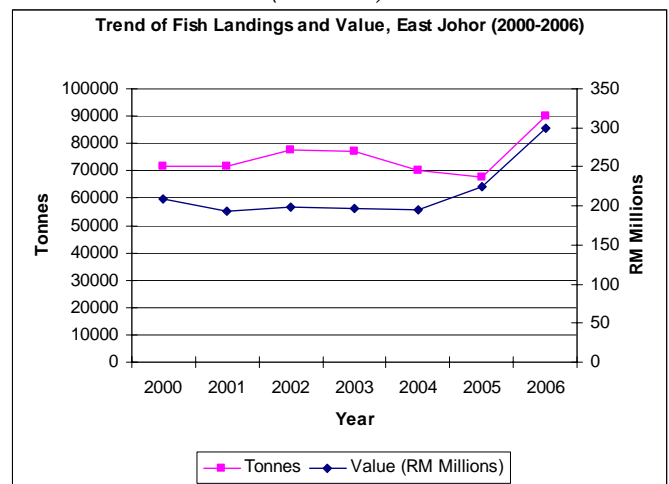
1.9.2 Fish Landings

From 2000 until 2002 reported fish landings increased from 71,415 MT to 77,589 MT; however, from 2003 to 2005, reported marine fisheries landings dropped to 67,894 MT, with an apparent increase again in 2006 to 90,092 MT (Table 1.27). Over the seven year period this represents a fall in landings of almost 5%, and from interviews undertaken in mid 2008, it is likely that once released the official data will show a steep reduction for the east coast.¹¹⁹ As noted above, fishing vessels and fishers increased during this timeframe, signifying an overall reduction in reported landings per vessel. However, an increase in fisheries revenue value was also reported from 2004 to 2006 as shown in Figure 1.25, where total marine fisheries value increased significantly up to 2006 even though a fall in landed tonnage was reported for 2005. It is not clear from the fisheries data why such a great deficit between reported landings and value is observed in 2005 based on the past observation that fisheries tonnage value is given an average nominal price (Figure 1.25). The data would therefore appear to indicate that the basic rules of supply and demand did prevail in 2005 at least for this fisheries region.

Of interest is that Table 1.27 shows a range of 743 MT to 1,277 MT of annual landings from 'Bag Net' gear, although the statistics did not report any registered gear of this type 2005 as shown at Table 1.26. The reported statistics declare that only one Bag Net gear type was registered in 2001, (where 937 MT of landings

occurred as shown in Table 1.26), with 14 Bag Net gear type vessels being licensed by 2004. When comparing the data from Table 1.26 and 1.27 for Bag Net gear type vessels and landings, the data does not appear to be consistent. This would appear to be yet another example of the potential inaccuracy in reported fisheries data. However, one explanation for the inconsistency could be that although catch landings for Bag Net gear type were reported in some years, the vessels remained unlicensed at that time or were awaiting renewal.

Figure 1.25: Trend of Fish Landings and Value – East Johor (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

¹¹⁹ Pers Coms, Reported by Fisheries Officers during field interviews in August 2008.

Table 1. 27: Landings of Marine Fish by Gear Group, East Johor (2000-2006) (Tonnes)

Year	Commercial		Traditional					Landings (Tonnes) Including minor miscellaneous gear	Value (RM'000)
	Trawl Nets	Fish Purse Seines	Drift Nets	Portable & Stationary Traps	Hooks & Line	Bag Net	Other		
2000	60,767	6,918	840	202	1,899	762	27	71,415	209.140
2001	61,479	7,095	594	347	1,210	937	26	71,688	193.507
2002	64,546	9,766	540	322	1,419	976	20	77,589	198.549
2003	65,150	8,181	654	257	1,821	1277	16	77,356	196.707
2004	59,779	6,933	670	301	1,740	759	6	70,188	195.547
2005	57,709	7,092	684	359	1,306	743	2	67,894	225.349
2006	72,711	13,518	1,520	334	1,144	844	20	90,092	298.826

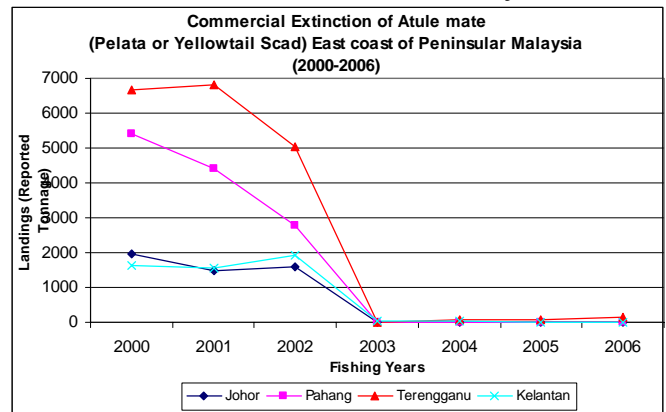
Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

1.9.3 Catch Profile

An examination of the catch profile shown in Table 1.28 shows an overall decrease in landings for five species of the 20 identified in the table, most of which are pelagic and demersal fish. However, the reported landings for nine species, (mostly shrimp and squid species such as *Penaeus merguensis*, *Penaeus monodon*, *Loligo sp.*, *Sepia sp.*) increased for the period 2000 to 2006. The most notable trend consistent with data from Pahang (Table 1.24), Terengganu (Table 1.21) and Kelantan (Table 1.17) is the complete collapse of the species *Atule mate* (the Yellowtail Scad) fishery, where fishing for this near-shore species along the east coast of Peninsular Malaysia from Kelantan right down to East Johor has resulted nearly no 'reported landings' in recent years (Figure 1.26). Considering that the population doubling-time for this species is 18 months, such a comprehensive collapse is a strong indication of the fishing pressure

applied to the species and the fishery in general in recent years.¹²⁰

Figure 1.26: Commercial Extinction of *Atule mate* (Pelata or Yellowtail Scad) – East Coast of Peninsular Malaysia (2000-2006)

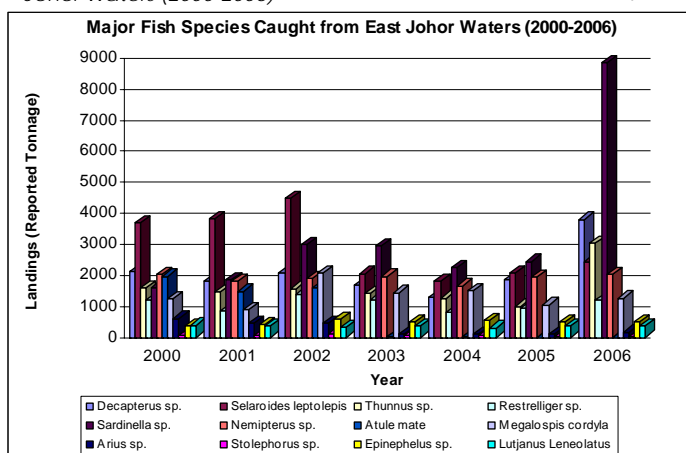


Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

¹²⁰ Fishbase.org – *Atule mate* information page, extracted from 03-06-08 from <http://www.fishbase.org/Summary/speciesSummary.php?ID=1893&genusname=Atule&speciesname=mate>.

Anecdotal reports suggest also that trawler operation along the east coast have had a significant adverse effect upon the marine habitat.¹²¹ Three other species, *Arius sp.*, *Stolephorus sp.* and *Selaroides leptolipis* have all declined by more than 40%, with *Arius sp.* falling from 609MT to only 173MT in the reporting period (Table 1.28 and Figure 1.27).

Figure 1.27: Major Fish Species Caught from East Johor Waters (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data

The primary reported landings of finfish pelagic species include *Selaroides leptolepis* (selar kuning), *Decapterus spp.* (selayang), *Sardinella spp.* (tamban), *Thunnus spp.* (aya), *Megalaspis cordyla* (cincaru) and *Rastrelliger spp.* (kembung). The main demersal species is *Nemipterus sp.* (kerisi) (Table 1.28 and Figure 1.27).

Another possible symptom of an over-exploited fishery (particularly within 30 nm) is that trash fish landings (either low value or juvenile higher values species) now account

on average for 22-26% of east coast landings (2000-2006).¹²²

Reported landings of crab (Figure 1.28 and Table 1.28) *Portunus pelagicus* (ketam laut), and shrimp (udang minyak) *Parapenaeopsis sp.* declined between 2000-2006; however, landings of other species of shrimp and squid (e.g. *Penaeus sp./Metapenaeus sp./Solenocera subnuda*, *Loligo sp.*, and *Sepia sp.*) increased. Landings of crustacean and cephalopods between 2002 and 2005 do nonetheless show a decline (Figure 1.28), with some recovery in 2006. The noticeable decline in landings of most listed finfish species in East Johor reflects the overall reported decline in landings shown in Figures 1.27 and 1.28, although landings for the common sardine (*Sardinella sp.*) increased four-fold from 2000-2006, further indicating a shift in ecosystem balance as the increase cannot be explained by increased fishing effort along.

¹²¹ Pers Coms, Reported by LKIM and PNK Fisheries Officers during field interviews in August 2008.

¹²² Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08 and *Department of Fisheries Statistics 2000-2004* and Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

Table 1. 28: Commercial Fish Landings from East Johor Waters (2000-2006)

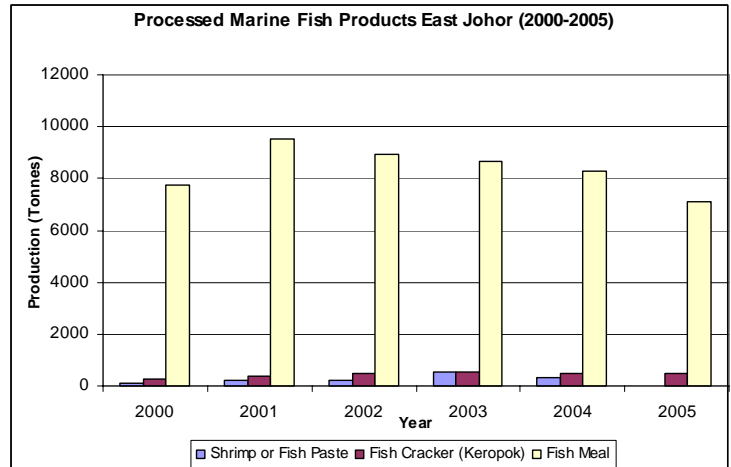
English Name - Fish	Local Names - fish	Scientific Name	Landings (Tonnes)						
			2000	2001	2002	2003	2004	2005	2006
Indian Scad Mackerel Scad Rougher Scad Shortfin Scad Japanese Scad	Selayang	<i>Decapterus sp.</i>	2,113	1,808	2,072	1,684	1,284	1,858	3,796
Yellowstripe Scad	Selar kuning	<i>Selaroides leptolepis</i>	3,680	3,824	4,487	2,051	1,808	2,078	2,443
Kawakawa Bullet Tuna Frigate Tuna	Aya	<i>Thunnus sp.</i>	1,594	1,446	1,564	1,409	1,264	1,006	3,039
Short Mackerel Indian Mackerel	Kembung	<i>Restrelliger sp.</i>	1,204	834	1,400	1,215	795	943	1,210
Fringescale sardinella Blacktip sardinella Smooth-belly sardinella Spotted sardinella	Tamban	<i>Sardinella sp.</i>	1,615	1,839	2,979	2,932	2,257	2,439	8,856
Various Bream species	Kerisi	<i>Nemipterus sp.</i>	2,040	1,816	1,901	1,960	1,653	1,939	2,026
Yellowtail Scad	Pelata	<i>Atule mate</i>	1,960	1,475	1,596	8	1	0	0
Torpedo Scad	Cincaru	<i>Megalospis cordyla</i>	1,228	905	2,084	1,440	1,511	1,047	1,263
Catfish	Duri	<i>Arius sp.</i>	609	453	461	102	117	95	173
Commerson's anchovy Indian Anchovy Hardenberg's anchovy	Bilis/bunga air	<i>Stolephorus sp.</i>	49	59	127	72	66	29	30
Numerous Grouper species	Kerapu	<i>Epinephelus sp.</i>	372	417	573	485	541	505	496
Various species snapper	Remong	<i>Lutjanus Leneolatus</i>	381	373	318	370	299	369	365
Flower/Blue/Blue Swimming Crab	Ketam Laut	<i>Portunus pelagicus</i>	510	485	665	127	102	103	118
Giant Mud Crab	Ketam Batu	<i>Sylla serrata</i>	-	-	-	14	4	2	0
White Prawn	Udang Putih	<i>Penaeus merguensis</i>	137	136	112	147	192	188	246
Sharp-rostrum Prawn	Udang Minyak	<i>Parapenaeopsis sp.</i>	217	231	135	182	224	146	200
Tiger Prawn	Udang Harimau	<i>Penaeus monodon</i>	111	127	136	115	145	132	370
	Other Shrimps	<i>Penaeus sp./ Metapenaeus sp./ Solenocera subnuda</i>	1,993	2,223	1,720	1,872	1,905	2,301	2,697
Common squid	Sotong Biasa	<i>Loligo sp.</i>	4,442	4,168	5,975	5,625	4,903	4,788	6,281
Cuttlefish	Sotong Katak	<i>Sepia sp.</i>	3,211	3,514	4,049	4,305	4,017	3,502	4,285

Data Source: Department of Fisheries (2000-2004) and Department of Fisheries 2005 Statistics and 2006 partial data

1.9.4 Processed Marine Fish Products

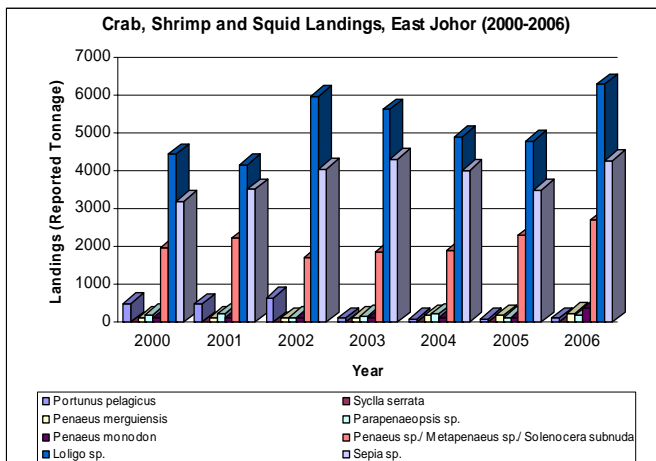
Total production of processed fish products varied between 9,000 MT and 10,000 MT throughout the six year period of 2000 to 2005. Three products were reported to be produced, they were fish meal, prawn paste (*belacan*), and fish crackers (*keropok*) **Figure 1.29**. Although fish meal was also produced in other States along the east coast, the volume was too small to warrant analysis. However, the production of fish meal is the primary product in East Johor. The absence of any data on the volume of shrimp past production does not necessarily mean that the product is no longer made in this region; rather, this may be yet another example of data omission. Most fish cracker production is produced under cottage-based industry standards (**Photo 1.18**).

Figure 1.29: Processed Marine Fish Products – East Johor (2000-2005)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics

Figure 1.28: Crab, Shrimp and Squid Landings – East Johor (2000-2006)



Data Source: Department of Fisheries (2000-2005) and Department of Fisheries 2005 Statistics and 2006 partial data



Photo 1.18: Keropok Keping (fish cracker) out to dry in the sun. This product is produced by an SME visited during site interviews in August 2008. This SME started up around 2002-03 and has expanded operation through the financial assistance provided by the Ministry of Agriculture and Agro-based Industries, Malaysia. Once dry this product is packages in plastic ready for sale; photograph taken 2008.



2.0 Socio-economic and Environmental Status

This chapter outlines the socio-economic and environmental context of the fisheries industry on the east coast of Peninsular Malaysia. The discussion is presented on a State-by-State basis starting from the northern most State, Kelantan, and ending with East Johor in the south. Much of the east coast is less developed than the main urban centers of Kuala Lumpur and Penang (located on the west coast), or indeed the west coast of Peninsular Malaysia as a whole. In general, residents on the east coast of Peninsular Malaysia receive lower average monthly household incomes and suffer from an outflow of youth and working age people who often migrate to urban areas on the west coast in search of employment. However, discussion of this phenomenon at the sub-district or village level is difficult because of limited State/district data. Some data is presented at the district level but is available only in different formats. Nevertheless, specific factors such as population size, gender and age, ethnic ratios, income, the rate of reported poverty, education and car ownership by State are examined to describe the socio-economic context and recent trends.

Malaysia has undertaken a national census on four occasions: 1970, 1980, 1991 and

2000.¹²³ The next census is due to be taken in 2010. Some more up-to-date demographic data is available for Terengganu through the 2005-2006 Terengganu State Census.¹²⁴ In 2007, the total population of Malaysia was reported to have exceeded 27 million, of whom 21,622,200 were reported to reside in Peninsular Malaysia.

The lower level of development and income on the east coast is analysed in the context of demographic profiles, followed by description and discussion of some of the more pertinent socio-economic and environmental issues faced along the east coast of Peninsular Malaysia, especially as they relate to fisheries.

Generally, there are substantive differences in mean monthly income between the major ethnic groups within Malaysia. Ishak (1994) reported that this was, "...rooted in the development of a dualistic economic structure under British rule. At the time the Chinese and Indians were encouraged to settle in the Peninsula to provide labour to the British investors in the rapidly developing rubber and tin industries, whilst the Chinese and Indians [to a lesser extent] prospered from their

¹²³ Department of Statistics Malaysia, 2005: Population and Housing Census 2000, Press Statement, extracted 10-06-08 from http://www.statistics.gov.my/english/frameset_census.php?file=pressdemo.

¹²⁴ The 2005-2006 Terengganu State Census was undertaken by the Terengganu Development Institute, a development authority of the State Government. However, data distribution and spread of data is restricted and not widely publicized.



participation in the modern sectors of the economy, the Malays who remained in their traditional smallholding agriculture lagged behind in terms of productivity, trade, and economic well-being".¹²⁵ Labour for the fisheries sector is undertaken primarily (apart from the foreign labour component) by Malays, where a large proportion of the fisheries are small-scale, traditionally-based enterprises utilising low levels of capital and technology.

Limited research on gender in Malaysian fisheries is available. However, a 1995 survey observed that women comprised a minority of the labour force (particularly on the east coast), and that where women participated in fisheries, participation was primarily within the traditional fisheries category. In all, only 76 women were recorded out of the total 15,344 surveyed fishers on the west coast and for the east coast only 16 of the 9,605 surveyed fishers were women.¹²⁶

Small-scale traditional fisheries communities commonly represent one of the most economically depressed sectors of Malaysian society.¹²⁷ In 1970, 73% of fishers

were considered to be living in poverty. In 1983, although still substantial, this number had declined to 45%¹²⁸, and by 1997 12% of fishers were acknowledged still to be living in poverty (refer **Table 2.1** for historic east coast fishers income data).¹²⁹

The fisheries sector has received substantial Federal Government support through national Development Plans. The Ninth Malaysia Plan (for 2006-2010) allocated RM663.8 million to the fisheries sector.¹³⁰ However, the socio-economic situation of many fishers (particularly small-scale fishers) along the east coast continues to be underprivileged; and in some cases fisher families struggle to eke out a living. The standard of housing in many east coast villages is testament to the lower levels of income, although income has been reported to have gradually improved over time (see **Photo 2.1** and **2.2**).¹³¹

¹²⁵ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 12.

¹²⁶ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.

¹²⁷ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York and Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>.

Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

¹²⁸ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 27.

¹²⁹ 'An Overview of the Concept and Profile of Poverty in Malaysia: An Assessment of the success of poverty eradication', Paper presented by Dato' Dr Zainul Ariff b Haji Hussain at IDS Workshop on Poverty Eradication in the Context of Globalisation, May 23, 2000, Kota Kinabalu, Sabah. p. 18.

¹³⁰ Malaysia, Ninth Malaysian Plan, Chapter 3, p 106.

¹³¹ The latest studies on fisheries income was for 1995 and 1998. More recent data or studies have not been done. During field trips along the east coast in August 2008, most respondents in reference to fishers income remarked that fishers (including crew) were generally on incomes of approximately RM1,000/month. However, no data to substantiate these remarks was available.



Table 2.1: Comparison of east coast fishers income – monsoon and non-monsoon 1998

Mean Monthly Income During Normal Period (RM)										
	Commercial Vessels					Traditional Vessels				
State	Skipper	Owner	Skipper/ Owner	Crew	Diver	Skipper	Owner	Skipper/ Owner	Crew	Diver
Kelantan	573	5067	2316	424	-	419	417	412	319	290
Terengganu	906	3443	2291	379	1394	553	648	551	352	-
Pahang	1229	4720	1153	592	-	650	600	611	412	-
East Johor	1461	2267	3400	693	600	630	619	547	443	-
East coast Average (rounded to RM)	1042	3874	2290	522	-	563	571	530	381	-
Mean Monthly Income During Monsoon Period (RM)										
	Commercial Vessels					Traditional Vessels				
State	Skipper	Owner	Skipper/ Owner	Crew	Diver	Skipper	Owner	Skipper/ Owner	Crew	Diver
Kelantan	520	1700	1869	347	-	350	404	348	246	195
Terengganu	769	2689	2053	232	1211	438	461	515	290	-
Pahang	836	4720	893	437	-	466	217	482	308	-
East Johor	1181	2095	2990	642	600	463	502	467	340	-
East coast Average (rounded to RM)	826	2801	1951	414	-	429	396	453	296	-

Source: Reproduced from Omar Yaakob and Quah Peng Chau, 2005: Jurnal Teknologi, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia".

Overall, the population of Peninsular Malaysia is fairly mobile with migration in search of employment or improvements in career opportunities spurring further and, in many cases, rapid urbanization. Many residents in the main metropolitan areas, such as Kuala Lumpur, Penang and the State of Selangor are sojourners, who have family links and family homes in villages in other States. During long public holidays such as *Eid-ul Fitri* (a Muslim festival) or Chinese New Year these people travel back en mass to their villages. Indeed, during festive seasons many major highways on the east coast become locked up with kilometers of traffic that results in the doubling of population for

some States over a weekend. This phenomenon is made more frequent by a rich diversity of cultures and religions, which give rise to many public holidays related to Chinese, Indian or Malay cultural events.¹³²

¹³² For example, in 2008, a total of 15 days are officially gazetted as public holidays in Malaysia.





Photo 2.1: Kuala Abang, Terengganu. A fishing village situated mid-way down the coast of Terengganu. Small fishing boats are hauled on to the beach and tethered to stakes near the edge of the village. In the event of a storm surge, both this settlement and the one shown below would be at great risk of loss of property and other harm; photograph taken August 2008.



Photo 2.2: Kuala Besut, Terengganu. A small fishing settlement north of the State Capital Kuala Terengganu. Note the poor condition of living quarters. This type of settlement is a common site along the east coast of Peninsular Malaysia. The settlement is situated beside the primary coastal highway running the length of the coast; photograph taken August 2008.

Differences in the level of development for each State on the east coast are generally influenced by the political context and particularly whether ruling parties are the same as the Federal Government. Conclusive fisheries income data for the east coast is limited or superficial; however,

Siwar *et al* (2006) reported that the average income of coastal and traditional fishers on the west coast of Peninsular Malaysia ranged widely between RM500-RM1200/month (USD\$150-380/month).¹³³

¹³³ Chamhuri Siwar, Mohd Zaki Ibrahim, Siti Haslina Md Harizan & Roslina Kamaruddin, 2006, University Kebangsaan Malaysia, Paper prepared for Regional



Given that the fisheries sector on the west coast is considered more productive and stable than the east coast, it is fair to assume that similar incomes are common on the east coast.¹³⁴ Reported per capita income for rural east coast residents of RM500/month (USD\$151/month) or less is common, with some States reporting up to 40% of the population living on such an income.¹³⁵

Studies in the mid-1990s revealed that the average ex-vessel price of fish did not increase during fishing downtime throughout the monsoon (December to March), which appears to be contradictory to the economic principle of supply and demand. Therefore, the level of income of east coast fishers is substantially lower throughout the monsoon season due to lower catch levels.¹³⁶ Past observations noted that of the two groups of fishers on the east coast of Peninsular Malaysia (commercial and traditional, the latter of which often employ unlicensed fishing vessels), only 31% of commercial fishers and 25% of traditional fishers fish during the monsoon season.¹³⁷ Yaakob and Chau (2005) noted that historically the income of

east coast fishers dropped between nine and 32 percent during the monsoon season, and highlighted that the income of east coast fishers is generally very low as seen at **Table 2.1**. Although **Table 2.1** shows mean monthly incomes for 1998, some industry sources suggest that these income levels have not improved significantly in recent years, while others indicated that during downtimes, fishers sometime seek income from other economic activities. The mean monthly income for fishers of traditional vessels is considerably lower than the mean monthly income from commercial vessels; however, even during non-monsoon months, the crew of commercial vessels subsist on an income which would be below the poverty line in Malaysia, if no other source of income for the families of these fishers is available.¹³⁸ A salary of RM522/month as shown in **Table 2.1** roughly equals USD\$160/month.

Symposium on "Natural and Human Induced Environmental Hazards and Disasters" in Conjunction with the Inauguration of the ICSU Regional Office for Asia and the Pacific, Kuala Lumpur, Malaysia, 18-19 September 2006.

¹³⁴ During site visits in Johor, a skipper of a larger Class C vessel (40-69.9GRT) stated that his average income from this position was around RM700/Month and during the monsoon period other sources of income had to be sourced.

¹³⁵ Terengganu Development Institute (TDI), Terengganu Census 2005-2006 TDI Presentation, www.tdi.org.my/retreat/TERENGGANU%20CENSUS%20RETREAT.ppt extracted 10-06-08.

¹³⁶ Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>. Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

¹³⁷ *Ibid.* After Lembaga Kemajuan Ikan Malaysia (LKIM). 1998. Report on Socio-economic Research of Malaysian Fishermen 1995. Kuala Lumpur: Ministry of Agriculture.

¹³⁸ Hardcore poverty refers to households with less than half the poverty line income. The concept of hardcore poverty, first introduced in 1990, was to give emphasis to eradicate extreme poverty. [The] Poverty Line Income in 2002 was RM529 per month in Peninsular Malaysia, RM690 for Sabah and RM600 for Sarawak. Higher incidence[s] of hardcore poverty was seen among households headed by the elderly at 4.9% in 2002 and female headed households that recorded 9.4%. In some coastal settlements, fisheries activity is not the only source of income; however, it is often the primary source.



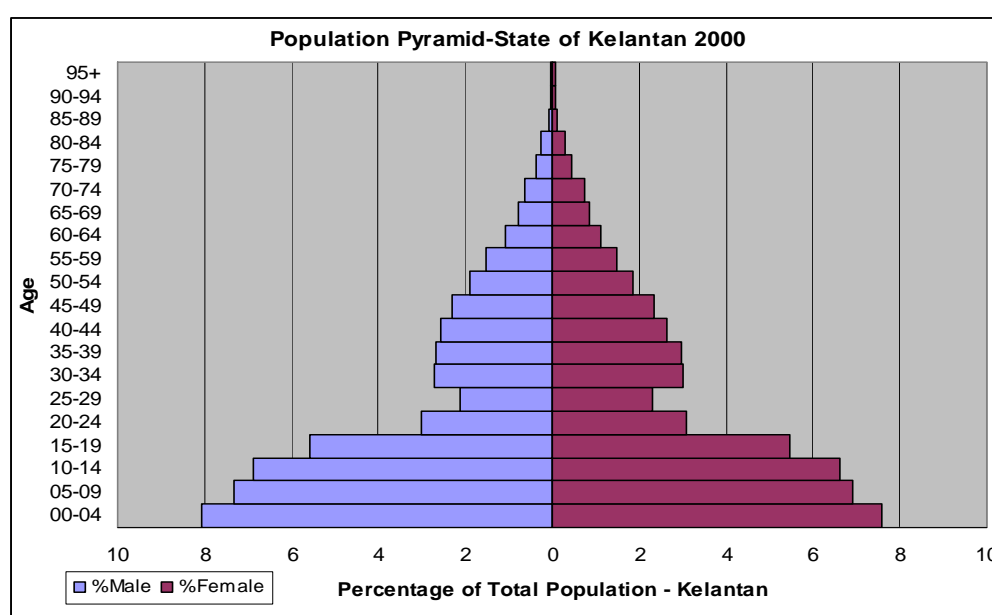
2.1 Demographic Overview of Kelantan

2.1.1 Overall Population Structure

The total population of Kelantan in 2000 was 1,361,432 people (681,453 females and 679,979 males).¹³⁹ In 2003, the population reached 1,453,000,¹⁴⁰ with an annual population growth rate of 2.1%.¹⁴¹

An examination of population by age and gender for Kelantan (Figure 2.1) from the 2000 Census data shows that Kelantan had a large percentage of youth and a bottle neck in the upper age groups that can be attributed in part to inter-State migration, which was likely to have occurred in search of employment.

Figure 2.1: Population Pyramid – State of Kelantan 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia, www.epu.jpm.my/new%folder/ses/xls/1.2.3.xls.

¹³⁹ Census Statistics 2000 data, Economic Statistics, Economic Planning Unit, Prime Ministers Department, extracted 10-06-08 from www.epu.jpm.my/new%folder/ses/xls/1.2.4.xls. The Year of Statistics Malaysia 2000 quoted slightly different population figures, with a difference of some 20,000 people. An explanation as to how this difference has occurred is not known, considering the quote data for each source came from the Population and Housing Census 2000. Given the slight difference in total state populations, a pragmatic decision was still required, where data from the Yearbook as this was by age and sex and the former was not, means that Yearbook data has been used for the population pyramid. Therefore, recognition of a slight error from one source or another has been recognised and accounted for.

¹⁴⁰ The Terengganu State Economic Planning Unit reported as part of their comparative analysis that the population of Kelantan reached 1,560,000 people mid-year 2007. Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁴¹ Terengganu State Government Website, Key data by State, extracted 10-06-08 from www.terengganu.gov.my/dan/dan04/data_penting1.p hp.



A comparison of population by age and gender for Malaysia as a whole (**Figure 2.2**) and Kelantan in 2000, shows a marked difference in the distribution of working age adults, where a more even bell shape (which is the expected shape for a balanced population in a given region) is evident for the Malaysian population as a whole. **Figure 2.1** shows a State population deprived of a large proportion of working age people, where the population is dominated by people below the age of 20 years. It is not uncommon for some families to rely on the broader family structure (often grandparents, older aunts and uncles) in Malaysian society to take care of children while parents are away working and residing in another location.

The societal outcomes of such arrangements do pose questions relating to social integrity given the large number of apparent absentee parents. An examination of population data (shown in **Figure 2.3**) for 2008 and that of 2000 for Malaysia as a whole shows no significant change in the population profile, apart from an apparent decrease in the percentage of population below the age of 10 years, indicating a slowdown in population growth.

Many working age people tend to migrate to metropolitan areas like Kuala Lumpur or the State of Selangor (see **Figures 2.4** and **2.5**) and Penang in search of work. Indeed Penang and Selangor had a burgeoning working age cluster in 2000 representative of migration for employment purposes. These metropolitan areas have become a somewhat permanent place of residence

for many working people from the outer rural and less developed States of Malaysia, where links with the original village (referred to as a 'Kampong') tend to lose their strength over time, although remaining on the whole strong at the initial stages of geographical separation.

Although not observable from **Figure 2.1**, Kelantan had the highest percentage of people 90 years old and above.¹⁴² Also, the ratio of rural to urban residents in Kelantan was almost 2:1 in 2000, with 65% of the population reported to be living in rural villages. The rate of urbanization in Kelantan is lower than the national average, (i.e., 38% of the national population while only 35% for Kelantan) having the second highest rate of rural population, surpassed only by Perak, a State on the west coast of Peninsular Malaysia.¹⁴³

Another indicator of development, population density, shows that Kelantan is the fifth least populated State (of all fifteen States and federal territories) by land area, with a reported 87 people per square kilometer. However, this population density is above the reported national average of 71 people per square kilometer in 2000.¹⁴⁴

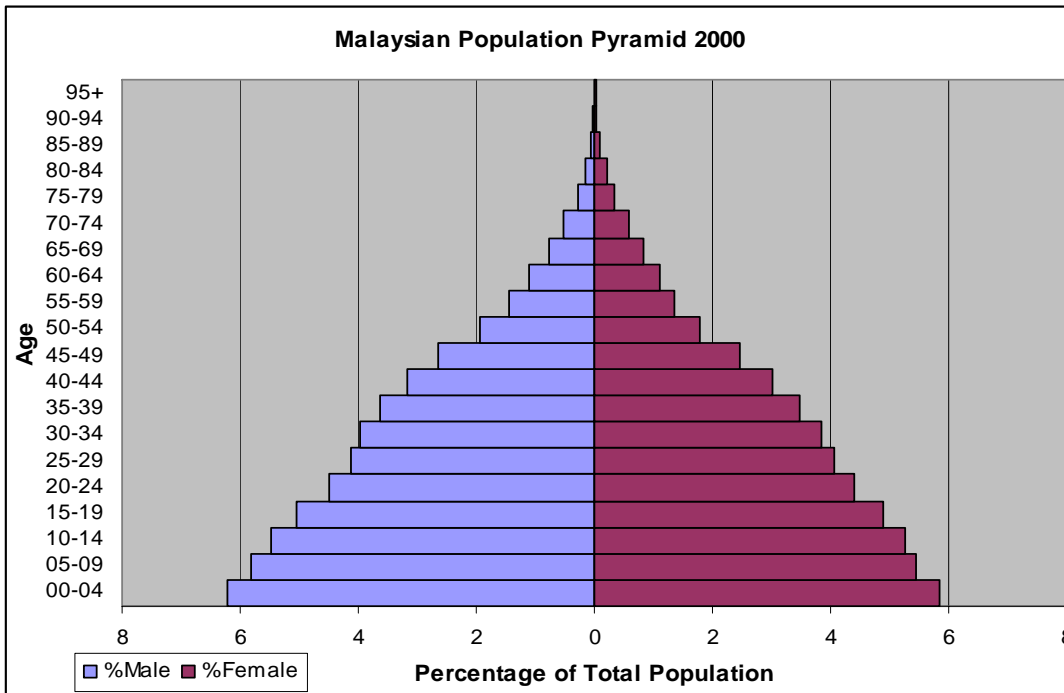
¹⁴² Census Statistics 2000 data, Economic Statistics, Economic Planning Unit, Prime Ministers Department, extracted 10-06-08 from www.epu.jpm.my/new%20folder/ses/xls/1.2.4.xls.

¹⁴³ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

¹⁴⁴ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

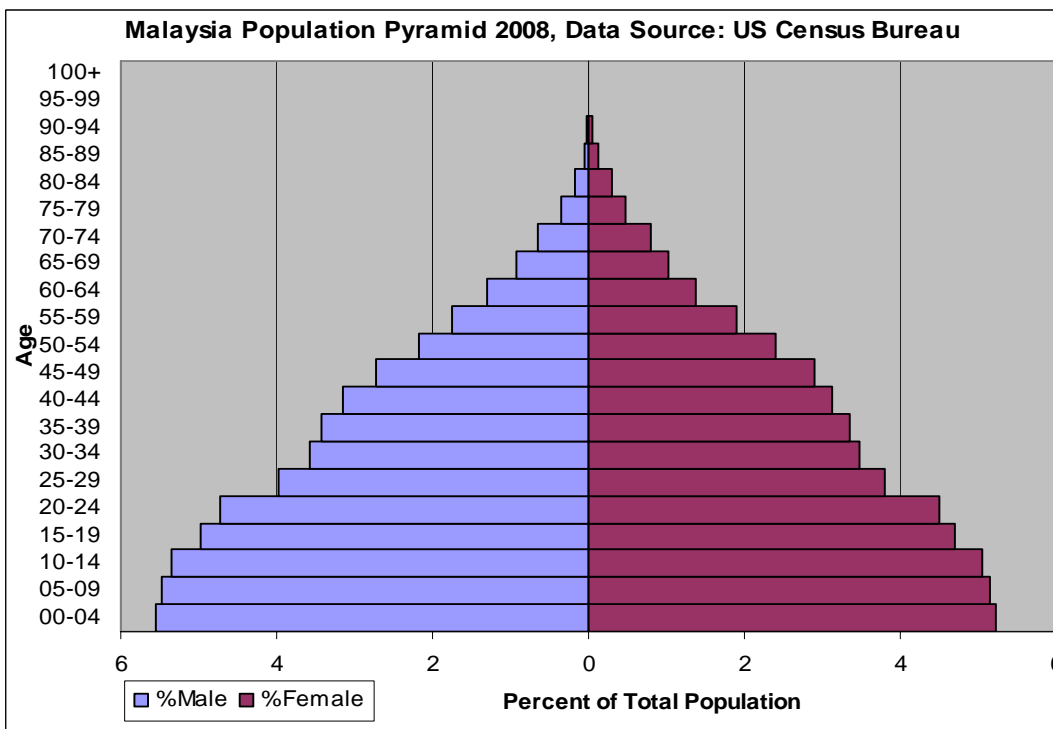


Figure 2.2: Malaysia Population Pyramid 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia, www.epu.jpm.my/new%2Ffolder%2Fses%2Fxls%2F1.2.3.xls

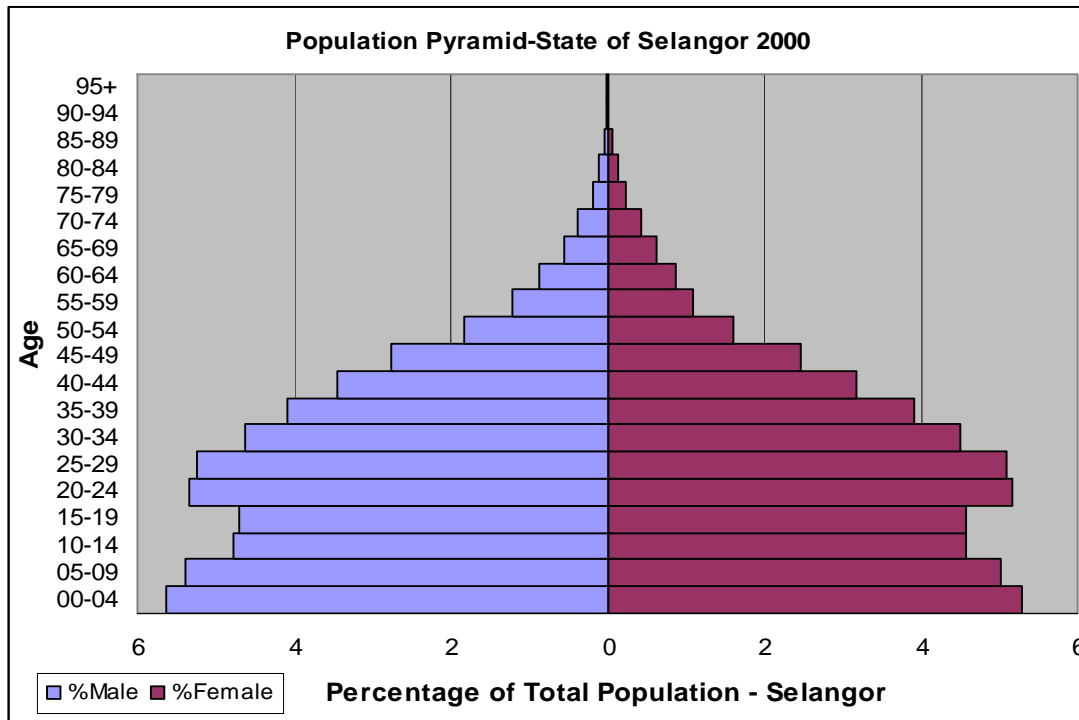
Figure 2.3: Malaysia Population Pyramid 2008



Data Source: US Census Bureau – International Data Base, Table by Country and Spreadsheet, extracted 10-06-08 from <http://www.census.gov/ipc/www/idb/idbsprd.html>

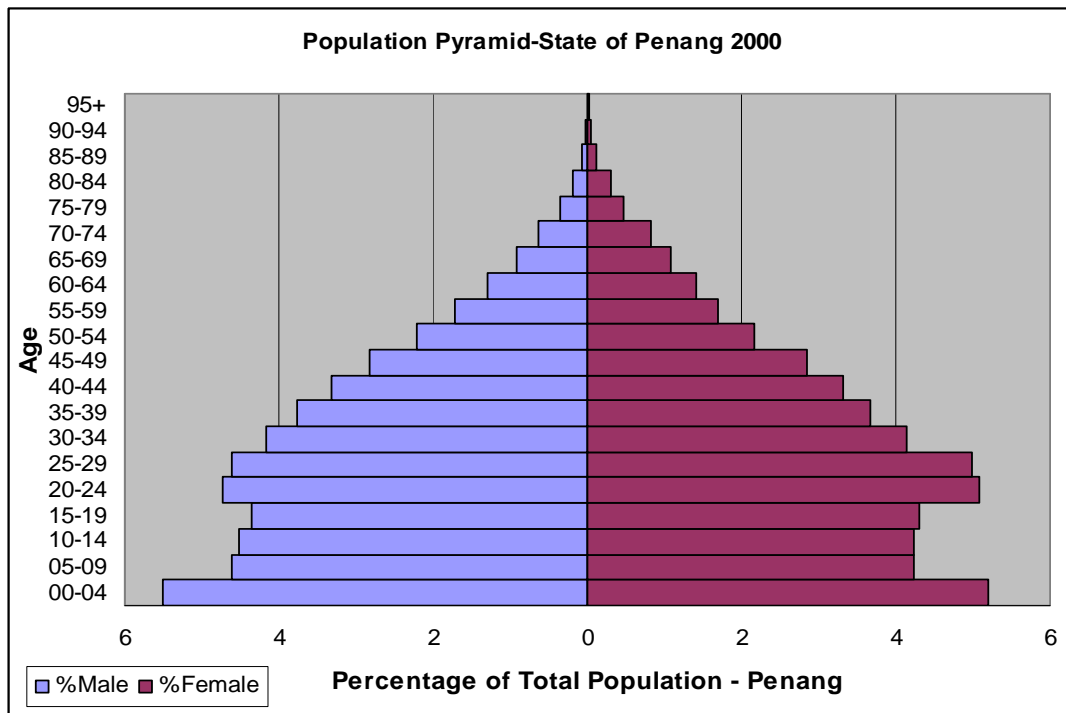


Figure 2.4: Population Pyramid – State of Selangor 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia, www.epu.jpm.my/new%folder/ses/xls/1.2.3.xls

Figure 2.5: Population Pyramid – State of Penang 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia, www.epu.jpm.my/new%folder/ses/xls/1.2.3.xls



2.1.2 Ethnicity, Income and Socio-economic Indicators

The ethnicity of Kelantan varies from the national ratios in that the population as at 2000 was mainly ethnic Malays (92% or 1,261,353) and other *bumiputera* (0.7% or 10,800, i.e., other indigenous groups, including Orang Asli [the original inhabitants before the arrival of the Malays]) (see **Table 2.2**). The total *bumiputera* population was 93%. The national average percentage of Malays and other *bumiputera* as at 2000 was 61%.

The high level of ethnic Malays in Kelantan is partly a result of the past influence of colonialism (where the British did not introduce very many non-Malays to the region and had limited interest in that area), and land-laws, which prevent non-Kelantanese from owning property in Kelantan. In 2000, ethnic Chinese and non-Malaysian citizens were the main minority groups in Kelantan with a combined total of 72,086 people (**Table 2.2**).

Table 2.2: Ethnicity of the State of Kelantan in 2000¹⁴⁵

Description	Total numbers
Malay	1,261,353
Other <i>bumiputera</i>	10,800
Percent Bumiputera (Includes Malay)	93%
Chinese	50,036
Indian	3,869
Others	13,050
Non-Malaysian citizens	22,050
Total Population	1,361,432

¹⁴⁵ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

In 2002, the level of *mean monthly gross household income* in Kelantan was reported to be the lowest of all States in Malaysia, at RM1,674/household/month.¹⁴⁶ Kelantan was also reported to have the highest rate of poverty of all States in Malaysia in that year, with 12.4% of the population being registered in this category.¹⁴⁷ The rate of hardcore poverty for Kelantan was also significant in 2002 standing at 3.6%, the highest of all States. Overall, given the high percentage of Malay and other *bumiputera* in Kelantan, there may be a relationship between ethnicity and income as this pattern of low income amongst Malays is also seen in the *national mean monthly gross household incomes* by ethnicity, i.e., the national averages as at 2004 were as follows:

- Malay/*bumiputera*
RM2,711/household/month,
- Indian
RM3,456/household/month, and
- Chinese
RM4,437/household/month.¹⁴⁸

As shown in **Table 2.1**, the reported income of fishers in the past may still represent current trends given the mean monthly income of households in 2002. The average monthly income of traditional fishers was very low at RM371 per month and if this is the only source of income in some

¹⁴⁶ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from www.epu.jpm.my/New%20Folder/publication/Laporan%20MQLI%202004.pdf.

¹⁴⁷ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from www.epu.jpm.my/New%20Folder/publication/Laporan%20MQLI%202004.pdf.

¹⁴⁸ After Ninth Malaysia Plan, Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.



households then poverty may be more apparent among fishing communities than elsewhere.¹⁴⁹



Hardcore poverty refers to households with less than half the poverty line income. The concept of hardcore poverty, first introduced in 1990, was to give emphasis to eradicate extreme poverty. [The] Poverty Line Income in 2002 was RM529 per month in Peninsular Malaysia, RM690 for Sabah and RM600 for Sarawak. Higher incidence[s] of hardcore poverty was seen among households headed by the elderly at 4.9% in 2002 and female headed households which recorded 9.4%.

Extracted from: Economic Planning Unit, Prime Ministers Department, Malaysia, Malaysian Quality of Life Report 2004, extracted 10-06-08 from www.epu.jpm.my/New%20Folder/publication/Laporan/MQLI%202004.pdf.

The level of affluence of a population can also be contextualized through quality-of-life indicators such as the level of car ownership, access to telephones and the internet, access to health care, the quality of housing and levels of educational attainment. In 2002, of all Malaysian States, Kelantan was reported to have the third lowest rate of car ownership, the second lowest rate of fixed telephone lines, the second lowest rate of internet subscribers, the seventh highest ratio of population to doctors, and the sixth highest ratio of

¹⁴⁹ Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>. Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

people to dentists (Table 2.3).¹⁵⁰ However, Kelantan residents did do better in education, where they attained the third highest percentage of population achieving tertiary education,¹⁵¹ although the State also had the third highest rate of people with no formal education (Table 2.3).¹⁵²

Table 2.3: Basic Quality of Life Indicators – Kelantan 2002

Description	Total numbers
Private Motorcars per 1,000 residents	88.5
Fixed line Telephone per 1,000 residents	107.8
Internet Subscribers per 1,000 residents	12.5
Population per Doctor	1,545
Population per Dentist	14,247
Tertiary education %	27.65
No formal Education %	8.69

Past research indicates that the level of educational attainment among surveyed fishers was substantially lower than the State average, demonstrating a significant

¹⁵⁰ Ranking from a total of thirteen States and two Capital Territories.

¹⁵¹ The high percentage of tertiary education in Kelantan can be attributed to a 'positive discrimination' policy adopted by the Education Ministry where Kelantanese are provided the highest quota amongst the Bumiputera quota for entry into public universities. Attempts to find written policy at the time this paper was proposed proved unfruitful. The "quota system" established in 1979 requires 55% of the places at public universities to be reserved for Bumiputera students. Quotas are also applied on a course by course basis. The system is affirmed in Article 153 of the Malaysian Constitution. See Machi Sato. Education, Ethnicity and Economics: Higher Education Reforms in Malaysia 1957 - 2003 in NUCB JLCC, 7, 1, (2005), 73-88 at <http://www.nucba.ac.jp/cic/pdf/njlcc071/05sato.pdf>. Accessed 11-09-08

¹⁵² Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from www.epu.jpm.my/New%20Folder/publication/Laporan/MQLI%202004.pdf.



educational gap between urban dwellers and fisheries villages. Of the total 1,618 surveyed fishers in 1995 in Kelantan, a mere 0.12% had attained tertiary education, while 21% had either lower or higher secondary education. Of further interest was that 20.5% of surveyed fishers in Kelantan reported attaining no formal education, a significantly higher proportion than that shown in the State aggregated data in **Table 2.3**.¹⁵³

2.1.3 Fishers Population in Kelantan by District

There are three fisheries districts in Kelantan: Kota Bharu; Bachok & Pasir Putih; and Tumpat. In 2004, a total of 607, 3,805 and 1,204 fishers were recorded in each district respectively, giving a total of 5,616 fishers.¹⁵⁴ By 2005, the total number of fishers in Kelantan had risen to 5,695, of whom a large majority were registered foreign fishers (a total of 4,101) working on locally registered and operated fishing vessels. By 2006, total registered fishers rose to 6,007.¹⁵⁵ From 2004-2006 the number of foreign fishers decreased by 171.¹⁵⁶ In 2006, there were only 2,328 local fishers

(Malaysian citizens) registered on licensed fishing vessels.¹⁵⁷

As discussed previously, many local fishers operate unlicensed fishing vessels in the three fisheries districts of Kelantan and indeed along much of the east-coast. Local fishers consist of less than 0.002% of the overall State population. However, for coastal villages the importance of the fisheries sector should not be underestimated as it is one of the primary sources of both income and protein. The total population of Kelantan fisheries districts in 2000 was 747,037 people, many of whom lived in urban and inland areas. Of this population, the number of working-aged men between 20-64 years totalled 271,143.

Given the average percentage of rural residents in Kelantan (65%), there is likely to be a rural population of approximately 176,242 men of working age in these three districts, from whom roughly 2,300 would be registered fishers (1.3%).¹⁵⁸ Detailed data on workforce numbers and more specifically unemployment rates in Kelantan are not readily available to the public.

¹⁵³ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.

¹⁵⁴ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2004*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹⁵⁵ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 25-08-08.

¹⁵⁶ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2004 and 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08 and Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 25-08-08.

¹⁵⁷ Department of Fisheries, partial 2006 fisheries statistics, extracted from

<http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

¹⁵⁸ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.



2.2 Demographic Overview of Terengganu

2.2.1 Overall Population Structure

In 2000, the population of Terengganu was 902,569 people: 442,436 of whom were female and 460,160 male (refer **Figure 2.6**).¹⁵⁹ In 2003, the State government of Terengganu reported that the population reached 966,100 with a population growth rate in 2002 of 2.3%¹⁶⁰ and in 2007 the population had reached 1,067,900 people; a 15% increase in population between 2000 and 2007.¹⁶¹ As seen in the case of Kelantan in 2000, Terengganu also reported a disproportionate level of youth above that expected in a normal population pyramid; and far in excess of the national averages at the time (see **Figures 2.2** and **2.3**).

The over-representation of youth continued to be evident in 2007 (see **Figure 2.7**). However, the social consequences of such an imbalance in population is likely to have far-reaching effects, particularly in coastal communities where incomes and career opportunities are limited almost entirely to the primary production sector, or related small-scale fisheries-based enterprises. The high proportion of people not accounted for in the working age bands may also be evidence of improvements in the level of tertiary education now being attained, the

¹⁵⁹ Census Statistics 2000 data, Economic Statistics, Economic Planning Unit, Prime Ministers Department, extracted 10-06-08 from www.epu.jpm.my/new%2Ffolder%2Fses%2F1.2.4.xls

¹⁶⁰ Terengganu State Government Website, Key data by State, extracted 10-06-08 from www.terengganu.gov.my/dan/dan04/data_penting1.p hp.

¹⁶¹ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

rewards of which are only attainable in major cities elsewhere.

Although the rate of development and standards of living appear to be slightly better in Terengganu than in Kelantan, there is still a general pattern of emigration from the State in search of employment. The specificity of the population pyramids for the years 2000 and 2007 differ in that published State Census data for 2007 was rounded for each age and gender group to the nearest 100 people. The data also grouped together those people above 75 years and over, thus resulting in less divisible elder age categories and a broadening of the percentage for this group (**Figure 2.7**).

Figure 2.7 highlights what appears to be an increase in migration from Terengganu for the age groups between 30-34 years and to a lesser extent 35-39 years for both males and females. Changes in the demographic profile of children were also evident with a minor reduction in the percentage of children between 5-14 years old. This may be evidence of slowing population growth, likely to result in smaller family units now compared to 2000. In 1995, the average household size of fisheries families was reported to be 6.53 people.¹⁶² The shrinkage of working age people in Terengganu is not dissimilar to normal patterns for a rural area, where working age residents move in search of employment, returning only on holidays, and towards retirement, and in the case of females sometimes for marriage.

¹⁶² Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003. *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.



The population of Terengganu also displays disparity in gender ratio for most age groups, the trend of which appears to have increased in prominence between 2000 to 2007 (refer **Figure 2.6 and 2.7**). In 2000, 49% of the population was female and 51% was male, and at 2007 48.7% were female and 51.3% were male. Only after the age of 45 does the imbalance in gender begin to even out (**Figure 2.7**). This pattern may be due to a higher rate of single women now moving into professional fields where employment is primarily sought in major economic centers such as Kuala Lumpur and Penang.

By district, the population of Terengganu shows a fairly even pattern of age category distribution (**Figure 2.8**). As expected, a majority of the population live in the State capital, Kuala Terengganu. Further assessment of age group distribution by district highlights that there is no apparent significant difference in the percentage for each age group by district (**Table 2.4**). As observed from the overall rate of population increase, population density also increased from 69 people per square kilometer in 2000 to 83 people per square kilometer in 2007.¹⁶³

The percentage of rural population in 2000 was 51%, dropping to 46.9% by 2007.¹⁶⁴ Notably, six of the seven districts of Terengganu are coastal, and five of these are rural (i.e., only Hulu Terengganu is inland, and Kuala Terengganu largely urban).

Table 2.4: Age group percentage of total district populations – Terengganu 2007

Districts in Terengganu	% 0-14 Yrs	% 15-64 Yrs	% 65+ Yrs
Besut	35.60	60.63	3.77
Dungun	35.13	61.05	3.82
Hulu Terengganu	35.57	60.81	3.62
Kemaman	34.69	61.53	3.78
Kuala Terengganu	35.50	60.57	3.92
Marang	35.70	60.45	3.85
Setiu	35.50	60.54	3.96

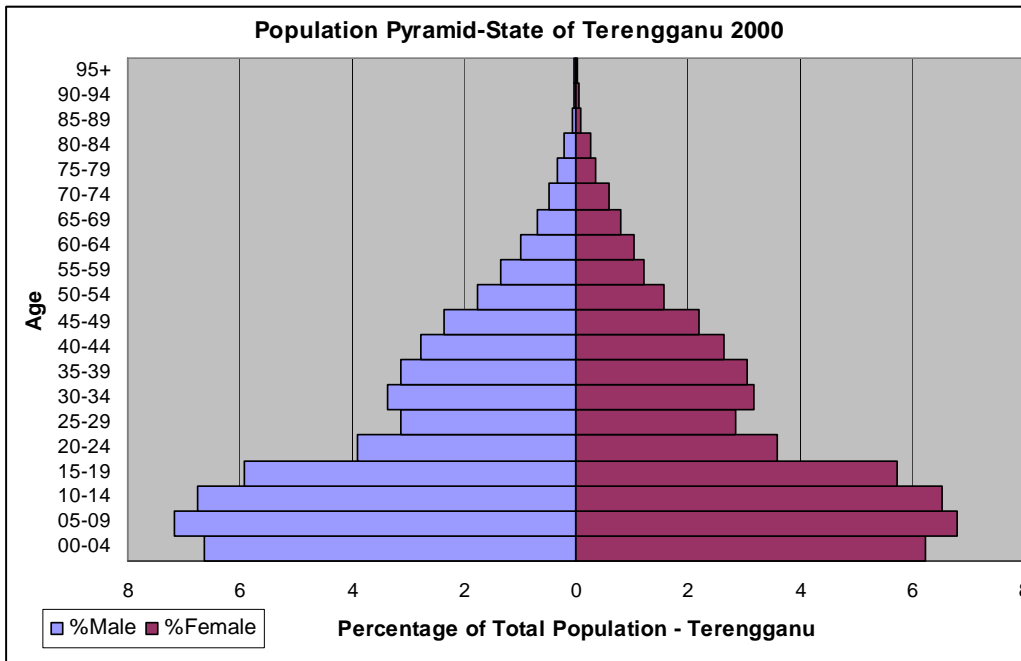
Data Source: Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁶³ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia and Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁶⁴ *Ibid.*

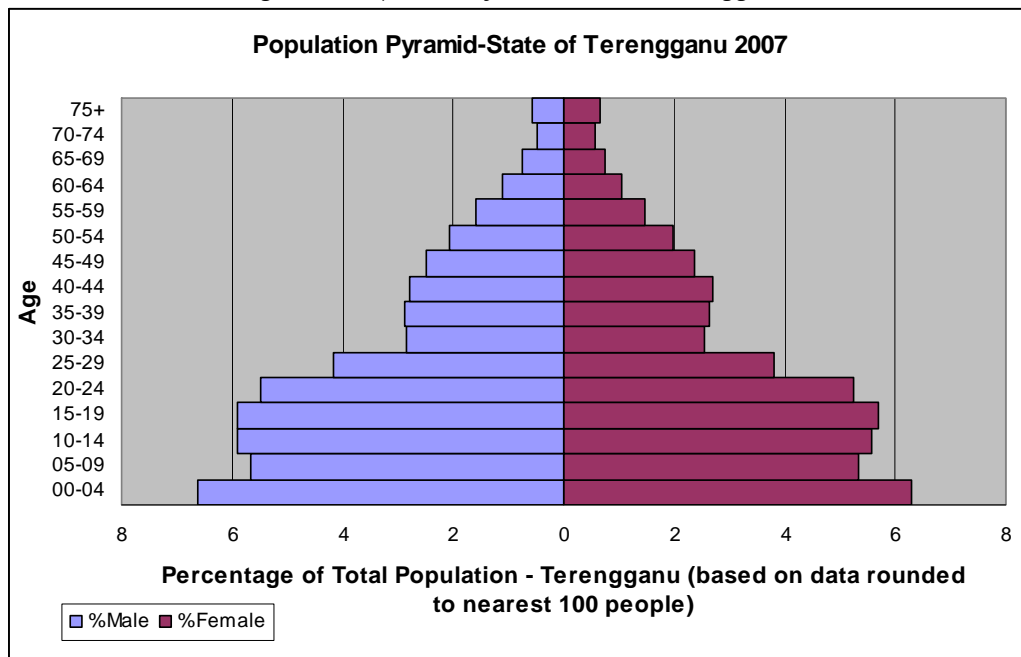


Figure 2.6: Population Pyramid – State of Terengganu 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia. www.epu.jpm.my/new%2Ffolder%2Fses%2Fxls%2F1.2.3.xls

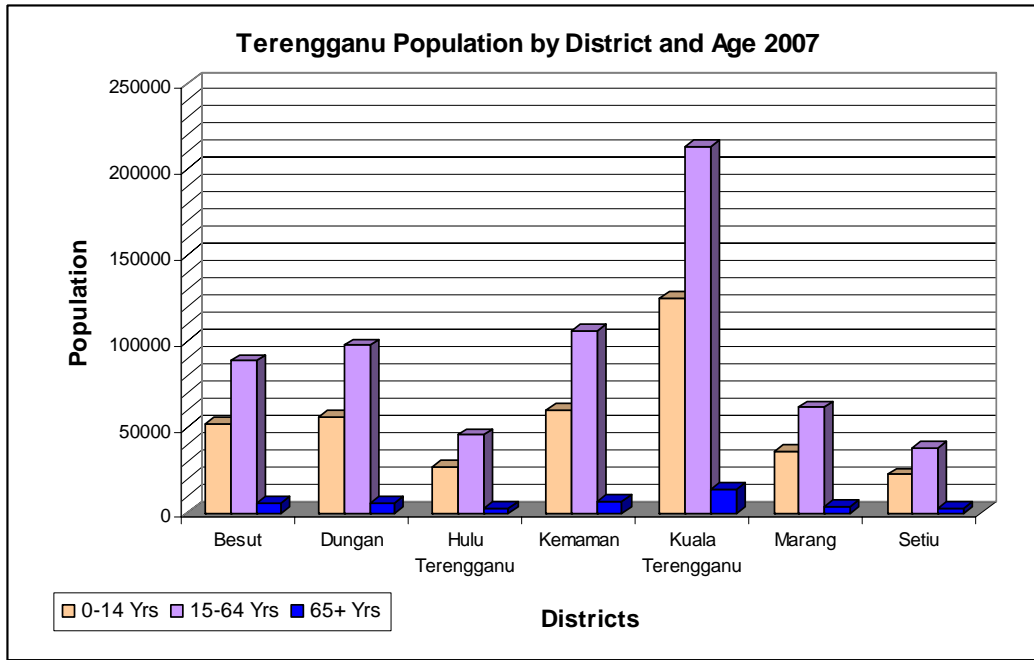
Figure 2.7: Population Pyramid – State of Terengganu 2007



Data Source: Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. Basic State Census Data, Terengganu 2007, www.terengganu.gov.my/dan/dan07/.



Figure 2.8: Terengganu Population by District and Age 2007



Data Source: Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. Basic State Census Data Terengganu 2007, www.terengganu.gov.my/dan/dan07/.

2.2.2 Ethnicity, Income and Socio-economic Indicators

Ethnicity ratios for Terengganu are similar to those seen in Kelantan and appear not to have changed significantly between 2000 and 2007, where the percentage of Malay and other *bumiputera* decreased from 95% to 94.4% (Table 2.5). The district of Setiu, has the highest proportion of Malay/*bumiputera* (96.5%) of a total population of 63,100 people.¹⁶⁵ Over the last two decades, the population growth rate has increased, from an average of 1.5% per annum between 1991-2000, to an average of 2.5% between 2006 and 2007.¹⁶⁶

The high proportion of ethnic Malay and other *bumiputera* is also symptomatic of the limited past colonial influence in the State, along with existing land-laws that restrict outside land ownership.¹⁶⁷ Chinese and Indian Malaysians form even less of the population in Terengganu (a minority 2.6% in 2007) than is seen further north in Kelantan. Another factor to this pattern is that non-Malays tend to favour urban lifestyles where a higher level of economic attainment is possible. Although incomes for *bumiputera* have improved, some data suggests that non-Malays earn higher incomes; however, the gap has been closing in recent years.

¹⁶⁵ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/

¹⁶⁶ *Ibid.* This is partly due as a result of emigration from other states to Terengganu, in light of the fact that the ratio of youth in recent years had actually declined.

¹⁶⁷ Many rural villages (known as Kampongs) are situated on land vested in the State or the Sultan and are usually not subject to significant developmental changes, although this pattern appears to be changing for coastal estates, where tourism development may be beginning to make its mark on traditional land occupation.



Table 2.5: Ethnicity of the State of Terengganu in 2000 and 2007¹⁶⁸

Description	Total numbers (2000)	Total numbers (2007)
Malay	853,625	1008,300
Other Bumiputera	2,864	-
Percent Bumiputera (Includes Malay)	95%	94.4%
Chinese	24,960	26,400
Indian	1,917	2,300
Others	2,507	30,900
Non-Malaysian citizens	16,723	-
Total Population	902,596	1,067,900

The average household monthly income in Terengganu has increased steadily between 2000 and 2007, from RM1,837¹⁶⁹ to RM2,463¹⁷⁰ per month. However, 2007 average monthly household income was likely still to be below the national average for Malay households (given that 94.4% of Terengganu households are Malays) based on the 2004 national figure of RM2,711/household/month. As highlighted previously, the 2004 national average household income for Malaysian Chinese was RM4,437/household/month and RM3,456/household/month for Malaysian Indian.¹⁷¹ This difference in average monthly household incomes may in part be

¹⁶⁸ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia and Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁶⁹ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from [www.epu.jpm.my/New%20Folder/publication/Laporan MQLR%202004.pdf](http://www.epu.jpm.my/New%20Folder/publication/Laporan%20MQLR%202004.pdf).

¹⁷⁰ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁷¹ After Ninth Malaysia Plan, Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

explained by the general pattern of non-Malays who reside in States and regions where incomes are higher (generally major cities such as Kuala Lumpur and Penang).

Average incomes may be skewed due to average household income data also including a small minority of very wealthy individuals that push the bell curve, thus masking the true nature of income levels. Historic monthly average income for fishers (commercial and traditional) was reported to be RM1,124 in 1995, and RM1,168 in 1998. Traditional fishers' income for the same period was lower again at RM508 in 1995, and RM526 in 1998.¹⁷² Like Kelantan, if this is the primary source of income for fisheries families, then a significant proportion may be close to the poverty line, although other sources of income are not uncommon.

In 2002, the incidence of poverty for Terengganu was second highest and equal with the State of Kedah, with 10.7% of households registered as being affected by poverty. The rate of hardcore poverty (those households on less than half of RM529/month) was reported at 2.8%. This level of hardcore poverty is significant given that it is surpassed only by Kelantan at 3.6%, and Sabah at 3.1%.¹⁷³

¹⁷² Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003 and Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>. Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

¹⁷³ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from



Traditional fishers' income was at RM508 in 1995 and RM526 in 1998.

The impact on quality of life from low average incomes is tempered by a lower cost of living in Terengganu, and indeed all along the east coast. Additionally, recent patterns in the chief *general quality of life indicators* highlight that the socio-economic context in Terengganu has been on an upward trend. For example, **Table 2.6**, shows that, although below the national average, the level of access to doctors has improved markedly from one doctor to every 2,278 people in 2002, to one doctor for every 1,373 people in 2007. Another key indicator, car ownership, suggests significant enhancement in the quality of life where 'motorcars per 1,000 residents' increased from 91.5 in 2002 to 246 in 2007 (**Table 2.6**).

Table 2.6: Basic Quality of Life Indicators - Terengganu 2002 (with some 2007 correlated data where available)

Description	Total numbers (2002)	Total numbers (2007)
Private Motorcars per 1,000 residents	91.5	246
Fixed line Telephone per 1,000 residents	6.7/1000 people	7.7/1000 people
(Yr 2000) Internet Subscribers per 1,000 residents	17.1	-
Population per Doctor	2,278	1,373
Population per Dentist	13,475	-
Tertiary education %	26.28	-
No formal Education %	5.97	-

www.epu.jpm.my/New%20Folder/publication/LaporanMQLI%202004.pdf

Terengganu also fairs well overall in access to dentists, having the seventh highest access rate, and tertiary education, where it ranked fifth highest out of the 13 States and two Federal Territories. However, the level of residents with no formal education was rated significant at 5.97%. The unemployment rate in Terengganu over the past two decades has declined from a registered high of 8.8% in 1990 to 3.2% in 2007.¹⁷⁴ These indicators suggest a fair improvement between 2002 and 2007 of the overall socio-economic condition for the State, although the pattern of improvement is unlikely to be even throughout all districts.

However, in 1995, the number of fishers in Terengganu with no formal education was reported to be 14.6% of the surveyed fishers (2,445 surveyed in all).¹⁷⁵ This may be indicative of current educational attainment patterns in many fishing villages in Terengganu, and at the least, indicates the likelihood of a gap between urban residents and fisheries communities in Terengganu which is likely to persist even now. Abu Talib (2003) *et al* reported that the level of fishers with no formal education was most prevalent among traditional fishers both in Kelantan and Terengganu. Traditional fisheries are usually based within the fishing village, whereas commercial fisheries are most often based out of official

¹⁷⁴ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁷⁵ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.



LKIM fisheries complexes employing primarily foreign workers and larger vessels.

2.2.3 Fishers Population in Terengganu by District

In 2004, the seven fisheries districts of Terengganu (i.e., Kemaman, Dungun, Marang, Kuala Terengganu Utara, Kuala Terengganu Selatan, Besut, and Setiu) were reported to have a total of 8,654 fishers; of whom 5,979 were Malay/Bumiputera.¹⁷⁶ By 2005, total fishers numbered 8,706, of whom 6,032 were Bumiputera/Malay and 2,664 were Thai.¹⁷⁷ By 2006, a noticeable trend had emerged where more foreign fishers were recorded, in all 2,744, while local fishers declined to 5,926.¹⁷⁸ The foreign proportion (31.6%) is high; however, not to the extent seen in Kelantan further north nearer the Thailand border. However, Terengganu State government data reported a fall in total fishers working on licensed vessels in 2007 to 8,449.¹⁷⁹ The number of licensed fishing vessels had also declined to 2,419 in 2007, from 2,442 in 2005, although this may be a result of licenses still under renewal.¹⁸⁰ In total 0.0085% of the resident population were reported to be involved as fishers in 2007. However, the proportion of fishers is

notably higher in Besut, Marang and Setiu (Table 2.7) located on the coast.

Table 2.7: Fisheries Population by State District – 2007¹⁸¹

District	Total Population ¹⁸²	Total Fishers	Fishers % of Population
Besut	145800	1525	0.010%
Dungun	159700	928	0.006%
Hulu Terengganu	74500	0	0.000%
Kemaman	171800	1235	0.007%
Kuala Terengganu	351800	2177	0.006%
Marang	101400	1066	0.010%
Setiu	63100	618	0.010%

A more accurate overview assessment of the importance of fisheries may be understood through an assessment of fisheries participation within the total labour force. The reported total labour force in 2007 was 396,134 people of whom 383,458 people were employed; fishers represented 0.02% of the employed labour force.¹⁸³ However, such an assessment is made problematic by the fact that fishers are often self-employed and therefore may not register in employment data. Additionally, the seasonality of fisheries signals that the employment of fishers is unlikely to be full time, where many fishers

¹⁷⁶ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2004*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹⁷⁷ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹⁷⁸ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

¹⁷⁹ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁸⁰ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/, and Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

¹⁸¹ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁸² The source of data for these State government district population statistics reported that totals were rounded to nearest 100 people. In the census data the total population by district was based upon residents by district with no distinction of the ratio of local/foreign residents by district; however, the ratio of local/foreign fishers was provided. Therefore this assessment of fishers % of population includes local and foreign fishers as a combined group due to base data inadequacy.

¹⁸³ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.



are reported to undertake other forms of employment.

Ishak Haji Omar (1994), the author of one of the most comprehensive and authoritative exposés of the Malaysian fisheries industry of recent years, reported that along the east and west coast of Peninsular Malaysia (as is still the case today), fishing villages are located usually near estuaries or river mouths where the rates of income deprivation are extreme with many fishing families living below the poverty line.¹⁸⁴

Ishak (1994) observed that east coast fisheries are often small-scale, and in Kelantan and Terengganu the majority of fishers were living below subsistence levels (what would now be conceptualized as living below the poverty line). Further to this, he reported that up to 30% of the workforce of small-scale fisheries were not gainfully employed.¹⁸⁵ Reports from Yaakob and Chau (2005) and Siwar *et al* (2006) show that income levels among fishing villages are still fraught with limitations and inequality. The scale (units of geographic measurement) of State Census data and analysis masks the level of income disparity and socio-economic hardship experienced by the rural coastal fishing villages of Terengganu. Population, social indicator and income data by sub-district or mesh-block, had it been available, would allow for a more revealing analysis of the socio-economic condition of coastal fishing villages in Terengganu. Examples of the circumstances of housing

in many fishing villages in Terengganu, are shown in **Photos 2.1** and **2.2**.

2.3 Demographic Overview of Pahang

2.3.1 Overall Population Structure

The population of Pahang has grown from 1,295,772¹⁸⁶ people in 2000 to 1,483,600 people in 2007, with a reported 2006/07 population growth rate of 1.9%.¹⁸⁷ Population growth in Pahang has decreased in recent decades, from 4.2% between 1970 and 1980, 2.79% in 1981-1991, and 1.82% between 1991 and 2000.¹⁸⁸ Although total population data for 2007 was available, data by age and gender for that year was not; therefore, the population pyramid below is based on the last census in 2000 (**Figure 2.9**).

The most notable pattern observed in **Figure 2.9** is that the apparent low level of working age people was less pronounced in Pahang than in Kelantan and Terengganu for the same period. However, an imbalance of gender (more males than females) was apparent for the age range 20-59 years of age, after which gender balanced out. The gender imbalance was most pronounced for the age range of 20-39 years (**Figure 2.9**). **Table 2.8** highlights the gender imbalance.

¹⁸⁴ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York pg 16-36.

¹⁸⁵ *Ibid*, p 26.

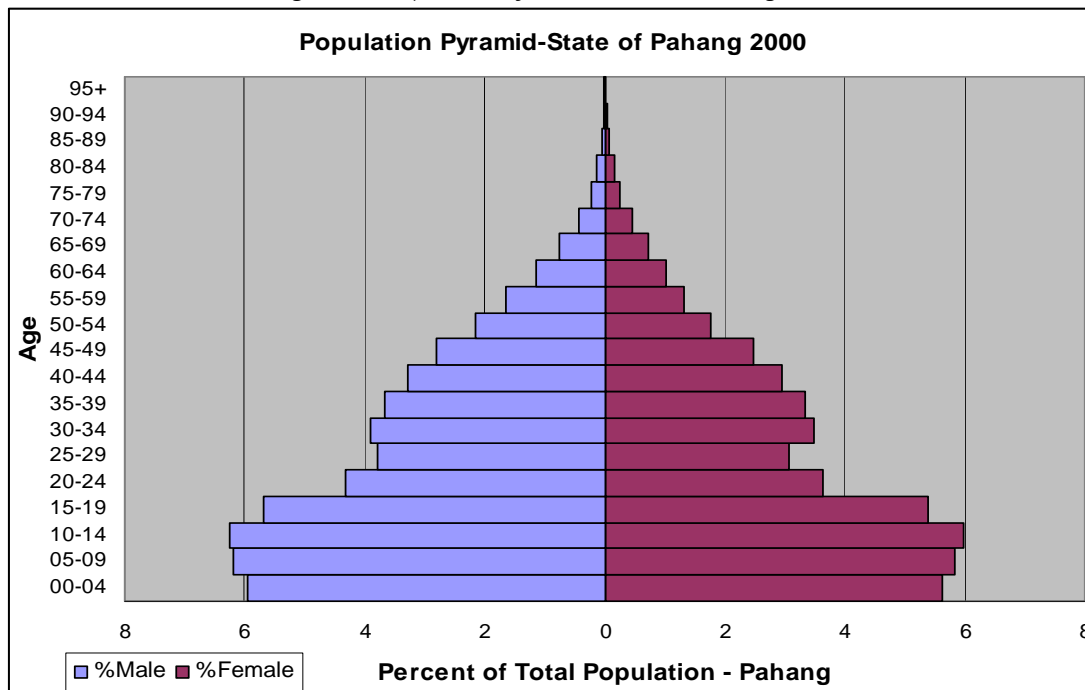
¹⁸⁶ Data source included 'non-citizens' and 'other' category.

¹⁸⁷ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia and Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

¹⁸⁸ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.



Figure 2.9: Population Pyramid – State of Pahang 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister's Department, Malaysia, www.epu.jpm.my/new%2Ffolder%2Fses%2Fxls%2F1.2.3.xls.

for this age range 20-59 years, where the highest imbalance is observed between the age ranges of 20-24 years (with 44.6% females) and 55-59 years (with 44.57% females). The overall average gender difference for all age groups 20-59 years resulted in an imbalance where 46.30% female and 53.70% male. Like other States, this imbalance may be linked to the changing social profiles and importance of women in the work place necessitating migration to major urban areas in search of fulfilling career opportunities.

The rural/urban ratio of Pahang in the year 2000, was reported to be lower than Kelantan with 58% of residents reported to be rural, but higher than Terengganu.¹⁸⁹ In 2000, Pahang had the third lowest

population density for the nation at 36 persons/square kilometre.¹⁹⁰ This had changed little by 2007 when the population density had increased slightly to 41.2 persons/square kilometre. The small increase in population may be partially explained by the fact that substantial tracts of land in this State are inland and at high altitude.

Pahang has the largest land area in the peninsula. An examination of population by administrative districts (Table 2.9) shows that Kuantan, the State capital, has the highest population in Pahang. However, there are three other administrative districts where the population exceeds 100,000 people. The fisheries districts (as administered by the Department of Fisheries) include Kuantan, Pekan and

¹⁸⁹ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

¹⁹⁰ *Ibid.*



Rompin where total populations are relatively significant.

Table 2.8: Gender Distribution by Age 20-59 years – Pahang 2000¹⁹¹

Age Range	Male	Female	Total	% Female
20-24	56088	47027	103115	45.61
25-29	49060	39623	88683	44.68
30-34	50637	45117	95754	47.12
35-39	47323	43081	90404	47.65
40-44	42363	38194	80557	47.41
45-49	36264	32177	68441	47.01
50-54	27973	23016	50989	45.14
55-59	21214	17059	38273	44.57
Totals	330,922	285,294	616,216	46.30

Table 2.9: Population by Administrative District – Pahang 2000¹⁹²

Districts in Pahang	Male	Female	Total ¹⁹³
Bentong	50,336	46,353	96,689
Cameron Highlands	15,258	12,819	28,077
Jerantut	41,877	38,808	80,685
Kuantan*	178,149	166,170	344,319
Lipis	38,757	34,800	73,557
Pekan*	50,367	47,384	97,751
Raub	40,717	38,771	79,488
Temerloh	69,298	66,916	136,214
Rompin*	54,749	47,284	102,033
Maran	56,923	55,683	112,606
Bera	40,832	36,853	77,685
Total	637,263	591,841	1,229,104

**Administrative districts appear to correlate by name with fisheries districts although the administrative district of Rompin is likely to include a wider geographic area than that of the fisheries district Kuala Rompin.*

¹⁹¹ *Ibid.*

¹⁹² Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

¹⁹³ Source data by district did not include 'non-citizens' and 'other' category which was included as part of total population at start of section and within Table 9.



2.3.2 Ethnicity, Income and Socio-economic Indicators

Although primarily Malay/*bumiputera* (73%), the ethnicity of Pahang in 2000 had a noticeably larger proportion of Chinese (17%) and Indian Malaysians (4.7%) than observed for Kelantan and Terengganu (Table 2.10). However, the Malay/*bumiputera* proportion of the population was still higher than the national average of 61% in 2000.

Table 2.10: Ethnicity of the State of Pahang in 2000¹⁹⁴

Description	Total numbers
Malay	886,369
Other <i>bumiputera</i>	60,382
Percent Bumiputera (Includes Malay)	73%
Chinese	221,054
Indian	61,913
Others	7,106
Non-Malaysian citizens	58,948
Total Population	1295,772

The combination of a large rural population (as compared to the west coast), and high proportion of Malay/*bumiputera* is reflected in a fairly low mean monthly gross household income of RM1,991 reported for Pahang in 2002.¹⁹⁵ The average monthly income of fishers (commercial and traditional) in 1995 for Pahang was RM1,195 and in 1998 it was reported to be RM1,245. Average incomes for traditional fishers in 1995 were reported

to be RM518 per month, and in 1998, RM568 per month.¹⁹⁶ Once again, if this level of income is the only or main source for fishery-based families, then a substantial number may still be living near the poverty line.

Although the average level of income in Pahang is low, and that of fishers potentially lower in comparison to national average, the cost of living and the relative improvement in mean monthly household income in Pahang since 1990 (previously RM961/household/month) suggest improvement in the economic condition of Pahang residents over recent years. In 2002, the incidence of poverty (less than RM529/month/household) in Pahang was reported to be 3.8% of households, and only 0.1% of households for hardcore poverty.¹⁹⁷ Overall poverty and hardcore poverty in Pahang do not affect as large a proportion of households as observed for Kelantan and Terengganu.

Quality of life indicators show a general improvement between 1990 and 2002; i.e. car ownership increased from 71/1000 residents to 130.01/1000 residents, the rate

¹⁹⁴ Population and Housing Census 2000 – Economic Planning Unit, Prime Ministers Department, www.epu.jpm.my/new%20Folder/ses/xls/1.2.3.xls

¹⁹⁵ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from

www.epu.jpm.my/New%20Folder/publication/Laporan%20MQLI%202004.pdf.

¹⁹⁶ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries. WorldFish Centre Conference Proceedings 2003 and Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>. Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

¹⁹⁷ Economic Planning Unit, Prime Ministers Department, Malaysia, *Malaysian Quality of Life Report 2004*, extracted 10-06-08 from www.epu.jpm.my/New%20Folder/publication/Laporan%20MQLI%202004.pdf.



of fixed telephone lines increased substantially from 37/1,000 residents to 145.7/1,000 residents, the ratio of doctor per population improved from 3,508/person to 1,912/person, and the level of residents with no formal education improved from 5.95% to 4.98% (Table 2.11). Improvements in the ratio of dentists did not improve markedly and the rate of tertiary education actually dropped slightly from 24.7% in 1990 to 23.59% in 2002. Overall, the improvement of these indicators for Pahang in comparison to Terengganu and Kelantan, shows that Pahang has experienced faster improvement in the general socio-economic situation between 1990 and 2002. However, levels of fishers with no formal education were high, although not as high as reported for Terengganu and Kelantan, with 8.8% of surveyed fishers indicating no attainment of formal education in 1995.¹⁹⁸

Table 2.11: Basic Quality of Life Indicators – Pahang 2002

Description	Total numbers
Private Motorcars per 1,000 residents	130.01
Fixed line Telephone per 1,000 residents	145.7
Internet Subscribers per 1,000 residents	18
Population per Doctor	1,912
Population per Dentist	14,321
Tertiary education %	23.59
No formal Education %	4.98

¹⁹⁸ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.

2.3.3 Fishers Population in Pahang by District

In 2004, the three fisheries districts of Kuantan, Pekan and Kuala Rompin had a total of 3,848 fishers, 3,592 of whom were local fishers registered to be operating licensed vessels. Of the three districts, Kuantan had the highest proportion of foreign fishers (208 in total), and Pekan had the lowest number of foreign fishers (23 in total). Almost all of the registered foreign fishers in 2004 were reported to be Thailand nationals (a total of 246), with the remainder (10 fishers) from an unspecified country. Although data by district for 2005 was not available, data for the number of local and foreign fishers for the State indicates that there were 4,050 local fishers and 489 foreign fishers (or 10.8% of the total number of fishers). By 2006, the number of foreign fishers had increased to 1,543, while local fisher numbers also increased to 3,954.¹⁹⁹ This represents a significant shift in the demographics of registered fishers in Pahang, from primarily local and few foreign, to a significant proportion of foreign registered fishers.

As the majority of registered fishers are local residents (although this has changed significantly in recent years), it is fair to assume that the sector provides an important source of income for coastal villages. The nature of fisheries in Pahang is largely small-scale, with almost half (580 vessels) of the total number of licensed

¹⁹⁹ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.



vessels (1,379 vessels) powered by outboard motors in 2006.²⁰⁰

2.4 Demographic Overview of Johor

2.4.1 Overall Population Structure

The State of Johor has eight administrative districts, two of which (Kota Tinggi and Mersing) are on the east coast. During the last census in 2000,²⁰¹ these two east coast districts (the subject of enquiry) had a total population of 259,941.²⁰² The following discussion and any assumptions made are given for the state as a whole and where possible, data by district is used. However, once again, the nature of this data is often not conducive to rigorous analysis due to temporal or spatial variance or lack of specificity. The total population of Johor increased from 2,762,539 in 2000 to 3,240,900 in 2007.

²⁰³

Overall, Johor has the most balanced population by age and gender of all east coast States included in this study (Figure 2.10), as shown by the shape of the population pyramid which is not too dissimilar to that seen for the Economy as a whole (see Figures 2.2 and 2.3). The distribution of age and gender implies a solid and fairly prosperous societal mix, which is reflected in the overall quality of

life indicators that show that the Johor residents enjoy one of the highest levels of socio-economic standing in Malaysia. The only noticeable skew within the population pyramid was a slight imbalance in gender, where 51.7% were male and 48.3% females. This was most prominent within the age band of 15-39 years (Figure 2.10), after which gender balance evens out. One of the most notable variations in gender was reported for the district of Kota Tinggi, where males outnumbered females by 10% with 101,139 and 91,197 individuals respectively.²⁰⁴ Mersing also had a gender imbalance with slightly more males than females (e.g., 34,745 males and 32,860 females). These differences in gender suggest that at least these two east coast districts may share some similarity with the other east coast States where females of tertiary education or working age may tend to move to major urban areas.

On the whole, the Johor ratio of rural to urban residents is somewhat lower than the other three northern east-coast States, i.e. only 35% of the total Johor population in the year 2000 was rural.²⁰⁵ In 2000, Johor had a population density of 144 people/square kilometer, and in 2007 population density reached 170 people/square kilometre. The most recent data highlights that Johor's population growth rate was one of the highest in Malaysia in 2007 at 2.2%.²⁰⁶ This is more likely a result of migration into Johor from other States in search of employment,

²⁰⁰ Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

²⁰¹ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

²⁰² Source data did not include 'non-citizens' or 'other' category.

²⁰³ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia and Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.

²⁰⁴ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

²⁰⁵ Department of Statistics, Malaysia, 2006: *Yearbook of Statistics, Malaysia*. Kuala Lumpur, Malaysia.

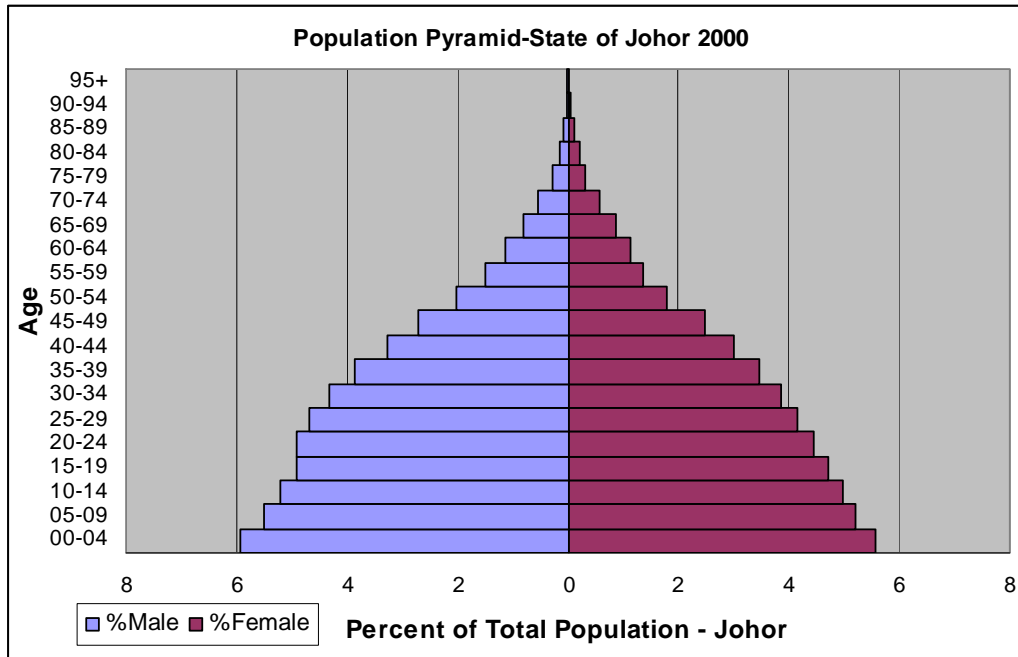
²⁰⁶ Terengganu State Economic Planning Unit and Department of Statistics, Malaysia. *Basic State Census Data Terengganu 2007*, www.terengganu.gov.my/dan/dan07/.



rather than as a result of natural birth increase as the State Capital, Johor Bahru

is a major commercial centre.

Figure 2.10: Population Pyramid – State of Johor 2000



Data Source: Population and Housing Census 2000 – Economic Planning Unit, Prime Minister’s Department, Malaysia, www.epu.jpm.my/new%2Ffolder%2Fses%2Fxls%2F1.2.3.xls.

2.4.2 Ethnicity, Income and Socio-economic Indicators

The ethnic mix of Johor as a whole in the year 2000 closely reflects that of major cities in Malaysia (i.e., Kuala Lumpur and Penang). For example, in 2000, the Johor ethnic mix was 53% Malay/other *bumiputera*, 33.4% Chinese, 6.4% Indian and 7.2% others or non-Malaysians (Table 2.12).

Fishers’ income for East Johor displayed a significant deficiency when compared to average household income.

Compared to all States and Federal Territories, the mean monthly average

household income in Johor was the fourth highest in 2002 at RM2,963. This was an increase of close to 150% since 1990, when the mean monthly household income was RM1,152. Such a level of household income is nearly 30% higher than the next highest level reported for the east coast of Peninsular Malaysia in 2002. As expected, the incidence of poverty for households in Johor was low at 1.8% (compared to Kelantan at 12.4%), and hardcore poverty was only registered for 0.2% of households in Johor. These outcomes place Johor in a much higher level of prosperity than the rest of the east coast States. However, the unavailability of data by district tends to mask the socio-economic situation for the east coast districts of Johor, where circumstances have been reported



anecdotally to be closer to that of Pahang.²⁰⁷

Table 2.12: Ethnicity of the State of Johor in 2000²⁰⁸

Description	Total numbers
Malay	1,452,516
Other Bumiputera	32,825
Percent Bumiputera (Includes Malay)	53%
Chinese	923,195
Indian	178,928
Others	17,393
Non-Malaysian citizens	157,682
Total Population	2,762,539

In support of this assumption is the observation that fishers' income for East Johor has historically displayed a significant deficiency when compared to average household income. For example, surveyed fishers reported an average monthly income of RM1,184, and those involved in traditional fisheries reported an average income of RM511 per month in 1998; close to that reported by the three northern east coast States.²⁰⁹ Taking into account the 2002 mean monthly income above, the income of the fishery communities likely fall short of the State average.

Overall, the other primary quality of life indicators show a general improvement in

²⁰⁷ SRM 'Field Trip Report to Sedili Fishing Town', February 2008 (on file).

²⁰⁸ Population and Housing Census 2000 – Economic Planning Unit. Prime Ministers Department, www.epu.jpm.my/new%2Ffolder%2Fses%2F1_2_3.xls

²⁰⁹ Omar Yaakob and Quah Peng Chau, 2005: *Jurnal Teknologi*, 42(A) June 2005 "Weather Downtime and its Effect on Fishing Operation in Peninsular Malaysia", p 23, Extracted 16-05-08 from <http://eprints.utm.my/33/1/JTJUN42A%5B2%5D.pdf>. Note this data was sourced from DOF 1996 fisheries statistics, Ministry of Agriculture.

the socio-economic context for Johor from 1990 to 2002 as evidenced by improvements in the level of private car ownership (i.e., 223 cars/1,000 residents from 115 in 1990), a reduction in the resident doctor ratio from 3,131/doctor to 1,617/doctor, and improvements in the rate of tertiary education where 22.95% of the population have a tertiary education (Table 2.13). Johor also saw a reduction in the rate of residents with no formal education, and a slight improvement in the ratio of dentists to residents.

Table 2.13: Basic Quality of Life Indicators – 2002 Johor

Description	Total numbers
Private Motorcars per 1,000 residents	223
Fixed line Telephone per 1,000 residents	206.9
Internet Subscribers per 1,000 residents	30.2
Population per Doctor	1,617
Population per Dentist	12,253
Tertiary education %	22.95
No formal Education %	5.15

Surveyed commercial fishers reported an average monthly income of RM1,184 and traditional fisheries reported an average income of RM511 per month in 1998.



However, educational attainment amongst surveyed east Johor fishers was very different to the State average i.e. in 1995, none reported that they had received tertiary education, and 11.4% had no formal education.²¹⁰

2.4.3 Fishers Population in Johor (East Coast) by District

In 2004, the three fisheries districts of Johor had 4,386 fishers as follows; Kota Tinggi Utara (915 fishers), Kota Tinggi Selatan (1,138 fishers) and Mersing (2,333 fishers). By 2005, the total number had risen to 5,213 fishers.²¹¹ The number of foreign fishers registered to be working on licensed vessels came to a minority 384 fishers in 2004, rising to 528 fishers in 2005. The fisheries district of Mersing recorded the highest number of foreign fishers (315 fishers) out of the three districts in 2005. By 2006, the number of registered fishers had declined to 4,982. However, the ratio of local to foreign fishes had started to change similar to that observed in Pahang, where foreign fishers increased to 913 from 528 the previous year.²¹²

Nevertheless, the fact that the majority of registered fishers in 2006 were locals signifies that fisheries is an important source of income to coastal villages in East Johor, where 675 small scale vessels of the 1,424 licensed in 2006 were either non-powered

or outboard-powered. These vessels primarily employ traditional gear and fish close to the coast. Large vessels that employ foreign labour to fish in the zone outside of 30 nm totalled only 42 units in 2006.²¹³

2.5 Influence of Fisheries Market Structure

2.5.1 Market Distribution of Fish

The importance and influence of the marketing structure and State attempts at market intervention have had an indelible effect on the socio-economic conditions of east coast fishers in Peninsular Malaysia. "Whilst fishermen's [sic] landings are small, uncertain and scattered over 350 villages along both coasts, consumption centres are located in the main towns on the west coast of the peninsula where market preference is highly biased towards fresh, rather than frozen marine fish".²¹⁴ This presents many obstacles to fishers in supplying fresh fish to the west coast of the peninsula given limitations in cold-storage and post-harvest handling capacity in most east coast fishing districts where most fish is sold fresh (see **Photo 2.3** and **2.4**).

²¹⁰ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Centre Conference Proceedings 2003.

²¹¹ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2004 and 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

²¹² Department of Fisheries, partial 2006 fisheries statistics, extracted from <http://www.dof.gov.my/v2/perangkaan.htm>, 25-08-08.

²¹³ *Ibid.*

²¹⁴ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 39.





Photo 2.3: Cold storage facilities at the Tok Bali, Kelantan branch of the Fisheries Development Authority (LKIM) fish landing port. These facilities chill fish down to -20 Celsius. The facility is not utilised as most landings go straight to market. Photograph taken August 2008.



Photo 2.4: A small cold storage facility located at LKIM Endau, Johor branch of the Fisheries Development Authority (LKIM). This was the extent of observable cold storage at this fisheries landing port. Photograph taken August 2008.

Consequently, a complex market and fish distribution structure has developed that is loaded with multiple layers of middle-traders (sometimes referred to as *Tauke*) and their collection agents (referred to as *Daganan*). Such traders benefit from social and economic relationships with many coastal fishers. These relationships are often mediated or result from past financial arrangements (e.g., loans to fix outboard engines or nets or to purchase boats).²¹⁵

²¹⁵ Interviews during site visits in August with LKIM officers in Pahang and Johor suggest that the financial obligatory links between small-scale fishers and *Tauke*, may no longer be as prevalent as they were; as the Fishermen's Association [sic] provides very low-interest loans (2%) up to a maximum value of RM25,000 to assist

Such a social link of indebtedness between fisher and wholesaler, as well as the fact that the main markets for east coast fish production (apart from that directed for processing) are on the west coast where population densities are greatest, results in a fish distribution system of many layers that entail barriers to entry (**Figure 2.11**).

Ishak (1994) asserted that the primary channels of fish distribution involve intermediaries who are engaged in one or more of the following stages, "sorting, assembling, transporting, wholesaling, and retailing".²¹⁶ The major participants in the trading activity include boat owners, fish assemblers, coastal wholesalers, fishermen's associations [sic], consignment or commission agents, itinerant dealers, retailers, and a small number of consumers. Fish catch is assembled at any one of the many hundreds (regulated and non-regulated) of landing sites, where most of the catch is sold by fishers under pre-agreed or market day rates that are often inequitable (if not sold through LKIM landing ports, although prices achieved are sometimes not much better) in favour of wholesalers. After which the wholesaler either transports the fish to west coast distribution centres or hands them over to transporters for that purpose (**Photo 2.5**). Some of the catch may be sent for export or local consumption.²¹⁷ Once the fish reach west coast distribution centres, they

traditional fishers with the purchase or maintenance costs of vessels and fishing gear.

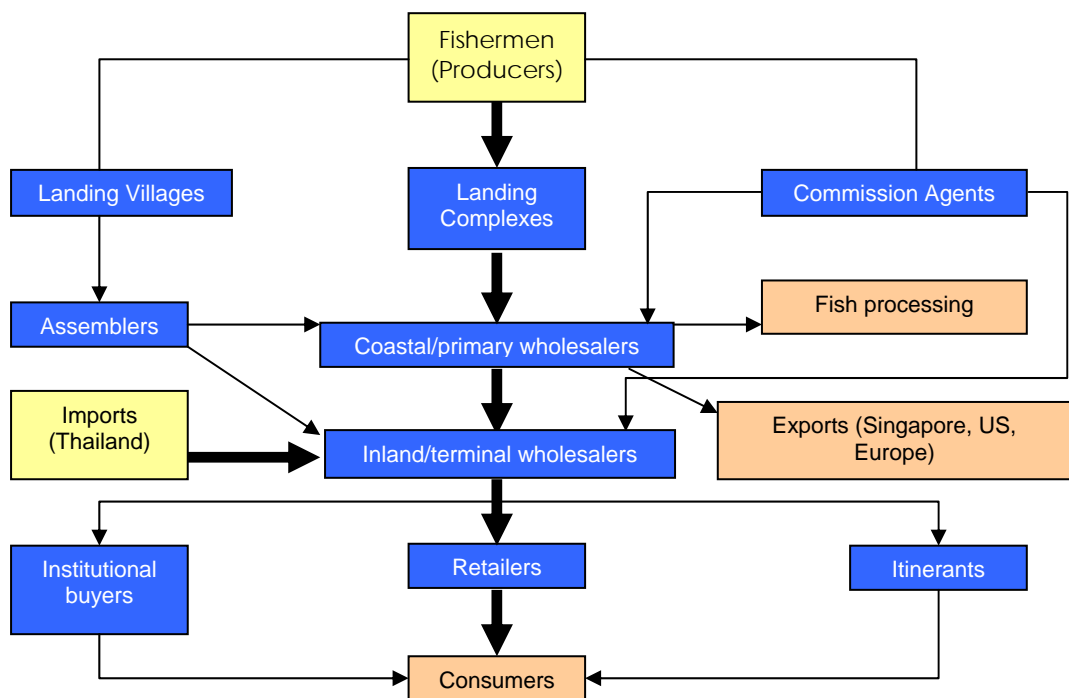
²¹⁶ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy - The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 39.

²¹⁷ Some local consumption distribution may be controlled by fishers themselves, and in such an arrangement, better prices achieved; therefore, monthly incomes for this group are likely to be enhanced over those who sell direct to local wholesalers (*Tauke*).



are often forwarded on by further layers of wholesalers prior to reaching consumers (Figure 2.11). The multifarious nature of this structure is likely to play a pivotal role in the continued poverty of east coast fishers. "As fish move from one trade level to another, the trading parties tend to maintain relations with one another; thereby, dependencies and influences are established".²¹⁸ Often these dependencies leave fishers in a situation of continued indebtedness where the mobility and option to sell to another buyer are restricted.

Figure 2.11: Marketing Channels for Fish in Peninsular Malaysia



Source: Reproduced from - Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy - The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 40. Note: U.S. and Europe added (not in original schematic).

²¹⁸ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy - The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 39.



2.5.2 Government Market Intervention

Ishak (1994) further observed that attempts by the Fisheries Development Authority (LKIM) to intervene in the fish marketing system through fish trading projects resulted in "...heavy financial losses at all levels of the trade. Physical loss of fish; lack of fast and efficient transport, of qualified and experienced staff, and of an efficient financial control system, resulting in malpractices and pilferages; high management costs; and a general boycott and acts of sabotage by private wholesalers were some of the factors identified in the poor performance of the projects".²¹⁹



Photo 2.5: Typical scene in the fish landing and sorting area at Tok Bali LKIM Wharf. Buyers purchase straight from boat owners after inspecting the catch, even while the crew are unloading and sorting the catch.

Ishak (1994) further reported that, "since the enactment of the Fish Marketing Regulations Act of 1973, the LKIM has made several abortive attempts at market intervention through institutional participation in the trading business and

²¹⁹ After Jahari, 1981; Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 32.

through the provision of support facilities for fishermen's co-operatives [sic] to compete with coastal wholesalers".²²⁰

Photo 2.6 shows one of the latest undertakings by LKIM at market intervention. This newly developed fish landing site at Tok Bali, Kelantan was due to start operation in mid-2008, although at the time the photo was taken (December 2007) there was still much to be done (including initial dredging of the channel which will require continued maintenance dredging) towards realizing a fully-functional fish trading complex.²²¹



Photo 2.6: Tok Bali, LKIM Fish Landing and Marketing Facility nearing completion – December 2007, although reported to be stalled in August 2008. Photograph taken December 2007.

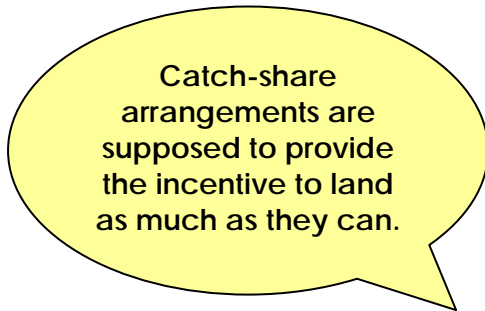
²²⁰ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 95.

²²¹ Interviews in Kelantan during August 2008, confirmed suspicions about the project stalling. Interviewees reported that as the project tender was several years old at the time of project implementation, the cumulative increases (particularly in the last year) in building material costs has resulted in funding shortfalls as the project can no longer be completed for the initial quotation price of the original tender. Observers noted that there may be a need to consider refinancing this project under current market rates in order to see the project completed and operational. *Pers Coms*, Site visit interview, Kelantan August 2008.



2.5.3 Catch-sharing Arrangements

Profits from landings are usually (unless involving a single owner/operator) divided between the vessel owner, skipper and crew and vary slightly from one location to another. Generally, there are three main systems.²²²



On **trawlers**, catch is divided into shares after deducting operating costs. The number of shares is pre-agreed between the vessel owner and crew and is based upon the value of contributions such as capital, skill or responsibility. The trawler owner will receive about half of the shares (value of the catch), while the skipper slightly more than the crew. The catch-sharing arrangements on **purse seiners** are more complex due to the larger number of crew required to operate a C or C2 Class purse seiner (minimum 15 persons). It has been reported that in general, the crew are given the first 450 kg of catch, and if the catch is less than 450 kg, then the owner receives nothing (Note: a reoccurring pattern where the owner receives nothing would likely result in a change of skipper and crew). Usually the

²²² Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries. WorldFish Centre Conference Proceedings 2003; and Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York.

first 450 kg of crew share is sold back to the vessel owner. Any catch in excess of 450 kg, is divided into shares after deducting the operating costs, where the vessel owner will usually receive five shares, while the remaining 15 or so shares go to the skipper and crew. Such catch-share arrangements, are supposed to provide the incentive to land as much as possible, otherwise very poor incomes will be the result. The sharing arrangements for **anchovy purse seines** vary, where the crew are on a base salary and commission from landings caught, suggesting that the nature of the Anchovy fishery is or has been more predictable over recent years.²²³

As the types of gear and landings fluctuate greatly in traditional fisheries, along with the nature of ownership, catch-sharing arrangements also appear to be more fluid. Nevertheless, catch-sharing arrangements do occur in traditional fisheries, although in many cases the owner may also be the skipper and the crew may well be related to the owner/skipper. In such family operated concerns, catch-sharing may be less pronounced. Also, the catch may also be in part for subsistence or for the production of traditional fish products, which are often processed by the women in the family. Where catch-sharing arrangements are in place, the owner usually receives a share that can range anywhere between 20-60%.²²⁴

²²³ Abu Talib Ahmad, Kamaruzamam Salim, Chee Phaik Ean, Mahyam Mohammad Isa and Lim Chai Fong, 2003: *An Overview of the Socio-economic Status of Fisheries in Malaysia*. Pp 517-542. In G. Silvestre *et al* (eds) Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries. WorldFish Centre Conference Proceedings 2003.

²²⁴ *Ibid.*





3.0 IUU Fishing in the East Coast Region

3.1 Background

IUU fishing is fishing activity that does not comply with national, regional or global fisheries conservation and management obligations. IUU fishing is an important factor undermining the sustainability of fisheries. It occurs in both small-scale and industrial fisheries, in marine and inland-water fisheries, as well as in zones of national jurisdiction and on the high seas.²²⁵ The FAO 2001 International Plan of Action (IPOA-IUU) to prevent, deter and eliminate IUU fishing provides a definition of IUU Fishing. See **Box 3.1**.

IUU fishing off the coast of Peninsular Malaysia takes various forms; a significant one of which is the violation of licensing conditions. Between 1997-2005, violation of licensing conditions in Malaysia contributed to more than 80% of reported fishing offences, as shown at **Figure 3.1**. Contravention of fishing license conditions often relates to gear type; fishing ground or zone; home port; or crew welfare.

In the east coast region of Peninsular Malaysia, there are several marine parks that include the Pulau Perhentian, Pulau Redang and Pulau Tioman groups of marine parks

islands. Incidences of fishing within marine park limits have been reported.

Fishing undertaken by unauthorised foreign fishing vessels in the Malaysian Fisheries Waters is a commonly cited form of IUU fishing. Whilst this activity is discussed in this chapter, IUU fishing by unlicensed Malaysian vessels is also identified as a problem for effective fisheries management. For the east coast of Peninsular Malaysia, the target resources include lobsters, cockle spat, turtle eggs, turtle by-catch, arowana, grouper fry and sharks.

²²⁵ Doulman, D. 2001. *A General Overview of Some Aspects of Illegal, Unreported and Unregulated Fishing*. FAO Fisheries Report No. 666. Rome.



Article 2.1 FAO IPOA – IUU.

Illegal fishing refers to activities:

- (1) conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations;
- (2) conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization and by which the States are bound, or relevant provisions of the applicable international law; or
- (3) in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization.

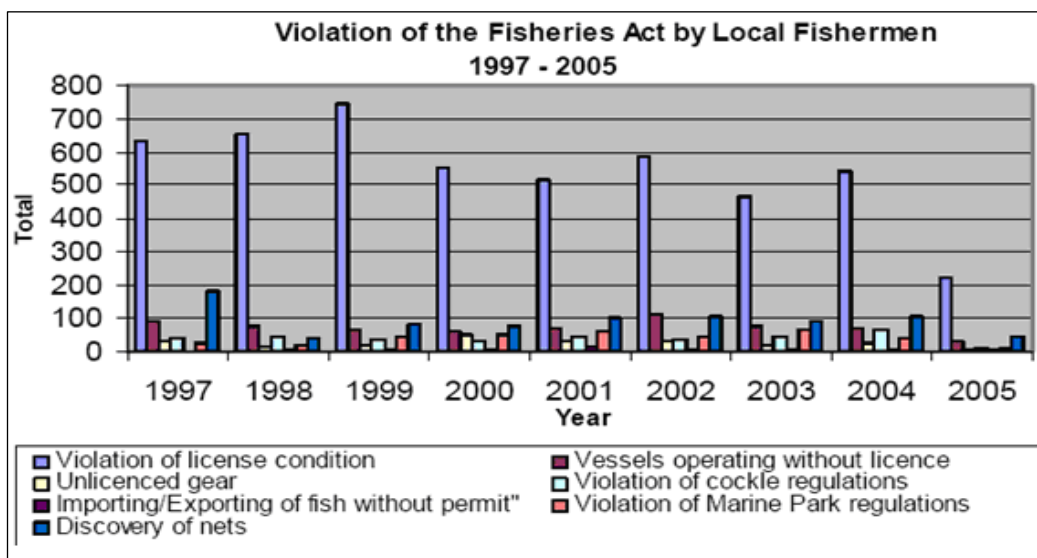
Unreported fishing refers to fishing activities:

- (1) which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or
- (2) undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization.

Unregulated fishing refers to fishing activities:

- (1) in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or
- (2) in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner consistent with State responsibilities for the conservation of living marine resources under international law.

Figure 3.1: Violation of the Fisheries Act by Local Fishers between 1997-2005



Source: Mohd Nizam Basiron, *Marine Environment Law: Development and Compliance*. Maritime Institute of Malaysia (MIMA Online) 2006.



3.2 Violation of Fishing License Conditions

3.2.1 Encroachment

The highest number of reported violations relate to the incursion of deep-sea commercial fishers into fishing zones A and B, which are reserved for artisanal and smaller-scale fishing.²²⁶ These incursions not only cause degradation of the coastal environment, but also result in collisions with small-scale fishing vessels, causing gear damage and often human casualties.

Nonetheless, Vincent (1997) noted that the financial gains made by violating these zones outweighs the sanctions imposed by the Fisheries Act, and that violators at that time viewed the risk of being caught as low given the state of fisheries law enforcement.²²⁷ Not only are the risks of being apprehended considered low by some fishers (interestingly, a study conducted by Kuperan *et al.* in 2002, calculated the probability of apprehension for fisheries offence at less than one percent.²²⁸), but also fishers often have no great concern in getting caught as licences can be renewed under another name legitimising continued fishing operations. (The “real” ownership of the vessel and license remains the same as prior to license renewal).²²⁹

²²⁶ *Ibid.*

²²⁷ Vincent, J.R. *et al.* 1997. ‘Environment and Development in a Resource-Rich Economy’. *Malaysia Under the New Economic Policy*. Harvard Institute for International Development.

²²⁸ *Op. Cit.*, Basiron, p. 24.

²²⁹ Pers Coms - Reported by LKIM/PNK Officers during field trip interviews in August 2008. A fine of RM300 per infringement was reported. This low penalty suggests that it only applies to traditional fishers. Offences under the Fisheries Act are liable to a fine not more than RM20,000 or a term of imprisonment less than two years (local fisherman) or if the offence is committed by a foreign fishing vessel / foreign national, the fine is not more than RM1 million (master/owner) and RM100,000 for each crew member, respectively. However, penalty following

Over the years, traditional fishers have complained about the encroachment of industrial fleets into traditional fishing zones, destruction or damage of fishing gear in traditional fishing zones, and a decline in fish stocks as a result of trawling.²³⁰ Commercial fishing vessels have more storage space and nets with greater capacity than do traditional fishing boats. Therefore, the encroachment of commercial fishers into traditional fishing grounds crowd out artisanal fishing effort. It also leaves the near-shore fishing grounds unproductive and less able to replenish fish stocks.

3.2.2 Fishing Gear Violations

Another form of violation of fishing license conditions relates to gear type. The *Fisheries Act* 1985 bans the use of pair trawling and fishing nets of more than 10 inch mesh size.²³¹ The minimum mesh size regulation is 1.5 inches. Fishing vessels are considered to be operating illegally if they deploy these banned gears. Again, enforcement has not been strong, and such practices persist.

conviction of an offence contravening the Fisheries (Maritime) (Licensing of Local Fishing Vessel) Regulation 1985, is a fine not exceeding RM1,000 – (section 22).

²³⁰ See also extensive discussion of this problem in Chapter One of this report.

²³¹ Fisheries (Prohibition of Method of Fishing) Regulations 1980 [Made 10 September 1980] s2. “No person shall use for the purpose of fishing or have in his possession or on board any vessel any fishing net, trap, appliance or device described in the schedule.” Schedule No.4: “Any drift net, gill net or any net which is similar to any drift net or gill net with a mesh size of more than 25.4 cm (10 inches) operated anywhere between the water surface and the sea-bed by drifting or anchoring”. [ins. PU(A) 32/90]



Box 3.2: Stiff penalty to deter foreign fishers.

May 20, 2008 19:20 PM

Stiff Penalty To Deter Foreign Fishermen

KUALA LUMPUR, May 20 (Bernama) -- The government Tuesday pointed out that the exorbitant fines imposed on foreign fishermen found to have intruded into Malaysian waters aims to check such incursions and protect the country's marine resources.

Agriculture and Agro-based Industry Minister Datuk Mustapa Mohamed said the provisions under Section 25(a) and Section 52 of the Fisheries Act 1985 aimed to look after the interests of local fishermen so that their incomes were not affected.

"We realise that many of the foreign fishermen caught could not afford to pay the stiff penalty imposed and most of them opted to go to jail.

But the question is, if this is not done and they are released, they will certainly intrude into our waters and Malaysians will have no opportunity to fish.

"So the government feels that this is an appropriate measure and with the stiff penalty and the power to confiscate (fishing equipment), we have to a certain extent curbed these illegal activities," he said.

He said this when responding to a question from Ngeh Koo Ham (DAP-Beruas) who wanted to know whether the government was aware that the country had to bear the cost of accommodating foreign fishermen who were caught and jailed after failing to pay the exorbitant fines.

Figure 3.2: Encroachment by Foreign Vessels in Malaysian Fisheries Waters.



Indeed, enforcement activities for fishing net mesh size are presently lacking due to the scale of non-compliance with regulations.²³² Another gear infringement is the use of more than one gear by a single licensed vessel. Interviews during site visits in August 2008 confirmed that Class A and B vessels often use more than one fishing gear, although the vessel is only licensed to use a single gear type.²³³

Table 3.1 shows reported cases of the use of illegal mobile fishing gears in Malaysia from 1990 to 1999. Destructive mobile fishing gears in Malaysia consist of otter trawling, pair trawling and push net.²³⁴ Otter trawling activities in Malaysia are licensed and managed according to the fisheries zonation system.²³⁵ **Table 3.1** suggests that pair trawling and push net offences were insignificant in the east coast Peninsular Malaysia in the 1990s.

Table 3.1: Reported cases of otter trawling, pair trawling and push net offences in Malaysia from 1990-1999

States	Otter Trawling	Pair Trawling	Push Net
West coast of Peninsular Malaysia			
Perlis	308	1	1
Kedah	957	2	19
Penang	242	22	2
Perak	1638	536	87
Selangor	631	-	2
Negeri Sembilan	0	-	-
Melaka	2	-	3
East coast of Peninsular Malaysia			
Kelantan	65	-	-
Terengganu	206	-	-
Pahang	318	-	-
Johor	924	5	-
East Malaysia		-	
Sarawak	217	-	-
Labuan	50	-	-
Sabah	NA	-	-

²³² Pers Coms – Statement made by DOF officials when questioned about the level of enforcement particularly on net mesh-size at a Seminar on Marine Fisheries and Aquaculture Management organised by MIMA, 5 August 2008.

²³³ Pers Coms - Reported during field trip interview with University Terengganu Malaysia in August 2008.

²³⁴ Otter trawling is also known as dragging. It is one of the most commonly used techniques for fish harvesting. In otter trawling, a large net is dragged along the bottom or up in the water column behind a towing vessel. The mouth of the net is held open by two large "doors" which are attached to either side of the net. The net is dragged behind the boat with a thick steel cable. Once the back of the net, called the bag, is filled with fish, the net is hauled back aboard the vessel, the catch is spilled from the bag, and the net is redeployed. Pair trawling is trawling by two vessels towing the same net. Push net consists of a net and two poles to keep the net open while it is pushed by an engine-driven boat. Source: Zakariah, Z.M. 2004. *Destructive Fishing in Malaysia: The need for local participation in fisheries management*. Maritime Institute of Malaysia.

²³⁵ *Ibid.*



Photo 3.1: Malaysian Class C purse seine boats at Kuala Besut, Terengganu



3.3 Unlicensed Fishing

3.3.1 *Illegal Local Vessels*

Marine fisheries are regulated by vessel and gear licenses issued by the DOF for four classes of vessels, i.e., A, B, C or C2. A license is given for the operation of the vessel, and another for the use of a specific gear (normally, one gear per vessel). There is no need for fishers to be licensed or qualified. However, commercial fisheries workers are encouraged to undergo fisheries training for the operation of vessels and specific fishing gear. Such training is provided by the DOF and the Ministry of Human Resources via the National Occupational Skills System (NOSS) training program.

In a recent assessment of IUU fishing and fisheries capacity management, Morgan *et al* (2007) observed that from official survey responses, Malaysia reported no significant change in the level of IUU fishing undertaken by locally-based vessels (national vessels).²³⁶

Although no quantification of the level of local vessel IUU fishing within Malaysia was reported in the study, such a response nevertheless supports the fact that IUU fishing by local vessels does occur and has been acknowledged by Malaysia as a reality of the current industry. Supporting this conclusion are observations made, and statements taken during recent site visits along the east coast, which revealed that there is a significant proportion of coastal fishing at the traditional village level that occurs without

vessel or gear licenses (i.e., unlicensed fishing). Some interviewees estimated the number of unlicensed traditional vessels at roughly 50% of the total traditional vessel fishing fleet. It was even suggested that of the 4,000-5,000 sampan operating in the State of Johor, only a handful were licensed as part of the Class A category, sometimes shown in the statistics as the *Enjin Sangkut* category.

As indicated in Chapter One of this report, there would appear to be an informal policy not to require traditional fishers (based in the coastal zone) to obtain fishing vessel or gear licenses.²³⁷ Occasionally, traditional fishers may operate alongside larger licensed vessels far from the coast but, in the main, they operate almost exclusively within the five nautical mile limit. More recent interviews along the east coast, have indicated that both fisheries research institutions and the Fisheries Development Authority, in tandem with the Fishermen's [sic] Association, have been revisiting the renewal of a plan to license part-time, or otherwise - termed 'traditional recreational' fishers. Such an initiative would be an attempt to move away from the status quo approach. Fishers seem to support this concept as consistent with efforts to establish legitimate rights in the near-shore fishery.

The Minister of Agriculture and Agro-based Industries also recently announced to the National Fishermen's Association (Nekmat) that the government would look into unfreezing up to 16,000 fishing licenses (see

²³⁶ Morgan, G., Staples, D., and S. Funge-Smith, 2007: *Fishing Capacity Management and IUU Fishing in Asia*, RAP Publication 2007/16, Asia-Pacific Fishery Commission, Food and Agriculture Organisation of the United Nations Regional Office for Asia and the Pacific, Bangkok, 2007, pg 21.

²³⁷ Pers Coms – Reported by Fisheries Officers during field trip interviews in December 2007-January 2008, and confirmed by a former top level Director of the Department of Fisheries.



Box 3.3).²³⁸ Unfreezing up to 16,000 licenses would imply that there are perhaps up to 16,000 unlicensed fishers operating primarily in the coastal zone. The Nekmat general manager was reported to have stated that, “there are vessels that operate without licenses...”²³⁹

In response to the announcement by the government, WWF Malaysia advised in a letter to the Editor in the *New Straits Times*²⁴⁰ that further licensing would not be sustainable given that coastal fisheries operate in the already over-exploited coastal zone. WWF further urged the government to reconsider the proposal to ‘unfreeze’ the fishing licences. However, through licensing, unlicensed fishers hope to establish firm rights in an area where they compete against those operating vessels licensed as Class A.²⁴¹ If licensing results in regulating IUU fishers, the DOF, through LKIM fish landings data collection, might gain improved information on the total tonnage landed in Malaysia.

The suggestion to license further full-time or part-time traditional fishers would appear to contradict recent efforts by the DOF to reduce fishing effort within the coastal marine fisheries sub-sector.²⁴² A current moratorium on new licenses has probably been undermined to an extent by these traditional fishers (sometimes misleadingly referred to ‘recreational’ fishers) who merely continue to

fish with or without an appropriate license, comforted in the knowledge that they will likely never be caught nor prosecuted for their activities (i.e. undertaken at a subsistence level).

Historically, Ishak (1994) commented that in the 1980s and early 1990s:

“Despite existing legislative laws on fishery resource use, the conduct of operation for the different types of gear, and the limits of the territorial waters, it has proven extremely difficult to enforce the laws because of the limited number of patrol crafts available, most of which are ill equipped. Even those fishermen [sic] caught violating the laws are sometimes not prosecuted because of political interference at the local level...”

The moratorium on new licenses and other factors, such as limited regulatory tools, monitoring and enforcement, have resulted in an un-quantified level of unlicensed fishing by boats that would otherwise need to be licensed as Class A or B vessels.²⁴³ Many of these unlicensed fishers live in the numerous fishing villages scattered along the east coast of Peninsular Malaysia.

²³⁸ Government to look into frozen fishing vessel licenses, *New Straits Times*, 29 August 2008.

²³⁹ *Ibid.*

²⁴⁰ Review Plan to unfreeze permits, *New Straits Times*, 5 September 2008, pg 29.

²⁴¹ Pers Coms - Reported during site visit to LKIM offices in Terengganu and Pahang in August 2008.

²⁴² Indeed, the Director-General of Fisheries was reported to have stated in 2007 that he wanted to keep the number of people in the fishing industry under control by being strict about the number of licenses issued. “Government to look into frozen fishing vessel licenses”, *New Straits Times*, 29 August 2008, pg 9.

²⁴³ Pers Coms – Reported by Fisheries Officers during field trip interviews in December 2007-January 2008.





Govt to look into frozen fishing vessel licences

By Suganthi Suparmaniam

2008/08/29

KUALA LUMPUR: Despite grave concerns about overfishing in the country, the government has promised to look into unfreezing some 16,000 fishing vessel licences. Agriculture and Agro-based Industry Minister Datuk Mustapa Mohamed promised fishermen at the annual meeting of the National Fishermen's Association (Nekmat) yesterday that he would look into the matter.

The licences had been frozen since 1982 to protect the country's fishery resources and industry.

The unfreezing of the licences came as a surprise as the Fisheries Department had expressed concern about the issue of overfishing last year.

Its director-general, Datuk Junaidi Che Ayub, was quoted, in an interview with the New Straits Times in May last year, as saying that he wanted to keep the number of people in the fishing industry under control, by being strict about the number of licences issued.

He said the department might also introduce seasonal fishing to curb overfishing.

In 2006, coastal fishermen harvested 1.4 million tonnes, when they should only harvest 900,000 tonnes.

More than 80 per cent of fish landed in Malaysia come from coastal areas.

Nekmat general manager Norizaman Ghazali said the government's promise to look into the issue of frozen licences was related to complaints from fishermen who owned vessels but could not register them.

"There are vessels that operate without licences and, besides, the issuing of new licences is long overdue."

There are 38,000 registered vessels in the country. Fishermen whose vessels are not registered are not entitled to the e-diesel cards which allow them to buy subsidised diesel.

On another matter, Mustapa said the government was extending the closing date for fishermen to apply for the fishermen's registration card which allows them to claim RM200 monthly allowance up to Oct 31.

Some 70,000 fishermen are registered with the Malaysian Fisheries Development Authority but less than a quarter have applied for the registration card which is valid for five years.

The allowance is meant to help fishermen deal with the rising cost of living.

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Source: 'Government to look into frozen fishing vessel licences' 29 August, 2008: New Straits Times, New Straits Times Press (Malaysia), extracted 29-08-08 from <http://www.bernama.com.my/bernama/v3/news.php?id=334216>



Of the previously reported 350 fishing villages located along the coastline of Peninsular Malaysia²⁴⁴, a calculation based upon reported fish landings, the number of licensed vessels per State, geographically suitable locations and the number of registered fishers on each coast, suggests that 140-150 of these fishing villages are located on the east coast. From within this number of potential landing areas there are indeed likely to be many hundreds of private jetties operating quite busy enterprises. Indeed, this was corroborated by one contact who stated that:

"There are literally hundreds of tiny, open boats with outboard engines that are not licensed. They're officially described as recreational boats; they don't even go out more than one mile to sea. They land fish at private jetties. There are so many of the private jetties that nobody could monitor them all. For example, there are at least 50 private jetties at Bachok, and about 30 at Kamasing".²⁴⁵

Many of the small sampan used by part-time fishers do not require jetty facilities at all and may be hauled up on the beach as shown in **Photo 3.2**. An understanding of the socio-economic and political context is essential to appreciate some of the driving forces behind the current rate of unlicensed fishing along the east coast. As shown in Chapter Two of this report, some east coast fishers (licensed or part-time) generally live on incomes that are below the amount needed to support themselves and their families, i.e., living below or close to the official poverty line. Moreover,

²⁴⁴ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York.

²⁴⁵ Pers Coms – interview with Kelantan-based fisheries industry contact – 01 July 2008.

the official poverty line measure may not be a reasonable indicator of poverty, as the threshold for poverty continues to be set at a very low rate (RM529/month/household for Peninsular Malaysia in 2002 [roughly USD\$150/month/household]).

Ishak (1994), reported that, "typically, fishing villages are located at river-mouths which are often isolated and lacking in physical, social, and public amenities such as water supply, electricity, medical clinics, schools, and proper housing".²⁴⁶ **Photos 3.4 & 3.5** show examples of typical fishing villages and a typical standard of housing observed on the east coast in 2006 and 2008. These images suggest that little has changed with regard to the socio-economic status of many fishing families since Ishak's research pre 1994.

Reportedly, the income of fishers is so low that fishing families sometimes cannot afford basic necessities, such as toothpaste or soap.²⁴⁷ However, other sources suggest that there are now very few fishers on incomes of less than RM1,000/month²⁴⁸. Nevertheless, **Photos 3.4 & 3.5** do show a substandard level of housing typically found along the east, which suggests a continued low income segment of the population.

A brief review of government financial assistance to low-income families

²⁴⁶ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, pg 26.

²⁴⁷ Pers Coms – Reported to the authors in June 2008 by a contact who discussed their experiences and observations while staying in a fishing village in Northern Kedah, Peninsular Malaysia. While this person stayed with a family where fishing was the primary source of income, the family were reported to be embarrassed about not having these essential items. The household incomes of Kedah fishers were reported to be higher than that reported for much of the east coast of Peninsular Malaysia.

²⁴⁸ Pers Coms – Reported by a number of fisheries officials during site visit interviews conducted 11-14 August 2008.



demonstrates that poverty within the fisheries sector (mainly at the traditional village level) is a concern for Federal and State governments. For example, Federal assistance to fisher communities was RM39.02 million from 1971-1975; RM319.90 million for 1984-1989 period; RM263.35 million for the 1990-1994 period; and RM663.8 million for the period 2006-2010 (Ninth Malaysia Plan).²⁴⁹



Photo 3.2: Outboard powered fishing boats used mainly by part-time fishers. Photograph taken at Terengganu December 2007.

Recently, the government announced a further allocation of RM4 billion to the Rural and Regional Development Ministry, "...targeted to pull about 10,000 families out of hardcore poverty".²⁵⁰ The Minister for Rural and Regional Development, Malaysia, Tan Sri Muhammad Taib stated that, "the needs are huge, but the means are lacking, so we will have to prioritise".²⁵¹ Another driving force for unlicensed fisheries may be "the monopoly over fishing licenses by traders, and the lack of a competitive market that could threaten ownership of these licenses...".²⁵² Traders have been reported to hold an average of 2.5 licenses each, with some traders

operating up to eight vessels. This effectively leaves limited room for new entrants.

Unlicensed fishing by other sectors also affects traditional fishing villages, where trawler owners have been observed to employ *Orang Asli* (indigenous people) to operate trawlers near shore. Such unlicensed fishing is reportedly undertaken by errant trawler operators because when the "...boat and crew are detained for illegal fishing, these *Orang Asli* are unlikely to reveal the name of the operators [vessel owners] due to their ignorance of the law".²⁵³ Further, these illegal operators "...sometimes team up with their counterparts from Indonesia to smuggle goods and even illegal immigrants".²⁵⁴ Local fishers in Batu Pahat and Pontian, in East Johor stated that they "want[ed] a stop to the encroachment of their local fishing grounds...[as the fishers]...claimed that they had incurred heavy losses and that their fishing gears were often destroyed by the bigger trawlers".²⁵⁵ Some *Orang Asli* were reported to believe that they are not bound by fisheries laws and regulations, and this misconception may further confound control efforts.

Although, not directly related to IUU fishing, the contextualisation of associated poaching in a broader coastal context nevertheless suggests that there may be a cultural tolerance of such practice in some places on the east coast. In one instance, the State Wildlife and National Parks Department, Terengganu officers involved in a water fowl poaching operation (mainly *Gallinago cinerea*)

²⁴⁹ Malaysia, Ninth Malaysian Plan, Chapter 3, pg 106.
²⁵⁰ Ridzwan Abdullah, "Ninth Malaysia Plan mid-term review: RM4b more for the poor", *New Straits Times*, 20 June 2008.
²⁵¹ *Ibid.*
²⁵² Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, pg 70.

²⁵³ Maizatul Nazlina, 1997: *Orang Asli hired to operate illegal trawlers*, *Star Publications*, 14 April 1997, extracted 30 June 2008 from <http://161.139.39.251/akhbar/fisheries/1997/st97414.htm>.
²⁵⁴ *Ibid.*
²⁵⁵ *Ibid.*



apprehended a number of local poachers. The raid reportedly netted more than RM 30,000 worth of water fowl (expected to be the black market price) and traps at Telaga Papan in Setiu and Lubuk Mandi in Marang, Terengganu.²⁵⁶

3.3.2 Illegal Fishing by Foreign Vessels

The EEZ off the east coast Peninsular Malaysia shares a boundary with the EEZ of Indonesia, Thailand and Viet Nam. However, the exact locations of the EEZ boundaries are yet to be delineated and there are no maps showing the extent of the EEZ boundary. Unauthorized incursion of foreign fishing vessels from Thailand and Viet Nam into the Malaysia Fisheries Zone is common.²⁵⁷ Vessels from Indonesia and Chinese Taipei are also known to fish in Malaysian waters but not as frequently as vessels from Thailand and Viet-Nam.²⁵⁸ Boats from Thailand and Viet Nam are most usually detected north of Kuantan.²⁵⁹ Table 3.2 shows the prevalence of fishing vessels detected as encroaching into Malaysian waters and number of vessels detained from 1991-2002. The low detention rate by the enforcement authorities is notable in the context of the frequent reported detections of encroachment throughout the reporting period. Nevertheless, according to DOF, the arrest and detention of foreign vessels increased from 2001 to 2004.



Photo 3.3: A dwelling at an island fishing village: Kampong Hulu Redang, Terengganu in 2006



Photo 3.4: Street scene at fishing kampong Pulau Duyong, Terengganu 2006.

Table 3.2: Number of fishing vessels encroaching Malaysian waters and number of vessels detained, 1991-2002

Year	Number of encroachment	Number of vessels detained
1991	2,442	158
1992	2,696	96
1993	1,336	107
1994	1,122	148
1995	1,150	124
1996	1,446	113
1997	1,206	62
1998	1,616	61
1999	1,184	67
2000	890	67
2001	873	99
2002	588	112

Source: Salleh, I.S. (1998): *Maritime Enforcement Coordination Centre (2000,2001,2002)*, as cited in Mohd Nizam Basiron, *Marine Environment Law: Development and Compliance*. Maritime Institute of Malaysia (MIMA).²⁶⁰

²⁵⁶ Zarina Abdullah: Poached Water Fowl, traps seized, *New Straits Times*, 21 May 2003, extracted 30-06-08 from www.jphpk.gov.my/English/May03%2021F.htm.

²⁵⁷ Pers Coms – Interviewees during the site visits along the east coast confirmed that incursions of foreign vessels has been an ongoing matter for the past 20 years, particularly since Thailand's fishery stock collapsed roughly 20 years ago.

²⁵⁸ Interview with Head of Enforcement Section, Malaysian Dept of Fisheries, 8th July 2008.

²⁵⁹ *Loc. cit.*

²⁶⁰ *Loc. cit.*



Table 3.3 shows the reported detention of foreign vessels fishing off the east coast Peninsular Malaysia from March 2006 to March 2008.²⁶¹ Since March 2006, only 14 cases of detention of foreign fishing boats were reported in this area.²⁶² Seven cases involved vessels from Viet Nams, followed by six vessels from Thailand, with one case involving Singapore fishermen. Sixty-four percent of these fishing offences occurred off the coast of Terengganu. Such a low arrest rate is remarkable, and may suggest that surveillance and enforcement measures during the period were not strong. Indeed, in 2008, the DOF Enforcement Section had to reduce the number of sea patrol days from its target of 60% (i.e. 20 days per month per vessel) because of a rising cost of fuel.²⁶³ Whilst Malaysian fishing vessels enjoy access to subsidised fuel at around RM1.43/litre, DOF enforcement vessels must pay full market rate which have reached as high as RM3.53/litre (according to July 2008 prices).

Illegal foreign fishers are present in Malaysian waters particularly during the monsoon season when rough seas keep local fishers and enforcement officials on shore.²⁶⁴ Reportedly, Thailand fishers often operate close to the maritime border area to enable quick exit in case of the arrival of Malaysian enforcement authorities. Some of these fishing vessels are equipped with high-technology radio frequency scanners to help

them monitor the location of Malaysian patrol boats.²⁶⁵

However, a recent paper by Sutarji *et al* (2008) noted that almost all arrests of foreign fishing vessels for illegal fishing were made inside the Malaysian EEZ. In both 2006 and 2007, three arrests were made just outside the territorial sea (12 nm), and from 2005 to 2007, most arrests were made between 40-80 nm from the Malaysian shoreline²⁶⁶.

²⁶¹ The data is extracted from web address at www.illegal-fishing/info, which is run by Chatham House. Chatham House, formally known as the Royal Institute of International Affairs, is a non-profit, non-governmental organization based in London. However, data from the Prime Minister's Department, Malaysia, claim a higher arrest rate of 19 vessels in 2006 and 39 in 2007.

Source: <http://www.chathamhouse.org.uk/>

²⁶² *Ibid.*

²⁶³ Pers Coms, Interview with the Head of Enforcement Section, Malaysian Dept of Fisheries, 8th July 2008

²⁶⁴ Marsh, J.B. 1992. *Resources and Environment in Asia's Marine Sector*. Taylor and Francis Ltd. Washington D.C.

²⁶⁵ Salleh, I.S.M. 1998. *Industri Perikanan Negara: Krisis Pengurusan Penguatkuasaan Antara Agensi*. (Accessed 13th June 2008). Available at: <http://www.mima.gov.my/mima/htmls/papers/pdf/sazlan/ikan.pdf>

²⁶⁶ Sutarji, H.J & Hashim, N.R. July 2008. *Application of GIS and Statistical Methods for effective Marine Fisheries Law Enforcement in the South China Sea* Paper presented at NAFIS, Kuala Terengganu, July 2008. p.14.



Table 3.3: Cases of reported foreign fishing vessels encroaching into the waters of the east coast of the Economy of Peninsular Malaysia.

Date	Economy	Location	Incidence
13/4/08	Thailand	80 nm from Kuala Terengganu	7 fishermen arrested for trawling illegally
25/2/08	Viet Nam	Con Dao Archipelago	Fishing boat was held by Malaysian coast guard for 10 days.
13/11/07	Singapore	Off the east coast of Johor	2 Singapore registered vessels were detained and a total of 300 kg of fish are seized.
10/10/07	Viet Nam	Bachok, Kelantan	DOF seized 2 boats and detained 12 crew members on Ops Hulubalang Bersepadu.
22/8/07	Thailand	85 nm from Kuala Terengganu	The vessel was spotted near an oil rig. The vessel was escorted to K.T. Fisheries Department for the next course of action.
10/8/07	Viet Nam	Terengganu	Around 200kg of fish worth US \$ 870 was found. 13 crew members were detained.
15/6/07	Thailand	Northern Kelantan	Marine police detained 31 Thailand nationals and seized a large fishing trawler after a 30 minutes chase.
4/6/07	Viet Nam	80 nm of Terengganu	MMEA caught 11 fishermen from Viet Nam poaching in the vicinity of Dulang oil platform.
28/5/07	Thailand	Terengganu	Malaysian navy detained 8 fishermen and a vessel carrying fish.
27/5/07	Thailand	63 nm Northeast of Tanjung Gelang, Kuantan	Malaysian navy arrested 8 crews after the Royal Malaysian Air force detected the vessel.
24/5/07	Viet Nam	Terengganu	MMEA arrested 2 fishing boats and 15 fishermen, and also seized 80 kg of fish worth US \$294.
19/9/06	Thailand	94 nm off Kuala Terengganu	DOF detained 8 fishermen and their fishing boat during Ops Samudera Gagah.
19/9/06	Viet Nam	Kuala Terengganu	DOF detained 7 fishermen and their fishing boats during Ops Samudera Gagah.
24/4/06	Viet Nam	50 nm off Kuala Terengganu	6 crew members were brought to court and were fined RM 500,000

Adapted from: Chatham House illegal fishing statistics, extracted from www.illegal-fishing.info

In recent years, the number of Thailand fishing vessels arrested has fallen, whilst the number from Viet Nam vessels has increased. However, the increased detention of vessels from Viet Nam reflects the possibility that these vessels are slower and less sophisticated than fishing boats from Thailand.²⁶⁷ Foreign fishing vessels have been noted to operate in groups to reduce the risk of being caught. Supply / transshipment boats are also used to provide food and provisions in addition to transferring catch, which allows foreign vessels to operate at sea for long periods. IUU fishing vessels need enter foreign ports with

illegally caught fish, which can instead be laundered by mixing with legally caught fish onboard transport vessel and returned as domestic catch to the country/Economy of origin of the vessel. Conflicts arising from illegal fishing in Malaysian waters by Thailand and Indonesian boats are of concern as some have resulted in violence and even death. One incident in the 1980s involved a Malaysian coastal patrol craft firing at a Thailand trawler, leaving a crewman dead and another wounded.²⁶⁸ In 2006, a Thailand fisherman was wounded after an enforcement squad opened fire during a

²⁶⁷ Pers Coms, Interview with the Head of Enforcement Section, Malaysian Dept of Fisheries, 8th July 2008

²⁶⁸ Lim, T.G. et Valencia, M.J. 1990. *Conflict over natural resources in Southeast Asia and the Pacific*. United Nations University Press. New York.



boat chase.²⁶⁹ In the same year, Malaysian marine police fired warning shots at an Indonesian registered fishing boat found in Malaysian waters, and wounded two Indonesian crew members.²⁷⁰ Malaysia not only has arrested foreign fishers caught fishing illegally but has also confiscated their vessels and equipment. Malaysia has difficulty enforcing fishery laws because of a limited enforcement capacity and the technologically advanced design and configuration of some foreign fishing vessels. Even those fishers caught violating the laws are sometimes not prosecuted because of political influence that is sensitive to unclear maritime boundaries or the need to maintain good political relations with neighbouring Economies at the regional level.²⁷¹

3.4 Destructive Fishing

While illegal trawling is known to occur in coastal waters, other forms of destructive fishing, for example fish bombing and cyanide fishing, have taken place in Malaysia in areas with coral reef cover. Cyanide fishing requires fishers to dive on reefs and squirt cyanide in coral crevices and directly on fish, stunning the fish and making them easy to catch. However, the practice also poisons coral polyps in the process. Cyanide fishing mainly supplies live reef fish for the tropical aquarium market but some fish caught using cyanide are also sold to restaurants. Extensive live food-fish trade to meet rising demand in Hong Kong, China and China has decimated

many endangered species.²⁷² Researchers studying the trade in Malaysia found that catches of some grouper species and the Napoleon wrasse fell by as much as 99 percent between 1995 and 2003.²⁷³ The extent of cyanide fishing in the east coast of Peninsular Malaysia is difficult to determine, but generally believed to be low if it occurs at all. Incidences of cyanide fishing are high elsewhere in Malaysia, especially in Sabah, East Malaysia.

The use of explosives (blast fishing) has also been reported in Malaysia. Self-made bombs not only kill fish in the vicinity but also demolish coral structures that function as fish habitat. However, blast fishing has not been identified as a problem in Peninsular Malaysia and appears to be confined to Sabah.²⁷⁴

²⁶⁹ Fisheries deputy DG defends enforcement squad who opened fire. 23/3/2006. Bernama (Malaysian National News Agency).

²⁷⁰ Indonesia summons Malaysian envoy over shooting of fishermen. 21/9/2006. Xinhua.

²⁷¹ Omar, I.H. 1994. *Market power, vertical linkages, and government policy-The fish Industry in Peninsular Malaysia*. Oxford University Press. Kuala Lumpur.

²⁷² Hong Kong contributes US \$ 400 million to the estimated \$ 1 billion of the global live-food fish trade. Source: Life Reef Fish Trade in the Pacific Islands. 24 May 2005. Seaweb.org.

²⁷³ 'The taste for live fish is decimating endangered species, study shows.' 24th January 2007. The Associated Press. (Accessed 29th June 2008). Available at: <http://www.iht.com/articles/2007/01/24/news/fish.php>

²⁷⁴ Interviews during site visits in August 2008, confirmed that there have been no known cases of fish bombing or cyanide fishing along the east coast in recent years. Therefore, these destructive and illegal activities appear only to occur in Sabah primarily.



3.5 Fishing in Marine Protected Areas



Photo 3.5: Advertisement by a Singapore travel agency for fishing holidays in the Pulau Aur marine protected area.

Source: www.nemotravel.com.sg

Frequently, latitude is shown to allow traditional, small-scale fishers to fish in marine protected areas (MPA).²⁷⁵ Such fishermen argue that they have fished for centuries in the areas and have no alternative source of livelihood. However, anecdotal reports suggest that such fishing activity can be considerable. For example, at Pulau Aur, which is a marine park,²⁷⁶ one diver reported in 2006 that "On several occasions recently around Aur, it's like we have to wait for the fishing trawlers to pull up their nets and get out of the way before we can dive on the sites... I've had several dives cut short because I've stopped to cut nets off reefs or abandoned open traps."²⁷⁷ According to a dive boat skipper operating in the area, complaints were submitted to the Fisheries

²⁷⁵ Pers Coms - Interview with Fisheries Officer in Department of Marine Parks Malaysia. May, 2008.

²⁷⁶ The Johor Marine Park / Pulau Tinggi Marine Park consists of the waters surrounding 13 islands including Pulau Harimau, Pulau Mensirip, Pulau Goal, Pulau Besar, Pulau Tengah, Pulau Hujung, Pulau Rawa, Pulau Tinggi, Pulau Mentinggi, Pulau Sibul, Pulau Sibul Hujung, Pulau Pemanggil and Pulau Aur. These islands are located off the northeast coast of the State of Johor and situated between 8 to 35 nautical miles from Mersing. The island group and its surrounding waters were gazetted as a Marine Park in 1994 under the *Fisheries Act 1985* (Amended 1993). Source: Marine Parks Department, Malaysia.

²⁷⁷ Source: <http://www.malaysiadivingcommunity.com/forum/lofiversi/on/index.php/t1482.html> (Accessed 17th June 2008).

authorities on fishing operations in the marine park, but the officials replied that surveillance work is constrained by fuel shortages.

Another example of illegal fishing in an MPA is the operation of several "kelong"²⁷⁸ in the Pulau Tinggi Marine Park.²⁷⁹ These Kelong were established before the marine park was gazetted; however, their continued existence is a flagrant breach of the law and undermines the very principle of a marine protected area (see **Photo 3.7**). Apart from offering angling fishing, holiday packages to the Kelong can include diving, snorkelling, and other water sports, all of which could affect delicate environment under and around such permanent structures. The Kelong are also known to pollute the MPA waters with sewage and litter.

3.6 Types of Marine Resource Targeted by IUU Vessels

3.6.1 Unregulated and Unreported Lobster Catch

In the southern coast of Terengganu, interviews with coastal fishers in 2006 at Kuala Kemaman and Kerteh revealed that they frequently caught painted rock lobster (*Panulirus ornatus* – also referred to as the ornate rock lobster) as by-catch in gill nets that are deployed near-shore.²⁸⁰ The primary catch season is in the monsoon months from November to February.²⁸¹ These lobsters were

²⁷⁸ Kelongs are structures built on stilts over the sea. They were originally used to trap fish. However, they are now often used by anglers and almost resemble little resorts with basic facilities.

Source: http://www2.malaysia-trulyasia.com/mta/fishing_in_malaysia.htm

²⁷⁹ Pulau Tinggi Marine Park consists of the waters surrounding 13 islands. *Supra*. Source:

<http://www.dmpm.nre.gov.my/form/Pulau%20Tinggi%20arine%20Park%20Johor%20Malaysia%20Version%201.pdf>

²⁸⁰ 'Terengganu Coastal and Islands Study', conducted in the latter half of 2006 under commission by the Terengganu Development Institute. Report on file with SRM.

²⁸¹ The lobster range in size up to more than one kilogram, with most said to average around 800g. Several specimens



witnessed to be kept on ice in cooler boxes and were available for cash-only purchase from casual outlets. The tonnage of catch is not officially recorded and none of the interviewees were confident to estimate the total annual catch. Painted rock lobster were said to be caught all along the east coast from Johor to Terengganu, with catch tonnage greatest in the southern part of the coast. The fishers interviewed did not know of any regulations, nor traditionally practise any controls regarding minimum or maximum size, shell hardness or egg-bearing females. They stated that nobody ever released a lobster once caught.

The lobsters are sold to 'middle-men' who, in 2006, paid between RM40-45/kilogram in cash directly to the fishers. The middle-men traders were reported to take lobsters to Singapore by road to be sold in markets and restaurants. At the time, the market price for lobster in Singapore was around RM120 per kilogram, with higher prices paid by Singapore restaurants. In 2008, Australian rock lobster cost S\$120 (>RM300) per kilogram at a prominent restaurant in Singapore.²⁸² In a local seafood restaurant in Penang, lobsters are priced at between RM 180-RM 200 per kilogram.²⁸³

Inquiries with the Fisheries Research Institute in Terengganu revealed that no stock surveys have been conducted on east-coast lobster. Also, there is no dedicated license, quota or other controls on lobster harvest in that area.

were witnessed by the interviewer and none were smaller than this average size.

²⁸² See an account of dining at 'Jumbo' seafood restaurant at: http://yum.sg/restaurants/jumbo_singapore_indoor_stadium/ (accessed 16 June 2008).

²⁸³ Malaysia Food Blog, Malaysia Travel Blog, Bali Hai Seafood at Gurney Market, Penang, extracted 18-06-08 from www.vkeong.com/2008/05/05/bali-hai-seafood-market-gurney-drive/.

The potential loss to the community from such an unregulated fishery is considerable. Were this fishery to be nurtured and expanded through better science and management, a 50 tonne per annum harvest would be worth approximately RM5 million at a wholesale unit price of RM100/kilogram. The catch tonnage has almost certainly always been below its potential with sound management, possibly including habitat enhancement, and in any case is unknown. However, some early efforts at habitat enhancement were reported in the media in 1998. The Terengganu State Fisheries Director at that time noted that the DOF had installed "about 200" artificial reefs



Photo 3.6: Lobster caught by a shrimp trawler

near Kuala Abang and Gong Bali (at a reported cost of approximately RM40,000 per reef).²⁸⁴ "Lobster Farms" were said to have been created using "cylindrical ceramic artificial reefs", and the then Chief Minister of Terengganu was reported to have visited such lobster farms near Pulau Kapas and Pulau Tenggol.²⁸⁵ Lobster species do not feature in the reported landings statistics published by the DOF. However, it was reported during site visits in August 2008, that

²⁸⁴ 'Terengganu's fish, lobster breeding projects poised to attract investors' *New Straits Times*, Monday 27th April 1998.

²⁸⁵ *Loc. cit.*





Photo 3.7: Ah Ngan Kelong, Pulau Sibul

Source :www.fishingkaki.com/forum/viewtopic.php?t=10498

the rock lobster population, at least in Terengganu, has disappeared at commercial scale²⁸⁶.



Photo 3.8: " PRIZED CATCH...Diver Raja Adnan Raja Ahmad showing a lobster which he caught at an artificial reef 'farm' off Gong Balai, Marang, during a visit by Terengganu Menteri Besar Tan Sri Wan Mokhtar Ahmad on Saturday" NST 27Apr1998.

3.6.2 IUU Harvest and Smuggling of Cockle Spat

According to a recent report, there has been a sharp rise in cockle spat smuggling into Thailand,²⁸⁷ to Thailand farmers who have expertise to rare cockles to a enhanced size, favoured by consumers. Some of the mature cockles (locally called 'Kerang Dewasa') are reportedly sold back to Malaysia where they fetch RM 2/kilo compared to RM 0.80/kilo in Thailand.²⁸⁸ In June 2008, 57 gunny sacks of cockle spat were seized at an illegal jetty at Kampong Limau Purut near Rantau Panjang, at the Kelantan-Thailand Border. The cockle spat, worth more than RM100,000, were believed to have been brought into Kelantan from Perak to be smuggled to Thailand via one of the illegal jetties along the Thailand

²⁸⁶ Pers Coms – Reported by research institutions during field interviews along the east coast in August 2008.

²⁸⁷ Sharp rise in cockle spat smuggling. 20 June 2008. *The New Straits Times Online*, extracted 25-06-08 from http://www.nst.com.my/Current_News/NST/Friday/National/2272552/Article/index.html

²⁸⁸ RM2 per kg of cockles in Malaysia compared to 80 cent in Thailand. Source: *ibid*.



border with Kelantan.²⁸⁹ The commanding officer of the General Operations Force (GOF) of the Malaysian Police in Kelantan reported that smuggled spat was worth RM30/kg in Thailand and that the price was only RM20/kg on the Malaysian market.²⁹⁰ This IUU fishing not only results in a loss of revenue to local harvesters and farmers, but consumers also pay more for imported cockles. The GOF recently took over the border patrol along the Malaysian/Thailand border and this was the first reported seizure of smuggled cockle spat by the GOF.²⁹¹ The east coast border between Peninsular Malaysia and Thailand is not the only location where cockle spat smuggling has been observed. The Anti-Smuggling Unit recently arrested "...a 35 year old man for allegedly trying to take out cockle spat worth RM 118,000..." to Thailand at Bukit Kayu Hitam, Kedah on the northern Thailand border of west peninsular Malaysia.²⁹²



Photo 3.9: Fisher collecting cockles in Setiu Lagoon, Terengganu.

Photo 3.10 shows how cockles are harvested in the many small rivers, river mouths and lagoons of Peninsular Malaysia for domestic

²⁸⁹ *Ibid.*

²⁹⁰ *Ibid.*

²⁹¹ *Ibid.*

²⁹² Anti-smuggling Unit Seizes Cockle Spat Worth RM118,000, 07 March 2008: *Bernama 2008*, extracted 02-07-08 from <http://www.bernama.com/kpdnhep/news.php?id=319114&lang=en>.

supply. The men in **Photo 3.11** were said to have travelled throughout Peninsular Malaysia over the last 25 years harvesting cockles.²⁹³ Data specifically on cockle harvest is not available. However, the DOF fisheries statistics show total landings for shellfish, which include cockles, indicating that shellfish landings are only reported for Kelantan and Terengganu on the east coast of the peninsula, with 136MT and 82MT respectively for 2004 and 2005. Recent data shows that landings of shellfish in Kelantan fell between year 2004-2005.²⁹⁴ Cockles are also cultured (grown from harvested spat) in Malaysia. On the east coast of the peninsula, the DOF data confirms that this form of aquaculture only occurs in Johor on a total area of 44.51ha.²⁹⁵



Photo 3.10: Cockle gathering from Pahang River, Pahang, destined for the Kelantan market. The operation was said to be undertaken by four men that have been involved in this activity for the last 25 years.

Source: 'Four Cockle-hunters scour the peninsula's river.' 12 June, 1998: *New Straits Times*, New Straits Times Press (Malaysia) extracted 2-06-08 from <http://161.139.39.251/akhbar/fisheries/1998/ns98612.htm>

²⁹³ Four Cockle-hunters scour the peninsula's river. 12 June, 1998: *New Straits Times*, New Straits Times Press (Malaysia) extracted 2-06-08 from

<http://161.139.39.251/akhbar/fisheries/1998/ns98612.htm>.

²⁹⁴ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2004-2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08.

²⁹⁵ Department of Fisheries, Malaysia, *Annual Fisheries Statistics Bulletin 2005*, extracted from <http://www.dof.gov.my/v2/perangkaan.htm> 16-05-08



Nonetheless, cockle farming is predominantly an activity that occurs on the west coast of Peninsular Malaysia, i.e., in 2005, Perak followed by Penang produced most of the 59,520.88MT of cockles.²⁹⁶ The total wholesale value of cockle production in 2005 was estimated to be RM 74,966,000 with a retail value of RM 87,379,000.²⁹⁷

3.6.3 IUU Turtle Egg Harvesting and Unreported Turtle By-catch

Turtle eggs are a traditional source of protein in Malaysian coastal communities. Poaching for turtle eggs is prevalent throughout the Economy, and a significant cause for the decline in the number of turtle nestings on the east coast of Peninsular Malaysia.²⁹⁸ In 2006, the head of the Agricultural and Regional Department for Terengganu was reported by the BBC to have claimed that conservation efforts and policy relating to turtle eggs have failed.²⁹⁹ Also, incidental captures and subsequent drowning of turtles in fishing gear, especially ray nets (having mesh size larger than 10 inches) and trawl nets have further traumatized turtle populations.³⁰⁰ According to Chan (1998), the most serious direct threat to the turtle population in Terengganu apart from the poaching of eggs was the large

number of offshore fishermen using large mesh (6-10 cm) drift nets, in which turtles become entangled.³⁰¹ A State official announced that the State government was considering licensing turtle egg collection in key breeding areas to curb poaching activities.

For thousands of years, marine turtles have been a source of food and sustenance for coastal communities in tropical and subtropical regions. In the Peninsular Malaysia states of Kelantan, Pahang, Perak, and Terengganu, legislation prohibits the killing of turtles. However, laws also permit State authorities to license egg collectors and grant leases over collecting areas.³⁰² In Terengganu, leatherback turtles were nested along a 20 km stretch of sandy beach at Rantau Abang. Coastal dwellers were allowed to collect leatherback turtle eggs laid at Rantau Abang through a concession system. The Terengganu State Government issued concession rights to the highest bidders through a tender process, and only holders of a concession could collect marine turtle eggs.³⁰³ Nearly 100% of the eggs laid were collected. The State Fisheries Department purchased a proportion of these eggs, estimated during the early 1980s to be at about 10% of the total eggs harvested.³⁰⁴ Prolonged egg collection is one of the main threats to the leatherback turtle and in some

²⁹⁶ *Ibid.*

²⁹⁷ *Ibid.*

²⁹⁸ A combination of inappropriate hatching methods, poor management of turtle related tourism and increased development in the coastal zone have been cited as factors contributing to the decline of landings and nestings in Rantau Abang. Source: Basiron, M.N. 2006. Turtle Conservation at the Cross-roads, redux. Centre for Coastal & Marine Environment, Maritime Institute of Malaysia (MIMA). Available at:

<http://www.mima.gov.my/mima/htmls/papers/pdf/MNB/Turtle%20Conservation%20at%20the%20Cross.pdf>

²⁹⁹ He was reported as saying banning turtle egg collection merely raises prices and encourages poaching. Source: Fahri Azzat. 26th Oct 2006. Of Turtles. (Accessed 30th June 2008). Available at :

<http://www.loyarburok.com/content/view/62/20/>

³⁰⁰ Chan, E.H. et Liew, H.C. 1989. The offshore protection of Malaysian Leatherback turtles. In: *Proceedings on the Twelfth Annual Seminar-Research Priorities for Marine Science in the 90's*. Institute for Advanced Studies University of Malaya. Kuala Lumpur.

³⁰¹ *Ibid.*

³⁰² Groombridge, B and Wright, L. 1982. *The IUCN Amphibia-Reptilia Red Data Book Part 1*. IUCN Conservation Center.

³⁰³ Troëng, S. and Drews C. (2004). *Money Talks: Economic Aspects of Marine Turtle Use and Conservation*, WWF-International, Gland, Switzerland.

³⁰⁴ Siow, K.-T. and Moll, E. O. (1982) Status and conservation of estuarine and sea turtles in West Malaysian waters. In, Bjorndal, K. (Ed.). *The Biology and Conservation of Sea Turtles*. Smithsonian Institution Press, Washington D.C.





Photo 3:11 : Turtle eggs on sale in Pasar Payang market, Terengganu

Source: <http://des-evelyn.blogspot.com/2007/10/famous-things-in-terengganu.html>

areas the egg harvest and illegal poaching removed more than 95% of the clutches.³⁰⁵ Since the 1950's, close to 100% of the endangered leatherback turtle eggs were collected and either consumed locally or sold at markets.³⁰⁶ The current egg sales price is estimated at around \$US0.66 per egg. In order to conserve the turtle population, efforts to incubate turtle eggs in hatcheries began in 1961.³⁰⁷ Presently, egg collection continues, but all leatherback turtle eggs are now supposed to be sold to the Fisheries Department and incubated in hatcheries for subsequent release.³⁰⁸ However, the collection and consumption of other turtle eggs (Green, Hawksbill, Olive Ridley) are permitted. In Pasar Payang, Terengganu and Pasar Siti Khadijah in Kelantan, the main wet markets on the east coast Peninsular

Malaysia, turtle eggs are sold side-by-side with other food items. Eggs belonging to the Green Turtle species, are sold for between RM23 and RM25 for a packet of 10. There is no restriction on the sale of turtle eggs in Terengganu, which has inadvertently encouraged the sale of smuggled eggs at these markets. Some of the eggs found in Terengganu are believed to have come from Sabah and the Philippines.³⁰⁹ In an effort to conserve marine turtles and terrapins, nine hoteliers on resort islands in Terengganu recently joined a turtle conservation awareness campaign launched by University Malaysia Terengganu. The name of the campaign is, "Say No to Turtle and Terrapin Eggs".³¹⁰ Although the *Fisheries Act* 1985 states that persons found collecting turtle eggs without a permit from the State Fisheries Department are liable to a fine of up to RM1,000 per egg, few cases are reported where offenders are prosecuted or fined.³¹¹

³⁰⁵ IUCN (2002) 2002 IUCN Red List of Threatened Species.

³⁰⁶ At Rantau Abang, Malaysia nesting declined from 10,000 leatherback nests per year in 1956 to 3 nests in 2002 due in large part to over-exploitation of eggs and fisheries by-catch. Source: *Ibid*.

³⁰⁷ K. Ibrahim. Head of Rantau Abang Turtle Sanctuary. *In: Malaysia's Rantau Abang*. 2003. (Accessed 2nd July 2008). Available at: <http://www.thingsasian.com/stories-photos/2372>

³⁰⁸ Inept hatchery methods also caused their decline. The head of Rantau Abang Turtle Sanctuary was quoted as saying: "We only now know the temperatures of 31-32 degrees Celsius used at hatcheries around the country produced 100 percent female turtles. So that means we have been producing female turtles since 1961. This would also explain why no eggs were hatched in 2001, despite there being 21 detected landings. "No fertilisation or mating process took place, possibly due to the lack of males," Source: *Ibid*.

³⁰⁹ Turtle eggs from Sabah and the Philippines sold in Terengganu. 16 April 2006. *Bernama News*. (Accessed 2nd July 2008). Available at:

<http://wildsingaporenews.blogspot.com/2008/04/turtle-eggs-from-sabah-and-philippines.html>

³¹⁰ Nine resorts join drive to save turtles. 29 July 2008. *New Straits Times*, pg 23.

³¹¹ S.M. Mohd Idris, 'Revoke permits, amend laws to save turtles'. *New Straits Times*. Letters. 7 July 2008. p.27.



Furthermore, villagers in Terengganu have reported the harvesting of river terrapins in Dungun River. There have also been reports of the terrapins being offered in Chinese restaurants on the West Coast of Peninsular Malaysia or being smuggled out of the Economy for markets in China.³¹² Setiu River is inhabited by two endangered freshwater turtle species, the river terrapin and the painted terrapin, which are a favourite delicacy sought after by the Chinese. The Chinese believe that turtles have medicinal value when cooked with certain herbs.³¹³ Similar to the fate of sea turtles, the eggs of terrapins are poached and sold at RM10 for three in the Terengganu market. Orders reportedly have to be placed with collectors well in advance to obtain the eggs.³¹⁴

The Terengganu Turtle Enactment 1951 (Amendment 1987) provides a range of protection and penalties relating to terrapins: RM3,000 fine and up to one year's jail for killing, possessing, removing or destroying eggs and failure to furnish statistics (in the case of licensed egg-collectors), and RM1,000 fine or jail up to six months for injuring or disturbing nesting terrapins. However, these provisions have never been invoked. There appears to be no will and directive to enforce the law. "Although Pasir Temir and Lubuk Kawah on Sungai Terengganu (Terengganu River) have been gazetted as turtle sanctuaries, the villagers continue to harvest eggs along these sandbanks. The rangers employed to guard turtle nests are

often part of the community and may empathise to an extent with local practices: "Asked if any of the poachers had been charged, chief ranger Mohd Yusof Jusoh was hesitant in calling the uncooperative villagers 'poachers' ".³¹⁵

3.6.4 *Illegal Harvest of Arowana*

Many Asians believe that arowana bring them good luck and fortune. Some Chinese, particularly businessmen, believe this fish has the power to ward off evil, and will bring luck and fortune. Some Asians consider arowana to be a "status symbol" and occasionally will own several of these rare, exotic, and easy-to-keep fish. According to the Chinese, arowana are the reincarnation of the dragon, the mythical figure of Chinese folklore from which all Chinese are believed to be descended. Geomancers say that the fish bring good luck, and that they protect the owners from harm and misfortune. A common believe is that an arowana kept in the office, especially a gold one, as a symbol of wealth, will bring good fortune and prosperity. A red arowana is believed to ward off evil spirits, especially when placed at home. For these reasons, along with the beauty of this species, the arowana has become a favoured aquarium fish.

In 1980, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed Asian arowana in the first appendix as a highest class of protected fish.³¹⁶ According to a survey by the wildlife

³¹² See: Hilary Chiew, 'Restocking River Terrapins' *Strait Times*. 20 July 2004. http://www.asianturtlenetwork.org/library/news_archives_articles/2004/restocking_river_terrapins_20_04.pdf

³¹³ A popular dish for Chinese is the turtle soup. It is known for its rich herbal taste. The meat, skin and organs of the turtle are used to make soup. Source: www.tmytmz.blogspot.com/2008/05/turtle-terrapin.

³¹⁴ *Loc. cit.*

³¹⁵ Chiew, H. *Op. cit.*

³¹⁶ This prohibits international trade except in special circumstances, where the captive-bred fish are allowed to trade by CITES-certified breeder in Malaysia, Indonesia and Singapore. The fish are tagged with a glass-covered microchip inserted under the skin that can be read by a scanner. Proper CITES permits and a certificate with the microchip number must also accompany each fish.



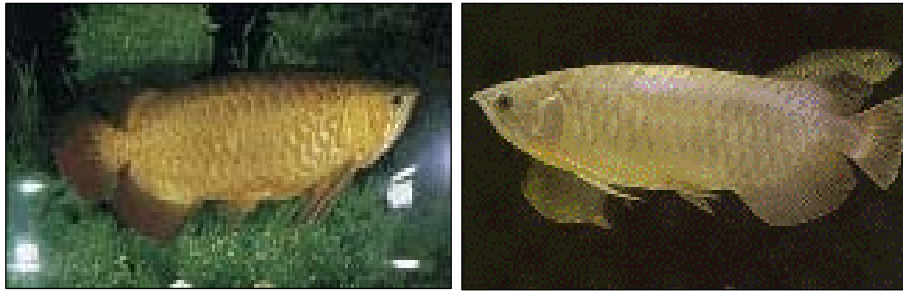


Photo 3.12: Red Arowana (left) and Green Arowana (right)

trade monitoring network (TRAFFIC), arowana is smuggled into Malaysia from Indonesia and sold to foreigners or local traders. Although there is some demand for the fish in Malaysia, most that are imported into the Economy are re-exported to further destinations, such as Thailand, Chinese Taipei and Hong Kong, China. There is also concern about hormone treatment. When breeders catch fish that are not coloured red, they may treat them with hormones so that the fish will sell at a higher price.³¹⁷ However, a growing problem is that some breeders reportedly catch arowana from the wild, and tag them as CITES registered fish. On the east coast of Peninsular Malaysia, arowana have been poached from Sungai Jamai (Jamai River) in the Endau-Rompin National Park.³¹⁸ Netting has been discovered by rangers in the National Park, and another native fish, the “freshwater puffer fish”, that was abundant in Sungai Jamai now appears to have been fished out.³¹⁹

3.6.5 Unreported Harvest of Grouper Fry

Grouper fry are required to support marine cage aquaculture, which takes place in sheltered areas such as Setiu Lagoon in northern Terengganu and elsewhere in Malaysia. The main fishing grounds are around Besut and Setiu (and generally between Kuala Besut and south of Kuala Terengganu). These two areas are the source of about 90% of all grouper fry/fingerlings produced in Peninsular Malaysia. Most capture areas are in the vicinity of river mouths.³²⁰ The grouper fry/fingerling capture season is during the Northeast monsoon



Photo 3.13: Bunches of temarang hanging on a tree

³¹⁷ KL syndicates sell fake red arowana. Malaysia File. Source: <http://keithhibodeaux.com/Aquarium/arowana/intro.html>
³¹⁸ Ibrahim Mohtar, ‘Endau-Rompin: Wildlife faces threat of poaching’, *The Star Online*. 02 July 2003
³¹⁹ *Loc. cit.*

³²⁰ Sadovy, Y. 2000. *Regional survey for fry/fingerling supply and current practices for grouper mariculture: evaluating current status and long-term prospects for grouper mariculture in South East Asia*. (Accessed 24th June 2008) and *Fisheries Act 1985, Fisheries Regulations PU(A) 619/96*. Pursuant to the regulation, the Director-General of Fisheries may authorise harvest during the prohibited months.



season (November-March), despite a prohibition to do so during the months of November and December.³²¹

The capture device used by the Terengganu fishers is called '*temarang*' (See **Photo 3.14**). *Temarang* is an artificial aggregating device that consists of about 25 small bunches of dried leaves and branches of the plant *Temarang* strung out in bundles along a 33m long line. The line is kept floating close to the surface of the water by marker buoys.³²² Such practices appear to be in variance to fisheries regulations that state that, "no person shall engage in any fishing of kerapu fry in any lagoon or estuarine waters except with the use of a licensed bubu" (wire fish trap).³²³ In 1999, grouper fry production from the east coast Peninsular Malaysia was estimated at 5 million fry. A local grouper fry broker reported that there are 20 brokers in Terengganu, and that there is no recorded grouper fry export. However, grouper fry caught in Terengganu are transported domestically to inter-State culture facilities, particularly to Johor.³²⁴ Of interest, a broker said that "grouper fry are smuggled from Johor through Singapore to Chinese Taipei."³²⁵

In late 2006, the collection of grouper fry at Setiu Lagoon was witnessed by the consultants. One of the collectors stated that he was 12 years old. When asked why he was not at school, he claimed to have already

graduated. He was smoking a cigarette and conducted his assigned task, which was to carry harvested fry over a narrow sand spit to a plastic lined capture pond in Setiu Lagoon (see **Photo 3.15**), with confidence. The gatherers complained that more than half of the fry died in the collection and transportation process. Of the surviving fry, the aquaculture farmers at Setiu Lagoon reported that more than half die during the grow-out phase (see **Photo 3.16**).



Photo 3.14: *Temarang* in the water. Two fishers scoop up grouper fry that gather underneath the *temarang*.



Photo 3.15: Grouper fry gathered from the *temarang*.

³²¹ *Ibid.* Grouper fry capture peaks in December and January.

³²² Two fishers can handle 500 m of *temarang*, and about 500 fry can be caught per 33 m of *temarang* and they are collected by scoop net.

Source://www.livefoodfishtrade.org/aquaculture/pdf/Regional_Survey_Fry_Fingerling_Supply_Sadovy.pdf

³²³ Fisheries Act 1985, Fisheries Regulations PU(A) 620/96.

³²⁴ Interviews with collectors near the river mouth at Setiu Lagoon, 2006

³²⁵ *Ibid.*





Photo 3.16: Aquaculture grow-out cages at Setiu Lagoon that use, *inter alia*, wild-caught grouper fry

3.6.6 Shark Fin Production

Malaysia's official position on shark-fin fishing is that it does not exist in Malaysia.³²⁶ However, whether or not a shark/ray fishery officially exists is unclear. For example, one research officer at the Southeast Asian Fisheries Development Centre (SEAFDEC), was quoted to say that, "we don't have a shark fishery *per se* and we definitely do not practice shark fining". However, DOF Fisheries Statistics report a category of fish landings called 'Yu',³²⁷ meaning shark, where 8,299 MT in 2004 and 9,165 MT in 2005 were recorded to have been landed in Malaysia. Landings of rays are also recorded in the official data (e.g. 16,754 MT in 2004 and 15,929 MT in 2005 were recorded).

³²⁶ Chew, H. 2005: "Curbing a cruel act", *The Star*, 15 November 2005, extracted 26-08-06 from www.jpohk.gov.my/English/Nov05%2018c.htm. During a west coast site visit to the Malaysian International Tuna Port (MITP) in Penang, Peninsular Malaysia in January 2008, shark fins being unloaded from a tuna long-liner was observed. There was no evidence of the remainder of the shark carcasses being unloaded during the site visit, although we were informed that the carcasses were in the vessels hull (as discussed in footnote in Chapter Two).

³²⁷ 'Yu' includes species such as, *Carcharhinus amblyrhynchoides* (Graceful Shark), *Carcharhinus amblyrhynchos* (Grey Reef Shark), *Carcharhinus borneensis* (Borneo shark), *Carcharhinus brevipinna* (Spinner shark), and *Carcharhinus falciformis* (Silky shark) etc. www.fishbase.org.

In the context of increasing shark/ray landings (i.e. 10,792 MT in 1982 to 27,948 MT in 2003 and then 25,094 MT in 2005), and a declining number of licensed fishing boats from 30,390 vessels in 1981 to 22,041 vessels in 2005 (for Peninsular Malaysia only)³²⁸, the belief that Malaysia does not have a shark/ray fishery appears incorrect. In 2005, 35% (some 8,856 MT) of this fishery occurred in Peninsular Malaysia. Therefore, given that the reported landings of shark and rays have increased significantly in the context of a decreasing fishing fleet, there would appear to be evidence that these fish are desirable, target species. Fishing licenses for Malaysian vessels do not restrict the species that can be caught. The license usually only restricts the location where fishing can be done (the fishing zone and class of vessel) and the gear type used.



Photo 3.17: Shark fins landed at the Malaysian International Tuna Port, Penang 2008

Ali (2004) *et al*/reported that shark landings on the west coast of Peninsular Malaysia had exceeded sustainable levels and that in Sabah landings had grown since 1991, and peaked at 3,176 MT in 1995, gradually declining to 1,577 MT by 2001. No assessment of the shark/ray fishery was done for the east coast of Peninsular Malaysia, although landings data is available for part of the

³²⁸ Historic data on fishing fleet size for East Malaysia not given in the DOF Fisheries Statistics.



fishery.³²⁹ Ali (2004) *et al* reported that shark and ray landings make up to 2% of marine fish landings. The increase in shark and ray landings was also reported to have coincided with the advent of trawling operations where a large majority of landings from this gear type (up to 60% from this gear by 2001) were observed.³³⁰

Shark “by-catch” has been reported to be consumed locally either as fresh or salted products, and the non-edible parts used as bait.³³¹ However, the most valuable part of a shark is the fin, and the suggestion that Malaysian fishers decline to harvest this product and forego the resulting lucrative income is incredulous. Indeed, processed products, such as shark fin, have been reported to be exported to Hong Kong, China and China.³³²

3.7 Crimes at Sea Related to IUU Fishing

3.7.1 Violent Crime against Fishing Boats

Malaysian fishers in the southern part of the east coast of Peninsular Malaysia claim not to venture too far from shore for fear of harassment by the enforcement authorities of neighbouring Economies.³³³ A Fisheries Development Authority official in Johor stated that such a cautious limitation on catch area affects the average size of fish landed with

“the best and biggest fish caught by Indonesian fishing boats.”³³⁴ Malaysian boats were said to catch smaller fish. However, the Director General of the Malaysian Maritime Enforcement Agency (MMEA) noted that such concerns are probably overstated, and that there have been few, if any, recent reports of such behaviour by foreign authorities in this part of Malaysian waters.³³⁵

3.7.2 Sea Robbery or Piracy

Pirate attack on Malaysian fishing boats is also a common threat. Pirates are often heavily armed and raid fishing boats in order to seize the vessel, or kidnap crew members and demand a ransom.³³⁶ For example, on 2nd May 2008, two Malaysian fishing vessels were hijacked at 2:00am outside the river mouth of Hutan Melintang, Perak, Malaysia. This was shown on the International Maritime Bureau piracy map (see **Box 3.4**). The IMB does not report that, in this instance, two 150 GRT steel hulled fishing vessels were stolen by men armed with machetes and that the vessels remain missing.³³⁷ In some cases, the perpetrators of pirate attacks have been members of foreign government agencies who collect ‘fees’ from fishers. The fishers will be detained if they do not pay the ‘fees’.³³⁸ However, once again, pirate attack off the east coast of Peninsular Malaysia is not as great a concern as elsewhere in Malaysian waters, particularly in the Malacca Strait.

³²⁹ After Ali *et al*, 2004: *Elasmobranch resources, utilisation, trade and management in Malaysia*, Southeast Asian Fisheries Development Centre, Kuala Terengganu, Malaysia ISBN 983-9819-52-6 in Chew, H. 2005: “Curbing a cruel act”, *The Star*, 15 November 2005. Extracted 26-08-06 from www.jpnpk.gov.my/English/Nov05%2018c.htm.

³³⁰ *Ibid*.

³³¹ Chew, H. 2005: “Curbing a cruel act”, *The Star*, 15 November 2005. Extracted 26-08-06 from www.jpnpk.gov.my/English/Nov05%2018c.htm.

³³² *Loc. cit*.

³³³ Pers Coms, Interview with LKIM staff in Sedili, Johor. Feb 2008.

³³⁴ *Loc. cit*.

³³⁵ Interview with DG MMEA February 2008

³³⁶ According to data from the International Maritime Bureau’s (IMB) Piracy Reporting Centre, Southeast Asia was the most affected region by area in the world between 1992-2006. Source:

<http://www.globalcollab.org/Nautilus/australia/apsnet/policy-forum/2007/the-roots-of-piracy-in-southeast-asia/>

³³⁷ The date, time and location match that provided by the fishing company in response to a query, and they confirmed reporting the hijacking to IMB.

³³⁸ Liss, C. 2007. *The root of piracy in Southeast Asia*. Austral Peace and Security Network, Nautilus Institute.



Box 3.4: Report of Malaysian fishing vessels hijacked by pirates



Source: <http://www.icccs.org/extra/display.php?yr=2008>





4.0 Drivers and Impacts of IUU Fishing

“IUU fishing is a serious threat to achieving long term sustainability in fisheries, as envisaged in Agenda 21 and the 1995 FAO Code of Conduct for Responsible Fisheries, because it undermines national and regional efforts to rationally conserve and manage fish stocks... By hindering attempts to regulate an otherwise legitimate industry, IUU fishing puts at risk millions of dollars of investment and thousands of jobs as valuable fish resources are depleted below sustainable levels...”

Dato' Junaidi bin Che Ayub, Director General of Fisheries, Malaysia. FAO Workshop on IUU Fishing National Plans of Action, 10 - 14 October 2004, Penang, Malaysia.

4.1 Drivers of IUU Fishing in East Coast Peninsular Malaysia

There are many factors that contribute to IUU fishing in the east coast region of Peninsular Malaysia, and their influence is complex and interrelated.

In order to clarify the factors at work and their role in the causal chain of IUU fishing, a 'Driving Force-Pressure-State-Impact-Response' (DPSIR) model is shown at **Box 4.1**. The DPSIR model is not a definitive summary of all aspects of IUU fishing and its causes; rather, it is a tool to aid understanding of the cause-and-effect relationship of various key activities and issues.

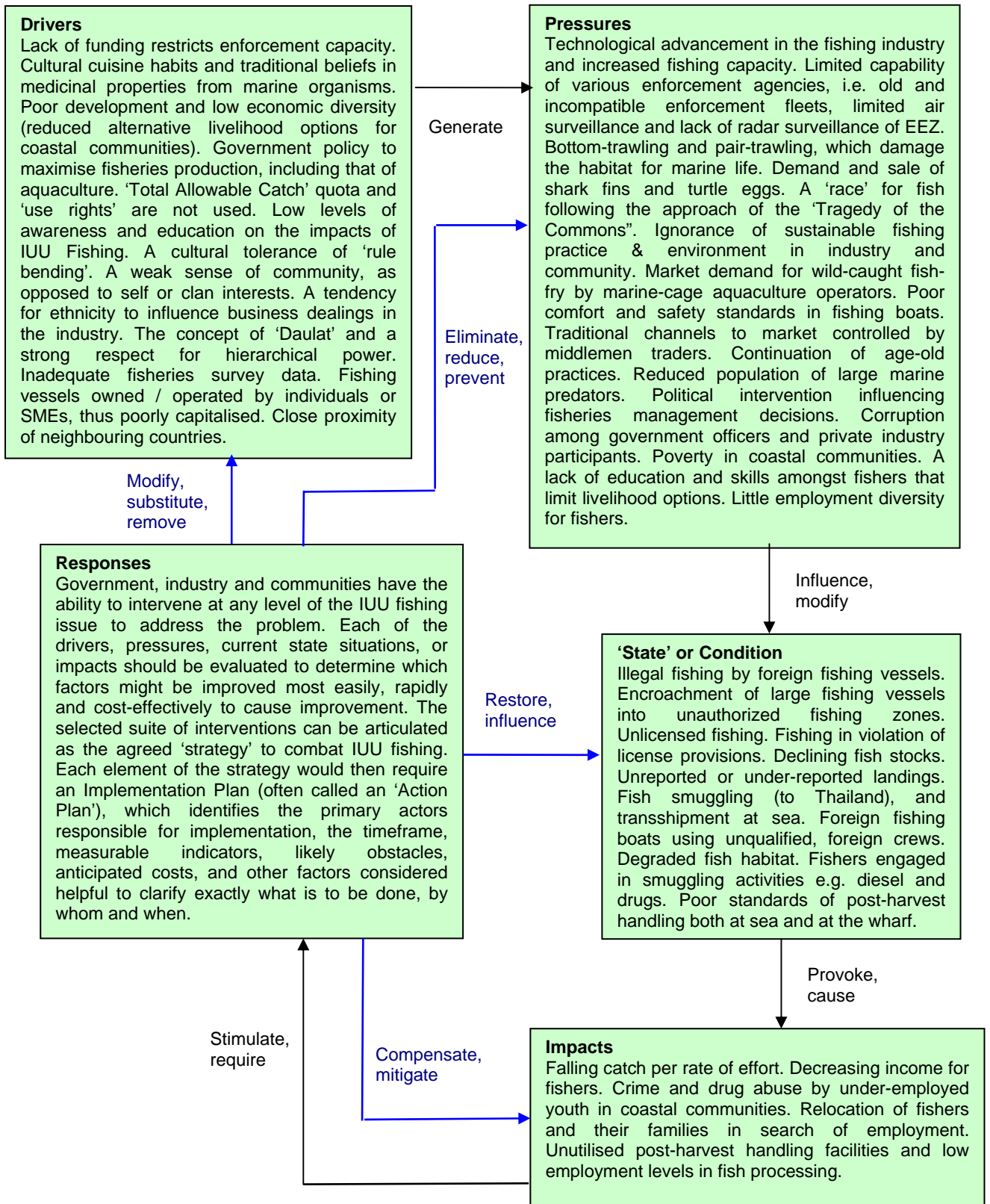
A number of the factors identified in the DPSIR model have already been discussed at length elsewhere in this report, e.g. Government policy and weak fisheries data in Chapter 1, socio-economic factors in Chapter 2, the nature of IUU fishing in Chapter 3, and weak MCS in Chapter 5. Others, such as enhanced fishing capacity

through developments in technology, are not particular to the east coast of Peninsular Malaysia and are well documented in other studies. Nevertheless, there remain certain factors that warrant additional discussion as drivers or associated illegal activities of IUU fishing in the target area, including:

- fuel smuggling;
- fish smuggling;
- corruption;
- human trafficking for fishing crew;
- cultural attitudes to hierarchy and authority;
- the influence of ethnicity in business dealings; and
- cultural tolerance for 'rule bending'.



Box 4.1: DPSIR model for IUU Fishing off the east coast of Peninsular Malaysia



4.1.1 Fuel Smuggling

Malaysian fishermen are known to smuggle subsidized fuel to the vessels of neighbouring Economies. In 2007, approximately 8% of the 70 million litres of subsidised fuel allocated to fishermen nationwide were 'estimated' to have been sold illegally, mainly to Thailand.³³⁹ In mid-2007, diesel in Thailand was reported to have sold for an equivalent of RM2.30/litre. Since then, the price escalated considerably to be more than RM4.00/litre by mid-2008. At that time, Malaysian fishers were entitled to purchase subsidised fuel for RM1.00 per litre (and as at August 2008, RM1.43/litre). With a monthly allocation of up to 30,000 litres (refer **Table 4.1**) for a Class C2 vessel, and a sale price to Thailand buyers of RM1.80 per litre, a Malaysian fishing license holder could earn RM24,000 per month from the smuggling of fuel.³⁴⁰

Malaysian fishing boats need only go to the border area near Tak Bai/Pengkalan Kubor to sell cheap fuel to Thailand boats. Reports during site visits in August 2008 indicated that the sale price for the smuggled diesel was then around RM2.40-RM2.60/litre and that smuggling continues.³⁴¹ Thailand buyers are prepared to pay this price as it is still much less than the cost of fuel purchased legitimately.

³³⁹ Wong, J. 'Fishermen selling fuel subsidies for profit.' *The Star Online*. May 28, 2008. Available at: <http://thestar.com.my/news/story.asp?file=/2008/5/28/nation/20080528125637&sec=nation>

³⁴⁰ *Loc. cit.* See also: 'Fishermen making money selling subsidised diesel' *New Straits Times*, 29 May 2008. Available at: http://www.nst.com.my/Current_News/NST/Thursday/National/2253045/Article/index.html

³⁴¹ Pers Coms – Reported during site visit interview 11-14 August 2008.

Table 4.1: Maximum quota of subsidized fuel by vessel Class³⁴²

Vessel Class	Maximum Fuel Quota Litres/Month
Sampan (outboard powered)	Up to 1,500 litres/month petrol – or 50 litres/day
Class A	Up to 4,000 litres/month diesel
Class B - Small	Up to 8,000 litres/month diesel
Class B – Large	Up to 20,000 litres/month diesel
Class C	20,000-24,000 litres/month diesel
Class C2	25,000-30,000 litres/month diesel

Were a volume of five million litres to be smuggled to foreign buyers, the cost to Malaysia through subsidies alone (setting aside lost fish catch through reduced rate of fishing effort) would be approximately RM6.25 million. According to one Kelantan-based interviewee, these figures may understate the true scale of diesel smuggling by fishing boats considerably, and also do not reveal that a high percentage of the activity takes place on the east coast of Peninsular Malaysia.

Diesel Subsidies. Following a global rise in fuel prices in mid-2008, diesel in Malaysia went up to RM2.58 per litre. However, the Malaysian Government announced the continuation of diesel subsidies for the fishing industry – see **Box 4.2**. The subsidies include:

1. Diesel price for fishermen is at RM1.43 per litre;
2. A RM200 per month allowance for each Malaysian fishing vessel owner; and

³⁴² Pers Com – Reported during site visit interview 11 August 2008.



- An incentive of 10 sen for every kilogram of catch landed in Malaysia for fishing vessel owners.



Photo 4.1: A Terengganu registered Class B fishing boat leaving Tok Bai, Thailand. Photo taken August 2008.

During site visits along the east coast, some Government interviewees provided quota details of subsidised fuel in various fisheries districts, along with recent partial data on landings for 2007/08. Information was also provided on the number of vessels and fishers by State and district (see **Figure 4.1**). Although the data in **Figure 4.1** is incomplete, a key observation is that there does not seem to be a fisheries-based explanation (e.g. access to fish stocks) for the over-representation of Class C2, and to a lesser extent Class C, vessels operating out of Kelantan when compared with other States where fisheries are healthier (refer Chapter One).

Kelantan is closest to the Thailand border (e.g. Tok Bali, Kelantan is 37 nautical miles to the Thailand border, and Tumpat, Kelantan is less than two nautical miles); therefore, smuggling may well be a factor encouraging the disproportionate number of larger vessels that are based in that State.³⁴³

³⁴³ Although fisheries stocks further south (refer Chapter One) are more productive based upon reported

Box 4.2: Smuggling 2,580 Litres of Subsidised Diesel into Thailand

Date : 16/08/2008

Full Story:

KANGAR, Aug 16 (Bernama) : The Malaysian Maritime Enforcement Agency (MMEA) successfully prevented smuggling of subsidised diesel into Thailand with the seizure of two boats in Kuala Perlis waters early today.

MMEA Northern Region First Admiral (Maritime) Zammani Mod Amin said the two boats were spotted heading towards Thai waters at about 2am.

The boats tried to flee but got grounded in mud near the beach.

After a search of the vessels, the agency seized 2,580 litres of subsidised diesel worth RM6,700 kept in two drums and 66 plastic containers.

Two Thai nationals in one boat were arrested while the others in the other boat bolted into the mangrove forest in the dark

Bernama - Saturday, August 16

Extracted from:

<http://www.mmea.gov.my/mmeaBI/page.php?filename=output.php&option=view&newsid=96>; accessed 10 September 2008.

Some sources reported that there are as many as 100 Class C2 vessels, (and to a lesser extent Class C vessels and likely smaller vessels as well) involved in the smuggling of diesel, fish and other contraband to Thailand.³⁴⁴ If 100 Class C2 vessels each were to sell only 10,000 litres of diesel per month (a lower volume than suggested by industry sources) this would equate to a total of 1,000,000 litres a month, from the allocated 5,000,000 litres a month available in Tok Bali, Kelantan.

landings. The true state of the fishery resources along the east coast is, however, subject to uncertainty due to a variable level of leakage occurring. Therefore, fisheries landings data may not necessarily be representative of the state of fish resources.

³⁴⁴ Pers Coms – reported during site visit interviews 11-14 August 2008.



Taking into account the lower of the two reported sale prices for smuggled diesel, (i.e. RM2.40/litre), this level of smuggling would result in RM970,000 profit per month (or RM11,640,000 per year, which is the equivalent of USD\$3,423,529 per year).³⁴⁵ Interestingly, in recent years, there has been a significant increase in registered Class C2 vessels at Tok Bali, Kelantan from 138 in 2005 to 191 vessels in 2008. Other States further south have also recorded a marginal increase in Class C2 vessels but not to the same extent as Kelantan.

Vessel diesel quota data shown in **Table 4.2** was chosen by selecting every eighth vessel shown on a spreadsheet provided to researchers during site visits along the east coast of Peninsular Malaysia in August 2008. The random sample includes a total of 36 vessels from a total sample of 293 vessels located at this Kelantan fishing port, where all vessels were allocated subsidised fuel. The data for the month of May as shown in the table, is not affected by poor weather because this period is not during the monsoon – therefore, weather would not be a factor in influencing the volume of subsidised fuel collected by each vessel. Some vessels received only a small proportion of their quota (highlighted in red) while others received almost all, if not more than the allocated quota (highlighted in yellow). Reportedly, larger vessels often receive priority over smaller vessels (Classes A and B) in access to subsidised diesel. Since supply is often insufficient to meet the total demand for the district, smaller vessels may not receive

Box 4.3: New System To Check Abuses

July 10, 2007 16:49 PM

KUALA LUMPUR, July 10 (Bernama) -- Cheating and other abuses by fishermen in the country can be overcome with the implementation of e-nelayan (e-fishing) and e-endaratan (e-landing).

Agriculture and Agro-based Industry Minister Tan Sri Muhyiddin Yassin said the online system was still being studied for implementation.

"The ministry and Home Affairs Ministry are looking into ways to plug the loopholes so that there will no room for cheating (by fishermen)," he said in his reply to Datuk Ismail Abdul Mutalib (BN-Marang).

He said the regulations under the Malaysian Fisheries Development Authority (LKIM) would be fully enforced with the introduction of e-nelayan.

"Through e-nelayan, a fisherman going out to sea will be given a diesel quota to ensure that his catch corresponds with the amount of fuel used.

"If the two don't tally, the fisherman may have cheated on the amount of fuel used," he explained.

To a supplementary question from Datuk Rosli Mat Hassan (BN-Dungun) on whether there existed a "cartel" in the Terengganu and Kelantan fishing industry, Muhyiddin said it was important to keep reminding the fishermen to land their catch at designated jetties.

"This is stipulated in the LKIM regulations and with the enforcement of the new system, perhaps the sale of fuel to certain quarters in neighbouring countries can be overcome," he said.

Earlier, answering the original question from Ismail, Muhyiddin said 315 foreign fishermen were fined a total of RM13.97 million by the courts in 39 cases for illegal fishing in Malaysian waters in 2006.

Of them, 17 cases involved Indonesian fishermen, Vietnamese (15 cases), Thais (four cases), and one case each involving Taiwanese, Singaporean and Hong Kong fishermen.

He said losses incurred by the country due to illegal fishing by foreigners were estimated at RM4.68 million, as the actual figure could not be determined because the catch was brought to neighbouring countries.

-- BERNAMA
<http://www.bernama.com.my/bernama/v3/news.php?id=260171> accessed 10-09-08

³⁴⁵ August 2008 exchange rate.



Box 4.4: Announcement by the Malaysia PM that the fuel subsidy for the fisheries industry continues despite the recent increase in fuel price

NST THURSDAY, JUNE 5, 2008

Subsidy still in force

■ By Deborah Loh
news@nst.com.my

PUTRAJAYA: The pump price for petrol is now RM2.70 per litre and diesel RM2.58 a litre following a cut in the fuel subsidy.

The increase of 78 sen per litre for petrol and RM1 a litre for diesel still leaves their prices 30 sen below the market rate.

Announcing the hike, Prime Minister Datuk Seri Abdullah Ahmad Badawi said a 30-sen subsidy per litre will prevail on pump prices, and will be used as an "automatic adjuster" in tandem with fluctuations in the world oil price.

The government will make the adjustments monthly.

To cushion the price increase, cash rebates will be given to owners of cars and motorcycles, based on engine capacity, through post offices from July 1 (see graphic).

These rebates will be given to owners of vehicles with road tax renewed between April 1 this year and March 31 next year.

Those who have already paid their road tax should produce their vehicle registration details at a post office and Pos Malaysia will issue them a money order.

Vehicles with large engine capacities will be levied a lower road tax from June 1.

The rebates will cost the government about RM5 million this year.

From today, the price of




FUEL PRICE HIKE

FUEL SUBSIDY SCHEME

- 30 sen subsidy for petrol and diesel.
- Automatic monthly adjustment in petrol and diesel prices, in line with global prices.
- Annual cash rebate of RM625 for owners of private vehicles with an engine capacity of up to 2,000cc, and pick-up trucks and jeeps up to 2,500cc.
- Annual cash rebate of RM150 for owners of motorcycles with a 250cc engine or less.
- Road tax discount of RM200 for owners of private vehicles with engine capacities above 2,000cc.
- RM50 road tax discount for motorcycles with engines above 250cc.
- Fishermen, boat owners and transport operators will get diesel at RM1.43 per litre
- Each Malaysian fishing vessel owner will receive RM200 monthly.
- Fishing vessel owners will get incentive of 10 sen for every kilogramme of catch landed.

WHERE THE RM13.7b SAVINGS WILL GO

- RM7.5 billion** goes back as subsidies for petrol, diesel and gas.
- RM4 billion** for food security.
- RM1.5 billion** for cooking oil subsidies.
- RM400 million** for standardising price of rice in Sabah and Sarawak.
- RM200 million** for flour subsidy.
- RM100 million** for bread subsidy.

* Government will still spend RM18 billion annually on fuel subsidies after restructuring package.



Datuk Seri Abdullah Ahmad Badawi and Datuk Seri Mohd Najib Razak at the press conference to announce the increase in petrol and diesel prices.

subsidised diesel will be standardised at RM1.43 per litre for fishermen, boat owners and transport operators.

Previously, subsidised diesel was priced at RM1 per litre for fishermen, RM1.20 for boat owners and RM1.43 for transport operators.

Prices for cooking gas (liquefied petroleum gas or LPG) and natural gas for vehicles (NGV) remain unchanged at RM1.75 for every kg of LPG and 63.5 sen for every litre of NGV.

This involves Petronas restructuring its gas subsidy from July 1 for the peninsula whereby it will raise gas prices for energy producers and industrial users.

The government will save RM13.7 billion from the restructured package.

Out of this amount, RM7.5 billion will go towards subsidi-

dising prices of petrol, diesel and gas.

The rest will be spent on food security (RM4 billion), cooking oil subsidies (RM1.5 billion), standardising the price of rice in Sabah and Sarawak (RM0.4 billion), flour subsidies (RM0.2 billion) and bread subsidies (RM0.1 billion).

Abdullah said even after the fuel price increase and restructuring, the government would still have to spend about RM18 billion to pay for the difference between the pump prices and the world price.

Reiterating his call for Malaysians to change their lifestyle and be more prudent, Abdullah said they should try to spend less in all areas.

"This is something that is happening all over the world. We are not lifting the subsidies totally as we are still subsidising petrol and other items like

cooking oil."

He said efforts were being made to improve the public transport system.

Acknowledging that the fuel

price increase would not go down well with the public, Abdullah said the government could no longer sustain the rising price of oil.

"I am not out to be popular. We try our best, and this is something we are very serious about, but naturally people will not be happy."



subsidized fuel.³⁴⁶ The vessels with preferential access are often those that were formerly registered in Thailand (**Table 4.2**).³⁴⁷

Another factor related to the size of the diesel quota is historic weekly usage, which is used as part of the formula to calculate an appropriate quota for each vessel. Site visit interviews confirmed that, as a result of the quota system, many larger vessels had been fitted with bigger fuel tanks in order to claim additional subsidised fuel.³⁴⁸

Although not shown in **Table 4.2**, 82 (primarily Class C2) vessels at this fishing port, i.e. roughly one third of those vessels eligible for subsidised diesel, utilised 75-100% of their diesel quota in the month of May 2008.³⁴⁹

The likely effectiveness of Government initiatives for the introduction of 'e-Nelayan' and 'e-Landing' systems (**see Box 4.3**) in 2007 to monitor and curb the illegal sale of diesel, remains questionable because smuggling of diesel continues unabated. Some officials are rumoured to have interests in present arrangements for the east coast Peninsular Malaysian fishing industry. The suggestion was made, "off the record", in several interviews that this factor hinders attempts to enforce or deter illicit activities, such as diesel smuggling.

4.1.2 Fish Smuggling

Interviews with industry representatives and DOF officials suggest that a certain amount of fish caught in Malaysian waters off Kelantan are not landed in Malaysia but are instead smuggled to Thailand. The nature of this IUU fishing activity is complex and is made possible because of a high number of vessels from Thailand that have been re-flagged as Malaysian fishing vessels. The former Thailand vessels are purchased by new Malaysian owners, and come complete with Thai fishing skipper and crew. In 2008, there were 211 Class C2 deep-sea fishing vessels based in Kelantan (191 of which were based in Tok Bali).³⁵⁰ Interviews indicate that most of these boats were formerly registered as Thailand vessels, and this observation is supported by the number of Thailand fishers registered in Kelantan (4,238 in 2007, refer **Figure 4.1**).³⁵¹

On 24 July 2008, the Department of Fisheries arrested 54 reportedly Thailand nationals caught in the act of transferring fish from four Class C2 trawlers to a cargo ship believed to be destined for markets along the Thailand border.³⁵² The four Class C2 trawlers were registered in Kelantan (28 arrestees from the trawlers) and the cargo ship was registered in Terengganu (with Thai nationals operating the vessel). A total of 1.5 MT of fish was seized in the operation

³⁴⁶ Pers Coms – Interview in Kelantan during site visit 11 August 2008.

³⁴⁷ *Ibid.*

³⁴⁸ *Ibid.*

³⁴⁹ *Ibid.*

³⁵⁰ Department of Fisheries, Fisheries Statistics, 2005

³⁵¹ Pers Coms – reported during site visit interviews 11-14 August 2008 and confirmed through assessment of official diesel quota allocation data.

³⁵² This was reported to be the first known case where fish smugglers from Malaysian registered vessels bound for Thailand had been caught in the act.



estimated to be worth RM150,000 at
wholesale prices in Malaysia.³⁵³ One hour

³⁵³ Fish 'Sale' at Sea Foiled, 26 July 2008. *New Straits Times*, pg 24.



Table 4.2: Sample of subsidised diesel usage in a Kelantan fisheries district in May 2008³⁵⁴

Zone/Class	Gear Type	Operator Estimates of Weekly Diesel Usage (litres)	Approved Monthly Diesel Quota (litres)	Monthly Quota Used (litres)	Unused Monthly Quota (litres) [NB: Supply not always available]
C2	Trawler	-	28,000	20,000	8,000
C	Trawler	45,000	24,000	13,863	10,137
C2	Purse seine	9,000	0	Eligible for 25,000	Likely a new vessel
C2	Trawler	45,000	28,000	28,000	0
A	Drift/gill net	300	2,000	100	1,900
C2	Trawler	-	28,000	27,800	200
C	Purse seine	2,000	15,000	11,500	3,500
C2	Purse seine	8,000	25,000	13,000	12,000
C2	Purse seine	24,000	25,000	15,433	9,567
C2	Purse seine	30,000	20,000	14,565	5,435
C	Purse seine	5,000	15,000	12,450	2,550
A	Anchovy purse seine	600	5,000	2,550	2,450
C2	Purse seine	45,000	25,000	24,930	70
C2	Purse seine	7,500	20,000	0	20,000
A	Lift net	1,500	3,000	190	2,810
C2	Other gear	500	2,000	0	2,000
C2	Purse seine	2	25,000	14,134	10,866
C2	Purse seine	-	25,000	14,237	10,763
C2	Purse seine	10,000	25,000	11,408.80	13,591.20
C2	Purse seine	20,000	25,000	10,000	15,000
C2	Purse seine	20,000	25,000	0	25,000
C2	Purse seine	20,000	25,000	24,500	500
C2	Purse seine	20,000	25,000	7,798	17,202
B	Trawler	20,000	20,000	13,113	6,887
A	Drift/gill net	500	2,000	720	1,280
C2	Purse seine	10,000	20,000	11,525	8,475
C2	Purse seine	8,000	20,000	11,000	9,000
C2	Purse seine	10,000	25,000	6,906	18,094
B	Trawler	5,000	8,000	9,000	-1,000
C2	Trawler	11,000	28,000	17,000	11,000
C2	Purse seine	9,000	25,000	0	25,000
C2	Purse seine	10,000	25,000	24,800	200
C2	Purse seine	10,000	20,000	15,000	5,000
A	Drift/gill net	120	2,000	450	1,550
A	Hook and Line	2,400	2,000	49	1,951
C	Purse seine	8,000	0	Eligible for 15,000	Likely a new vessel

³⁵⁴ Pers Coms – Data supplied during site visit interviews 11-14 August 2008. For the purpose of this table, no identifying information is provided; the data shown is only assumptive purposes only.



Box 4.5: Following announcement by the Malaysian PM regarding the fuel subsidy, fishermen in Malaysia were reported to have abused the incentive for profits.

RM200 aid 'only for registered fishermen'

ALOR STAR: Some 3,000 registered fishermen in Kedah will receive a monthly allowance of RM200 beginning next month.

State Malaysian Fisheries Development Authority (LKIM) director Mohd Noor Had said the government had allocated about RM7.2 million a year for the allowance.

"The allowance would only

be given to registered fishermen. There are 6,000 fishermen in the state but only 3,000 are registered with LKIM.

"And to date, 90 per cent of the registered fishermen have applied for the allowance," he said at a meet-the-press event here yesterday.

Mohd Noor said the allowance was supposed to be handed out starting last

month but was postponed due to some technical matters.

The amount due last month and this month would be paid to the fishermen soon.

Mohd Noor said the new LKIM complex in Kampung Gelonchor, Kuala Kedah, would be operational by the end of the year.

The RM48 million complex, equipped with the latest facilities,

was initially scheduled to start operations by June.

"It had to be delayed after we found that the waters near the building were too shallow for the fishermen's boat.

"We have solved the problem by digging a slope to allow the water level to increase."

Mohd Noor said the certificate of fitness for the complex was expected by October.

Sabah man heads LKIM

PAPAR: Former Sabah Agriculture and Food Industries minister Datuk Abdul Rahim Ismail has been named the new chairman of the Fisheries Development Authority of Malaysia (LKIM), effective Friday.

Abdul Rahim, who is also the Pantai Manis state assemblyman, confirmed receiving his appointment letter signed by Agriculture and Agro-Based Industry Minister Datuk Mustapa Mohamed.

Abdul Rahim, 58, the son of a fisherman, pledged to do his best to uphold the role and functions of LKIM. "The appointment is meaningful as it means the government has given a person from Sabah an



Datuk Abdul Rahim Ismail is also Pantai Manis state rep

opportunity to lead a federal agency."

The previous LKIM chairman was Datuk Adam Abdul Hamid. — Bernama

95 blacklisted for abusing fuel subsidy

ALOR STAR: Ninety-five fishermen have been blacklisted by the Malaysian Fisheries Development Authority (LKIM) for abusing the e-Petrol and e-Diesel cards to make profits.

Kedah LKIM director Mohd Nor Had said 33 were e-Petrol card holders and the rest held

e-Diesel cards.

"LKIM gave the incentive to ease their burden but they abused it. That's why the action was taken," he said at a meet-the-press event yesterday.

Mohd Nor said without the card, the fishermen would

have to pay RM2.58 per litre for diesel and RM2.78 per litre for petrol, compared with the subsidised price of RM1 per litre for each fuel offered by LKIM.

"They can continue fishing and enjoy the subsidised price if their appeal is granted."

Mohd Nor said the 95 fishermen were blacklisted after LKIM received detention reports from the Domestic Trade and Consumer Affairs Ministry, Malaysian Maritime Enforcement Agency and the Anti-Smuggling Unit. — Bernama

'Aid applicants need more time'

SITIAWAN: Fishermen in Perak want the deadline for the application of cash incentives to be extended as many have yet to receive their fishermen identification cards and boat licences.

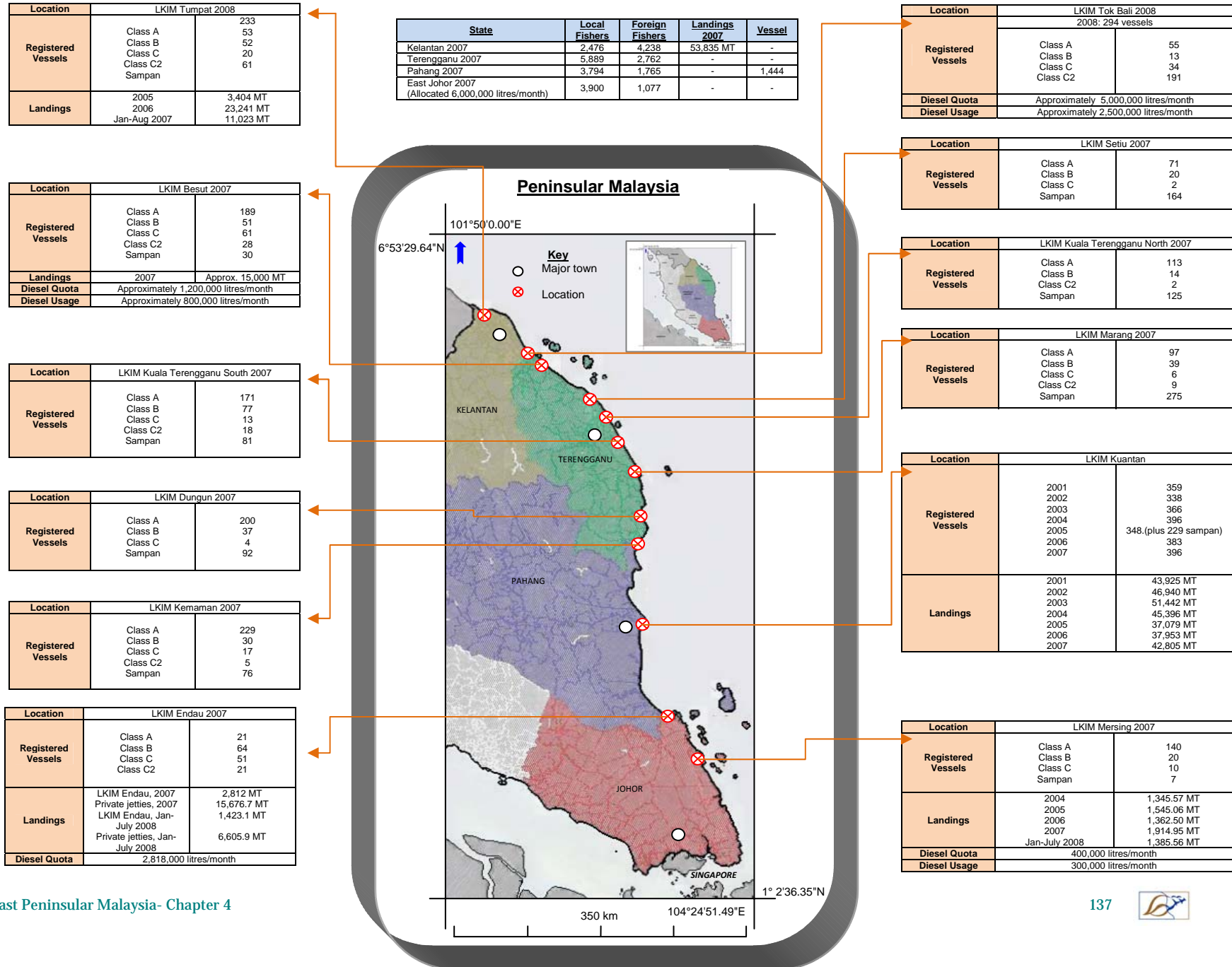
Pangkor state assemblyman Datuk Dr Zambry Abd Kadir said only 1,000 of the 7,800 fishermen in the state were

able to get their ID and licence applications approved by the state Fisheries Department before the deadline, which was today.

He said many had submitted their applications for IDs and licences at the department's branch offices, but there was only one officer in each office to approve the applications.



Figure 4.1: Partial State/District Fisheries Information, East Coast Peninsular Malaysia



before these arrests, enforcement officers arrested the crew of a Thailand registered trawler 82 nautical miles off the coast of Terengganu, trawling near an oil platform. The boat owner of this Thai-registered vessel was identified to be a local Malaysian, whereas the crew were reported only as being “foreign” (Photo 4.2).³⁵⁵



Photo 4.2: Detainees caught during the fisheries enforcement action.³⁵⁶



Photo 4.3 A Class A Kelantan registered fishing boat going to Tak Bai (red superstructured vessel centre), Thailand, while a Kelantan registered Class B fishing boat was leaving Tak Bai, Thailand (green hulled vessel-right). Photograph taken 11 August 2008.

Additionally, during field-trip investigations for this study, Kelantan-based Malaysian fishing licence holders admitted to be preparing to “lease” the use of their license to a foreign boat owner at a fee that was quoted at RM5,000 per month. These arrangements, and the indicated fee, were corroborated in

several interviews to be typical. In order to effect such a transaction, a vessel must be ‘sold’ to the Malaysian licence holder, usually under a contract involving a schedule of part payments over an extended period, and the vessel registered in Malaysia accordingly. Such a plan need not actually require the payment of any deposit by the Malaysian party, and leaves the Thai interests (who actually direct the operations of the boat) complete freedom from interference by the Malaysian party.³⁵⁷

Malaysian registered Class C2 fishing vessels are licensed to fish outside of 30nm from shore within the Malaysian EEZ, and registered Malaysian owners are entitled to purchase diesel at a price subsidised by the Malaysian government (i.e. RM1.43/litre).³⁵⁸ The vessels are required to land their catch at a designated port in Malaysia.³⁵⁹ However, there may be reason to question whether the fish landing conditions of licences are being met in full.

The DOF Statistics for 2005 record that the total annual landings in Kelantan from deep-sea (*Laut Dalam*) vessels was 29,335 tonnes. A typical profile for a Class C2 deep-sea vessel is to make two trips to sea each month. On average, the fish carrying capacity of a Class C2 vessel is about 40 tonnes. If the 138 units of Class C2 deep-sea vessels registered in

³⁵⁷ Fisheries Act, 1985, Section 14(4)(a) prohibits the transfer of licence or permit of a fishing vessel registered under an applicant to another. However, upon application to the Director General, the transfer of licence or permit may be approved if the new applicant meets qualifying conditions under the Act – section 14(4)(aa). Failing that, unapproved transfer of licence or permit is an offence under the Act – section 14(4)(b).

³⁵⁸ However, the registered Malaysian owner of the vessel controls the entitlement card for the purchase of the subsidised fuel, and may take the opportunity so presented to add a small margin on the price of the fuel to further returns from the arrangement with the Thai parties.

³⁵⁹ See Box 4.1, an announcement by the relevant Minister on the implementations of e-landing system to ensure catches are landed at Malaysian fishing ports.

³⁵⁵ *Ibid.*

³⁵⁶ *NST*, 26 July 2008, *Op. Cif.*

Kelantan accounted for all of the reported tonnage landed, at two trips per month, the average landings per vessel would be just approximately 8.8 tonnes per trip.

However, as identified in Chapter One of this report, there are inconsistencies in official fish landing statistics that call into question the accuracy of the data.³⁶⁰ Interview responses suggest that not all fish captured by Class C2 vessels are off-loaded at Malaysian ports, and that Malaysian registered Class C2 boats make frequent trips to southern Thailand where most of the fish are sold at better prices than they would fetch in Malaysia. Were the actual landed tonnage in Malaysia to be less than the recorded figure, the scope for undeclared landings in Thailand would be even greater than initially suggested by comparing the declared figure of 8.8 tonnes with average Class C2 fish carrying capacity of approximately 40 tonnes (Note: **Figure 4.2** showing photographs of Malaysian-registered fishing vessels at Sungai Patani port, Thailand).

In July 2008, a news dispatch reported that:

“Patani’s (in southern Thailand, ed.) governor (regarding)... the fishing sector of this province, which faces the Gulf of Thailand...(said:) ‘The economy of Patani averages 26 billion baht (\$1.1 billion) a year, of which the fisheries sector accounts for 33%’, ... ‘There are 17 fishing factories in operation’... ‘The fishing industry is very important to us; it is one of the main

economies in the province’, he adds of the sector that is fed by over 700 fishing trawlers and commercial boats and smaller boats operated by some 20,000 households... When the seas were abundant – with some Thai trawlers going as far as Indonesia to fish – the monthly catch brought into Patani ranged from 10,000 to 13,000 tonnes of fish, the fisheries office records reveal. But it has halved since then, with only 5,000 tonnes of fish brought in by the boats every month to feed the fish industry’s production line.”³⁶¹

Conservatively, if only 100 of the 191 Class C2 vessels based at Tok Bali, Kelantan, were controlled by Thailand interests, and were only 70% of these to return part of their catch to Thailand, a total of 70 boats could potentially be making two trips per month to a southern Thailand port. If each vessel did indeed land 8.8 tonnes in Malaysia, and caught only half of their carrying capacity each trip, about 22 tonnes of fish would be landed in Thailand each month per vessel. Over a fleet of 70 vessels, this would equate to 1,540 tonnes each month (18,480 tonnes per year), which would represent 30.8% of the declared input of 5,000 tonnes per month to the Patani fisheries industry. The DOF Fisheries Statistics report of 2005 uses a base figure of RM3,919/MT to value fisheries in Malaysia.³⁶²

³⁶⁰ During discussions on this topic with an individual in the industry, it was reported that often landings data, particularly in the northern part of the east coast of Malaysia, is in fact falsified in some cases for a fee reported to be RM150/vessel. The landings are recorded to be higher than they are for reasons claimed to be linked to the continuation of the fishing license. If landings drop below a certain annual level then the license might be revoked, along with the access to subsidised fuel. Therefore, for example, although 10MT may be reported for a vessel's landings, it may in fact land less than that, while the remaining tonnage is taken to Thailand.

³⁶¹ Marwaan Macan-Markar, 'For Thai fisheries, depleted seas are worse than insurgency' *The Brunei Times*, 9th July 2008. See:

http://www.bt.com.bn/en/focus/2008/07/08/for_thai_fisheries_depleted_seas_are_worse_than_insurgency

³⁶² Chapter One discussed this issue and also noted that the apparent average tonnage price was not apparent in the 2006 fisheries statistics.

Figure 4.2: Kelantan registered Malaysian vessels moored at Sungai Patani fishing port, Thailand 2004-05.³⁶³



³⁶³ Pers Coms – Photos supplied in confidence under the proviso that anonymity of the supplier would not be compromised. The reason being that this activity still continues today with a high level of financial interest by those undertaking the illegal activities.

If this figure is applied against a leakage of smuggled fish from Kelantan of 1,540 tonnes per month, the direct loss to the Kelantan economy is just over RM6 million per month, or more than RM72 million per year. Such a figure does not include the opportunity cost to the Kelantan economy of the funds soaked out of the economy by artificially inflated fish prices through market manipulation of supply. Neither does it include the cost of the subsidised fuel that underpins such fish smuggling nor the lost business through provisioning of the fishing vessels with food and ice, some of which at least reportedly also takes place in Thailand ports rather than in Kelantan.³⁶⁴

Geographic proximity to Thailand, in addition to social and industry linkages between the Thailand and Kelantanese fisheries sector, supported by a high number of foreign fishers, seem to provide a catalyst for smuggling diesel, fish and other products such as rice, sugar and drugs. Encouraged by weak enforcement and monitoring, smuggling activities provide participating fishermen an opportunity for greater income than they would enjoy from fishing activities.

One of the primary drivers of both smuggled fish and diesel is proximity to the border where these commodities fetch higher prices than in Malaysia. Thus, the smuggling of fish and diesel into Thailand closely relates to the following elements:

- Fishers are mainly Thais;

- Vessels are formerly Thai-registered;
- Geographic proximity to Thailand; and
- Higher prices are paid in the Thailand market.

These factors help to explain why IUU fishing persists in the northern part of the east coast of Peninsular Malaysia.

Interviews in the other three States, i.e., Terengganu, Pahang and Johor, also confirmed that diesel smuggling occurs throughout the east coast. However, in Pahang and Johor, diesel smuggling was reported to be more a domestic activity, where fishers sell diesel to other Malaysians rather than to neighbouring Economies.

4.1.3 Corruption

The issue of corruption as an influence encouraging IUU fishing is a sensitive topic and interviewees were reluctant to cite specific examples. Nevertheless, corruption was raised by almost every interviewee as a factor affecting the industry. Examples given included the alleged payment to officials to distort fish landing statistics, improper behaviour by officials who administer the fuel subsidy system, and the role of patronage and corruption in the issue of fishing licences.

The investigation of such allegations is well beyond the scope of this study. However, there is evidence in other studies on the Malaysian economy to suggest that such behaviour in the fisheries sector should probably be expected. For example, numerous instances were reported during

³⁶⁴ Pers Coms: Kelantan fisheries industry representatives. The price of a block of ice for a Class C2 vessel was said to be RM9.90 in Kelantan but only RM5.00 equivalent in Thailand.

interviews, that multiple fishing licences were awarded to individuals who had neither a fishing boat nor any experience in the fishing industry. This suggests that the licences were awarded as a mechanism for recipients to earn economic 'rents' through sub-leasing at the expense of public natural resources. Such practice is a common and well documented phenomenon in Malaysia, but it can confuse the policy setting for industry and reduce predictability and transparency for business planning:

*"Among the problems (that) have hindered faster growth has been the emergence of... 'cronyism', or the distribution of rentier opportunities to companies controlled by politicians, retired bureaucrats, parties in the ruling coalition and politically well-connected businessmen... For Yoshihara, crony capitalists were rent-seeking 'private-sector businessmen who benefit enormously from close relations' with government leaders by obtaining 'not only protection from foreign competition, but also concessions, licences, monopoly rights, and government subsidies (usually in terms of low-interest loans from government financial institutions)' resulting in 'all sorts of irregularities' in the economy"*³⁶⁵

At its most base level, corruption can give rise to truly repugnant behaviour as suggested by the literature on human trafficking for fishing boat crew (see below).

4.1.4 Human Trafficking for Fishing Crew

Comment was made during field trip interviews to suggest that not all of the 'Thai' fishing crew working in Malaysia may actually be Thailand nationals. Thailand

³⁶⁵ Gomez, E.T. & Jomo, K.S., 1999. *Malaysia's Political Economy: Politics, Patronage and Profits*. Cambridge: Cambridge University Press. p. 25, citing also Yoshihara, K., 1988. *The Rise of Eratz Capitalism in South-East Asia*. Kuala Lumpur: Oxford University Press.

parties were reported to engage Burmese crew, some of whom were prone to "run away" when the vessel returns from sea. Therefore, Fishing vessels are deployed to Kelantan to discourage crew from returning home or seeking refuge in Thailand with friends or relatives. A report by the United States Department of State reinforces the possibility that Thailand operated fishing vessels may illegally employ foreigners:

*"The true extent of labour exploitation on the high seas is unknown, but cases that surface are truly abhorrent. In August 2006, more than 30 Burmese fishermen died from infectious diseases and lack of medical care on fishing vessels found off the coast of Thailand; the bodies of victims were tossed overboard, discarded like common refuse. Burmese and Cambodian men and boys are trafficked onto commercial fishing boats in ports on the Gulf of Thailand and the Andaman Sea. Promised employment in seafood processing factories by traffickers, they are commonly delivered directly to fishing vessels and constrained until their ship departs."*³⁶⁶

According to testimony before a US Department of Labour Hearing on Child Labour or Forced Labour in May 2008, approximately three million Burmese "migrants live and work in Thailand's low-wage, mostly informal sectors such as domestic service, construction, agriculture, fishing, and seafood processing."³⁶⁷ The UNHCR 'World Refugee Survey 2008 - Malaysia' report also makes reference to

³⁶⁶ US Department of State, *Trafficking in Persons Report: Servitude on the High Seas*. See: US Department of State -

<http://www.state.gov/g/tip/rls/tiprpt/2007/82808.htm>

³⁶⁷ Testimony of Thea Mei Lee, Policy Director, American Federation of Labor Congress and Industrial Organizations (AFL-CIO). Written Testimony: May 7, 2008. Hearing Date: May 28, 2008. Department of Labor, Public Hearing to Collect Information to Assist in the Development of the List of Goods from Countries Produced by Child Labor or Forced Labor. See: <http://209.85.175.104/search?q=cache:6QG1J2ior8J:www.dol.gov/ilab/programs/ocft/pdf/20080423e.pdf+fish+smuggling+thailand+gulf&hl=en&ct=clnk&cd=102>

the forced employment of Burmese as fishers:

*"Malaysia deported nearly 2,300 refugees and asylum seekers to Thailand, at least 14 of whom Thai authorities deported on to Myanmar... In deportations to Thailand, officials often gave advance notice to traffickers who kidnapped the deportees or bought them directly from immigration officials. Deportees reported that immigration officials received 900 ringgit (about \$272) per person from traffickers. If they could afford it, deportees could bribe the traffickers to return them to Malaysia and one reported paying 1,800 ringgit (about \$543). Traffickers often sold those not able to pay to Thai fishing boats, in the case of men, or brothels, in the case of women."*³⁶⁸

Such reports are echoed consistently also in NGO reports such as the following:

*"Given the dire detention conditions, after completing their sentence the refugees often agree to be deported by the immigration authorities to the Thai-Malay border, where they are picked up by smugglers and traffickers. The immigration officers who deport the refugees to the border witness the trafficking that takes place and may benefit from the fees, around 1500 MYR or 500 USD, paid by the refugees to the traffickers. If they are unable to pay for their release, the refugees are sold into forced labour, most commonly on Thai fishing boats. One Burmese Rakhine refugee interviewed by RI (refugees International) had been deported three separate times and each time spent several months working on a fishing boat where he witnessed severe human rights abuses, such as other Burmese workers being shot or stabbed and thrown overboard."*³⁶⁹

And:

"On the Thailand side the deportees are normally delivered to "agents." If

*the refugees can then contact people who have money available back where they lived in Malaysia (usually Kuala Lumpur) then monetary payment is sent to the agent, who then arranges for the refugees' return to Malaysia. In many cases, this ransoming works smoothly. If not, the refugees are in serious trouble. Men are often sold onto Thai fishing boats where they may or may not ever earn money for return to Malaysia. Women and girls are at risk of rape in custody and of being taken away for forced prostitution in Thailand. Other options for earning agent money reportedly include work in factories or begging. Children and teenagers may be particularly vulnerable during this stage, especially if on their own or separated from parents. People actually disappear during this process."*³⁷⁰

The scope of this study does not afford an opportunity to collect direct evidence to corroborate or contradict the comments made by interviewees suggesting that some 'Thailand' fishers working in Malaysia may not actually be Thailand nationals. However, there are a sufficient number of reports available in the public literature concerning Burmese forced labour on Thailand fishing vessels to allow the possibility that such comments may be accurate.

4.1.5 Cultural Attitudes to Hierarchy and Authority

A perplexing aspect of IUU fishing in the east coast region of Peninsular Malaysia was discovered to be the tolerance and patience shown by other industry participants and coastal communities of official inaction against IUU fishing (or even indirect participation) despite common knowledge of the phenomena. Indeed, in one instance, Government officials failed to take action against the operators of a substantial and conspicuous fishing

³⁶⁸ United States Committee for Refugees and Immigrants. 'World Refugee Survey 2008 – Malaysia' 19 June 2008.

³⁶⁹ See: Refugees International Report at <http://www.refugeesinternational.org/content/article/detail/10005/>, and Saw Kanyaw, 'Malaysian Police Arrest 46 Chin Refugees' The Democratic Voice of Burma. 28 January 2008.

³⁷⁰ See: <http://www.projectmaje.org/malaysia.htm>

platform that offered angling holidays *within* a marine protected area (Marine Park) because of concern not to offend members of a Royal family whom were understood to have an interest in the enterprise (see Chapter Three).

Such attitudes cannot be understood easily without consideration of the cultural context within which IUU fishing takes place in Malaysia. Malaysian society reflects a Confucian respect for hierarchy and order. Given the long and substantial interaction between South East Asian cultures and Chinese civilisation, such tendencies are understandable:

"... perhaps the most enduring impact of Confucius is the stress his teachings place on order and hierarchy. The emphasis on hierarchy might be estranged from its Confucianist roots or at least run parallel to Confucianism (as it is among the Malay population of Malaysia, for example), but it is there nonetheless. The arrival of Islam in what is now Malaysia, Indonesia, southern Thailand, and the southern Philippines didn't threaten the existing hierarchy – local princes became sultans, for example... So, despite differing cultural and religious notions and local experience, the adherence to hierarchy is one of the most pervasive characteristics of Asian society."³⁷¹

However, respect for officialdom and especially, at its epitome, the Sovereign, is even stronger within Malay society than suggested even by a Confucian social order. Put simply, Malay culture does not teach nor tolerate its citizens to rise against incompetent or venal officials and rulers.

A good example of attitudes that survive until today is shown by the historical treatment of the murder of Sultan Mahmud in 1699:

³⁷¹ Backman, M., (1999). *Asian Eclipse: Exposing the Dark Side of Business in Asia*. Singapore: John Wiley & Sons (Asia) Pte Ltd. p. 10.

*"At the time, eyewitnesses informed the Dutch that the assassination had been carried out by a group of nobles, which included the Bendahara. Malay histories single out the individual responsible for the fatal blow, a man called Megat Sri Rama whose pregnant wife had been disembowelled at Sultan Mahmud's orders. But though contemporary European accounts corroborate Malay texts in describing the Johor ruler as a vindictive sadist, Malays found the regicide difficult to condone: it was, after all, *derhaka*, treason, which merited the most terrible of punishments. According to the *Siak Chronicle*, Megat Sri Rama was struck on the foot by the ruler's spear. Because of *daulat*, the spiritual powers associated with kingship, grass began to sprout in the wound and for four years Megat Sri Rama suffered agony before he finally died."*

4.1.6 Influence of Ethnicity in Business Dealings

Ethnicity and race play an openly-acknowledged and significant role in the governance and societal practices of East Asian societies, particularly Malaysia. Perhaps the most obvious example of policy related to race is the 'New Economic Policy' (NEP). The NEP was first launched in the Second Malaysia Plan (1971-75) following the May 1969 elections and riots. It set a target that by 1990:

"at least 30 per cent of the total commercial and industrial activities in all categories and scales of operation should have participation by Malays and other indigenous people in terms of ownership and management. The objective is to create over a period of time, a viable and thriving Malay industrial and commercial community which will operate on a par and in effective partnership with non-Malays in the modern sector" (2MP. p. 158).³⁷²

Accordingly, the NEP, *inter alia*, has favoured Malays in the award of Government contracts and issuance of licences, including fisheries licences.

³⁷² As cited in Searle, P. (1999). *The Riddle of Malaysian Capitalism*. Honolulu: Allen & Unwin. p. 14.

In the following example, Ishak also recognises that ethnicity, including language, can influence market alliances and the treatment of fishing crew:

“Since the crew comprised mainly of Malays, Javanese, and Indians (particularly at Pulau Pangkor), and all business dealings were conducted in Chinese – as well as in secrecy, usually in the wholesaler’s private office – conflicts did arise over prices used in valuing the catch.”³⁷³

Ishak’s 1994 study of ‘Market Power, Vertical linkages and Government Policy’ for the Malaysian fisheries sector concludes:

“Another serious non-price barrier to entry was that of ethnicity. With complete domination by the Chinese at all levels of the trade and with every form of market transaction written or spoken in Chinese, the inability to communicate well in the language constituted an effective barrier to entry, in particular, to other ethnic groups.”

Thus, IUU fishing in the east coast region of Peninsular Malaysia takes place in the context of a complex inter-play between Government policy that favours Malays for the issue of licences, the existence of a formal LKIM fish marketing structure run by Government officials who are mainly Malay, and dominance of most channels to market and much of the industry outside of the Government institutions by ethnic Chinese. Such race-based influences can only exacerbate the challenges for rational, outcomes-oriented management of the fisheries sector.

Another factor that may influence the foreign crews to under-report fish catch and smuggle fish to the Thailand market is cultural affinity between foreign

compatriots. Although many of the fish mongers at Tok Bali port in Kelantan are Thailand nationals, the Thailand vessel operators are believed still not to trust Malaysian market practices. For example, a large freezer facility (reported to be approx 1,400 tonnes capacity) was built at Tok Bali Kelantan, but is said to remain largely unused. Apart from the possibility of higher prices in Thailand, one reason offered for this in interviews was that the Thailand vessel operators prefer to do business with other Thai people whom they know and trust well. The freezer facilities at Tok Bali are owned and operated by Malaysians.

4.1.7 Cultural tolerance for ‘rule bending’

A simple examination of rules and laws may not furnish an accurate picture of public policy in any given policy realm. For example, Government allocation of finances and other resources may undermine enforcement (e.g. for motor vehicle emissions) and this may be done deliberately to allow more freedom than legislation might, *prima facie*, suggest is possible.

Also, in Malaysia, regulatory authorities often take a ‘soft’ approach to enforcement. Certain fines may be negotiated and factors such as ability to pay and the degree of contrition shown by an offender can influence the severity of the compound fines and other punishment. In this regard, Malaysia (and other East Asian societies) differ from strictly rules-based systems more familiar in Western Economies.

³⁷³ Ishak, *Op. cit.*, pp. 105-106.

In Chinese jurisprudence, the dichotomy between these two approaches to governance has long been recognised as the contending principles of: the 'legalist school' (*fa-zhi*) favoured in the West, while the 'principles (guidance) school' (*li-ren*) is more common in the East. In this context, the continued acceptance of factors that contribute to IUU fishing, such as demonstrably flawed fisheries data, insufficient fleet coverage for VMS over the past ten years or so, the conspicuous and steady transit of fishing vessels to Thailand ports, and much more, could, in part, be the outcome of the strength of *li-ren* (with a tolerance for bending the rules) over *fa-zhi* in Malaysian society.

4.2 Impacts of IUU Fishing

4.2.1 Economic Impacts

Revenue loss. Loss of revenue resulting from IUUF activities remains an undesirable outcome for the coastal State. Fish piracy gives rise to a loss of potential resource rent.³⁷⁴ Put simply, it reduces future benefits from exploitation of a depleted stock. According to a report by the International Coral Reef Initiative (ICRI), when harvested sustainably, live fish from a healthy coral reef in Southeast Asia can yield up to 0.55 to 1.1 tons per year, per square kilometer, with an annual net benefit of USD \$2,500 -

³⁷⁴ Resource rent is defined as a surplus value, i.e. the difference between the price at which a resource can be sold and its respective extraction or production costs, including normal returns. Source: Sinner, J. et Scherzer, J. The Public Interest in Resource Rent. (Accessed 27th Aug 2008). Available at: www.agrifood.info/connections/2007/Sinner_Scherzer.pdf

\$5,000.³⁷⁵ However, IUU fishers rescind the prospective economic gains by disrupting the entire ecosystem, potentially over-fishing the area and leading to an unsustainable fishery. In 2006, the Malaysian Minister of Agriculture and Agro-based Industry estimated losses of RM4.86 million due to illegal fishing but admitted that actual figure was difficult to determine as fish caught were not landed in Malaysia. See **Box 4.3**. However, an estimate by an earlier Minister of Agriculture had put the figure much higher at an estimated RM1 billion.³⁷⁶

In the east coast of Peninsular Malaysia, the prevalence of foreign IUU fishers continually deprives the Malaysian economy of fisheries income. Apart from losses arising from depleted resources, revenue loss also includes non-payment by IUU vessels of landing fees, licence fees, taxes and other related levies. In addition, impacts resulting from loss of income and employment in ancillary fisheries industries equally reduce potential earnings. Local upstream fisheries activities, which can include manufacturing of fishing gear, boats and equipment, cold storage facilities, etc., experience diminished business. Downstream activities, such as post-harvest processing and packaging, marketing and transportation, are also harmed. An indication of the potential scale of such lost business is explored below.

Some IUU vessels remain at sea for a long period. They deploy 'supply ships' to

³⁷⁵ Coral Reefs and Exploitive Fishing. (Accessed 27th Aug 2008). Available at: www.icran.org/pdf/ExploitiveFishingIssueBrief.pdf

³⁷⁶ YB Affendi, Minister of Agriculture, *NS7* 2002.

replenish fuels, baits, fishing gears, fresh water and food items. Often, IUU 'supply ships' tranship the illegal catch at sea. In the present case, most fish taken illegally by foreign boats are processed and value-added in Thailand, often to be exported back to Malaysia.

The occurrence of IUU fishing also reduces port activity, which leads to a loss of secondary income including revenue from processing and re-exporting, harbour revenues, servicing proceeds, transport earnings and related employment opportunity. This in turn affects the general standard of living, and results in a loss of tax revenues. Secondary multiplier effects such as the potential loss of activity in shipbuilding and servicing restrict the development of technical skills and know-how in relevant fields.

IUU fishing also affects the livelihood of low-income fishing communities. Some commercial IUU fishers intrude on near-shore fishing zones, damaging fishing gear set up by artisanal fishers and depleting fisheries resources.

Furthermore, a decline in fish supply will result in decreased income due to reduced opportunities from fish processing (e.g. making dried salted fish, fish crackers, fish sausages, fish/shrimp paste), which usually is carried out by fishermen and their immediate families.³⁷⁷

The persistence of IUU fishing undermines respect for fisheries MCS arrangements by legitimate fishers. Perception of weak

³⁷⁷ See report on field-visits for elaboration. On file with Client.

enforcement, coupled with the potential for high returns from IUU fishing encourage others to explore IUU fishing activities.

Indeed, IUU fishing contorts competition amongst marine resource users and endangers the economic survival of those who fish according to the law and relevant management measures.³⁷⁸ Law-abiding fishing entities acquire fishing licenses and pay various fees. In contrast, IUU fishers scour the sea potentially with no other fees to pay apart from the cost of fishing gear, vessel and crew.³⁷⁹

The lower running costs of IUU vessels are achieved by avoidance of insurance fees, licenses, taxes and royalties; disregard for health and safety standards; and non-compliance with vessel monitoring system (VMS) requirements.³⁸⁰ All of these help to make IUU fishing economically tempting.

Examples of economic impact. The structure of the Malaysian fisheries industry, particularly with regard to the multi-layered system of post-harvest distribution and sale, tends to encourage micro-market conditions of glut and scarcity that significantly influence price.³⁸¹ For example, if *Tongkol Kayu* (White Tongkol, a

³⁷⁸ Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries. 2005. Marine Resources Assessment Group Ltd. London. A report prepared for the UK Department for International Development (DFID).

³⁷⁹ Illegal, Unreported and Unregulated Fishing. New Zealand Plan of Action to Prevent, Deter and Eliminate Illegal, Unregulated & Unreported Fishing. 2004. Ministry of Fisheries New Zealand. (Accessed 28th Aug 2008). Available at: <http://www.fish.govt.nz/en-nz/Publications/Historical+Documents/IUU+Fishing/default.htm>

³⁸⁰ *Ibid.*

³⁸¹ See generally the arguments of Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York.

neritic tuna) were to be landed in Kelantan by a single boat, the price could be expected to be around RM4.20 to RM4.50 per kilogram. However, if several boats were to land the same species, the price has been known to fall rapidly to as low as RM3.00 per kilogram.³⁸² Should that same fish be sold in Thailand, the demand from fish processors is such that the price can be expected to remain firm at around RM5.00 per kilogram.³⁸³

In some cases, the price differential between the Malaysian and Thailand markets may be sufficient that certain fish are not sold in Malaysia at all.

One such example might be the *selar kuning* (yellowtail scad). As explained in Chapter One, this was an important fish landed in high tonnage until 2003, after which almost *no* reported landings were made to 2006. However, the fish is freely available in local markets and sells for about RM0.50 per kilogram.

Selar kuning is a key ingredient in several local dishes (e.g. *Masak Singur* and *Masak Zamak*). However, the same fish sells in Thailand for the equivalent of about RM2.70 per kilogram. It is the basis of a dish called *Ikan Manis* (fillets that are dipped in a sweet coating and deep fried). *Ikan Manis* is an export product for Thailand that is sent to Malaysia where it sells for up to RM8.00 to RM12.00 per kilogram.³⁸⁴ Therefore, whether in the form of *Ikan*

Manis or as a frozen product, any fish that had been landed in Thailand would not be recorded in Malaysia as domestic landings but as imports, if recorded at all.

Another example might be *Cincar* (used in *Gulai Lembuduk*), which is not a fish favoured in Thailand. Quantities of the fish are reportedly brought into Malaysia from freezer facilities in Thailand at a steady rate that maintains market price, with sales

made near the border area at Tak Bai each morning and landed at Kota Bharu where it is

sold at the '*Pasar Borong*' (wholesale food market) "behind the Pantai Timor supermarket".³⁸⁵ The suggestion was made during interviews that at least some of these fish may actually originally have been caught in Malaysian waters.

Selar Kuning' sells for about 50 sen/kilo in the local market, but sells in Thailand for RM2.70/kilo.

4.2.2 Social Impacts

The social impacts of IUU fishing link to its economic impacts. Reduced harvest due to IUU fishing leads to lower income and rate of employment, which exacerbates poverty. This effect is potentially severe on the east coast of Peninsular Malaysia because social support and alternative livelihood opportunities in Malaysia are not well-established. In an interview³⁸⁶ with a senior purse seine skipper, the skipper noted that many fishers have abandoned fishing to take up jobs as labourers due to the decline in landings. In Malaysia, labourers are paid very poorly and the

³⁸² Pers Coms: Kelantan fisheries industry representatives.

³⁸³ *Loc. cit.*

³⁸⁴ Pers Coms, Kelantan fisheries industry representatives. An observation was made that Malaysia does not have the technology to make *Ikan Manis*, and that even if investment was made to introduce the technology, Thai fishers would not be willing to sell necessary fish to a Malaysian producer.

³⁸⁵ *Loc. cit.*

³⁸⁶ Site visit interview, 14-08-08.

changing of jobs would provide little, if any, improvement to the economic situation of the former fishermen concerned.

As mentioned in Chapter 2 of this report, a high percentage of small-scale traditional fishers live in poverty, despite numerous relevant government subsidies. One consequence of poverty can be a rise in crime. Sidhu (2005)³⁸⁷ notes that:

“With regard to unemployment, studies have shown a significant correlation between unemployment (which includes those having difficulties in finding a higher paying job) and property crime. A review of the 49,243 prisoners in our correction facilities has shown that 95% of them earned less than the Malaysian Real per Capita Income.”

Statistics provided by the Malaysian Prisons Department³⁸⁸ show the relationship between low-paying jobs to involvement in crime. As shown in **Table 4.3**, approximately 95% percent of the surveyed criminals earned below the Malaysian Real per Capita Income of RM13,708 (roughly RM1,142 per month). Given that the highest mean monthly income of east coast fishermen – not including the owner/shipper – is approximately RM1,000, with a majority earning in the bracket between RM400 and RM500,³⁸⁹ there is a risk that some will turn to criminal activity as an alternative source of income.

Some fishers and their family members have turned to drugs (easily obtained in the east coast). During interviews with coastal community leaders in Terengganu

in 2005, the link between drug abuse and property crime was emphasised repeatedly.³⁹⁰

Table 4.3: Convicted Prisoners by Monthly Income - extracted from Sidhu (2005)

Monthly Income (RM)	Total Prisoners	Percentage
Unemployed	8,543	17.3%
Below 250	4,027	8.2%
250 - 500	11,880	24.1%
500 - 750	14,778	30%
750 - 1000	7,573	15.5%
1000 - 1500	1,696	3.4%
1500 - 3000	746	1.5%
Total	49, 243	100 %

Impact on women & family. Although the participation of women in active fishing is low, their contribution in the market place, including auctioning, processing and retail selling of fish, remains strong along the east coast of Peninsular Malaysia.

IUU fishing deprives the market of fish resources and therefore reduces income opportunities for women. Also, the household responsibilities of women increase proportionately with longer at-sea period of the male members of the family associated with falling catch per unit rate of effort (CPUE). Not only do women feed and educate children, and manage the household, they also tend to social relations within the community and with relatives, friends and other individuals during periods of long absence of the men. Field trip interviews reported anecdotal instances where wives of fishers had affairs with other men while their husbands were away during long fishing trips. Such activity would seriously threaten family break-up (especially in the conservative

³⁸⁷ ACP Amar Singh Sidhu. 2005. The Rise of Crime in Malaysia - An academic and statistical analysis, Journal of the Kuala Lumpur Royal Malaysia Police College, No. 4, 2005, pp. 16 -17.

³⁸⁸ *Ibid.* p. 17.

³⁸⁹ See Table 2.1 of Chapter 2 of this report for details.

³⁹⁰ Terengganu Coastal and Islands Study, *Op. cit.*

communities of the east coast of Peninsular Malaysia).

Crew safety. Unsafe vessels and fishing practices are common on board Malaysian fishing vessels in general. However, IUU fishing boats may be unlicensed and often operate outside of the rudimentary processes that do exist to inspect fishing vessel seaworthiness. Consequently, many IUU vessels do not carry life jackets, flares, adequate medical supplies, or even clean water. Fishing industry sources reported to field researchers to this study that accidents occur frequently during fishing operations because of poor safety standards; however, these accidents are usually unreported and therefore no statistics are available. Reportedly, many fishers cannot swim. One interviewee recounted a first-hand incident of a fishing deck hand pulled overboard during hook-and-line operation. The individual concerned was said to have drowned. Furthermore, many of the crew are unaware that they are engaging in IUU fishing operations, which puts them at risk of capture or life-threatening conflicts at sea.³⁹¹ The loss of such key income earners on coastal families is obviously debilitating to their standard of living.

“...crew members on IUU fishing vessels are often denied fundamental rights regarding terms and conditions of labour, for example in relation to wages, hygiene, standards, and working and living conditions. Food safety standards are frequently not met by IUU operators, ultimately putting the consumer at risk.”

*Source: The New Zealand Plan of Action to Prevent, Deter and Eliminate Illegal, Unregulated & Unreported Fishing.*³⁹²

Drug addiction. During site visit interviews along the east coast in August 2008 respondents reported that barter trading of fish in return for illegal substances such as methamphetamine is common practice for vessels that transfer fish at sea to Thailand vessels. During an interview with a private drug rehabilitation centre, the interviewee reported that there appears to be a strong link between the fisheries industry and drug addiction. This is in part facilitated by easy access to drugs through smuggling activities. Drugs are smuggled across the border either by land (often in small quantities) or by sea (usually in larger quantities).³⁹³ The rehabilitation centre reported that up to 20% of participants in their program (either a six or 12 month program) are linked to the fisheries industry, and that these guests individuals are often fishing license holders or the sons of license holders (the centre does not cater to women).³⁹⁴

³⁹¹ Fish Piracy: Combating Illegal, Unreported and Unregulated Fishing. 2004. *In* Proceedings of an OECD workshop in Paris. Organization for Economic Co-operation and Development. OECD Publishing.

³⁹² *Op. cit.*

³⁹³ Pers Coms – Interview with private drug rehab centre 12 August 2008.

³⁹⁴ In 2005-2006, another study conducted in Terengganu. (Terengganu Development Institute Coastal and Island Study) identified drug abuse/addiction as a critical issue for coastal Terengganu. Many of the drug abusers were identified to be involved in the fishing industry. In Dungun,

The Centre observed that the cost of treatment may be an obstacle to their efforts.³⁹⁵ They also commented that some fishers become addicted at first to stay alert during the long hours onboard the boats. The centre employees noted that when visiting fishing ports they often observed the physical signs of drug addiction among the crew of some boats.

As the drugs move south from the source of production in Thailand they reportedly become more expensive (i.e. one methamphetamine tablet in Kelantan costs RM20, while in Terengganu it costs RM30).³⁹⁶

4.2.3 Environmental Impact

Depletion of fish stocks. IUU fishing contributes to depletion of coastal stocks that are already severely over-fished in the Malaysian waters.³⁹⁷

Such unregulated harvest results in unsustainable impacts on fishes and the environment, which are likely to reduce productivity, biodiversity and ecosystem resilience.³⁹⁸ IUU fishing on the east coast of

Kemaman, Besut and Setiu, drug abuse was frequently linked in interview responses with boredom and disillusionment from under-employment and lack of opportunity. A consistent opinion throughout coastal communities was that the main cause of robberies was drug abuse: *TCIS Draft Final Report*, October 2006.

³⁹⁵ The cost of treatment is not high in comparison to the cost of supporting a RM100/day drug habit. Admission costs to the rehab centre are RM780 and the monthly fee is RM500. However, often the families of addicts cannot afford these fees and help is sought under the public healthcare system.

³⁹⁶ *Ibid.*

³⁹⁷ Statement by the Director General of Fisheries Malaysia; http://www.nst.com.my/Current_News/NST/Friday/National/2335535/Article/pppull_index.html, accessed 6 September 2008.

³⁹⁸ Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries. 2005. Marine Resources Assessment Group (MRAG) Ltd. London. A report prepared for the UK Department for International Development (DFID).

Peninsular Malaysia has without doubt contributed to the depletion of fish stocks and reduced future fish resources. There are fluctuations in species landing which have not been fully examined.³⁹⁹ Further research is needed to provide concrete evidence document incidences of local extinction or collapse in fish stocks.⁴⁰⁰

Given the extent of likely illegal and unrecorded landings, IUU fishing has led to excessive harvest off the east coast region, and this has given rise to an unsustainable fishery, which eventually will lead to general overexploitation. Importantly, under-reporting of fish landing has compromised scientific stock assessment, which is necessary for sound fisheries management.

Species mortality. Fishing in general results in by-catch species impact. This is especially harmful for threatened and endangered species like cetacean, sea birds, and turtles, which are slow-growing animals with long life spans. Significant by-catch can deplete their population. On the east coast of Peninsular Malaysia, turtle numbers have declined drastically in recent decades, and leatherback turtles are effectively now extinct in that area.⁴⁰¹

³⁹⁹ Economic Planning Unit. Malaysian National Conservation Strategy – towards sustainable development. Volume 2 (Administration). Economic Planning Unit, Prime Minister's Department, Kuala Lumpur, 1993

⁴⁰⁰ See, further discussion in Basiron, M.N. *Future Challenges in the Management of the Marine Environment in Malaysia*. Available at: www.mima.gov.my/mima/htmls/papers/pdf/MNB/future%20challenges%20marine%20environ.pdf.

⁴⁰¹ The East Coast of Peninsular Malaysia, particularly Terengganu, had been popularly known for the unique and abundant nesting of sea turtles in the 1970s and 1980s ...The highest concentration of green turtle nesting in Peninsular Malaysia occurs mainly around the islands and mainland of the states of Terengganu and Pahang. Leatherback nesting was mainly found on the 1.5 km stretch of beaches of Rantau Abang and Paka in Terengganu and was recorded at Chendor in

The WorldFish Centre paper on *Fisher Profiles and Perceptions, of Sea Turtle-Fishery Interactions* reported that following interviews with fishers, Chan et. al. (1988) documented that in Terengganu, incidental captures of sea turtles in fishing gear is a significant factor on the mortality of these animals in Terengganu. The main gears that caught sea turtles include trawl nets, followed by drift/gill nets and bottom long-lines. The study suggested that trawl and drift nets each had the potential of capturing an average of 742 and 422 turtles respectively, per year. A large number of turtles reported caught in the 1988 study were leatherbacks, followed by both olive ridleys and green turtles.⁴⁰² Although efforts have been taken to introduce turtle exclusion devices, these are unlikely to be used by IUU fishing vessels.

Over the years, other incidences over marine species mortality have been reported in the East Coast of Peninsular Malaysia. One recent incident involved the death of a Bryde's whale that died following ingestion of foreign objects which included a nylon rope (the incidence is discussed further under 'rubbish dumping' below).

Pahang and in Johor (Kamarruddin 1996 and Mohd Najib and Kevin 1999). Around 2,000 leatherback nests were recorded in the 1950s which dropped drastically in the 1990s to around 213 nests in 1994 and 14 nests in 2003 (Zulkifli et al. 2004). In 2005, one leatherback landing was reported while five landings were reported in 2006 (K. Ibrahim, Pers Coms). Extracted from: The WorldFish Center, 2007. *Fisher Profiles and Perceptions, of Sea Turtle-Fishery Interactions: Case Study of East Coast Peninsular Malaysia*, WorldFish Center Discussion Series No. 6

See also, Chan, Eng Heng, 2006. *Marine Turtles in Malaysia: On the verge of extinction?* Aquatic Ecosystem Health and Management, 9(2). Taylor and Francis Group.

⁴⁰² *Op. cit.* WorldFish Discussion Series No 6.

Moreover, IUU fishers will catch juvenile species of commercially important species, which will be discarded dead back into the sea to maximise storage room for more valuable product. The extent of this loss is unknown but is likely to be substantial in terms of fishing mortality.

Ecosystem destruction. Marine biodiversity is an effective indicator of the health of marine environment apart from marine water quality.⁴⁰³ In addition to negative effects on fish stocks, IUU fishing can severely impact the wider marine ecosystem. Fishing activities lead to changes in the structure of marine habitats and influence the diversity, composition, biomass and productivity of the associated biota. The direct effects of fishing vary according to the gears used and the habitats fished, but they usually include the scraping, scouring and re-suspension of bottom sediment. Trawling and dredging wreak havoc on the marine ecosystem.

In sheltered areas where complex habitats develop at minimal depth, such as coral reefs, the direct effects of fishing may be marked and have profound effects on the ability of the habitat to sustain fish production. The corals that support a wealth of other marine life, can be destroyed with a single pass of a bottom trawl, and may take decades to recover.

⁴⁰³ See, Basiron, M.N. *Future Challenges in the Management of the Marine Environment in Malaysia*. Available at: www.mima.gov.my/mima/htmls/papers/pdf/MNB/future%20challenges%20marine%20environ.pdf. Many habitats are fragile, for example, the inshore shallow seas, mangrove, coral, and seagrass beds, which act as breeding ground and settlement areas for other marine animals including juvenile fish.

IUU vessels are more destructive than licensed vessels because IUU fishers disregard management actions such as closed areas aimed to reduce habitat destruction. Although fishing is prohibited around the two-nautical mile limit of the marine park, villagers have witnessed incidences of illegal fishing often by foreign vessels around the vicinity of Pulau Perhentian (Terengganu) and Pulau Redang (Terengganu) marine parks.⁴⁰⁴ Most IUU fishing in the marine parks occur at night at which time enforcement activities are at its minimum as confirmed by Malaysian enforcement agencies.⁴⁰⁵

Box 4.6: Impacts of fishing activities on coral reefs around Pulau Perhentian

Overfishing

Although, current IRPA field-research has had no opportunity to survey and relate the impact of fishing activities over coral reefs around the islands of Payar and Perhentian, there is alleged fishing⁴⁰⁶ on island reefs particularly those off Pulau Perhentian by mainland-based fishers. These fishers are often from Besut, Kemaman, and some come as far as Kota Bharu. Fishing is often conducted at night - when there are almost non-existent enforcement operations.

The IRPA Mapping group spotted fishing vessels at almost every corner of the group of islands around Perhentian. They reported that indiscriminate anchoring of vessels on coral reefs, careless behaviour of tourists and fishermen, seasonal winds and waves as likely factors that break branching *Acropora* into rubble.⁴⁰⁷ Similar finding was found when the Mapping Group mapped corals at Pulau Payar. Dead corals found nearest to the beach at the Marine Park Centre due to snorkeling and boat anchoring.⁴⁰⁸

Source: Legal Review for the IRPA Project on Coral Reef Rehabilitation in Marine Park Islands
IRPA Project No: 08-02-04-0123, unpublished.
(On file with SRM)

Continuous illegal fishing in gazetted Marine Parks annuls the purpose of conserving the ecologically important area.⁴⁰⁹ Damages caused by fishing gear destroy the habitat for marine life and affect the natural breeding grounds of fishes, causing the natural regeneration of the marine park ecosystem to be sluggish.

Table 4.4 lists threats to the marine biodiversity in the east coast of Peninsular Malaysia, which include overexploitation, pollution and habitat destruction. Illegal fishing by foreign vessel is deemed to have a 'low impact' on the marine ecosystem. Destructive fishing methods were not reported to affect fisheries resources, sea turtles nor the coral reef ecosystem, which appear to be contrary to other research findings including anecdotal evidence related by local fishermen and villagers.⁴¹⁰

⁴⁰⁴ Pers Coms during field study visits for the Terengganu Coastal and Island Study in 2005 by SRM.

⁴⁰⁵ Pers Coms with DOF and MMEA.

⁴⁰⁶ Communication with Abdul Rahim whose family live in Besut and Pulau Perhentian: 15 July 2002.

⁴⁰⁷ Sand and rubble were found as the most dominant substrate (coral growth forms) at 40.3% in Perhentian Besar, whereas the same in Perhentian Kecil was 46.5%. See *Coral Reef Mapping of Pulau Perhentian's Marine Park*, Jefri Mat Saad et al.

⁴⁰⁸ *Mapping of Coral Reefs at Pulau Payar Marine Park*, Jefri Mat Saad et al., p.3.

⁴⁰⁹ See discussion on fishing in Marine Park in Chapter 3.

⁴¹⁰ E.g., Pers Coms with a Johor purse seine skipper during 14-08-08 site visit interviews. The skipper noted that a lot of damage to fish habitat have been caused by trawlers, where "too many" of them are operating in the near-shore zones.

Table 4.4: Impacts of human activities on marine ecosystem in the East Coast of Peninsular Malaysia.

LIVING MARINE RESOURCES AND IMPACTS OF HUMAN ACTIVITIES	EAST COAST OF PENINSULAR MALAYSIA
(1) Fisheries resources	
• Overfishing (Inshore fisheries)	3
• Destructive fishing method	0
• Illegal fishing by foreign vessels	1
• Ecosystem degradation	1
• Coastal development	1
• Land-based pollution	**
• Marine pollution (oil spill)	**
• Red tide bloom	1
(2) Sea turtles	
• Excessive egg-harvest	3
• Intentional/accidental catch	1
• Destructive fishing method	0
• Marine pollution (tar-ball)	2
• Land-based pollution	**
• Excessive coastal development (mainly for tourism)	3
• Coastal erosion (beach)	1
(3) Coral reef ecosystem	
• Destructive fishing method	0
• Intensive recreational use	3
• Land-based pollution (oil spill)	x
• Marine pollution (oil spill)	1
• Coral and sand mining	**
Note: 3 = adverse impact; 2 = moderate impact; 1 = low impact; 0 = not reported; ** = status not classified; x = unknown.	

Extracted and reproduced from: Basiron, M.N. *Future Challenges in the Management of the Marine Environment in Malaysia*. Available at: www.mima.gov.my/mima/htmls/papers/pdf/MNB/future%20challenges%20marine%20environ.pdf

Rubbish dumping. Uncontrolled dumping of rubbish and other waste from the IUU vessels pollutes the marine environment. Torn nets and other malfunction fishing gears are frequently thrown into the waters resulting in the 'ghost-fishing' phenomenon. Fishing gear tends to be constructed from synthetic fibres that are non-biodegradable. Once discarded, a cycle of capture, decay and attraction tends to develop with lost gear. The net catches fishes, which will then die or eventually eaten by other predators. Once clear of fish, the net would attract and

catch fish again. This vicious cycle can repeat continually.⁴¹¹

As recent as 13 October 2008, a Bryde's whale was found stranded (often also termed as 'beached') in the shallow waters at Kuala Nenasu estuary near Pahang. Efforts by the DOF, the Turtle and Marine Ecosystem Center (TUMEC) and villagers to release the whale back to the sea proved futile when the whale returned to the beach the following day. The female whale died two days after it was found. Initial post-mortem revealed the presence of plastic bags, a clump of nylon rope and a bottle cap in the intestines of the whale.⁴¹² The foreign objects found in the whale blocked its intestinal tract reportedly led to its death.



Photo 4.4: Efforts to rescue the 10-meter-long Bryde's whale came to no avail.

Source: *New Straits Times*.

⁴¹¹ Ghost Fishing. (Accessed 26th Aug 2008). Available at: <http://www.jncc.gov.uk/page-1567>

⁴¹² See detailed story in "Plastic bags, rope found in whale's intestines", in *New Straits Times*, Thursday, October 16, 2008. Pg 16. Reproduced above.

Box 4.7: Excerpt from NST 'Plastic bags, rope found in whale's intestines.'

NEW STRAITS TIMES THURSDAY, OCTOBER 16, 2008

Plastic bags, rope found in whale's intestines

PEKAN: Plastic bags, a clump of nylon rope and bottle caps were among the foreign objects found. In the intestines of the whale which died on Tuesday after it was stranded in Kampung Kuala Nenasi.

A research officer with the Turtle and Marine Ecosystem Centre (Tumec) in Rantau Abang, Mohd Lazim Mohd Saif, said the plastic bags, including black garbage bags, and nylon rope could have completely blocked the mammal's intestinal tract and this could have contributed to its death. -'

"All the objects found in its stomach were believed to have been ingested by the whale while it was in the open sea.

"Since the whale often migrates from one location to another, we could not confirm how these objects ended up in its intestine," he said yesterday when asked about the initial post-mortem findings.

The 10-metre-long female Bryde's whale was first stranded in the shallow waters at the Kuala Nenasi estuary early Monday morning.

It was towed out to sea later that night and released but the next morning, it was once again found beached on the same stretch.

It died on Tuesday despite the frantic efforts of villagers and fishery officials.

Lazim said the minor bruises found on the whale's body were normal as they could have been caused by the whale's aggressive movements when it accidentally brushed against the corals in the sea.

The whale's carcass was towed to the Kuala Nenasi jetty by fishing boats about 6pm on Tuesday before the post-mortem examination was conducted two hours later.

Four veterinarians from the regional Veterinary Laboratory in Kuantan and officers of the Fisheries Department were present during the post-mortem on Tuesday night.

Sources said the actual cause of death could only be ascertained after a thorough examination of samples collected from the whale's carcass.

"The team harvested certain organs and the whale's stomach contents for further investigations."

The team is expected to complete their probe and prepare a report in about two weeks.

State fisheries director Mohamad Mat Seman said the department would wait for the full post-mortem report from the veterinary team to determine the cause of death.

In Kampung Kuala Nenasi, nearly 500 people braved the chilly air of the seaside village to witness the burial of the three-tonne whale in the wee hours of Tuesday morning".

An excavator was used to carry the whale's carcass and placed it into a 1.8 metre-deep hole.

The villagers are divided on whether the arrival of the whale on their shores was a good omen.

"For some fishermen, the arrival of the whale was a good sign that their income will double this year but there are also others who believe otherwise," said Saman Mohamad, 42.

Meanwhile, Lazim said officials from Tumec would dig up the bones of the whale after two months and display it at the Tumec exhibition centre in Rantau Abang.

unscrupulous dumping of rubbish and fishing gear.⁴¹³ However, whether the rubbish and fishing gear were thrown into the sea by illegal fishers or otherwise will be difficult to prove. This incident is not an isolated occurrence and demands fishing practices to be better regulated and monitored to prevent further destruction of such marine species.

Food & health security. As already discussed in Chapter 1, IUU fishing activities in the East Coast Peninsular Malaysia have contributed to increase in fish price, which makes fish less attainable to the fisheries community, including the poor who make up a high percentage of coastal village dwellers in east coast Peninsular Malaysia.

Related to this, many IUU vessels operating in this area not conformed to acceptable hygiene standards in their fishing and storing operations. Accordingly, fish sold either in the east coast or in other neighbouring Economies may be susceptible to pathogen and viral attack due to poor handling; or at best, suffer deterioration in flesh quality. Consumption of contaminated fish can possibly affect human health.

Given that legitimate fishing practices lack the necessary cold-chain standards, any guarantee that IUU fishing in this region would meet or surpass the minimum hygiene standard would be improbable.

⁴¹³ Bryde's whale feeds on crustacean and small fish by gulping at a school of fish, and straining out the water through its baleen plate while retaining fish in its mouth. This method of lunge fishing exposed the whale to risk of ingesting litters and harmful waste. See, *Balaenoptera edeni* — Bryde's Whale. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=35. Accessed 18-10-08.

The unfortunate Bryde's whale and its deadly encounter with dumped rubbish incident in Pahang is an example of

The current study does not afford an in-depth investigation that would include research on IUU vessel conditions (which might prove difficult or even risky following our field visit experience, where our field team encountered some unfriendly, mostly foreign fishermen). Thus, confirmation on whether IUU vessels conform to acceptable cold-chain handling standards remain to be established.



5.0 Monitoring, Control, and Surveillance (MCS)

5.1 Management of Fisheries

The Department of Fisheries (DOF) Malaysia, in the Ministry of Agriculture and Agro-based Industries, is responsible for management and development of the national fishery sector. However, other enforcement agencies support DOF in executing MCS tasks pursuant to that responsibility. This chapter outlines the Malaysian approach to fisheries MCS, along with the respective mechanisms and responsibilities of relevant agencies. The effectiveness of present arrangements is also considered.

5.2 Monitoring, Control and Surveillance of Fisheries

MCS is an essential and integral component of fisheries management. However, in Malaysia, MCS of fisheries has been weak. For example, for the period of 2000 to 2004, although 2,619 foreign fishing vessels were reported by Royal Malaysian Air Force surveillance flights to be fishing illegally in Malaysian fisheries waters, and 771 of these in the South China Sea off the east coast of Peninsular Malaysia, only 120 arrests were made.⁴¹⁴ Indeed, for the year of 2005 to 2007, apprehension of foreign fishing vessels in Malaysian fisheries waters off the east coast of Peninsular Malaysia

were only numbered at 13, 19 and 39 respectively.⁴¹⁵ "Eleven ships and boats... made only one arrest during the three-year period. One of these ships is KM LANGKAWI. Despite its capabilities (ocean-going 1,300 tonne OPV, *ed.*) it made only one arrest...".⁴¹⁶

There are many factors contributing to the low success rate in detection and arrest of illegal fishing in Malaysian waters, including: the type, number and age of enforcement vessels; levels of training for enforcement personnel; limited surveillance technology; inter-agency rivalry and consequent dissipation of limited finances for fisheries enforcement; and a lack of political will to address the problem.⁴¹⁷

5.2.1 Monitoring

In theory, monitoring is carried out through the measurement of fishing effort and resource yields, which are estimated by direct fisheries assessments. Effort is made to collect data on the biological, economic and social aspects of fisheries and basic information on fishers, vessels and gear. However, in practice, fisheries

⁴¹⁴ Sutarji, HJ & Hashim, NR, 'Application of Geographic Information System (GIS) and Statistical Methods for Effective Marine Fisheries Law Enforcement in the South China Sea.' Paper presented at the *National Fisheries Symposium* (NAFIS), Kuala Terengganu, 14-16 July 2008.

⁴¹⁵ *Ibid.*, pp. 11-12, citing data from the respective Annual Reports of the NMECC in the Prime Minister's Department of Malaysia.

⁴¹⁶ *Ibid.*, p. 15.

⁴¹⁷ *Ibid.*, p.16.

data has been shown to be unreliable in Malaysia (see Chapter 1).

For vessels and fishing gear, a fisheries management data base maintained by DOF captures new registrations and changes in ownership, gear-type, and engines. Details of fishers are collected through census surveys and recorded in a computer database called the 'Fishermen's Profile System'. Incidences of offences and prosecution are also recorded in the database.⁴¹⁸

5.2.2 Control

Management controls are applied through a variety of instruments, including:

- (i) Legislation;
- (ii) Fishing effort control (through licensing);
- (iii) Control of fishing areas/locations (zonation);
- (iv) Control on duration or period of fishing; and
- (v) Control in ports and at sea.

(i) Legislation

Fisheries management in Malaysia is governed by the *Fisheries Act 1985* and its subsidiary regulations. However, most fisheries enforcement in Malaysia is now undertaken by the Malaysian Maritime Enforcement Agency (MMEA), and this is especially so beyond three nautical miles from the shoreline.

⁴¹⁸ Teo, S.W. 2005. *Monitoring, Control and Surveillance of Fisheries in Malaysia*. (Accessed 12th September 2008). Available at: <http://ftp.fao.org/docrep/fao/field/006/x1352E/x1352e05.pdf>

The term 'Malaysian Fisheries Waters' that is listed in the definition of the 'Malaysian Maritime Zone' in the *Malaysian Maritime Enforcement Agency (MMEA) Act 2004* s.2,⁴¹⁹ 'means the Malaysian fisheries waters as defined under s.2 of the *Fisheries Act 1985*'.⁴²⁰ In the *Fisheries Act 1985*, s.2 defines 'fisheries waters' to mean "maritime waters under the jurisdiction of Malaysia over which exclusive fishing rights or fisheries management rights are claimed by law and includes the internal waters of Malaysia, the territorial sea of Malaysia and the maritime waters comprised in the exclusive economic zone of Malaysia".⁴²¹

'Maritime waters', according to the *Fisheries Act 1985*, s.2 means "areas of the sea adjacent to Malaysia, both within and outside Malaysian fisheries waters and includes estuarine waters,⁴²² and any reference to marine culture system,⁴²³ fishing⁴²⁴ or fisheries⁴²⁵ is construed as

⁴¹⁹ Act 633. The MMEA Act 2004 was given Royal Assent on 25th June 2004 and was gazetted on 1st July 2004. The Act came into force on 2nd February 2005, with the 15th February 2005 nominated by the Deputy Prime Minister as the official date of formation of the MMEA.

⁴²⁰ Act 317.

⁴²¹ Emphasis added by the author.

⁴²² Under the interpretation section of the 1985 Act, i.e. s 2, this means the waters of a river extending from the mouth of the river – (a) up to the point upstream penetrated by sea water at neap tides; and (b) in the case of the State of Sarawak, up to the limits set by the Minister, with the concurrence of the State Authority, in regulations made under this Act.

⁴²³ According to the *Fisheries Act 1985* (Malaysia), s.2 this 'means any establishment, structure or facility employed in aquaculture includes on-bottom culture, cage culture, hanging-net culture, pen culture, pond culture, pole or stick culture, raceway culture, raft culture, rope culture and hatchery'.

⁴²⁴ The term 'fishing' is defined by s.2 of the 1985 Act to mean - (a) the catching, taking or killing of fish by any method; (b) the attempted catching, taking or killing of fish; (c) engaging in any activity which can reasonably be expected to result in the catching, taking or killing of fish; or (d) any operation in support of, or in preparation for, any activity described in paragraph (a), (b) or (c) of this definition.

⁴²⁵ 'Fishery', under the *Fisheries Act 1985* (Malaysia), s.2 'means any one or more stocks of fish which can be treated as a unit for the purposes of their conservation, management and development and includes fishing for any such stocks, and aquaculture'. S.2 also goes on to explain that 'aquaculture' means 'the propagation of fish seed or the raising of fish through husbandry

referring to the conduct of any of these activities in maritime waters". Under s.3 of the *Fisheries Act 1985*, the Minister shall be responsible for "all matters relating to fisheries including the conservation, management and development of maritime ... fishing and fisheries, in Malaysian fisheries waters". The *Fisheries Act 1985* s.4 empowers the Minister to appoint "such fisheries officers and Fisheries deputy fisheries officers as may be necessary for implementing the provisions of this Act". Further, under s.36, the Minister has power to appoint an 'authorised officer', which is defined by s.2 to include: the Director-General, a Deputy Director-General of Fisheries, a fisheries officer, a port officer as defined in section 2 of the Merchant Shipping Ordinance 1952, the commanding officer of any Government naval vessel or Government aircraft, the commanding officer of any Government marine police vessel or any other person or class of persons appointed to be an authorized officer or authorized officers under section 36.

The legislative framework for fisheries management is discussed further at Chapter 6.

Although at the time of passing the *MMEA Act* in 2004, there was general discussion of the 'coast guard' initiative in the popular press and Parliament, no formal policy articulation on oceans governance nor maritime enforcement was released.⁴²⁶ In the absence of explanatory policy on

during the whole or part of its lifecycle'. 'Fish seed' is also defined in s 2 to mean 'fish egg or larva or post-larva of fish or the spawn, fry or fingerling of fish'.

⁴²⁶ For example, see Shahrullizan Rosli, "(The MMEA) will be like a Malaysian Coast Guard. It will patrol waters like the police and navy" *APMM to be Elite Force*, Bernama, 2004

maritime law enforcement or Government directives on legislative interpretation, decision-makers must look to the *MMEA Act* and other relevant legislation to determine arrangements for law enforcement at sea.

Unfortunately, such an examination of legislation allows for administrative arrangements that do not achieve the streamlining and coordination envisaged by an original Study Team that reviewed maritime enforcement in 2002 and recommended formation of a coast guard.

Malaysia also has no articulated Oceans Policy to guide government administration of the maritime zone. Therefore, the ultimate vision, goals, objectives, and guiding principles that should underpin enforcement activities are not readily available to ensure that disparate decisions by discrete enforcement agencies cumulatively achieve desired results. In the absence of a holistic, integrated oceans policy, there is no specific articulation of what the Government eventually would like to achieve in the field of maritime enforcement.

Moreover, the *MMEA Act* 2004 was developed rapidly and has not established a clear foundation for MMEA operations as an integrated maritime enforcement agency for Malaysia. Although the *MMEA Act* recognises the MMEA to have responsibility for maritime enforcement throughout the maritime estate, other legislation remains unamended, thus continuing to give enforcement responsibilities to other Agencies.

In 2004, there was an *administrative decision* that the other maritime enforcement agencies would cease sea enforcement operations and hand over their assets to the new MMEA. This outcome was achieved to a certain extent (e.g. PZ Class boats handed over from the Royal Malaysian Police, PC boats handed over from the RMN, Bintang Class boats from the Marine Department, etc.). However, with time, some of the people involved in making the administrative decision that MMEA was to be the primary enforcement agency have moved on, and there no longer appears to be consensus that such an outcome reflects government policy on law enforcement:



Photo 5.1: MMEA Patrol Boat

In this context, with a legal requirement remaining for other agencies to conduct enforcement, there has been a creep back to the original multiple-agency enforcement arrangements of the past. Other agencies that conduct enforcement operations at sea include:

- Royal Malaysian Navy;
- Royal Malaysian Customs;
- Royal Malaysian Police; and
- Department of Fisheries.

The Royal Malaysian Police argue that because Malaysia retains *sovereignty* out

to 12nm from the territorial sea baselines (i.e. within the territorial sea) they have an obligation to police that area. Thus, the Government's goal to streamline enforcement is not being achieved. For example, a recent decision to procure new patrol boats for the Royal Malaysian Police creates an appearance that the Police may simply have passed old technology to the MMEA and used this as justification for new assets.

Some provisions or lacunae of the *MMEA Act* that merit review with regard to fisheries control include:

- a. The MMEA Act remains silent on the question of a definition of 'hot pursuit'.⁴²⁷ Whereas LOSC Article 111 provides for hot pursuit of an offending vessel up until the point where such a vessel enters the territorial sea of another Party,⁴²⁸ Malaysian policy on the question of hot pursuit into the exclusive economic zone (EEZ) of another State, and therefore under common terms of reciprocity, acceptance of such conduct by a neighbour into the Malaysian EEZ (an integral part of the Malaysian Maritime Zone as defined in the MMEA Act) is not clear. This operational challenge potentially is exacerbated by the absence of bilateral treaties of EEZ boundary delimitation between Malaysia and its neighbours.

⁴²⁷ S.7(2,e)

⁴²⁸ LOSC Art 111(3)

b. The MMEA Act does not specifically assign the MMEA the power to collect compound for offences. Neither does the MMEA Act specifically provide for the detention of offenders by the MMEA, nor for the MMEA to offer release on bond or bail. Section 7(h) provides instead only for the MMEA to “arrest” offenders. Administrative practice generally is for the primary functional implementation Agency to prosecute an offence. Therefore, in practice, the MMEA has been strained in its dealings with maritime user stakeholders (especially fishermen) who do not understand that the MMEA must wait for other Agencies to take such action or decide to compound offences.

Also, there are powers enumerated in the *MMEA Act 2004*, s.7(2)(f) and s.7(2)(g) that duplicate Fisheries Department duties under the *Fisheries Act 1985*. Under the *MMEA Act 2004*, s.7(2)(f), the MMEA is authorised “to examine and seize any fish, article, device, goods, vessel, aircraft or any other item relating to any offence which has been committed or it has reason to believe has been committed” and further by s.7(2)(g) “to dispose of any fish, article, device, goods, vessel, aircraft or any other item relating to any offence which has been committed or it has reason to believe has been committed”.

Furthermore, under the *MMEA Act 2004*, s.7(2)(i) the MMEA has the power “to expel any vessel which it has reason to believe to

be detrimental to the interest of or to endanger the order and safety in the Malaysian Maritime Zone”. In other words, the MMEA can act even if no criminal offence has been committed. Moreover, there is no requirement that either the interest of the nation, or the order and safety of the maritime zone *in fact* be endangered. It is sufficient that the MMEA has reason to believe it to be so.

Thus, the legislative underpinning of fisheries management control in Malaysia is more complex than a simple examination of the *Fisheries Act 1985* alone would suggest. Importantly, such complexity exists in the absence of clear policy guidance, which has encouraged continued duplication of effort and possibly lowered the overall effectiveness of fisheries control in Malaysia.

(ii) Control of Fishing Effort

In 1981, a National Fisheries Licensing Policy (NFLP) was adopted (See Chapter 1) to regulate fishing effort. Under the Policy, the number of licenses was to be limited and measures taken to ensure that no vessel is allowed to fish without authorization in accordance with national legislation. The objectives⁴²⁹ of the NFLP were to: prevent over-exploitation of fisheries resources in in-shore waters; eliminate competition between artisanal fishers and trawler fleets in in-shore waters; promote the development of offshore industrial fisheries; restructure the ownership pattern of fishing

⁴²⁹ Mathew, S., 1990. ‘Fishing legislation and gear conflicts in Asian countries.’ In: *SAMUDRA Monograph* (Belgium), No. 1 / International Collective in Support of Fishworkers, Brussels (Belgium). Available at: http://icsf.net/icsf2006/uploads/publications/monograph/pdf/english/issue_31/ALL.pdf

units to promote *Bumiputera* interests; and encourage equitable distribution of resources.⁴³⁰

The following measures have been taken under the NFLP to control fishing effort:⁴³¹

(a) Licensing of vessels

Fishing vessels in Malaysian fisheries waters must be licensed. Licenses are recorded and renewed on an annual basis subject to a vessel inspection report. The purpose of the inspection is to ensure conformity of fishing vessels to rules regarding gear and other requirements. The annual inspection also helps to determine the number of vessels in operation and fishers/crews working on each vessel.

(b) Control of Fishing Units

A comprehensive coding and marking mechanism has been formulated to identify licensed fishing vessels.⁴³² The coding and marking system is as follows:

- *Emblem marking on the hull*

Newly registered and licensed fishing vessels are required to have an emblem marking on the hull according to their state and district.

- *Registration number*

A registration number is given upon registration of a fishing vessel. The number is displayed on the vessel's side. For example, PAF 4346, the code PA represents the state of origin (in this case, Pahang), the letter F means fisheries, and the digit

4346 is the number of vessels already registered in that particular state. The registration number must be presented in white on a black background on the port or starboard side of a vessel.

- *Tin plate*

To prevent duplication of a vessel registration number, the fixing of a tin plate is compulsory for vessels operating in zones beyond 12nm. The DOF logo and the Director General's signature are imprinted on the plate which is fixed to the inner side of the vessel hull with specially designed screws.

- *Colour-coded wheelhouse*

Colour codes are used for easy identification of vessels from different states. The colour used to paint both sides of the wheelhouse represents the state of origin. This system helps to control the encroachment of fishing vessels to other states. For example:

- Johor State : Dark Blue
- Perak State : Dark Yellow
- Terengganu : Light Green

- *Fishing Zone Markings*

All fishing vessels (except those without a wheelhouse), are marked with a code corresponding to its approved fishing zone (i.e. A, B, C, or C2) on both sides of the wheelhouse. The marking is painted white on a black and round background.

- *Special Markings on Trawlers*

Trawler activities are potentially damaging to the environment. Hence, a system of marking has been introduced to assist with easy identification of trawlers. This special marking consists of a diagonally drawn

⁴³⁰ Lamin, S.B. 2006. *Situation of MCS in Malaysia*. Available at: <ftp://ftp.fao.org/docrep/fao/field/006/ad495e/ad495e06.pdf>

⁴³¹ *Ibid.*, pp. 71-74.

⁴³² *Ibid.*, p. 71.

white line across both sides of the wheelhouse.

(iii) Control of Fishing Areas

(a) Zonation

Malaysian Fisheries Waters are divided into distinct zones (i.e. A, B, C, & C2) that permit only certain categories of fishing vessel and gear (for a description of the Fishing Zones, see Chapter 1).

The main purpose of the zonation system is to eliminate competition between traditional and commercial fisheries, and to protect resource-rich coastal waters from uncontrolled exploitation by commercial fishers.

(b) Marine Protected (Closed) Areas

Marine protected areas (Marine Parks and Reserves) that are closed to fishing are an important tool for fishing control. The Department of Fisheries has established a network of marine parks to afford special protection to marine life. However, these closed areas primarily protect coral reef systems in an area, usually of two nautical miles, around islands. Presently, there are a total of 40 marine parks in Malaysia.⁴³³

(iv) Control on Duration or Period of Fishing

In some coastal areas (e.g. Malacca Strait), there is a limitation on the width of the fishing zones. Consequently, commercial fishers, such as trawlers, are tempted to encroach into near-shore coastal waters (i.e. Zone A), which conflicts with traditional fishing activities. In order to

control the activities of commercial fishers and minimise the potential for conflict, trawlers are permitted to operate in areas where zone width is limited only during the day (from 6.00am to 7.00pm).

(v) Control in ports and at sea

The following management controls apply in ports and at sea:⁴³⁴

(a) Local Vessels

- Fish taken from foreign fishing vessels are not to be brought into Malaysian fisheries waters.
- At sea, fishing vessels are prohibited from loading or unloading fish, fuel, or transshipping other supplies.
- Fish must be unloaded at the specified port stated in the license.
- Fishing vessels above 70 GRT must report to an authorized fisheries officer upon return from sea and prior to leaving port.
- Fishing vessels above 70 GRT are also required to report catch details to a fisheries officer.
- Fishing crew must be Malaysian.

(b) Foreign Vessels

- Foreign vessels are not allowed to fish in Malaysian waters.
- Foreign vessels are not allowed to load/unload fish, fuel, or tranship other supplies in Malaysian fisheries waters.
- Foreign fishing vessels that enter Malaysian fisheries waters for the purpose of innocent passage must notify an authorized officer.

⁴³³ First & Second Schedule, 'Establishment of Marine Parks Malaysia Order 1994' *Fisheries Act 1985*, International Law Book Series, 2004.

⁴³⁴ Lamin, *Op. cit.*, p.74.

They need to inform the relevant authority their name, flag State, location, route and destination of the vessel, the types and amount of fish being carried, and the circumstances under which the vessel is entering Malaysian fisheries waters.

- If a foreign fishing vessel intends to load or unload fish, fuel, or supplies in a Malaysian port, written approval of the Director-General is needed.

5.2.3 Surveillance

According to Flewwelling *et al.* (2003), 'surveillance' consists of "the degree and types of observations required to maintain compliance with the regulatory controls imposed on fishing activities."⁴³⁵

In Malaysia, there are three main elements to the surveillance effort: air surveillance, surface patrol, and vessel monitoring system (VMS) surveillance. The first two of these are undertaken throughout the EEZ primarily by the MMEA (in essence the 'coast guard'), with support from other maritime agencies along with the Royal Malaysian Air Force. Within the territorial sea, and especially within the 3nm limit of State waters, the DOF and Royal Malaysian Police also conduct small, speedboat patrols. VMS data is monitored by the Operations Control Centre of the DOF

Resource Protection (Enforcement) Branch.⁴³⁶

Routine sea patrols cover specific areas with sufficient frequency to serve as a deterrent. Alternatively, sea patrols are aimed to track and apprehend illegal fishing activities responding to intelligence reports. The MMEA and DOF also work closely with components from the Maritime Enforcement Co-ordinating Centre (MECC), which is an agency under the National Security Division of the Prime Minister's Department.

(i) Malaysian Maritime Enforcement Agency

The MMEA Act 2004 established the Malaysian Maritime Enforcement Agency (MMEA), which started operations at the end of November 2005. The MMEA is the principal government agency tasked with maintaining law and order and coordinating search and rescue operations in the Malaysian Maritime Zone and on the high seas. In the area of the east coast of Peninsular Malaysia, there is no land-based radar coverage to assist in the surveillance task, and the MMEA has limited air assets. Therefore, surveillance is conducted primarily by surface units.

The MMEA currently operates from facilities that are rented or borrowed from various other agencies.⁴³⁷ The area of responsibility for the MMEA is within the 'Malaysian Maritime Zone', which is divided into five 'Maritime Regions' consisting of 18 'Maritime Districts'. In the east coast of

⁴³⁵ Flewwelling et al. 2003. Recent Trends in Monitoring, Control and Surveillance Systems for Capture Fisheries. *FAO Fisheries Technical Paper*. (Accessed 17th September 2008). Available at: <http://www.fao.org/DOCREP/005/y4411E/y4411e03.htm>

⁴³⁶ Lamin, *Op. cit.*, p. 74.

⁴³⁷ By mid 2007, the MMEA rented 24 buildings that were used as Territory, District or Base offices. Source: Interview Admiral Dato' Mohammad bin Nik (former Director General of MMEA), Jan-Feb 2008.

Peninsular Malaysia, regional headquarters are located at Kuantan, Pahang. There are three district headquarters in Kuantan, Pahang; Kemaman, Terengganu; and Tok Bali, Kelantan.

When it formed in 2005, the MMEA inherited a range of equipment, vessels and systems from the other maritime enforcement agencies. In general, these assets were very old and not always designed to work together.

Ten vessels are deployed by the MMEA for service in Malaysian fisheries waters in the South China Sea off of the east coast of Peninsular Malaysia, i.e.: two Langkawi Class Offshore Patrol Vessels (ex-RMN OPV, 75m, 1,300 tons); two Gagah Class patrol boats (ex-Police PZ Class at 320 tons); four Sipidan Class patrol boats (ex-RMN PC Class at 100 tons); one Malawali Class patrol boat (ex-Marine Department Bintang Class at 63.5 tons) and one Nusa Class patrol boat (ex-Marine Department Rajawali Class at 53 tons).⁴³⁸



Photo 5.2: MMEA Personnel

Such an inventory of equipment, vessels and systems, inherited from several different sources, were also neither selected nor designed to fulfil the specific

mission and functions of the MMEA. For example, in the entire inventory of existing enforcement vessels, only the two 75 m patrol vessels – formerly in service with the RMN – are suitable for heavy-weather patrol and response in the outer areas of the EEZ.



Photo 5.3: MMEA OPV

Also, with the exception of the RMN, other Malaysian maritime enforcement agencies do not operate patrol boats both day and night, in all weather, out to 200 nm from the shore; however, that is the MMEA requirement. Therefore, legacy vessels that were not expected to stay at sea for protracted periods on patrol were not equipped with the standards of accommodation and provisioning capacity necessary for such operations. Equally, shipboard systems, engine capacities, endurance, hull form and many other attributes that need to be considered during vessel design and construction were not decided upon with MMEA operations in mind. Whilst some effort has been made to standardise certain equipment, e.g. radios, and improving crew comfort and safety, there are limits beyond which effort to adapt vessels that were not *built for purpose* is unwise. Money spent on such endeavour would be more sensibly applied to the acquisition of new vessels.

⁴³⁸ Sutarji, *Op. cit.*, p. 7.

Also, by the year 2010, of the 80 Malaysian patrol vessels (25-40m length) in service at the time of formation of the MMEA:

- 18.8% (15 boats) would be 45-50 years old;
- 26.2% (21 boats) would be 35-44 years old;
- 42.5% (34 boats) would be 25-34 years old; and
- 7.5% (6 boats) would be 20-24 years old.

In total, approximately 88% of the legacy vessels will be out of date (more than 25 years old) by 2010. This figure rises to 95% for vessels over the age of 20 years old. Budgetary provision has been made for the acquisition of new vessels over the next 15 years but no replacement program has been concluded.

Furthermore, although other agencies have been cooperative in providing shoreside facilities to assist the MMEA, they allocate priority to their own vessels. In the event of a conflict in schedule, the MMEA must move out of the way. This factor has caused an element of uncertainty in operations planning. Currently, MMEA vessels have been assigned semi-permanent wharf space by the Navy, and this has assisted MMEA commanders in execution of their daily operations. On balance, present arrangements for utilisation of shoreside facilities that are controlled by other agencies have enabled the MMEA to fulfil its duty to conduct enforcement operations at sea.

Altogether, the MMEA now has 70 vessels of various classes down to 14m in length, plus 38 units of new rigid-hull-inflatable-

boats (RHIB).⁴³⁹ Some of these vessels remain in shipyards waiting to complete repairs and modifications. By 2006, the MMEA had brought a total of 19 patrol boats to operational status. A target was set to increase this number to a minimum of 35 vessels operational by 2007. This target was exceeded with a total of 37 ships successfully made operational that year.⁴⁴⁰ The MMEA increased the number of days deployed at sea from 1,339 in 2006 to a total in 2007 of 3,369. In 2006, the MMEA conducted 2,023 inspections/boardings of vessels at sea, resulting in 173 arrests. This total was lifted to 4,480 inspections in 2007, resulting in 683 arrests.⁴⁴¹

(ii) Vessel Monitoring System

DOF efforts to introduce a VMS began in 1998. VMS components consist of an Automatic Location Communicator (ALC), which is fitted to the vessel; a Ground Station in the Department of Fisheries in Putrajaya; and a satellite component. The ALC transmit data on position, speed and course to the Ground Station in the DOF Operations Control Centre.

Although the system offers an efficient method to monitor fishing vessels, its implementation has been hampered by: the high cost of ALC installation; a lack of legislative rules to govern the use of VMS; a reluctance by fishers to reveal information on fishing grounds and operations; tampering and interference with the VMS equipment; and the unavailability of

⁴³⁹ These boats are fitted with 2 x 225bhp engines and are capable of speeds up to 45 knots with an endurance of 3 – 4 hours.

⁴⁴⁰ Mohammad bin Nik, *Op. cit.*

⁴⁴¹ An increase from 2006 to 2007 of 510 arrests. Of this total, 384 (75%) of the additional arrests related to the *Fisheries Act*. *Loc. cit.*

certain technology.⁴⁴² At present, only 230 Class C and C2 vessels are fitted with VMS. (In 2005, there were 1,540 Class C vessels [505 on east coast], and 836 Class C2 vessels [316 on east coast] [DOF Stats 2005]). A total of 138 of these C2 vessels were based out of Kelantan.⁴⁴³

5.3 Challenges to Effective Fisheries MCS

The factors hindering fisheries MCS in east coast Peninsular Malaysia include: an aged enforcement fleet with limited capabilities; a lack of inter-agency cooperation, particularly between the MMEA and Royal Malaysian Police;⁴⁴⁴ the influence of corruption; the general inadequacy of radar and air surveillance in the area; weak policy and a lack of political will to address the problem;⁴⁴⁵ incomplete installation of VMS technology; and ignorance of the essential elements of a sustainable fishery within industry and the community.

Most of these challenges have been outlined in this Chapter and discussed at length elsewhere in the Report; however, the following brief observations are offered to elaborate further on four of them.

⁴⁴² Lamin, *Op. cit.*, pp.75-76: & Interview with the DOF Head of Enforcement, 8th July 2008: All new Class C and C2 boats must be fitted with Vessel Monitoring System (VMS) equipment. Older vessels must be fitted with VMS before the next renewal of their license. By the end of 2009, all of the Class C & C2 vessels should be fitted with VMS. However, DOF has only had the present system for the past two years and there have been some teething problems. For example, the contractor has had difficulty providing sufficient hardware for the fishing vessels.

⁴⁴³ Interview with the DOF Head of Enforcement, 8th July 2008

⁴⁴⁴ Mohammad bin Nik, *Op. cit.*

⁴⁴⁵ Sutarji, *Op. cit.* p. 16.

5.3.1 Inter-agency Coordination

Although a variety of laws and regulations exist for both domestic and foreign fishing vessels, the enforcement of fisheries law in Malaysia is hampered by a lack of coordination between the various government departments.⁴⁴⁶ This factor is highlighted in the text below:

*"...the Royal Malaysian Navy was tasked with the defence of the nation's seas, whereas the Marine Police concentrated on prevention of criminal offences at sea....enforcement officers from the Fisheries Department ensure compliance with the federal laws on fisheries, but mangrove swamps are an important breeding ground for fish, prawns and crabs and fall within the jurisdiction of the Forestry Department."*⁴⁴⁷

Very few Royal Marine Police have transferred into the new MMEA, and there is little active cooperation and coordination between these two agencies. Indeed, MMEA vessels have not been permitted to operate out of Marine Police bases.⁴⁴⁸

5.3.2 Corruption

Corruption is also a known phenomenon among Malaysian officials. According to

⁴⁴⁶ Ooi, U.J. 2007. The Malaysian Maritime Enforcement Agency Act 2004: Malaysia's legal response to threat of Maritime Terrorism. (Accessed 13th June 2008). Available at: <https://maritimejournal.murdoch.edu.au/index.php/maritimejournal/article/viewFile/31/58>

⁴⁴⁷ *Ibid.*

⁴⁴⁸ Mohammad bin Nik, *Op. cit.*

Liss (2007), along the Malacca Straits, Malaysian Marine Police officers have been known to harass local fishers and demand money and fish from them. Also, some victims of piracy do not report attacks, as they fear acts of revenge by 'law enforcement' officers who are involved in illegal vices.⁴⁴⁹ Similar circumstances were discovered during a field investigation by the authors in Sarawak in 2005, and corrupt practices by Government officials were reported during field investigations for this study in the target area in July 2008.

5.3.3 Weak Air Surveillance

Air surveillance is conducted using airplanes chartered from the Royal Malaysian Air Force (RMAF) and other private companies. Data on the identity/nationality of the vessels, locations, numbers and gear used are recorded and stored in the computerised surveillance programme system.⁴⁵⁰ However, air surveillance is too expensive to be carried out on a routine basis.

However, the MMEA has entered into contract with Eurocopter for the purchase of three Dauphin light/medium helicopters,⁴⁵¹ and has announced a

decision to purchase two Canadian Bombardier amphibious fixed-wing turbo-prop aircraft. Such new capability should help to overcome this MCS weakness.



Photo 5.4: Typical Aircraft for Air Surveillance. Source: RMAF website



Photo 5.5: MMEA Aviation Crew

5.3.4 Unclear Policy

Unclear policy also undermines effective fisheries control. For example, in August 2008, the government promised to consider unfreezing approximately 16,000 fishing vessel licenses following complaints from fishermen who owned but could not

⁴⁴⁹ Author's Interview (confidential) in Hutan Melintang, Malaysia. Cited by Liss, C. 2007. *The Privatisation of Maritime Security- Maritime Security in Southeast Asia: Between a rock and a hard place?* Asia Research Center.

⁴⁵⁰ Salleh, I.S.M. 1998. Industri Perikanan Negara: Krisis Pengurusan Penguatkuasaan Antara Agensi. Pemikir 14 (4). Available at: www.mima.gov.my/mima/htmls/papers/pdf/sazlan/ikn.pdf

⁴⁵¹ The Eurocopter website states: "Eurocopter was the first helicopter manufacturer to set up a complete maintenance and support facility in Malaysia with amenities located throughout West (Subang) and East

Malaysia (Miri and Kuching) in December 2006. A dedicated team of more than 110 personnel works alone in this new West Malaysia's state-of-the-art facility, proving Eurocopter's commitment to optimally support all customers in the region to ensure cost-efficient operation and availability of Eurocopter aircraft ... Eurocopter Malaysia provides a broad spectrum of services, ranging from scheduled and unscheduled maintenance to aircraft modifications (retrofits, painting, interior refurbishment and customization) as well as logistics support (spare parts, repairs and overhaul). Eurocopter Malaysia has a paid-up capital of RM 10 million, with an expected revenue of around RM 307 million in 2007 (approximately \$100 million)" see: http://www.eurocopter.com/publications/FO/scripts/newsFO_complet.php?lang=EN&news_id=524 (accessed Feb 2008)

register fishing vessels.⁴⁵² According to press reports, there are 38,000 registered fishing vessels in the Economy, and fishers whose vessels are not registered are not entitled to the 'e-diesel' cards which allow them to buy subsidized diesel.⁴⁵³ Similarly, the current Agriculture and Agro-based Industries Minister added that "there are vessels that operate without licenses and, besides, the issuing of new licenses is long overdue." He further noted that the government was extending the closing date for fishermen to apply for the fishermen's registration card, which allows them to claim RM 200 monthly allowance.⁴⁵⁴

However, any move to unfreeze fishing licenses seems to be inconsistent with the reported views of the Director-General of the DOF a year ago. In an interview with the *New Straits Times* in May 2007, the Director-General was quoted as saying that he wanted to keep the number of fishermen under control by limiting the issuance of licenses.

In the absence of clear articulation by Government of its goals for fisheries management, the agencies responsible for MCS risk applying effort incorrectly and wasting resources.

⁴⁵² The licenses had been frozen since 1982 as a means to protect the coastal fishery resources and the fishery industry.

⁴⁵³ Suparmaniam, S. 29th August 2008. 'Government to look into frozen licenses.' *New Straits Times*

⁴⁵⁴ The fishers ID card is valid for five years and it meant to help the fishers deal with the rising cost of living.



6.0 Legal and Institutional Framework

6.1 Overview

As a party to the UN Law of the Sea Convention, 1982 (LOSC), Malaysia has sovereignty in the territorial sea and sovereign rights in the Exclusive Economic Zone (EEZ). The LOSC stipulates a clear regime of rights and responsibilities for coastal States in the territorial sea, contiguous zone, EEZ and on the continental shelf, and these must be respected by coastal States.

Malaysian "fisheries waters" includes internal waters, the territorial sea/waters, and the maritime waters of the EEZ.⁴⁵⁵ The term "maritime waters" means areas of the sea adjacent to Malaysia both within and outside Malaysian fisheries waters and includes estuarine waters. Any reference to marine culture system, fishing or fisheries is construed under the *Fisheries Act, 1985* as referring to the conduct of any of these activities in maritime waters.

"In Peninsular Malaysia there are two main agencies responsible for the management and development of the fisheries industry; the DOF and the Fisheries Development Authority (LKIM)".⁴⁵⁶ Both agencies are

under the administration of the Ministry of Agriculture and Agro-based Industries (MOA). The DOF is the government administrative agency in charge of fisheries matters as a whole, and functions as a technical support department serving the fisheries industry while also working with LKIM. The specific functions of the DOF include: policy and program formulation/implementation; research, management and evaluation of fisheries resources; provision of technical and infrastructural facilities (although fish landing ports are now under the control of LKIM); compilation and dissemination of fisheries statistics; licensing and enforcement of marine fisheries; and training of fishermen.

LKIM was established as a quasi-governmental body under the LKIM Act 1971, and was originally instituted as an additional development funding authority for the fisheries industry to spur commercialisation of the sector. The primary functions of LKIM are to: increase fish production; raise the income of fishers; provide and supervise the effective use of credit for the adoption of new fishing technology and for investment in related fisheries industry sub-sectors; promote, facilitate and supervise the development

⁴⁵⁵ Definition provided by section 2 of the Fisheries Act, 1985.

⁴⁵⁶ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy – The Fish industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 24.



of fishers' organisations (fishermen's associations [sic]).⁴⁵⁷

6.1.1 Background on Malaysia's Maritime Zones of Jurisdiction

Malaysia's involvement in international negotiations concerning law of the sea - beginning from participation in the First United Nations Conference on the Law of the Sea (UNCLOS I) from February 24 to April 29, 1958; the Second United Nations Conference on the Law of the Sea (UNCLOS II) from March 17 to April 26, 1960; to the Third United Nations Conference on the Law of the Sea (UNCLOS III) from 1973 to 1982 - saw the promulgation of several fundamental laws establishing Malaysia's maritime estate extending seawards to 200 nautical miles. These laws sought to cater particularly to the perceived needs of a young, developing nation. Thus, during the period leading to Malaysia's ratification of the LOSC in 1996,⁴⁵⁸ many sectorally written national laws of the sea were established. These included *inter alia* measures to declare and delimit parts of Malaysia's territorial sea up to 12 nautical miles (nm) under the *Emergency (Essential Powers) Ordinance, 1969*; the declaration of Malaysia's EEZ of 200 nautical miles in the *Exclusive Economic Zone Act, 1984*; and proclamation of legislation pertaining to the conservation, management and development of maritime and estuarine

fishing and fisheries in the *Fisheries Act, 1985*.

6.1.2 Zones and Rights for Malaysia as a Coastal State

Upon ratification of the LOSC, a State party may establish zones of maritime jurisdiction to enjoy the rights and obligations pertaining thereto. As a State party to the LOSC, and as a coastal State, Malaysia has declared its zones of jurisdiction under several enabling Acts. Zones of jurisdiction prescribed under the LOSC comprise: **internal waters** (lakes, canals, rivers, ports and other waters inside the baselines⁴⁵⁹ where the coastal State exercises complete sovereignty); **territorial sea** (up to 12 nautical miles from the baselines. In the territorial sea, the coastal State exercises sovereignty except with regard to the right of innocent passage or transit passage in the case of a Strait Used for International Navigation or "SUFIN"); **contiguous zone** (up to 24 nautical miles from the baselines. In the contiguous zone the coastal State has jurisdiction over customs, fiscal, immigration and sanitary matters); the **exclusive economic zone** (up to 200 nautical miles from the baselines for exercise of sovereign rights related to resources, and jurisdiction with respect to artificial installations, marine scientific research and marine environment protection); and **continental shelf** (potentially out to 350nm recognising sovereign rights and jurisdiction related to resources and activities on or under the seabed). **Table 6.1** outlines each zone, the

⁴⁵⁷ Ishak Haji Omar, 1994: *Market Power, Vertical Linkages, and Government Policy - The Fish Industry of Peninsular Malaysia*, South-East Asian Social Sciences Monographs - Oxford University Press and Oxford Singapore Press, New York, p 24

⁴⁵⁸ The LOSC came into force in 1994. Prior to it coming into force, preceding international laws governing maritime delimitation amongst countries and activities at sea include the 1958 Geneva Convention on Territorial Sea and the Contiguous Zone to which Malaysia was also a party.

⁴⁵⁹ Unless special circumstances warrant their definition to differ from normal baselines, "baselines" under the LOSC definition are measured from the low water mark. See, LOSC Article 5.



Enabling Acts, how the zones are defined, and the nature of jurisdiction.

Table 6. 1: Summary Description of Coastal State Jurisdiction vis-à-vis Maritime Zones

Zone (Enabling Act)	Definition	Coastal State Jurisdiction
Internal Waters (Emergency Essential Ordinance, 1969 No. 8 and No. 11 - implied)	Waters within the baselines defining the territorial sea (usually above low water mark). These waters mostly comprise bays, estuaries and ports	Full sovereignty as if land territory (i.e., no right of innocent passage). May regulate the conduct and safety of foreign flag ships in internal waters as required, subject to any rights conferred by international treaty
Territorial Sea (Emergency Essential Ordinance, 1969 No. 8 and No. 11)	12 nautical miles seaward of the baselines (usually low water mark)	Sovereignty. Malaysia may impose comprehensive controls in this area, with the exception that it must respect the right of innocent passage of foreign vessels. Foreign ships are allowed to navigate through the territorial sea to transit these waters without entering any port or in the course of proceeding to or from internal waters or calling at a port
Contiguous Zone (None - not declared)	Between 12 nautical miles and 24 nautical miles seaward of the territorial sea baselines	Limited enforcement jurisdiction in relation to customs, fiscal, sanitary and immigration matters
Exclusive Economic Zone (Exclusive Economic Zone Act, 1984)	Between 12 nautical miles and 200 nautical miles seaward of the territorial sea baselines	The right to explore and exploit the living and non-living resources of the EEZ and the concomitant obligation to protect and conserve the marine environment. Foreign flag ships have rights closely associated with those applying on the high seas, such as freedom of navigation
Continental Shelf (Continental Shelf Act, 1966 - a map was also published in 1979 depicting Malaysia's continental shelf maritime expanse)	Subject to the provisions of Article 76 of LOSC, between 12 nautical miles and 200 nautical miles from the baseline and the outer edge of the continental margin, or to a distance of 200 nautical miles from the baseline where the outer edge of the continental margin does not extend to that distance	The exclusive right to explore and exploit the living and non-living resources of the shelf, while not infringing or resulting in any unjustifiable interference with navigation and other rights and freedoms of other States as provided for in LOSC
High Seas	All parts of the sea that are not included in other maritime zones (i.e. internal waters, territorial sea and the EEZ)	No State may subject any part of the high seas to its sovereignty. The high seas are open to all States and they have the right to freedom of navigation over the high seas. In general, a flag State has the exclusive right to exercise jurisdiction over its ships on the high seas

Adapted from: Ocean management – the legal framework. The South-east Regional Marine Plan Assessment Reports, National Oceans Office 2002, Australia, p.4



6.2 Legal Framework for Fisheries Operations

The design and implementation of legislation in Malaysia operates on the basis of the Act providing heads of power to a Minister/Ministry or agency, with the detailed provisions for implementation, management and control addressed through regulations or rules. The following **Box 6.1** provides a summary of laws that are directly applicable to the fisheries in Malaysia.

- (b) prohibition or control on the importation and exportation of live fish - §40,
- (c) registration of local fishing vessels and the issue of appropriate documentation - § 61(ak)
- (d) fisheries offences and offences under the Act – §8 and 25-34,
- (e) Conditions in license and directions - §10,

6.2.1 *The Primary Law for Fisheries Activities*

The majority of marine fisheries in Malaysia occur within the EEZ and indeed most often within 30 nautical miles of the coast.⁴⁶⁰ The coastal nature of Malaysian fisheries is due to factors such as: the sea worthiness of vessels, security at sea, the class of fishing vessels, etc. Thus, federal legislation such as the *Fisheries Act, 1985* governing fishing activities within zones of Malaysian jurisdiction applies. The *Fisheries Act, 1985* provides for the licensing of fishing vessels (and aquaculture), and describes the kind of fishing gear, *inter alia*, that can be used for any licensed fishery.

6.2.2 *Specific Fisheries Related Provisions*

The following relevant matters are regulated under the *Fisheries Act 1985* -

- (a) provision for the licensing of fishing vessels - § 61(m);

⁴⁶⁰ Pers Coms, Interview with CEO Sarawak fishing company operating 14 Class B, C, and C2 vessels, 18-19 November 2005.



Box 6. 1: Ministry of Agriculture and Agro-based Industry, Department of Fisheries, Malaysia

Fisheries Act, 1985 (Act 317) Am: Act 854/1993	<ul style="list-style-type: none">relating to fisheries, including the conservation, management and development of maritime and estuarine fishing and fisheries, in Malaysian fisheries waters, and to turtles and riverine fishing in Malaysia. A law made under Articles 74(1) and 76(1)(b) of the Federal Constitution.
Fisheries (Marine Culture System) Regulations, 1990	<ul style="list-style-type: none">the regulations apply to culture systems in the maritime waters of Malaysia, where an application for a permit, a licence to operate and submission of a deposit to set up a marine culture system are required.
Fishermen's Association Act, 1971 (Act 44)	<ul style="list-style-type: none">to establish Fishermen's [sic] Association in Malaysia and to provide for matters connected therewith.
Fees Act, 1951 (Act 209)	<ul style="list-style-type: none">to provide for the levy of fees and payments for licences, permits and other matters to be leviable in subordinate courts and public offices.
Exclusive Economic Zone Act, 1984 (Act 311)	<ul style="list-style-type: none">management of resources in the EEZ.
Malaysian Maritime Enforcement Agency Act, 2004 (Act 633)	<ul style="list-style-type: none">legal provision for the establishment of the Malaysian Maritime Enforcement Agency (Malaysia's coast guard) to perform enforcement functions for ensuring the safety and security of the Malaysian Maritime Zone.
Fisheries Development Authority Act (LKIM), 1971 (Act 49)	<ul style="list-style-type: none">establish LKIM as a statutory body to improve the socio-economic condition of fishers, through the promotion and development of efficient and effective fisheries enterprise management and improve the marketing of fish; while also providing credit facilities and promoting economic and social development initiatives for fishing communities.



- (f) License and respect of local fishing vessels, fishing stakes, fishing appliance, fish aggregation device or marine culture system - §11,
- (g) Period of validity of license and non-transferability - §14,
- (h) Fishing by foreign fishing vessels in Malaysian Fisheries Waters - §15,
- (i) Bringing into or having in Malaysian fisheries waters fish taken or received from foreign fishing vessels - §20,
- (j) Classification of vessels - §24,
- (k) Enforcement - §46-52.

6.2.3 Licensing of Fishing Vessels

Vessel licensing in Malaysia is under the responsibility of the Licensing and Resource Management Division, DOF. Within the Division, there are five units, which are:

- Licensing;
- Deep-Sea Resources;
- Coastal Resources;
- Land-Based Coastal Resources; and
- Tuna Development.

Licences are issued for vessels and equipment that cover Zones A, B, C and C2 for fishing vessels to operate and catch fish - see Chapter 1 of this report for further discussion on vessels and fishing zones as promulgated under the National Fisheries Licensing Policy 1985.

The term "fishing vessel" includes any boat used for fishing or aquaculture. There are two kinds of fishing vessels recognised under the *Fisheries Act* 1985, namely, local fishing vessels and foreign fishing vessels. A

"local fishing vessel" is a vessel registered in Malaysia and wholly owned by a citizen of Malaysia; a statutory corporation established under any of the laws of Malaysia; the Government of Malaysia or the Government of a State in Malaysia; or a body corporate or "unincorporate" established in Malaysia, and includes chartered, sub-chartered, leased or sub-leased vessels as well. A "foreign fishing vessel" is described as any fishing vessel other than a local fishing vessel.

There are three distinct categories for the licensing of a fishing vessel:

1. Licensing of a new fishing vessel - §9;
2. Licensing of a local fishing vessel or application for its renewal - §11;
3. Permit for a foreign fishing vessel (to fish in Malaysian fisheries waters) - §19.

The **licensing of a new fishing** vessel is subject to approval from the Director-General of fisheries. Application for the licence must be submitted before the commencement of vessel construction and shall be accompanied by construction plans and specifications. Construction of the new fishing vessel may proceed upon receipt of written approval from the Director General where conditions such as horsepower, size and tonnage of the vessel, or disposal of any existing fishing vessel may be prescribed. Further conditions of licensing are described in §10, which include requirements for permanent markings of the fishing vessel, nationality and number of persons to be employed or carried on the fishing vessel, and that non-Malaysians onboard require



written approval of the Director General to engage in any fishing activity related to the fishing vessel.

The *Fisheries (Maritime) (Licensing of Local Fishing Vessel) Regulations, 1985* provide the terms and conditions for a fishing vessel registered in Malaysia and operating in Malaysian fisheries waters.

Regulation 6 requires the following particulars to be entered in the licence:

1. Name and address of the owner and master of the vessel;
2. Length, breadth, depth and gross tonnage of the vessel;
3. Nationality and number of crew to be employed;
4. The number of the National Registration Identity Card (NRIC) of the owner and master of the vessel.

An offence or contravention of the 1985 Regulations is subject to a fine not exceeding RM1,000. However, this penalty may not provide an adequate obstacle to license contraventions.

A **foreign fishing vessel** wishing to fish in Malaysian fisheries waters is subject to provisions set out in Part V, sections 15 - 24 of the *Fisheries Act 1985*. Fishing by a foreign fishing vessel includes the act of loading, unloading any fish, fuel, supplies or transshipment of fish in Malaysian fisheries waters.

Section 19 requires the application for a foreign fishing vessel permit to be made through a Malaysian agent. The Malaysian agent takes legal and financial

responsibility for the vessel activities. A security payment - not specified in the Act - may be required by the Director General, whilst the validity of each issued permit is supplemented by a sum of money, also to be advised, for a maximum of one year.

The condition of a permit specified in sections 4(a) to (x) can include:

1. the areas within which fishing is authorised;
2. the period during which fishing is authorised;
3. the species, age, length, weight and quantity of fish that may be retained onboard the foreign fishing vessel, landed in Malaysia or transhipped; and
4. the transfer, transshipment, landing and processing of fish taken.

The bringing into, or possession in, Malaysian fisheries waters of fish taken or received from a foreign fishing vessel requires authorisation in writing from the Director General of fisheries (section 20).

Although foreign fishing vessels may have conditions placed upon their license relating to fish species, age, length and quantity, no such measures apply to local fishing vessels. Common perception and practice implies that such restrictions on local fishers are not necessary, and that sustainable fisheries can be achieved through the granting or restriction of vessel licenses alone.

6.2.4 Registration of Ships under MSO 1952

The registration of all ships in Peninsular Malaysia is administered by the Marine Department Malaysia. Section 12 of the



Merchant Shipping Ordinance, 1952 (MSO) requires all Malaysian ships to be registered according to the provisions of the MSO. The MSO describes "sea-going ship" as any ship going beyond port limits; whilst "ship" includes every description of vessel used in navigation not propelled by oars.

Registry exemptions for certain ships as provided by section 13, include:

MSO 1952 Section 13. Exemption from Registry

The following ships are exempted from registration under this Part -

- (a) any ship not exceeding 15 tons nett used for navigation on the rivers and coastal waters of Malaysia;
- (b) any vessel licensed under section 475 (A603/84) of this Ordinance; and (A 603/84)
- (c) any local fishing vessel not exceeding five hundred tons gross where such vessel is licensed under any written law relating to fisheries. (A603/84)

6.2.5 Import or Export of Fish

Under §40 of the *Fisheries Act 1985*, a person who imports or exports live fish into or out of Malaysia, or who transports the same within the states of Malaysia, requires a permit issued by the Director-General. The Director-General is empowered to issue a permit for the control of live fish and to impose any condition necessary in such a permit, such as those concerning the state of cleanliness of the fish to be exported, imported or transported, and measures to avoid the spread of communicable fish diseases, or to avoid or control the release into the natural environment of non-indigenous species of fish. Under §20 of the *Fisheries Act 1985*, no person may import fish caught by a foreign fishing vessel without authorisation from the Director-General. However, the Act is silent on conditions related to the origin of fish from

foreign vessels, and on the matters pertaining to the exportation dead fish.

6.2.6 Enforcement of Fisheries Offences

For the purpose of enforcement, an authorised officer is empowered under Part X of the EEZ Act, 1984 §§ 46 – 56, to board and search any offending vessel or any marine culture system within Malaysian fisheries waters and to inspect any document under the provisions of the *Fisheries Act 1985* or under any generally accepted international rules and standards. The officer has powers of entry, seizure and arrest without a warrant where there is reason to believe that an offence has been committed. Where in the course of a search and seizure, the authorised officer impounds any fish or other article of a perishable nature, the Director-General of Fisheries pursuant to sub-section 48(1) of the *Fisheries Act 1985*, may authorise sale of these goods.⁴⁶¹ Section 48(2) of the *Fisheries Act 1985* provides that the Government of Malaysia shall not be liable to any person for any deterioration, howsoever caused, in the quality of any fish or other article seized under this Act.

The Director-General of Fisheries may exempt any vessel or any person from the provisions of the *Fisheries Act 1985* (see Section 58) if the purpose is for research or training or proper conservation or management of fisheries or survey on economic feasibility of any fishing activity.

⁴⁶¹ The recent confiscation of Vietnamese and Indonesia vessels in Malaysian fishing waters provided the assets for much needed fisheries training vessels for the DOF. Personal communications with DOF officers confirmed that at least three vessels sent for refurbishment in 2007 for fisheries training programs were vessels that had been seized from foreign IUU fishers.



Ministerial powers under §61 of the *Fisheries Act*, 1985 state that the Minister responsible for fisheries may draft regulations for the proper conservation, development and management of maritime fishing in Malaysian fisheries waters. Regulations can also be made for foreign capital investment, joint venture proposal in fisheries, transfer of technology and training of Malaysian personnel. The number of personnel on board fishing vessels, manning standards for fishing vessels, the conditions that have to be observed by local and foreign fishing vessels within Malaysian fisheries waters are within the scope of the section. Likewise, rules relating to size of fish and areas to be fished though not amounting to sustainable development of fisheries are also present in the *Fisheries Act*, 1985. Agencies may be appointed to carry out the terms of the Act.

6.2.7 The MMEA Act

Following the conclusion of a study in 2002 on improving maritime enforcement at sea in Malaysia, the study concluded that:

“All Ministries/Departments/Agencies unanimously agreed on the establishment of a single integrated maritime enforcement agency under one unified command. The establishment of a Malaysian Coast Guard would make maritime enforcement better organised and more cost efficient and effective.”

The *Malaysian Maritime Enforcement Agency Act (MMEA) 2004*⁴⁶² established the Malaysian Maritime Enforcement Agency (MMEA), which was formed on 15 February 2005, and achieved operational status on 30 November 2005.⁴⁶³ Parliament reported that the establishment of the MMEA was to effect a change from ‘sectoral’ maritime enforcement to a ‘singular dedicated agency’ for the enforcement of at sea activities.⁴⁶⁴

The functions of the MMEA within the Malaysian Maritime Zone are specified in the *MMEA 2004*, Section 6(1), which provides that the MMEA shall:

- a. enforce law and order under any federal law;
- b. perform maritime search and rescue;
- c. prevent and suppress the commission of an offence;
- d. lend assistance in any criminal matters on a request by a foreign State as provided under the *Mutual Assistance in Criminal Matters Act 2002* [Act 621];
- e. carry out air and coastal surveillance;
- f. provide platform and support services to any relevant agency;
- g. establish and manage maritime institutions for the training of officers of the Agency; and

⁴⁶² Act 633. The MMEA Act 2004 was given Royal Assent on 25th June 2004 and was gazetted on 1st July 2004. The Act came into force on 2nd February 2005.

⁴⁶³ www.mmea.gov.my/hocgmy/mmea.htm extracted 15-06-08.

⁴⁶⁴ *Penyata Rasmi Dewan Rakyat, Parlimen Kesebelas, Penggal Pertama, Mesyuarat Pertama, Bil. 17, Isnin.*



- h. generally perform any other duty for ensuring maritime safety and security or do all matters hitherto.

Accordingly, officers of the MMEA are authorised to enforce all aspects of the *Fisheries Act* 1985, and any other fisheries related laws and regulations. The MMEA is generally understood to patrol the zone outside of 12nm from the shore in respect of fisheries enforcement.⁴⁶⁵

The legislative foundation for establishment of the MMEA, the MMEA Act 2004, along with subsequent administrative interpretation of the MMEA Act and underlying government policy, have departed somewhat from the original rationale and intended method for forming the new agency. Significant aspects of Malaysian maritime enforcement have not been streamlined into the MMEA as a single, or even coordinating, enforcement agency.⁴⁶⁶

Administrative decisions that allowed the continued existence of other maritime enforcement agencies, along with retention by those agencies of strategic shore base assets, has prevented achievement of the original goal of streamlined maritime enforcement for Malaysia. Additionally, lack of human resources and physical assets combined with certain weaknesses in the MMEA Act 2004, have, to date, impacted on the capability of the MMEA to fully meet its

obligations to provide enforcement at sea services that include curbing and controlling IUU fishing operations.

6.3 Other Laws for Fisheries Activities Occurring in Malaysian Fisheries Waters

6.3.1 Marine Environment Protection

In the main, the *Exclusive Economic Zone Act, 1984* (EEZ Act) provides the Director-General of the Environment responsibility for management of the marine environment in the EEZ. In part, the *Fisheries Act* 1985 itself was necessary because of declaration of an EEZ under the EEZ Act.

The EEZ Act permits dumping of old and disused vessels, aircraft, platforms or aquaculture cages etc, so long as the activity is regulated by the Act. § 2 defines 'dumping' as any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; or any deliberate disposal of vessels, aircraft or other man-made structures at sea. Article 5 prohibits activities in the EEZ or on the continental shelf except where authorised as in Part III, §§ 6 to 8. Section 6 acknowledges that the seas comprised in the EEZ shall be part of Malaysian fisheries waters.

Section 30 states that where an offence is committed by a company, every director and officer of that company directly connected with the activity resulting in the commission of the offence shall each be guilty of that offence and liable to punishment under § 29, where a fine not exceeding a million Ringgit is imposed.

⁴⁶⁵ Pers Coms, interview with Head of Resource Protection Unit, DOF 08-07-08. It was reported that the DOF generally undertake enforcement patrols within Zones A and B up to 12nm from the coast.

⁴⁶⁶ Extracted from SRM Report on 'MMEA Review 2008' prepared for a private client. On file with SRM.



Section 14 deals with a failure to comply with directions of the Director-General of the Environment, and action to remove, disperse, destroy or mitigate damage to the coastline or environment or related interests such as fishing, whereby the owner or person in charge of the installation or device is considered liable. Section 15 deals with the position where a detained vessel proceeds to sea and §§ 16 – 20 address the duty to conduct marine scientific research according to stated procedure.

Part VA of the *Merchant Shipping Ordinance*, 1952 regulates pollution from ships that also applies to fishing vessels. Further, § 473A to 485 apply to fishing vessels. Likewise, Part IX concerning the *International Convention relating to the Limitation of the Liability of Owners of Sea-going Ships* signed in Brussels on 10 October 1952 also applies to fishing vessels.

6.3.2 Other Relevant Laws

Other legislation that has relevance to fisheries in Malaysia includes the *Lembaga Kemajuan Ikan Malaysia Act, 1971* (Act 49); the *Fishermen's Association Act, 1971* (Act 44); *Antiquities Act, 1976* (Act 168); and the *Customs Act, 1967* (Act 235).

Fishing vessels are exempted from requiring port clearance under §39 of the *Customs Act, 1967*. Anecdotal evidence suggests that this lack of customs clearance (while possibly being linked to practicalities of the fisheries industry) allows for the easy operation of smuggling to occur as inspections by other authorities may be infrequent. There are also provisions that

affect fishing vessels such as the General Provisions Affecting Vessels in Territorial Waters, §§ 43 – 51, *Customs Act, 1967*. The significant provisions are those that regulate or prohibit the entry of ships into safety zones; or to warn ships of the presence of these installations, the removal of abandoned structures, or those that stipulate that the vessel should not interfere with navigation, fishing or conservation of the living resources of the sea, interfere with national defence, oceanographic or other scientific research, or with submarine cables and pipelines and those which prescribe penalties for breach of regulations.

6.4 Applicable International Instruments and Initiatives

In addition to the LOSC, there are a range of other international legal instruments that have a bearing on the fisheries industry. This section provides an overview of the main points of these other international instruments: two legally binding instruments (The Bonn Convention and the Convention on Biological Diversity) and five non-legally binding, but policy persuasive instruments (the FAO Code of Conduct for Responsible Fishing, the Regional Plan of Action for Responsible Fishing, the FAO International Plan of Action for the Management of Sharks, the FAO International Plan of Action for the Management of Fishing Capacity, and International Plan of Action on IUU Fishing). Should Malaysia become a Party to the Bonn Convention, many current practices may have to be reconsidered in order to protect migratory species. Malaysia is a party to the Convention on Biological Diversity and is



required to meet the provisions of this treaty.

6.4.1 The Convention on the Conservation of Migratory Species, 1979 (the Bonn Convention)

As of 1 February 2008, Malaysia was not a party to the *Bonn Convention*; and did not have a Memorandum of Understanding (MOU) in place.⁴⁶⁷ However, this important international treaty sets standards of conduct that serves as a benchmark for responsible State behaviour and that all States must at least take into consideration.

The *Bonn Convention* addresses the specific problems of managing migratory species that move across different political and jurisdictional boundaries. The Convention defines "migratory species" as:

...an entire population or any geographically separate part of the population of any species or lower *taxon* of wild animals, a significant portion of whose members cyclically and predictably cross one or more national jurisdictional boundaries (Article II).

The *Bonn Convention* imposes obligations on Parties, to take action to conserve migratory species whenever possible and appropriate.

The *Bonn Convention* recognises two types of conservation status for migratory species - "favourable" and "unfavourable". The conservation status of migratory species is regarded as "favourable" when:

- the population dynamics data indicates that the migratory species is maintaining itself on a long-term basis as a viable component of its ecosystem;
- the range of the migratory species is neither being reduced at present, nor is likely to be reduced in the long-term;
- there is, and will be in the foreseeable future, sufficient habitat to maintain the population of the migratory species on a long-term basis; and
- the distribution and abundance of the migratory species approaches historic coverage and levels to the extent that potentially suitable ecosystems exist and to an extent consistent with wise wildlife management.

The conservation status of migratory species is taken to be "unfavourable" if any of the above-mentioned conditions are not met (Article 1(1)).

The *Bonn Convention* also prescribes specific obligations with respect to migratory species whose conservation status is "unfavourable". Parties to the *Bonn Convention* are required to prohibit the taking of any such species listed. However, exceptions may be permitted under the following circumstances (Article III(3)(5)):

- where the taking is for scientific purposes;

⁴⁶⁷ Convention on Migratory Species Secretariat Website, extracted 17-06-08 from http://www.cms.int/about/interactive_map/cms_parties_australasia.htm.



- where the taking is for the purpose of enhancing the propagation or survival of affected species;
- where the taking is to accommodate the needs of traditional subsistence users of such species; or
- where extraordinary circumstances so require.

6.4.2 LOSC and Conservation of the Living Resources in the EEZ

The sovereign rights of the coastal State in its EEZ come with an obligation to manage and conserve the living resources therein. Thus, Article 61 of the LOSC requires the coastal State to conserve living resources in the EEZ. In this regard, the coastal State is required, taking into account the best scientific evidence available to it, to ensure through proper conservation and management measures that the maintenance of living resources in the EEZ is not endangered by over-exploitation. To discharge this obligation, the coastal State is required to determine the total allowable catch (TAC) of the living resources in its EEZ. In addition, the coastal State has significant powers with regard to the impact of fishing in its EEZ on non-target and associated species. Under Article 61(2), the coastal State is required to take appropriate measures to minimize the impact of fishing on species associated with or dependent on harvested species.

The specific fisheries conservation obligations of the coastal State noted above must be read in addition to the wider power given in Article 56(1)(b)(iii) with regard to “the protection and preservation of the marine environment”.

The LOSC does not elaborate on the scope and content of such a wide power, with the consequence that a number of States, particularly in the Asia-Pacific region, have sought in the past to give a broad interpretation to this provision, which has included a ban on vessels carrying radioactive substances through their EEZs.

To enforce sovereign rights, the coastal State is given wide discretionary powers to legislate and take enforcement action. Nationals of foreign States fishing in the EEZ of the coastal State are required to comply with the conservation and management measures and with other terms and conditions established in the laws and regulations of the coastal State. The laws and regulations of the coastal State may relate to, among others, the following:

- determining its capacity to harvest the living resources of the EEZ;
- allocation of the surplus to foreigners;
- licensing of foreign fishing vessels;
- determining the species which may be caught;
- regulating seasons and areas of fishing, the types, sizes and amount of gear and the types, sizes and number of fishing vessels that may be used in the EEZ; and
- specifying information required of fishing vessels, including catch and effort statistics and vessel positions,



placing of observers on board fishing vessels.

Article 73 of the LOSC empowers the coastal State to take enforcement action to ensure compliance with fisheries laws and regulations in the EEZ. The wording of Article 73 is as follows:

Enforcement of laws and regulations of the coastal State

1. The coastal State may, in the exercise of its sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zone, take such measures, including boarding, inspection, arrest and judicial proceedings, as may be necessary to ensure compliance with the laws and regulations adopted by it *in conformity with this Convention* (emphasis added).

2. Arrested vessels and their crews shall be promptly released upon the posting of reasonable bond or other security.

3. Coastal State penalties for violations of fisheries laws and regulations in the exclusive economic zone may not include imprisonment, in the absence of agreements to the contrary by the States concerned, or any other form of corporal punishment.

4. In cases of arrest or detention of foreign vessels the coastal State shall promptly notify the flag State, through appropriate channels, of the action taken and of any penalties subsequently imposed.

Thus, the enforcement powers of the coastal State under Article 73 include boarding, inspection, arrest and judicial proceedings. Significantly, the coastal State has wide discretionary powers for the exercise of enforcement under Article 73. This is confirmed by Articles 297(3)(a) and 298(1)(b) under which the coastal State cannot be compelled to submit any related disputes to a compulsory judicial determination.

An area of uncertainty is the fact that the LOSC does not define “fishing” or “fishing vessel.” Therefore, States have been left generally free to decide on the meaning of the terms. In order to give effect to their sovereign rights, which are also exclusive rights, States have tended to adopt broad rather than narrow definitions.

One of the few definitions of the terms “fishing” and “fishing vessel” is to be found in a recent international instrument, the *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*, 2000. Article 1(a) of that treaty, a treaty in further implementation of both the LOSC and the UN Fish Stocks Agreement reads that “fishing” means:

- (i) searching for, catching, taking or harvesting fish;
- (ii) attempting to search for, catch, take or harvest fish;
- (iii) engaging in any other activity which can reasonably be expected to result in the locating, catching, taking or harvesting of fish for any purpose;
- (iv) placing, searching for or recovering fish aggregating devices or associated electronic equipment such as radio beacons;
- (v) any operations at sea directly in support of, or in preparation for, any activity described in subparagraphs (i) to (iv), including transshipment;
- (vi) use of any other vessel, vehicle, aircraft or hovercraft, for any activity described in subparagraphs (i) to (v) except for emergencies involving the health and safety of the crew or the safety of a vessel.



Article 1(e) states that “fishing vessel” means any vessel used or intended for use for the purpose of fishing, including support ships, carrier vessels and any other vessel directly involved in such fishing operations. Whilst the provisions of this instrument are helpful from the perspective of informing interpretation of treaties under customary international law, they do not bring absolute clarity.

Other relevant obligations imposed by the Bonn Convention with respect to migratory species include the requirements to conserve and, where feasible and appropriate, restore those habitats of the species that are of importance in removing the species from danger or extinction (Article III(4)(a)); and to prevent, remove, compensate for, or minimise the adverse effects of activities or those obstacles that seriously impede or prevent the migration of the species (Article III(4)(b)).

6.4.3 The Convention on the Conservation of Biological Diversity 1992 (Biodiversity Convention)

The objective of the *Convention on the Conservation of Biological Diversity* 1992 (Biodiversity Convention), is the conservation, and sustainable use of components of biological diversity (Article 1). “Sustainable use” is defined as the use of components of biological diversity in a way and at a rate that does not lead to long term decline of biological diversity (Article 2). Malaysia signed the convention on 12 June 1992 and became a party to the convention 24 June 1994.⁴⁶⁸

⁴⁶⁸ UNEP Website <http://www.cbd.int/>.

The Biodiversity Convention emphasises “*in-situ*” conservation (Article 8), supported by “*ex-situ*” conservation (Article 9) where necessary. “In-situ” conservation involves the maintenance of ecosystems and natural habitats in their natural surroundings. “Ex-situ” conservation means the conservation of biological diversity outside their natural surroundings.

Obligations are placed on Parties to the *Biodiversity Convention* to identify and monitor several categories of species, including:

species and communities which are threatened; wild relatives of domesticated or cultivated species; species of medicinal, agricultural or other economic value; species of social, scientific or cultural importance; or species of importance for research into the conservation and sustainable use of biological diversity, such as indicator species (Article 1(2)).

In discharging obligations under the *Biodiversity Convention*, Parties are required to:

- establish representative systems of protected areas;
- develop (where necessary) guidelines for the selection, establishment and management of protected areas;
- regulate or manage such protected areas;
- promote the protection of ecosystems and natural habitats;
- rehabilitate and restore degraded ecosystems and promote the recovery of threatened species; and
- develop legislation or adopt other regulatory mechanisms to protect



threatened species and their populations.

6.4.4 *FAO Code of Conduct for Responsible Fishing*

The FAO Code of Conduct which was adopted in October 1995, has been described as representing 'the most complete and up-to-date expression of the principles of sustainable fisheries management and development, and is likely to have substantial impact on fisheries management at both national and international levels'.⁴⁶⁹

The Code of Conduct provides principles and standards applicable to the conservation, management and development of all aspects of fisheries, i.e., the capture, processing and trade of fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. Of particular relevance are principles addressing:

- conservation of target species, species belonging to the same ecosystem or associated and dependent species;
- application of the precautionary approach to fisheries conservation and management;
- protection of endangered species;
- promotion of selective and environmentally safe fishing gear, and practices; and
- protection and rehabilitation of critical fisheries habitats.

⁴⁶⁹ Gerald Moore, "Chapter 5: The Code of Conduct for Responsible Fisheries," in *Developments in International Fisheries Law*, ed. Ellen Hey. The Hague, The Netherlands: Kluwer Law International, 1999: p. 85.

6.4.5 *FAO International Plan of Action to Deter, Prevent and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) 2001*

The International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), "was developed as a voluntary instrument, within the framework of the Code of Conduct for Responsible Fisheries...[and was] adopted by consensus at the Twenty-fourth Session of Committee on Fisheries (COFI) on 2 March 2001...".⁴⁷⁰ Measures contained in the IPOA-IUU include: State responsibilities, flag-State responsibilities, coastal-State measures, port-State measures, internationally agreed market-related measures, and research and regional fisheries management organisation (RFMO) roles.

Under Section Three, "Objective and Principles" the IPOA-IUU promotes the phased implementation of National Plans of Action. Seven years have past since the IPOA-IUU was adopted, and in this time limited information on implementation initiatives has been put into the public arena. Morgan *et al* (2007), reported that, "...there are virtually no NPOAs-IUU in the Asian region that have been notified to FAO, the only region in the world where this is the case even though Asian Ministers participated in the Ministerial Meetings in 1999 (Code implementation) and 2005 (IUU Fishing) where decisions were taken on IUU

⁴⁷⁰ FAO Corporate Document Repository, Rome 2001: *International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*, extracted 02-07-08 from <http://www.fao.org/DOCREP/003/y1224e/y1224e00.HTM>.



fishing”.⁴⁷¹ (see **Box 6.2** below for State implementation to overcome IUUF). Morgan *et al* do highlight the issue of poor or incomplete survey data as a factor in their findings; however, the Malaysian DOF has reported that Malaysia has drafted a NPOA-IUU.⁴⁷²

Box 6.2: Extracts from the IPOA-IUUF for national implementation

IPOA-IUU

IV. IMPLEMENTATION OF MEASURES TO PREVENT, DETER AND ELIMINATE IUU FISHING

ALL STATE RESPONSIBILITIES

16. National legislation should address in an effective manner all aspects of IUU fishing.

17. National legislation should address, *inter alia*, evidentiary standards and admissibility including, as appropriate, the use of electronic evidence and new technologies.

National Plans of Action

25. States should develop and implement, as soon as possible but not later than three years after the adoption of the IPOA, national plans of action to further achieve the objectives of the IPOA and give full effect to its provisions as an integral part of their fisheries management programmes and budgets. These plans should also include, as appropriate, actions to implement initiatives adopted by relevant regional fisheries management organizations to prevent, deter and eliminate IUU fishing. In doing so, States should encourage the full participation and engagement of all interested stakeholders, including industry, fishing communities and non-governmental organizations.

26. At least every four years after the adoption of their national plans of action, States should review the implementation of these plans for the purpose of identifying cost-effective strategies to increase their effectiveness and to take into account their reporting obligations to FAO under Part VI of the IPOA.

27. States should ensure that national efforts to prevent, deter and eliminate IUU fishing are internally coordinated.

6.4.6 Regional Plan of Action for Responsible Fishing including combating Illegal, Unreported and Unregulated (IUU) Fishing in the Region

“The Regional Plan of Action to Promote Responsible Fishing Practices including Combating illegal, unreported, and unregulated (IUU) Fishing in the Region was approved by the Ministers of Republic of Indonesia, Australia, Brunei Darussalam, Cambodia, Malaysia, Papua New Guinea, The Philippines, Singapore, Thailand, Timor-Leste and Viet Nam on 5 May 2007 at Bali, following three meetings of Senior Officials in Jakarta, Indonesia on 29-30 November 2006, in Canberra, Australia on 22-23 March 2007, and in Bali, Indonesia on 2-3 May 2007”.⁴⁷³

The Regional Plan of Action (RPOA) encourages member States, including Malaysia, to enhance and strengthen the overall level of fisheries management to sustain fisheries resources and the marine environment through the adoption of responsible fishing practices. The RPOA covers three areas; the South China Sea, the Arafura-Timor Seas, and the Sulu-Sulawesi Seas.⁴⁷⁴ As this is a new initiative in the context of international fisheries management instruments, details of actions taken in support of the RPOA by Malaysia are not yet available in public sources.

⁴⁷¹ Morgan, G., Staples, D., and S. Funge-Smith, 2007: *Fishing Capacity Management and IUU Fishing in Asia*, RAP Publication 2007/16, Asia-Pacific Fisheries Commission, Food and Agriculture Organisation of the United Nations Regional Office for Asia and the Pacific, Bangkok, 2007, p 25.

⁴⁷² Ahmad Saktian Langgang *et al*, *Notes on Managing Fishing Capacity and IUU Fishing in Malaysia*, Department of Fisheries, Putrajaya, Malaysia, extracted 12-06-08 from www.illegal-fishing.info/uploads/Malaysia.pdf.

⁴⁷³ Interim Report to APEC Secretariat, March 2008: *Implementation of the Bali Plan of Action, Regional Stock-take (Gap Analysis) of the Current Situation in the Asia-Pacific Region compared with Ministers' Objectives: A Foundation Assessment: Volume Four: Desktop Research on Regional Initiatives and Organisations*, APEC FWG 01/2007. Unpublished.

⁴⁷⁴ M.A. Palma and M. Tsamenyi, 2008: *Case Study on the Impacts of Illegal, Unreported and Unregulated (IUU) Fishing in the Sulawesi Sea*, APEC Secretariat, April 2008, #208-FS-01.1.



6.4.7 *International Plan of Action for the Conservation and Management of Sharks, 1999*

The International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) is designed to ensure the conservation and management of sharks and their long-term sustainable use. The IPOA-Sharks applies to: States in the waters of which sharks are caught by flagged vessels of that State;⁴⁷⁵ States in whose waters foreign vessels catch sharks; and any States whose nationals fish for sharks on the high seas. The measures that States are encouraged to consider and implement under the IPOA-Sharks are:

- to assess the status of shark stocks to determine whether a national plan of action (NPOA) is required;
- to adopt and implement a national plan of action (Shark-plan) in accordance with Appendix A of the IPOA-Sharks where significant threats to sharks are found; and
- produce a periodic shark assessment report in accordance with Appendix B of the IPOA-Sharks for dissemination to FAO and the international community.

In 2006, the DOF published a NPOA-Sharks for the Conservation and Management of Shark (Malaysia - NPOA-Shark). The Malaysia NPOA-Shark, developed according to the guidelines of the IPOA-Sharks, aims to “ensure the conservation

and management of shark and their long-term sustainable use”. In this guide, ‘shark’ includes chondrichthyan or cartilaginous fishes, such as sharks, skates, rays and chimaeras. The objective of the Malaysia NPOA-Shark

The Malaysia NPOA-Shark reports that “sharks and rays landings that constitute a part of demersal fishery occur throughout the Malaysian fisheries waters, from the coast to the edges of its EEZ. The landings contribute only a minor portion of less than 2.2% of total marine landings”. The report further states that: “Sharks are not targeted by fishers but are caught together with other commercially important species. They are brought back as a whole to the port and sold at reasonable price with the fins fetching a better price.”

Malaysia reports catches by groups of sharks and rays, not by species.⁴⁷⁶ Shark/ray landings increased from 10,792MT in 1982 to 27,948 MT in 2003,⁴⁷⁷ and 25,094 MT in 2005, while both the number of licensed fishers and vessels operating in Malaysia decreased over that period. Such an outcome appears to be inconsistent with the description of sharks as by-catch and suggests that they may have been targeted by fishers.

⁴⁷⁵ Malaysia's Long-line Tuna Fisheries results in shark-catch as by-catch. A significant volume of shark fin landings were observed at the Malaysian International Tuna Port during site visits in January 2008. The port operators insisted that the remainder of the sharks were still within the hull of the vessel, although no evidence to this claim was observed during the remaining off-loading of the tuna catch.

⁴⁷⁶ It was reported that shark-fining does not occur in Malaysia and that sharks are caught only as incidental by-catch mainly in nets. Hillary Chew, 2005: “Curbing a cruel act”, *The Star*, 15 November 2005, extracted 26-08-06 from www.jpnpk.gov.my/English/Nov05%2018c.htm.

⁴⁷⁷ *Ibid.*



6.4.8 *International Plan of Action for the Management of Fishing Capacity*

The International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity) is a voluntary instrument that applies to all States who engage in capture fisheries. The plan contains action and identifies mechanisms through which fishing capacity management can be undertaken. One of the mechanisms is the development of national plans of action (NPOA-Capacity). Morgan *et al* (2007) reported that, as of 2007, many States in Asia had not developed a national plan of action, although Malaysia was said to have started, and had reported steps to reduce capacity for issues already identified. This action of drafting a national plan of action was corroborated, and it was reported that a draft NPOA-Capacity is under consultation with stakeholders.⁴⁷⁸ Morgan *et al* (2007) also observed that Malaysia did not provide data on the rate of capacity assessment for current fisheries sectors. Another capacity management tool identified in the IPOA-Capacity is the use of Fisheries Management Plans. Morgan *et al* (2007), observed that Malaysia had to date not developed any fisheries management plans, for either artisanal or commercial fisheries.⁴⁷⁹

⁴⁷⁸ Pers Coms, interview with Head of Marine Resource Management Section, DOF, 08-07-08.

⁴⁷⁹ Morgan, G., Staples, D., and S. Funge-Smith, 2007: *Fishing Capacity Management and IUU Fishing in Asia*, RAP Publication 2007/16, Asia-Pacific Fisheries Commission, Food and Agriculture Organisation of the United Nations Regional Office for Asia and the Pacific, Bangkok, 2007, p 5.

6.4.9 *FAO Model Scheme on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing*

In 2005, the FAO developed a Model Scheme for stronger "port state measures" that could be adopted by Economies in order to combat IUU fishing.⁴⁸⁰

The FAO Model Scheme on Port State measures include activities such as -

- undertaking inspections of documentations, catches and equipment when boats land to take on fuel and supplies or offload fish; or
- requiring vessels to make activity reports before entering port.

Vessels found to be involved in IUU fishing can be denied docking rights, causing considerable financial losses to their owners. These measures are considered among the most effective means of preventing the import, transshipment or laundering of illegally caught fish.

In June 2008, the FAO appealed to donor Economies to contribute US\$1 million to further develop implementation of the FAO Model Scheme.⁴⁸¹

The FAO Assistant-Director General of Fisheries, Mr Ichiro Nomura were reported saying -

⁴⁸⁰ See, earlier discussions on this initiative reported in Report of the Technical Consultation to Review Port State Measures to Combat Illegal, Unreported and Unregulated Fishing, Rome, 31 August - 2 September 2004, available at <http://www.fao.org/docrep/007/y5787e/y5787e00.HTM>. Last accessed 18-10-08.

⁴⁸¹ See, "More funding needed in fight against illegal fishing", 25-06-08 at <http://www.apfic.org/modules/news/print.php?storyid=132>. Accessed 18-10-08.



“These [developing] countries need exposure to state-of-the art practices, training for their line officials, and to establish better lines of communication at the regional level to share information on offenders and harmonize actions,”.

Among the initiatives FAO have initiated to kick off the Model Scheme was a series of regional workshops that assessed the status of port state measures in different parts of the world. The workshops also explored ways where regions might incorporate components from FAO’s Model Scheme, toward promoting greater harmonization of port state measures. The targeted personnel included port inspectors, fisheries authorities, legal experts, foreign affairs officials and customs officers.

To date five regional port state measures workshops have been held: the Pacific Ocean, the Indian Ocean, the Mediterranean, southern Africa and Southeast Asia.⁴⁸²

In the same week, a Technical Consultation of Economy representatives and experts worked on a draft text for a binding international agreement that would require parties to implement a minimum standard for port state measures to curb IUU fishing.

The need for a binding instrument has been widely acknowledged in international fora including the United Nations General Assembly and the FAO Committee on Fisheries (COFI). The

outcome of the June 2008 consultation will be reported to COFI in 2009.

Given that IUU fishing is rife in the East Coast of Peninsular Malaysia; active participation in this initiative might prove useful for Malaysian officials in their efforts to thwart further IUU fishing incursion.

⁴⁸² See, “More funding needed in fight against illegal fishing”, 25-06-08 at <http://www.apfic.org/modules/news/print.php?storyid=132>. Accessed 18-10-08.





**IUU Fishing
East Coast of
Peninsular
Malaysia**

Conclusion

For the east coast of Peninsular Malaysia, the cumulative impacts of such a wide array of IUU fishing activities is likely to be considerable for the economic and social well-being of coastal communities, and the health of fish stocks and the environment. Incompleteness and inconsistencies in fisheries catch data, the informal nature of traditional harvesting and fishing activities, and a rudimentary understanding only of fishing boat behaviour in the absence of a fully developed vessel monitoring system or observer program, combine to hinder a proper understanding of the issue by authorities and researchers alike.

Nevertheless, certain practices are well recorded in the public literature, and were known to occur off the east coast of Peninsular Malaysia by those fisheries officials and industry representatives interviewed for this study. A number of factors, including a lack of resources, political interference, lack of evidence, the scale and historically entrenched nature of the activities, and cultural acceptance of certain practices were all cited as obstacles to curbing IUU fishing in the area.

At its most extreme, the possibility that Burmese refugees may be employed as forced labour on deep sea fishing vessels licensed by Malaysia but recruited and controlled by Thailand interests, and that these crews may be subjected to abuse in

the course of that employment, is abhorrent.

Such possibility, and the significant financial losses to the Malaysian economy, belies any suggestion that IUU fishing is simply the minor problem of an inefficient or poorly developed industry, or that it should be allowed to improve slowly with incremental advances in national development status. Ecosystem disruption, species exhaustion, habitat destruction and even human lives can all be lost irreversibly with every day that the identified IUU abuses are allowed to continue unchecked.

