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THAILAND SHARK POLICY BRIEF: SITUATION ANALYSIS AND RECOMMENDATIONS

13 NOVEMBER 2023

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Thailand Shark Policy Brief:

Situation Analysis and Recommendations

Situation analysis: Status of sharks and rays by marine fishery

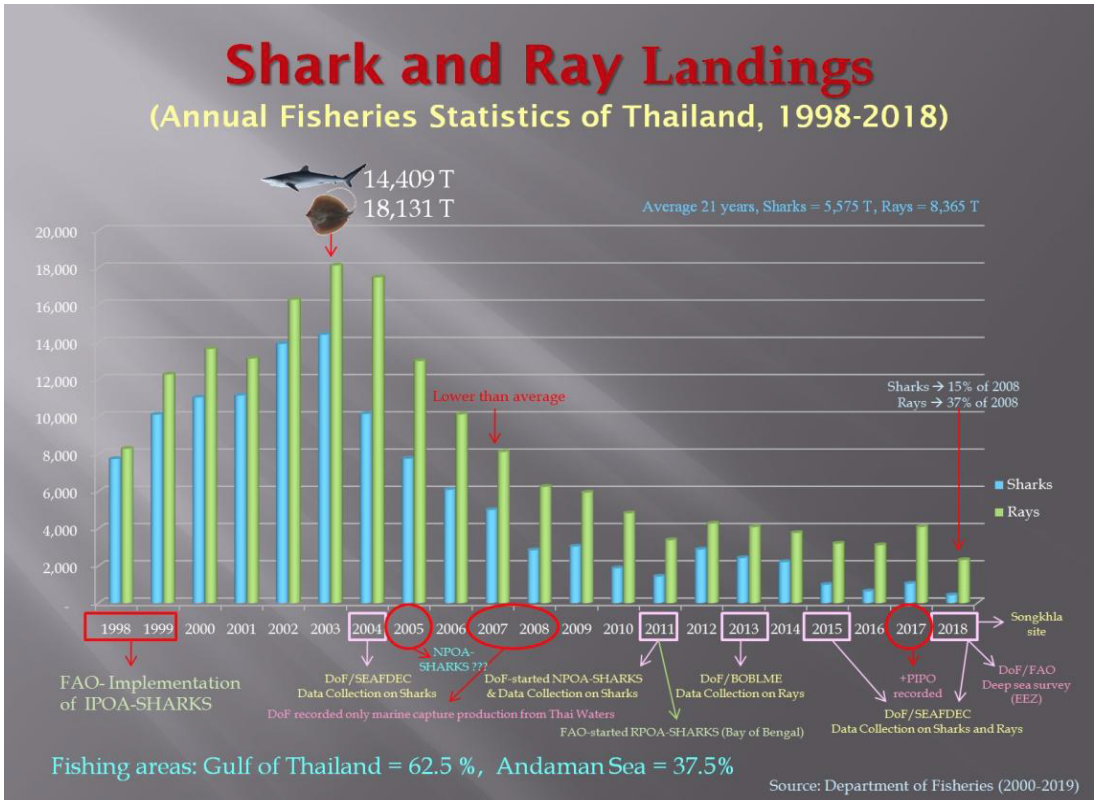
The marine fishery production of Thailand is harvested from both the Gulf of Thailand and the Andaman Sea covering the marine area of 323,488 km^2. According to Department of Fisheries, most of the production (90%) was caught by commercial fishing gear and the rest was caught by small-scale fisheries. Trawl fishery landed about 70% of the total production from the sea of Thailand.

In 2012, Thailand was listed as the world's 12th largest shark fishing nation with an average of 20,479 ton of cartilaginous fishes (sharks, rays, skates, and chimaeras) landings reported annually to the Food and Agriculture Organization of the United Nations (FAO) between 2000 and 2009 (Fischer et al., 2012) and has also become the leading exporter of shark fins globally in 2015 (Dent & Clarke, 2015). A FAO report (2015) pointed out that Thailand has surpassed China, Hong Kong SAR as the world's largest exporter, and estimates suggest that its main trading partners Japan and Malaysia may be among the world's top four export markets for shark fins.

In fact, shark landings have been in severe decline in Thailand ever since the introduction of commercial trawling in the 1960's (Pauly & Chuenpagdee, 2003). Thailand has been listed amongst the countries recording the greatest declines in shark landings (Davidson et al., 2016). Total shark landings from marine fisheries have declined catastrophically in the past decade. The Fisheries Statistics of Thailand from 1998-2018 reported the highest catch of sharks and rays with 14,409 and 18,131 metric tons in 2003 and the lowest catch with only around 419 and 2,311 metric tons in 2018 (See **Figure 1**). These revealing figures accounted for 97% decline of catch for sharks and almost 90% decline of catch for rays in less than 20 years. Based on the same period, sharks and rays were caught from the Gulf of Thailand around 62.5% and 37.5% from the Andaman Sea.

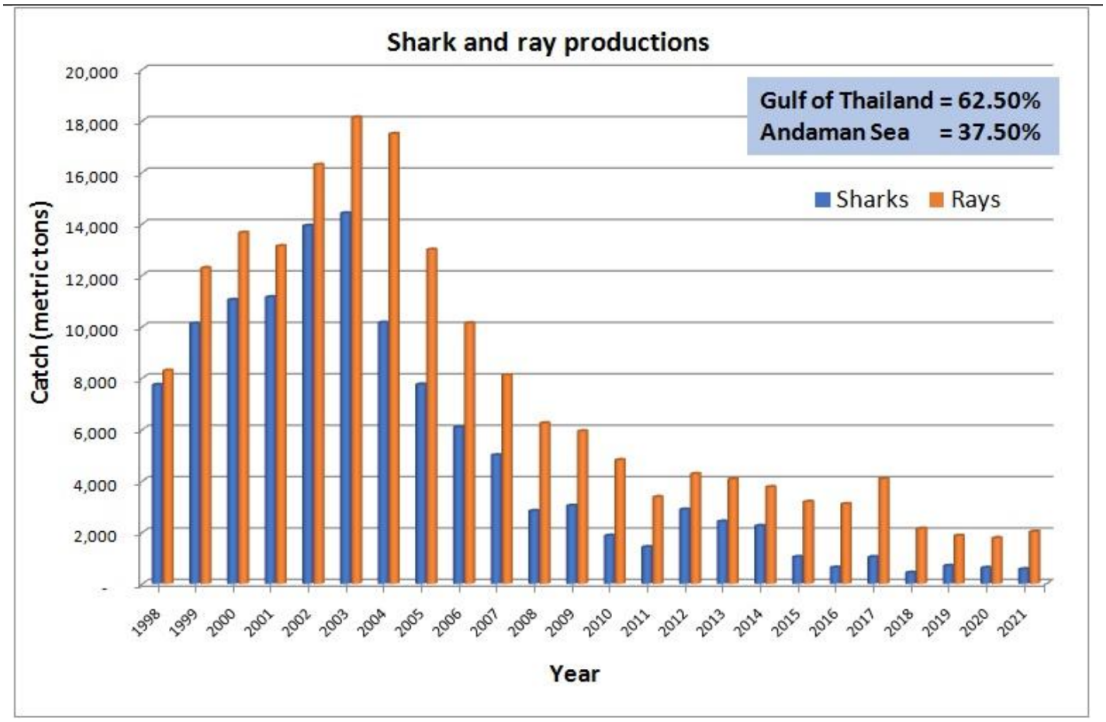
Nevertheless, it appears that shark and ray catches are not the main catch in Thailand. Based on in-country fishery statistics from 2002-2014, shark and ray catches by both commercial and small-scale fisheries contribute only about 0.5-0.72% of the total marine fishery production (Krajangdara, 2014, DOF 2020).

In contrast to general belief that sharks and/or rays are used only for the fin trade, sharks are fully utilized in Thailand (See **Annex 1** Type and volume of Trade (Import and Export) of shark and ray commodities). Most catches of sharks and rays are consumed as fresh meat or processed into products such as fish ball and dried salted fish. Dried shark fins and guitarfish fins are sold to Chinese restaurants and exported to Hong Kong, Taiwan, Singapore, and countries. Livers are used to extract oil and mix in fish oil and cosmetic or to feed brood stock in shrimp culture. Skins are used as leather to produce handbags, wallets, belts, shoes, etc. Furthermore, some parts of sharks and rays (jaw, teeth and spine) are used to produce souvenirs in different styles. Discarded parts of sharks and rays such as heads, cartilages and other internal organs are used to supply fishmeal factories or as bait for fish and crab traps.



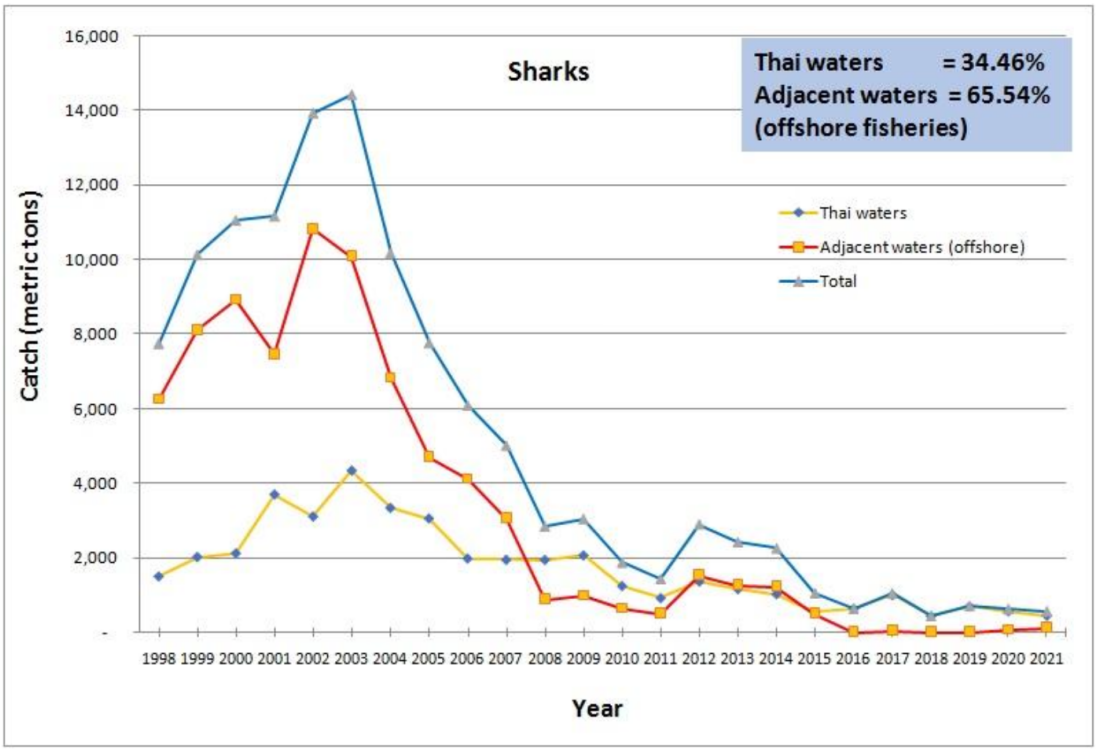
Source: Tassapon Krajandara, 2019

Figure 1. Shark and Ray landings based on annual fisheries statistic of Thailand (1998-2018)



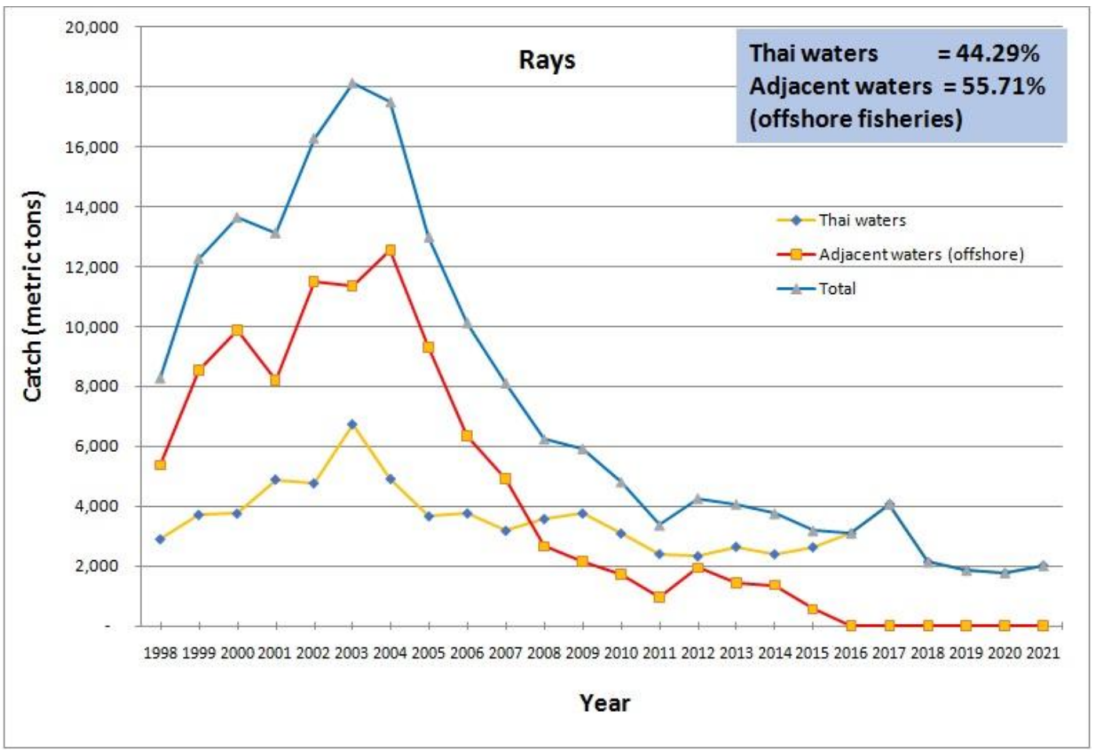
Source: Sharks and Rays in Thailand: Country Report, 2023

Figure 2. Shark and Ray landings based on annual fisheries statistic of Thailand (1998-2021)



Source: Sharks and Rays in Thailand: Country Report, 2023

Figure 3. Shark landings based on annual fisheries statistic of Thailand (1998-2021)



Source: Sharks and Rays in Thailand: Country Report, 2023

Figure 4. Ray landings based on annual fisheries statistic of Thailand (1998-2021)

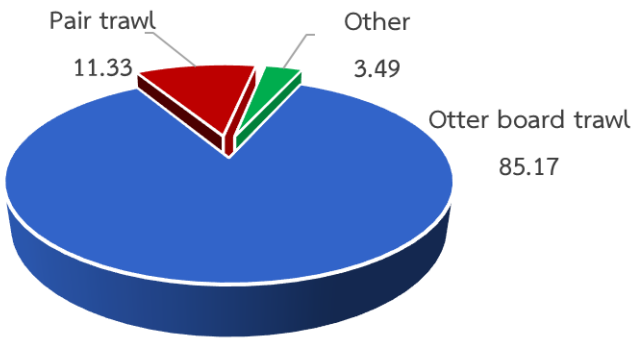
Fishing gears affecting shark

The Royal Ordinance on Fisheries B.E. 2015 and the Royal Ordinance 7 on Fisheries (No. 2) B.E. 2017 have been forced for fishery resource management by prescribing that all commercial fishing vessels wishing to engage in commercial fishing must obtain a commercial fishing license issued and determine the coastal sea area. The number of licensed commercial fishing vessels during 2016-2017 was 10,990 vessels, classified by fishing gears type.

There are no known specific types of fishing gears to catch only for sharks and rays in Thailand only traditional fishing gear called Rawai hook or ray longline but they are no longer popular due to the scarcity of ray population. However, they are continued to be caught as bycatch or incidental catch by marine capture fisheries by a number of fishing gears such as trawls, purse seines, long lines, gill nets and others.

Sharks have been caught by otter board trawl at 85.17% which was by far the highest percentage of sharks caught from Thai marine fisheries, 11.33% in pair trawls and 3.49% with other fishing gears, such as long line, purse seine, Indo-Pacific mackerel gill net, mackerel gill net, etc. (See **Figure 2**).

Otter board trawlers are the most abundant commercial fishing fleet in Thai waters. Certified trawlers in 2016-17 recorded otter board trawl (fish) on 969 vessels and otter board trawl (prawn) on 691 vessels in the Gulf of Thailand and 436 vessels (fish) and 38 (prawn) in the Andaman Sea. Pair trawlers are the second most abundant with 946 vessels registered in the Gulf of Thailand and 192 in the Andaman Sea.



Source: NPOA-Sharks, Thailand

Figure 5. Percentage of shark and ray catches from Thai waters classified by fishing gears during 2002-2014

Existing policies relating to sharks

Although sharks and rays are not mainly targeted by fisheries in Thailand, they are captured as bycatch (or secondary catch) due to multiple types of fishing gears and methods employed. According to fisheries statistics, the amount of these species that are caught has been continuously declining, and therefore their extirpation is a serious concern. The DoF and collaborative authorities have established several measures to control fisheries and

utilisation of shark and ray resources by enacting laws and enforcement by responsible authorities. Furthermore, international organisations have given priority and established several measures to safeguard, conserve, and promote sustainable use of shark and ray resources.

Thailand has enforced a number of laws, which either directly or indirectly affect fisheries resource management and conservation of sharks and rays with the objective of sustainable utilisation of aquatic animals. The relevant laws are as follows (DoF, 2021):

1. The Royal Ordinance on Fisheries, B.E. 2558 (2015) (Fisheries Act, B.E.2558) and its amendment in B.E. 2560 (2017): The Fisheries Act B.E. 2490 (1947) was enforced until 2015 when it was amended and revised to be the Royal Ordinance on Fisheries, B.E. 2558 (2015). The Act was amended to comply with the international standard of fisheries resource management and to keep up with the changing fisheries situation. This act includes the measures to monitor, control and surveil Thai- flagged fishing vessel activities in Thai waters and overseas to prevent IUU fishing and manage fisheries resources in accordance with maximum sustainable yield (DoF, 2015). This can be done by establishing guidelines for the conservation and management of fishery and aquatic animal resources in Thai waters for their sustainable utilisation. With regard to conservation of sharks, the notification by the Ministry of Agriculture and Cooperatives was established on “Definitions for Marine Mammals and Endangered or Near Extinct Species Prohibited to Fish or Bring onboard Fishing Vessels” dated 7 April 2016. Under Article 66 of this Act, only the Whale Shark was listed as a number four species in the Annex of this notification, with the exception of animal rescue. Furthermore, there is the Fisheries Department Rule on application and certification of species not listed in CITES Appendix, dated 29 September, 2004. Issued in accordance with the Wildlife Preservation and Protection Act, B.E. 2535 (1992) and CITES, to control trades of aquatic animals listed in CITES Appendix, including sharks and rays in CITES lists.

2. The Wildlife Preservation and Protection Act, B.E. 2562 (2019): This Act grants specific species two different levels of protection status, namely “Preserved species” and “Protected species”. Preserved species are defined as rare and critically endangered to extinction, thus requiring strict conservation. Animals on the list receive the highest protection status. Any attempt to hunt, kill, or sell carcasses of these species can result in the penalty of imprisonment up to 15 years and fines of THB ฿ 300k to 1.5 million (USD $ 8.5k – 42.4k). The Whale Shark is the only species currently declared as a Preserved Species in the fish group. Protected species are defined as species that are important to ecosystems or species with populations declining at a rate that can affect ecosystems. The penalty for violating laws regarding Protected species includes imprisonment up to 10 years and fines of up to THB ฿ 1 million (USD $ 28k). There are currently 12 ray species declared as protected species in the fish group: 6 devilrays (Mobulidae), 4 sawfishes (Pristidae), Bowmouth Guitarfish, and Giant Freshwater Stingray (Urogymnus chaophraya, previously named Himantura chaophraya).

3. National Park Act, B.E. 2562 (2019): This Act prevents any harm to the animals residing in a National Park, and includes marine national parks where hotspots of reef sharks and rays are found.

4. Act on the Promotion of Marine and Coastal Resources Management, B.E. 2558 (2015): This act allows the establishment of Marine Protected Areas under articles 20 and 22, which grant the protection of the habitat and species within the designated area. Furthermore, there is the Natural Resources and Environment Ministerial Notification on determining wild animals and wild animal remains for the import and export, dated 27 June, 2013, aims to control the import and export of listed animals (including sharks and rays in CITES appendices).

5. Maritime National Interests Protection Act B.E. 2562 (2019): this Act lie in protecting maritime national interests with efficiency and optimization; and maintaining the sovereign, sovereign rights, and any other rights and duties, under the international laws, in this regard, the enactment of this Act duly complies with the conditions provided in section 26 of the Constitution of the Kingdom of Thailand.

6. Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992): Section 43 of this Act allows Minister to issue ministerial regulation designating fragile ecosystems, which are sensitive and vulnerable to destruction or impacts of human activities, or worthy of being conserved due to its natural or aesthetic values or amenities area as an Environmentally Protected Area (Section 42-45). Environmentally Protected Areas (EPA) are designated in some coastal provinces e.g. Phang-Nga, Phuket, Krabi include some protection for sharks by prohibiting the catch and possess of zebra shark (*Stegostoma fasciatum*), and guitarfishes (family Rhinobatidae) and requiem sharks (family Carcharhinidae) under 50 cm in length.

7. NPOA-Sharks (Plan 1: 2020-2023): This plan was established by the DoF and relevant agencies in 2019 under the framework of the IPOA-Sharks. The outline of five key actions necessary to improve the management and conservation of shark and ray resources in Thai waters, are as follows: 1) Study and develop a database for information on biology, ecology, fisheries, and utilization of sharks and rays in Thai waters, 2) Systematically and regularly assess status and threats on sharks and rays caused by fisheries and environment, 3) Develop knowledge and enhance capability related to shark and ray management for relevant officers, 4) Define conservation and management measures to regulate fishing activities and trade on sharks and rays in consistent with international rules, regulations, and obligations, and 5) Establish and strengthen a network of stakeholders' engagement for management and conservation of shark and ray resources. With those objectives, DoF issued NPOA- Sharks of Thailand for conservation and management of sharks and rays. Time series data of shark and ray resources in Thailand and guidelines for shark and ray resources management through national stakeholder consultation process to ensure sustainability conservation and management of shark and ray resources.

There are no further specific management measures targeted at sharks and rays. However, the other policies for management marine resources can indirectly support the protection of sharks and rays in Thai Waters as follows:

- Agriculture and Cooperatives Ministerial Notification on Areas prohibiting for trawler and push netter (within a distance of 3,000 m from the shoreline and within a perimeter of 400 m of any stationary gear through the year), dated 20 July B.E. 2515.
- Agriculture and Cooperatives Ministerial Rule on Trawler and push netter control practice, dated 17 September B.E. 2539. The number of new entry trawler is limited and push netter is banned (To freeze of trawling fleet).
- Agriculture and Cooperatives Ministerial Notification on Designated areas prohibiting trawler and push netter (within a distance of 5,400 m from the shoreline through the year) in 10 provinces, namely Krabi, Prachuabkirikhan, Trang (dated 9 October B.E. 2550), Rayong, Narathiwas, Pattani (dated 3 October B.E. 2551), Satun (dated 29 January B.E. 2552), Nakhon Si Thammarat (dated 17 July B.E. 2552), Chumphon (dated 11 April B.E. 2554) and Chanthaburi (dated 11 December B.E. 2555).
- Agriculture and Cooperatives Ministerial Notification on Prohibition of specific fishing gears during spawning and breeding season (closed season) in areas of Prachuabkirikhan, Chumphon and Surat Thani (26,400 km2) during 1 February-15 May each year (dated 24 September B.E. 2542), in some areas of Phuket, Phang Nga Krabi and Trang (4,696 km2) during 1 April-30 June each year (dated 24 October B.E. 2551) and in some areas of Prachuabkirikhan, Phetchaburi, Samutsongkhram, Samutsakorn, Bangkok, Samutprakarn, Chachengsao and Chonburi during 1 June-31 July each year (dated 13 August B.E. 2556)

Source: Tassapong Krajangdara, 2019

Figure 6. Sharks and rays protected under the Wildlife Preservation and Protection Act B.E. 2562.

Limitations and Loopholes

- Currently, only one shark species and 10 ray species are legally protected by WARPA (2019) leaving the rest of the species unclear status and often unprotected or lack of appropriate fisheries management.
- A lot of catch (shark and ray) that are labeled as bycatch in fact is more like incidental catch (retained catch of non-targeted species) with relatively good value especially the large ones. Differentiation between bycatch (include catch and incidental catch should make it easier for legal action and encourage fisher to release non-targeted species.
- Trades in dark market hinder data collection and obscure true situation how catches are retained and sell to specialized dealer.
- Marine national parks provide full protection for sharks and rays but law enforcement is not consistent especially during closed season when there is no tourist. Small-scale fisheries are usually allowed to fish even in protected area and sharks and rays are frequently caught.
- CITES listed species do not receive full attention and properly monitored because of a limited number of government staff who have knowledge to identify sharks at the family or species level. Monitoring at landing sites often is difficult because of lack of operation from stakeholders. If the Department of Fisheries lacks capacity, there should be deputizing specialist to conduct search and data collection.
- In some conservation and environmental protected areas e.g. Phuket, Krabi and Phang-Nga, zebra shark is protected as well as sawfish and juvenile sharks of less than 50 cm in length. However, awareness of this existing regulation is low and monitoring and enforcement are random.
- The prohibition of trawler and push netter within a distance of 5400 m from the shoreline is not difficult to monitor and enforce without local community engagement.
- Small scale fisheries do not recognize sharks and rays as significant species for protection and demand for consumption of these species is still high locally and nationally.

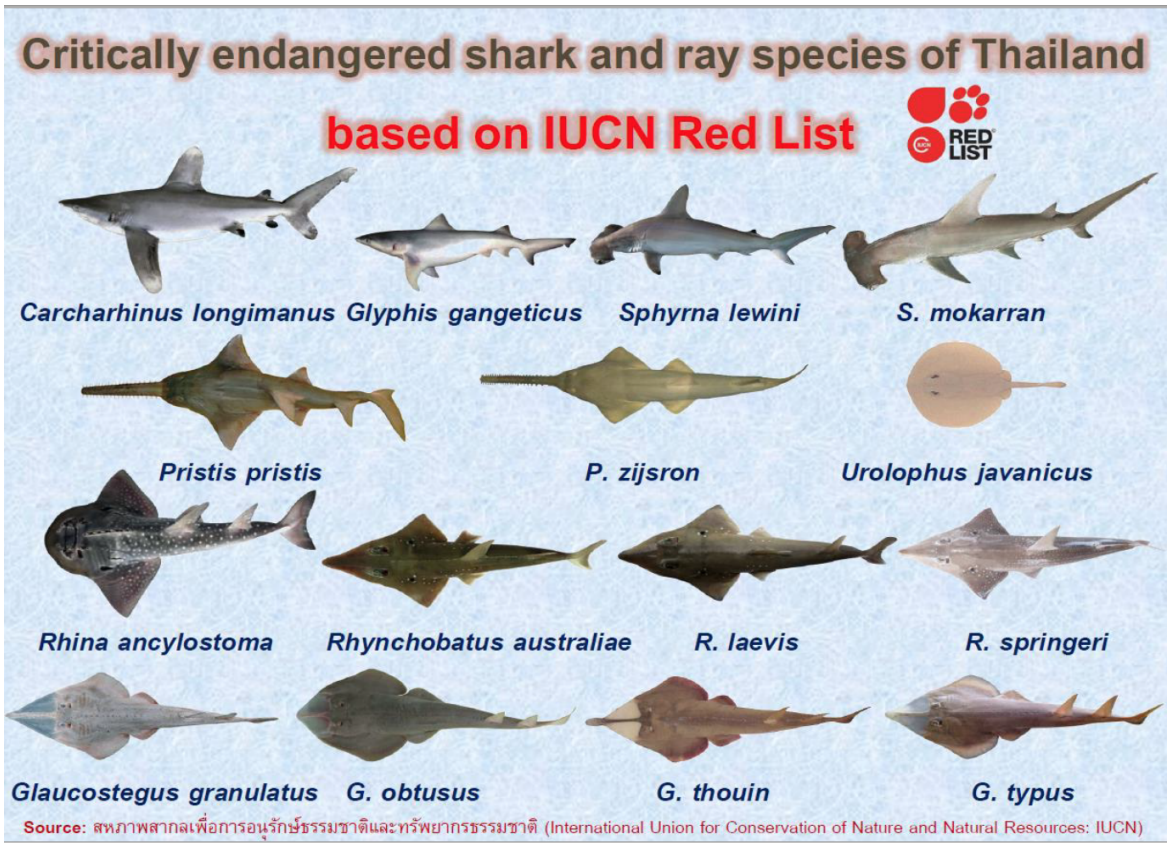
Species diversity of sharks and rays and priority species for protection

Up to date, 87 species of sharks and 96 species of rays have been recorded in Thailand based on the latest data (Krajangdara *et al*. 2019). The current status of these fishes based on IUCN Red List as of July 2020 reported that 26 sharks (~30%) and 45 rays (~48%) classified as globally threatened species. 23 species of sharks (~26%) and 37 species of rays (~38%) are classified as either "data deficient" or "not evaluated" indicating the lack of information about the species. Priorities should be given to Critically Endangered (CR) species (4 sharks and 11 rays), Endangered (EN) species (8 sharks and 14 rays) and

Vulnerable (VU) (14 sharks and 20 rays) (**Table 1**, **Figure 7-8**). Additionally, 11 sharks and 23 rays are listed on CITES Appendix I and II (**Figure 9-10**)

Table 1. Conservation status based on IUCN Red List of sharks and rays found in Thailand

IUCN Red List Status	Sharks	Rays
CR - Critically endangered species	7	14
EN - Endangered species	20	29
VU - Vulnerable species	25	28
NT - Near Threatened	18	5
LC - Least Concern	11	11
DD - Data Deficient	1	5
NE - Not Evaluated	5	4
Total	87	96

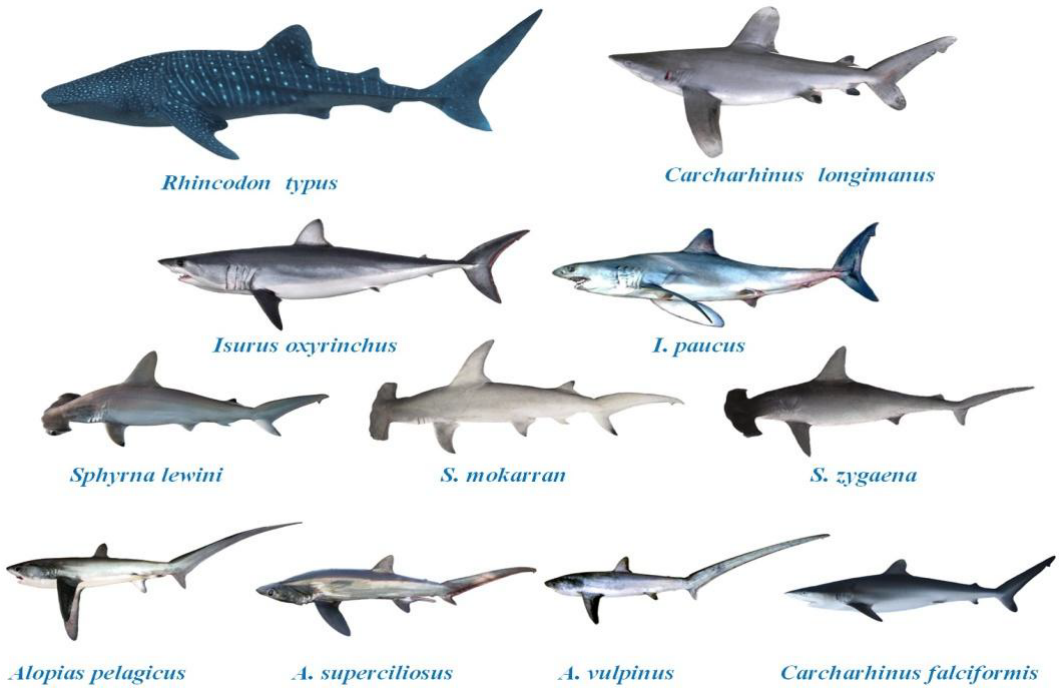


Source: Tassapong Krajangdara, 2019

Figure 7. Critically endangered (CR) shark and ray species of Thailand

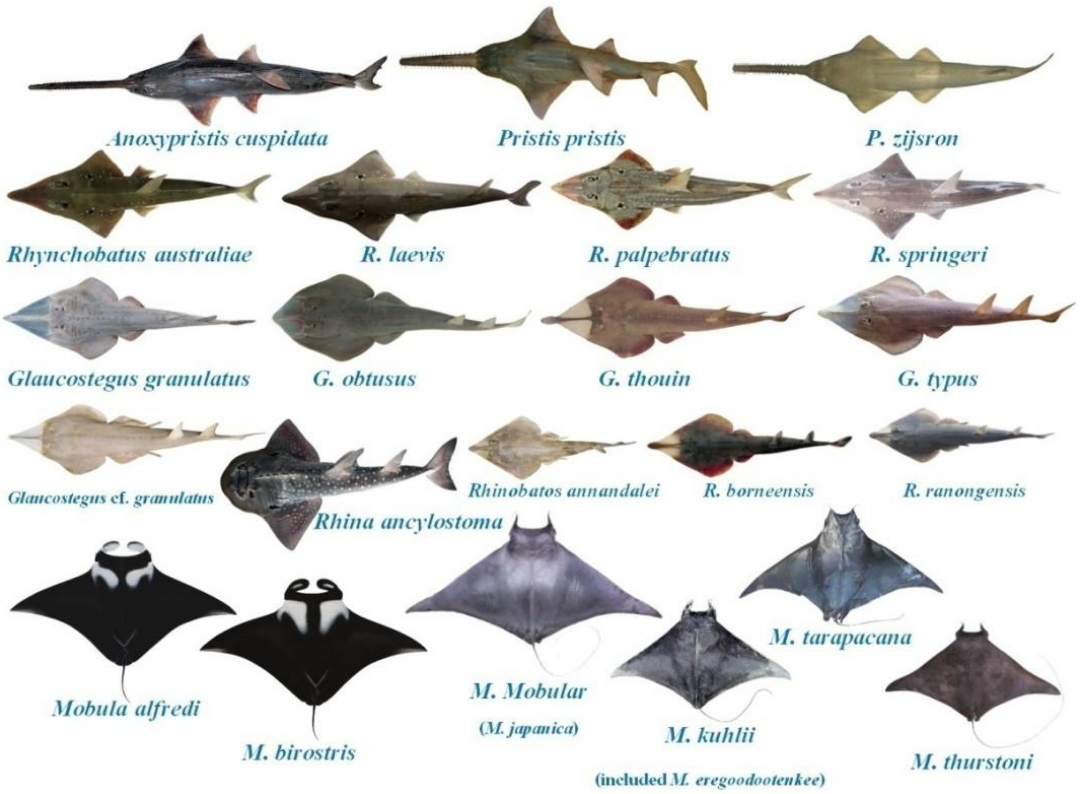
Source: Tassapong Krajangdara, 2019

Figure 8. Endangered (EN) shark and ray species of Thailand



Source: Tassapong Krajangdara, 2019

Figure 9. CITES listed shark species of Thailand (to be updated)



Source: Tassapong Krajangdara, 2019

Figure 10. CITES listed ray species of Thailand (to be updated)

CITES CoP19 leads to new protection of sharks and guitarfishes

The 19th Conference of the Parties (CoP19) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has increased protections for 95 species of sharks and guitarfish.

According to the International Union for the Conservation of Nature (IUCN), roughly one third of sharks, rays, and chimaeras (cartilaginous fish) are threatened with extinction. The number of species threatened is even higher if data-deficient species are included and assumed threatened. Traded for meat and fins, these species are threatened or endangered due to illegal fishing practices and overfishing.

At the conference in Panama City last November, governments that attended CoP19 voted in favor of listing all 95 species including 54 species of requiem sharks, the bonnethead shark, 6 species of hammerhead shark, and 37 species of guitarfishes. Majority of the global fin and shark meat trade is made up of requiem sharks. While hammerhead sharks and guitarfishes went into effect in February 2023, it will take 12 months for the requiem sharks changes to go into effect in global trade.

The new shark and guitarfish species were added to CITES Appendix II, described as species that are not threatened now – but unless trade is regulated or controlled could become so. This means international trade of these species can be authorized only with an export permit or re-export certificate.

Overall Recommendations

Policy and Regulations: As previously discussed**,** various regulations exist to support shark conservation management but there has been little coordination among relevant agencies. As a result, many measures are currently ineffective.

After long overdue, Thailand National Plan of Action (NPOA) for Conservation and Management of Sharks (2020-2024) has been developed by Department of Fisheries aims to 1) create a database of information on biology, ecology, fisheries, and utilization of sharks in Thai waters 2) assess the sharks status and threatens on sharks occurred by fisheries and environment 3) develop knowledge and capability relating to sharks management for relevant officers 4) establish conservation measures and fisheries and trade controls on sharks in consistent with international rules, regulations, and obligations and 5) establish a network of stakeholders involving with management and conservation of sharks resources. Thailand NPOA serves as a baseline and framework for conservation actions.

Based on NPOA, emphasis is given on research and monitoring, capacity building, site-based conservation measures and cooperation among stakeholders. The plan is a good start but still lacks a clear coordination mechanism and implementation timeline. This should also include essential steps to comply with CITES new listing. Actions in NPOA should be prioritized for all relevant agencies especially DOF, DMCR and DNP. As a way forward, DOF should lead the coordination and set up a working group among government agencies involved in NPOA including NGOs. Please see below for specific recommendation for effective implementation of NPOA for sharks.

With support from external organization like WildAid and WWF, the updating process for NPOA phase 2 (2025-2029) should be more inclusive and consider the obstacles and barriers for effective implementation and how to overcome them.

Conservation measures: Conservation priority both for research and management should be given to globally threatened species (CR, EN, VU) and CITES listed species. Site-based management for shark conservation needs to be strengthened, especially at known shark hotspots.

Thailand has established protected areas covering 18,136 km2 of coastal and marine areas and about 5.6% of the total marine area. The country still needs to protect an additional marine and coastal area of 14,212 km2 to reach the CBD target of at least 10% of coastal and marine areas, and the target is changing to 30% by 2030.

Thailand’s Marine Protected Areas marine areas provide protection for coral reef, seagrass, mangrove and soft bottom areas, all of which are known habitats for sharks and rays. Legally, within the National Parks no commercial fishing and small-scale fishing are allowed, although small-scale fishing does take place and is typically overlooked. Law enforcement capacity should be strengthened to increase patrolling effort. A systematic law

enforcement monitoring e.g. SMART (Spatial Monitoring and Reporting Tool) should be implemented and information on sharks should be prioritized.

Mapping shark hotspots and highlighting them as Key Biodiversity Area (KBAs) could be one way to expand the marine protection coverage and create a network of MPAs. This effort can start with gathering and reviewing anecdotal data on frequent sighting of sharks as well as online reporting in diving community social media groups.

A number of marine national parks, conservation and environmental protected areas and near-shore area where sharks and juvenile sharks have been frequently sighted or caught (e.g. Mu Ko Phi Phi in Krabi, Ko Hong in Phang-Nga, Mu Ko Surin National Park, Ko Tao in Surat Thani). A data portal on shark related information in these areas should be created. Research and monitoring on well-known populations e.g. Maya Bay Shark Watch is a crucial step to provide meaningful management recommendations. Creating shark sanctuary or shark reserve based on research could be a great way to recognize and highlight the importance of the site for shark conservation and ensure responsible fishing.

Awareness: Thailand has a good track record in public campaigns to change consumer perspective and nature of trade in marine species, as in the case of removing parrotfish off supermarket shelves. Other successful campaigns have included removing shark fin from hotel and restaurant menus, and closing sensitive areas for restoration due to over-tourism, such as Maya Bay in Had Nopparattara-Mu Ko Phi Phi National Park and the closure of Ko Tachai in Mu Ko Similan National Park. These measures would not have succeeded without public mobilization.

For the general public, sharks are still perceived and described by the media as “dangerous, ferocious, coldblooded and aggressive” especially when attack incidents occur . However, conservation scientists have been quite successful in educating public about true nature of sharks and their ecological significance as evident in a recent shark attack incident https://thai.ac/news/show/115713. Promoting sharks as a flagship species for marine conservation should be continued to wider audience.

Sharks and rays are also commonly consumed and sold both domestically and internationally. Recently, dried sharks are also used as pet’s snacks and marketed widely with unknown impact to wild populations. Disappearance of sharks should be explained as a symptom of severe overfishing. Improving public understanding about shark ecological roles and featuring them as the conservation icon would be a good way to combat overfishing and promote sustainable seafood. Rays are also severely depleted and receive very little public attention. Awareness raising on both sharks and rays is urgently needed and this could start with global conservation priority species i.e. IUCN Red List of threatened species and CITES listed species.

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Specific recommendations for priority actions* to support the implementation of NPOA-Sharks, Thailand

*Based on four capacity building workshops and consultation with key government agencies

NPOA Objectives	All	DOF	DMCR	DNP	NGOs (WildAid/WWF)
1) Create a database of information on biology, ecology, fisheries, and utilization of sharks in Thai waters	● Improve integration and sharing of information among relevant government agencies.	● Prioritize on developing database of biology, ecology, fisheries and assessment of shark population status and threats from fisheries and the environment. ● Conduct study or analysis of market value chain of sharks and rays, and businesses that utilize these species. ● PIPO system should be the main platform for sharing information with researchers, etc. ● Conduct Study of relationships between fin length and mature size of sharks could help identify a recommended	● Prioritize shark and ray data collection as part of marine endangered species database of DMCR ● Promote shark and ray species in DMCR citizen science platform	● Create a databased information on sharks and rays in Marine National Parks ● Prioritize information on shark and ray sighting in Marine National Parks	● Promote public participation in submitting shark and ray sighting in Thailand ● Initiate citizen science program to document utilization of sharks in Thailand ● WildAid to support the shark research in Maya Bay

		minimum fin size that should be required by sustainable fisheries targeting sharks. This will ensure future catches are primarily composed of mature sized sharks and to improve traceability in the shark fin trade.			
2) Assess the sharks status and threatens on sharks occurred by fisheries and environment	● Assess shark and ray status and their threats that occur in respective jurisdiction e.g. Marine National Parks, Marine Protected Area, seafood market ● The data should be analyzed and reported every year to monitor the status of the stock at national level.	● Collect shark data during quarterly research trawl throughout the Gulf and Andaman coasts to update the shark and ray distribution maps from spatial data on sharks and rays, determine quarterly and annual catch rates, species composition, sex ratios and estimates of biomass. ● Increase monitoring and species identification of	● Increase monitoring and species identification of sharks and rays as part of marine endangered survey	● Increase monitoring and species identification of sharks and rays in Marine National Parks	● WildAid to support research on DNA test in Pet Snack, including random checks)

		imported and exported sharks and rays products for CITES listed species.			
3) Develop knowledge and capability relating to sharks management for relevant officers	● Develop knowledge and capability relating to shark management for relevant officers. Priority topics of interest are: 1.Effective design and management of MPAs for sharks and rays. 2.Policy and regulations for sharks conservation. 3.Public communications on the importance of sharks conservation. ● Allocate budget and designate staff to support	● Shark and ray identification training ● Publicize identification and educational materials on sharks and rays ● Organize trainings on species identification of shark fin products from external morphology as the first step to detect CITES-listed species and trainings on DNA-based species identification methods to detect threatened species and CITES-listed species in the shark fin trade. The trainings should be	● Develop knowledge and capability relating to shark management for DMCR research staff.	● Develop knowledge and capability relating to shark management for marine national park staff where sharks are frequently sighted.	● Run a continued campaign to raise public awareness on threatened shark and ray species

	implementation of policies and regulation.	provided, not only to DoF officials, but also Customs Department personnel.			
4) Establish conservation measures and fisheries and trade controls on sharks in consistent with international rules, regulations, and obligations	● Increase enforcement and awareness of existing regulations in some conservation and environmental protected areas. ● Coordination to collect accurate shark import and export data to understand the market situation better, in order for regulating the trade based upon the new CITES listing.	● Robust execution of the landings monitoring on the Gulf and Andaman Coasts is needed to comply with CITES new listing ● Stricter Law enforcement: Random DNA checks on imports to comply with CITES new listing. ● Establish a traceability system that allows access to information on shark fin products from within the country and exports throughout the supply chain. ● Improve efficiency in traceability	● Listing threatened shark and ray species e.g. leopard sharks under WARPA	● Implement Marine SMART system to improve law enforcement within Marine National Parks	● Mobilize public support for conservation measures for sharks and rays including listing the species as protected species

		system and law enforcement to counter illegal shark trade.			
5) establish a network of stakeholders involving with management and conservation of sharks resources. Thailand NPOA serves as a baseline and framework for conservation actions.	● Increase engagement among stakeholders such as fishing industry, fishermen, businesses that benefit from sharks. ● Maintaining communications among network of fisheries to inform laws and regulations in advance before it becomes effective.	● Communicate clearly on the species that requires protection. Inform small-scale fisheries to stop catching sharks that are less than 50 centimeter long. ● Forming 'Fisheries protecting sharks and rays' network/group to motivate fisheries to help protect these endangered species. ● Continue to organize trainings for artisanal and commercial fisheries sector. Priority topics of interest are: 1. Species identification of sharks and rays	● Serve as main agency to coordinate with the tourism sector on sharks and rays ● Continue to organize trainings for staff working in the diving-tourism industry in sharks hotspot area. Priority topics of interest are: 1.Public Communications to raise awareness on the importance of sharks conservation 2.Responsbile sharks and rays tourism.	● Serve as main agency to coordinate with visitors and park users where shark hotspots are.	● Set up Facebook group to share news updates, events, and activities among the tourism sector. ● Organize trainings on shark conservation for staff in the tourism industry at top tourist destinations that can see sharks and rays. ● Develop guideline for the tourism sector on reducing impact on sharks and rays.

		2. Communications to raise awareness on the importance of sharks conservation 3.Effective design and management of MPAs for sharks and rays 4. Situation of trade in sharks and fin products and monitoring guideline	3.Policy and regulations for sharks conservation. 4.Citizen science for research and monitoring of sharks and rays.		

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Annex 1.

Type and volume of Trade (Import and Export) of shark and ray commodities

The information of Division of Fish Quarantine and Inspection, DoF recorded import and export of shark and ray commodities during 2015-2017 (import > export) as below:

Shark commodity importation is divided into 5 types as:

1) Refrigerated fish (whole body) was imported from Malaysia and Cambodia. The total import quantity was 66.27 metric tons, valued at 1.37 million Baht. All the products were in Family Carcharhinidae and Hemiscylliidae.

2) Frozen fishes (whole body and fish fillet) were imported from Malaysia, Taiwan, Indonesia, China, Vietnam, South Korea, Iran, Australia, Japan and Senegal. The total import quantity was 6,497.54 metric tons, valued at 271.00 million Baht. Most of the products were in Family Carcharhinidae and Squalidae.

3) Shark fins (frozen and dried) were imported from Indonesia, Malaysia, China, Hong Kong, Singapore, Spain, Norway, USA, New Zealand and Senegal. The total import quantity was 717.94 metric tons, valued at 179.73 million Baht. Most of the products were in Family Carcharhinidae and Squalidae.

4) Dried fish and cartilage were imported from Indonesia and New Zealand. The total import quantity was 0.51 metric tons, valued at 1.87 million Baht. All the products were in Family Scyliorhidae and Triakidae.

5) Skins (frozen and dried) were imported from China, Taiwan and Mexico. The total import quantity was 16.55 metric tons, valued at 0.54 million Baht. All the products were in Family Alopiidae and Carcharhinidae.

Ray commodity importation is divided into 5 types as:

1) Refrigerated fishes (whole body and fish fillet) were imported from Myanmar, Malaysia, Cambodia, Japan, Pakistan, India, France, Netherlands and Spain. The total import quantity was 1,380.81 metric tons, valued at 31.04 million Baht. All the products were in Family Dasyatidae and Rajidae.

2) Frozen fishes (whole body, fin and fish fillet) were imported from Malaysia, Indonesia, Taiwan, Pakistan, India, Iran, Singapore, Japan, Papua New Guinea, France and Netherlands. The total import quantity was 2,701.04 metric tons, valued at 77.28 million Baht. Most of the products were in Family Dasyatidae.

3) Salted fish and seasonal fish were imported from Japan and Vietnam. The total import quantity was 4.18 metric tons, valued at 4.80 million Baht. All the products were in Family Dasyatidae.

4) Skins and tail (frozen, dried and salted) were imported from Malaysia, Indonesia, India, Pakistan, Bangladesh, Japan, Italy, France and USA. The total import quantity was 1,443.39 metric tons, valued at 106.03 million Baht. All the products were in Family Dasyatidae.

5) Aquarium fishes were imported from Malaysia, Singapore, Indonesia, Hong Kong, Taiwan, Colombia, Brazil, Peru, USA, Germany, France, and Netherlands. The total import quantity was 6,832 individuals, valued at 13.28 million Baht. All of them were in Family Potamotrygonidae and Dasyatidae.

Shark commodity exportation is divided into 4 types as:

1) Frozen fishes (whole body and fish fillet) were exported to Taiwan and Myanmar. The total export quantity was 60.06 metric tons, valued at 1.47 million Baht. All the products were in Family Carcharhinidae.

2) Shark fins (frozen and dried) were exported to China, Taiwan, Hong Kong and Malaysia. The total export quantity was 56.76 metric tons, valued at 14.44 million Baht. Most of the products were in Family Carcharhinidae and Squalidae.

3) Dried fish and cartilage were exported to Taiwan, and Australia. The total export quantity was 41.34 metric tons, valued at 1.60 million Baht. All the products were in Family Carcharhinidae and Scyliorhidae.

4) Skins (frozen and dried) were exported to Taiwan and Hong Kong. The total export quantity was 488.69 metric tons, valued at 20.05 million Baht. All the products were in Family Carcharhinidae and Hemiscylliidae.

Ray commodity exportation is divided into 5 types as:

1) Refrigerated fish (whole body) was exported to Malaysia. The total export quantity was 2.24 metric tons, valued at 0.18 million Baht. All the products were in Family Dasyatidae.

2) Frozen fishes (whole body, fin and fish fillet) were exported to Malaysia, Singapore, Cambodia, Vietnam, China, South Korea and USA. The total export quantity was 149.20 metric tons, valued at 7.01 million Baht. All the products were in Family Dasyatidae.

3) Salted fish and seasonal fish were exported to South Korea, Japan, Taiwan, Laos, Singapore, Australia and USA. The total export quantity was 50.29 metric tons, valued at 19.23 million Baht. All the products were in Family Dasyatidae.

4) Skins (dried and leather) were exported to Italy, China, Hong Kong, Singapore and USA. The total export quantity was 21.30 metric tons, valued at 18.32 million Baht. All the products were in Family Dasyatidae.

5) Aquarium fishes were exported to 66 countries worldwide. The total export quantity was 3,086,955 individuals, valued at 40.78 million Baht. All of them were in Family Potamotrygonidae and Dasyatidae.