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A Rapid Assessment on the Trade in Marine Turtles in Indonesia, Malaysia and Viet Nam

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A Rapid Assessment on the Trade in Marine Turtles in Indonesia, Malaysia and Viet Nam

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CONTENTS

	Executive Summary	1
1	OBJECTIVE OF THE STUDY	5
2	BACKGROUND AND HISTORY OF MARINE TURTLE TRADE IN SOUTHEAST ASIA AND THE CORAL TRIANGLE	5
	2.1 Marine Turtle Trade In Indonesia, Malaysia and Viet Nam	6
3	POLICY AND LEGAL FRAMEWORK	9
	3.1 Global and Regional Frameworks	9
	3.1.1 Indian Ocean South-East Asian Marine Turtle Memorandum of Understanding (IOSEA Marine Turtle MoU)	9
	3.1.2 Memorandum of Understanding on ASEAN Sea Turtle Conservation and Protection (ASEAN MoU)	11
	3.1.3 Memorandum of Agreement between the Government of the Republic of the Philippines and the Government of Malaysia on the Establishment of the Turtle Islands Heritage Protected Area (TIHPA MoU)	11
	3.1.4 Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)	11
	3.2 National Legislation	12
	3.2.1 Indonesia	12
	3.2.2 Malaysia	15
	3.2.3 Viet Nam	17
4	METHODS	20
	4.1 Seizure analysis	20
	4.2 Market surveys	21
	4.3 Online surveys	24

5	RESULTS	25
	5.1 Marine Turtle Seizures	25
	5.1.1 Seizure Records and Commodities Seized	25
	5.1.2 Hotspots and Routes	30
	5.2 Physical Market and Online Surveys	36
	5.2.1 Indonesia	36
	5.2.2 Malaysia	39
	5.2.3 Viet Nam	41
6	DISCUSSION	42
	6.1 Domestic Trade Dynamics	42
	6.1.1 Indonesia	42
	6.1.2 Malaysia	46
	6.1.3 Viet Nam	49
	6.2 Legal International Trade Transactions	50
	6.3 Illegal International Trade	54
	6.3.1 Indonesia	54
	6.3.2 Malaysia	55
	6.3.3 Viet Nam	56
	6.4 Conservation Impact and Management of Marine Turtles	56
	6.4.1 Indonesia	57
	6.4.2 Malaysia	57
	6.4.3 Viet Nam	59
7	CONCLUDING REMARKS AND RECOMMENDATIONS	60
	7.1 Recommendations	60
8	REFERENCES	63
	ANNEX I: NESTING AND FORAGING GROUNDS IN MALAYSIA	67
	ANNEX II: SEIZURE DATA AND SUMMARY FOR SABAH BETWEEN 1999 AND 2017	69
	ANNEX III: LIST OF STAKEHOLDERS CONSULTED IN INDONESIA, MALAYSIA AND VIET NAM IN 2018	70
	ANNEX IV: MARINE TURTLE HATCHERY INFORMATION FOR INDONESIA 2018	72

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EXECUTIVE SUMMARY

Six species of marine turtles are found in Southeast Asia. Generally, all six species are protected or regulated by national laws across the region. Furthermore, all marine turtle species (Family Cheloniidae and *Dermochelys coriacea*) are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits the international trade of marine turtles, their parts and derivatives for commercial purposes. These species are also listed on Appendices I and II of the Convention on Migratory Species of Wild Animals, meaning that the Parties to the Convention including Indonesia, Malaysia and Viet Nam among other countries in the region have committed to strict protection of these species and to reducing threats to their survival both nationally and through international co-operation. These countries are also among the 35 Signatory States to the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia the goal of which is to enhance international co-operation on the conservation of marine turtles. Despite these efforts, marine turtles continue to be illegally exploited for trade and consumption, which is considered to be a threat to remaining wild populations already at risk from a range of reasons including continued habitat degradation, pollution of the marine environment, bycatch and disease.

This study was undertaken to document the current scale of trade in marine turtles in Indonesia, Malaysia and Viet Nam. Legislation and protection measures are varied in the three countries. In Indonesia and Viet Nam, the trade in marine turtle parts and products is generally prohibited, though various gaps and conflicts in the many regulations can pose a complication to control measures. In Malaysia however, trade in eggs is legalised in Peninsular Malaysia through licensed collection by the Department of Fisheries in the respective states, but any trade in marine turtles, parts and products is prohibited in the states of Sabah and Sarawak on Malaysian Borneo. All three countries however have been previously identified as playing a key role in the illegal trade of marine turtles that feeds both a domestic as well as an international market demand. In 2015, *A report on the Illegal Take and Trade of Marine Turtles in the Indian Ocean and South-East Asian Region (IOSEA)* that was undertaken for the 66th CITES Standing Committee meeting (SC66), reinforced conservation concerns regarding the international trafficking of marine turtles.

This study built on the information presented in CITES document for SC66, and explored the current trade dynamics on marine turtles involving the three countries. It encompassed rapid surveys of physical markets in selected locations in Indonesia, Malaysia and Viet Nam (conducted from January–July 2018), rapid surveys of online markets (conducted from July–August 2018) as well as an analysis of seizure data from 2015 to July 2019. Key locations were visited in each country encompassing markets, souvenir shops, nesting beaches and turtle hatcheries. The study also involved stakeholder engagement with governments, NGOs, researchers and conservation practitioners working on marine turtles in these three countries. It further examines the reported trade (based on CITES trade data from 2000–2017) and illegal trade (based on seizures, market surveys and online surveys) taking place; and excludes traditional/cultural take as well as legal harvest or accidental killing of marine turtles during fishing operations.

The analysis of results revealed that the illegal trade in marine turtles persists in all three countries although there appears to be a shift from open availability to more underground markets. Open trade in physical markets surveyed was limited particularly in Indonesia and Malaysia. Despite this, it is clear Indonesia remains an important source and consumer country supplying demand for eggs and meat as well as trade in marine turtle shells (either in processed forms—jewellery, souvenirs, taxidermied or unprocessed forms—raw pieces). Seizures and discussions with stakeholders in Indonesia confirm that poaching, consumption and trade is prevalent across the Indonesian archipelago including in Kalimantan, Java, Bali, Sulawesi, Maluku and Papua. In Malaysia, the long-standing problem of local demand for turtle eggs in the states of Sabah and Terengganu remains active. The trade in marine turtles, parts and products is strictly prohibited in Sabah, while in Terengganu, all catch and trade is prohibited except for turtle eggs, for which collection and trade is regulated. It also appears that in Sabah, new and well organised trade mechanisms have developed—traders typically roam around town approaching potential buyers, covertly using a hand signal of the “OK” sign, locally understood to refer to availability of turtle eggs for sale. Further, the trade of live turtles and turtle parts appears to be a growing concern in Sabah, especially the increasing involvement by local communities to meet foreign market demands. In Viet Nam, local demand for marine turtle meat exists and marine turtle products were observed for sale in 39 of 436 outlets surveyed. However, the open trade in bekkos (turtle shell) products has reduced significantly in Viet Nam compared to findings in 2009.

The online surveys revealed a significant shift in the trade of marine turtle products from physical markets in Indonesia. At least 213 advertisements were recorded on commercial trade platforms offering a variety of products (jewellery, turtle egg powder, fan, spectacles, taxidermied, turtle oil, etc) over a one month span. In Viet Nam, 45 posts and advertisements on social media and commercial trading sites were recorded over a 14 hour period and included small personal items such as fans, spectacles and fingerpicks made from turtle shells. In contrast, there was only one post of a bracelet made from turtle shell recorded for Malaysia over a one-month span.

An analysis of seizure data (January 2015–July 2019) revealed that all three countries play an active role in the international trafficking of marine turtle products in the Asian region—China was reported to be a key destination in most cases. Given the inconsistent way seizures and enforcement actions are reported and recorded by the different countries in this study, it is unlikely that the available dataset is representative of the real number of incidents involving marine turtles that have taken place during the research period. Due to the inherently covert nature of the illegal wildlife trade, its true extent is unlikely to be reflected by the reported seizure data alone. Regardless, a total of 163 seizure incidents were found to have occurred in Indonesia, Malaysia and Viet Nam during this period. Seizures involved whole specimens (live, dead, taxidermied), eggs, shell and shell pieces as well as meat. Of these, marine turtle eggs (n=91,216) were the most abundant commodity seized, particularly in Malaysia. This was followed by seizure of live marine turtles (n=1,880), mostly in Malaysia (n=1,201 individuals), and turtle shells mostly in Indonesia (1,069 pieces, 739 kg, and 936 souvenirs and jewellery). Seizures of whole specimens provide an indication of the minimum number of turtles that were meant for illegal trade during this period—at least 2,354 turtles. Analysis over this period highlights a number of patterns. Viet Nam is mostly a destination market as well as transit route in the trafficking of marine turtle products to China. Indonesia functions mostly as a source country with seized shipments destined to China, Viet Nam and Malaysia. Malaysia was both a destination country for turtle eggs from Indonesia and the Philippines presumably for local consumption and as a source of turtle products to Viet Nam. cursory research on seizures made elsewhere, but implicating the three countries, also reveal the scale of international marine turtle trafficking involving China, France and the Philippines from 2015–2018.



Analysis of CITES trade data reveals that only a small percentage (2% of total records) of international trade transaction involved Indonesia, Malaysia and Viet Nam. A total of 116 legal trade transactions that involved the three countries took place from 2000–2016, from a total of 6,200 records. No trade records involving Indonesia, Malaysia and Viet Nam were found for 2017. At least 18 records were of international imports into Indonesia (n=4), Malaysia (n=13) and Viet Nam (n=1). These 18 records involved mostly carvings, reportedly imported mostly for commercial purposes, as well as live turtles and specimens which were reportedly for scientific purposes. A total of 98 records involved the export of marine turtle products from the three countries, to 11 countries (Australia, Czech Republic, France, United Kingdom, Japan, Malaysia (who imported from Viet Nam), the Netherlands, New Zealand, Portugal, Singapore, and the United States (US)). The US, with 65 trade transactions, was the main reported importer of marine turtle products from the three countries, and generally involved the greatest diversity of marine turtle products exported. The analysis of CITES trade data also raised concerns in terms of compliance with CITES. For example, the incident with the largest quantities was of 2,444 live Hawksbill and Green Turtles imported by the United Kingdom in two separate shipments in 2004, reported as seized specimen. A small percentage (11%) of the 116 trade records was reported to be for commercial use.

This study confirms that illegal trade of marine turtles persists in Indonesia, Malaysia and Viet Nam and identifies the main source and trading countries as well as some of the challenges in its regulation and enforcement. Limitations of this study include the rapid nature of the research, which prevented a more comprehensive quantification of trade levels and its impact on marine turtle populations. However, considering that marine turtle populations are globally in decline, the threat posed by continued poaching and illegal trade in combination with the multiple other threats they face, will have significant adverse impacts on remaining turtle populations in Southeast Asia, if allowed to persist. Therefore, the following recommendations are made:

Recommendations:

- **Streamlining policy and legislative provisions, administrative capacities and implementation**
 - Standardise legislative provision to close loopholes and improve conservation of turtle populations in Malaysia, to prevent laundering into the marine turtle egg trade in the country, between states that prohibit trade and those that do not.
 - Improved enforcement of existing legislation to restrict trade of turtles and turtle products
 - Periodical updates on National Plans of Actions (NPOAs) in all three countries.
 - Streamline roles of the various government agencies tasked with implementing legal and regulatory policies.
- **Monitoring, investigations, law enforcement and improved gateway protection**
 - Improved monitoring, detection and law enforcement in the market place, and particularly in maritime areas involving fishing vessels and seaports. This should also include DNA sampling of seized specimens to determine species involved and / populations of origin.
 - Long-term monitoring of trade in key locations and countries (including those not assessed under this study), which considers comparisons and trends over time.
 - Investigations into the players involved in the poaching and trade of marine turtles and their parts, including the identification of collectors, illegal harvesters, middlemen, transportation and logistics companies and traders, which leads to arrests and conviction of those found guilty
 - Pursuant to CITES Notification 009 that was issued in 2018¹, all CITES Parties to prepare and submit an account of annual illegal trade reporting in an accurate manner.
- **Enhanced awareness-raising**
 - Educate and raise awareness among key players (such as local communities, fishermen, traders and consumers).
 - Awareness-raising campaign for key players, which could also serve as a starting point in developing more targeted research and initiatives designed to reduce consumption and changing behaviour in the long term.
- **Enhanced regional co-operation**
 - Strengthen co-ordination and collaboration between Indonesia, Malaysia, and Viet Nam (as well as the Philippines, that is also an important country involved and/or implicated in the marine turtle trade).
 - Promote collaboration and information sharing on the illegal international trade, such as smuggling methods and trade flows.
 - Identify and stem illegal trade flows from within Southeast Asia to East Asian destination countries and territories (mainland China, Taiwan Province of China, Hong Kong SAR and Japan). These can be done through existing

1 <https://cites.org/sites/default/files/notif/E-Notif-2018-009.pdf>

co-operative agreements such as under the umbrella of IOSEA Marine Turtles MoU, ASEAN or the Coral Triangle Initiative, which can include capacity building and joint information sharing initiatives.

- **Source site management and protection**

- Coastal provinces/cities where marine turtles are nesting and foraging to implement the following practices and cross-cutting solutions including: embedding comprehensive management policies and regulations to protect coastal areas and/or islands for nesting and foraging marine turtles within annual provincial/city economic and tourism developmental strategy; establish no-entry and/or no-catch zones in some special areas restricting human presence and activities to protect nesting and foraging females; develop provincial monitoring mechanism in collaboration with marine police and other related organisations to combat illegal hunting, and collection of eggs and nesting females; develop programmes/projects providing sustainable alternative livelihoods to diversify income sources for local communities; develop sand protection programmes to reduce impacts of over-exploitation to the usefulness of sand for marine turtles laying eggs.

- **Assessment and management of turtle attraction sites**

- Better assess and monitor captive facilities that manage turtle hatcheries and those used as tourist attractions to ensure that these facilities do not undermine conservation efforts, or facilitate laundering of wild caught turtles or their parts into trade.





This study was undertaken pursuant to CITES Decisions 17.222 and 17.223² on Hawksbill Turtle *Eretmochelys imbricata* and other marine turtles (Cheloniidae and Dermochelyidae). Under these Decisions, the CITES Secretariat is requested to, in collaboration with its partners Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) and the Convention on Migratory Species/Indian Ocean-South-East Asian Memorandum of Understanding (CMS/IOSEA), undertake a study on the legal and illegal international trade in marine turtles, *inter alia* to research its status, scope and trends, conservation impacts and management options, and to identify areas where immediate mitigation efforts may be needed. The CITES Secretariat is currently implementing this study at the global level and is focusing particular assessment efforts in three regions: the Inter-American region, the East African region and the Southeast Asian and Coral Triangle region.

Towards this end, TRAFFIC was contracted by the CITES Secretariat to undertake a review to document the trade in marine turtles in the Southeast Asian and Coral Triangle region, specifically in Indonesia, Malaysia and Viet Nam. These three countries have been identified as playing a key role in the illegal trade of marine turtles both to meet local demand as well as international demand.



There are seven species of marine turtles in the world, of which six are found in the Southeast Asia and Coral Triangle region: Leatherback *Dermochelys coriacea*, Green *Chelonia mydas*, Loggerhead *Caretta caretta*, Hawksbill *Eretmochelys imbricata*, Flat-back *Natator depressus* and Olive Ridley *Lepidochelys olivacea*. The Kemp's Ridley *Lepidochelys kempii* is native to Mexico and the United States. Except for the Flat-back Turtle, which only nests in Australia but forages around southern Indonesia and Papua New Guinea, these species are widely distributed in the region (Ezekiel, 2018). Species occurring in the three Southeast Asian target countries are provided in Table 1.

2 <https://www.cites.org/eng/dec/valid17/81876>

5 *A Rapid Assessment on the Trade in Marine Turtles in Indonesia, Malaysia and Viet Nam*

Table 1: Marine turtle species occurring in Southeast Asia, their range and IUCN Red List status.

Species	Green Turtle <i>Chelonia mydas</i>	Hawksbill Turtle <i>Eretmochelys imbricata</i>	Leatherback Turtle <i>Dermochelys coriacea</i>	Olive Ridley Turtle <i>Lepidochelys olivacea</i>	Loggerhead Turtle <i>Caretta caretta</i>	Flatback Turtle <i>Natator depressus</i>
IUCN status	Endangered	Critically Endangered	Vulnerable	Vulnerable	Critically endangered	Data Deficient
Range States*	Indonesia, Malaysia, Viet Nam	Indonesia, Malaysia, Viet Nam	Indonesia, Malaysia, Viet Nam	Indonesia, Malaysia, Viet Nam	Indonesia, Malaysia, Viet Nam	Indonesia

* refers only to countries considered under this assessment

Marine turtles are known to nest in key locations throughout the region. In Malaysia, primary nesting sites are found in the states of Sabah and Sarawak in East Malaysia, as well as the states of Terengganu and surrounding islands, Melaka and in some parts of Pahang and Perak in Peninsular Malaysia; though there has been no reliable information regarding the nesting of Loggerhead Turtles in Malaysia (TRAFFIC Southeast Asia, 2009) (see Annex I for detailed description of key nesting sites, abundance and trends in Malaysia). In Indonesia, nesting sites are distributed throughout the 17,000 islands that make the archipelago (IOSEA, 2008; TRAFFIC, 2009; Profana, 2010; IOSEA, 2014). The Turtle Islands region, part of the Sulu Archipelago comprising some 400 islands between the southwestern tip of the Philippines and northeast apex of Sabah, Malaysia are important grounds for Green and Hawksbill Turtles (Lam *et al.*, 2012). In Viet Nam, major nesting beaches are scattered from the northern border with China to the southern border with Cambodia, including most offshore island groups. Concentrated nesting areas are found in the Gulf of Tonkin, central provinces and the islands in the Southeastern waters and the Gulf of Thailand, though many are under severe pressure from human activities and some no longer exist (Hamann *et al.*, 2003; Hamann *et al.*, 2006).

Marine turtles are generally nationally protected in most Southeast Asian countries (see Section 3.2 for detailed description of national legislation pertaining to Indonesia, Malaysia and Viet Nam). Further, as of 1981³, all marine turtle species (Families Dermochelyidae and Cheloniidae) have been listed within Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This essentially prohibits the international trade in marine turtle parts and products for commercial purposes. Despite this, illegal international and domestic trade in their parts and products persists.

2.1 Marine turtle trade in Indonesia, Malaysia and Viet Nam

Past studies in Southeast Asia have documented many threats that have caused the decline in marine turtle populations (Campbell, 2002; Troëng and Drews, 2004; McLellan *et al.*, 2005; Sandilyan and Vinoth, 2013). This includes targeted and opportunistic fisheries, habitat degradation of nesting and feeding habitats, pollution of the marine environment, disease, climate change and use by humans. This study focusses on the threats faced by marine turtle populations due to exploitation for trade in their meat, eggs and shells. Hunting of marine turtles to supply trade and consumption demands of both a domestic and international market, is deemed a serious and persistent threat to the long term survival of marine turtles (Groombridge and Luxmoore, 1989; Meylan and Donnelly, 1999; Pilcher, 2000; Kemp *et al.*, 2000; van Dyke and Shepherd, 2004; Stiles, 2009; IOSEA, 2014; CITES, 2016a).

For centuries, marine turtles have been exploited for their shells, sought-after for the production of artefacts and ornaments (Aikin, 1840; Groombridge and Luxmoore, 1989; van Dijk and Shepherd, 2004; Kinch and Burgess, 2009; Lam *et al.*, 2012). China and Japan have featured prominently in this trade, with Hawksbill Turtle shells coveted in the luxury arts and crafts markets, though this was also popular in the Republic of Korea and Taiwan Province of China (Groombridge and Luxmoore, 1989; Lam *et al.*, 2012). Japan's marine turtle shell import from 1970–1986 was said to involve more than 600,000 Hawksbill Turtles (Milliken and Tokunaga, 1987). Marine turtle shells, also known more popularly by the Japanese term bekko, are used as ornaments and curios such as jewellery, combs, hand-held fans, buttons, spectacle frames as well as furniture embellishments in more elaborate cases (Limpus and Miller, 1990; van Dijk and Shepherd, 2004). The harder shell of

³ Kemp's Ridley Turtle was the earliest to be listed in CITES Appendix I in 1975; Green, Leatherback and Olive Ridley Turtles were first listed in Appendix II in 1975 and up-listed in 1977; Flatback Turtles were first listed in Appendix II in 1975 and later uplisted to Appendix I in 1981; Hawksbill Turtle was listed in 1977 in Appendix I. By 1981, all marine turtles (Cheloniidae and Dermochelyidae) were included in Appendix I.

Hawksbill Turtle makes it a preferred choice of species that is targeted for the trade in bekko (Canin, 1991; Hainshwang and Leggio, 2006). A single average Hawksbill Turtle reportedly yields about 780 g of bekko (Milliken and Tokunaga, 1987).

Aside from this, marine turtles are also harvested and exploited for their parts, such as their meat and eggs, consumed as an important source of protein for coastal communities, for religious and cultural reasons as well as for traditional medicine purposes (TRAFFIC, 2009; TRAFFIC Southeast Asia, 2009; Dethmers and Baxter, 2011; IOSEA, 2014; Wild Aid, 2018; Riskas, 2018). Consumption of meat and eggs reportedly occurs in 75% of the countries in the Indian Ocean and Southeast Asia region while East Asian countries mainly dominate the trade in marine turtle shells (IOSEA, 2014). The South China Sea is considered a haven for the illegal capture and trade in marine turtles due to the vastness of shipping and fishing activities (Wild Aid, 2018). In Southeast Asia, exploitation of marine turtles, their parts and products is believed to centre around the Coral Triangle region of Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands and Timor Leste (Figure 1).

From 2000 to 2008, over 9,180 marine turtle derivatives were reportedly traded between Southeast Asia and East Asia regions (Lam *et al.*, 2012). The main regional trade route for whole turtles and parts or products seems to originate in Indonesia, Malaysia and the Philippines to supply the consumer markets of East Asia (Lam *et al.*, 2012; CITES, 2016b). Since 2009 at least, the poaching of marine turtles at sea in Southeast Asian waters was reported to be perpetrated by Chinese fisheries mostly, operating out of Hainan province and Vietnamese fisheries (IOSEA, 2014). This demand is reportedly on the rise—both Chinese demand for turtle meat and medicine, and demand from Japan and Taiwan Province of China for traditional crafts made of turtle scutes (Lam *et al.*, 2012; CITES, 2016b). Marine turtle populations in the Coral Triangle are reported to have declined dramatically in recent decades, by as much as 90% for some populations (WWF, 2011; IOSEA, 2014).



Figure 1: Coral Triangle region

A detailed account of the trade in marine turtles in Indonesia, Malaysia and Viet Nam was highlighted in a report prepared by the IOSEA Secretariat in 2014 (IOSEA, 2014), and more recently by Riskas *et al.*, (2018). They reported that the direct exploitation of marine turtles including meat, eggs and shells was concentrated in the Coral Triangle Region. Both Indonesia and Malaysia were highlighted as a key source of turtles to meet domestic demand and also were increasingly being implicated as a source of smuggled turtles to countries like China, Japan and Viet Nam. Vietnamese fisheries were highlighted as a key perpetrator in the poaching of marine turtles in the Coral Triangle region which were then traded at sea to China.

In Indonesia, marine turtle meat, mostly involving Green Turtles but also the Hawksbill Turtle, is said to be consumed for religious and cultural reasons in Bali (Barr, 2001; Profauna, 2003; van Dyke and Shepherd, 2004; Jansen, 2009; Profauna, 2010; Langenheim, 2017). Other than as a source of protein, there is a widely-held belief that the consumption of turtle eggs confers sexual vigour (Tiba, 2013; Widodianto, *pers. comm*, 2018). The trade of sea turtles and their products appears to be widespread in Indonesia with turtle eggs and meat still in demand locally. An estimated minimum of 1,967 turtles and 29,123 turtle eggs were seized in Indonesia from 2005–2009 (TRAFFIC, unpublished). A 2008 research study by ProFauna Indonesia estimated that around 1,115 Green Turtles were being poached every year in Southeast Sulawesi alone (IOSEA, 2008). TRAFFIC’s research in 2009 recorded active trade throughout Bali, Java, Kalimantan, Sulawesi and Sumatra, involving both Hawksbill and Green turtles (TRAFFIC, unpublished). In 2012, Indonesian authorities warned that international trafficking of marine turtles was on the rise nationwide due to increasing demand from East Asian countries such as China and Japan (IOSEA, 2014). Although foreign fishing fleets have recently been banned from Indonesian waters, the problem of illegal fishing, either without legal permits, or using illegally purchased permits, still persists.

In Malaysia, the impacts from the trading of marine turtle parts and derivatives had been acknowledged as a conservation issue and has been given wide attention in the country since the 1950s. This domestic trade is dominated by the consumption of eggs (Liew, 2011; Chan, 2006; TRAFFIC Southeast Asia, 2009; Department of Fisheries Malaysia, 2008; Mohd Salleh *et al.*, 2018; Teh *et al.*, 2018; WWF-Malaysia and Sabah Wildlife Department, 2018), which is legal in most states, with the exception of Sabah and Sarawak on Borneo. In the early 1960s, the management of turtle egg collection and nesting disturbances was formally established to address the declining Leatherback Turtle nesting population in Rantau Abang, Terengganu (Liew, 2011). However, actual studies on the occurrence and prevalence of trade, as well as the type and characteristics of the trade itself have been quite limited. Egg collection licences were introduced to curb widespread turtle collection and subsequent trade, with “buyback”⁴ mechanisms established for conservation purposes by the Department of Fisheries Malaysia, typically involving Green and Hawksbill turtles (Chan & Liew, 1996; WWF-Malaysia, 2011). The egg licensing system generally includes the following: licences are non-transferrable, all eggs must be sent to the Department of Fisheries for incubation, and only a small number of individuals are allowed to collect on a stretch of beach or area (TRAFFIC Southeast Asia, 2009).

Since 2009, two specific studies were undertaken to understand marine turtle egg trade in the country i.e. a TRAFFIC study in 2009 (TRAFFIC Southeast Asia, 2009) and a regional assessment in 2014 which included Malaysia (IOSEA, 2014). Other studies only mention marine turtle exploitation through the harvesting and consumption of eggs as being a potential reason for population decline, without going into any particular detail on the trade (Liew, 2011). In the state of Sabah, trade is prohibited, but continues to take place. A study by WWF Malaysia and the Sabah Wildlife Department found that between 1999–2017 at least 129 seizure incidents involving marine turtle eggs were recorded in the state—238,396 eggs were seized over this period, and the highest seizure per-year occurred in 2016 with 43,826 eggs seized (WWF-Malaysia and Sabah Wildlife Department, 2018) (Annex II). The study also recorded 23 cases from 2004 to 2017 involving seizures of whole or parts of turtles.

In Viet Nam, marine turtles are a symbol of indigenous cultural and economic values. Marine turtles have been traded for food because of their fat (0.5–1.2%) and protein (15–20%)⁵ content and for decoration (from bone, skin and shell). Green Turtles’ nests are harvested for eggs and Hawksbill Turtle shells are used to make handicraft and decorative items including beko ornaments from turtle shells or stuffed (taxidermied) whole animals (Pham Thuoc, 2003; Stiles, 2009; Education for Nature-Viet Nam, 2018). These uses have reportedly contributed to the decline in the population of marine turtles as well as the number of nesting females coming to the country to lay eggs (Stiles, 2009). Leatherback Turtles are extremely rare in Viet Nam, while Green Turtles are currently only found in offshore islands or less populated areas in Viet Nam (Chu and Nguyen, 2015). International trade in marine turtles involving Viet Nam increased greatly during the 1990s driven by demand from Japan, South Korea and China (Groombridge and Luxmoore, 1989). In more recent times, much of the domestic trade in turtle products is seen to be driven by foreign and national tourists with trade of marine turtle products occurring in provinces/cities such as Ho Chi Minh City, Vung Tau, Nha Trang, and Ha Noi (Martin, 1992; Stiles, 2009). However, even this saw a slight reduction in 2008, compared to 2002 after the trade in marine turtle products was outlawed by the Government in 2002—from 22,225 observed products in trade to 5,854 products between 2002 and 2008 (Stiles, 2009). Hawksbills Turtles are particularly threatened by the intensive shell trade, as the most exploited species in the illegal trade in Viet Nam, coveted primarily for their shell (Stiles, 2009; Lam *et al.*, 2012).

4 The buyback scheme refers to the government buying the eggs back from collectors, which provides an income to the collectors while the government manages the eggs in a hatchery.

5 Chu The Cuong and Bui Thi Thu Hien (2015), *101 Cau hoi va Tra loi ve Bao ton rua bien*, Gland, Thuy Sy: IUCN, Page 37.



3.1 Global and Regional Frameworks

A number of major global conventions are directly relevant to the conservation of marine species, including marine turtles. These include four legally binding agreements: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), the Convention on Wetlands of International Importance (Ramsar Convention) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS). In addition, voluntary agreements provide guidelines and less formal commitments for the conservation of various species or habitats of marine wildlife. All seven species of marine turtle are listed in Appendix I of CITES, since 1981, and all except the Flat-backed Turtle on Appendices I and II of CMS; the Flat-backed Turtle is listed on Appendix II only. CITES Appendix I listing prohibits international trade in these species, except for exceptional circumstances, while CMS Appendix I and II listing obligates Parties to, *inter alia*, prohibit taking of Appendix I species (exceptional cases possible) and 2) conclude international agreements which would benefit Appendix II species.

Key international frameworks applicable to the region, and particularly Indonesia, Malaysia and Viet Nam are provided in the following sections, based on Ezekiel (2018).

3.1.1 Indian Ocean South-East Asian Marine Turtle Memorandum of Understanding (IOSEA Marine Turtle MoU)

ASEAN Signatories: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Viet Nam

The IOSEA Marine Turtle MoU was created under the auspices of CMS and came into effect in 2001. It was amended in 2009, along with the Conservation and Management Plan which is appended to the MoU. The MoU is not legally binding; however, it does have a provision that it can be amended to become a binding treaty if a majority of signatories agree. The MoU applies to the land and marine territory of Signatory States and is also applicable to vessels operating in the region under a Signatory's flag.

Obligations

International co-operation	Signatories must co-operate "closely" to conserve marine turtles and are urged to ratify relevant international agreements to promote the legal protection of marine turtles.
Create effective legislation	Signatories should create, review and implement national legislation to conserve marine turtles and harmonise legislation between signatory states.
National authorities	Signatories are required to designate (1) a national authority to co-ordinate communication between signatory states; (2) a Secretariat to co-ordinate and encourage reporting and communication between member states and other relevant organisations; and (3) an Advisory Committee to advise on scientific, technical and legal matters.

Reporting	Signatories should report regularly to the IOSEA Marine Turtle MoU Secretariat on their implementation of the MoU.
Implement the Conservation and Management Plan	<p>Signatories are required, subject to resources, to implement the Conservation and Management Plan appended to the MoU. The plan comprises a list of 105 activities to be undertaken, listed under the following six main objectives:</p> <ol style="list-style-type: none"> 1. Reduce direct and indirect causes of mortality of marine turtles. This includes activities 1.4a–d to promote the use of fishing gear that minimises bycatch of turtles, and 1.4e–f to support the UN Driftnet Moratorium and provide proper facilities for disposal of fishing gear. This objective also includes activity 1.5a–e to prohibit harvest and trade in marine turtles and their eggs, including by enacting legislation to do so, where necessary. 2. Protect and conserve marine turtle habitats. This includes activities 2.2a–b to rehabilitate degraded nesting beaches, coral reefs, mangroves and seagrass beds. 3. Increase and share research on marine turtle ecology. 4. Increase public awareness and participation in marine turtle conservation. 5. Enhance national, regional and international co-operation, including activities 5.1a–c to improve compliance with CITES, and 5.1f to implement legislation and improve enforcement efforts to deter illegal trade. Activities 5.3h and i urge Signatories to encourage non-signatory states to become Party to, respectively, CMS and global fisheries agreements, including UNFSA, and to implement the FAO Code of Conduct. Activity 5.5a is to “Review domestic policies and laws to address gaps or impediments to marine turtle conservation.” Signatories should exchange information on marine turtles with other states (3.4). 6. Promote implementation of the MoU and Conservation and Management Plan. Including activities 6.1a to encourage non-signatory states to sign the MoU and 6.1c to consider making the MoU legally binding.

Relevant resolutions passed under the IOSEA Marine Turtle MoU

Three resolutions have been passed by the Signatory States to the IOSEA Marine Turtle MoU, all of which relate to the issue of marine turtle by-catch and mortality:

- The 2012 Resolution to Establish the IOSEA Network of Sites of Importance for Marine Turtles in the Indian Ocean–South-East Asia Region encourages Signatory States to nominate sites for inclusion in the IOSEA Network of Sites of Importance for Marine Turtles and provides guidance on how to evaluate potential sites for nomination and co-ordinate governance for selected sites.
- The 2008 Resolution to Promote the Use of Marine Turtle By-catch Reduction Measures by IOSEA Signatory States urges Signatory States to adopt the FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations and encourages Signatory States, the Indian Ocean Tuna Commission (IOTC) and the Western and Central Pacific Fisheries Commission (WCPFC) to adopt safe marine turtle handling measures for longline fisheries.
- The 2005 Resolution 3.1 Urging the Indian Ocean Tuna Commission and its Member States to Address Marine Turtle By-Catch Issues within the IOSEA Region contributed to the IOTC passing its 2005 Recommendation on Sea Turtles and 2009 Resolution on Sea Turtles, which were superseded in 2012 by the Resolution on the Conservation of Marine Turtles (discussed below under Regional fisheries agreements).
- In addition, the 8th Meeting of Signatories to the IOSEA Marine Turtle MOU convened to establish a working group to address issues related to turtle trade.

3.1.2 Memorandum of Understanding on ASEAN Sea Turtle Conservation and Protection (ASEAN MoU)

ASEAN Contracting Parties: Brunei, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam

The ASEAN MoU is a concise agreement signed in 1997 by all ASEAN countries except Cambodia. The agreement was one of the first multilateral agreements focused specifically on marine turtle conservation. However, the MoU is extremely broad and asks very little of its signatories. Other than designating Malaysia as the co-ordinator for implementing the MoU (Art. V) and requiring each Party to designate an agency to co-ordinate with Malaysia (Art. VI) and at least one expert to form a Technical Expert Working Group (Art. V), the MoU does not require specific actions from its Contracting Parties. However, it does ask Parties to consider enacting new laws on marine turtle conservation and harmonising existing national laws, and to co-ordinate with the Southeast Asian Fisheries Development Centre (SEAFDEC) in creating a sea turtle protection programme (Art. IV).

3.1.3 Memorandum of Agreement between the Government of the Republic of the Philippines and the Government of Malaysia on the Establishment of the Turtle Islands Heritage Protected Area (TIHPA MoU)

ASEAN Parties: Malaysia, Philippines

The Turtle Islands Heritage Protected Area (TIHPA) MoU concerns the joint management and protection of the only remaining major Green Turtle nesting habitats and population in Southeast Asia, which also provide nesting sites for Hawksbill Turtles. This bilateral MoU covers six islands in the Philippines and three in Malaysia, located along the international treaty limits separating the two countries. The agreement was formalised by the Governments of the Philippines and Malaysia in 1996. The area is subject to each country's laws within the applicable jurisdiction and jointly managed as a Green and Hawksbill turtle sanctuary. As a marine sanctuary, each country's punishments for wildlife crimes within national protected areas apply. In addition, the agreement provides for protection of sand and coral within the area.

Obligations

Conservation and management	Parties are required to implement a joint marine turtle resource management programme and an integrated conservation and research programme that aims for the wise management of the Protected Area (Art. II). Annex A to the MoU lists nine actions to be taken to conserve and manage turtles, including protecting nesting habitat and prohibiting sand and coral excavation and the use of fishing gear that disturbs or harms turtles in the area.
Other obligations	Parties are required to establish an Implementing Agency (Art. IV), a centralised information network on marine turtles, including a database that collects information described in Annex A of the MoU, and eco-tourism and awareness programmes (Art. II).

3.1.4 Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)

ASEAN Signatories: Indonesia, Malaysia, Philippines

The CTI-CFF is a multilateral partnership between Indonesia, Malaysia, the Philippines and the non-ASEAN partners Papua New Guinea, Timor Leste and the Solomon Islands. A non-binding declaration, the Coral Triangle Initiative Leaders' Declaration on Coral Reefs, Fisheries and Food Security, was signed by these countries in 2009, committing them to implement a 10-year Regional Plan of Action as a rallying point for collective and parallel action at a variety of levels. The Regional Plan of Action states that it will target all six species of turtles found in the Coral Triangle, as well as corals, seagrass and other species assessed as threatened on the IUCN Red List.

Obligations

The Declaration does not provide any specific obligations; however, the Plan of Action includes 38 regional actions under five goals. These are:

1. Manage priority seascapes. Including designating and effectively managing these seascapes.
2. Develop an ecosystem approach to managing marine resources. Including implementing strong legislative, policy and regulatory frameworks for an ecosystem approach, including through international collaboration. This goal specifically mentions implementing the FAO IPOA-IUU. Under this goal are also targets of achieving a more sustainable trade in reef fish and establishing a forum on managing and trading internationally in reef-based organisms. It is also recommended to integrate the precautionary approach into legislation and take measures to reduce destructive fishing practices, including use of cyanide and blast fishing.
3. Conserve and manage marine areas. Including identifying priority seascapes, establishing a model for sustainable management of seascapes and securing funding. Parties are encouraged to establish and manage MPAs.
4. Adapt to climate change.
5. Improve the status of threatened species. The Plan of Action urges Parties to create and implement regional plans for sharks, sea turtles, marine mammals, targeted reef fish and threatened invertebrates. Specific targets for each of these are listed, including monitoring and enforcement of regulations regarding international trade and reduction of bycatch. Parties are encouraged to adopt and strengthen local and national legislative, policy and regulatory frameworks and regional and international agreements on threatened species. The Plan of Action indicates that these measures should include sharing information such as draft and final versions of national laws to enable regional harmonisation of legal and policy frameworks and enforcing laws and regulations to combat IUU fishing and trafficking of threatened marine species.

3.2 National Legislation

The following sections are based largely on a review of key marine protection related legislations in the ASEAN countries that was led by TRAFFIC (Ezekiel, 2018).

3.2.1 Indonesia

Indonesia generally has a good wildlife protection legislative framework, however some weaknesses exist, such as the lack of a unified list of protected species that covers all CITES- and CMS-listed species and a lack of prohibitions on some harmful activities. This includes the lack of provision to regulate and take action on non-native CITES listed species. The most important pieces of legislation for the conservation and management of marine wildlife in Indonesia are the *Conservation of Living Resources and their Ecosystems Act No. 5 (1990)*, the *Law on the Management of Coastal Areas and Isles (2007)* and the *Fishery Law (2004, amended 2009)*. Three Government Regulations relate to the conservation of marine wildlife: *No. 60/2007 on the Conservation of Fishery Resources*, *No. 7/1999 on Preserving Flora and Fauna Species*, and *No. 8/1999 on Wild Flora and Fauna Exploitation*. All marine turtles are considered protected species under the Government Regulation No. 7/1999 on Preserving Flora and Fauna Species. Any catch, trade, import, export, possession and transfer of protected species is prohibited under Act No. 5. Anyone violating this law may be liable, upon conviction, to a fine of up to IDR100,000,000 (USD10,000) and imprisonment of up to five years.

Several other laws provide relevant measures, including the *Law on the Sea (2014)*, which makes the Indonesian Government responsible for managing the marine environment, the *Customs Law (1995, amended 2006)*, and the *Penal Code (1915)*, which includes measures to protect animals from mistreatment. In addition, a large number of Ministerial Regulations provide detailed measures for the management and control of activities relating to marine wildlife. Strengths and weaknesses of Indonesia's legislation with regard to marine wildlife protection are summarised in **Table 2**.

Table 2: Summary of strengths and weaknesses in Indonesia's marine turtle legislation

Strengths	Weaknesses
<ul style="list-style-type: none"> • Detailed list of prohibited activities, including catching, killing, possessing, transporting or trading protected species without a licence and importing and exporting wildlife without a permit. • Prohibition of fishing with explosives, poisons or other materials that destroy coral reefs, fish resources or the environment. Possession of equipment for these types of fishing prohibited. • Requirement to release marine wildlife that has been captured accidentally alive and report if dead. • Minister of Marine Affairs and Fisheries required to specify closed seasons and areas. • Permits and licences required for natural resource exploitation, including for fishing outside Indonesian waters. • Detailed requirements for vessel registration and logbooks. • Confiscated specimens and wildlife found in a human environment must be returned to their natural environment where possible, and confiscated wildlife housed in adequate facilities. • An offence to deliberately harm an animal, cause it pain or transport it in a needlessly painful manner. • Strong penalties for some offences under <i>Fishery Law, Law on the Management of Coastal Areas and Isles and Conservation of Living Resources and their Ecosystems Act</i>. • Specification of maximum and minimum sentences for some offences under <i>Customs Law and Law on the Management of Coastal Areas and Isles</i>. • Increased penalties for committing offences deliberately under <i>Conservation of Living Resources and their Ecosystems Act and Law on the Management of Coastal Areas and Isles</i>. • <i>Fishery Law</i> provides higher penalties for some offences for owners and operators of fishing vessels, managers of corporations, and larger fishing operations. 	<ul style="list-style-type: none"> • <i>Conservation of Living Resources and their Ecosystems Act and Fishery Law</i> are general. Where implementing regulations provided by ministries, some provinces may not recognise jurisdiction (Lotolung <i>et al.</i> 2005). • Permitted to catch, kill, transport or trade protected animals for research, education or safeguarding of the animals under <i>Conservation of Living Resources and their Ecosystems Act</i>. • <i>Government Regulation No. 7 (1999)</i> allows Conservation Institutions, including zoos and animal parks, to take wildlife that is not protected from nature and does not provide conditions for obtaining wildlife in this way. • <i>Fishery Law</i> allows fishing with explosives and other damaging methods for research. Ministry of Fisheries Decrees specifying protected species provide exceptions for research. • Protection for wildlife parts and products omitted from <i>Government Regulation No. 8/1999 on Wild Flora and Fauna Exploitation</i>. • No prohibition on possession of species obtained using destructive fishing equipment or techniques. • <i>Regulation of the Minister of Forestry No. 447 (2003)</i> allows collection of wildlife, including protected and CITES-listed species, from nature as long as not in protected areas. • No requirements for Turtle Excluder Devices (TED) or minimum mesh sizes. • Under <i>Regulation of the Minister of Marine Affairs and Fisheries No. 04 (2010)</i>, CITES Appendix I species may be traded if bred in captivity and of at least the second generation, or of the first generation if they belong to a species allowed by the Minister. Could enable laundering of wild-caught specimens. • Penalties for mistreating animals in trade low under <i>Penal Code</i>. • Some regulations impose only administrative sanctions and/or do not specify sanctions.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Penalties for some offences under <i>Fishery Law</i> and <i>Customs Law</i> are increased by one third if an official is involved. • Incentives for information and arrests under <i>Fishery Law</i> and for customs agents who have settled violations under <i>Customs Law</i>. • Clear indication of responsibilities for implementation. 	<ul style="list-style-type: none"> • No provisions to apply penalties to corporations or managers under <i>Conservation of Living Resources and their Ecosystems Act, Government Regulation No. 8 (1999), Law on the Sea and Law on Coastal Areas and Small Isles</i>. • No penalisation of accomplices. • Provincial legislation regarding marine wildlife protection may not be harmonised across the country or with Ministerial Regulations. • No single list of protected species that covers all CITES- and CMS-listed species.



3.2.2 Malaysia

Malaysia comprises 13 states and three federal territories, and legislation to protect marine wildlife in Malaysia consists of a mixture of federal and state law. As per Article 75 of the Constitution of Malaysia, where there is a conflict between federal and state legislation, federal law prevails. In general, management of turtles falls under the jurisdiction of each individual state for areas within their territorial waters (up to 3 nm of the low water mark). In light of this provision, management of turtles which falls under the purview of the federal government as included in the Fisheries Act 1985 only applies in lieu of any state enactments pertaining to turtle management.

In Peninsular Malaysia, all states have marine turtle related legislations except for Perlis and Selangor. The legislations in other states via state enactments or under the enabling section of the Fisheries Act 1985 mainly prescribes the procedures and fees for the purposes of securing licences to collect eggs, and operating turtle watching areas. There are also penalties prescribed for offences involving the possession or killing of turtles. There is no uniformity and in most of Peninsular Malaysia, all marine turtle eggs (except Leatherback eggs in Terengganu and Pahang) are freely and legally traded in the local markets, except in Perak and Melaka. The states of Sabah and Sarawak have their own wildlife protection legislation (the *Wildlife Conservation Enactment* (1997) and the *Wildlife Protection Ordinance* (1998)), which list marine turtles as totally protected animals. Both states ban all trade and consumption of marine turtles or their parts or products. Federal legislation governs the import and export of wildlife through Malaysia's main CITES-implementing legislation, the *International Trade in Endangered Species Act* (2008), and the *Customs Act* (1967).

Malaysia's wildlife protection legislation is generally comprehensive and provides a solid framework to protect marine wildlife. On the other hand, many of the measures to protect wildlife within Malaysia do not apply to marine species, and the mixture of federal and state legislation to protect wildlife can create gaps, inconsistencies and overlap. For example, while the states of Sabah and Sarawak afford protection to marine turtles and ban trade, the same is not applicable in the Peninsular Malaysian states:

- Five states (Melaka, Penang, Johor, Negeri Sembilan and Kelantan) have enacted Rules pursuant to the Fisheries Act 1985.
- Terengganu Turtle Enactment 1951 (amended 1987) uses local Malay names to describe marine turtles (no definition at species level). It prohibits the killing and taking of turtles but regulates the collection of turtle eggs via a licensing protocol.
- Melaka Fisheries (Turtles and Turtle Eggs) Rules 1989 and the Penang Fisheries (Turtles and Turtle Eggs) Rules 1999 which lists all four turtle species in Malaysia and provides for a licensed egg collection system.
- Johor Fisheries (Turtles and Turtle Eggs) Rules 1984, the Negeri Sembilan (Turtles and Turtle Eggs) Rules 1976 and the Kelantan (Turtles and Turtle Eggs) Rules 1978, all mention the order Chelonia, together with local names, and allow for the licensing of egg collection.

Strengths and weaknesses of Malaysia's legislation with regard to marine wildlife protection are summarised in **Table 3**.

Table 3: Summary of strengths and weaknesses in Malaysia’s marine turtle legislation

Strengths	Weaknesses
<ul style="list-style-type: none"> • Protected status for all CITES-listed species. • Coverage for parts and products. • Detailed list of prohibited activities, including import and export of protected species without a licence, possession of fish obtained illegally, and fishing and other activities within marine parks. • Prohibition of fishing with electricity, explosives and poisons. • Requirement for live aquatic mammals, turtles, Whale Shark and some species of clam that have been caught accidentally to be released and dead specimens reported. • Prohibited fishing in marine parks. • Permits and CITES documentation required for import and export of scheduled species. <i>Customs Act</i> requires permits for import and export of all animals and products. • Fishing licences required by local and foreign vessels. Licences required for hunting in Sabah and Sarawak, collection of turtles and eggs in Kedah and Terengganu. • Requirement for registry of fishing licences and permits and to record catch data if intended for export. • Management Authority may (but not required to) order confiscated specimens to be returned to their home countries. • Regulations provide standards for rescue centres. • Potential to prohibit mistreatment of wildlife. • Strong penalties for serious offences under <i>International Trade in Endangered Species Act</i> and in Sabah. • Specification of maximum and minimum sentences for some offences under <i>Customs Act</i> and Sabah’s <i>Wildlife Conservation Enactment</i>. 	<ul style="list-style-type: none"> • <i>National Parks Act</i> lacks detail, including offences and penalties. • <i>Fisheries Act</i> lacks detailed requirements on permitted equipment, by-catch mitigation, prohibited areas, closed seasons and other issues for protecting marine wildlife. • Minister or director responsible for implementation of <i>International Trade in Endangered Species Act</i>, <i>Fisheries Act</i>, and Sabah’s <i>Wildlife Conservation Enactment</i> may exempt anyone or any species from any or all provisions. • A CITES Management Authority may return specimens, equipment and evidence seized under <i>International Trade in Endangered Species Act</i> without specifying conditions. • Marine species not covered by <i>Wildlife Conservation Act</i> (2010). • <i>Fisheries Act</i> does not cover turtles, and many states lack measures to protect turtles. • No prohibition on indiscriminate fishing methods such as types of trawling or use of small mesh nets. • No requirement for TEDs. • No requirement for seized wildlife to be housed in a rescue centre, repatriated, or released into the wild. • No requirement for licences to fish outside EEZ or co-operate with international laws or laws of other states. • Mandatory collection of fisheries data only for crew nationality. • Low penalties for some offences under <i>Fisheries Act</i>; Sarawak’s <i>Wildlife Protection Ordinance</i>, <i>National Parks and Nature Reserves Ordinance</i>, and <i>Biodiversity Ordinance</i>; <i>Parks Corporation Enactments</i> in peninsular states; Kedah’s and Terengganu’s <i>Turtle Enactments</i>.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Penalties doubled for repeat offences under Sabah's <i>Wildlife Conservation Enactment</i> and <i>Parks Enactment</i> and Sarawak's <i>Wildlife Protection Ordinance</i>. Under <i>Wildlife Conservation Enactment</i>, use of a firearm and more than two accomplices in an offence results in doubled penalties. • Penalisation of accomplices under most legislation. • Managers of corporations responsible for offences committed by corporations under most legislation. For offences involving foreign vessels, higher fines for master and owner, who are liable for offences by crew, under <i>Fisheries Act</i>. • Low burden of proof for some offences under <i>Fisheries Act</i>, <i>Customs Act</i>, Sabah's <i>Wildlife Conservation Enactment</i>, Sarawak's <i>Wildlife Protection Ordinance</i>, Kedah's <i>Turtles Enactment</i> and Terengganu's <i>Turtles Enactment</i>. • Rewards for information leading to arrests and seizures under <i>International Trade in Endangered Species Act</i>, <i>Customs Act</i> and Sarawak's <i>Wildlife Protection Ordinance</i>. • All legislation states which ministry, department or other body is in charge of implementation. 	<ul style="list-style-type: none"> • Maximum fines for violations under <i>International Trade in Endangered Species Act</i> involving individual specimens are high, but maximum total fine only 10 times this amount. • Fixed penalties under Sarawak's <i>Wildlife Protection Ordinance</i>. • Most legislation allows some offences to be compounded by low fines. <i>Animal Welfare Act</i> does not specify amount of administrative fines. • Potential for gaps, inconsistencies and overlap created by omission of marine wildlife from <i>Wildlife Protection Act</i> (2010) and division of responsibility for marine wildlife and fisheries between federal and state governments. • <i>International Trade in Endangered Species Act</i>, <i>Fisheries Act</i>, and <i>Parks Enactments</i> of Johor, Perak and Selangor allow officials to return seized items if undefined "sufficient security" provided.

3.2.3 Viet Nam

The most important laws for marine wildlife protection in Viet Nam are the *Law on Environmental Protection* (2014), the *Biodiversity Law* (2008), the *Law on Marine and Island Resources and Environment* (2015), the *Fisheries Law* (2003) and the *Law on Customs* (2014). These provide the general framework for marine wildlife protection. The *Vietnam Maritime Code* (2015) and the *Law on the Vietnamese Sea* (2012) also include measures relevant to marine wildlife protection. These laws are implemented by numerous regulations issued by the Government, Prime Minister and ministries. Penalties for crimes and administrative violations are provided separately in *Penal Code No. 100/2015/QH13* and *Law 12/2017/QH14*, known as the *Amended Penal Code*.

Four species of marine turtles (Green Turtle, Hawksbill Turtle, Loggerhead Turtle and Olive Ridley) were first protected in Viet Nam in 2002 by Decree 48/2002/ND-CP but were later removed from this list of protected species when Decree 48 was replaced by Decree 32/2006/ND-CP. However, prior to the implementation of Decree 32, the domestic exploitation of five species of marine turtles became prohibited in Viet Nam by way of Decree 59/2005/ND-CP (the original four species plus Leatherback Turtles). Although Decree 59 has been amended twice, first by Decree 14/2009/ND-CP and then by Decree 53/2012/ND-CP, the relevant section covering exploitation of marine resources still stands today. Decree 59 prohibits harvesting any species considered to be "threatened by extinction" by the Ministry of Fisheries. In 2007, the Ministry of Fisheries and Ministry of Agriculture were combined into Ministry of Agriculture and Rural Development (MARD). The list of species "threatened with extinction" as issued by MARD can be found in Decision 82/2008/QD-BNN and includes the following five species of marine turtles: Hawksbill Turtle, Green Turtle, Olive Ridley Turtle, Loggerhead Turtle and Leatherback Turtle. Decree 59 is also supplemented by guiding document Circular 02/2006/TT-BTS which lists four species of marine turtle that are "prohibited from exploitation": Hawksbill Turtle, Green Turtle, Olive Ridley Turtle, and Leatherback Turtle. Although Circular 02 was amended in part by Circular 62/2008/TT-BNN, the list of marine turtles remains the same. Thus, by way of Decree 59 and its related and incorporated documents, these five species of marine turtle are prohibited from domestic

exploitation in Viet Nam. However, Decree 160/2013/ND-CP provides exceptions to this rule, but only for research and/or conservation purposes. Decree 160 allows exploiting, trading, buying, selling, gifting, renting, keeping, ranching, transporting, exporting, and importing marine turtles for research or conservation purposes with proper permit(s).

The international trade in marine turtles to/from Viet Nam is regulated by Decree 82/2006/ND-CP, Viet Nam's CITES implementing legislation. Viet Nam's legal system is confusing to navigate, with a proliferation of laws and implementing regulations at different levels, but as a whole the legislation prohibits and penalises activities harmful to marine wildlife, controls marine resource exploitation, and provides a solid framework to protect marine wildlife in trade. Strengths and weaknesses of Viet Nam's legislation with regard to marine wildlife protection are summarised in **Table 4**.

Table 4: Summary of strengths and weaknesses in Viet Nam's marine turtle legislation

Strengths	Weaknesses
<ul style="list-style-type: none"> • Protected status for all CITES-listed species. • Detailed list of prohibited activities, including possession of destructive fishing gear, destruction of habitat, and trade, import and export of wildlife without a permit. • Prohibition on using mass killing equipment, explosives, poisons, electricity and other destructive fishing methods. • Licences required for fishing vessels over half a ton. Permits required to exploit wildlife, collect protected wildlife for research, and import or export wildlife. • Requirement for vessels over half a ton to register and maintain a logbook. • Confiscated wildlife to be housed in rescue centres and eventually released into their natural habitat. • Specification of maximum and minimum sentences under <i>Penal Code</i> and <i>Law on Handling of Administrative Violations</i>. • Lists of aggravating and extenuating circumstances guide determination of penalties within a range on <i>Law on Handling of Administrative Violations</i>. 	<ul style="list-style-type: none"> • No requirement to release marine wildlife that has been captured accidentally. • Lack of details for logbooks and vessel registration, particularly regarding vessel compliance history. • No requirement to return confiscated wildlife that originated outside Viet Nam to country of origin. • Low administrative penalties. • Extenuating circumstances allowing reduced sentences include outstanding contributions in production, work, combat or study: a subjective criterion that could be abused. • Fines may be postponed or waived for offenders with financial difficulties. While important to recognise extra burden of penalties on poor people, this measure could be abused. • Powers of enforcement agencies generally weak and not clearly specified. • Not always clear whether the Ministry of Natural Resources and Environment (MONRE) or the Ministry of Agriculture and Rural Development (MARD- the Ministry that houses the Viet Nam CITES Management Authority) has jurisdiction. E.g., MARD and MONRE both responsible for issuing permits for import and export of wildlife. • Several different lists of protected wildlife in use, leading to confusion in enforcement and possibly contradictory measures.

Strengths	Weaknesses
<ul style="list-style-type: none"> Increased penalties under aggravating circumstances, including repeat offences, offences involving organised crime, abuse of power, and particularly serious consequences under <i>Penal Code</i>. <i>Decree on Administrative Sanction in Fisheries Field</i> provides increased penalties for crimes involving larger quantities of illegally collected wildlife or larger vessels. Prohibition of abuse of power under <i>Law on Environmental Protection, Fisheries Law</i> and <i>Penal Code</i>. <i>Law on Handling of Administrative Violations</i> prohibits persons tasked with sanctioning administrative violations from failing to do so or doing so improperly or too slowly. 	<ul style="list-style-type: none"> <i>Law on Handling of Administrative Sanctions</i> explicitly places burden of proof with those enforcing the law rather than suspects. <i>Fisheries Law</i> promotes offshore fishing, which could conflict with sustainable management of fisheries resources in offshore areas. Large number of regulations and issuing bodies leads to difficulty identifying active regulations.





The study was conducted through a combination of field observations, review of online platforms, interviews with stakeholders, analysis of trade and seizure data from third-party organisations and review of publicly-available literature. Data gathered from these methods focused mainly on information (past and present) relating to presence and prevalence of trade activities, the types of trade conducted, brief insights into perceived conservation impacts from the trade activities, and existing management practices. The data gathered were further analysed to identify trends in trade. Due to time constraints however, the number of areas surveyed for turtle trade in the three countries was limited to just key locations (hotspots) known to trade in turtle products based on past studies conducted in these three countries (TRAFFIC, 2004; Profana, 2007; TRAFFIC, 2009; TRAFFIC Southeast Asia, 2009). This is further limited in relation to any seasonality of trade, particularly in meat and eggs (e.g. poaching of marine turtles and eggs is higher during nesting periods, which varies for species in each country), considering that the current surveys were one-off. Due to this, a desktop search was undertaken to supplement the data collected through survey work. Further, 30 people from various stakeholders (e.g. government agencies, NGOs, individuals working on marine turtle research, etc) were contacted for trade information where possible. A complete list of stakeholders engaged is provided in Annex III. However, forthcoming data were limited, given the time requested for information to be provided, the short notice given in trying to meet up with stakeholders considered authorities on the subject, reluctance of stakeholders to provide illegal trade data, etc.

4.1 Seizure analysis

This study looked at seizure data relating to marine turtles for Indonesia, Malaysia and Viet Nam for the period between January 2015 and July 2019. This seizure period was chosen to enable an assessment of marine turtle trafficking dynamics that is reflective of a more current scenario. Seizure incidents that occurred prior to 2015 are described where relevant, but not included in the overall analysis. Data were extracted from various sources, including TRAFFIC seizure data records, media reports, grey literature and records from other non-governmental organisations (NGOs). Seizures concerning live or dead animals and/or their parts and derivatives that were made in Indonesia, Malaysia and Viet Nam were included in the analysis. Seizures concerning both national and international trade were included. Data extracted from each seizure, where available, included information on date and place of seizure, origin and destination as well as commodities and quantities seized. Due to the information gaps in some seizure records, not all recorded turtles in trade could be identified to the species level. For the purpose of this analysis, the reported seizure data were assumed to be accurate. Records were checked for duplicates, and where the information from seizures appeared similar, these were eliminated from the analysis to avoid inflation of the data. Where turtle species seized were provided within the records obtained, the species indicated were accepted as being true.

Where available, trade routes (both domestic and international) were extracted from seizure records. In this instance, a “seizure country” was defined as the country where the seizure took place. Seizure countries were classified as source, transit or destination countries. A “source country” was defined as the first known point of a trade route, a “transit country” was defined as a country which had functioned or was intended to function as both an importing and a re-exporting country in the trade route, and a “destination country” was defined as the last known or reported point of a trade route.

Given the inconsistent way seizures and enforcement actions are reported and recorded by the different countries in this study, it is unlikely that the available dataset is representative of the real number of incidents involving marine turtles that

have taken place during the research period. Due to the inherently covert nature of the illegal wildlife trade, its true extent is unlikely to be reflected by the reported seizure data alone. However, seizure data are inherently influenced by a number of biases, including varying levels of law enforcement in each country, different reporting and recording practices of both law enforcement and media, variability in NGO behaviour and advocacy, different levels of corruption, language biases, peak turtle nesting seasons, etc. Therefore, a higher number of seizure records in one country may not necessarily translate into higher wildlife trafficking levels in comparison to other countries.

4.2 Market surveys

Physical market surveys were undertaken in key locations by local consultants and partner organisations between January and July 2018 in Indonesia, Malaysia and Viet Nam (Figure 2). At each location, surveys were conducted by recording the types of turtle products offered for sale and prices (**Table 5**). Where possible, conversations were held with local traders, to gather insights into source and relevant trade dynamics, though no information on turnover rates was provided. Due to the timing of the commissioning and expected completion date, field research were not all conducted during the peak nesting season of April–August.

In Indonesia, a total of 61 locations known as turtle nesting sites or to have trade in turtle parts and products were visited i.e. eight in Java, 30 locations in Bali, 11 locations in Padang, West Sumatra and 12 locations in Sulawesi. These locations included turtle nesting beaches, hatcheries, tourist turtle attractions, local fisheries ports and markets. Locations in Bali included 18 souvenir and accessories shops, to assess the extent to which turtle shell products were still being sold.

In Malaysia, the states known (TRAFFIC Southeast Asia, 2009; WWF-Malaysia and Sabah Wildlife Department, 2018) to have an active trade in marine turtle products—Melaka, Sabah, Sarawak and Terengganu—were visited. Surveys were conducted over a span of 17 days at wet, dry and souvenir markets at each location. A total of 24 markets across 10 locations were surveyed, a summary of which is provided in **Table 5**.

In Viet Nam, physical market surveys for marine turtle products were conducted by Education for Nature-Viet Nam (ENV) between January and April 2018. During the physical survey a total of 436 outlets (including souvenir shops, markets, and jewellery shops) were visited in five cities: Hanoi, Ha Tien, Ho Chi Minh City, Nha Trang and Vung Tau (**Table 5**).



Figure 2: Locations of physical market surveys in Indonesia, Malaysia and Viet Nam between January and July 2018

Table 5: Physical market survey locations in Indonesia, Malaysia and Viet Nam between January and July 2018

Country	Dates	Locations	Venues	Number of Venues surveyed	Description
Indonesia	April–July 2018	East and West Java	Turtle nesting beaches, hatcheries and tourist turtle attractions	8	Locations included Pramuka Island, Harapan Island, Kelapa Dua Island, Pangumbahan Sukabumi, in West Java; Cemara Beach, Pantai Rejo, Banyuwangi, Sukamade Beach, Meru Betiri National Park, Ngagelan Beach Alas Purwo National Park, Boom Beach in East Java.
		Bali	Turtle nesting beaches, hatcheries and tourist turtle attractions	12	Beaches and shops visited in Kuta, Sanur, Ubud, and Gianyar areas of Bali.
			Souvenir shops (Kuta, Denpasar, Sanur and Ubud)	18	
		West Sumatra	Turtle nesting beaches, hatcheries and tourist turtle attractions	11	Padang and adjacent areas were visited to assess the current state of the trade there, particularly of turtle eggs, which were formerly sold there quite openly and in large quantities.
		Sulawesi	Turtle nesting beaches, markets, local fisheries ports	12	Locations included Morowali (Central Sulawesi), Polewali Mandar and Majene (West Sulawesi), and Minahasa (North Sulawesi), Wakatobi, Northern Buton, Bau-bau City, Kendari City, Northern Kolaka, Muna, Southern Konawe (Southeast Sulawesi)
Malaysia	April–June 2018	Sabah	Wet and dry markets and souvenir shops	15	Locations included Tawau, Semporna, Lahad Datu, Sandakan, Kota Kinabalu and Kudat.
		Sarawak	Wet and dry markets	5	Locations surveyed included Serikin and Kuching.
		Terengganu	Wet and dry markets and souvenir shops	3	Kuala Terengganu town.
		Melaka	Wet market	1	Klebang town.

Viet Nam	January– April 2018	Hanoi	Souvenir shops, markets, and jewellery shops	88	Undertaken by ENV and data shared with TRAFFIC for this study.
		Ha Tien		41	
		Ho Chi Minh City		139	
		Nha Trang		118	
		Vung Tau		50	

4.3 Online surveys

In Indonesia and Malaysia, online surveys were conducted over a one month period between 15th July and 15th August 2018 focussing on commercial portals advertising turtle products for sale and Facebook (**Table 6**). One hour each day was spent searching and gathering as many adverts as possible on marine turtle products offered for sale in each country. Data extracted from each advertisement, where possible, included location of seller, type of turtle product for sale, quantity and price. Search terms used during the online searches were in English, Malay/Indonesian and Mandarin (**Table 6**).

In Viet Nam, the online market survey for marine turtle products was conducted by ENV between 26th–27th March 2018 for seven hours each day (total of 14 hours). Five keywords were used for the survey (**Table 6**). The online survey included search engines and social media websites (exact number of surveyed platforms not provided).





Table 6: Online survey details conducted in Indonesia, Malaysia and Viet Nam, 2018

Country	Date	Key Terms Used
Indonesia and Malaysia	15th July–15th August 2018	In English: sea turtles, marine turtles, turtle meat, and turtle eggs In Local language (Malay/Indonesian): penyu, telur penyu, telor penyu, barangan penyu, antik penyu, daging penyu In Mandarin: 海龟 (sea turtle), 海龟蛋 (sea turtle eggs), 海龟肉 (sea turtle meat)
Viet Nam	26th–27th March 2018	In Vietnamese: Đồi mồi (Hawksbill Turtle), Rùa biển (marine turtle), Lược đồi mồi (bekko comb), Đồi mồi mỹ nghệ (bekko handicraft)

5.1 Marine Turtle Seizures

5.1.1 Seizure Records and Commodities Seized

A total of 163 marine turtle seizure records were obtained for Indonesia, Malaysia and Viet Nam between January 2015 and July 2019 (**Table 7**). Most seizure records obtained involved Indonesia (44.8%), followed by Viet Nam (30.7%) and Malaysia (24.5%).

Table 7: Number of seizure records involving marine turtles, parts and products that have occurred in Indonesia, Malaysia and Viet Nam between 2015 and up to July 2019

Country of Seizure	2015	2016	2017	2018	2019	Total
Indonesia	12	31	12	16	2	73
Malaysia	6	14	13	5	2	40
Viet Nam	7	18	10	14	1	50
Total	25	63	35	35	5	163

Source: Data were extracted from various sources, including TRAFFIC seizure data records, media reports, grey literature and records from other non-governmental organisations (NGOs). A diverse range of commodities were seized in the 163 records involving Indonesia, Malaysia and Viet Nam, broadly including eggs, whole specimens, shells and meat. A full breakdown of the commodities seized in the three countries is provided in **Table 8**. Of these, marine turtle eggs were the most abundant

commodity seized, particularly in Malaysia. This was followed by seizure of live marine turtles (mostly in Malaysia) and turtle shells (mostly in Indonesia). Figure 3 illustrates a summary of seizures and commodities of marine turtles, parts and products over this period.

The species of marine turtle involved was not specified in all seizure records (Figure 4). However where this information was available (n=104 incidents), Green Turtle was the most frequent species seized, reported in 35% of incidents, followed by Hawksbill Turtle, reported in 18% of incidents. Overall, this amounted to a minimum of 2,354 whole specimens, quantified in terms of live, dead and taxidermied commodities seized which represent whole animals. Of this, Green Turtles had the highest numbers with a minimum of 399 whole animals, followed by Hawksbill Turtle with 173, Leatherback Turtle with 72, and Olive Ridley Turtle with 20. It was not possible to determine how many whole animals were derived from the quantity of meat and shell products seized. A breakdown of commodities seized by species identified, where this was available, is provided in **Table 9**.

Table 8: Marine turtle commodity types and total quantities seized in Indonesia, Malaysia and Viet Nam between 2015 and July 2019

Commodities seized	Indonesia	Malaysia	Viet Nam	Total
Eggs	14,528	75,062	1,626	91,216
Whole specimens				2,354
Live	597	1,201	82	1,880
Dead	63	225*	12**	300
Taxidermied/stuffed	18	0	156	174
Shells				2,744
Unprocessed shells (pieces)	1,014***	55	0	1,069
Unprocessed shells (kg)	609	127	3	739
Processed shells (souvenirs, jewellery)	936	0	0	936
Meat (kg)	1,606	153	8	1,767

Source: Data were extracted from various sources, including TRAFFIC seizure data records, media reports, grey literature and records from other non-governmental organisations (NGOs). Note: At least four seizure records did not have quantities of seized products reported i.e. *one seizure in Malaysia of turtle organs; **one seizure in Viet Nam involving a 40ft container containing dead and taxidermied marine turtles as well as dried lizards that reportedly numbered in the thousands; and ***two seizures in Indonesia of Hawksbill Turtle shells.

MARINE TURTLE SEIZURES IN INDONESIA, MALAYSIA AND VIET NAM, JANUARY 2015 – JULY 2019

Total number of seizures



Commodities

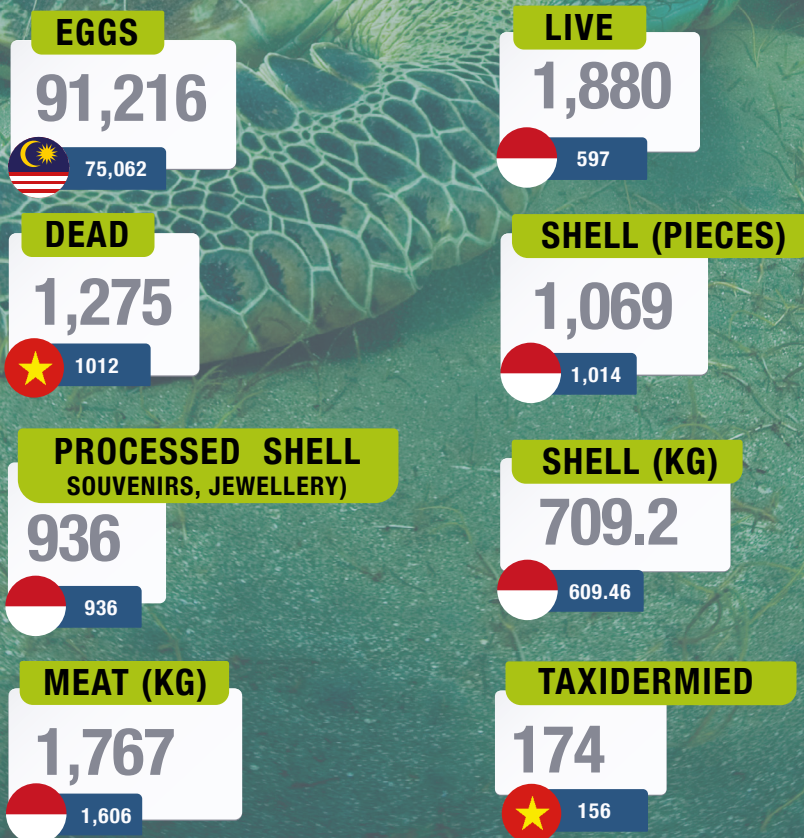


Figure 3: Summary of marine turtles, parts and products seized from January 2015–July 2019.

Source: Data were extracted from various sources, including TRAFFIC seizure data records, media reports, grey literature and records from other non-governmental organisations (NGOs).

Table 9: Commodities seized per species between 2015 and July 2019

Commodity Seized	Green Turtle	Hawksbill Turtle	Leatherback Turtle	Olive Ridley Turtle	Unknown/ Unreported
Live	364	39	71	18	1,291
Dead	23	52			225
Taxidermied	12	82	1	2	78
Shell (pieces)	77	964			23
Shell (kg)	127				612
Shell (processed)		382			554
Eggs	22,441			150	68,625
Meat (kg)	1009				758

Note: Not included in the table is a further two seizures in which all four species were identified as being seized with a total of 95 live individuals, however a breakdown for each species was not provided, in which case numbers will differ from the total of whole individuals seized in the text above.

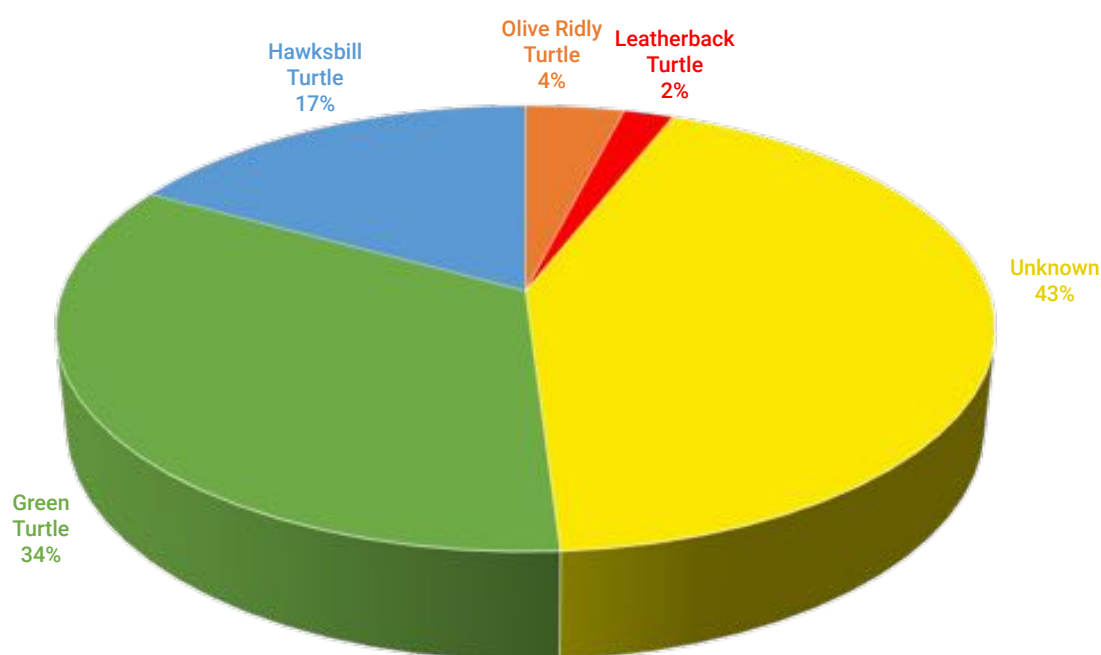


Figure 4: The proportion of marine turtles seized by species in Indonesia, Malaysia and Viet Nam between 2015 and July 2019. Based on a total number of 163 incidents although note that in some seizure records more than one species of marine turtle is reported as seized which is included in the percentage reported for each species.

Seizures outside Indonesia, Malaysia and Viet Nam that implicated them

There were at least eight other recorded seizures that took place outside the three countries from 2016–2017, but implicated Indonesia and Viet Nam in the international trafficking of marine turtles. Six of these occurred in China in which both Indonesia and Viet Nam were the reported origins, and the remaining two occurred in France and the Philippines respectively, with Viet Nam reported as the intended destination in both cases (**Table 10**).

French authorities estimated that the 496 kg of Hawksbill shells seized represented a minimum of 380 marine turtles. This, in combination with the taxidermied, live and dead turtles seized (**Table 10**) are estimated to amount to a minimum of 782 Hawksbill Turtles seized from these eight incidents alone. These seizures are provided here to illustrate the presence of international trafficking of marine turtles in the Asian region, however they are excluded from in-depth analysis considering there was insufficient time to conduct a thorough search of seizures that have occurred globally but which indicate Indonesia, or Viet Nam as either source, destination or transit countries.

Table 10: Recent examples of seizure records that occurred outside of Indonesia and Viet Nam but that implicate both countries in the international trafficking of marine turtles

Year	Country of Seizure	Location of seizure	Origin of shipment	Destination of shipment	Commodity seized	Quantity	Species
2017	France	Charles de Gaulle Airport	Haiti	Viet Nam	shell	496 kg (~380 whole)	Hawksbill Turtle
2017	China	Fangchenggang (Guangxi)	Viet Nam	China	taxidermied	38	Hawksbill Turtle
2017	China	Fangchenggang (Guangxi)	Viet Nam	China	taxidermied	2	Hawksbill Turtle
2016	China	Xiamen	Indonesia	China	taxidermied	1	Not specified
2016	China	Fangchenggang (Guangxi)	Viet Nam	China	live	153	Hawksbill Turtle
2016	China	Xiamen	Indonesia	China	shell	33	Hawksbill Turtle
2016	China	Fangchenggang (Guangxi)	Viet Nam	China	dead	109	Hawksbill Turtle
2016	Philippines	Palawan	Philippines	Viet Nam	dead	100	Hawksbill Turtle

5.1.2 Hotspots and Routes

A summary of seizures in the three countries between January 2015 and July 2019 is provided in **Figure 5**. Of the total 70 incidents recorded in Indonesia, Bali was the most frequent seizure location with 24% (n=17 incidents) (**Table 11**). This mostly involved live turtles and meat. Aside from this, West Kalimantan, East Java, East Kalimantan and Nusa Tenggara East were also notable in making seizures, involving a combination of all commodity types, except meat.

Table 11: Main seizure locations in Indonesia by province, between January 2015 and July 2019

Indonesia	2015	2016	2017	2018	2019	Total
Bali	4	7	2	4		17
West Kalimantan	1	5		1		7
East Kalimantan		3		2		5
East Java	3		1	1		5
Nusa Tenggara East		1	4			5
South Sulawesi		3		1		4
Papua		2		1		3
Sulawesi		2		1		3
North Sulawesi	1	2				3
Banten			1	1		2
Maluku			2			2
Central Sulawesi		2			1	3
West Sulawesi			2			2
Aceh				1		1
Jakarta	1					1
Central Java		1				1
West Java	1					1
Central Kalimantan				1		1
Riau Islands				1		1
Nusa Tenggara West		1		1	1	3
West Papua		1				1
Bengkulu		1				1
South Sumatra		1				1
Total	11	32	12	16	2	73

In Malaysia, the majority of seizures occurred in the state of Sabah, with Sandakan being the most frequent seizure location (**Table 12**). All incidents in Sandakan involved the seizure of eggs (n=23 incidents). In at least 12 of these incidents, the seizures were made off the Sandakan coast.

Table 12: Main seizure locations in Malaysia by state, between January 2015 and August 2019

State	2015	2016	2017	2018	2019	Total
Sabah	5	14	12	3	1	35
Sarawak	1			1	1	3
Terengganu			1			1
Total	6	14	13	4	2	39

The Province of Vung Tau and Ho Chi Minh City in Viet Nam were the most frequent seizure locations, with 10 and 8 incidents respectively of a total of 42 records (**Table 13**). This mostly involved the seizure of eggs, taxidermied and live turtles.

Table 13: Marine turtle seizures in Viet Nam by province between January 2015 and July 2019

Province	2015	2016	2017	2018	2019	Total
Vũng Tàu		5	4	1		10
Ho Chi Minh	1	5	2			8
Ha Long	1	2				3
Quảng Ngãi		1	1	1		3
Kien Giang Province				5	1	6
Binh Thuan	2					2
Cà Mau				2		2
Da Nang		1		1		2
Bắc Kạn	1					1
Bac Lieu		1				1
Bến Tre				1		1
Ha Noi	1					1
Hai Phong	1					1
Nha Trang		1				1
Phú Quý Island		1				1
Phan Rang–Tháp Chàm			1			1
Phú Yên			1			1
Quảng Nam				1		1
Thái Bình		1				1
Thừa Thiên–Huế			1			1
Unknown				2		2
Total	7	18	10	14	1	50

When assessing seizures made in the three countries as well as those made outside but implicating them, at least 44 trade routes were recorded between January 2015 and July 2019. This involved both domestic trade routes, mostly involving Indonesia and Malaysia (**Figure 6**) and international trade routes (**Figure 7**).

In terms of domestic trade routes, these were mostly apparent for Indonesia (n=18 incidents) which largely involved live marine turtles and eggs. The most frequent trade routes used were from Madura Islands to Bali (revealed in at least 6 incidents, all involving live turtles) followed by from Riau Islands to West Kalimantan (revealed in at least 3 incidents, all of turtle eggs). From the 17 incidents, sea was the more common (76%) mode of transporting marine turtle commodities within Indonesia, with the remainder being transported by air. In only one incident in Malaysia a domestic trade route was reported—the shipment of 365 eggs by air from Kota Kinabalu, Sabah (East Malaysia) to the state of Kelantan in Peninsular Malaysia.

There were 26 incidents revealing the international trafficking of marine turtles, parts and derivatives. Of these, China was implicated as a destination country in at least 11 incidents, with origins reported as Indonesia (n=7 incidents) and Viet Nam (n=4 incidents). Shipments from Indonesia were via air and sea whereas for Viet Nam it was mostly by land, intercepted by Chinese customs at the Guangxi border. Malaysia was implicated as a destination country in at least ten incidents—all eggs, totalling 52,840 eggs. Nine of these seizures took place in Sabah, mostly reported to be from the Philippines with the exception of one incident reporting that the eggs were heading to Kelantan in Peninsular Malaysia. In the one incident involving Indonesia, marine turtle eggs were being smuggled from Riau Islands to West Kalimantan by sea and from there by land across the border into Sarawak. The eight incidents involving the Philippines as a source were of turtle eggs, meat and shells to Sabah via sea. Viet Nam was also implicated as a destination country in at least six incidents, with origins mostly reported as Malaysia (n=3 incidents) involving illegal trade in both live and dead marine turtles, followed by Haiti, Indonesia and the Philippines with one incident each. In all incidents, shipments were made via sea, barring the one shipment from Haiti which was intercepted at the Charles de Gaulle Airport in France.



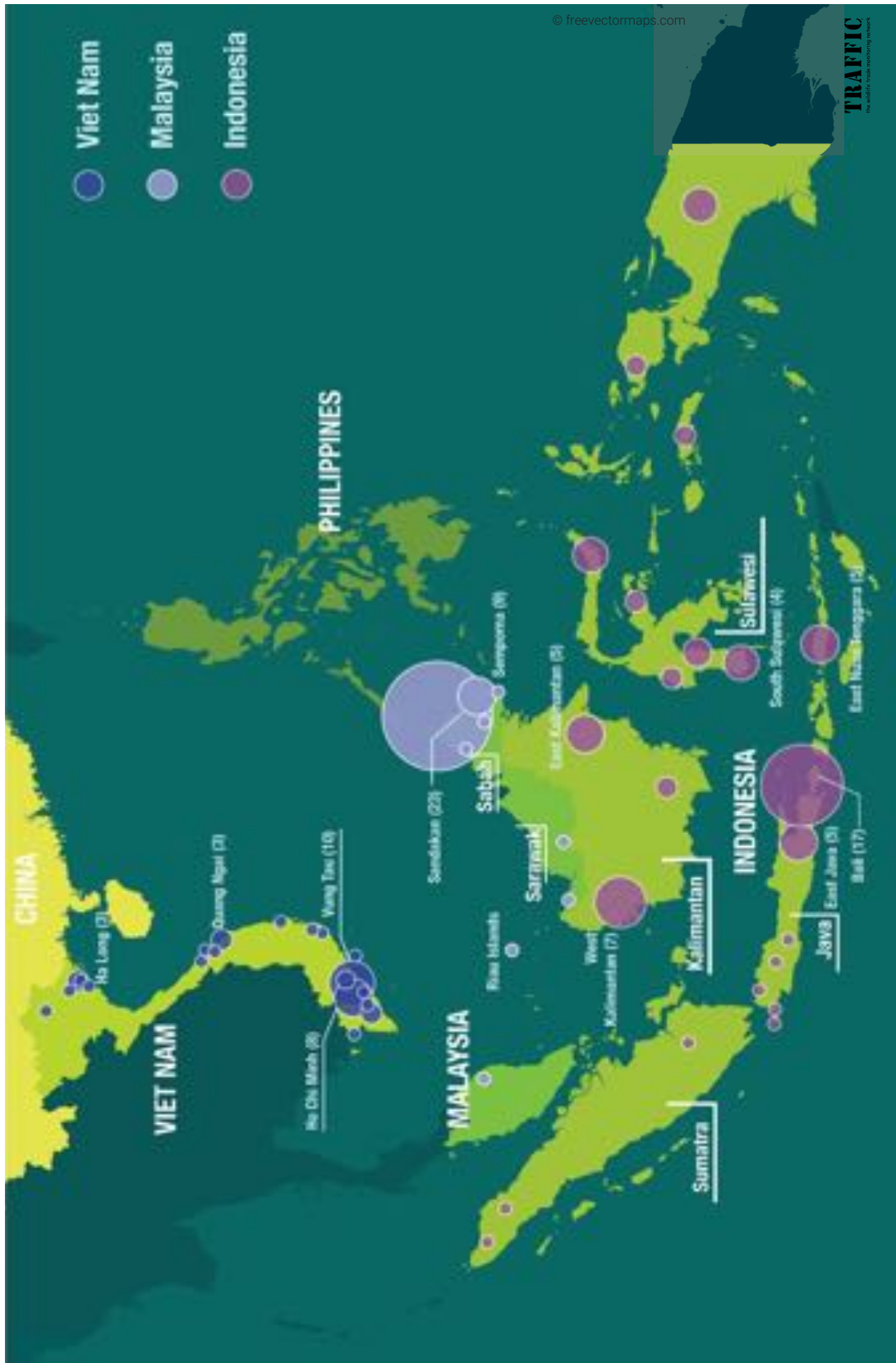


Figure 5 Location of seizures for Indonesia, Malaysia and Viet Nam between 2015 and July 2019. Numbers in brackets refer to the number of seizures in that location. Where no numbers are provided, this means there are two or less incidents for that location



Figure 6: Domestic trade routes for Indonesia and Malaysia based on seizure data between 2015 and July 2019. Thicker arrows refer to that particular route being mentioned three or more times in seizure records, while thinner lines refer the route being mentioned once.



Figure 7: International trade routes for Indonesia and Malaysia based on seizure data between 2015 and July 2019.

5.2 Physical Market and Online Surveys

5.2.1 Indonesia

Of the 61 locations and outlets visited, only 5 locations sold marine turtle products openly, in Bali and in Sulawesi. Of the 18 souvenir shops visited, only two shops in Gianyar, Bali were found to be selling products made from turtle shells (**Table 14**). The turtle products were relatively expensive as they were covered in silver and mother of pearl (Photo 1). There was no other evidence of turtle shell products in other souvenir shops visited in Bali.

Table 14: Shops found selling ornaments made out of turtle shells in Bali, May 2018

Date	Location	Types of items recorded for sale	Number of Items	Price Per item
27th May 2018	Gianyar	Small ornament in the shape of a turtle	1	IDR5,000,000 (~USD355)
		Ornaments made from preserved medium and large turtles	2	"Not for sale"
27th May 2018	Gianyar	Small ornament in the shape of turtles	2	IDR5,280,000 (~USD380)

Photo 1 Ornamental taxidermied turtles (right and left) with silver overlay, Bali 2018



Generally, the open sale of marine turtle products appears to have either declined or have become more discreet in Sulawesi. This is likely due to greater enforcement effort including collaborative work between the local government, police, NGOs and local communities. Of the 12 locations visited, turtle products were found in three locations and included dead turtles for taxidermy, meat, eggs and products such as rings and bracelets made from turtle shells (**Table 15**).

Table 15: Marine turtle products for sale in Sulawesi, July 2018

Location	Sites visited	Types of items recorded for sale
North Sulawesi	-Tomohon Market -Minahasa 'The Extreme' Market	Turtle meat and body parts
West Sulawesi	-“Pasar Sentral” Wonomulyo Market	Turtle eggs
Southeast Sulawesi	-Wameo Market -Kamali Beach	Bracelets and rings

Although not visited during market surveys, Mentawai islands and East Nusa Tenggara are reported to be a significant source of turtle eggs, meat and shell products for sale as the islanders here still have a strong traditional culture of catching and consuming turtles (Damanhuri *pers comm*, 2018; WWF-Indonesia *pers comm*, 2018) **(Photo 2)**.

Photo 2 Marine turtle products for sale illegally in Mentawai Islands in Sumatra (all photos obtained from local sources i.e. H. Damanhuri (2015) and Khalis (2018))



(i) Preparation of turtle meat



(ii) Turtle shell bracelets for sale



(iii) Turtles to be slaughtered for their meat

It would appear that during the past 15 years, in an attempt to address the marine turtle trade problem in Indonesia, the establishment of turtle hatcheries have increased around the country. A list of turtle hatcheries visited during the market surveys and a brief description of each is provided in Annex IV. In general, some of these establishments are more successful than others i.e. some are intended for conservation purposes while others as purely commercial enterprises with little conservation value. In the case of the latter, such centres have been established for tourist entertainment and as such likely not only to be detrimental to the turtles they keep but also to wild populations with the potential transfer of diseases from the release of captive turtles. Furthermore, such centres may also be conduits through which turtle eggs and meat are more easily sold (Firliansyah *et al.*, 2017); it is not known to what extent this may be currently happening.

The open availability of products made out of turtle shells is more apparent on online markets within the country, compared to physical markets. Over a one month span, a minimum of 607 individual items and 400 g of eggs were offered through 213 advertisements recorded on commercial trade platforms (**Table 16**). A variety of products were recorded although this mostly involved bracelets but also dried turtle egg powder, reportedly used as fish bait, and turtle oil, advertised as being good for treating skin problems such as acne, eczema, and other allergies. Most of the adverts were found on commercial internet trade platforms—Lazada followed by Shopee, and to a much lesser extent, Tokopedia and Prelo. At least 106 traders were recorded, though there was little information provided in terms of seller location (only 27 adverts had seller location). Jakarta was the most frequent location mentioned, noted in 14 adverts.

Table 16: Marine turtle products being advertised for sale online, July to August 2018

Type of Products	Price	Quantity	No of Sites	No. of traders
Belt	IDR1,700,000 (~USD120)	1	1	1
Bracelet	IDR25,000–IDR450,000 (~USD1.50–USD31.50)	207	5	14
Dried turtle egg powder	IDR4,000 - IDR54,000 (~USD0.30–USD7)	172 packets	3	43
Earrings	IDR44,600–IDR194,600 (~USD3–USD13)	20 pairs	2	7

Eggs	IDR23000 (~USD1.50)	400 g	1	1
Fan	IDR750000–IDR1100000 (~USD52–USD75)	4	2	2
Hair Clip	IDR130900 (~USD9)	1	1	1
Hair Pin	IDR50000 (~USD3.40)	19	1	1
Necklace	IDR50000–IDR450000 (~USD3.40–USD31.50)	24	2	3
Ring	IDR1000–IDR65000 (~USD0.60–USD4.50)	31	2	4
Spectacles	IDR29000–IDR292000 (~USD2–USD20)	13	3	10
Taxidermied	IDR600000–IDR12000000 (~USD42–USD840)	7	2	5
Turtle Oil	IDR18500–IDR199000 (~1.20–USD14)	107	3	13
Watch strap	IDR17500 (~USD12)	1	1	1
TOTAL			29	106

Note: USD exchange rate based on <https://www.oanda.com/currency/converter/> as of August 2018. Quantities provided should be interpreted with caution as it was not always possible to determine duplicates where products such as dried turtle egg powder and turtle oil were advertised for sale. This is similar with jewellery where quantities were not stated but just a picture provided. It should also be noted that some traders sell more than one type of turtle product particularly where jewellery items like necklace, bracelets and rings are concerned.

5.2.2 Malaysia

Marine turtle products were found in three of the four states surveyed being sold by 18 vendors (**Table 17**). The local trade of marine turtle parts and products appears largely to involve turtle eggs while turtle meat consumed locally appears to cater mainly to foreign tourists. Anecdotal information also seems to suggest that turtle meat from Malaysia is now being traded to China. While live turtles were not observed for sale during market surveys, the trade of live turtles has been noted in Sabah, where turtles are hunted and sold first to middlemen and then foreign fishermen, with prices ranging from MYR100/kg (USD25) per kilo for dried meat, up to MYR1,300 (USD327) for small-sized or juvenile turtles (WWF-Malaysia and SWD, 2018). Open trade was recorded in at least three states—Sabah, Sarawak and Terengganu, with an estimated minimum of 1,250 eggs offered (**Table 17**). Eggs appeared to be offered at the lowest price in Sarawak (where trade is illegal), at MYR2 (USD0.50) per egg, with prices of up to MYR6 (USD1.50) per egg in Terengganu where the egg trade is legal. Domestic trade appears to be mainly focused on the selling and purchasing of turtle eggs and meat for consumption. (**Table 17**).

Table 17: Summary of results from the physical market survey of turtle products in Malaysia between April and May 2018

State	Venue type/ locality	Number of outlets visited	Type of items recorded for sale	Quantity	Price
Melaka	Wet market	1	None	NA	NA
Sabah	Wet and dry markets	14	None	NA	NA
	Souvenir shops	3	None	NA	NA
	Roving traders*	Up to 10 traders were observed in Sandakan; 1 to 2 in other towns.	Eggs	Approx. 50 eggs/trader	- RM3.50/egg (fresh) (USD0.90) - RM5.50/egg (boiled) (USD 1.40)
Sarawak	Wet and dry markets	4	Eggs	Approx. 50 eggs (only observed at one vendor in Serikin market)	- RM20 (USD0.50) for ten eggs (only sold in batches of 10)
	Souvenir shops	1	None	NA	NA
Terengganu	Wet and dry markets	2	Eggs	Approx. 100–150 eggs/vendor (at least 7 vendors observed selling turtle eggs)	- RM4 - RM6/egg - (USD1 - USD1.50)
	Souvenir shop	1	None	NA	NA

Note: * In all of the areas surveyed in Sabah, trade of turtle eggs is conducted covertly with traders comprising individual traders with no established base of sale. Traders typically roam around town approaching potential buyers through the “OK” sign, which is commonly understood to refer to availability of turtle eggs for sale. USD exchange rate based on <https://www.oanda.com/currency/converter/> as of 26th June 2018.

Between 15th July and 15th August 2018, only one post was recorded during the survey on commercial trade portals and Facebook offering one bracelet for sale by a seller located in Selangor, being sold for MYR90 (USD22). Outside this research period, a 21-hour snapshot research, conducted in June 2018 over one week across 18 sites found only turtle eggs being offered—these offers were posted on Facebook. Compared to the single post offering the bracelet, the June survey found no evidence of organised trading of turtle eggs present, with all trade offers made by individuals on an ad-hoc basis. For the most part, trade observed online from the June survey was located in the east coast Peninsular Malaysia states of Kelantan and Terengganu, with some from Sabah. Eggs were offered on an individual trader’s page with prices ranging from RM1 (USD0.25) to RM5 (USD1.25) per egg with would be buyers required to collect the eggs in-person at a designated location. The volume of eggs being offered for sale online seems small and is conducted on an opportunistic basis with typical offers ranging from 10 to 50 eggs.

Aside from the demand for turtle eggs for consumption, there does not appear to be much demand for products made of turtle shells or stuffed turtles in Malaysia. Online trade, although it found some turtle eggs offered for sale, and the one turtle shell bracelet, appeared to be very minimal. These findings correspond with the market survey results.

5.2.3 Viet Nam

Marine turtle products were observed for sale in 39 of the 436 outlets surveyed by the ENV. Most of these were observed in Ha Tien (n=9 outlets), Ho Chi Minh City (n=9 outlets) and Nha Trang (n=10 outlets). However, Ha Tien (23%) and Vung Tau (12%) had a higher proportion of surveyed outlets selling marine turtle products (**Table 18**).

Table 18: Locations in Viet Nam observed selling marine turtle products between January and April 2018

Location	Outlets Surveyed	Outlets with turtle products (No.)	Outlets with turtle products (%)
Hanoi	88	5	5.7%
Ha Tien	41	9	22%
Ho Chi Minh City	139	9	6.5%
Nha Trang	118	10	8.5%
Vung Tau	50	6	12%
TOTAL	436	39	8.9%

Source: ENV, 2018. Note: Surveys by ENV were still on-going and as such they were unable to share quantities of items recorded for sale in time for this study.

Most of the products observed for sale were made from Hawksbill Turtles with a small number made from Green Turtles (these however were not specified). No other species of marine turtle were positively identified on the market. The products observed were mostly small personal items (bracelets, fans, combs, pendants) except for trophies (indicating whole preserved specimens). Although the absolute number of items observed was not available, bracelets were most frequently observed (in 31 outlets), followed by trophies (in 15 outlets).

Similar findings were observed by TRAFFIC in 2016, 2017 and 2018, during general physical market monitoring within Viet Nam. At least 199 marine turtle products were offered for sale in five cities in Viet Nam (**Table 19**) at 15 different outlets. Notably, 11 of those outlets were observed offering marine turtle products on more than one occasion, with at least two outlets offering products on four occasions. All the products observed were from Hawksbill Turtles and most of these were either bangles or bracelets (n=148).

Table 19: Marine turtle products observed for sale in four cities in Viet Nam between 2016, 2017 and 2018

Location	No. of Products
Ha Long	13
Hanoi	87
Ho Chi Minh City	83
Mong Cai	2
Nha Trang	14
TOTAL	199

Source: TRAFFIC, unpublished data

During the online survey conducted by ENV, a total of 25 individuals (unique online accounts) were found to be selling marine turtle products online via 42 different advertisements/posts. As with the physical market, most of the products observed for sale online were small personal items (bracelets, fans, glasses, fingerpicks) in addition to trophies. Meat was observed for sale on one occasion (quantity not provided). No information was provided regarding the species or the absolute number of products observed.



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6.1 Domestic Trade Dynamics

6.1.1 Indonesia

The following information is based on information obtained through conversations and discussions with relevant stakeholders as well as data extracted from market surveys, seizure data and existing literature to provide an understanding of the trade dynamics related to marine turtles in Indonesia.

The trade of marine turtles and their products appears to be widespread in Indonesia with turtle eggs, meat and shells still in demand locally. Stricter enforcement and media coverage of seizures is thought to have led to greater awareness among the general public about the protected status of marine turtles. This appears to have driven the trade in live turtles, meat, eggs and shell products largely underground with accurate information now much harder to come by. Regardless, the widespread numbers of reports from throughout the archipelago indicate that this trade continues. Similarly, the open sale of turtle shell products appears to be limited in physical markets, compared to TRAFFIC's previous surveys in 2009. However, the online survey revealed an active trade in marine turtle products such as jewellery made from turtle shells, fish bait powder made from dried turtle eggs and turtle oil.

While it is more difficult to identify individual trade "hotspots" for export, big cities with ports, and smaller ports and harbours everywhere provide easier trade routes than using flights. A number of seizures occurring within Indonesian waters with West Sumatra, Java, Kalimantan, Sulawesi, and further east, in Papua also highlight these areas as main trading hubs (See Section 5 for more information on seizures).

Local consumption and sales of marine turtles, eggs and products are reported to be taking place at roadside stalls and village/small town markets nearer to the nesting beaches and ports where fishing boats might be able to bring live and dead turtles ashore. It is reasonable to assume that, in most places where turtles are nesting or feeding, there will be some local consumption and/or sale of meat and eggs. As mentioned above, the coasts of West Sumatra, Java, Bali, Kalimantan and perhaps to a lesser extent but still significant, Sulawesi, Maluku and Papua, have trade hubs in the bigger cities. These areas are likely being supplied (mostly by boat) from the thousands of smaller islands.

Another trend that may be of concern is the sale of meat from freshwater softshell turtles (Trionichidae) as marine turtle meat. Given the unprotected status and captive breeding of many softshell turtle species, together with the confusion among the public about the differences between land turtles (*kura kura*), softshell turtles (*labi labi/bulus*) and marine turtles (*penyu*) and growing public awareness that marine turtles are not allowed to be collected and used as meat, highlights the potential threat/exploitation of other turtle species to meet market demand for marine turtle meat (Anon *pers comm*, 2018).

Following the increased enforcement of regulations relating to the sale and consumption of turtles and their products, some communities (notably in Bali) have opened "turtle attractions" that attract large numbers of fee-paying tourists. Permits are issued by BKSDA (the Nature Conservation arm of the Government), and these facilities may include hatcheries and large numbers of young and adult turtles. To obtain the necessary permits, facilities are established for the purpose of conservation, although this is not always the case (**see Annex IV**).

On a smaller scale, but no less important, are reports of traditional practices to capture specimens, where hunting expeditions targeted at marine turtles are sometimes practiced⁶. Various methods are used offshore including all sorts of nets, or by spearing the turtle from above through the carapace (shells of turtles caught in this way have one or more characteristic holes in the carapace where the spear has penetrated). Nesting turtles are also caught and butchered either before or after laying their eggs. This reflects the widespread problem the authorities have in convincing local people to change long-established traditional practices.

A summary of trade insights in key areas in Indonesia is provided below.

Kalimantan

Lying geographically close to other Asian countries, Kalimantan (Indonesian Borneo) presents many opportunities for illegal sales and smuggling. With its extensive borders and boundaries in both land and sea, and relatively low human population densities, the Indonesian part of Borneo is difficult to patrol and monitor effectively. Its proximity to Sumatra and the many small islands in between make it one of the main hubs for marine turtle trade, and also a conduit for export of turtle products to other countries. Kalimantan has been highlighted previously as a hotspot for egg collection in the Southeast Asian region with significant amounts being exported to East Malaysia (Sabah and Sarawak) (IOSEA, 2014). It would appear this is still the case with at least eight seizures recorded in Kalimantan between 2015 and May 2018 amounting to over 13,200 marine turtle eggs seized.

The trade in souvenirs made from marine turtle shells is reportedly also on the rise in East Kalimantan (Profauna, 2015). Based on market observations by Profauna in June 2015, over 700 marine turtle products from Hawksbill Turtle shells were observed for sale in Berau (Aji Dilayas market and two shops in Tanjung Redeb), East Kalimantan. It included bangles, necklaces and bracelets, selling from IDR10,000 to IDR70,000 per item. Turtle eggs were also reported to be sold in the market. Prior to this, in October 2014, Profauna reported the sale of Hawksbill Turtle shell products in the same area to the authorities and as a result, sales temporarily decreased up until February 2015. However, in June 2016, marine turtle products were once again evident for sale in the area (Profauna, 2016). In 2016, there were at least two seizure records in Kalimantan of 135 souvenir products made out of marine turtle shells and two taxidermied marine turtles⁷.

Sumatra

According to several reports, poaching of Green Turtles at sea in Sumatra for local meat consumption was still rampant as of 2011. The west coast of Sumatra, from Aceh in the northwest to Lampung in the Southeast, together with hundreds of offshore islands, has numerous marine turtle nesting beaches. Until relatively recently, trade of all kinds from towns and cities on the north and west coasts towards the east and inland was mainly by road. With increased numbers of internal and international flights operating from cities such as Padang, there has been an increased frequency of turtle products—particularly eggs, being transported to other parts of Indonesia and overseas to neighbouring Malaysia. Because of the predominantly Islamic culture in Sumatra, the eating of turtle meat is forbidden (*haram*). However, turtle eggs appear to be collected and eaten by Muslims almost everywhere they are found. Consumers of turtle meat on the other hand are mostly non-Muslims. There were only three recent seizure records for Sumatra. Two of these occurred in 2016 involving the seizure of 20 kg of marine turtle shells and one taxidermied marine turtle specimen. The third incident occurred in 2018 involving the seizure of 59 Green Turtle eggs from a local fishermen.

Java

Java appears to be a hotspot for marine turtle poaching and trade particularly in eggs and meat. Turtle nesting beaches are recorded in many places along the coast of Java. In May 2018, eight sites were visited in Java to assess the current state of turtle management there. Poaching of turtle eggs was reported from all sites. There is evidence to suggest that some of this may be to meet demand in Bali based on seizure data. Increased surveillance at the narrow ferry crossing point from Banyuwangi in east Java to Gilimanuk in northwest Bali has resulted in increased seizures of many kinds of illegal goods, including turtles. There is also anecdotal evidence that suggests that turtle eggs were being collected along the south Java coast and then sold to traders who in turn resold the eggs to turtle hatcheries in Bali. Mortalities during collection, holding and transport are thought to be very high. In 2016, local Quarantine Officers seized two live Green Turtles and 150 kg of turtle

6 <http://www.mycoraltriangle.com/coralweb/stories/details.aspx?id=18>

7 <https://www.turtle-foundation.org/en/profauna-news-officials-seized-hundreds-of-sea-turtle-shell-based-souvenirs-from-market-in-berau-east-kalimantan/>

meat in Banyuwangi which were being carried in a pickup truck on their way to the ferry. The turtles are said to have come from Pulau Raas (off Madura island, off the northeastern coast of Java), and were on their way to Bali to be sold. In January 2018, several traders were caught selling turtle meat, bought from sellers from Pasar Anom, East Java.

Bali

Bali presents a special case in the story of the marine turtle trade, because, unlike Muslims, Balinese Hindus have no religious taboos against eating turtle meat. On the basis that turtles were a “necessary” part of Hindu ceremonies (traditional practices are part of an oral tradition, and no written evidence has yet been discovered to support this), Bali has long been a traditional centre and hub for the turtle trade—particularly that of live turtles. It was said then that if one ordered beef to eat in Bali in those days, it was probably more likely to be turtle meat.

In the years 1969–1999, before turtles were officially protected, an estimated 19,628–30,121 animals were collected per year⁸. Bali was probably the centre of the largest domestic exploitation of sea turtles in the world, as well as being the leading exporter of sea turtle products (Barr, 2001; Troëng and Drews, 2004; IOSEA, 2014). Bali had the highest number of seizures recorded for Indonesia between 2015 and May 2018 mostly involving live marine turtles and to a lesser extent marine turtle eggs and meat with evidence indicating this feeds both a domestic and international market (see section 5.1.2).

In 2018, the turtle meat trade has become much more secretive. With fewer turtles being openly available, (likely due to perceived stricter enforcement, greater awareness of the law, and possibly also because fewer turtles are in the sea or on the beaches) it would appear that the trade has become more opportunistic in nature. Locals report that if a turtle appears, and there is less risk of being caught, it will be taken and slaughtered for its meat (Anon *pers comm*, 2018). Information from a villager in Tuban, south Bali (near the airport) says that local people in Kedonganan (south of the airport) will contact each other if there is turtle meat available for sale.

Several attempts have been made to start community-based turtle watch and protection schemes, including one in the main tourist area of Kuta beach. Nevertheless, turtles continue to be used in ceremonies, and a number of locations still have captive turtles for tourists to see and/or release (although at least some of them may actually be being used as holding areas/transit places for turtles to be used in ceremonies or traded). During the past 15 years, several local attempts have been made to address the marine turtle trade problem by establishing turtle hatchery programmes. In 2018, 12 turtle hatcheries and attractions were identified in Bali. Some of these turtle egg hatcheries do provide a strong conservation and education message. However, these are undermined by the establishment of commercial turtle “attractions” catered to tourists that have little conservation value. Rather, these centres are more detrimental to the marine turtles they keep, because of potential disease transfer from captive turtles to the wild population. Furthermore, they may also be conduits through which turtle eggs and meat are more easily sold. These observations are borne out by a paper from 2017 that covers many of the same issues in Bali (Firliansyah *et al.*, 2017).

Photo 3: Reported marine turtle conservation centres established in Benoa, Bali also serve as tourist attractions, 2018



8 http://www.ioseaturtles.org/electlib/Turtletrade_Bali.pdf

Sulawesi

Considering the large size of this island, together with its surrounding smaller islands and island groups, there is surprisingly little information about this region concerning the trade in marine turtles. In the southwest, the capital Makassar (also known as Ujung Pandang) has a big port and large airport, and acts as a major communications hub for the rest of Indonesia. Anecdotal evidence suggested that, after the trade into and out of Bali became more closely monitored and controlled, turtle trade activities shifted to Makassar. Based on recent seizure data (2015–May 2018), after Bali, Sulawesi had the second highest number of seizures recorded for Indonesia involving marine turtle shells as well as live and dead marine turtles. Information collected from locals during recent surveys indicates that Sulawesi has an active trade in turtle products, from live turtles to meat, eggs, taxidermied as well as jewellery such as rings and bracelets made from turtle shells.

The coasts of Morowali (Central Sulawesi) and Polewali Mandar (West Sulawesi), Cangke Island (South Sulawesi), Saponda Laut Island and Bau-Bau Buton (Southeastern Sulawesi) have been described as a hotspot for the illegal trade in turtle eggs. Turtle meat and parts can be found in the “Extreme Market” or Tomohon Market in Minahasa (West Sulawesi) while turtle shell jewellery can be found in Wameo Market and Kamali Beach. According to the local authorities and NGOs in Indonesia, turtle exploitation in Sulawesi has generally been decreasing as a result of law enforcement effort and awareness raising campaigns. However, the illegal exploitation of marine turtles still persists throughout the islands albeit in a more clandestine manner. Traders reportedly communicate with buyers using mobile phones to arrange a safe place to meet rather than sell products openly. They also reportedly prefer to market their products online—online surveys showed a variety of products being advertised, verifying this claim (see **Table 16**).

Profauna (2007) looked at several areas in Southeast Sulawesi in 2007, and reported that four areas (P. Wanci, Moramo, Ereke and Tikep) had an active trade in turtles. They also reported trade from Padei and Masudihang Islands in Central Sulawesi. Sulawesi was generally thought to supply marine turtle products for trade in Bali (Profauna, 2007). Some of this was also observed during this survey (**Table 15**). At least one seizure record in 2016 indicates that this potentially still continues with a shipment of 70 live Green Turtles intercepted in Central Sulawesi which was reportedly on route to Bali. In eastern Sulawesi, stuffed (taxidermied) marine turtles were seen being sold openly in a shop in Luwuk (late 2007) and the villagers of the Banggai archipelago reported they will catch turtles with spears and eat the eggs if they come across them (Anon, *pers. comm.*, 2018)

Turtle nesting beaches can be found throughout Sulawesi. Some of the more prominent locations for the different species are noted as follows:

- North Sulawesi : Green, Hawksbill, Leatherback (Kab. Talaud and Minahasa), Olive Ridley, Loggerhead (Kab. Minahasa)
- Central Sulawesi : Green, Hawksbill
- Southeast Sulawesi : Green, Hawksbill, Leatherback (Kab. Wakatobi)
- South Sulawesi : Green, Olive Ridley
- West Sulawesi : Green, Hawksbill, Olive Ridley
- Gorontalo : Green, Hawksbill, Leatherback (Diyonumo Island)

Maluku

Maluku Province has a very large number of small islands covering a huge area. There are turtle nesting beaches in the north on Pulau Mororo (north of Halmahera) and centrally on Ambon and Seram. In 1998, it was estimated that some 6,000 to 8,000 Green Turtles were caught annually for the Balinese market (Moss and Van Der Wal, 1998). In the Southeast, there are more nesting beaches in the Kei islands, and where the numbers of jellyfish attract Leatherback Turtles to feed. The Kei Islanders were known to hunt this species for food (Suarez and Starbird, 1995), and therefore must have some way of neutralising the toxins in the meat, the consumption of which has been known to kill people elsewhere. The Aru Islands to the west of Papua have many nesting beaches, and turtles are reported to have been caught and traded from this region for generations. There were only two seizures recorded for Maluku, both of which occurred in 2017 involving 88 live marine turtles (six of which subsequently died) of various species including Hawksbill Turtle, Green Turtle and Olive Ridley Turtle.

Papua

Being the easternmost, remotest province of Indonesia, much of Papua is difficult to access. In general, the human population density is small, even along the coasts, so collection and sale of turtle eggs appears to be restricted and local. Some export of turtles and turtle products from ports in the bigger towns such as Jayapura, Merauke, Sorong and Manokwari are thought to occur. Indeed, there were at least four seizures recorded for Papua, occurring in Jayapura and Sorong between 2015 and May 2018. One of these incidents revealed the international trafficking of 50 dead Hawksbill Turtles to Viet Nam in 2015.

6.1.2 Malaysia

In Malaysia, the hunting and trade in marine turtles and products is banned in Sabah and Sarawak, but the licensing of egg collection is allowed in the states of Terengganu and Melaka (states that were surveyed). Terengganu is considered an important trading hub for marine turtle eggs. Eggs obtained illegally from other parts of Malaysia (e.g. Sabah) as well as neighbouring countries like Indonesia and the Philippines, are subsequently sold openly and legally in the state of Terengganu, akin to a “money laundering scheme” (MT-IOSEA, 2014). Trade appears to have remained constant in the state—based on the current market survey in 2018, at least 1,000 eggs were being sold daily at Pasar Payang in Kuala Terengganu (estimated at 365,000 eggs annually). Turtle eggs are often acquired in large quantities, demonstrated by seizures of up to 19,000 eggs in a single seizure⁹, and eggs are generally stocked for sale. This generally correlates with the yearly total of 422,000 eggs which was estimated in 2009 (TRAFFIC, 2009). In Sabah, based on observations and interviews with local stakeholders, there is a general perception that open trade of turtle parts and derivatives is on a decline. This is attributed to perceived increased enforcement activities in recent years—the highest number of seizure incidents were recorded in 2016 and 2017 (WWF-Malaysia and SWD, 2018). Nevertheless, this downward trend may be a “false positive” as further inquiries revealed a black market trade in turtle eggs and meat.

Sabah

The west coast of Sabah, Kudat, Sandakan, and Tawau are considered to be the main areas where turtle poaching and trading of turtle eggs occur, while trading hubs for turtle parts and derivatives, including eggs, appear to be centred in major towns of Sandakan and Semporna, coinciding with known turtle nesting sites (WWF-Malaysia and SWD, 2018). According to a study by WWF and the Sabah Wildlife Department (2018), the modus operandi for poaching of marine turtles has seen a shift in recent years through an increase in involvement of local community members. These local communities are paid to capture turtles which are then collected in centralised locations for packaging and subsequent export to foreign markets, namely China, Viet Nam and the Philippines (WWF & SWD, 2018). The reason for this shift is thought to be due to increased maritime security making it difficult for foreign vessels to operate directly in Malaysian waters (WWF & SWD, 2018). Poaching is found to coincide with the peak turtle nesting season in Sabah which runs from May to August annually. Market prices of live turtles currently stand at RM300/kg for fresh meat, RM100/kg for dried meat, RM2,000 for live adult turtles, and RM1,300 for live juveniles. Turtles are transferred from the poaching location to the collection centre as whole specimens or as parts (e.g. scales, calipee, and plastron) (WWF & SWD, 2018).

According to an interview conducted with the head of local council enforcement unit in Sandakan, a mayor of a Philippine Island stated during a meeting that turtle eggs make up one of their major exports. Interviews with various sources suggest certain border towns in Malaysia such as Serikin in Sarawak, and potentially Semporna in Sabah, are being used as transit hubs for international trade of turtle parts and derivatives for the Southeast Asian region (WWF & SWD, 2018; MT-IOSEA, 2014). As reported in WWF & SWD (2018), it is suspected that turtle products are being collected in these towns before being packed and shipped to overseas markets, particularly to meet the demand in certain parts of China. A review of press clippings of previous seizures made in Sabah’s jurisdiction shows that many of the turtle products seized either originated from the Philippines or Indonesia and are destined for export towards Viet Nam or China, these are mainly consignments which are transferred by boat.

The open availability of turtle products for sale in Sabah was limited. During market surveys, there were no turtle eggs, parts or derivatives for sale at venues visited. Rather, trade of turtle eggs is conducted covertly with traders comprising individuals with no established base of sale. Traders typically roam around town approaching potential buyers through the “OK” sign, which is commonly understood to refer to availability of turtle eggs for sale. This is apparent in a number of places in Sabah. Sales were made predominantly to local residents with sellers refusing to engage with tourists, especially when tourists made the initial approach. Eggs are sold at MYR3.50 (USD0.88) per fresh egg, with an additional MYR2.00

9 <https://www.thestar.com.my/news/nation/2016/07/16/sabah-police-turtle-eggs/>

(USD0.50) charged per egg for boiled eggs. It was reported that each trader appears to have around 50–60 eggs at any point of time, and will replenish their stock from a central “warehouse” as and when necessary (Majlis Perbandaran Sandakan, *pers comms*, 2018). In Semporna, there also appears to be an increasing level of trade in turtle meat through exotic dishes covertly offered by eatery outlets, particularly to satisfy the demand from tourists. These restaurants do not engage directly with potential customers but go through a trusted third-party instead. Products made of turtle shells were not observed during the market surveys, with the exception of a single taxidermied turtle hatchling, decorated with mother-of-pearl shells observed in a market in Kota Kinabalu. It was not being sold but just displayed for ornamental purposes (Photo 4).

Conversations with souvenir traders found that they were unable to source bekkos products in recent years due to a significant reduction in supply. Further inquiries revealed that turtle-derived products can still be sourced and are available for purchase, however, these are only offered by certain individuals.

From interviews with various traders in souvenir shops in Kota Kinabalu, Tawau, and Kudat, it appears that most of the turtle products (e.g. turtle meat, eggs, and shell souvenirs) are either locally sourced from Sabah or imported from the Philippines. Most of the turtle meat is sourced locally within certain areas around Sabah’s more remote islands or beaches such as Ligitan, Denawan, Bum-Bum and Omdal, in Semporna and are used as main slaughtering hubs (WWF-Malaysia and SWD, 2018). In these cases, the turtles were found to have been slaughtered with the carapace left, which suggests they were slaughtered for meat and not for ornamental or traditional medicine purposes.

Photo 4 Taxidermied turtle hatchling which was overlaid and decorated with mother-of-pearl shells was observed in a market in Kota Kinabalu, 2018



Traders interviewed in Sandakan and Kudat reported that turtle eggs are sourced locally from Sabah supplied by freelance harvesters, and in some cases, by individuals from enforcement agencies. In the latter case, these eggs are reportedly derived from eggs collected for conservation purposes, but are deliberately under-reported so as to supply the market demand. Some respondents also revealed that they periodically obtain marine turtle meat from individuals working in local enforcement agencies who themselves are involved in the meat harvesting process.

A large but undetermined amount of turtle eggs are reported to be exported out of Sabah for sale in other areas, namely Terengganu, where sale and consumption of turtle eggs are permissible. A respondent in Sandakan, who declined to be identified, stated that this is an “open secret” where eggs are packed in marked cargo which are then airlifted to Peninsular Malaysia, particularly Terengganu, to be sold to the public. Market surveys and interviews conducted in Terengganu for this study discovered that eggs sourced from Sabah do end up in the markets of Terengganu.

Sarawak

Only one vendor was observed selling marine turtle eggs at the Serikin market. Similar to Sabah, trading of turtle eggs was being conducted in a covert manner. Most of the vendors were suspicious when inquiries were made regarding availability of turtle eggs. The turtle eggs observed for sale by one particular vendor was also kept at a separate location and only acquired after inquiries were made. Eggs were being sold at MYR2 (USD 0.50) per egg, although a minimum purchase of 10 eggs was required. It was estimated that the vendor was in possession of 50 eggs. While other products derived from other wildlife were showcased at a majority of the stalls, observations of the products on offer did not reveal any products made of marine turtle parts. Trading of turtles, turtle parts or eggs was not observed in any of the markets and shops visited around Kuching city.

Based on discussions with turtle researchers from WWF-Malaysia and University Malaysia Terengganu (UMT) which were made on 25th June 2018 in Kuching, Sarawak, the same modus operandi employed by poachers and traders in Sabah were prevalent in Sarawak. They also reported that the town of Semantan which is considered to be an active trading location for illegal wildlife products, was also known to trade in marine turtle products. However due to time constraints this could not be visited in time for this study but should be considered for future surveys.

Terengganu

Based on interviews with traders, representatives of non-governmental conservation organisations (e.g. WWF-Malaysia) and researchers from local universities (i.e. UMT), trading hubs for turtle eggs are considered to be centred within major townships of Kuala Terengganu, Kemaman and Besut. Turtle eggs were observed openly for sale in markets with most of the trade occurring at Pasar Payang, a famous wet and dry market located in the centre of the state's capital of Kuala Terengganu (Photo 5). It was observed during the survey that eggs are sold in three categories namely "fresh" where eggs have allegedly been collected from local Terengganu beaches, "cooked" where eggs have been boiled for immediate consumption, and "pickled" which involves eggs that had not been sold and therefore pickled to extend their validity for consumption. The eggs were reportedly mainly sourced from nesting beaches around Terengganu, on the islands such as Redang and from Sabah. Some traders interviewed also said that eggs are being imported from other states in Peninsular Malaysia, such as Kelantan,

Photo 5 Observations of turtle eggs sold in Terengganu markets, Malaysia, in 2018



Pahang, and Perak (where the trade in eggs is also considered legal). One trader interviewed revealed that eggs that are sold in bulk are usually sourced from Sabah or imported from neighbouring countries such as the Philippines and Thailand which is against national laws. These eggs are imported through various means including over land, air, boats and via post.

During the market survey, at least seven vendors were observed selling up to an estimated 1,000 eggs daily at Pasar Payang in Kuala Terengganu, the largest market in the state. Generally, prices of eggs ranged between MYR4–MYR6 (USD1–1.50) per egg, depending on the freshness of the eggs, which is slightly higher than those being offered in Sabah. Although “buy-back” schemes exist as administered by the Department of Fisheries Malaysia (DOFM), the prices offered are significantly lower than the market value, at less than RM2 (USD0.50) per egg.

Melaka

A survey conducted in the markets around Klebang area on 2nd May 2018 did not reveal any open trading of turtles or turtle parts, including turtle eggs. Engagement with a representative of WWF-Malaysia (who has been active in undertaking turtle conservation activities in the state since the 1980s in collaboration with the DOFM), revealed that there is no commercial trade in turtle parts or products in the state. Rather the consumption of turtle eggs is mainly conducted by local residents on an opportunistic basis.

Given the widespread distribution of turtle nesting sites in Malaysia, it is not surprising that there has been historically, and remain presently, a local demand for turtle parts or derivatives, with consumption of turtle eggs especially being considered a norm and having become part of a particular area’s or community’s customs and traditions.

It is difficult to ascertain the true status of the turtle trade in Malaysia, or to identify if the trade behaviours have changed to a significant degree compared to what it was in previous years. Furthermore, it is also difficult to gauge the effectiveness of any measures implemented to mitigate impacts from trade activities, particularly considering there is limited information available on these activities themselves.

6.1.3 Viet Nam

Data on seizures as well as results of market surveys conducted by conservation NGOs have demonstrated that the domestic and international trade in marine turtle products is still active in Viet Nam today. It is challenging to determine whether the overall levels of current trade are declining, stable or increasing due to the lack of comprehensive data on seizures and reliable investigation of trade routes.

In 2002, TRAFFIC undertook a study (TRAFFIC, 2004) on marine turtle trade in the country, at a time when the trade in marine turtles was still legal¹⁰. This study found 29,000 marine turtle products for sale in 22 provinces, most of which were for ornamental purposes. Products of four species (Green, Hawksbill, Loggerhead and Leatherback Turtles) were found, in which the majority of specimens and/or products were made from Hawksbill (98.6%).

In 2009, another TRAFFIC study found that only two species of marine turtle were regularly found in trade, the Hawksbill and Green Turtles (Stiles, 2009). Compared to the TRAFFIC 2002 survey, the numbers of outlets and items in Ho Chi Minh City and Ha Noi decreased considerably. However, trade had increased in other places, including Ha Long, Phu Quoc, and Ha Tien where marine turtle products were openly purchased regardless of the illegality. The report pointed out the weakness and ineffectiveness of law enforcement activities in these areas. In 2016 and 2017, TRAFFIC observed 163 marine turtle products on the market in Viet Nam in Hanoi, Ho Chi Minh, Nha Trang, and Ha Long (TRAFFIC, unpub.). All the products were made from Hawksbill Turtles and included trophies, bangles, combs, hairpins, and earrings. In June 2018, 72 taxidermied marine turtles of various species were seized in Vung Tau which were on display at a shell-craft shop¹¹.

It is apparent that the trade in marine turtles still persists in Viet Nam but is becoming less open. Demand plays a key role in driving trade. Domestically, meat and eggs are consumed as a delicacy and as an aphrodisiac. Wealthy Vietnamese believe that burying stuffed marine turtles in the basement of their house brings luck, while wearing marine turtle products treats

10 The trade in marine turtle products was legal in Viet Nam prior to 22nd April 2002, since then marine turtles have been a protected species and regulated by a wide range of legal documents, initially the Government Decree 48/2002/ND-CP.

11 <https://tuoitrenews.vn/news/society/20180607/police-seize-scores-of-taxidermied-endangered-turtles-in-southern-vietnam/46005.html>

low blood pressure¹². In addition to domestic demand and consumption, demand from Chinese nationals is emerging¹³. According to the Chinese Embassy in Viet Nam, the number of Chinese tourists travelling to Viet Nam, especially to Nha Trang and Da Nang, has risen tremendously over the last five years. Sources find that Chinese tourists often buy wildlife products including combs and hairclips made of tortoiseshell¹⁴. Violators have claimed that they export huge amounts of processed marine turtle products to wholesalers in China for local consumption. However, further investigation is needed to identify how this trade route operates and who might be involved.

Over the years, Sa Ky Port (Binh Chau Commune, Binh Son District, Quang Ngai Province) has remained an active market for the illegal trade in marine turtles. Despite arrests, commercial trade for marine turtles persists in this coastal location. In 2009, 117 marine turtles weighing 2 tonnes were seized when a Vietnamese man in the An Hai village in Binh Chau was transporting them from his vessel to his car for trade. He declared that he caught the turtles in the sea and would sell the turtles in Binh Dinh, some 130 km away from Binh Chau. However, further investigation revealed that these marine turtles were intended to be sold to wholesalers in Nha Trang and Ho Chi Minh City for Chinese tourists. In October 2013, 94 dead frozen marine turtles were seized from a vehicle. The driver disclosed that these dead turtles were collected from fishing vessels in Sa Ky Port for domestic trade.

Violators that were arrested declared that fishermen often hunt marine turtles in Viet Nam's oceans or in the oceans of other surrounding countries. In the past, fishermen used traditional boats and simple fishing gear which could capture a single turtle per outing. Today, they fish in groups and equip themselves with large boats with outboard motors helping them to access a larger range to hunt a greater number of turtles. Some local people said that middlemen are willing to sponsor modern equipment and boats for the fishermen to use while hunting. Alive or dead, marine turtles are processed (mainly stuffed) in Viet Nam before export. In November 2015, the customs department in Hai An Port, Hai Phong province seized a 40ft container of dried turtles and tortoiseshells. These products were illegally transported from Port Klang (Malaysia) to Viet Nam. Some Vietnamese fishermen from Quang Ngai and Binh Dinh were sentenced to prison in the Philippines¹⁵ and Malaysia for illegally catching marine turtles in the waters of these countries. According to their testimonies, most of the marine turtles would be sold to buyers from Hainan, China (Chu and Nguyen, 2015).

6.2 Legal International Trade Transactions

An analysis of trade records from the CITES Trade Database was conducted to provide insights into reported trade transactions. The raw data were checked for what may have been duplicate reporting, for example where the reported information appeared in two or more incidents with identical information on quantities, countries, source and purpose codes.

Based on CITES Trade Data, there were at least 6,200 records involving the global legal trade of marine turtles, parts and derivatives between 2000 and 2017. Of these, only 116 records (or 2% of the total records) involved Indonesia, Malaysia and Viet Nam, with none occurring in 2016 and 2017. At least 18 records were of international imports into Indonesia (n=4), Malaysia (n=13) and Viet Nam (n=1) (**Table 20**). This involved mostly carvings, reportedly imported mostly for commercial purposes, as well as live turtles and specimens which were reportedly for scientific purposes.

12 <http://cand.com.vn/Kinh-te/Can-ngan-chan-viec-khai-thac-mua-ban-rua-bien-o-cang-Sa-Ky-242443/>; [http://vov.vn/Print.aspx?id=289462](http://vov.vn/Print.aspx?id=289462;);
<http://www.baobariavungtau.com.vn/xa-hoi/201509/rua-bien-con-dao-dang-bi-san-bat-trai-phep-637374/>
<http://giadinh.net.vn/xa-hoi/hiem-hoa-tu-nhung-chuyen-san-rua-bien-20131211040426777.htm>
<http://suckhoedoisong.vn/bo-than-trang-duong-bang-vi-thuoc-tu-rua-n2652.html>

13 <https://tuoitre.vn/tang-tru-hang-ngan-xac-rua-bien-de-che-tac-my-nghe-674781.htm>; <https://www.youtube.com/watch?v=oZ833NyhLM>;
<http://infonet.vn/rua-bien-con-dao-bi-san-bat-xe-thit-lam-mon-nhau-hot-post176839.info>

14 <http://gappingworld.com/trung-quoc-thua-nhan-gay-thiet-hai-cho-rua-bien-va-cac-rang-san-ho-tai-bien-dong/>

15 <https://vnexpress.net/tin-tuc/the-gioi/nguoi-viet-5-chau/philippines-bat-13-nguoi-viet-san-trom-rua-bien-2898560.html>

Table 20: Reported imports of marine turtles, parts and derivatives to Indonesia, Malaysia and Viet Nam between 2000 and 2015 based on CITES Trade Data

To	From	No. of Records	Commodity	Exporter Reported Quantity	Importer Reported Quantity	Unit
Indonesia	United Kingdom	1	carvings	1		
	Netherlands	2	carvings		2	
	Singapore	1	shells	2		
Malaysia	United Kingdom	9	carvings	11	3	
	Philippines	1	specimens		43	flasks
	Viet Nam	1	specimens		60	flasks
	Thailand	1	live		60	
	United States	1	carvings	1		
Viet Nam	France	1	carvings	2		

Note: For 13 records the source code was reported as "O-pre-convention specimens", followed by wild-caught (n=3), and "U-unknown" and "C-captive-bred" with one record each. In relation to purpose, 10 records were reported as commercial (mostly involving GB with one involving the US), 3 records were reported as "S-scientific" (involving PH, VN, TH), 3 records reported as "Q-circus/travelling exhibition" (NL and FR) and 2 records reported as "P-personal" (involving GB and SG).

A further 98 records, involved the export of marine turtle products from these three countries i.e. Indonesia (n=23), Malaysia (n=22) and Viet Nam (n=53) (Table 21). These exports went to 11 countries (Australia, Czech Republic, France, United Kingdom, Japan, Malaysia (who imported from Viet Nam), the Netherlands, New Zealand, Portugal, Singapore, and the United States (US). The US (n=65) was the main export destination for all three countries and generally involved the greatest diversity of marine turtle products exported. Quantity-wise, the largest transaction involved 2,444 live Hawksbill and Green Turtles imported by United Kingdom in two separate shipments in 2004. Malaysia reported these as of wild origin for scientific purposes whereas they were reported as seized by United Kingdom. Fifty-eight percent of the 98 trade records involved specimens where the source was reported as "seized" by importing countries, with the highest numbers exported from Viet Nam (n=35), followed by Malaysia (n=12) and Indonesia (n=10).



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Table 21: Reported exports of marine turtles, parts and derivatives from Indonesia, Malaysia and Viet Nam between 2000 and 2016 based on CITES Trade Data

From	To	No. of Records	Commodity	Importer Reported Quantity	Exporter Reported Quantity	Unit
Indonesia	Australia	1	specimens	106		
	Czech Republic	1	bodies	1		
	United Kingdom	2	carapace	1		
			specimens	15	90	
	Japan	4	specimens	0.117 kg	50	
			skins	0.603 kg	200	
	Netherlands	2	carvings	1		
			shells		1	
	New Zealand	1	carapace	1		
	Singapore	1	specimens	20		flasks
	United States	11	bodies	7		
			carvings	30		
			carapace	1		
skins			1			
specimens			10	210		
shells			1			
			trophies	1		



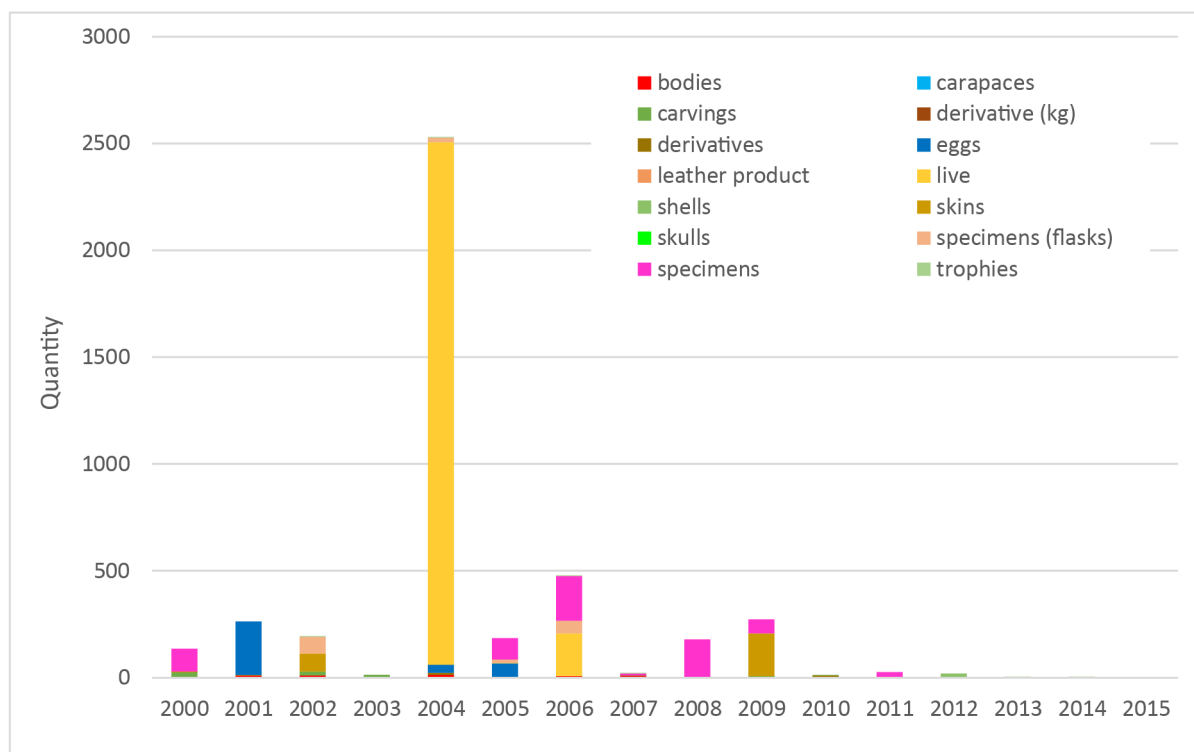
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Malaysia	Australia	7	specimens	123	198	
			eggs		314	
			live		198	
	United Kingdom	6	live	2,444	2,444	
			specimens		23	flasks
			eggs		37	
			leather	1		
	New Zealand	2	derivatives	10 + 1.17 kg		
	Poland	2	derivatives	1		
			skulls	5		
	United States	6	carvings	1		
			eggs	1		
			derivatives	1		kg
			specimens		79	flasks
skins			83			
skulls			1			
Viet Nam	France	1	carvings	2	2	
	Japan	1	carvings		2	
	Malaysia	1	specimens	60		flasks
	New Zealand	2	carapace	1		
			derivatives	1		
	United States	48	bodies	62		
			carapace	5		
			carvings	28		
shells			16			
		trophies	7			

Note: n=57 source code reported as seized by the importing country, n=34 as "W-wild-caught", and remaining n=5 as D-App I animal bred for commercial purposes", "O-pre-convention specimens" and "U-unknown". Of these, for 44 records the purpose was listed as "P-personal" (sources for all of these were reported to be seized specimens, mostly by the US followed by three records reported by New Zealand), 4 as "T-commercial" and 1 as "S-scientific". The remaining 8 records, had no purpose listed, but these were all reported as seized.

Figure 8 provides a breakdown of commodities exported from Indonesia, Malaysia and Viet Nam including quantities exported for each year. Where the purpose of the export was stated, the majority were for personal use (67%) followed to a lesser extent by scientific use (19%) and commercial use (11%). Of the trade records for commercial use, at least five incidents from 2001–2006 were reported to be wild-sourced (involving whole specimens and eggs from Indonesia and Malaysia that were imported by the US, Australia and the Czech Republic). Four other incidents between 2000–2010 involved import records by the US, from Indonesia and Viet Nam of skin pieces, carvings and bodies, the sources for which were reported as "seized".

Figure 8: Marine turtle commodities exported from Indonesia, Malaysia and Viet Nam between 2000 and 2015 based on CITES Trade Data



Records from the CITES Trade Database indicate that 57 of the trade transactions that came from Indonesia, Malaysia and Viet Nam were reported to be seized specimens. All of these were reported by importing countries—New Zealand, Poland, United Kingdom (UK) and the United States of America (US). These could have been illegal international shipments that were headed to the countries from the three Southeast Asian countries. The highest number of transactions originated from Viet Nam (n=35 records, heading to New Zealand and the US), followed by Malaysia (n=12 records, heading to New Zealand, Poland, UK and the US) and finally Indonesia (n=10 heading to New Zealand, UK and the US). Verification of these data from government agencies, in terms of units and specimens traded, is required to confirm if these were all indeed seizures upon import.

6.3 Illegal International Trade

The analysis of recent seizures from 2015–2018 (see section 5.1) as well as seizures that occurred outside that period provides evidence of a concerning trend in the illegal international trade in marine turtles and their parts. This section draws on these examples to illustrate the dynamics of the trade involving key countries, particularly those in the Asia region.

6.3.1 Indonesia

In 2012, it was reported that the international trafficking of marine turtles out of Indonesia was on the rise nationwide largely to meet demand from East Asian countries (IOSEA, 2014). This appears to still persist with recent seizure data (2015–August 2018) revealing the international trade in marine turtles from Indonesia heading into Malaysia, China, and Viet Nam. China was implicated as a destination country in at least seven cases with Indonesia as the reported origin. For example, in January 2018, 200 kg of marine turtle shells were intercepted in Makassar, Sulawesi on route to China (Anon, 2018). Authorities raided a house in Makassar, Sulawesi and found the items packed in cardboard boxes. The two suspects arrested reportedly sourced the products from the Indonesian province of Papua which was then shipped by boat to Makassar. There were at least four cases in 2016, two of which occurred in Indonesia (Bali and East Kalimantan) of seized

shipments involving shells and 31 live marine turtles; and two occurred in Xiamen, Fujian Province of China of shipments originating from Jakarta involving one taxidermied marine turtle and 33 Hawksbill Turtle shells.

In 2013, WWF Indonesia noted the rising smuggling of marine turtle eggs from West Kalimantan to the Malaysian states of Sabah and Sarawak where they fetched a higher price, after illegal sale of eggs in the Serikin market, at the Sarawak-West Kalimantan border, was reported (Jakarta Post, 2013). There were at least seven seizures of turtle eggs in Kalimantan from 2010 to 2015 involving an estimated 31,500 eggs which were reportedly destined to Malaysia (Mongabay, 2016). The most recent case was of 6,725 eggs which were seized at Sintete Port in West Kalimantan in 2015 which was en route to Sarawak.

In January 2015, Vietnamese fishermen were caught in Indonesian waters off Papua with 50 dead Hawksbill Turtles on their boat. Unfortunately, illegal Vietnamese poaching in waters within the Coral Triangle has been noted since at least the 2000s (IOSEA, 2014). China would appear to be the main source of demand for marine turtle shells, live and taxidermied products from Indonesia while Malaysia would appear to be the main source of demand for turtle eggs (IOSEA, 2014). These same findings were also noted by TRAFFIC in 2011 based on evidence of seizure records and market surveys that revealed a consistent illegal trade route from the Coral Triangle region of Southeast Asia (mainly Indonesia, Malaysia and the Philippines) to mainland China (Lam *et al.*, 2012). Lam *et al.*, found that between 2000 and 2008, over 9,180 marine turtle products were seized in East Asian countries/territories (i.e. mainland China, Hong Kong SAR, Taiwan Province of China, and Japan) including whole specimens (2,062 turtles), crafted products (6,161 pieces) and raw shell (789 scutes and 919 kg). Indonesia was the country most frequently linked to seizures in these locations with at least 14 incidents noted (Lam *et al.*, 2012).

6.3.2 Malaysia

Much of the illegal international trafficking of marine turtles in Malaysia has largely been attributed to poaching by foreign fishing fleets (mostly Chinese and Vietnamese) concentrated in the waters off the western coast of Sabah to meet market demands in China and Viet Nam (Lam *et al.*, 2012; WWF-Malaysia and Sabah Wildlife Department, 2018; Riskas *et al.*, 2018). Previous seizures and studies (WWF-Malaysia and Sabah Wildlife Department, 2018; IOSEA, 2014) identified these locations to host thriving turtle markets offering turtle meat dishes, turtle-based souvenirs, and traditional medicine made of turtle parts. Based on recent seizure data from 2015–May 2018 (see section 5.1), such incidents still occur. There were at least 10 seizure incidents linking Indonesia, Philippines and Viet Nam in the international trafficking of marine turtles with Malaysia. Most of these were of turtle eggs from Philippines into Malaysia (at least 8 cases), whereby by shipments were seized off the coast of Sabah. The most recent of these occurred in 2017, where two shipments of over 3,000 marine turtle eggs were seized from Filipinos in Sabah waters. There was only one incident, which occurred in 2017, in which a Filipino vessel carrying Green Turtle meat, organs and shells was seized in Malaysian waters reportedly heading back to the Philippines. Viet Nam has been linked to Malaysia in at least three cases. In two of these incidents, occurring in December 2016 and August 2017, Vietnamese vessels carrying marine turtles were seized in Malaysian waters amounting to 1,400 dead and live turtles. In the third incident, which occurred in 2015, a 40ft container containing thousands of dead marine life including turtles was seized at a port in Hai Phong, Viet Nam with origins reported as Peninsular Malaysia. Lastly, in October 2017, an Indonesian vessel carrying 97 kg of marine turtle shells was seized in Sabah waters.

According to a recent study by WWF-Malaysia and the Sabah Wildlife Department (2018), the modus operandi for poaching of marine turtles has seen a shift in recent years through an increase in involvement of local community members. These local communities are paid to capture turtles which are then collected in centralised locations for packaging and subsequent export to foreign markets, namely China, Viet Nam and the Philippines. The reason for this shift is thought to be due to increased maritime security making it difficult for foreign vessels directly to operate in Malaysian waters (WWF-Malaysia and Sabah Wildlife Department, 2018). Poaching is found to coincide with peak turtle nesting season in Sabah which runs from May to August annually. Market prices of live turtles currently stand at RM300/kg for fresh meat, RM100/kg for dried meat, RM2,000 for live adult turtles, and RM1,300 for live juveniles. Turtles are transferred from the poaching location to the collection centre as whole specimens or as parts (e.g. scales, calipee, and plastron) (WWF-Malaysia and Sabah Wildlife Department, 2018).

According to an interview conducted with the head of local council enforcement unit in Sandakan, a mayor of a Philippine Island stated during a meeting that turtle eggs make up one of their major exports. Interviews with various sources suggest certain border towns in Malaysia such as Serikin in Sarawak, and potentially Semporna in Sabah, are being used as transit

hubs for international trade of turtle parts and derivatives for the Southeast Asian region (WWF-Malaysia and Sabah Wildlife Department, 2018; IOSEA, 2014). As reported in WWF-Malaysia and Sabah Wildlife Department (2018), it is suspected that turtle products are being collected in these towns before being packed and shipped to overseas markets, particularly to meet the demand in certain parts of China. A review of press clippings of previous seizures made in Sabah's jurisdiction shows that many of the turtle products seized either originated from the Philippines or Indonesia and are destined for export towards Viet Nam or China, these are mainly consignments which are transferred by boat.

6.3.3 Viet Nam

Prior to the implementation of Decree 48/2002/ND-CP in 2002, the international trade in marine turtles was not strictly prohibited by Viet Nam law, despite Viet Nam having become a Party to CITES in 1994. Between 1973 and 1985, Viet Nam was known to supply marine turtle products to Hong Kong SAR, South Korea, Singapore and Taiwan Province of China (TRAFFIC, 2009). Initially, in the 1980s, these were sourced domestically but by the 1990s, Hawksbill Turtles were being sourced from Cambodia. By the early 2000s, whole Hawksbills originating in Malaysia and Indonesia were bought by Vietnamese fishermen from foreign fishing vessels out at sea while shells were imported from Indonesia and Singapore (TRAFFIC 2004). Research by TRAFFIC in 2002 also revealed an active international trade in marine turtle products, mainly bekkos, with much of the trade being exported from Viet Nam. This research disclosed a considerable amount of large-scale wholesale marine turtle trading to foreign dealers. Most Vietnamese dealers stated that much of their trade was international (TRAFFIC, 2004), compared to what was previously thought to be dominated by domestic trade (CRES, 1994). Annually until the early 2000s, hundreds of stuffed marine turtles in Ha Tien and Nha Trang were exported to China, Indonesia, the Philippines and Hong Kong SAR (TRAFFIC, 2004).

In 2014, Vietnamese authorities seized some 7,000 dead marine turtles in Nha Trang from a warehouse and a farm. In June 2018, after nearly four years of investigation, the offender was sentenced to four years and six months' imprisonment by Nha Trang's People Court. According to ENV, the turtles were allegedly destined for China, to be sold as trophies. Based on recent seizure data since 2015 (see section 5.1), at least 10 incidents show that Viet Nam functions mainly as a destination country or transit country in the illegal trafficking of marine turtles to China. According to Wild Aid (2018), between 2013 and 2017, there have been at least seven reported cases indicating cross-border trafficking of marine turtles between China and Viet Nam at Fangchenggang, a harbour city in the southwest of China. A total of 199 taxidermies and 153 live marine turtles, most of which were identified as Hawksbill Turtles were estimated seized in the seven cases. Aside from China, there was at least one seizure in 2017 revealing the trafficking of turtle shells reportedly from Haiti en route to Viet Nam which was intercepted at Charles De Gaulle Airport. Authorities seized almost half a tonne of Hawksbill Turtle shells estimated to amount to 380 turtles. As recently as May 2018, there was a batch of Hawksbill Turtle shells that were seized by INTERPOL reportedly en route to Viet Nam from Miami. No details however were provided on exact seizure location or quantities seized. As mentioned above, Malaysia and Indonesia are also linked as source countries in the trafficking of marine turtle products to Viet Nam.

6.4 Conservation Impact and Management of Marine Turtles

Conservation impacts of trade on marine turtle populations is challenging to quantify due to the complexities of turtle ecology and the multiple factors influencing turtle survival ranging from natural to anthropogenic sources. However, the present study provides evidence that poaching and illegal trade do have significant adverse impacts on turtle populations in the region, which are at the same time affected by bycatch, habitat destruction, pollution and other threats.

6.4.1 Indonesia

The Indonesian archipelago, with over 17,000 islands and an estimated coastline length of 54,716 km (among the longest in the world), presents significant challenges to those who are tasked with monitoring the turtle trade and/or enforcing the law. The sheer size of the archipelago, over 34 provinces and each with their own mandates, differing capacities and jurisdictional issues increases problems of communication between the various agencies concerned. Provincial regulations in Indonesia sometimes are not harmonised with national regulations or local practices. For example, in some areas, traditional or customary rights are perceived to be stronger than national legislation, adding to the complexity of enforcing national laws that apply to marine turtles. This is the case particularly around Padang, Sumatra, where eggs are sold openly in large quantities, or in Bali where turtle parts and products have been part of the local culture. Further, a combination of literature review and feedback from stakeholder engagement highlight that increasing human population and tourism, particularly along previously isolated stretches of coastline, combined with greater public mobility, are leading to greater pressures on formerly undisturbed nesting beaches.

Of greater concern is the rising number of “turtle attractions”, particularly in Bali, that hatch and keep live turtles for purely commercial purposes, but with little or no conservation value. Although all facilities display an official licence from the Indonesian Nature Conservation Agency (BKSDA) that allows them to operate legally, standard hatchery protocols are largely ignored, as long as some of the turtles hatch. Money is made from co-operation with local boats that bring the tourists to the attractions, entrance fees, donations, and varying amounts to pay if a visitor wants to release a captive turtle (hatchlings are much cheaper to release than adults). All of the attractions visited display the permits issued by the local BKSDA, on the understanding that they provide necessary income for otherwise poor coastal communities. A further problem occurs after live turtles or eggs are seized by the authorities. As with many other wildlife species that are seized by authorities, well-run rescue centres are in short supply (e.g. The Cikananga Wildlife Rescue Centre in Java), and the issuance of licences by local authorities to village groups unfortunately provides little more than an opportunity for them to make money out of the display and paid releases (and perhaps also secret sales) of turtles, rather than having any actual conservation value. Additionally, it is frequently very impractical in terms of costs and logistics to release seized animals (which might also be sick) back into the wild—particularly in their actual native habitat—in accordance with IUCN Release protocols (Eckert *et al.*, 1999). Indeed, in the case of marine turtles releases of young turtles that have been kept in captivity for long periods might arguably lessen their chances of survival, rather than them having the benefits of “head starting, and being released weeks or months after hatching” (although this is given as justification, by local parties conducting such releases, for keeping turtles in captivity for longer periods). Release of sick turtles could also lead to the possibility of disease transmission into wild turtle populations (Warwick *et al.*, 2013).

6.4.2 Malaysia

In general, in Malaysia, conservation effort with regards to turtles are focused on nesting beaches and a nesting population that consists of only females. Beaches are patrolled nightly to find eggs and collect data on nesting females. Eggs are then transferred for safe incubation in a hatchery (*ex situ*). The collection of data mostly focuses on the nesting population using parameters such as number of nests, eggs, hatchlings released, hatching rates, number of female turtles via tagging system and measurements. To that end, the conservation focus has been on monitoring nest numbers and nesting populations. However, in recent years, studies have been extended to identifying foraging grounds and populations via genetic analyses or satellite tracking.

The first hatchery in Peninsular Malaysia was built at Rantau Abang, Terengganu in 1971. Since then, a total of 20 hatcheries and 6 Turtle Information and Conservation Centers have been established in Peninsular Malaysia. Conservation of marine turtles in Peninsular Malaysia is a joint effort with various government agencies, university, non-governmental organisations and the private sectors. The Department of Fisheries Malaysia conducts conservation programmes, enforcements such as controlling fish net mesh sizes, promoting the use of Turtle Excluder Devices (TED) and encouraging the use of circle hooks in longline fisheries.

Turtle conservation in Sabah can be drawn back as early as 1927 when various notices related to turtle conservation were issued by the North Borneo British Company and the state government. Beginning 1977, the state government approved the establishment of Turtle Islands Park, formerly known as Turtle Farm, that consists of three important islands (Selingan, Gulisan and Bakungan Kechil). With the establishment of the park, turtles and their nesting beaches are fully protected and

this has resulted in increased number of nesters, incubated eggs and released hatchlings into the sea. Turtle conservation at the park includes daily beach patrolling, hatchery programmes, research activities and education programmes.

History of marine turtle management and conservation in Sarawak can be traced back as early as the 1600s. Eggs from Sarawak was used as barter trade items with traders from China as early as and involved Royals in collection of eggs in 1839. In 1998, the management and research on marine turtles of Sarawak have been undertaken by the Forestry Department Sarawak (FDS) until 2003, when some operation functions of FDS was taken over by the Sarawak Forestry Corporation Sdn. Bhd. (SFC). The management of marine turtles and all wildlife in Sarawak fall under the jurisdiction of the Protected Areas and Biodiversity Conservation Unit (PABC) of SFC. The Sarawak State Government took a step toward protecting the critical habitat of marine turtles by gazetting the Sarawak Turtle Islands as the Talang-Satang National Park. Turtle conservation at the park includes introducing reef balls to overcome turtle by-catches, daily beach patrolling, hatchery programmes, research activities and education programmes.

Nationally, the marine turtle management of Malaysia is guided by the national plan of action (NPOA) for marine turtle management published in 2008. There are 16 priorities and 6 objectives. The NPOA listed the programmes for 2008 to 2013. The plan had multi-dimensional approaches and involved various agencies and stakeholders for management of marine turtles by reduction of direct threats to the marine turtles; a conservation and rehabilitation programme for marine turtle habitat; intensification and conservation research on marine turtle; a public awareness programme; public involvement and promotion of the implementation of the plan. Monitoring of implementation of the NPOA programmes was carried out by a special task force called the Malaysia Technical Working Groups for Sea Turtles (MTWGST). Although the plan ended in 2013 most of the activities are listed as already implemented in the NPOA.

Regionally, the significance of marine turtle populations gave rise to Malaysia's recognition and involvement in international commitments such as the Indian Ocean South-East Asia (IOSEA) Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (MoU), Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) and Sulu-Sulawesi Marine Ecoregion (SSME) (Jolis *et al.*, 2016). In addition, the Turtle Islands Heritage Protected Area (TIHPA), a transboundary protected area in the Sulu Sea was established in 1996 between Sabah and the Philippines to jointly to manage the large turtle populations occurring there.

In terms of regulations, existing licensing systems regulate the collection of eggs of turtle species (see section 3.2.2), while existing laws in most other states define penalties that are too low to deter poaching activities effectively. Some Malaysian states (such as Perlis and Selangor) still have not adopted any legal protection for turtle populations present within their territories in the absence of a national legislative provisions on turtle conservation. Due to the lack of uniformity in legislative provisions across the country, there currently exists a legal loophole which is being exploited by egg collectors and traders. Generally, the increase of turtle populations in Sabah and Sarawak has been attributed to the success of a complete trade ban on turtle eggs in these respective states. Unfortunately, the trade ban on turtle eggs in certain states such as Sabah is being circumvented with sales of these eggs undertaken either locally or transported to areas where such trade is legal (e.g. Terengganu). Therefore, an extension of these bans nationwide is recommended to enable a cohesive enforcement mechanism to be established throughout the country. Increased monitoring at gateways such as airports and jetties in major towns in Sabah, Sarawak, and east coast states of Terengganu, Kelantan and Pahang is also recommended to mitigate trade in turtle parts, particularly as it has been highlighted that a lot of turtle products, especially turtle eggs, are being transferred through these major gateways.

Furthermore, while "buyback" schemes may have been effective in the past, it appears their effectiveness has been reduced due to the inefficiencies in implementing the scheme as well as the outdated price offered not being aligned with market conditions. In fact, all of the key nesting beaches in the state of Terengganu (which has the largest nesting population of Green Turtles in Peninsular Malaysia) are no longer under the "buyback" scheme. Instead seasonal workers are hired to patrol nesting beaches and relocate nests to designated hatcheries for incubation in an effort to reduce the poaching of eggs. The "buyback" scheme is implemented at beaches where nesting numbers have not reduced, largely due to the lack of resources to monitor over 40 nesting beaches in Terengganu. This is also being practiced in Melaka which has the second largest nesting population of Hawksbill Turtles after Sabah. Introduction of more protected nesting beaches and foraging areas, similar to the Rantau Abang beach in Terengganu and the Turtle Park in Sabah, should also be undertaken given the success observed on these measures in mitigating poaching of turtles and turtle eggs in these areas. Some of the areas of priority for protection include beaches in Redang Island, Perhentian Island, Padang Kemunting, Kem Terendak, Tanjung Serai, Tanjung Dahan, Meriam Patah and Pulau Upeh (Melaka), and islands in the Kudat and Semporna districts in Sabah. Nestings in Pulau Upeh in the last few years have declined by approximately 50% due to coastal development/reclamation. Main nesting beaches on Redang and Perhentian islands were gazetted for turtle protection under the National Land Code in 2006 and 2007. However, no specific provisions for turtle sanctuaries have been outlined in the legislation.

In Peninsular Malaysia, long-term nesting monitoring is in place at some key nesting beaches in Terengganu and Melaka via tagging programme by the Department of Fisheries, Universiti Malaysia Terengganu (SEATRU) and WWF-Malaysia. Awareness activities including religious sermons with a focus on the younger generation to end the practice of egg consumption have been conducted for years alongside advocacy for a national ban on egg trade and consumption by local universities and NGOs. In 2008, the Department of Fisheries launched the National Plan of Action (NPOA) for Conservation and Management of Sea Turtles which is closely aligned to the IOSEA Conservation and Management Plan. This comprehensive plan prioritises, among others, a national ban on commercial sale of turtle eggs and for all states to harmonise respective legislation on turtles. However, it is noted that the NPOA term ended in 2013 with no progress on harmonising existing legislations and a complete ban on egg trade.

6.4.3 Viet Nam

In Viet Nam, prior to 2002, studies demonstrated that the trade in marine turtle products in Viet Nam was threatening local populations (CRES 1994; Duc and Broad 1995; TRAFFIC 2004; van Dijk and Shepherd 2004). Since then Viet Nam has made strong commitments to addressing the issues of marine turtle conservation by becoming a signatory to a variety of global and regional conventions and treaties. For years, research and conservation activities have been ongoing coupled with awareness raising, more effective law enforcement and a national action plan. Questions remain on how these commitments are being implemented and if they are effectively addressing the decline of marine turtle populations in Viet Nam.

Marine turtle conservation faces many institutional challenges. One of the urgent problems in terms of the management of marine turtle conservation is the lack of clearly defined and divided roles and responsibilities for the Ministry of Natural Resources and Environment (MONRE) or the Ministry of Agriculture and Rural Development (MARD). These ministries are leading authorities in implementing state management plans on conservation of protected endangered species including marine turtles, which work with the various relevant agencies such as central and local law enforcers, police, customs, etc., in properly fulfilling their responsibilities with regard to implementing relevant biodiversity-related laws. This contributes to the lack of comprehensive and effective inter-agency co-operation on conservation of marine turtles. Additionally, marine turtle conservation requires enhanced co-operation and information sharing not only between MARD and MONRE, but should also involve Ministry of Public Security, Directorate of Customs, marine police, People Supreme Court, and other relevant agencies.

Local authorities in coastal provinces and cities are at the heart of marine turtle conservation. However, the current management system for conservation of marine turtles does not involve these authorities sufficiently, the needs include: enhanced co-operation and communication between national and local authorities, strict monitoring mechanisms, and knowledge sharing amongst coastal provinces and cities. Additionally, limited budget, weak capacity and low access to effective guidance on measures and solutions to conserve marine turtles are some of the challenges facing local authorities.

Law enforcement is reported to be ineffective and marine turtles continue to be captured and killed in coastal provinces/cities without any proper punishments. The capacity for effective enforcement of the existing legal system is hindered by a significant shortage of personnel trained to provide expert evidence, detect violations and prosecute offenders. Insufficient manpower, complex administrative procedures, corruption and undermine prompt detection of offences.

Weak judicial systems and light sentences allow those involved in this illegal activity to keep poaching marine turtles with little regard to the consequences. These factors make illegal trade in marine turtles a low risk business with high returns whereas the true masterminds and their networks remain untouched and operational with the ability to strike again.



Results from current field research indicate that although data are scarce, the illegal trade of marine turtle trade in Indonesia, Malaysia and Viet Nam appears to persist, with each country having its own trade dynamic. Open availability in physical markets surveyed was limited during the survey period, with online trade appearing more significant in Indonesia and Viet Nam considering the short survey span. Indonesia remains an important source country supplying demand for eggs and meat as well as trade in marine turtle shells (either in processed–jewellery, souvenirs, taxidermied or unprocessed forms–raw pieces). Seizures further confirm that poaching, consumption and trade is prevalent across the Indonesian archipelago including in Kalimantan, Java, Bali, Sulawesi, Maluku and Papua. In Malaysia, the long standing problem of local demand for turtle eggs in the states of Sabah and Terengganu remains active, and appeared to be occurring to a lesser extent in the state of Sarawak. Results of this research also suggests that a new trade mechanism has developed in the state of Sabah–traders roam around town approaching potential buyers covertly through the ‘OK’ sign, which is commonly understood to refer to availability of turtle eggs for sale, which is banned in Sabah. This was in response to stronger enforcement actions particularly in Sabah, where consumption and trade in marine turtles is strictly prohibited. In Viet Nam, local demand for marine turtle meat exists and while trade in marine turtle products were still observed for sale in outlets surveyed, the open trade in bekko products seems to have reduced significantly in comparison to findings in 2004.

Seizure analysis from January 2015–July 2019 in the three countries also reveal the persistence of international trafficking of marine turtle products in the Asian region. Indonesia, Malaysia and Viet Nam played a combination of source, consumer and transit roles, with China noted as a key destination in most cases. Further, the trade of live turtles and turtle parts appears to be a growing concern in Sabah, especially the increasing involvement by local communities to meet foreign market demands.

This study confirms the illegal trade of marine turtles persists in Indonesia, Malaysia and Viet Nam and identifies the main source and trading countries as well as some of the challenges in ensuring a ubiquitous ban on marine turtle trade and its enforcement. Limitations of this study include the rapid nature of the research, which prevents a more comprehensive quantification of trade levels, or comparison with past studies and a quantitative assessment of the impact on marine turtle populations. However, considering that marine turtle populations are globally in decline, the threat posed by continued poaching and illegal trade in combination with the multiple other threats they face, will have significant adverse impacts on remaining turtle populations in Southeast Asia, if allowed to persist. Based on information presented in the previous sections, the following recommendations are made:

7.1 Recommendations

- **Streamlining policy and legislative provisions, administrative capacities and implementation**

Non-harmonised laws and regulations pave the way for violators to exploit management and protection measures. Urgently, a standardised legislative provision is required to close loopholes and improve conservation of turtle populations in Malaysia, particularly to ensure all States prohibit the domestic trade in turtle parts and products. This will prevent laundering of the marine turtle egg trade in the country, between states that prohibit trade and those that do not. Furthermore, improved enforcement of existing legislation to restrict trade of turtles and turtle products (for example between states that prohibit

trade and those that do not) is required in many jurisdictions across all three countries, including of the respective National Plan of Action (NPOA) on Marine Turtles. More periodical updates on NPOAs are necessary to keep track of changes and trends over time, update knowledge and develop preventive measures to improve management provisions and curb illegal trade.

The streamlining of legal and regulatory policies should also extend to the roles of the various government agencies. For example, Viet Nam should work to identify and clarify the roles for the two key agencies—MARD and MONRE—in implementing state management plans on conservation of protected endangered species including marine turtles and to support the various relevant agencies in properly fulfilling their responsibilities. These can be resolved through national-level engagement, including in line with the country's NPOA process.

- **Monitoring, investigations, law enforcement and improved gateway protection**

Improved monitoring, detection and law enforcement is required in the market place, and particularly in maritime areas involving fishing vessels and seaports. In Malaysia, more strict mechanisms for monitoring and regulating and taking action on illegal trade, particularly turtle eggs, through major airports is required, particularly those flying out of Sabah and Sarawak in East Malaysia towards Kuala Lumpur and east coast cities of Kota Bharu (Kelantan), Kuala Terengganu (Terengganu), and Kuantan (Pahang). Similarly, in Indonesia, as trade appears to be operating on a more covert nature to feed both local and international demand, monitoring and investigations will be key. Continued monitoring and identification is needed, beyond those identified to be hotspots from research and investigations over the past decades, of key trade routes used, volumes, and 'hot-spots' for trade as well as promoting information sharing on the illegal international trade, such as smuggling methods and trade flows, among countries that have an active trade relationship regarding marine turtles.

Longer-term monitoring of trade trends and dynamics in key locations and countries, including those not covered under this study, should be conducted. Such studies would enable a more holistic understanding of the marine turtle trade in the region. Studies should also be considered to be undertaken at opportune moments, including turtle nesting seasons to determine if seasonality impacts trade patterns, as relevant comparisons with past studies to determine trends over time.

Persistent illegal trade, as demonstrated by seizures, reinforces the need for improvements on enforcement in all three countries. A majority of seizures are currently made through authorised raids on markets or opportunistic arrests made during maritime patrols. These should continue to deter illegal imports and exports of turtles and their products across the three countries (at provincial/state and national level), as well as in collaboration with neighbouring countries in the region. Forensics DNA analysis of seized specimens should be conducted to determine species involved and populations of origin. International co-operation is important as research has shown that illegal trade occurs not only to meet domestic demand but also to cater to international markets.

At local and national levels, investigations into the players involved in the poaching and trade of marine turtles and their parts, including the identification of collectors, illegal harvesters, middlemen, transportation and logistics companies and traders, is critical. As open availability of marine turtle parts and products reduces (due to legislative prohibitions) and trade moves underground, this becomes more imperative. Without investigations into parties involved along the trade chain, leading to the arrest and successful prosecution and conviction of violators, this problem will perpetuate to the detriment of wild turtle populations. To do this effectively, support to regulatory agencies is important, given that their capacities to manage the complicated issue of international turtle trade are limited to resources (e.g. funds and manpower) that are shared to address other issues or priorities.

Pursuant to the CITES Notification 009 that was issued in 2018, Parties are urged to prepare and submit an account of annual illegal trade reporting. The CITES Notification calls a comprehensive account of actions and outcomes of seizure and prosecution that is reported to the CITES Secretariat on an annual basis. An accurate level of reporting on law enforcement actions and outcomes is crucial, by all countries implicated in this trade, to understand the trade patterns and scale that would contribute towards law enforcement efforts.

- **Education and awareness-raising**

Given the varying dynamic of the trade that is both legal and illegal, education and awareness-raising among key players (such as local communities, fishermen, traders and consumers) in an effort to reduce marine turtle trade and consumption is important, highlighting detrimental impacts to the species and the environment. Activities should not only focus on the ecological impacts from poaching and trade of marine turtles, but also on the potential health impacts from consumption of products, such as turtle eggs. Additionally, an awareness-raising campaign should be undertaken focusing on local communities known or suspected to be involved in turtle poaching activities, to inform them of the impacts of their activities to the turtle populations as well as the unsustainability of the practice for their own livelihoods, in addition to implications for violating laws. These activities could also serve as a starting point in developing more targeted research and initiatives designed to reduce consumption and changing behaviour in the long term.

- **Enhanced regional co-operation**

Given the clear regional links involved in the trade, as demonstrated by seizures, strengthened and co-ordinated regional approach to mitigating trade of turtles, their parts and derivatives, is urgently required. Improved co-operation between Indonesia, Malaysia, and Viet Nam (as well as the Philippines, that is also an important country involved and/implicated in the marine turtle trade) is required particularly as these countries appear to share a common turtle trade route. Regional co-operation is also important to identify and stem illegal trade flows from within Southeast Asia to East Asian destination countries and territories (mainland China, Taiwan Province of China, Hong Kong SAR and Japan). The IOSEA Marine Turtles MOU provides a mechanism for co-operation on a regional level. At its latest meeting of Signatories in 2014, the 35 Signatory States including both source and consumer countries identified above, such as Indonesia, Malaysia, Viet Nam, Philippines, the US, France and others, the Signatories established an illegal trade working group, which is tasked with raising the awareness and strengthening political dialogue on this issue. Additionally, regional co-operation on countering illegal trade should be enhanced under other existing co-operation mechanisms, such as the Association of Southeast Asian Nations (ASEAN) umbrella or the Coral Triangle Initiative. Close collaboration and exchange of actionable intelligence regarding illegal harvest and trade of marine turtles and their products should be promoted between and within Southeast and East Asia.

Capacity building and joint information sharing platforms should be encouraged and implemented between Southeast Asian and East Asian countries, to update current knowledge and information on marine turtle trade patterns. This should also include training pertaining to the implementation and enforcement of national legislations and international commitments.

- **Source site management and protection**

Coastal provinces/cities where marine turtles are nesting and foraging are advised to implement the following practices and cross-cutting solutions including: establishing comprehensive management policies and regulations to protect coastal areas and/or islands for nesting and foraging marine turtles into annually provincial/city economic and tourism developmental strategy; establish no-entry and/or no-catch zones in some special areas restricting human presence and activities to protect nesting and foraging females; develop provincial monitoring mechanism in collaboration with marine police and other related organisations to combat illegal hunting, and collection of eggs and nesting females; develop programmes/projects providing sustainably alternative livelihoods to diversify income sources for local communities; develop sand protection programmes to reduce impacts of over-exploitation to the usefulness of sand for marine turtles laying eggs.

- **Assessment and management of turtle attraction sites**

Throughout the region, captive facilities that manage turtle hatcheries and those used as tourist attractions should be better assessed and monitored. In some cases, these facilities have little conservation value. Robust interrogation of these facilities, and an assessment of their regulation and practices is needed to ensure that these facilities do not undermine conservation efforts, or facilitate the laundering of wild caught turtles or their parts into trade.



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ANNEX I: NESTING AND FORAGING GROUNDS IN MALAYSIA

Out of seven extant marine turtle species, four can be found in Malaysia. They are the Green turtle *Chelonia mydas*, Hawksbill turtle *Eretmochelys imbricata*, Olive Ridley turtle *Lepidochelys olivacea* and Leatherback turtle *Dermochelys coriacea* (Chan, 2006).

Nesting distribution

The Leatherback nests primarily on the mainland beaches of the Terengganu state. For the Green, important nesting beaches occur in the Sabah's Turtle Islands Park and Sarawak's Talang-Satang National Park. Other nesting beaches are in Terengganu, Pahang, Perak states and Sipadan Island Park in the state of Sabah. There are two important nesting beaches for the Hawksbill Turtle, which are in the Turtle Islands Park in the state of Sabah, and in the state of Melaka. Other populations can be found in Terengganu, Johor and elsewhere. The nesting status of the Olive Ridley turtle is fragmentary, with nestings reported in the Sarawak Turtle Islands Park, Penang, Terengganu and Kelantan (Chan, 2006).

Figure 9: Key nesting sites of marine turtles in Malaysia



Source: WWF-Malaysia

Nesting abundance and trends

Except for the Green Turtle population in Sabah's Turtle Islands Park, most nesting trends are in decline (Chan, 2006). Generally, the Leatherback Turtle population is now considered as locally extinct, the Olive Ridley is on the verge of extinction, while the Green and Hawksbill turtles are struggling to survive (Chan, 2006; Joseph, 2017).

In Terengganu, the declines are shown in the Leatherbacks, Hawksbills and Olive Ridelys. Available records have shown that the Leatherback Turtle population has dropped from 10,000 annual nestings in the early 1950s to less than a dozen in present years (Chan and Liew, 1996, Chan, 2006). The last recorded nests of Leatherback Turtles in Terengganu was in 2010 and no nesting has been recorded since (Abdul Karim, 2016; Syed Kadir, 2016). According to Chan (2006), the Green Turtle populations in Terengganu have not been monitored sufficiently to provide a clear picture of the nesting trends, anecdotal evidence suggests declines of over 80%, nonetheless anecdotal evidence also indicates there has been an increase of nest numbers in recent years. Current nesting density averages 2,000 per year.

In Sarawak Talang-Satang National Park, nesting trends in the Green Turtles appear to be stable, with currently 2,000 or 3,000 nestings occurring per year (Chan, 2006). However, in the early 1950s, nestings of over 20,000 per year were recorded, indicating a decline of over 90% (Tisen & Bali, 2000; Bali *et al.*, 2016).

The Green Turtle population of the Sabah's Turtle Islands Park show signs of population recovery with the current densities of over 8,000 nestings per year (Chan, 2006; Isnain *et al.*, 2016; Joseph, 2017). However, the Hawksbill Turtle population in Sabah's Turtle Islands Park shows a gradual decreasing trend (Isnain *et al.*, 2016; Joseph, 2017). Currently, nesting density ranges from 400 to 500 per year (Chan, 2006).

Generally, the nesting season of Leatherback Turtles is from March to September with May to July being the peak period. The peak month for Hawksbill Turtles occurs from May to July, while the peak months for Olive Ridley Turtles in general is between February to May (Department of Fisheries Malaysia, 2008). In Sabah's Turtle Islands Park, nestings occur throughout the year and the peak months are May to August for Green turtles while Hawksbill nestings occur throughout the year with peak months from February to April (Joseph, 2017).

Foraging grounds

The Green Turtles in Malaysia undergo long-distance migrations from their nesting beaches to foraging grounds and vice versa. Luschi *et al.*, (1996) and De Merwe *et al.*, (2009) revealed long-distance migrations of nesting Green turtles in Malaysia. In addition, genetic studies by Dethmers *et al.*, (2006), Jensen *et al.*, (2016) and Joseph & Nishizawa (2016) have shown that the matured Green Turtles in Malaysia return to their natal nesting beaches from their foraging grounds to reproduce. In Malaysia, a few important foraging grounds have been identified, such as Brunei Bay and Sipadan Island Park, both in the state of Sabah. Through genetic mixed-stock analyses, Joseph *et al.*, (2016) found that Green Turtles originating from Sabah's Turtle Islands Park and other areas in the Sulu Sea migrate to Brunei Bay.

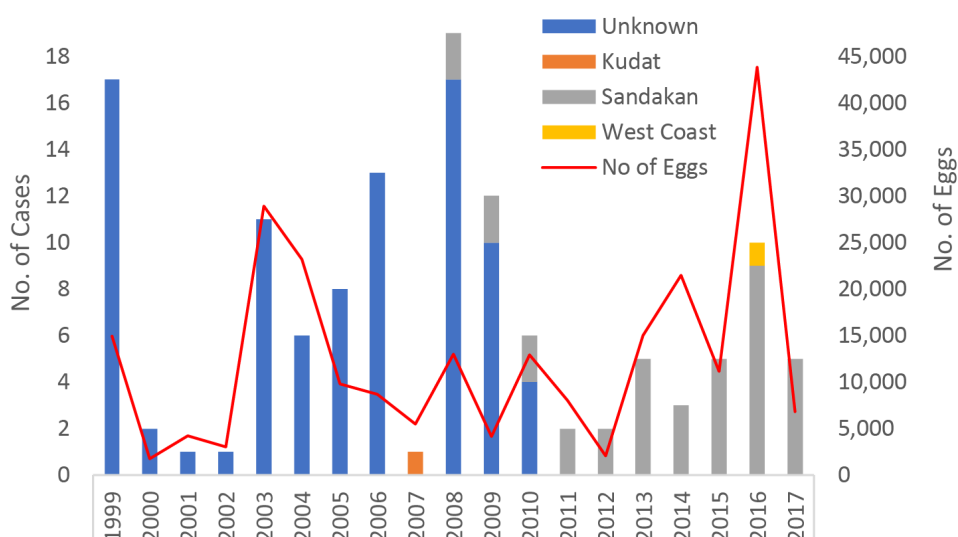
Clear genetic differences have been observed between Hawksbill Turtles in Sabah's Turtle Islands Park and in other rookeries in Malaysia (Nishizawa *et al.*, 2016) indicating a natal philopatry of Hawksbill Turtles in the region. Mixed-stock analysis of Hawksbill samples collected from foraging grounds in Malaysia shows the presence of multiple haplotypes, suggesting that Hawksbill Turtles from various rookeries contribute to foraging grounds in Malaysia (Nishizawa *et al.*, 2016). Interestingly, some of the Hawksbill Turtle haplotypes detected in the foraging grounds in Tun Sakaran Marine Park and Sipadan Island off the districts of Semporna have been observed in the relatively proximate rookeries of Sulu Sea (Nishizawa *et al.*, 2016). Similar to Green Turtles, Hawksbill Turtles also undergo long-distance migrations. Hawksbill Turtles nested in Malacca migrated to the south of the Strait of Malacca and the waters surrounding the Riau Archipelago (Indonesia) and the neighbouring islands. This suggests that the archipelago and the neighboring islands are important foraging grounds for the species (Lau *et al.*, 2009).

ANNEX II: SEIZURE DATA AND SUMMARY FOR SABAH BETWEEN 1999 AND 2017

Marine turtle seizures were only available for Sabah where incidents have been recorded by the Sabah Wildlife Department since 2004 (for live turtles and turtle parts) and since 1999 (for turtle eggs) (see Figure 1), up to 2017. In the period between 1999 and 2017, a total of 129 cases were recorded involving seizures of turtle eggs while 23 cases were recorded from 2004 to 2017 involving seizures of whole or parts of turtles.

For seizures involving turtle eggs, the highest number of seizures were made in the Sandakan area which recorded 37 out of the 129 total cases reported from 1999 to 2017, with the highest number of cases typically occurring between July and September each year, coinciding with peak turtle nesting season. The highest number of cases occurred in 2008 with 19 cases while 2016 recorded the highest number of eggs seized with 43,826 eggs. The seized eggs were mainly from Green and Hawksbill turtles and at the time of seizures were mainly being transported into Malaysia to be sold for local consumption. Cases involved a combination of local communities, foreign nationals (e.g. Filipino) or illegal immigrants to Malaysia.

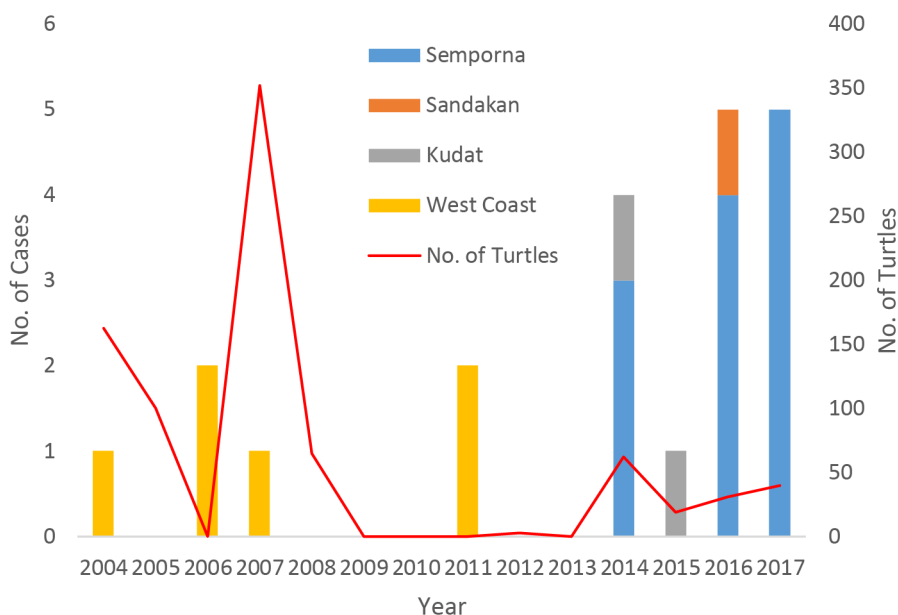
Figure 1: Total Number of seizures relating to turtle eggs in Sabah (1999–2017)



Source: WWF-Malaysia/Sabah Wildlife Department, 2018

For turtles and turtle meat, seizure records indicate the highest number of cases occur in Semporna area with 12 cases out of a total of 23 cases recorded. From 2004 to 2017, a total of 23 cases were recorded around Sabah involving 835 Green and Hawksbill turtles with 53 kg of flesh and 227 kg of carapace seized (Figure 2). All of these cases involved foreign fishermen from either Viet Nam or China, with their cargo destined for export to international markets, likely to be either Viet Nam or China.

Figure 2: Total number of seizures relating to turtle poaching in Sabah (1999–2017)



Source: WWF-Malaysia/Sabah Wildlife Department, 2018

ANNEX III: LIST OF STAKEHOLDERS CONSULTED IN INDONESIA, MALAYSIA AND VIET NAM IN 2018

Country	Stakeholders	Organisations
Indonesia	Government	<ul style="list-style-type: none"> • BKSDA Bali • BKSDA West Java • BKSDA East Java • BKSDA Makassar
	NGO	<ul style="list-style-type: none"> • Pak Made Kanta, Sarah Melania and Dodi (Bali Turtle Conservation and Education Centre, Serangan Island) • I Wayan Wiradnyana and Pak Agung (Bali Sea Turtle Society) • Harfiandri Damanhuri (Kepala Pusat Informasi Penyu di Universitas Bung Hatta, Padang, N. Sumatra) • PROFAUNA - Regional offices (Java, Kalimantan, Sulawesi) • Turtle Project Desa Pemuteran, Kecamatan Gero kgak, Buleleng Bali. (since 1992)

Country	Stakeholders	Organisations
Indonesia	Researches/ individuals	<ul style="list-style-type: none"> • Dr Mirza D Kusrini (Dept of Forest Resources Conservation & Ecotourism Faculty of Forestry, Bogor Agricultural University, West Java) • Dewi Damayanti, Bali • Khalis Dwi (Marine Science Dept Padjadjaran University, Bandung, West Java) • Retno Kusuma Ningrum, Bali • Monika Ruwaimana (PhD student) • Daniela B. Cavallini • Maggie Muurmans, Pulau Banyak, N. Sumatra • Nur Masyitha Nurdin (Conservation and Biodiversity Analysts of BPSPL Satker Makassar) • Andi Muhammad Ishak Yusma (Head of Programme and Evaluation Section of BPSPL Satker Makassar) • Mr. Muhammad Amin, Head Section of 1st Region of GAKKUM (Balai Penegakan Hukum) KLHK Makassar • Alghazali (local Kendari) • Rusli (local Kendari, former turtle hunter/fisherman)
Malaysia	Government	<ul style="list-style-type: none"> • Department of Fisheries Malaysia • Sandakan Municipal Council (In-person interview was conducted with the Council's Head of Enforcement Unit)
	NGO	<ul style="list-style-type: none"> • WWF Malaysia–Melaka and Sabah • Kudat Turtle Conservation Society
	Researchers	<ul style="list-style-type: none"> • University Malaysia Terengganu (4 researchers working on marine turtle conservation were interviewed).
	Local community	<ul style="list-style-type: none"> • Vendors (n=6) - Informal interviews conducted with willing vendors based at wet and dry markets and souvenir shops at various surveyed locations. • Dive instructors (n=3) - Informal interviews conducted with willing dive operators/ instructors based at the various surveyed locations on observations on marine turtle trade. • Local business owners (n=3) - Informal interviews conducted with willing local business owners (e.g. café, restaurants, etc.) based at or near wet and dry markets at various surveyed locations.
Viet Nam	NGO	<ul style="list-style-type: none"> • The Asian Turtle Programme (ATP) is a regional tortoise and freshwater turtle research and conservation programme based in Hanoi, Vietnam. • WWF-Vietnam • IUCN-Vietnam (interviews (through mail) and sharing of referenced materials) • Education for Nature–Viet Nam
	Government	<ul style="list-style-type: none"> • Rural Development (MARD) (group discussion with experts coming from several departments under the ministry and interviews) • Directorate of Fishery (interviews (through phone) and sharing referenced materials) • Con Dao's National Park (sharing referenced materials) • Nui Chua's National Park (sharing referenced materials) • Institute of Resources and Marine Environment/ Institute of Science and Technology (sharing research findings)
	Freelance experts	<ul style="list-style-type: none"> • Interviews and group discussion with individuals who have worked in marine turtle conservation projects and/or have in-depth experiences and knowledge of the sector

ANNEX IV: MARINE TURTLE HATCHERY INFORMATION FOR INDONESIA 2018

Java

In May 2018, eight sites were visited in Java to assess the current state of turtle management there. Nesting beaches on other islands were listed. Egg poaching was reported from all sites. Tourists at all sites were mainly local. Hatchery facilities were generally very simple and could do with improvement. Hatchling turtles were often kept for six months. Fungal diseases were common. In summary:

No	Location	Description
1	Pramuka Island, Pulau Seribu, Jakarta Bay, West Java	The government-run turtle hatchery on P. Pramuka was closed to tourists while undergoing renovation and construction of a turtle clinic (start July 2018) and there were some hawksbill turtle hatchlings and a very few young captive Hawksbill and green turtles there. 30% mortalities were recorded.
2	Harapan Island, Pulau Seribu, Jakarta Bay, West Java	Government-run, has an educational theme and a guide. Large numbers of Hawksbill eggs and hatchlings were being kept, and three adult Hawksbill turtles were being held there. Rangers patrol beaches 3-4 times a month. 20-30% mortalities were recorded
3	Kelapa Dua Island Pulau Seribu, Jakarta Bay, West Java	Government-run, they have an information/education board on display. No eggs in the hatchery (using buckets only), 462 hatchling Hawksbill Turtles and 11 young turtles. Hatchlings are kept for 6 months before release. 30% mortalities were recorded.
4	Pangumbahan, Sukabumi, West Java	Government-run facility. An information board for education, and a guide. 2703 Green Turtle eggs in the hatchery, and 4 young turtles. Hatchlings are not kept but released on the day of hatching. During the peak hatching season ((September-October) over 300 hatchlings are released every day. Olive Ridelys were last seen in 2012. Daily patrols. 10-20% mortality.
5	Cemara Beach, Pantai Rejo, Banyuwangi, East Java	Run by local NGO PokMasWas. Funded by oil company Pertamina and other donations. Educational information board, Guide. Some international visitors. 874 Olive Ridley eggs kept in an indoor hatchery, 58 hatchlings and 6 young turtles. 20-30% mortality. People can 'adopt a turtle' for Rp. 20,000.
6	Sukamade Beach, Meru Betiri National Park, Banyuwangi, East Java	Government-run. 4 species of Turtle (Green, Hawksbill, Olive Ridley, and rarely, Leatherback) nest along the coast. 15097 Green turtle and 3207 Olive Ridley eggs in the hatchery, Mortalities 20%. For Rp. 30,000 visitors can go on a turtle watch at night, and a turtle release in the morning.
7	Ngagelan Beach, Alas Purwo National Park, Banyuwangi, East Java	Government-run. Visitors are mainly international tourists. 16,302 Olive Ridley eggs in hatchery and 106 hatchlings. 10% mortality reported. Only one nest of eggs kept for 3 months after hatching, the rest released. Hatchery is outside with strong mesh to protect eggs from monkeys. 4 species nest along this beach-Green, Olive Ridley, Hawksbill and occasionally Leatherback. Daily patrols.
8	Boom Beach, Banyuwangi, East Java	Established in 2011. Facility run by the Banyuwangi Turtle Foundation NGO. Tourist visits not encouraged. Indoor hatchery with CCTV. 9008 Olive Ridley eggs in hatchery. No adult or hatchling turtles kept. Eggs bought from local people for IDR2,500 each as an incentive not to sell elsewhere. 5% Mortality. Olive Ridelys still nest along the beach in spite of heavy tourist pressure, lights and noise. Educational talks to schools and turtle events for public awareness. Website www.bstf.org .

Bali

In 2018, 12 turtle hatcheries and attractions were identified In Bali. In summary:

No.	Name	Location	Notes
1.	Kurma Asih	Desa Perancak, Kabupaten Jembrana	Formerly funded by Daihatsu. Uncertain whether this is still the case. Far from main road. Some eggs, sticks. No public information.
2	TEC Serangan	Desa Serangan, Kota Denpasar	A well-run facility formerly supported by WWF. Eggs are bought from local people. Turtles are released soon after hatching. Knowledgeable staff, lecture theatre for turtle talks to schools, public. Many overseas visitors. Needs urgent funding to enlarge hatchery. No eggs in sand. Runs on donations. Receives little /no financial support from BKSDA but legal. Has broken pump, needs a new one to pump in sea water. Some turtles sick. Parasites and buoyancy problems.
3	Konservasi Penyu dan Kura-Kura	Serangan	A community-run operation. Only 5 large Green Turtles and Hawksbills in a covered pond. Eggs kept in small buckets. Visitors can feed the turtles with seaweed. Not much educational value. Many floating baskets with hatchlings. Bought from local people.
4	Deluang Sari	Desa Tanjung Benoa, Benoa, Kabupaten Badung	Overcrowded, poor conditions. Mostly Asian tourists.
5	Konservasi Penyu Saba Asri	Pantai Saba, Gianyar	Locked up at time of visit. No access. Some eggs in a hatchery visible over fence. Strange notice about donation Rp.5 million? Bank Padma notice–sponsor?
6	Konservasi Penyu Sindhu Dwarawai	Pantai Sindhu, Sanur	Very small. Suffers from lack of funding. On beach but not popular with western tourists.
7	Konservasi Penyu Yeh Gangga	Pantai Yeh Gangga, Tabanan	Nesting beach only. No hatchery. No info. Old building now used for storage of ceremonial (Barong) items.
8	Konservasi Penyu Pemuteran	Pantai Pemuteran, Kabupaten Buleleng	No info
9	Penangkaran Penyu Tegal Besar	Pantai Tegal Besar, Kabupaten Klungkung	No info
10	Bali Sea Turtle Society	Pantai Kuta, Kuta, Kabupaten Badung	Well run facility. Many eggs collected on tourist beach, incubated and released same day of hatching (releases do not ask for payment). Good community relations Many western visitors. Urgently needs more room for hatchery to expand.
11	Penangkaran Penyu Mooncot Sari	Tanjung Benoa	Inadequate in many ways. Dirty, overcrowded, no educational value. Almost entirely Asian visitors.

12	Penangkaran Penyu Bulih Bali 'New Bulih Bali Turtle Farm"	Pulau Pudent, Benoa Tanjung Benoa	Area approx. 1000m ² . 1 big pond (partial shade), 5 small ponds. 10 big GT in big pond in 10 cm deep dirty muddy water (low tide), several small and medium sized turtles (HT and ORT in smaller ponds covered with big mesh ("because they bite"). Guides were very badly informed. Other animals in rusty small cages included 1 reticulated python, 4 owls from Java (?), fruit bats, 1 green iguana, 2 palm civets. Guides insisted on people sitting on turtles, even if they did not want to. Photos taken of them and then charged Rp.200,00. Visitors also encouraged to feed turtles with handfuls of seaweed.
13	Turtle Project	Desa Pemuteran, Kecamatan Gero kgak, Buleleng Bali. (since 1992)	Managed by the owner of "Reef Seen Divers' Resort". Hatchery and releases. Local people given incentive to bring turtle eggs to facility. Visitors asked to pay a donation to release baby turtles. Adult Hawksboill Turtles also released. Ponds for hatchling and adult turtles. Records show receipt of 1750 eggs, 1467 hatchlings, 1017 hatchling releases, 116 adult turtle releases. (to 05 June 2018)

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