NATIONAL SHELLFISH SANITATION PROGRAM (NSSP) IN MALAYSIA

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MALAYSIA

FAO-CEFAS Virtual Regional Workshop on Bivalve Mollusc Sanitation for FAO Asia and Pacific region. 9th – 11th December 2020

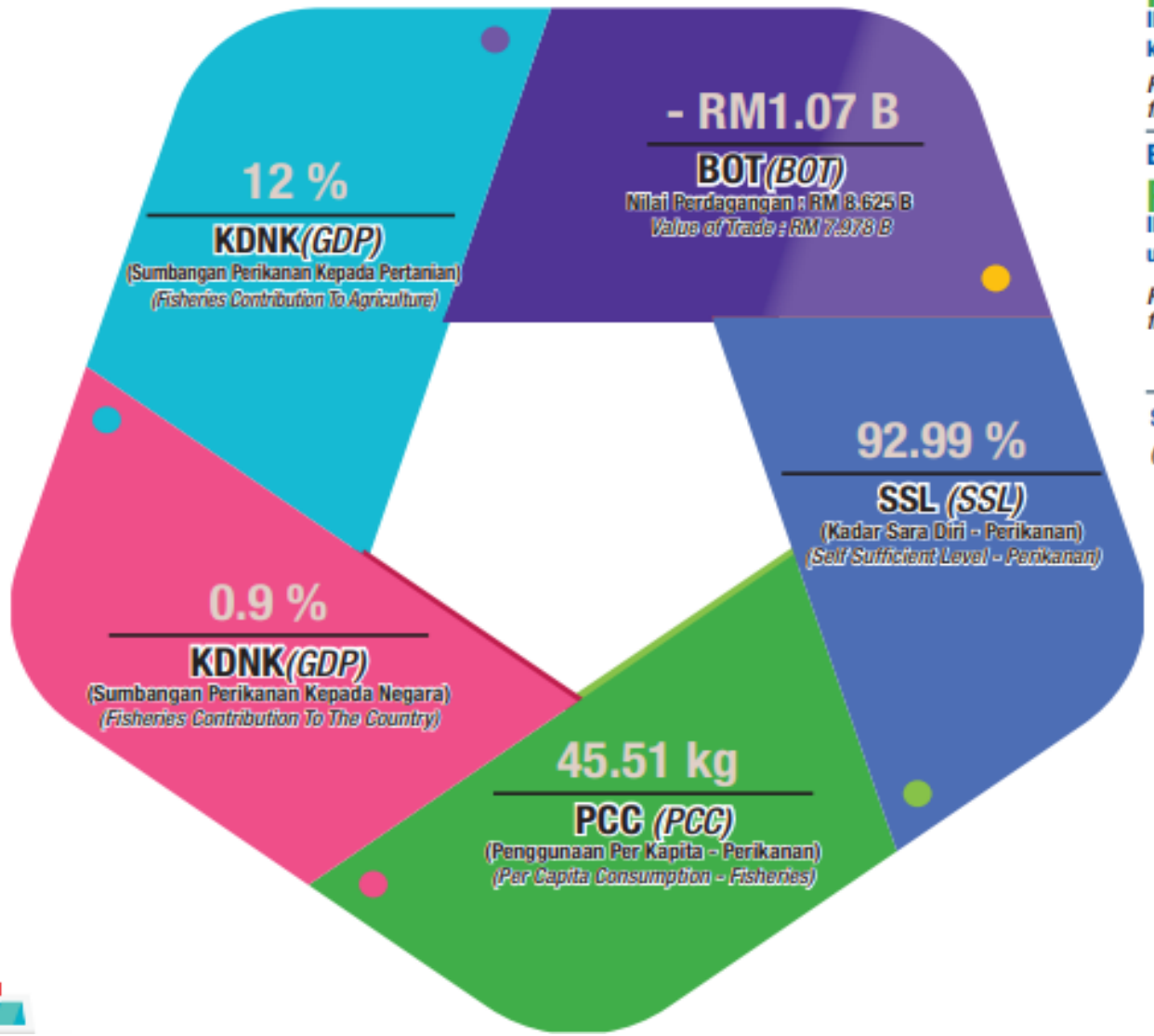
FISHERIES SECTOR IN MALAYSIA

Fisheries General Information, 2019

Perikanan Tangkapan
Capture Fisheries
0.6 %

Akuakultur
Aquaculture
0.3 %

Kadar Pertumbuhan Tahunan
Annual Growth Rate
0.04 %



Import / Import
RM 4.85 B
Ikan segar, beku, filet ikan, krustasia dan moluska
Fresh, chilled, frozen fish, fish fillet, crustacean and mollusc

Eksport / Export
RM 3.78 B
Ikan segar dan beku, ikan proses, udang, krustasia dan moluska, fishmeal
Fresh, chilled, frozen fish, processed fish, crustacean and mollusc, fish meal

SSL Mengikut Komoditi Utama Perikanan
(SSL of Fishery Commodities)

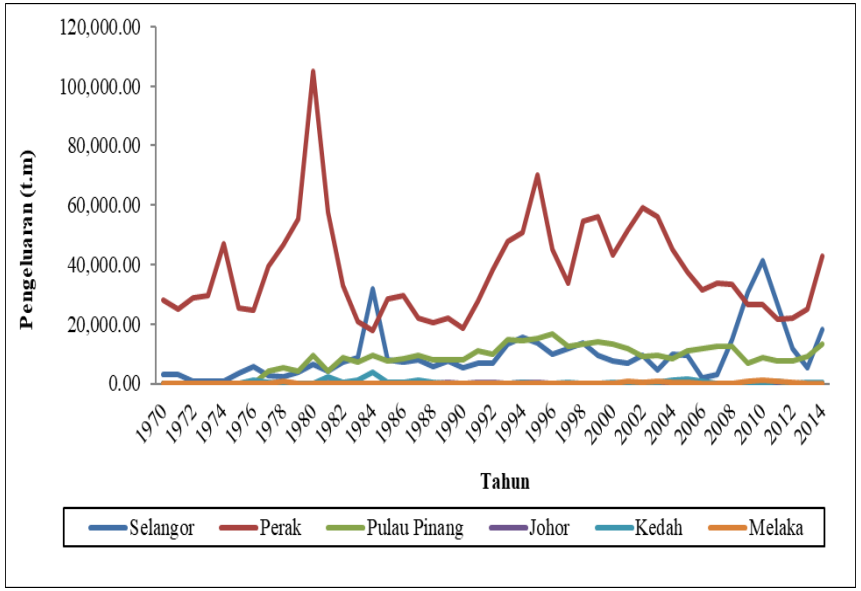
Udang | *Shrimp*	102.9 %
Mackerel | *Mackerel*	84.5 %
Tuna | *Tuna*	101.3 %
Sotong | *Cuttlefish*	109.2 %
Ketam | *Crab*	93.9 %
Tilapia | *Tilapia*	98.9 %

Ref: Annual Fisheries Statistic, DOFM, 2019)

MAJOR SHELLFISH PRODUCTION IN MALAYSIA

Species	Pictures	2018 (m.t)	2019 (m.t)	Changes (%)
Abalone		12.40	30.76	+148%
Script venus (Kepah)		N.A	44.43	N.A
Cockles -*Tegillarca granosa* / *Barbattia arca* (Kerang)		16,642.73	13,771.74	-21%
Polymesoda expansa (Lokan)		27.82	47.39	+70.3%
Mussels – *Perna viridis* (Kupang)		996.89	1,220.63	+22.5%
Oysters - *Crassostrea* sp (Tiram)		455.22	1,568.28	+244.5%

2019:
29% contribution from other brackish aquaculture species such as shrimp, fish and shellfish contributing 119,069 m.t worth RM2.46 billion for fisheries sector. (Specifically, shellfish contributes 4.9 % worth of 900k)
Ref: Annual Fisheries Statistic, DOFM, 2019)



Cockles production in Malaysia from 1970-2014 by States.
Ref: Annual Fisheries Statistic, DOFM.

SEAFOOD VALUE CHAIN AND RELATED COMPETENT AUTHORITIES MALAYSIA

Hatchery

Aquaculture ponds/cages

Feed mill/fish meal

Ice

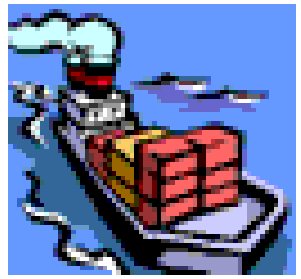
Fishing Vessel

Mollusc (culture/wild)

Jetty

Transportation

Processing plant



Export

Department of Fisheries Malaysia

Ministry of Health Malaysia

Fisheries Development Authority of Malaysia

SHELLFISH MONITORING PROGRAM IN MALAYSIA

WTO

SPS (*Sanitary and Phytosanitary*) Agreement

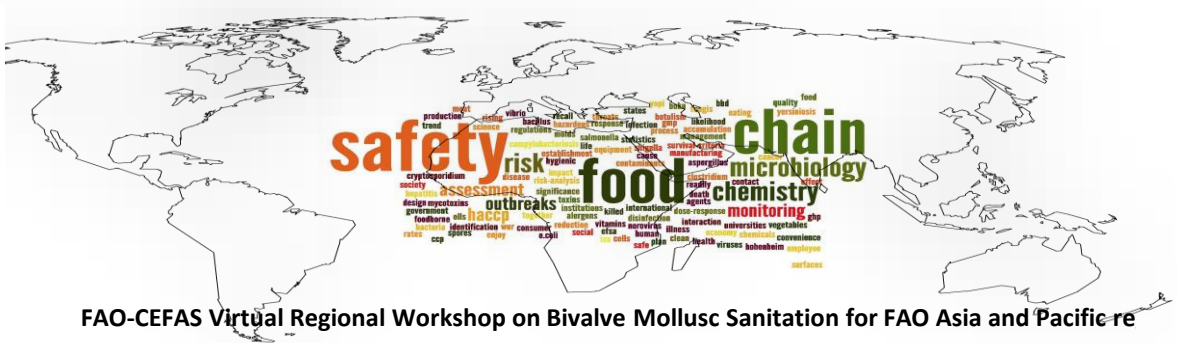
SPS Marine

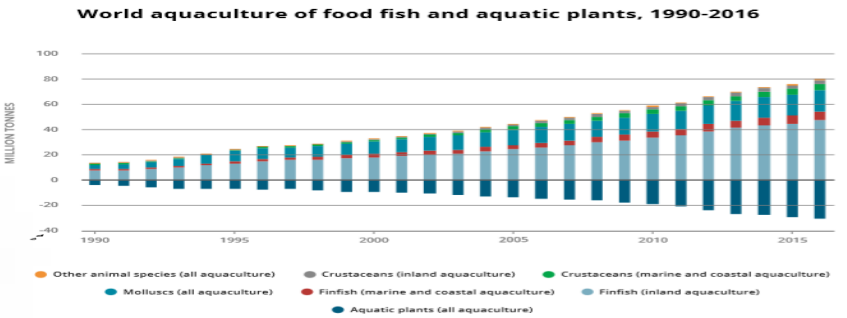
Dept. of Fisheries Malaysia conducting SPS Marine Program to ensure food safety level for fish and shellfish (including bivalve/mollusc).

NSSP

Specific program to monitor and evaluate the food safety level for shellfish in Malaysia.

1995 **2000** **2013**





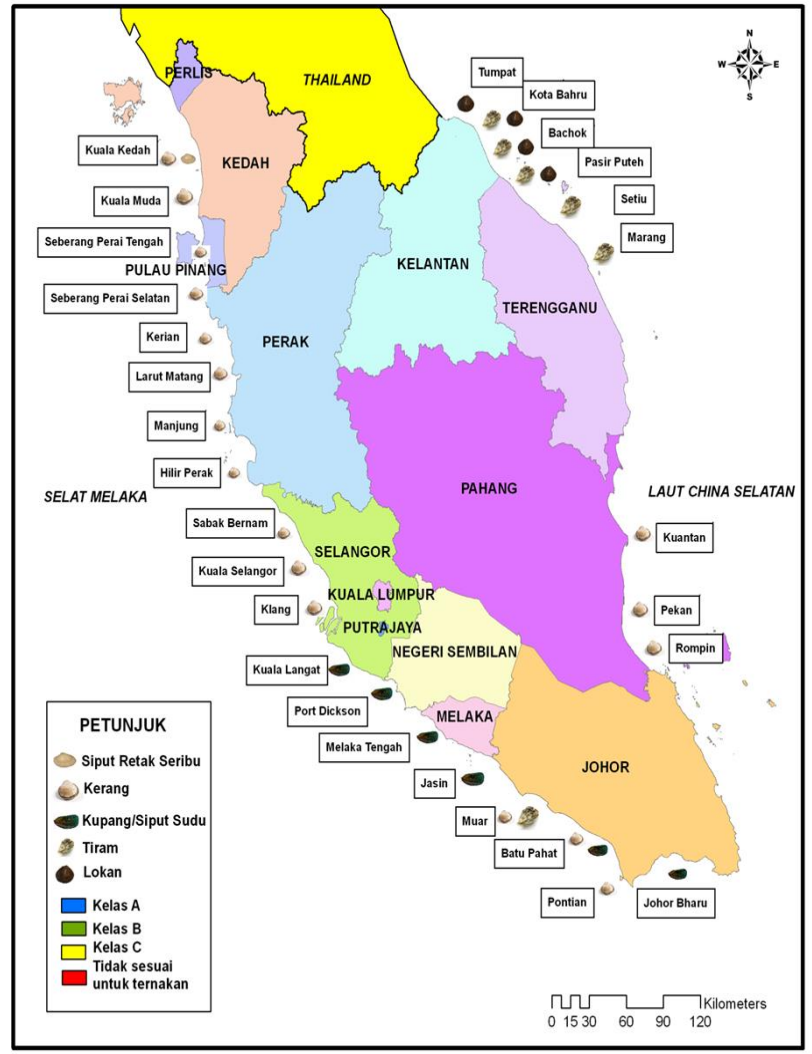
NSSP Program Objectives:

01 To ensure that Malaysia complies with relevant food safety legislation regarding the placing of molluscan shellfish on the market.

02 To ensure consumer confidence in the safety of the shellfish product.

03 To support long term sustainable development of local shellfish industry and to maximize its export potential

04 To ensure that any changes in legislation are introduced into the monitoring programme in a co-operative and open manner



Major Components in NSSP Implementation

Legal Framework

- ❑ Fisheries Act 1985, Item No.9, Third Schedule (Regulation 7) Terms and Conditions of a Licence for Marine Culture Systems.
- ❑ Council Directive 91/492/EEC of 15 July 1991 Laying Down the Health Conditions for the Production and the Placing on the Market of Live Bivalve Molluscs; and
- ❑ Council Directive 79/923/ EEC on Quality Required of Shellfish Waters / Council Directive 2006/113/ EC of 12 December 2006 on Quality Required of Shellfish Waters (codified version)
- ❑ Malaysia Food Act 1983

SOP

i. SOP for National Sanitation Shellfish Program (effective 28 March 2013)
ii. SOP for Public Health Emergency Plan (Capture Fisheries) (effective 14 April 2009)
iii. SOP for Public Health Procedure for Rapid Alert Notification (Capture Fisheries) (effective 14 April 2009)

Parameter & MRL

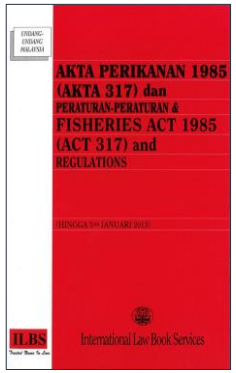
- ❑ Heavy Metal –Hg, Pb, Cd
- ❑ Biotoksin
- ❑ Polychlorinated Biphenyls (PCB)
- ❑ Microbiology (Faecal coliform, *E. Coli*, patogen seperti *Salmonella, Vibrio cholerae, Vibrio parahaemolyticus, Vibrio vulnifucus*, Hepatitis A virus)
- ❑ Water Quality
- ❑ ID Plankton
- ❑ MRL:
  - EC) No. 1881/2006 – for export to EU
  - Malaysia Food Act 1983 (Malaysia Food Regulations 1985) - for local consumption
  - Malaysia Marine Water Quality Criteria and Standard, Class 2, Department of Environment.
  - Malaysia Food Act 1983

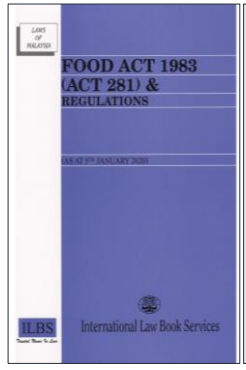
Contravene Cases

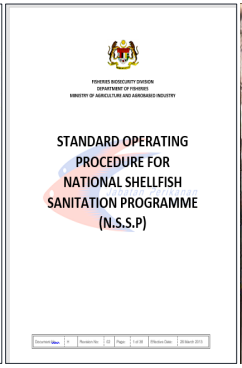
- ❑ Mechanisms involved various related government agencies.

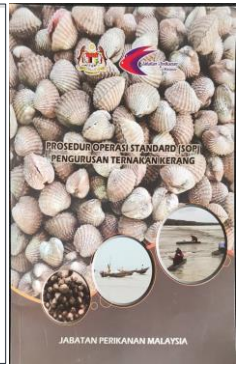
Data Management

- Monitoring and evaluation
- Publications
- Research and innovations

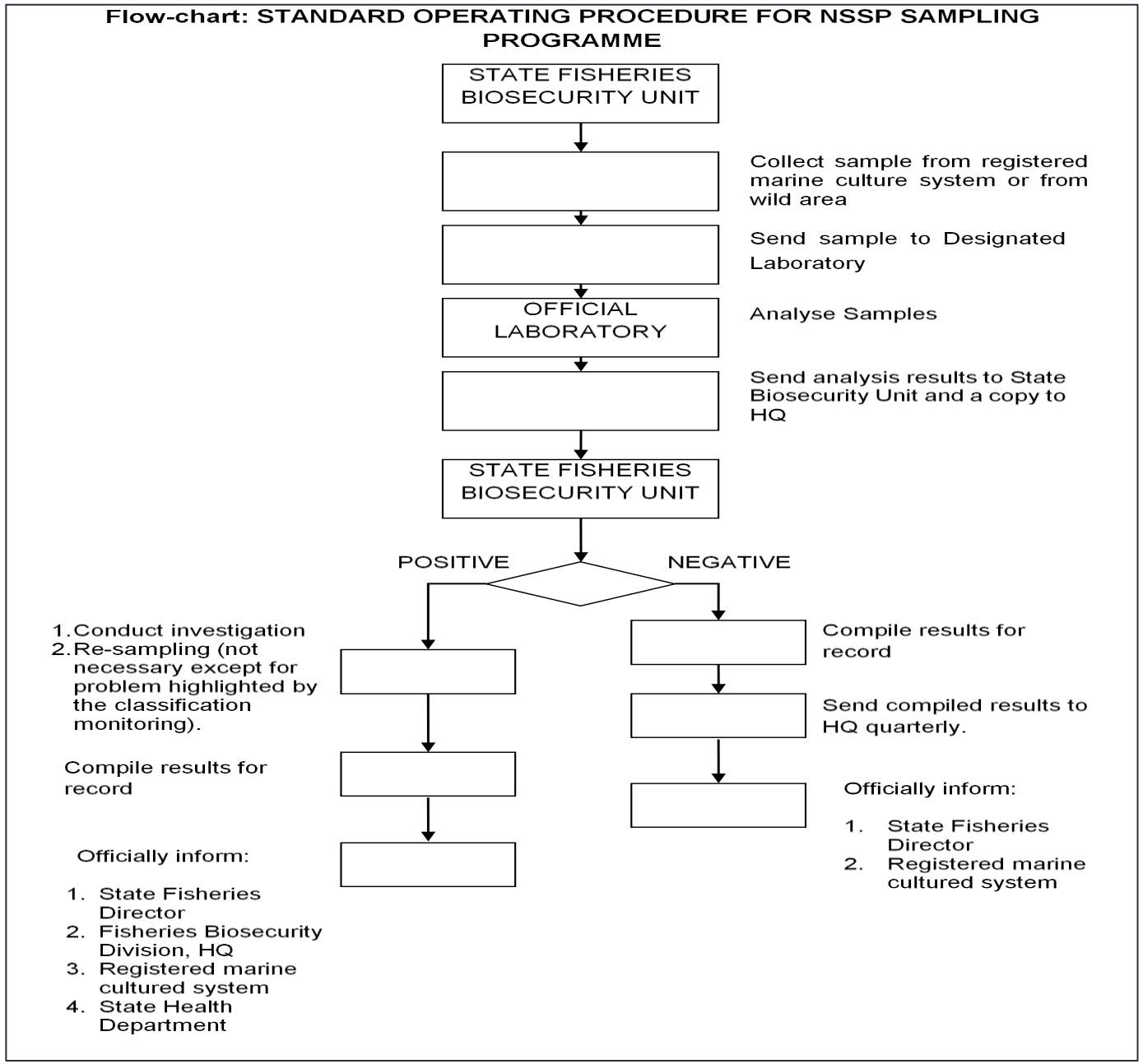








MECHANISMS IN MANAGING CONTRAVENE CASES



Data management : Classification of shellfish production area based on microbiology data

Negeri	Kawasan	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Kedah	Kuala Kedah																			
	Kuala Muda																			
P. Pinang	SP Tengah																			
	SP Selatan																			
Perak	Kerian																			
	Larut Matang																			
	Hilir Perak																			
	Manjung																			
Selangor	Sabak Bernam																			
	Kuala Selangor																			
	Klang																			
	Kuala Langat																			
N.Sembilan	P. Dickson																			
Melaka	Melaka Tengah																			
	Jasin																			
Johor	Muar																			
	Johor Bharu																			
	Batu Pahat																			
	Pontian																			
Kelantan	Tumpat																			
	Kota Bharu																			
	Bachok																			
	Pasir Putih																			
Terengganu	Setiu																			
	Marang																			
Pahang	Pekan																			
	Rompin																			
	Kuantan																			

Production area status

Based on EC Shellfish Directives 91/492/EEC laying down the health conditions for the production and the placing on the market of live bivalve shellfish)

Category	Permitted Level (MPN/100g)	Outcome
A	<230 EC/100g flesh <300 FC/100g flesh	May go direct for human consumption
B	<4,600 EC/100g flesh (in 90% of the samples) <6,000 FC/100g flesh (in 90% of the samples)	Must be depurated, heat treated or relayed to meet category A requirement
C	<46,000 EC/100g flesh <60,000 FC/100g flesh (in 90% of the samples)	Must be relayed for a period of at least 2 months, followed where necessary by treatment in a purification centre to meet category A requirement
Prohibited area	> 60,000 FC	Unsuitable for production

Ref : Compilation of Microbiology Analysis in Shellfish (1999-2014). DOFM. 2017

Ref: Wan Norhana et. al 2016; Ainul Yasmin 2018;Siti Dina 2020. Dept of Fisheries Malaysia

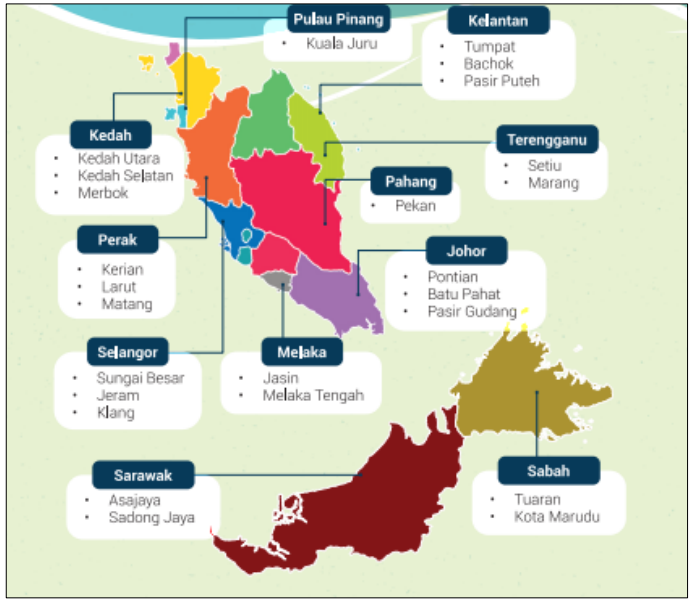
NSSP : SAMPLING PROGRAMS

1) Sampling frequency

- The frequency of shellfish sampling is based on the yearly schedule. Sampling frequencies are generally set for each parameter as below:

Quarterly :Microbiology, virus, biotoxin, Harmful microalgae identification and water quality, Heavy metal

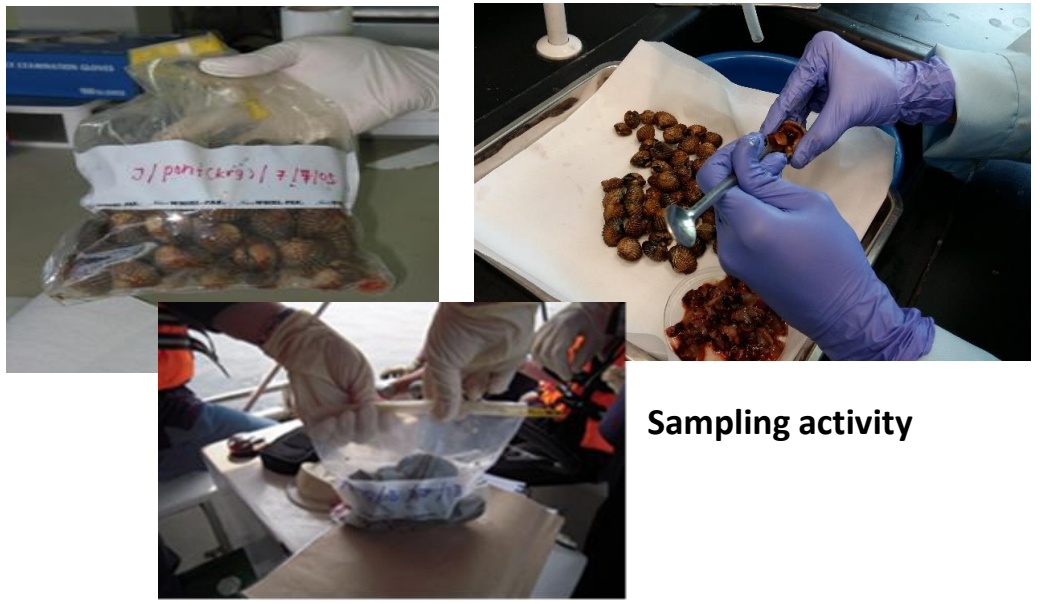
Once yearly :Polychlorinated biphenyl (PCB)



NSSP sampling locations in Malaysia

2) Shellfish production areas and sampling points

- The State Fisheries Biosecurity Unit (SFBU) shall identify shellfish production areas and designated appropriate sampling points within those areas. All changes to the shellfish production areas or sampling points are communicated to the relevant shellfish marine culture operators by the SFBU.

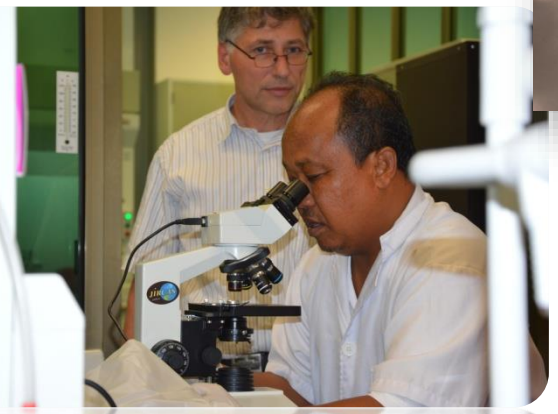


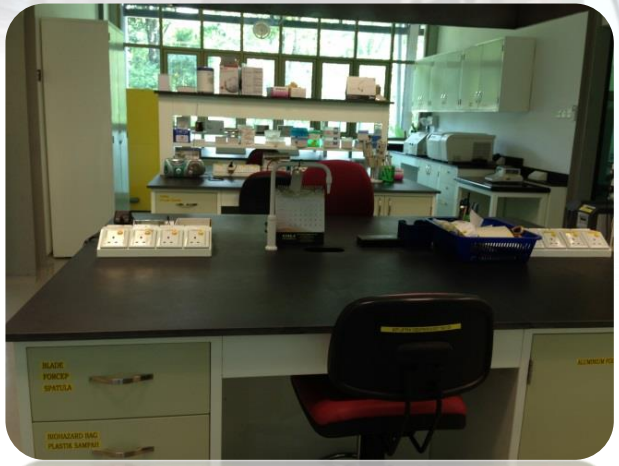
Sampling activity

NSSP: PARAMETERS AND LAB ANALYSIS

Laboratory	Parameter
Fisheries Biosecurity Centre, Kuala Lumpur	Biotoxin (PSP)
	Plankton ID
	Microbiology (Fecal indicator, *Salmonella* and Vibrio)
Fisheries Biosecurity Centre, Kuantan	Microbiology (Fecal indicator, *Salmonella*, Vibrio)
	Biotoxin (PSP)
	Heavy Metal
	PCB
	Water quality
Fisheries Biosecurity Centre, Bintawa	Biotoxin (PSP)
	Water quality
	Plankton ID
	Microbiology (Fecal indicator, *Salmonella* and Vibrio)
	Heavy Metal
	PCB
Fisheries Biosecurity Centre, KLIA	Water quality
Fisheries Biosecurity Centre, Johor	Water quality
Fisheries Research Institute, Batu Maung, Penang	Microbiology (Fecal indicator, *Salmonella*, Vibrio and Hepatitis A virus)
	Water quality

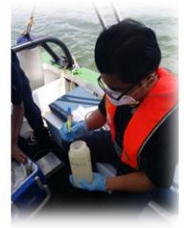
NSSP: PARAMETERS AND LAB ANALYSIS

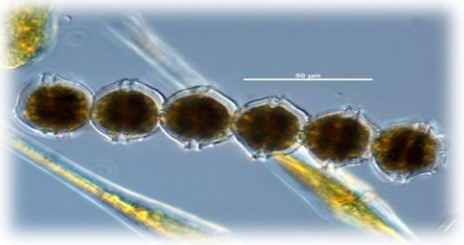




REPORTED CASE OF PSP IN MALAYSIA

	Year	Location	Toxic alga/species	Notes	Reference
1.	1976	West Coast of Sabah	*Pyrodinium bahamense ver compressum*	7 deaths	Roy (1977)
2.	1976-1988	Sabah	*Pyrodinium bahamense ver compressum*	31 deaths	Ting and Wong (1989)
3.	1991	Sebatu, Melaka	*Alexandrium tamiyavanichii* *Gymnodinium attenatum*	3 person hospitalized	Anton et. al (2000) Usup et. al (2002)
4.	2001	Tumpat, Kelantan	*A. minutum*	1 death, 6 hospitalized	Lim et. al(2004)
5.	2009	Kota Kinabalu, Sabah	*P. Bahamense*	No data	DOF, Sabah (2009)
6.	2013	Sepangar Bay or Kuala Penyu, Sabah	*Pyrodinium bahamense ver compressum*	4 deaths	Suleiman et. al. (2017)
7.	2013	Kuantan, Pahang	*Alexandrium tamiyavanichii*	10 hospitalized	Normawati et. al (2017)





Ref: Fisheries Research Institute, Batu Maung, Pulau Pinang

THREATS

Anthropogenic threats: Pollution from point and non point sources – heavy metal, microbiology (*E. coli*, F. coliform, *Salmonella*),

Natural threats: pathogenic Vibrio, Natural disaster – drought, flood.

Harmful Algae Bloom– PSP, DSP, ASP – to further equipped on

CHALLENGES

Enforcement

1) Enforcement (Fisheries Act, 1985)

2) NSSP Program

3) Continuos research from Fisheries Research Institute

Socioeconomy approach

1) Infrastructure

3) Downstream acitivity – job opportunites, woman involvement

4) New production area

5) Market incentives

Fisheries Management Plan

1) Potential new production area

2) Holistic resource management

WAY FORWARD

1

NSSP Data Compilation Book 2009-2019

- Data management, easy access
- *trend analysis*

2

SOP – Fishkill Management

- To strengthen mechanism in managing fishkill events, including cases caused by HAB.

3

Safety guidance to industry :

- web: www.dof.gov.my

4

Capacity building

- Expertise, lab capacities.
- Shellfish Biosecurity Measurement Plan

THANK YOU

Further Information:

Department of Fisheries Malaysia,

Ministry of Agriculture and Food Industry

Lot 4G2, Precinct 4,

62628 Putrajaya, MALAYSIA

http://www.dof.gov.my