ISBN 978-967-0633-49-7
SEAFDEC/MFRDMD/SP/44

DOMESTIC MARKETING OF SHARKS AND RAYS IN PERAK AND PAHANG, MALAYSIA

AHMAD SHUIB
ASWANI FARHANA MOHD NOH
AHMAD ALI
TAI SHZEE YEW
ILLISRIYANI ISMAIL
FATIMAH MOHAMED ARSHAD
HAMIZAH NADIA ALIAS@YUSOF
ROBA'A YUSOF

2019

DOMESTIC MARKETING OF SHARKS AND RAYS IN PERAK AND PAHANG, MALAYSIA

Prepared by

AHMAD SHUIB
ASWANI FARHANA MOHD NOH
ILLISRIYANI ISMAIL
FATIMAH MOHAMED ARSHAD
ROBA'A YUSOF
Institute of Agricultural and Food Policy Studies,
Universiti Putra Malaysia

TAI SHZEE YEW
Universiti Tunku Abdul Rahman

AHMAD ALI
HAMIZAH NADIA ALIAS@YUSOF
Southeast Asia Marine Resources Institute

Submitted to
Department of Fisheries Malaysia

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Ahmad Shuib
DOMESTIC MARKETING OF SHARKS AND RAYS IN PERAK AND PAHANG, MALAYSIA / AHMAD SHUIB, ASWANI FARHANA MOHD NOH, ILLISRIYANI ISMAIL, AHMAD ALI, FATIMAH MOHAMED ARSHAD, TAI SHZEE YEW, HAMIZAH NADIA ALIAS@YUSOF, ROBA'A YUSOF.
ISBN 978-976-0633-49-7
1. Sharks--Malaysia--Perak.
2. Sharks--Malaysia--Pahang.
3. Rays (Fishes)--Malaysia--Perak.
4. Rays (Fishes)--Malaysia--Pahang.
5. Government publications--Malaysia.
I. Aswani Farhana Mohd. Noh. II. Illisriyani Ismail.
III. Ahmad Ali. IV. Fatimah Mohamed Arshad.
V. Tai Shzee, Yew. VI. Hamizah Nadia Alias@Yusof.
VII. Roba'a Yusof. VIII. Title.
597.309595114

Published by:
Jabatan Perikanan Malaysia
Kementerian Pertanian dan Industri Asas Tani Malaysia
Wisma Tani, Aras 1-6, Blok Menara 462, Presint 4
62628 Putrajaya.
Tel: 03-8870 4000
Fax: 03-8890 3794
Email: hqhelp@dof.gov.my
http://www.dof.gov.my

This publication should be cited as follows;

Ahmad, S., Aswani, F.M.N., Ahmad, A., Tai, S.Y., Illisriyani. I., Fatimah. M.A., Hamizah Nadia, A. and Roba'a. Y. (2019). Domestic Marketing of Sharks and Rays in Perak and Pahang, Malaysia, SEAFDEC/MFRDMD/SP/44.33pp.

FOREWORD

This study was undertaken by the Institute of Agricultural and Food Policy Studies, Universiti Putra Malaysia (IKDPM, UPM) in collaboration with the Southeast Asia Marine Resources Institute (ISMAT) from 2016 to 2018. This pioneer study in Peninsular Malaysia explored the status and trends of shark and ray utilisation, marketing and trade as a follow up to study conducted in Sabah in 2015.

Since 2006, The government of Malaysia has implemented the National Plan of Action Shark (NPOA-Shark Plan 1) and NPOA-Shark Plan 2. The main purpose of both plans is to emphasize the need to protect and manage the shark and ray resources within the fisheries industry in the country while, at the same time, safeguarding the livelihood of the traditional fisheries sector. Although sharks and rays are not the targeted species, any decision made on the conservation and management would significantly affect the livelihood of traditional fishers.

As part of the strategic actions agreed upon in the NPOA-Shark Plan 2, the present study is aimed at collecting information on shark and ray marketing, as well as the impacts on socio-economics of traditional fishers in Pahang and Perak. The study thus fulfils the aim of shark and ray resources management as stipulated in the NPOA-Shark Plan 2, which is to develop appropriate policies to promote responsible shark and ray conservation and management for the future generations.

The study team would like to record their sincere thanks to the Department of Fisheries Malaysia (DOFM) for initiating this study. The help and collaboration from various agencies and individuals have been crucial in achieving the intended objectives of the study. In particular, we are indebted to the officers of DOFM and Fisheries Development Authority of Malaysia (FDAM) for their continuous support of the study. The ever willingness of the officials of DOFM at the districts of Kuantan and Rompin in Pahang and the districts of Kerian, Manjung, and Hilir Perak in Perak to facilitate our studies, either in terms of information or leads, are also highly appreciated. Without their support, it can be safely said that this study would not have been able to implement field interviews and visits to landing centres, as well as the discussions with the fishers and industry participants, all of whom are the targeted stakeholders of the study. The input of these stakeholders has served as the core data for the study.

The support of Universiti Putra Malaysia, particularly the Institute of Agricultural and Food Policy Studies, is highly appreciated. So are the hard work and contribution of Mr. Nor Azman Zakaria, Mr. Mohd Saki Noor, Mr. Wahab Daud, and the late Allahyarham Mr. Ruzelan Jusoh of ISMAT. The enormous support from the DOFM in Pahang and Perak are commendable indeed. Also, not to forget our thanks to all stakeholders including fishers, processors, wholesalers and retailers in Kuantan, Rompin, Lumut, Taiping, Ipoh, Batu Pahat, and Melaka for their involvement to aid us in completing this study. Most of all, it is the readiness and warmness of the fishers, processors, wholesalers and retailers in selected areas of Pahang and Perak whom have shared with us their experiences, insights and information that have touched us deeply, with great appreciation and admiration. Despite their struggle to earn a good income, their respect to the ocean and its content is remarkable and this deserves respect and appreciation. This report is dedicated to them.

The findings from this study would be useful as a guideline in expanding similar studies in other states in Malaysia.

EXECUTIVE SUMMARY

The study has been carried out in the state of Perak and Pahang in 2016 and 2017, as these two states are the major landings of shark and ray in the Peninsular Malaysia. Several steps including gathering information from recent and past studies related to catching of sharks and rays, obtaining information through focus group discussions (FGD) and key informant surveys (KIS) have been undertaken in Hilir Perak, Larut Matang, Manjung, and Kerian districts in Perak and Kuantan, Pekan and Rompin districts in Pahang. Face to face interviews have been carried out to collect the relevant data related to the traditional fishers. This includes socio-demographics and fishing activities, dependencies and views on conservation of shark and ray. The information which has been obtained through Focus Group Discussion (FGD) and Key Informant Survey (KIS) confirm that fishers in Perak and Pahang use four main gears to catch sharks and rays, which are trawlers, drift/gill nets, hook and lines, and longlines.

Information which are obtained through the FGD and KIS with the market players of shark and ray products at several major markets show that the marketing channels of shark and ray in the two states are localised (export and import are minimal) and efficient; all parts of shark and ray are mostly fully utilised. The main products traded consist of fresh meat, frozen meat, fresh fins, dried fins, skin of rays and cartilage of sharks.

The supply chain of shark and ray in Pahang is made up of three channels; the first channel, wholesalers at the FDAM Jetty in Kuantan buy fresh sharks and rays directly from the fishers and sell to the retailers in Kuantan as well as those from Batu Pahat, Johore Bahru, Melaka, Kuala Lumpur and Singapore. Some amounts are sold to the processors in Beserah, in which salted meat and dried products are processed for local consumption. Whereas, dried ray skins are exported to Thailand. The second channel, fishers at the FDAM Jetty in Kuantan sell their catches to wholesalers in Beserah and Balok, who then sell the products to retailers in Kuala Lumpur and Melaka. The third supply channel is made up of the wholesalers in Nenasi and Rompin who buy fresh sharks and rays from local fishers and sell to the wholesalers in Kuantan. The wholesalers in Nenasi and Rompin also sell the fresh sharks and rays to retailers in Mersing, Rompin, Batu Pahat and Johore Bahru in Johore and Seremban in Negeri Sembilan.

In Perak, there are three levels of supply chain; catches from fishers are bought by wholesalers at the jetty who then sell the products to retailers**.** The main jetties are at Hutan Melintang, Bagan Panchor and Pangkor. The main markets for the rays are outside of Perak such as Penang (Butterworth, Bukit Mertajam), Kedah (Alor Setar), Kuala Lumpur, and Johore (Johore Bahru) and some are exported to Singapore. Local retail markets in Perak include those in Sitiawan, Pantai Remis, Sungai Ular, Kampung Acheh, Telok Intan and Taiping. Rays are more popular in Perak compared to sharks. Most rays are sold in fresh form. Some amounts of ray are processed into dried salted meat.

It is evident that fishers who catch sharks do not practice finning; fishers bring back the whole bodied sharks to the jetties. The prices of fresh sharks and rays and processed products are highly depending on supply and demand, as well as the type of species.

ABBREVIATION

ASEAN	Association of Southeast Asian Nations
DOFM	Department of Fisheries Malaysia
FAO	Food and Agriculture Organization of the United Nations
FDAM/LKIM	Fisheries Development Authority of Malaysia/Lembaga Kemajuan Ikan Malaysia
FGD	Focus Group Discussions
IPOA	International Plan of Action
ISMAT	Southeast Asia Marine Resources Institute/Institut Sumber Marin Asia Tenggara
KIS	Key Informant Surveys
MFRDMD	Marine Fishery Resources Development and Management Department
NPOA	National Plan of Action
NPOA-Shark Plan 1	Malaysia National Plan of Action Shark Plan 1
NPOA-Shark Plan 2	Malaysia National Plan of Action Shark Plan 2
PNK	Persatuan Nelayan Kawasan/Fisheries Association
SEAFDEC	Southeast Asian Fisheries Development Center
mt	metric tonne

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

This document provides the findings of a study on marketing of shark and ray in states of Perak and Pahang, Peninsular Malaysia. The report is organized as follows: (i) The first section provides the introduction; (ii) the second and third sections explain the problem statement and objectives of the study; (iii) the forth section entails a brief description of the methodology which covers data sources and empirical methods used; (iv) the fifth section discusses the findings of the study with respect to fishers dependency on sharks and rays; and (v) the last section concludes the study.

1.1 General Overview of Fisheries Sector in Malaysia

Fish as major source of animal protein is an important issue of food security in Malaysia. For decades, fish is consumed by most ethnic groups in Malaysia. According to the Ministry of Agriculture and Agro-based Industry Malaysia (2010), consumption per capita in 2009 was 45.1 kg. However, in 2014 consumption per capita was increased to 56.89 kg (Department of Fisheries, 2014).

In 2017, fisheries sector contributed RM15,157.67 million. Major contribution was from inshore fisheries valued at RM9,220.34 million (60.8%) followed by aquaculture with RM3,905.58 million (25.8%), deep sea RM1,598.50 million (10.5%), ornamental fish RM326.95 million (2.2%), inland fisheries RM93.31 million (0.6%) and aquatic plants RM12.98 million or 0.1% (DOFM, 2018). Details are shown in Figure 1.1.

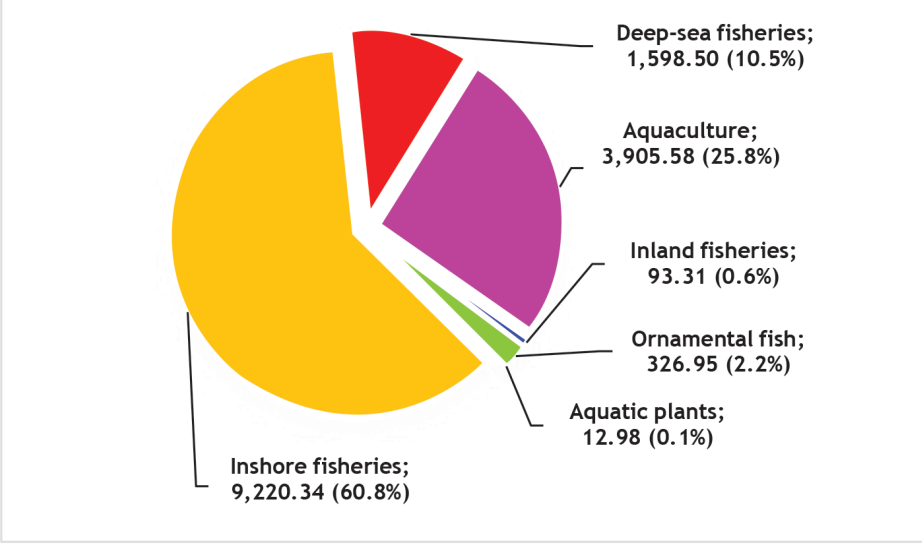


Figure 1.1: Fisheries Value by Sector in Malaysia, 2017 in RM (million) and Percentage
Sources: Department of Fisheries Malaysia, 2018 in press.

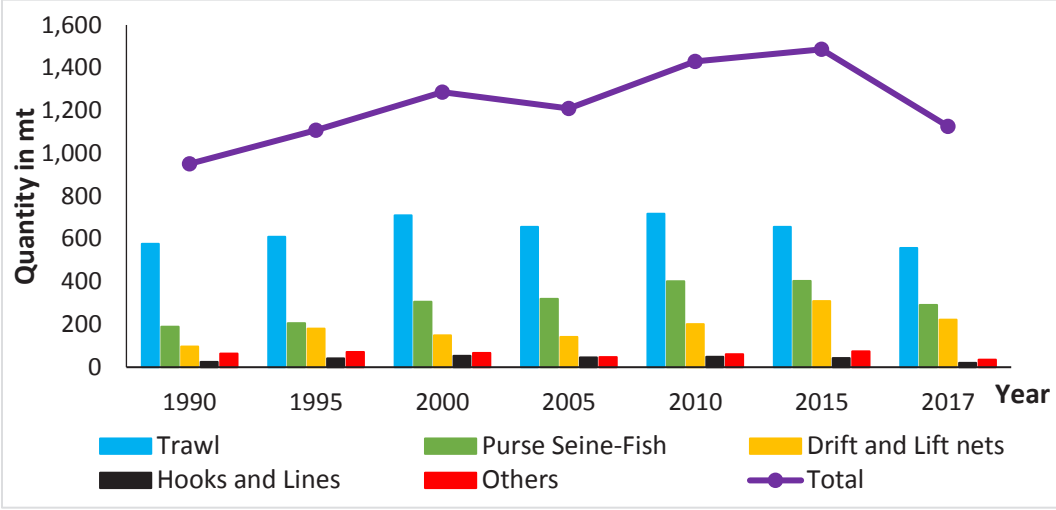


Figure 1.2: Trends of Marine Fish Landing by Fishing Gear Group, 1990-2017 (mt)
Sources: Annual Fisheries Statistics, Department of Fisheries Malaysia

Figure 1.2 depicts the trend of total marine fish landing in from 1990-2017 by fishing gears. Throughout the years, the top three fishing gears contributed to marine fish landing are trawl nets, purse seine-fish and, drift and lift nets.

1.2 Landings of Shark and Ray

1.2.1 Landings of Shark and Ray in Malaysia

Sharks and rays are mostly caught as bycatch in many fishing gears especially trawlers and drift nets. According to Ahmad *et al.*, (2014) at least 63 species of sharks and 82 species of rays are recorded in Malaysian waters. However, landings and trades of shark and ray are not recorded at species level but reported in groups simply as 'shark' and 'ray'. In general, sharks and rays in Malaysia only contributed less than 2.3% of total marine fish landing.

Table 1.1 shows the landing of sharks by states between 2000-2016. Three major states recorded highest landing of sharks are Sarawak, Sabah and Pahang. Other states such as Perak, Terengganu and Johore (East Johore) are also important for shark landings. The highest landing is in 2005 with a total of 9,165 mt. Landing trend is fluctuated between 6,000-9,000 mt.

Table 1.1: Landing of Sharks by States in Malaysia (mt and percentage), 2000-2016

State	2000		2005		2010		2015		2016	
	mt	%	mt	%	mt	%	mt	%	mt	%
Perlis	7	0.09	32	0.35	38	0.56	0.01	0	0	0
Kedah	100	1.26	51	0.56	69	1.02	10	0.13	4	0.07
Penang	13	0.16	4	0.04	55	0.81	20	0.26	26	0.43
Perak	705	8.87	486	5.3	706	10.39	2,144	28.12	970	16
Selangor	443	5.57	154	1.68	308	4.53	175	2.3	131	2.16
Negeri Sembilan	3	0.04	1	0.01	4	0.06	0	0	0	0
Melaka	66	0.83	66	0.72	45	0.66	26	0.34	9	0.15
West Johore	94	1.18	11	0.12	7	0.1	14	0.19	34	0.56
Kelantan	43	0.54	200	2.18	165	2.43	307	4.03	422	7
Terengganu	355	4.47	1,005	10.97	356	5.24	237	3.11	207	3.41
Pahang	984	12.38	1,661	18.12	1,047	15.42	690	9.07	496	8.2
East Johore	648	8.15	668	7.29	736	10.84	313	4.11	178	2.93
Sarawak	2,603	32.75	2,469	26.94	1,534	22.59	2,817	37	2,914	48.11
Sabah	1,797	22.61	1,951	21.29	1,388	20.44	731	9.6	563	9.28
F.T Labuan	87	1.09	406	4.43	334	4.92	127	1.71	103	1.7
Malaysia	7,948		9,165		6,792		7,611		6,057	

Sources: Annual Fisheries Statistics, Department of Fisheries

Table 1.2 shows the landing of rays by states between 2000-2016. Three major states recorded highest landing of rays are Sarawak, Sabah and Perak. Other states such as Selangor, Pahang and Johore (East Johore) are also important for ray landings. The highest landing is in 2000 with a total of 16,573 mt. The landing trend showed decreasing after 2000 from 16,573 mt to 12,281 mt in 2016. Landing in Perak is the highest in West Coast of Peninsular Malaysia and since 2015, landing in Pahang is the highest in East Coast of Peninsular Malaysia.

Table 1.2: Landing of Rays by States in Malaysia (mt and percentage), 2000-2016

State	2000		2005		2010		2015		2016	
	mt	%	mt	%	mt	%	mt	%	mt	%
Perlis	166	1	363	2.28	273	1.98	244	1.89	219	1.78
Kedah	586	3.54	161	1.01	208	1.51	68	0.53	55	0.45
Penang	314	1.89	401	2.52	455	3.3	224	1.74	312	2.54
Perak	3,129	18.88	2,178	13.67	2,130	15.47	1,502	11.64	1,611	13.12
Selangor	1,180	7.12	562	3.53	1,066	7.74	1,173	9.09	1,554	12.65
Negeri Sembilan	14	0.08	14	0.09	42	0.3	1	0.01	0	0
Melaka	134	0.81	146	0.92	121	0.88	154	1.19	176	1.43
West Johore	228	1.38	252	1.58	254	1.84	366	2.84	587	4.78
Kelantan	309	1.86	311	1.95	450	3.27	734	5.69	617	5.02
Terengganu	961	5.8	888	5.57	362	2.63	259	2.01	234	1.91
Pahang	2,117	12.77	2,293	14.4	1,459	10.59	1,212	9.39	1,321	10.76
East Johore	2,212	13.35	1,831	11.49	1,734	12.59	595	4.6	282	2.3
Sarawak	2,840	17.14	3,910	24.55	2,666	19.36	4,263	33.02	3,969	32.33
Sabah	2,301	13.88	2,240	14.06	2,230	16.19	1,888	14.62	1,226	9.98
F.T Labuan	82	0.49	379	2.38	323	2.35	224	1.74	117	0.95
Malaysia	16,573		15,929		13,773		12,907		12,281	

Sources: Annual Fisheries Statistics, Department of Fisheries

Figure 1.3 shows landing trends of shark and ray between 1982-2017. The annual landings of shark and ray increased and fluctuated from 10,792 mt in 1982 to 20,102 mt in 2017. The highest landing is in 2003 at 27,948 mt while the lowest landing is in 1985 at 10,185 mt. This trend is due to the nature of fisheries and sharks and rays are seasoning in occurrence. Landing of sharks fluctuated from year to year. The highest landing is in 2005 with 9,165 mt. Similar as for shark, landing of rays also fluctuated from year to year. The highest landing is in 2003 with 19,253 mt.

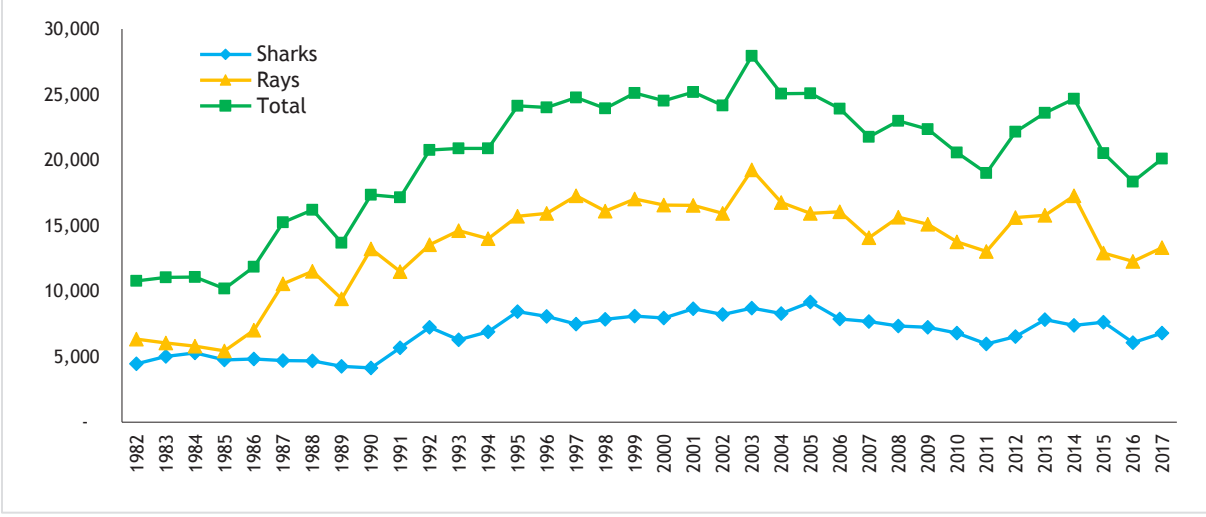


Figure 1.3: Trends of Landing of Shark and Ray in Malaysia, 1982-2017 (mt)
Sources: Annual Fisheries Statistics, Department of Fisheries Malaysia

1.2.2 Landings of Shark and Ray in Perak and Pahang

In general, Perak and Pahang recorded the highest landings of shark and ray in Peninsular Malaysia. Figure 1.4 shows landings of shark and ray in Perak between 2010-2017. In 2010, landings of shark and ray is 706 mt and 2,130 mt respectively. However, in 2017 the landing is decreased to 463 mt and 990 mt respectively. The highest landings of shark and ray are 2,144 mt in 2015 and 2,879 mt in 2012 respectively.

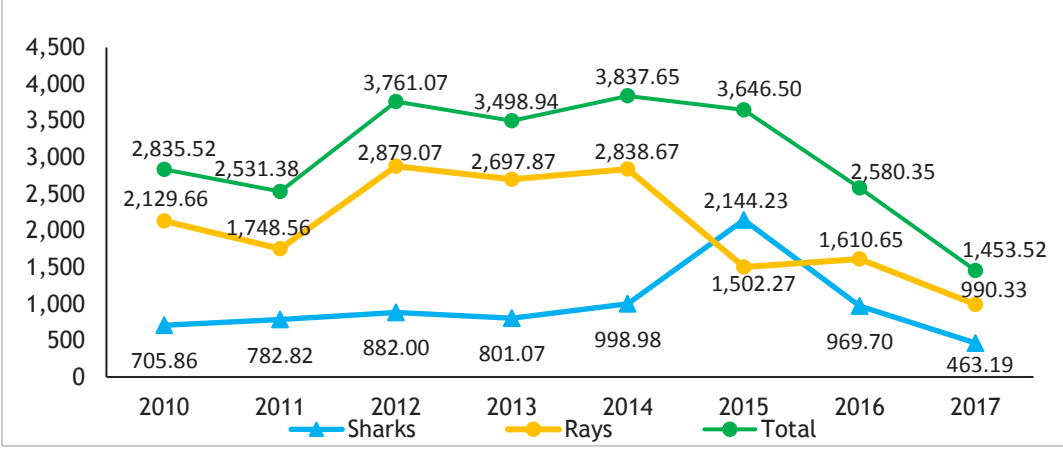


Figure 1.4: Trends of Landing of Shark and Ray in Perak, 2010-2017 (mt)
Source: Perak State Fisheries Office (2010-2017)

Figure 1.5 shows landings of shark and ray in Pahang between 2009-2017. In 2009, landings of shark and ray are 740 mt and 1,010 mt respectively. However, in 2016 the landing of sharks is decreased to 434 mt while landing of rays slightly increased to 1,117 mt. The highest landings of shark and ray are recorded in 2010 at 1,022 mt and 1,440 mt respectively.

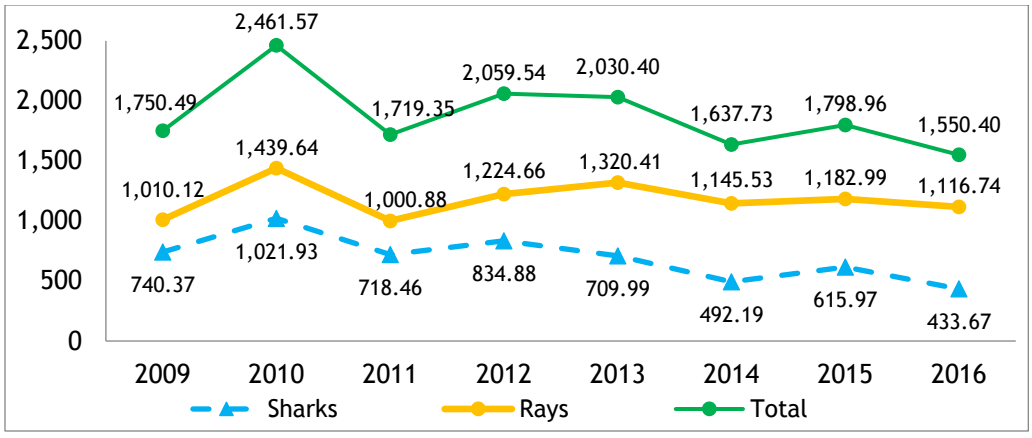


Figure 1.5: Trends of Landing of Shark and Ray in Pahang, 2009-2016 (mt)
Source: Pahang State Fisheries Office (2009-2016)

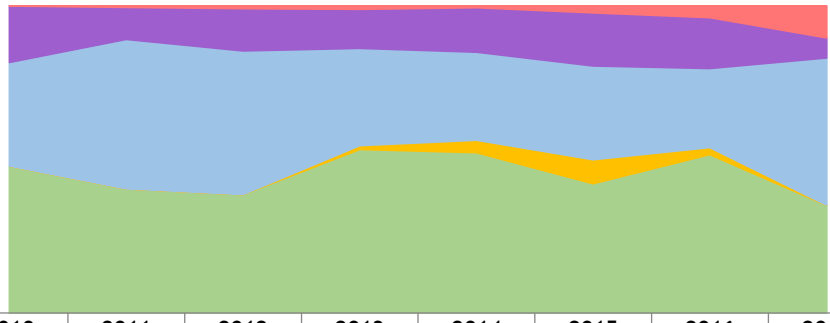
Perak

Table 1.3 shows the total landings of shark and ray in Perak by districts from 2010-2017. The grand total in eight years are 24,145 mt. Three main districts with highest recorded landings of shark and ray are Hilir Perak, Larut Matang and Manjung Selatan. Hilir Perak recorded the highest total landings of shark and ray with 10,655 mt followed by Larut Matang (7,523 mt), Manjung Selatan (4,580 mt), Kerian (900 mt) and Manjung Utara with 487 mt. At Hilir Perak, the highest landing of sharks is recorded in 2015 with 904 mt and for rays in 2014 with 1,486 mt. Details are shown in Table 1.3, Figure 1.6 and Figure 1.7.

Table 1.3: Total Landings of Shark and Ray in Perak by Districts, 2010-2017 (mt)

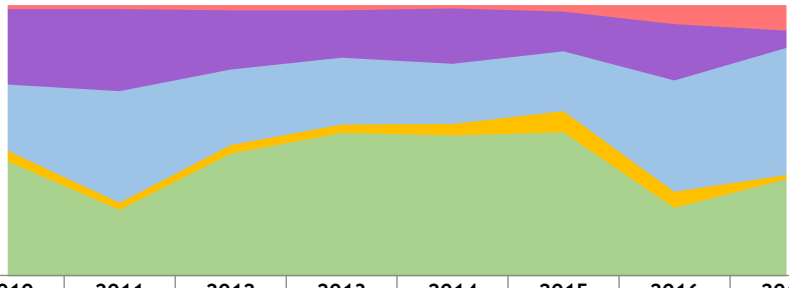
Groups	Districts	2010	2011	2012	2013	2014	2015	2016	2017	Total
Sharks	Hilir Perak	337.86	316.49	340.06	426.91	522.27	903.73	500.27	162.72	**3,510.31**
	Kerian	0.10	0.22	0.00	10.09	40.67	168.45	22.99	0.14	**242.67**
	Larut Matang	238.58	381.06	413.19	253.67	286.33	652.65	249.08	222.08	**2,696.65**
	Manjung Selatan	129.32	81.45	121.24	101.48	144.10	372.07	160.24	30.18	**1,140.07**
	Manjung Utara	0.00	3.61	7.50	8.91	5.61	47.33	37.12	48.07	**158.15**
	Total	**705.86**	**782.82**	**882.00**	**801.07**	**998.98**	**2,144.23**	**969.70**	**463.19**	**7,747.85**
Rays	Hilir Perak	905.96	432.50	1,310.96	1,438.66	1,485.60	803.45	410.64	357.01	**7,144.77**
	Kerian	85.19	46.48	93.96	82.64	120.03	118.10	95.35	15.09	**656.84**
	Larut Matang	524.33	723.74	807.72	670.30	634.79	333.19	665.00	467.29	**4,826.37**
	Manjung Selatan	597.12	532.66	630.68	472.78	582.28	221.77	338.40	64.44	**3,440.12**
	Manjung Utara	17.06	13.18	35.75	33.48	15.97	25.76	101.26	86.50	**328.96**
	Total	**2,129.66**	**1,748.56**	**2,879.07**	**2,697.87**	**2,838.67**	**1,502.27**	**1,610.65**	**990.33**	**16,397.07**
Total (Sharks and rays)	Hilir Perak	1,243.82	748.98	1,651.02	1,865.57	2,007.87	1,707.18	910.91	519.72	**10,655.08**
	Kerian	85.29	46.70	93.96	92.74	160.70	286.55	118.34	15.24	**899.51**
	Larut Matang	762.92	1,104.80	1,220.91	923.97	921.12	985.84	914.08	689.37	**7,523.02**
	Manjung Selatan	726.44	614.11	751.92	574.27	726.38	593.83	498.63	94.62	**4,580.20**
	Manjung Utara	17.06	16.79	43.25	42.39	21.58	73.09	138.38	134.57	**487.11**
	Total	**2,835.52**	**2,531.38**	**3,761.07**	**3,498.94**	**3,837.65**	**3,646.50**	**2,580.35**	**1,453.52**	**24,144.92**

Source: Perak State Fisheries Office (2010-2017)



	2010	2011	2012	2013	2014	2015	2016	2017
Manjung Utara	0.00	3.61	7.50	8.91	5.61	47.33	37.12	48.07
Manjung Selatan	129.32	81.45	121.24	101.48	144.10	372.07	160.24	30.18
Larut Matang	238.58	381.06	413.19	253.67	286.33	652.65	249.08	222.08
Kerian	0.10	0.22	0.00	10.09	40.67	168.45	22.99	0.14
Hilir Perak	337.86	316.49	340.06	426.91	522.27	903.73	500.27	162.72

Figure 1.6: Landing of Sharks in Perak by Districts, 2010-2017 (mt)
Source: Perak State Fisheries Office (2010-2017)



	2010	2011	2012	2013	2014	2015	2016	2017
Manjung Utara	17.06	13.18	35.75	33.48	15.97	25.76	101.26	86.50
Manjung Selatan	597.12	532.66	630.68	472.78	582.28	221.77	338.40	64.44
Larut Matang	524.33	723.74	807.72	670.30	634.79	333.19	665.00	467.29
Kerian	85.19	46.48	93.96	82.64	120.03	118.10	95.35	15.09
Hilir Perak	905.96	432.50	1,310.96	1,438.66	1,485.60	803.45	410.64	357.01

Figure 1.7: Landing of Rays in Perak by Districts, 2010-2017 (mt)
Source: Perak State Fisheries Office (2010-2017)

Pahang

Table 1.4 shows the total landings of shark and ray in Pahang at Kuantan, Pekan and Rompin districts from 2009-2016. The grand total throughout the years are 15,008 mt. Kuantan recorded the highest total landings of shark and ray with 6,947 mt followed by Rompin (6,149 mt) and Pekan with 1,912 mt. The highest landing of sharks is recorded at Kuantan in 2010 with 536 mt while the lowest is at Pekan in 2016 with 0.14 mt. However, the highest landing of rays is recorded at Rompin in 2010 with 751 mt and the lowest is at Pekan in 2009 with 5.8 mt. Details are shown in Table 1.4, Figure 1.8 and Figure 1.9.

Table 1.4: Total Landings of Shark and Ray in Pahang by Districts, 2009-2016 (mt)

Groups	Districts	2009	2010	2011	2012	2013	2014	2015	2016	Total
Sharks	Kuantan	383.71	536.29	349.34	529.30	346.12	276.67	209.87	216.70	**2,847.99**
	Pekan	6.89	89.43	117.27	62.11	217.40	52.15	100.50	0.14	**645.90**
	Rompin	349.77	396.21	251.85	243.47	146.47	163.37	305.60	216.83	**2,073.55**
	Total	**740.37**	**1,021.93**	**718.46**	**834.88**	**709.99**	**492.19**	**615.97**	**433.67**	**5,567.45**
Rays	Kuantan	373.48	577.38	277.82	327.01	740.58	645.49	443.51	713.99	**4,099.25**
	Pekan	5.75	110.96	125.58	269.62	244.12	92.55	186.96	230.44	**1,265.99**
	Rompin	630.89	751.30	597.48	628.03	335.72	407.50	552.52	172.31	**4,075.75**
	Total	**1,010.12**	**1,439.64**	**1,000.88**	**1,224.66**	**1,320.41**	**1,145.53**	**1,182.99**	**1,116.74**	**9,440.99**
Total (Sharks and rays)	Kuantan	757.20	1,113.67	627.16	856.31	1,086.70	922.15	653.38	930.68	**6,947.25**
	Pekan	12.64	200.39	242.86	331.74	461.52	144.70	287.46	230.58	**1,911.89**
	Rompin	980.65	1,147.51	849.33	871.49	482.19	570.87	858.13	389.14	**6,149.30**
	Total	**1,750.49**	**2,461.57**	**1,719.35**	**2,059.54**	**2,030.40**	**1,637.73**	**1,798.96**	**1,550.40**	**15,008.44**

Source: Pahang State Fisheries Office (2009-2016)

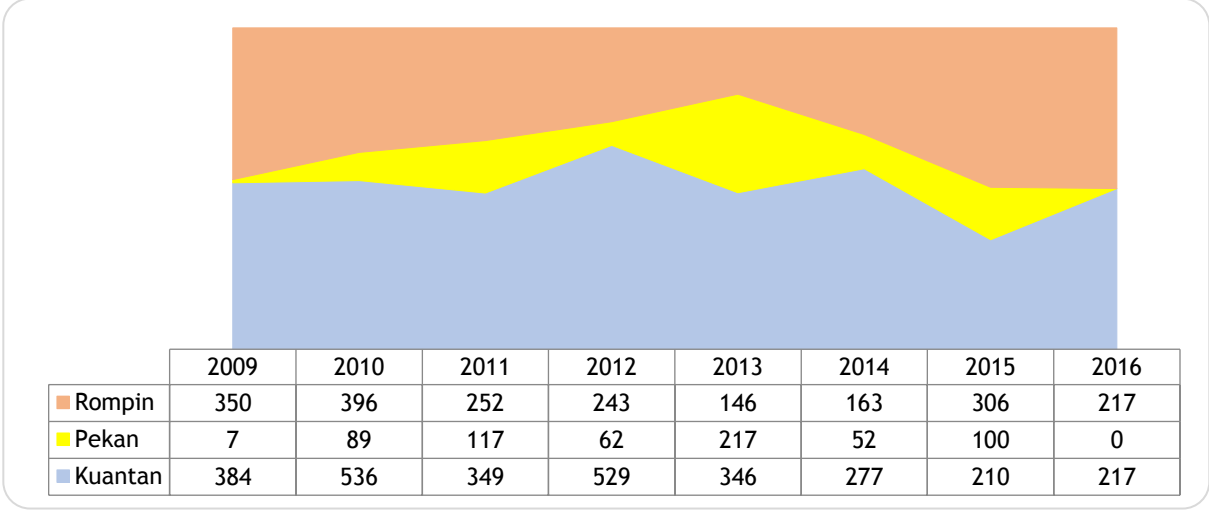
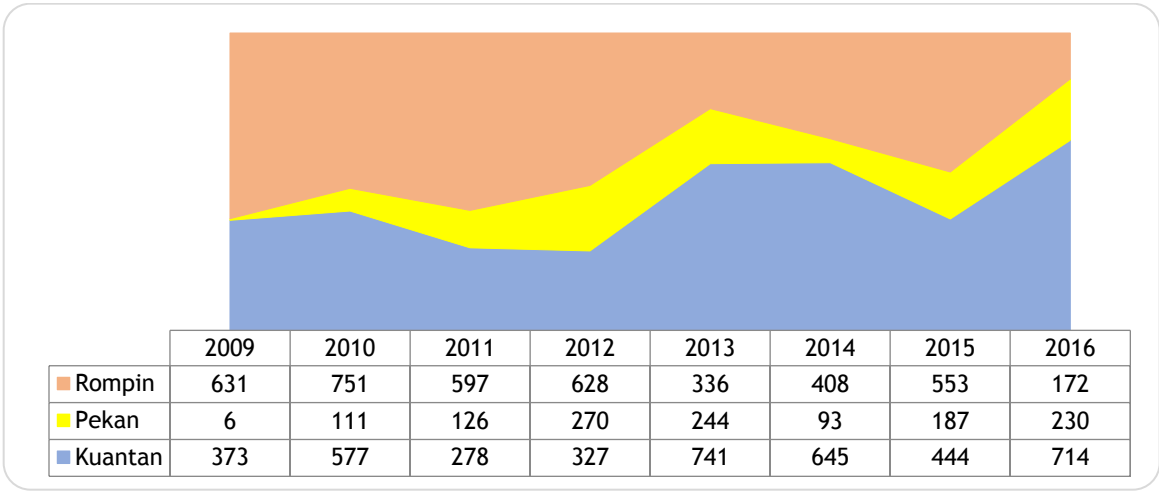


Figure 1.8: Landing of Sharks in Pahang by Districts, 2009-2016 (mt)
Source: Pahang State Fisheries Office (2009-2016)



	2009	2010	2011	2012	2013	2014	2015	2016
Rompin	631	751	597	628	336	408	553	172
Pekan	6	111	126	270	244	93	187	230
Kuantan	373	577	278	327	741	645	444	714

Figure 1.9: Landing of Rays in Pahang by Districts, 2009-2016 (mt)
Source: Pahang State Fisheries Office (2009-2016)

1.2.3 Shark and Ray Biodiversity and Resources in Perak and Pahang

Study conducted by Abd. Haris Hilmi *et al.*, (2017) at Larut Matang and Manjung Utara recorded 20 species of sharks from five families and 33 species of rays from nine families. At Larut Matang, 19 species of rays from five families and 14 species of sharks from three families are recorded while at Manjung Utara 14 species of rays from four families and six species of sharks from three families. In terms of percentage from total marine landings, sharks and rays contributed 0.56% and 2.03% in Larut Matang while 0.38% and 1.38% in Manjung Utara respectively.

The most abundant shark species in both Larut Matang and Manjung Utara are *Chiloscyllium hasseltii*, *Chiloscyllium punctatum* and *Atelomycterus marmoratus* while for rays are *Neotrygon orientalis*, *Maculabatis gerrardi*, *Brevitrygon heterura* and *Telatrygon zugei*. The highest catch per unit effort (CPUE) (kg/days and kg/hauls) for ray species captured by trawl net Zone C in Perak are *Neotrygon orientalis* followed by *Maculabatis gerrardi* and *Brevitrygon heterura*, while for sharks are dominated by *Chiloscyllium hasseltii*, *Chiloscyllium punctatum* and *Carcharhinus sorrah* (Abd. Haris Hilmi *et al*., 2017).

Yano *et al*., (2005) reported that most sharks and rays species are landed by trawl nets at Kuantan. Species of sharks recorded are *Carcharhinus sorrah*, *Carcharhinus sealei, Carcharhinus brevipinna, Loxodon macrorhinus, Rhizoprionodon acutus, Sphyrna lewini, Atelomycterus marmoratus, Chiloscyllium punctatum, Chiloscyllium plagiosum, Chiloscyllium indicum, Chiloscyllium hasseltii, Hemipristis elongata* and *Hemigaleus microstoma*, while for rays are *Rhynchobatus australiae, Brevitrygon imbricata, Brevitrygon heterura, Telatrygon zugei, Pateobatis uarnacoides, Himantura undulata, Himantura uarnak, Himantura leoparda, Maculabatis gerarrdi, Pateobatis jenkinsii, Maculabatis fai, Maculabatis pastinacoides, Pastinachus spp, Taeniura lymma, Taeniurops meyeni, Gymnura japonica, Gymnura poecilura, Gymnura zonura* and *Rhinoptera javanica*.

1.3 Marketing of Shark and Ray in Perak and Pahang

In general, all other parts of shark and ray are fully utilised such as meat, fins, cartilage, skin, as well as jaws. A small number of shark's jaws are sold as rare souvenir items to enthusiasts in both states. Discarded parts such as head are used as bait for fish/crab traps and aquaculture. There are no shark and ray processing plants in both states. This is due to irregularity in supply of the raw materials. Sharks and rays processing are usually carried out as a cottage industry, mostly by the families of fishers.

Both shark and ray meat are sold either fresh, salted or dried. Small sharks are sold fresh and meat of large sharks are mostly salted and sun dried. In other hand, rays are mostly sold fresh and small species such as *Brevitrygon imbricata, Brevitrygon heterura* and *Telatrygon zugei* are salted and sun dried. Skin of rays especially *Maculabatis gerarrdi* are preserved and exported to Thailand. Large sized sharks and rays such *Carcharhinus sorrah, Carcharhinus leucas, Carcharhinus amblyrhynchos, Sphyrna lewini, Sphyrna mokarran*, *Rhynchobatus australiae* and *Rhina ancylostoma* are sold with fins cut off at the landing site.

The utilisation, price and market destination of shark and ray are almost similar throughout the study duration. Once sharks and rays are caught by fishers they are brought back as a whole to the landing sites. The prices of fresh sharks and rays range accordingly by per kg depending on various factors such as species, size and season.

This research in Perak and Pahang is focused on; identifying the key industry participants: fishers, wholesalers, distributors, agents, processors, exporters, retailers, institutional buyers and consumers; to identify the major landing sites for shark and ray; to identify type of products; and to outline the marketing practices and supply chain of shark and ray.

2. PROBLEM STATEMENT

Malaysia has developed a National Plan of Action for sharks (NPOA-Shark) in 2006 in line with the requirement of the International Plan of Action for Conservation and Management of Shark (IPOA-Shark) by FAO in 1998 (Department of Fisheries Malaysia, 2006). The NPOA-Shark contains seven major items. They are: biology and habitat, socio-economic aspects of fishers and middlemen, trade, consumption of shark and ray, capacity building and research coordination, increasing awareness through information, conservation and effective management of shark and ray. The first NPOA-Shark has been revised in 2014 taking into account of the suggestions made by the IPOA-Shark after the document was evaluated on its achievement (Department of Fisheries Malaysia, 2014). According to IPOA-Shark, all the seven items under NPOA-Shark 2006 have been addressed but sections on the socio-economics profile of the fishers and middlemen requires further empirical evidences as well as on trade issues. Extended studies have been proposed by Department of Fisheries Malaysia (DOFM) to fill the knowledge gap namely for domestic utilisation, marketing of shark and ray in Perak and Pahang for Peninsular as representation of market flows for shark and ray.

The evidences on trade trends and competitiveness provide an indication of the extent of commercialization activities of this commodity in Malaysia in comparison to its trade partners in the ASEAN region. Profiling the middlemen, their marketing activities and practices are crucial to indicate the economic roles of each type of middlemen along the supply chain and the value creation made on the products respectively. This information are indicators of the commodification and marketization of shark and ray in Malaysia, the major players, value added activities, the roles of

prices on the supply and demand of shark and ray products and consumer preferences. They are valuable input towards designing a sustainable development of shark and ray from all angles: production, utilisation, supply, demand, market and resource management.

To ensure the effectiveness of conservation and management for shark and ray populations in the face of fisheries production and competition for natural resources, countries must be accountable for what they consume rather than what they produce.

3. OBJECTIVES

The overall objective of the study is to examine the domestic marketing of shark and ray products in Perak and Pahang. The sub-objectives are:

i. To identify the major actors in the marketing of shark and ray in selected areas of Perak and Pahang; and
ii. To examine the shark and ray marketing channels and practices in selected areas in Perak and Pahang.

4. METHODOLOGY

The following section describes the methodologies applied to achieve the above objectives. The methods used to answer these objectives were Key Informant Survey (KIS), Focus Group Discussion (FGD) and supply chain analysis.

Data on the marketing of shark and ray are collected through "key informant surveys" or KIS and "focus group discussions" or FGD with relevant stakeholders who are involved in the activities. KIS is a qualitative in-depth interview with individuals who know what is going on in the community[1]. In this study, the purpose of KIS is to collect information from a wide range of individuals including community leaders, traders, officials, prominent fishers, village heads who have first-hand knowledge about the fisher community and market. An FGD is a small group of 6-10 individuals led through an open discussion by a skilled moderator[2]. The group is large enough to generate a rich discussion but not too large that some participants are left out.

Table 4.1: List of Activities in Perak and Pahang, 2016-2018

No.	Date	Activities	Location
1.	20-23 October 2016	Preliminary Visits and KIS	LKIM & PNK Kuantan, Rompin & Mersing
2.	16-20 November 2016	Preliminary Visits and KIS	DOF Perak, PNK & Nelayan Pangkor, Lumut, Pantai Remis & Hutan Melintang
3.	22 February 2017	Preliminary Visits and KIS	DOF Pahang
4.	6-9 March 2017	KIS/Focus Group Discussion	Bagan Panchor, Pangkor, Lumut, Pantai Remis & Hutan Melintang
5.	3-7 April 2017	KIS/Focus Group Discussion	Kuantan, Balok, Beserah, Kuala Pahang, Nenasi & Rompin
6.	29 July–2 August 2017	KIS/Focus Group Discussion	Kuala Pahang, Nenasi, Balok, Beserah & Kuantan
7.	25-28 August 2017	KIS/Focus Group Discussion	Taiping, Larut Matang, Pantai Remis, Lumut & Sedeli
8.	21-25 January 2018	KIS/Focus Group Discussion	Balok, Beserah, Kuala Pahang, Nenasi & Rompin
9.	4 August 2018	KIS/Focus Group Discussion	Batu Pahat

[1] http://healthpolicy.ucla.edu/programs/health-data/trainings/Documents/tw_cba23.pdf
[2] https://assessment.trinity.duke.edu/documents/How_to_Conduct_a_Focus_Group.pdf

The stakeholders involved in both the KIS and FGD are: fishers, small time traders, wholesalers, processors, retailers (including restaurants and medicinal shops) and exporters. The study selected landing centres in Perak (including Hilir Perak, Ipoh, Larut Matang, Bagan Panchor, Pantai Remis, Lumut and Pangkor) and in Pahang (including Kuantan, Balok, Beserah, Kuala Pahang, Nenasi and Rompin).

For Perak, this study included four of the five fisheries districts which are Hilir Perak, accounting for 44.1% of shark and ray landings in 2017, Larut Matang (31.2%), Manjung Selatan (19.0%) and Manjung Utara (2.0%) (Department of Fisheries Perak, 2017). On the other hand, for Pahang, all districts are included which are Kuantan, accounting for 46.3% of shark and ray landings, Rompin (41.0%) and the balance from Pekan (12.7%).

The FGD questions used in the interviews of the stakeholders are provided in Appendix 8.2. A supply chain framework was used to guide the discussion and information seeking. The study ensured that major marketing functions were covered. These functions included: exchange (buying, selling and storage), physical (transportation, processing and standardization) and facilitating (risk bearing, financing and market intelligence). Major players along the supply chain and product development are identified and observed accordingly from the landing centres until the products reached the final destinations as reported by the stakeholders. To capture the differences in the marketing network between localities, a case study[3] approach is adopted for the locality and specific firm chosen.

5. RESULTS OF SHARK AND RAY MARKETING SUPPLY CHAIN

5.1 Marketing of Shark and Ray Products

During our visit, the main product that can be generated from shark and ray is shown in Figure 5.1 for both Perak and Pahang. The market is the main centre to buy fresh products of sharks and rays for local consumption. Shark products are sold in several forms such as fresh or salted meat, dried fin, fresh and frozen shark meat, skin, teeth, cartilage and fish ball. All prices are set at the retail market level. Most Malaysian shark product traders have multiple roles including processing, delivering and selling the products to the local markets. For example, livers are used either for food and sold fresh; skins are used for leather production as handbag, wallet, belt, shoes but processed outside Malaysia. However, they also have a number of retailers that reported to have a leather factory at Johore. Furthermore, some parts of shark and ray are used to produce souvenirs in different styles and leftover or discarded parts of the fish such as heads and other internal organs are used to supply fishmeal factory or as bait for fish and crab traps. Both states reported that sharks and rays are fully utilised.

[3] "Case study" is defined as an in-depth investigation of a single individual, group or event to explore the causes of underlying principles (http://www.pressacademia.org/case-studies/definition-of-case-study)

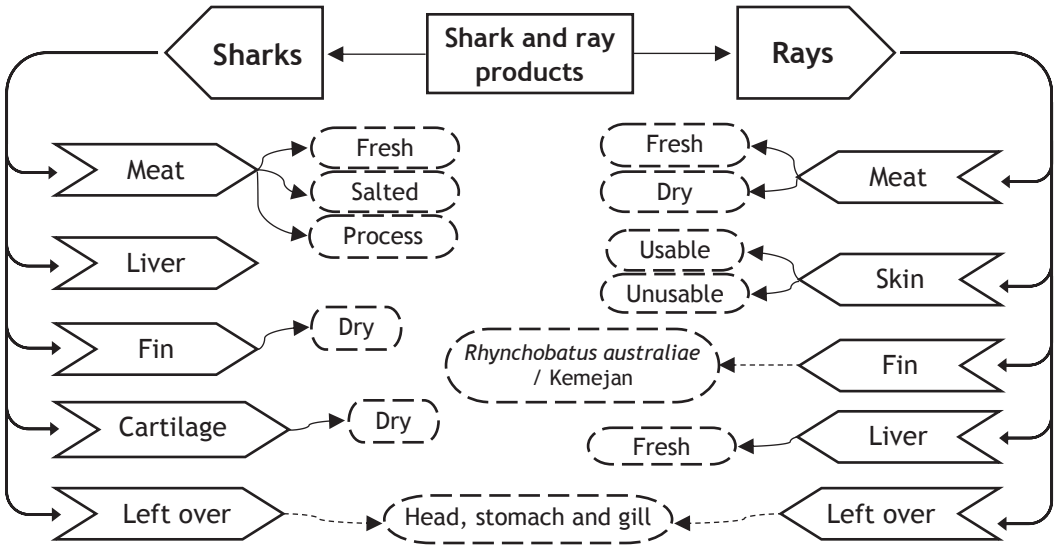


Figure 5.1: Shark and Ray Products Utilisation in Perak and Pahang, Malaysia

5.2 Marketing Channels of Shark and Ray

Based on the focus group discussions with major actors in the marketing of shark and ray in selected areas in Perak and Pahang, the general marketing channels for shark and ray are depicted in Figure 5.2 to Figure 5.4. Shark traders in Perak and Pahang bought or collected fish directly from the fishers and sold either to local markets or to markets in Penang, Johore, Melaka, Kuala Lumpur and a few other states.

Figure 5.2 shows the summary of shark and ray market channels in Perak from fishers to consumers. The market flow involves a few intermediaries from fishers, wholesalers, fishmongers or retailers (involved in logistic transportation service) to consumers. In this study, researchers have identified four fishers in Bagan Panchor who are targeted catching rays only using longlines, trawlers who have high landings of by-catch sharks, two marine product processors in Ipoh and several retailers selling dried shark and ray products at Manjung. According to Abdul Haris Hilmi *et al.,* (2017), the highest landing of shark by species are *Chiloscyllium hasseltii, C. punctatum, Atelomycterus marmoratus, Atelomycterus* cf. *ermanni* and *Carcharhinus sorrah*. Other shark species such as *Carcharhinus brevipinna, C. limbatus, C. leucas* and *Galeocerdo cuvier* are only landed between 1-2 months. The most common and abundant ray species are *Neotrygon orientalis, Maculabatis gerrardi, Brevitrygon heterura, Telatrygon zugei, Rhynchobatus australiae, Maculabatis pastinacoides* and *Hemitrygon akajei.* All these species are landed throughout the year. Other ray species such as *Dasyatis thetidis*, *Himantura undulata, Rhinobatos* cf. *borneensis* and *Rhynchobatus laevis* are only landed between 1-3 months.

At the landing sites, fishers sell to either wholesalers or fishmongeres the whole body of sharks with fins still attached at RM5/kg to RM10/kg regardless of it sizes. At the landing sites, buyers (wholesalers) determined the price of fish; nonetheless, price may vary according to the weather, moon position and season. Normally at the landing site wholesalers cut the body parts of big size sharks into pieces at the landing site before selling to retailers or direct to consumers. Price margin

of shark and ray that retailers usually pay to wholesalers is RM2/kg. Consumers, on the other hand, paid a retail price of between RM15/kg to RM18/kg if they bought at the fish market. Several wholesalers collected semi-processed ray skins which are sent to agents for exportation to Thailand.

Figure 5.3 shows the summary of shark and ray marketing in Pahang, overall market identity includes fishers, first level wholesalers and second level wholesalers. Most of the small size fishes are sold at the landing jetty itself, while the big size fishes are sent to Kuantan wholesalers. Several main first level wholesalers are operating at each jetty in Kuantan, Balok, Beserah, Kuala Pahang, Nenasi, Rompin and Endau-Rompin. Those first level wholesalers who have their own fishing vessels will also accept landings from other boats or vessels before sending all fishes to second level wholesalers. All transactions are paid in cash. There are two processors of dried fish products in Beserah, Kuantan, who bought the big sized sharks to be made into dried salted meat. The processors sell the products to small retailers at wholesale with price of about RM20/kg and the retailers will repackage and resell the salted meat at retail level for RM5/100 gram. In Kuala Pahang, Nenasi and Rompin, all shark and ray landings are taken up by the two first level wholesalers who will send the fishes mostly to Kuala Lumpur, Melaka, Johore and Singapore markets. The wholesalers also employed workers to collect partially processed ray skins which are then sent to a collector in Kuala Lumpur who then will export the skins to Thailand market. The wholesalers are responsible to charge and estimate the price of which is estimated at RM3,000/fish box. The price of the ray skins depends on the sizes and type of species. In Pahang, all shark and ray products including raw meat, salted meat, livers, skin and left over shark head are utilised.

Figure 5.4 shows the flow of supply and demand of shark and ray for the two second level wholesalers in Batu Pahat. The two second level wholesalers collected all types of fishes including shark and ray from a few landing locations for distribution to various markets. It is reported that shark and ray are normally collected from eight first level wholesalers in Terengganu (at Besut, Dungun and Kemaman), 11 first level wholesalers in Pahang (at Kuantan, Kuala Pahang, Nenasi, Sg. Miang and Rompin), one each from Tg. Balai, Indonesia (for low grade rays) and Bintulu, Sarawak (for *Pastinachus stellurostris* (Pari Daun) species). The distribution to retail markets in Melaka, Muar, Kuala Lumpur, Johore Bahru and Singapore depended on demand for specific species and types of products of shark and ray. The transportation of shark and ray products may be done by either logistic transport operators or by the second wholesalers themselves using their own transport vehicles. The costs of transportation are ranged between RM20-RM30 per box. The second level wholesalers in Batu Pahat usually prefer to take unprocess whole body fish.

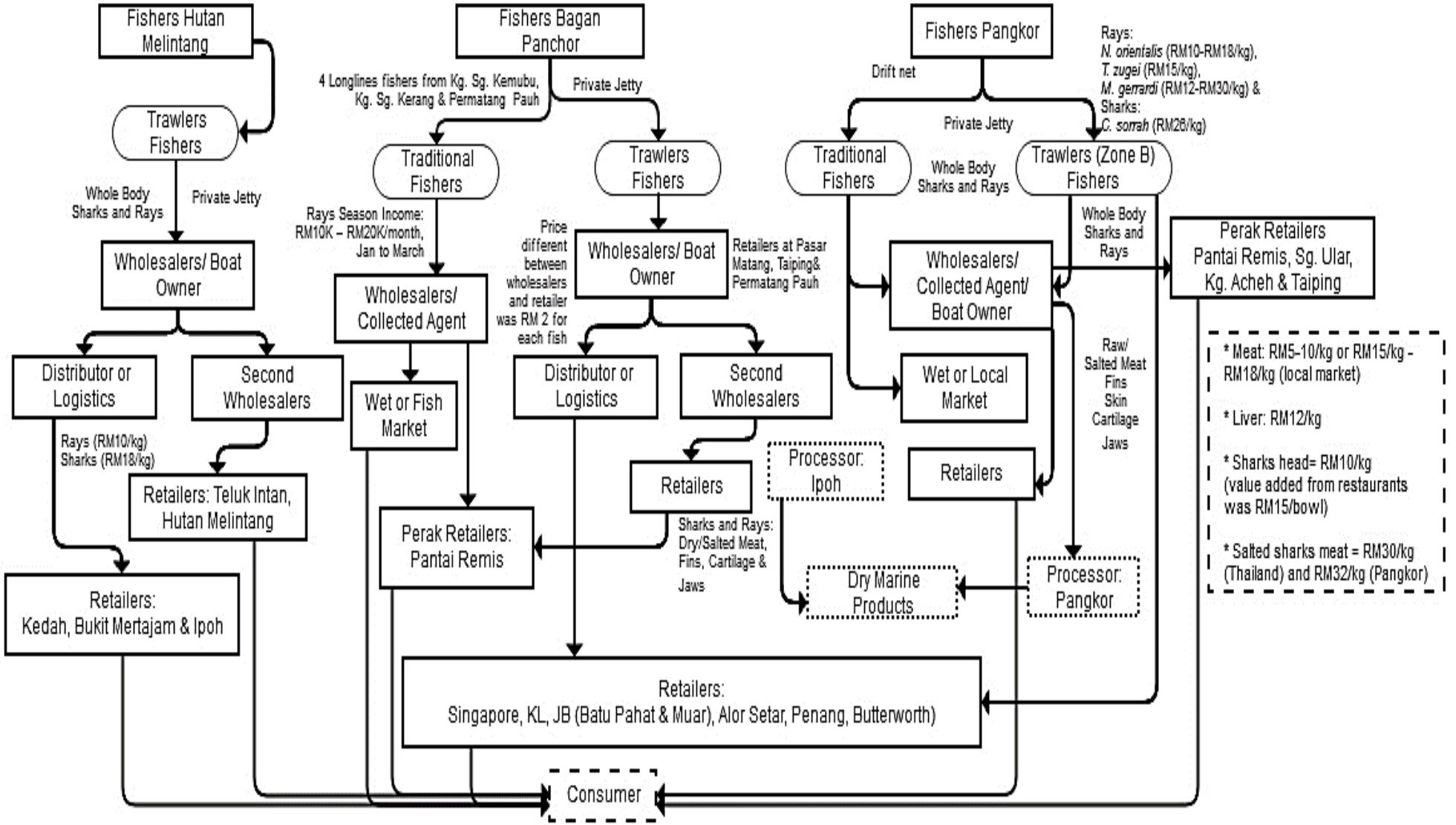


Figure 5.2: Shark and Ray Marketing Channels in Perak, Malaysia

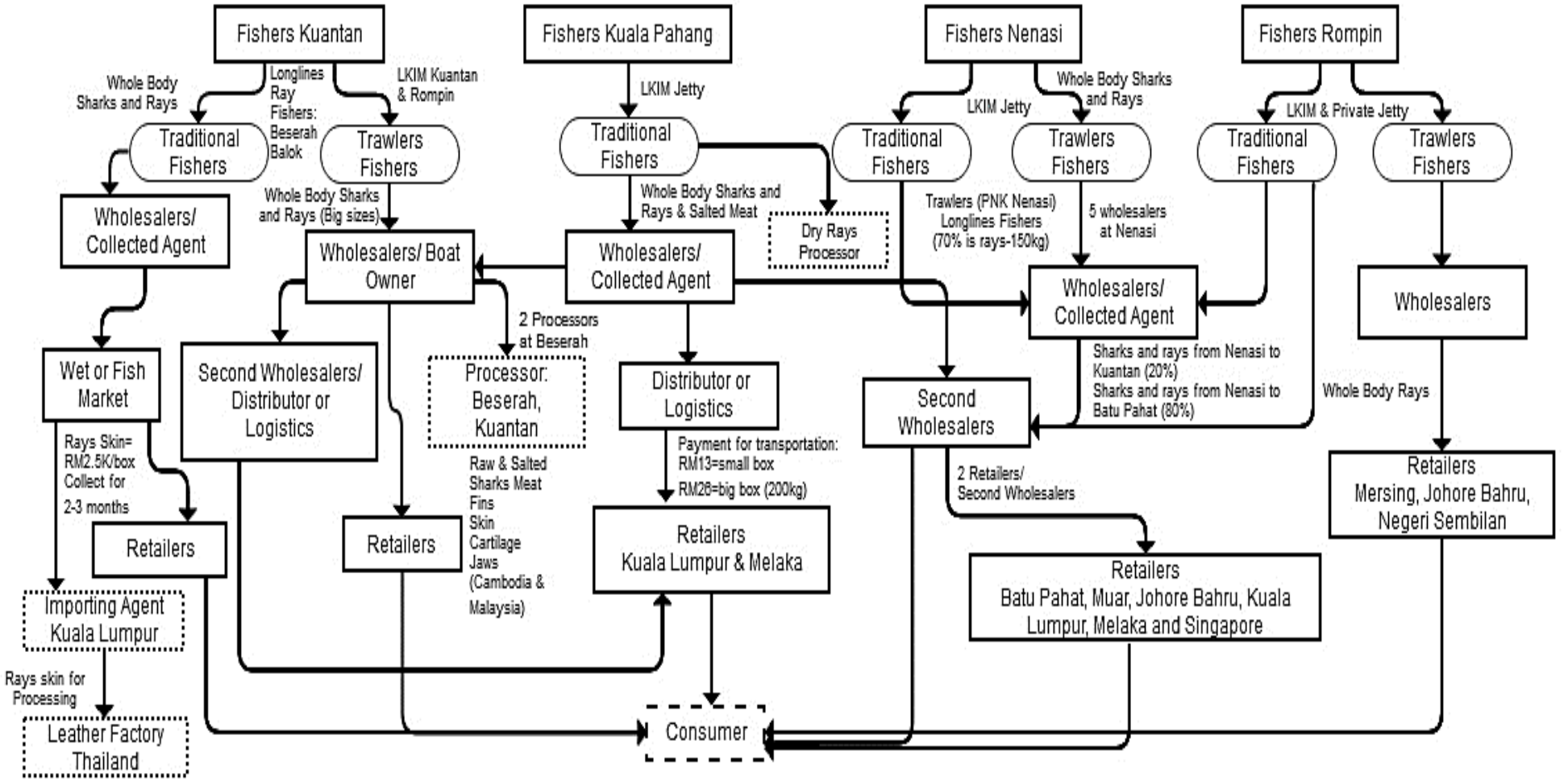


Figure 5.3: Shark and Ray Marketing Channels in Pahang, Malaysia

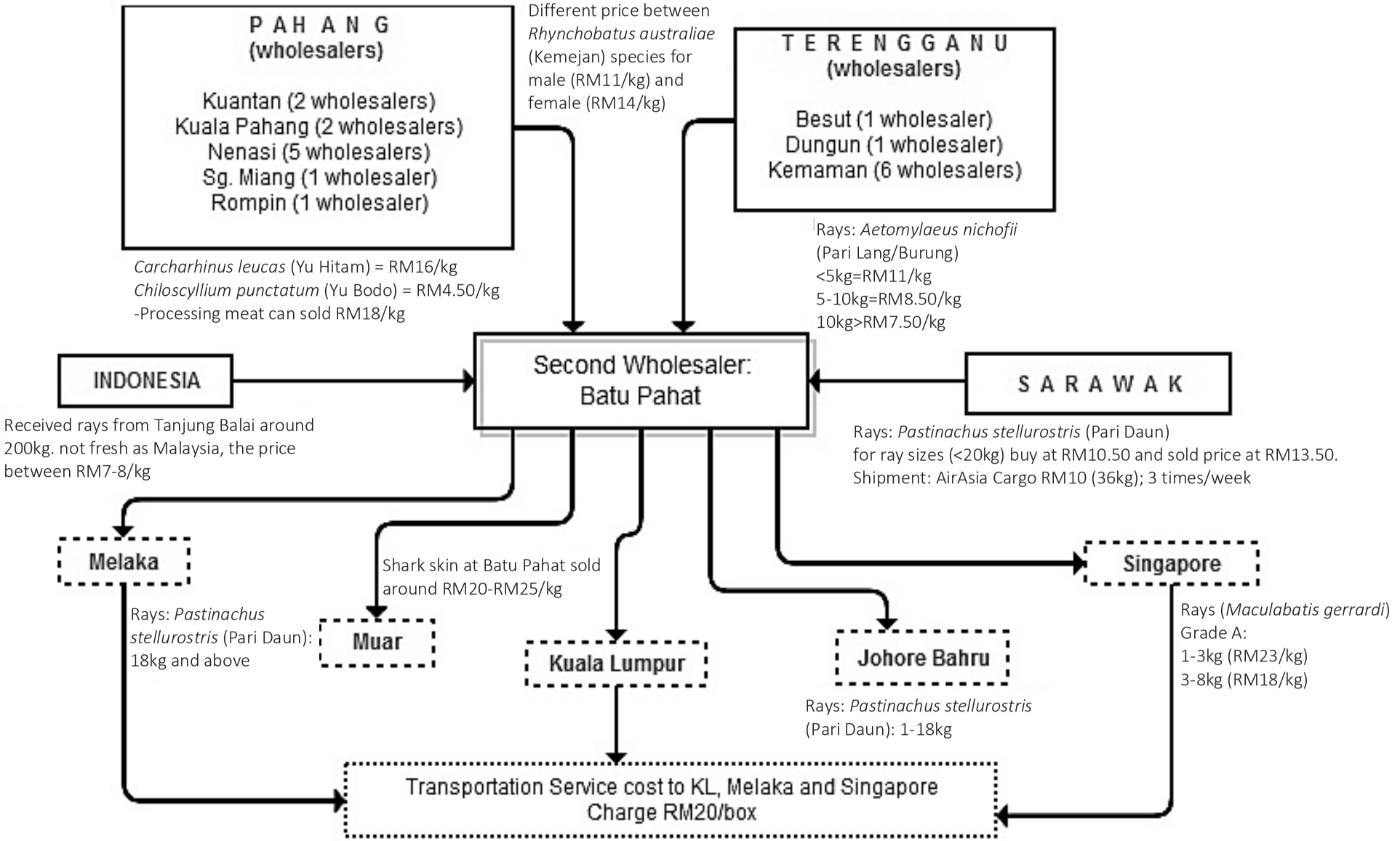


Figure 5.4: Shark and Ray Marketing Channels of Second Level Wholesalers in Batu Pahat

6. CONCLUSION

This study aims to examine the domestic marketing of sharks and rays in Pahang and Perak as a continuation of a similar study in Sabah. Both states are the major producers of shark and ray products in Peninsular Malaysia. Therefore, the study examines major players in the system, marketing channels and practices.

Data for the study are collected through the Focus Group Discussions (FGD) and Key Informant Survey (KIS) at major landing sites in both states. Face to face interviews are carried out to collect the relevant data related to the traditional fishers.

The findings of the KIS and FGD surveys have found that almost all fishers indicate that sharks and rays are "by-catch" and the landings are considerably small, with its marketing system seen to operate with a relatively efficient routine. The results reflect that markets for shark and ray in both states are mostly localised depending on the landings (weight and species) and the local demand.

In Pahang, sharks are consumed by local consumers in various forms. The central market for sharks and rays in Pahang is Kuantan where the products are distributed through wholesalers to local markets as well as markets outside the state including Melaka, Johore (Batu Pahat and Johore Bahru), Kuala Lumpur and Singapore. There are two processors of shark and ray products based in Beserah, Pahang. Both processors also export ray skins to Thailand through an agent based in Perak.

Whereas in Perak, the market system is even more direct where the wholesalers collect the fishes at the landing sites and sell most of them directly to the retailers. Major retailing markets are within the state itself such as in Sitiawan, Pantai Remis, Sungai Ular, Kampung Acheh, Telok Intan and Taiping. Out of state markets include those in Butterworth, Bukit Mertajam, Alor Setar, Kuala Lumpur, Johore Bahru, Batu Pahat and Selayang, Selangor and rays are also exported to Singapore.

Market players in the two states seem to have a good marketing network to communicate supply and prices. Most of the wholesalers have the storage facilities to keep fresh fish for distribution to major internal market destinations. In general, most of the sharks and rays are consumed locally in the fresh form. However, some small scale factories produce various value added products such as dried cartilage of sharks, shark jaws and salted-dried meat. The demand for sharks and rays in both states for local consumptions are relatively strong.

The findings from this study would be useful as a guideline in expanding similar studies in other states in Malaysia. It is hoped that the findings would provide the evidential input for policy decision and action as required by the National Plan of Action for Conservation and Management of Shark–Plan 2 (NPOA-Shark Plan 2).

7. REFERENCES

Abd. Haris Hilmi, A. A., Ahmad, A. and Lawrence, K. J. (2017). Data Collection on Sharks and Rays by Species in Malaysia (August 2015-July 2016), Terminal Report, Marine Fishery Resources Development and Management Department & Southeast Asian Fisheries Development Center, ISBN 978-983-9114-73-7, SEAFDEC/MFRDMD/SP/34, 92pp

Ahmad, A., Lim, A.P.K., Fahmi, Dharmadi and Tassapon, K. (2014). Field Guide to Rays, Skates and Chimaeras of the Southeast Asian Region SEAFDEC/MFRDMD/SP/25. 289pp.

Department of Fisheries Malaysia (2005-2018). Annual Fisheries Statistics [Volume 1].

FishStatJ FAO (2015). Fishery and Aquaculture Statistics. [Global commodities production and trade 1976-2011].

Yano, K., Ahmad, A., Gambang, A.C., Idris, A.H., Solahuddin, A.R. and Aznan, Z. (2005). Sharks and Rays of Malaysia and Brunei Darussalam. SEAFDEC-MFRDMD/ SP/12. Kuala Terengganu, Malaysia. 557 pp

8. APPENDIX

8.1 List of Stakeholders and Activities

Table 8.1: List of Stakeholders and Activities in Perak and Pahang, 2016-2018

No.	Date	Respondent	Location	Activity
1.	21/10/2016	LKIM Pahang, PNK Pahang and PNK Kuantan	Kuantan, Pahang	Key Informant Survey
2.	22/10/2016	LKIM Rompin (Wholesalers and fishers)	Rompin, Pahang	
3.	23/10/2016	LKIM Mersing	Mersing, Pahang	
4.	17/11/2016	DOF Perak	Ipoh, Perak	
5.	18/11/2016	Mr. Kaniapan (Trawl fisher) Mr. Chia Rong Zeng **(**Trawl fisher)	Pangkor and Lumut, Perak	Preliminary Visits
6.	18/11/2016	Eng Seng Pangkor Food Industry & Trading (Hasil Laut Sri Pangkor), Chop Chua Kee Sdn. Bhd. and Mrs. Jamilah **(**Shark and ray product retailers; wet and dry market)	Pangkor and Lumut, Perak	
7.	19/11/2016	Mr. Rosli Wahab (Longlines rays fishers), Private Jetty: Ah Leong, Teng Sheng Fishery and Ah soon (Trawlers owner and wholesalers)	Kg. Permatang Pauh, Pantai Remis and Bagan Panchor, Perak	
8.	20/11/2016	Keng Seng Fishery Sdn Bhd (Mr. Ah Soon) and Mr. Keng Sheng (Shark and ray wholesalers)	Hutan Melintang, Perak	
9.	20/11/2016	Teluk Intan wet market (Sharks and rays retailers)	Teluk Intan, Perak	
10.	22/2/2017	DOF Pahang	Kuantan, Pahang	Key Informant Survey
11.	7/3/2017	Fishers Association Pangkor (Trawl fishers), Mr. Kaniapan (Trawl fishers), Eng Seng Pangkor Food Industry & Trading (Hasil Laut Sri Pangkor) and Mrs Jamilah (Shark and ray product retailers dry market)	Pangkor and Lumut, Perak	Focus Group Discussion
12.	8/3/2017	Private Jetty Ah Leong, Matang Pauh Private Jetty Hup Seng, Jetty Bagan Panchor	Bagan Panchor, Perak	
13.	9/3/2017	Private Jetty Lang Pai Wah Private Jetty Hing Teck Soon	Jetty Bagan Panchor Perak	
14.	4/4/2017	Bonie M and Fu Yek (Shark and ray wholesalers) Ah Heng (PAF 4822) & Ah Huat (Trawlers owner)	Kuantan, Pahang	Focus Group Discussion
15.	4/4/2017	Shark and ray product retailers dry market	Kuantan, Pahang	
16.	5/4/2017	Koh Chi Lip Sdn. Bhd. & Heap Yee Trading (Sharks processing and dry product)	Beserah, Pahang	
17.	5/4/2017	Mr. Hasbullah Yusoff (Traditional boat owner and wholesalers)	Beserah, Pahang	

No.	Date	Respondent	Location	Activity
18.	6/4/2017	Ms. Nabila Syafida Mohd Nasir, Mr. Abd Rahim Mustafa and Mohd Yusof Mohd Nasir (Trawlers owner, fish collecting agents and wholesalers) Mr. Mohd Ali Mohd Basir, Mr. Mohd Rizal Mohd Basir and Mr. Mohd Fadzil Mustafa (Longlines fishers)	Nenasi, Pahang	
19.	7/4/2017	Mr. Heng Swee Chong (Hai Lee Hong Fishery Sdn. Bhd), Jetty Seng Fu (Along), Jetty Ah Tong Fishery	Rompin, Pahang	
20.	7/4/2017	Mr. Mohd Asraf Mat Kole (Rays collector and retailer) and Mr Yusof (LKIM Rompin officer)	Rompin, Pahang	
21.	31/7/2017	Mr. Suhaini Hussin (Traditional fishers), Mr. Mohd Liza Abd Halim (Wholesaler) Mr. Zali Ismail (Processor dry products)	Kuala Pahang, Pahang	Focus Group Discussion
22.	31/7/2017	Mr. Mohd Fadzil Mustafa and Mr. Mohd Yusuf Abdullah (Longlines fishers) Mr. Mohd Yusoff Mustaffa and Mr. Othman Razali (Trawlers owner, fish collecting agents and wholesalers)	Nenasi, Pahang	
23.	1/8/2017	Mr. Raja Haris Raja Salim (Fishers and PNK Balok) Mr. Mohamad Zulkhairi Salim (LKIM, Kuantan)	Balok, Pahang	
24.	1/8/2017	Mr. Koh Yee Been: Koh Chit Lip and Ah Lang: Heap Yee Trading (Processors for marine products)	Beserah, Pahang	
25.	1/8/2017	Mr. Hasbullah Yusoff- Pasar Sejahtera Beserah (MPK) (Traditional boat owner and wholesalers) and Mr. Mohd Adnan Mat Dahan (Rays skin collector and wet market worker)	Beserah, Pahang	
26.	1/8/2017	Kedai Hasil Laut Then Wang and Kedai Hasil Laut Lian Lee (Shark and ray product retailers dry market)	Kuantan, Pahang	
27.	2/8/2017	Visit LKIM Kuantan Jetty and Ms. Syarifah Nur Atiqah Sayed Alias (PNK Pahang-PENERPA) and Mr. Mohamad Zulkhairi Salim (LKIM, Kuantan)	LKIM Kuantan, Pahang	Preliminary Visits
28.	2/8/2017	Kedai Hasil Laut Sin Kee Hung (Shark and ray product retailers dry market)	Kuantan, Pahang	
29.	26/8/2017	Visit wet and dry market (Pasar Matang and Pasar Kota) Mr. Kamarudin b. Mat (Longlines fishers)	Taiping, Perak	Preliminary Visits&Focus Group Discussion
30.	26/8/2017	Mr. Rosli Wahab (Longlines rays fishers)	Batu 3 Sg. Pantai Remis, Perak	

No.	Date	Respondent	Location	Activity
31.	27/8/2017	Visit Sitiawan wet market, Seri Manjung market	Lumut, Perak	
32.	27/8/2017	Mr. Awang @ Abu Bakar (Longlines fishers and rays wholesalers)	Kg. Batu 3, Segari, Pahang	
33.	27/8/2017	Manjung Sea Product Dealer and Hasil Laut Jamilah (Sharks and rays dry product retailer)	Lumut, Perak	
34.	28/8/2017	Visit Selayang wet market	Selayang, Kuala Lumpur	
35.	22/1/2018	Mr. Raja Haris Raja Salim (Fishers and PNK Balok), Mr. Amirrudin Abdul Raub (Longlines fisher), Mr. Saifulrizal Sidek (Drift net fisher) and Mr. Rosli Abd. Rahman (Traditional fisher)	Balok, Pahang	Focus Group Discussion
36.	23/1/2018	Mr. Zulkifli Omar and Mr. Nazri Sani (Traditional fishers) Mr. Mohd Liza Abd Halim (Wholesaler)	Kuala Pahang, Pahang	
37.	23/1/2018	Mr.Sulaiman Putra (Wholesaler)	Nenasi, Pahang	
38.	24/1/2018	Visit Private Jetty (Ah Tong) Mr. Mee/ Mrs Boby (Sharks and rays wholesalers from Kuala Pilah, Negeri Sembilan)	Rompin, Pahang	
39.	24/1/2018	Mr. Wan Mohd Lazim and Mr. Mohd Fadzil Haris	Kuala Pontian, Pahang	
40.	24/1/2018	Mr. Mohd Asraf Mat Kole (Rays collector and retailer)	Rompin, Pahang	
41.	24/1/2018	Mr. Mohd Yusuf Mustaffa (Boat owner, fish collecting agents and wholesalers)	Nenasi, Pahang	
42.	25/1/2018	Visit LKIM Jetty	Kuantan, Pahang	
43.	25/1/2018	Mr. Hasbullah Yusoff- Pasar Sejahtera Beserah (MPK) (Traditional boat owner and wholesalers) and Mr. Mohd Adnan Mat Dahan (Rays skin collector and wet market worker)	Beserah, Pahang	
44.	4/8/2018	Mr. Abdul Halim Abdul Hamid (Sharks and rays second wholesalers to Batu Pahat, Johor)	Batu Pahat, Johor	Focus Group Discussion

8.2 FGD Question for Focus Group Discussion on Domestic Marketing of Shark and Ray

Perbincangan Kumpulan Fokus PKF (Nelayan)

Kata-kata aluan

1) Pengenalan penyelidik.
2) Latar belakang penyelidikan – 3 komponen, objektif, dll – (lihat Ringkasan Penyelidikan)
3) Nota: Apa yang diperlukan adalah pendapat peribadi peserta. Dalam perbincangan ini tiada pandangan yang salah atau betul. Pandangan peserta adalah rahsia.
4) Latar belakang peserta – nama, aktiviti terlibat dan sebagainya.

Topik perbincangan:

1. Sila terangkan operasi/kegiatan perikanan di komuniti anda.
    - Status pemilikan (pemilik bot, tekong/awak-awak)
    - Lesen bot & Perkakasan yang kerap digunakan (cth: pancing, rawai, pukat tangsi, pukat tunda)
    - Pangkalan digunakan
    - Pemilihan lokasi/kawasan menangkap ikan (jarak daripada pangkalan-batu nautika)
    - Bilangan hari bagi setiap trip & bilangan trip sebulan
    - Kuantiti dan nilai pendaratan setiap trip secara keseluruhan (kg & RM)
    - Hasil tangkapan utama (target spesies)
    - Musim atau bulan penangkapan, bilakah hasil penangkapan tinggi/kurang di kawasan anda?
    - Aktiviti lain (selain perikanan) yang menyumbang kepada pendapatan bulanan.

2. Bagaimanakah aktiviti penangkapan ikan yu dan pari dijalankan?
   (soalan akan ditanya berasingan bagi yu dan pari)
    - Kekerapan menangkap ikan yu dan pari seminggu (per trip)
    - Ditangkap sebagai spesis sasaran atau tertangkap (*by catch*)
    - Adakah terdapat kawasan penangkapan tertentu bagi yu dan pari (dapatkan nama lokasi) dan bagaimana anda mengetahui lokasi ini?
    - Jarak lokasi penangkapan dari pangkalan (batu nautika)
    - Adakah tangkapan yu dan pari bermusim? Jika Ya, bilakah musim penangkapan tertinggi/terendah
    - Jenis spesies yang ditangkap dan spesies yang paling kerap ditangkap
    - Saiz yu dan pari yang ditangkap (cth: kecil , sederhana atau besar)
    - Adakah yu yang ditangkap hanya diambil sirip atau di daratkan keseluruhan badan berserta sirip
    - Adakah terdapat pemilihan spesies tertentu sahaja yang ditangkap bergantung kepada permintaan dan harga
    - Anggaran kuantiti dan nilai pendaratan setiap trip (kg & RM) bagi yu dan pari

3. Bagaimanakah permintaan dan pemasaran bagi pendaratan ikan yu dan pari di kawasan anda?
    - Adakah pendaratan yu dan pari untuk kegunaan sendiri/menggunakannya untuk menghasilkan produk sendiri?
    - Kepada siapakah anda menjual hasil tangkapan anda (cth: pemborong/peraih/kilang/pusat pemprosesan)
    - Adakah anda mempunyai perjanjian/kontrak dengan pembeli? Jika Ya, sila terangkan
    - Adakah anda menyediakan dan memproses ikan ini sebelum dijual/dipasarkan (Ya/Tidak)
    - Adakah semua spesies yang didaratkan boleh dijual? Adakah terdapat spesifik spesies yang diminta oleh pembeli?
        - ✓ Adakah anda melepaskan kembali ikan yu ke laut jika spesies berkenaan tidak laku
        - ✓ Adakah ada ikan yu dan pari yang tidak ada harga dan dijadikan ikan baja
    - Adakah terdapat permintaan spesifik bagi bahagian ikan yang ditangkap (cth: sirip, daging, kulit, dll)
    - Faktor pemilihan lokasi penjualan/pemasaran ikan yu/pari
    - Adakah terdapat pembeli yang khusus membeli ikan yu dan pari sahaja

- Faktor yang mempengaruhi harga dan gred jualan
  - ✓ Spesies, saiz, musim, dll
- Bagaimanakah harga dan gred jualan ditentukan (perundingan, ditentukan oleh pembeli, dll)
- Apakah julat/range harga dan gred jualan yu dan pari (mengikut spesies dan saiz)
- Adakah anda dibayar secara terus semasa penjualan atau selepasnya? Tempoh masa?
- Adakah pendaratan dan penjualan yu atau pari menyumbang kepada pendapatan anda (banyak/sedikit)

4. Adakah anda mengetahui peraturan berkaitan ikan yu dan pari (dari segi penangkapan, penjualan, dll)? Sila nyatakan peraturan yang anda tahu dan apakah pandangan anda.

5. Sekiranya kerajaan melaksanakan larangan penangkapan ikan yu, adakah peraturan ini akan memberi kesan pada anda? Jika Ya, sila terangkan dalam bentuk apa?

6. Adakah anda mengetahui aktiviti penyiripan ikan yu di laut (melibatkan penyiripan dan membuang badan di laut) adalah dilarang? Apakah pandangan anda berkaitan praktis dan larangan ini?

Perbincangan Kumpulan Fokus PKF (Pengantara Pasaran)

Kata-kata aluan

1) Pengenalan penyelidik.
2) Latar belakang penyelidikan – 3 komponen, objektif, dll – (lihat Ringkasan Penyelidikan)
3) Nota: Apa yang diperlukan adalah pendapat peribadi peserta. Dalam perbincangan ini tiada pandangan yang salah atau betul. Pandangan peserta adalah rahsia.
4) Latar belakang peserta – nama, aktiviti terlibat dan sebagainya.

Topik perbincangan:

1. Latar belakang responden
   - Adakah anda seorang peraih/pemborong/penjual/peniaga restoran/kilang? (sila pilih)
   - Berapa lamakah anda terlibat di dalam aktiviti ini?
   - Bilangan pekerja dan jenis pekerja (tempatan/asing)
   - Jenis produk (cth: produk kering, beku dan basah)

2. Sila terangkan operasi/kegiatan pembelian yu dan pari.
   - Dimanakah anda mendapatkan sumber bagi yu dan pari, melalui pasaran tempatan (nelayan di jeti/ejen/perdagang daerah lain) dan/atau import
   - Jeti tempatan yang dikunjungi bagi mendapatkan sumber (nama jeti)
   - Jenis pembekal terlibat (nelayan tradisi, nelayan komersil (pukat tunda), pemborong, peraih, dll)
   - Adakah anda mempunyai perjanjian/kontrak dengan penjual/pembekal
   - Selain anda berapa ramaikah pembeli lain yang terdapat di jeti/pusat pembelian?
   - Adakah anda mempunyai permintaan tertentu bagi pemilihan pembelian bekalan (cth: spesies, saiz, dll)
   - Adakah anda membeli bekalan secara kerap atau bermusim? Jika bermusim, bulan berapakan dikira sebagai bulan penjualan tertinggi/terendah bagi produk yu dan pari?
   - Bolehkah anda nyatakan kuantiti dan nilai pembelian yu dan pari? Sekiranya kerap, sila nyakan dalam anggaran belian bagi seminggu/sebulan (kg & RM)
   - Bolehkah anda menganggarkan amaun/bahagian (dalam kuantiti/nilai atau %) pembelian bekalan yu dan pari berbanding bekalan produk lain.
   - Kekerapan anda menambahkan/mendapatkan stok bagi ikan yu dan pari dalam masa seminggu
   - Adakah anda pembeli tunggal yang membeli ikan yu dan pari di kawasan anda.
   - Bagaimanakah anda membuat keputusan bagi memenuhi keperluan anda (permintaan pasaran)
     Cth: Memiliki bot nelayan sendiri; menyediakan pangkalan pendaratan dan lain lain

3. Sila terangkan operasi/kegiatan penjualan yu dan pari.
   - Siapakah pembeli dan dimanakah produk yu dan pari anda dijual
   - Sila nyatakan spesies yu dan pari yang dijual?
   - Bolehkan anda nyatakan julat/range kuantiti dan nilai jualan? Jika kerap, sila nyakan dalam anggaran belian bagi seminggu/sebulan (kg & RM)
   - Bolehkah anda menganggarkan amaun/bahagian (dalam kuantiti/nilai atau %) penjualan yu dan pari berbanding penjualan produk lain.
   - Bagaimanakah anda menentukan harga dan gred bagi produk jualan anda? (mengikut spesies dan saiz)
   - Adakah pembayaran dibuat secara terus atau mengambil masa? Jika mengambil masa, biasanya berapa lama?

4. Pemasaran dan pemprosesan produk jualan yu dan pari?
   - Bahagian ikan yang dijual (cth: isi ikan, kulit, sirip, gigi, insang, tulang, hati, dll)
   - Berapa peratus bahagian yang dijual selepas diproses
   - Destinasi penghantaran produk jualan mengikut bahagian ikan yang diproses (cth: pasar borong (luar sabah), pasar basah, kedai barangan kering, restoran, kilang pemproses, dll)
   - Kaedah penghantaran produk (cth: lori, kargo, dll) dan kekerapan penghantaran
   - Faktor yang mempengaruhi harga dan permintaan

5. Berapakah kos yang diperlukan/terlibat bagi tempoh sebulan?
   - Apakah major kos operasi yang terlibat bagi aktiviti anda? Sila nyatakan amaun dan bahagian terlibat (cth: pembelian bekalan, upah pekerja, pemprosesan, pengangkutan, utiliti,dll)
   - Apakah major kos tetap yang terlibat? (cth: sewa bangunan dan peralatan,insuran, lesen perniagaan, dll)
   - Kos pemasaran terlibat? (cth: kos kargo/penghantaran, upah agensi pemasaran, dll)

6. Adakah anda mengalami masalah sepanjang menjalankan aktiviti perdagangan ikan yu dan pari.

7. Adakah anda mengetahui peraturan berkaitan ikan yu dan pari (dari segi penangkapan, penjualan, dll)? Sila nyatakan peraturan yang anda tahu dan apakah pandangan anda.

8. Sekiranya kerajaan melaksanakan larangan penangkapan ikan yu, adakah peraturan ini akan memberi kesan pada anda? Jika Ya, sila terangkan dalam bentuk apa?

9. Adakah anda mengetahui aktiviti penyiripan ikan yu di laut (melibatkan penyiripan dan membuang badan di laut) adalah dilarang? Apakah pandangan anda berkaitan praktis dan larangan ini?

8.3 Shark and Ray Landings in Perak, Pahang and Malaysia

Table 8.2: Landings of Shark and Ray in Perak, Pahang and Malaysia, 1991-2017 (mt)

Year	Perak				Pahang				Malaysia			
	Marine Fisheries	Sharks	Rays	Shark and Ray	Marine Fisheries	Sharks	Rays	Shark and Ray	Marine Fisheries	Sharks	Rays	Shark and Ray
1991	108,464	1,318	580	1,898	108,464	1,318	580	1,898	911,933	5,677	11,485	17,162
1992	148,000	1,798	1,212	3,010	148,000	1,798	1,212	3,010	1,023,516	7,240	13,531	20,771
1993	154,667	2,112	1,614	3,726	154,667	2,112	1,614	3,726	1,047,350	6,294	14,604	20,898
1994	160,328	2,373	1,734	4,107	160,328	2,373	1,734	4,107	1,065,585	6,889	14,000	20,889
1995	166,462	3,176	2,993	6,169	166,462	3,176	2,993	6,169	1,108,436	8,437	15,707	24,144
1996	180,143	2,846	2,765	5,611	180,143	2,846	2,765	5,611	1,126,689	8,080	15,928	24,008
1997	174,265	3,073	3,179	6,252	174,265	3,073	3,179	6,252	1,168,973	7,483	17,282	24,765
1998	196,227	3,111	2,934	6,045	196,227	3,111	2,934	6,045	1,215,206	7,839	16,104	23,943
1999	207,213	2,935	2,864	5,799	207,213	2,935	2,864	5,799	1,248,402	8,092	17,033	25,125
2000	202,857	1,797	2,301	4,098	202,857	1,797	2,301	4,098	1,285,696	7,948	16,573	24,521
2001	178,046	1,577	2,020	3,597	178,046	1,577	2,020	3,597	1,231,289	8,663	16,532	25,195
2002	175,121	2,052	1,987	4,039	175,121	2,052	1,987	4,039	1,272,078	8,226	15,941	24,167
2003	160,269	1,878	1,819	3,697	160,269	1,878	1,819	3,697	1,283,252	8,697	19,253	27,950
2004	188,597	2,214	2,140	4,354	188,597	2,214	2,140	4,354	1,331,647	8,299	16,753	25,052
2005	187,067	1,951	2,240	4,191	187,067	1,951	2,240	4,191	1,209,581	9,165	15,930	25,095
2006	176,314	2,419	3,457	5,876	176,314	2,419	3,457	5,876	1,379,726	7,877	16,044	23,921
2007	184,162	2,113	2,452	4,565	184,162	2,113	2,452	4,565	1,381,419	7,684	14,079	21,763
2008	174,006	2,159	2,730	4,889	174,006	2,159	2,730	4,889	1,394,503	7,345	15,642	22,987
2009	172,580	2,087	3,443	5,530	172,580	2,087	3,443	5,530	1,393,207	7,250	15,093	22,343
2010	174,577	1,389	2,230	3,619	174,577	1,389	2,230	3,619	1,428,865	6,793	13,769	20,562
2011	176,953	1,220	2,082	3,302	176,953	1,220	2,082	3,302	1,373,080	5,976	13,022	18,998
2012	178,062	1,375	2,057	3,432	178,062	1,375	2,057	3,432	1,472,242	6,537	15,612	22,149
2013	196,527	1,113	2,000	3,113	196,527	1,113	2,000	3,113	1,482,898	7,834	15,775	23,609
2014	214,676	921	2,309	3,230	214,676	921	2,309	3,230	1,458,128	7,389	17,275	24,664
2015	175,443	731	1,888	2,619	175,443	731	1,888	2,619	1,486,051	7,624	12,908	20,532
2016	159,773	563	1,226	1,789	159,773	563	1,226	1,789	1,574,447	6,077	12,281	18,358
2017	266,556	463	990	1,453	118,066	827	1,419	2,246	1,465,113	6,791	13,311	20,102

Sources: Annual Fisheries Statistics, Department of Fisheries (various issues)

8.4 Shark and Ray Utilisation

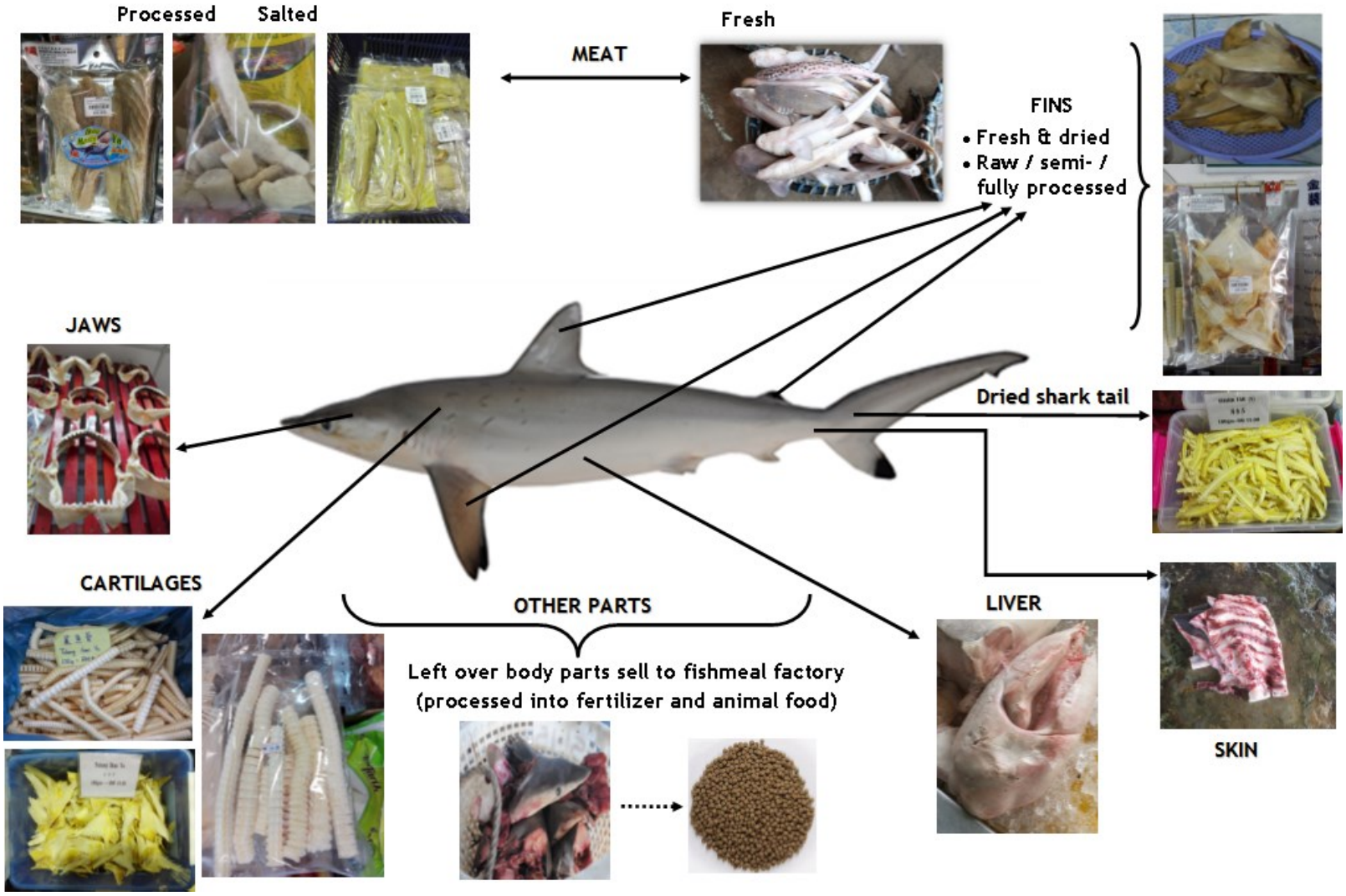


Figure 8.1: Shark Utilisation in Perak and Pahang, Malaysia

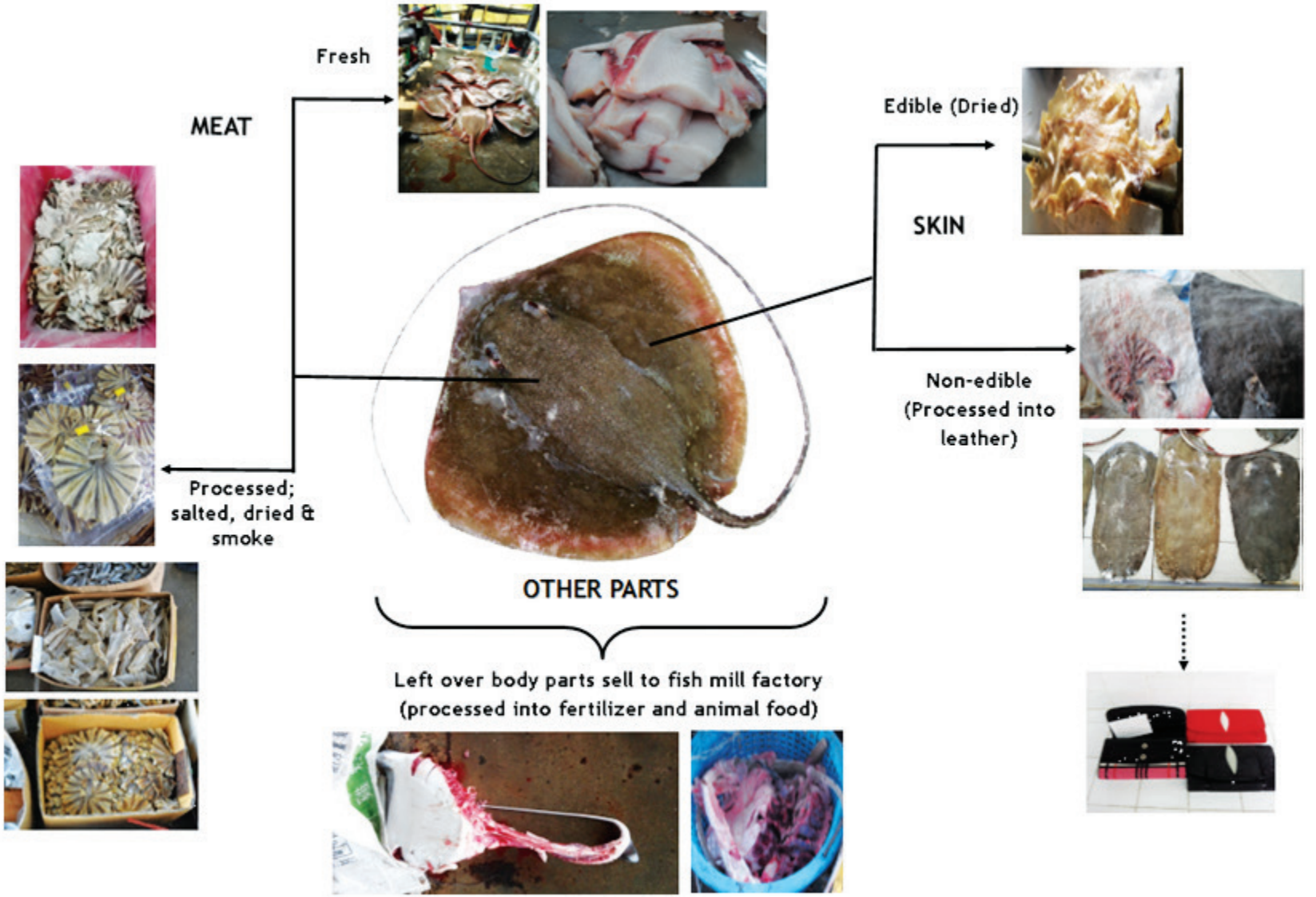


Figure 8.2: Ray Utilization in Perak and Pahang, Malaysia

ISBN 978-967-0633-49-7