Sea cucumber crime in India and Sri Lanka during the period 2015–2020

Teale Phelps Bondaroff[1]

Abstract

Sea cucumber poaching and smuggling has been on the rise in Sri Lanka and the south of India. This study analyses incidents of sea cucumber crime in India and Sri Lanka between 2015 and 2020, compiled from news media reports and government press releases. The 120 incidents analysed reveal 502 arrests, with an average of 4 arrests per incident and 544 kg of sea cucumbers seized. Over 64.7 tons of sea cucumbers – representing 104,531 individual animals – were seized by Sri Lankan and Indian authorities, worth an estimated USD 2.84 million. Sea cucumber poaching and smuggling operations are highly organised and incidences sharply increase in 2019 and 2020. Sea cucumber crime appears to be spreading from a core area in the Gulf of Mannar from Palk Bay to Lakshadweep. This paper concludes that sea cucumber crime should be treated as a form of transnational organised crime, that monitoring and enforcement efforts be expanded, and that intergovernmental and interagency cooperation be increased.

Keywords: Illegal fishing, sea cucumbers, wildlife crime, illegal, unreported, and unregulated (IUU) fishing

Introduction

Poaching and smuggling occurs within sea cucumber fisheries globally (Conand 2018), with the waters of southern India and Sri Lanka having emerged as a global hot spot for sea cucumber poaching and smuggling. For a number of years, authorities have been fighting a protracted battle to combat this form of wildlife crime, and the number of arrests and seizures appears to be on the rise. For the past several years, the majority of identified sea cucumber-related crimes have taken place in the waters and coastal areas of the Gulf of Mannar and Palk Bay – the waters between Sri Lanka and India. In 2020, however, a number of cases were reported in Lakshadweep, a group of islands 200 km off the southwest coast of India.

For the past two years, the OceansAsia research team has been monitoring these crimes. Using news media reports and government press releases, a database documenting 120 incidents of sea cucumber crime in India and Sri Lanka between 2015 and 2020 has been compiled. By analysing these data, this study seeks to better understand the nature, scale and increase of sea cucumber crime in the region.

The history of sea cucumber fishing in southern India and Sri Lanka is long, dating back a thousand years, when Arab and Chinese merchants set up supply chains (Hornell 1917 in Asha et al. 2017; Terney Pradeep Kumara et al. 2005). There is almost no domestic demand for sea cucumbers in India or Sri Lanka, which are principally exported to Hong Kong, Singapore and Chinese markets (Asha et al. 2017).

The Gulf of Mannar and Palk Bay is the principal region for sea cucumber fisheries. This region is bordered by both India and Sri Lanka, and as such, it is worth considering the region as a whole. Differences in sea cucumber harvesting and export regulations in India and Sri Lanka, coupled with the short distance between these two countries, has resulted in extensive smuggling, with organised criminal operations able to launder illicit sea cucumbers caught in India by smuggling them into Sri Lanka. Understanding this legal context is important to understanding the rise of sea cucumber crime in the region.

Of the more than 1700 species of sea cucumbers described globally, some 200 can be found in Indian waters, and of these, roughly 20 are considered commercially important (Kashyap et al. 2020; James 2001). The majority of these are found in the Andaman and Nicobar islands, followed by the Lakshadweep Islands, Gulf of Mannar, Palk Bay and Gulf of Kutch (James 2001; Asha et al. 2017). Of these regions, the Gulf of Mannar and Palk Bay, home to roughly 39 species of sea cucumber, is the principal centre of historic sea cucumber production in India. Although it is a multi-species fishery, harvesting focuses chiefly on *Holothuria scabra*, *H. spinifera*, and *H. nobilis*, when it can be found (Sastry 1998). In the illicit sea cucumber fishery that has emerged in Lakshadweep in recent years, *Holothuria fuscogilva*, *H. nobilis*, and *Thelenota ananas* the are high-value species that are exploited (Asha et al. 2017).

High demand and excessive harvesting resulted in serious population declines; as a result, in 1982, the Indian Ministry of Environment, Forests and Climate Change implemented

[1] Director of Research, OceansAsia. Email: Teale@oceansasia.org. Website: www.oceansasia.org

size regulations on exported beche-de-mer. This regulation proved ineffective and populations continued to decline. In 2001, a blanket ban was implemented, and all species of holothurians were listed under Schedule I of the Indian Wildlife (Protection) Act of 1972. This had the effect of prohibiting all sea cucumber fishing and exports in India (Asha et al. 2017). In the face of the ban, illegal sea cucumber fishing has expanded, along with the growth of clandestine organised criminal networks that help smuggle sea cucumber products out of the country.

Roughly 24 species of sea cucumbers can be found in Sri Lankan waters, of which 20 have commercial value (Dissanayake and Stefansson 2012). A multi-species fishery operates year round, and is focused on the northern arc of the country (north, northwest and northeast regions), after unsustainable extraction caused the collapse of sea cucumber populations in the south (Terney Pradeep Kumara et al. 2005; Prasada 2020). The sustainability of the current fishery is in question: Dissanayake and Stefansson (2012) found that "the total abundance of all the species declined between 2008 and 2009," with 11 species being exploited and a higher presence of immature and smaller animals in catches (Dissanayake and Stefansson 2012). A recent study by Nishanthan et al. (2019) recorded only nine species in commercial catches.

In contrast to India's complete ban, Sri Lanka permits fishing for sea cucumbers, but requires licenses for fishing, diving and transportation. As populations decline, the government has reduced the number of sea cucumber harvesting licenses it issues, reducing the number by 25% in 2016 (Daily News 2016).

Because it is still legal to export sea cucumbers from Sri Lanka, and due this country's proximity to India, significant numbers of sea cucumbers that are caught illegally in India are smuggled into Sri Lanka where they are laundered and then re-exported to Southeast Asian markets through licit supply chains. Sri Lankan fishers will also venture into Indian waters to poach sea cucumbers (Daiji World 2015), and Indian fishers will fish illegally in Sri Lankan waters (New Indian Express 2018; News First 2020).

Methodology

In order to better understand the nature, scale and increase of sea cucumber crime in the region, we have built a database of illegal incidents involving sea cucumbers from 1 January 2015 to 31 December 2020 in India and Sri Lanka. A detailed study of English-language news media stories, and the Sri Lankan Navy's archive of press releases and reports was conducted (Sri Lanka Navy n.d.). When an incident was identified, where possible, triangulation was used to confirm the details of the case. Google Alerts were set up for key terms – "sea cucumber", "sea cucumber + smuggling", and "sea cucumber + illegal", and monitored daily from March 2018.

Arrests or seizures that occurred in different locations but on the same day were recorded as separate entries; this was done to allow us to map individual incidents. For example, on 22 October 2019, 10 people were arrested at Nallur beach in Trincomalee, and three dinghies, three outboard motors, 300 kg of sea cucumber, and other illegally caught fish were seized. The same day, a suspicious three-wheeler was stopped at a roadblock in Vankalai, and a search revealed 40 kg of sea cucumbers. Because the driver did not have a permit for the sea cucumbers, he was arrested, and the three-wheeler and sea cucumbers were seized. These two incidents were reported together by the Sri Lanka Navy but separated into two entries in the database (Sri Lanka Navy 2019).

We identified 120 incidents over the time period under examination (50 in India, 70 in Sri Lanka), but were required to exclude portions of one of these entries from our analysis due to a lack of specificity. The report in question, from 26 August 2020, detailed the results of a week-long Sri Lanka Navy operation across the country that culminated in the arrests of 48 people for illegal fishing and "other unlawful activities", including harvesting sea cucumbers without a license. Because we were unable to determine how many individual arrests were linked to sea cucumber crime, we have included the total number of sea cucumbers seized through this operation (370 kg) in our analysis, but excluded it from some of the analysis (Sri Lanka Navy 2020b).

For each entry, we recorded the date, location, weight and/or number of sea cucumbers seized, the state of the sea cucumber (live, wet, dry), the value of the seizure (estimated by the authorities), any other seizures (boats, fishing gear, vehicles, diving equipment), the number of suspects arrested, and any details regarding the suspects (age, place of origin, name) and the authorities who made the arrest (agency and names), when this information was available.

Not all of this information was available for each entry. We found that either the weight or number of sea cucumbers seized was reported, but seldom both, and that there was often evidence of rounding numbers. The state of the sea cucumbers seized varied from case to case, and it was often unclear whether the sea cucumbers seized were live, wet, semi-processed, or processed (dry), a factor that influences estimates regarding the weight and commercial value of the seizure. This could not necessarily be inferred from the context in which the seizure took place. For example, on two occasions Indian authorities seized both live and processed sea cucumbers from fishing vessels intercepted in Lakshadweep (Chatterjee 2020a; 2020b). In both of these cases the live sea cucumbers were released.

The species of sea cucumbers involved was rarely reported, and the images that accompanied news stories were often stock photos and could not be relied on for species identification. Sri Lanka Navy press releases often included photos of individuals arrested and items and sea cucumbers seized (Sri Lanka Navy 2020a). While it was often difficult to identify the species involved from these photos, what was indicated was that sea cucumbers of different sizes and species were typically seized, reflecting the multi-species nature of this fishery.

Finally, the value of the sea cucumbers seized was rarely reported, and when it was, it was unclear how the value was

calculated. Most stories failed to provide details as to the species and whether retail, wholesale or price paid to the fisher was used in the calculation. For example, where values were given, the rate per kilogram ranged from USD 17.76/kg from a seizure of 800 kg by Indian customs officials in the Gulf of Mannar on 22 August 2019 (ANI News 2019), to USD 1353.32/kg from a seizure of 155.5 kg (220 sea cucumbers) made by Lakshadweep Forest Department officials on 10 October 2020 at a jetty in the Agatti Islands (Chatterjee 2020f). This reflects the range of prices paid for sea cucumbers, with fishers often paid a pittance, while expensive specimens of *Holothuria scabra* can retail for as much as USD 1800/kg, or H. fuscogilva selling for as much as USD 401/ kg (Purcell et al. 2018). However, given that dollar values in crime reporting are notoriously unreliable (Murtha 2016; Coomber et al. 2000), and that factors such as species, length, weight and quality of processing can affect the price, ultimately these numbers were not used (see Purcell 2014; Purcell et al. 2018; Purcell et al. 2017; Govan 2019).

Given the desired goal of tracking changes in sea cucumber crime over time, it was necessary to estimate weights, numbers and values for sea cucumber catch seizures where this information was lacking. The price of sea cucumbers can vary considerably, on an individual specimen level, at various stages of the supply chain, and even between market places. Prasada (2020) for example notes that Sri Lankan fishers may be paid ~ USD 7.00 for a fresh individual of *H. scabra*, ~USD 2.00 for a fresh individual of *H. spinifera*, *B. marmorata* and *T. anax*, and ~USD 0.50 for fresh specimens of low-value species (Prasada 2020). For simplicity, an average price was calculated using the November 2016 Hong Kong retail prices for *H. fuscogilva* and *H. scabra*, and the retail price for these species and the *T. ananas* from Guangzhou from the same date (see Govan 2019; Purcell et al. 2018), resulting in an average 2016 price of USD 200.40/kg.

The price of beche-de-mer has been steadily increasing. Chen (2003) observed that the price of a kilogram of this product in China has increased from the equivalent of ~USD 3.0 in the 1960s, to ~USD 60.0 in the 1980s, ~USD 120.0 in the 1990s, and ~USD 370 in the 2000s (Chen 2003). Purcell et al. (2018) calculated that the average price of beche-de-mer has been increasing 2.4% annually; this number was used to generate an average price used in this analysis.

Weights were drawn from the literature. For the live and/or wet weight, the average weights at capture of *H. fuscogilva*, *H. scabra* and *T. ananas* were drawn from a number of sources, and an average was calculated (Ngaluafe and Lee 2013; Koike 2017; Skewes et al. 2004). This resulted in an average weight of 2.45 kg per live and/or wet sea cucumber seized. To calculate the dry weight of the average seized sea cucumber, an average market weight for *H. fuscogilva*, *H. scabra* and *T. ananas* – as reported by Purcell et al. (2018) (for Hong Kong and Guangzhou markets) – yielded a weight of 0.15 kg. Where the state of the sea cucumber was unknown, we used the wet weight (2.45 kg) to determine the number of sea cucumbers seized, given that 72.6% of seizures (53 out of 73) where the state was identified, the sea cucumbers were recorded as being live and/or wet. It is recognised that this approach introduces a possible source of error that would underestimate the number of sea cucumbers seized, and that these weights, and the numbers derived from them are rough estimates, however this approach produces consistent values that allows for trends to be tracked.

Dry weight was used for the purposes of calculating values, and all wet weights were converted into dry weight using the conversion ratio of 6.0 – the average of the Secretariat of the Pacific Community (SPC) recommended conversion ratios of *H. fuscogilva* (8.0), *H. scabra* (5.0) and *T. ananas* (5.0) (Ngaluafe and Lee 2013).

Further limitations must be noted. This study relied on English-language media and reports, and as a result, cases reported in non-English language sources may have been missed. Cases that did not receive media attention or that were not reported by the Sri Lanka Navy would also have been overlooked. Given that some cases involving very small seizures were still reported in the press, it is unlikely that smaller cases were not reported. For example, several news outlets reported on the 5 October 2020 Forest Department seizure of 20 dry sea cucumbers from an abandoned building in Lakshadweep (Kedia 2020; Chatterjee 2020e). We can be more confident that fewer incidents were missed through the analysis of reports of the Sri Lanka Navy because it is a government agency. Finally, we noted inconsistent reporting in a number of news stories, particularly with regards to dates and locations of incidents. Triangulation was used to mitigate this potential source of error.

Results

From 1 January 2015 to 31 December 2020, there were 120 incidents involving sea cucumber crime in Sri Lanka and India, with the number of incidents increasing substantially in the past two years (Fig. 1). These incidents resulted in 502 arrests, which have also increased in the past two years (Fig. 2). On average, an incident resulted in four arrests, but ranged between zero and 29, with a mode of one. Reports and new stories often included details about those arrested, typically age and place of origin. Of those arrested, all were men, ranging from 15 to 63 years of age (see The Hindu 2020; Arockiaraj 2020).

In addition to the seizure of sea cucumbers (see below) and arrests, authorities often seized fishing and diving gear, oxygen cylinders and other equipment, as well as 105 vessels (8 from India and 97 from Sri Lanka), a considerable number of outboard motors, and land vehicles, including a number of lorries (2), three wheelers (4) and an SUV. While the vast majority of vessels were dinghies, a variety of vessels were seized, including country boats, fiberglass dinghies, and fishing trawlers (Table 1) (see News First 2020). During any given incident, an average of 0.88 vessels were seized.

When these incidents are mapped, a distinct cluster emerges in the Gulf of Mannar and Palk Bay region (Map 1). This is consistent with this area being a key sea cucumber fishing area

(historically in the case of India). Magnifying this area (Map 2) identifies a key sea cucumber crime area in and around Adam's Bridge (Rama's Bridge/Rama Setu), the shallow portion of sandbanks and shoals between Mannar Island in Sri Lanka, and Rameswaram (Pamban) Island in India separating the Gulf of Mannar and Palk Bay. Also of note is the cluster of incidences occurring in Lakshadweep in 2020, particularly on and around Agatti Island (Map 3).

The total combined calculated weight (wet and dry) of sea cucumbers seized over the period studied was 64,733 kg (64.7 t), with 40,433 kg seized by Indian authorities, and the remaining 24,300 kg seized by Sri Lankan authorities (Table 2).

The overall average size of a seizure was 543.98 kg per incident, though this amount fluctuated considerably over the years and was particularly influenced by individual large seizures (Fig. 3), such as the 26 October 2015 Indian Coast Guard interdiction of two Sri Lankan fishing vessels with 9300 kg of poached sea cucumbers at Cherbaniani, about 35 km off Lakshadweep (Daiji World 2015), and the 1 June 2019 seizure of 2410 kg of processed sea cucumbers at Nagapattinam by Indian authorities (New Indian Express 2019). The majority of seizures in both jurisdictions involved wet and/or live sea cucumbers (Fig. 4). Of the incidents where the state of the sea cucumber seized was known (73 incidents), 27.4% were identified as dry and/or processed sea cucumber, representing 14.0% of the total weight seized.

During the period under examination, it is estimated that 104,531 sea cucumbers were seized by Sri Lankan and Indian authorities (wet and dry), with an average of 871 sea cucumbers seized per incident (Table 3).

Table 1. Number of sea cucumber crime incidents, arrests and seizure in Sri Lanka and India, 2015–2020.

Year	Number of incidents		Number of arrests		Vessels seized		Other vehicles seized	
	Sri Lanka	India	Sri Lanka	India	Sri Lanka	India	Sri Lanka	India
2015	4	4	15	34	3	2	2 lorries	-
	8		**49**		**5**		2 three wheelers	
2016	1	5	5	9	0	0	-	-
	6		**14**		**0**			
2017	1	6	3	4	1	1	-	-
	7		**7**		**2**			
2018	6	3	51	0	11	1	-	-
	10		**51**		**12**			
2019	19	13	93	30	26	3	1 three wheeler	1 - SUV
	32		**123**		**29**			
2020	40	18	225	33	56	1	1 three wheeler	
	58		**258**		**57**			
Total	**72**	**48**	**421**	**81**	**99**	**6**		
	120		**502**		**105**			

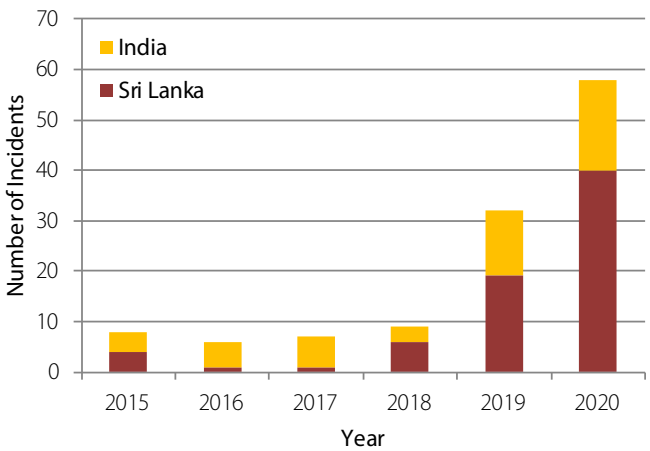


Figure 1. Number of sea cucumber crime incidents in Sri Lanka and India, 2015–2020.

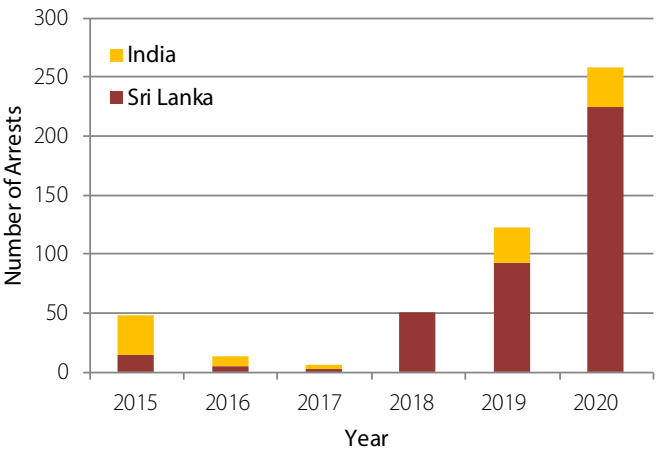
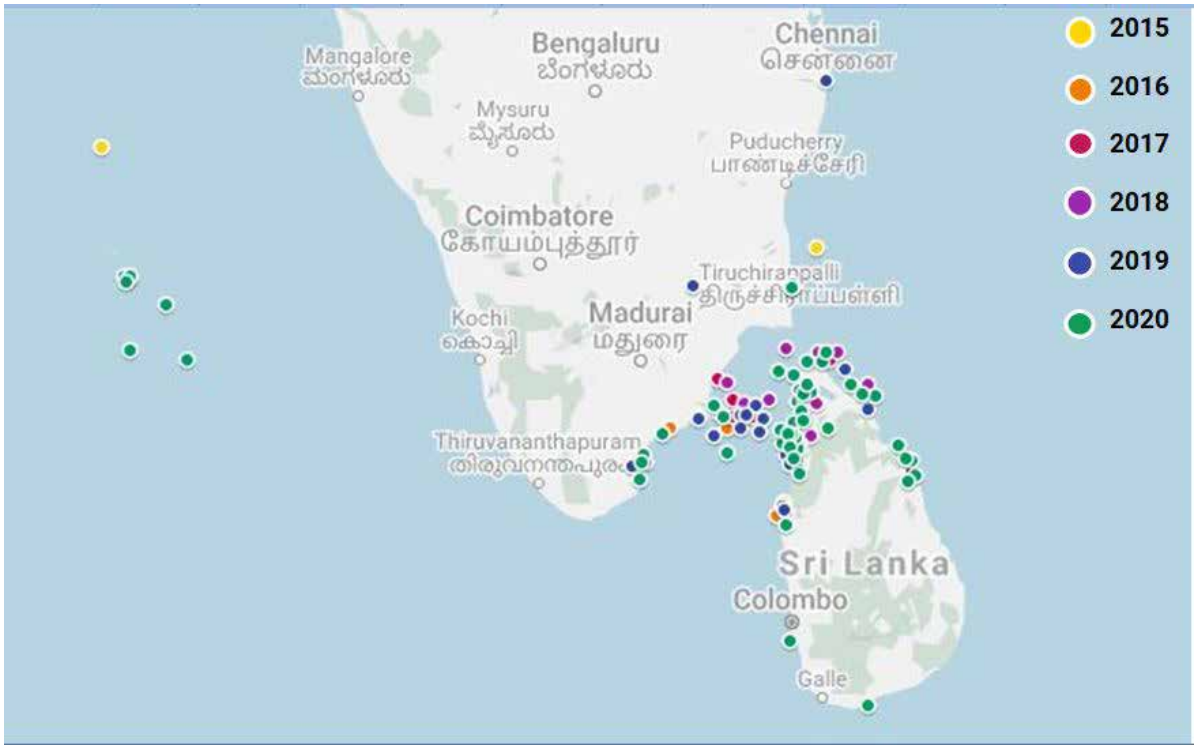
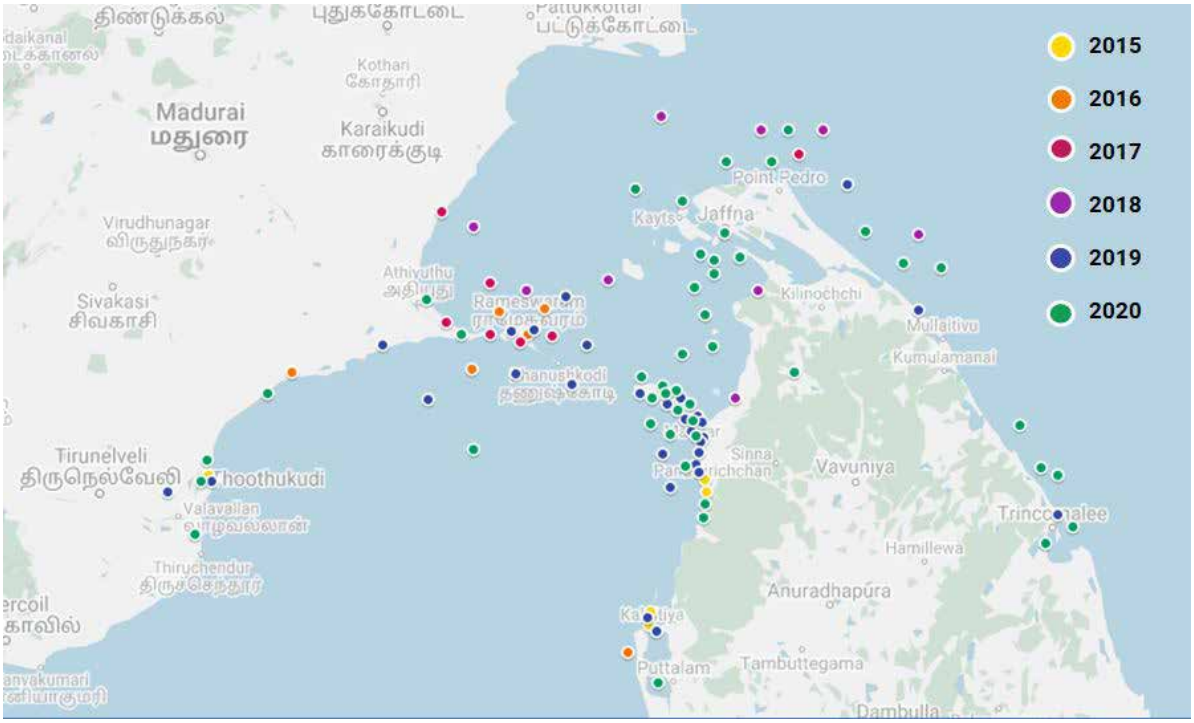


Figure 2. Number of sea cucumber crime-related arrests in Sri Lanka and India, 2015–2020.



Map 1. Sea cucumber crime in Sri Lanka and the south of India, 2015–2010.[2]



Map 2. Sea cucumber crime in the Gulf of Mannar and Palk Bay, 2015–2020.

[2] Note, the map does not include an incident that occurred on 7 November 2020, 14 nautical miles west of Rutland Island in the Andaman and Nicobar Islands, where Indian Coast Guard officials detained 12 fishers and a vessel of Myanmarese origin (Mangal 2020; The Economic Times 2020). The points on the map approximate the locations of incidents, as reports were seldom clear on the exact location.

Map 3. Sea cucumber crime incidents in Lakshadweep, India, 2015–2020.

When all weights and numbers were converted into dry weights for cost calculation purposes, the overall estimated dry weight was 13,480.81 kg, which, using the estimated price of USD 200.40/kg modified by 2.4% to accommodate annual increases, equated to USD 2,837,928 (Table 4). Tracking the overall number of incidents, the value of seized sea cucumbers was greater in 2015, and then after three years of relatively low values, increased significantly in 2019 and 2020 (Fig. 6).

The average (mean) value of a seizure was USD 23,848.14, and the median value was USD 4,469.68, although values ranged from USD 26.44 to USD 518,583.80.

Discussion

There has been a marked increase in sea cucumber crime in Sri Lanka and the south of India in recent years, particularly in 2019 and 2020. Over the period under study (2015 to 2020), 120 incidents resulted in 502 arrests and the seizure of an estimated 64.7 t of sea cucumbers (104,531 individual animals) by Sri Lankan and Indian authorities. The value of these seizures was over USD 2.84 million (INR 20.7 or LKR 528.3 billion). This illegal catch robs legal fishers, in the case of Sri Lanka, and denies local environments of the ecosystem services of these important animals (see Chary et al. 2020; Purcell et al. 2016).

With respect to types of sea cucumber crime in the region, the two major types appear to be illegal fishing (poaching) and smuggling. Sea cucumbers are illegally fished in both India and Sri Lanka, in operations that vary in size from individuals opportunistically gleaning along shorelines, to highly organised criminal enterprises. The average number of individuals arrested per incident was four, and 544 kg of sea cucumbers were seized on average. The vast majority of cases (0.88) involved vessels, ranging from small dinghies to fishing trawlers. Given arrest records, it is clear that fishers from both countries regularly cross into the waters of the other country to harvest sea cucumbers illegally.

Smuggling operations also appear to be highly organised. Sea cucumbers are often cached in hidden sites to be retrieved later. This can include being buried in remote locations (The Times of India 2020), stored in godowns (warehouses) (The Hindu 2020), or hidden in private homes (Sri Lanka Navy 2020c). Large consignments are then transported by teams, including lookouts and getaway drivers operating trucks, three wheelers and motorcycles on land, and by a variety of watercraft at sea. For example, in one case, over the course of eight months, a perpetrator collected 2410 kg of sea cucumbers that he kept in cold storage near Nagapattinam. He and a driver were arrested on 11 January 2020 while the sea cucumbers were being loaded onto vehicles (The New Indian Express 2019). In another case, Indian marine police, acting on a tip, recovered 600 kg of sea cucumber that was hidden in a sack buried off a beach near Thiruvadanai (The Hindu 2017).

This approach appears to be common. In an interview with the press concerning a case where 51.5 kg of sea cucumbers were found buried near Agatti Airport, Lakshadweep's chief wildlife warden, A.T. Damodhar, described a *modus operandi* whereby "at selected locations in the southern Indian Ocean, large consignments [6 to 10 tons] are packed together in a watertight material and dropped in international waters." He went on to describe how these packages are then tracked using global positioning system (GPS) and how "divers from large ships collect these shipments from these locations, and funds are simultaneously transferred through illegal web networks" (Chatterjee 2020d).

When sea cucumber crimes are mapped, they clearly reveal smuggling routes connecting India to Sri Lanka, whereby illegally caught sea cucumbers are smuggled into Sri Lanka in order to be laundered and then re-exported to Southeast Asian markets. The waters around Adam's/Rama's Bridge is one such route, but there are likely others. For example, in one case, Indian authorities intercepted a consignment of sea cucumbers that were destined for Kuala Lumpur (Malaysia) at Trichy Airport (Times of India 2019).

Mapping sea cucumber crimes also reveals a worrying trend. While the vast majority of crime was documented in the Gulf of Mannar and Palk Bay area, there were eight incidents in Lakshadweep in 2020. This region previously had only one incident, on 26 October 2015, where the Indian Coast Guard arrested 29 Sri Lankan fishers in two vessels with 9300 kg of sea cucumbers (Daiji World 2015). The concern is that sea cucumber crime could be expanding to Lakshadweep in the face of high demand, or that roving bandits could be shifting their operations from the Gulf of Mannar and Palk Bay due to increased monitoring and enforcement in this area (see Swedish FAO Committee 2009). This pattern of serial

Table 2. Total annual sea cucumber seizures (combined wet and dry weights) in Sri Lanka and India, 2015–2020.

	Weight seized (wet and dry) (kg)			
	Sri Lanka	India	Total	Average
2015	2 802	10 280	13 082	540,29
2016	950	1 025	1 975	329,17
2017	578	1 680	2 258	322,57
2018	1 171	1 900	3 071	341,27
2019	5 711	11 196	16 907	528,36
2020	13 088	14 352	27 440	481,4
Total	33 600	31 133	64 733	543,98

Table 3. Number of individual sea cucumbers seized by Indian and Sri Lankan authorities, 2015–2020.

	Total number seized	Average # per seizure
2015	22 818	2852
2016	2 022	337
2017	2 596	371
2018	2 625	292
2019	40 823	1 276
2020	33 647	580
Total	104 531	871

Table 4. Annual value of sea cucumber seizures in Sri Lanka and India, 2015–2020.

	Sri Lanka	India	Total
2015	$453 108	$268 970	$722 078
2016	$15 230	$53 306	$68 537
2017	$9 489	$27 580	$37 069
2018	$19 692	$31 940	$51 632
2019	$442 562	$785 827	$1 228 389
2020	$391 772	$338 451	$730 223
Total	$1 331 854	$1 506 075	$2 837 929

exploitation is unfortunately all too common with sea cucumber fisheries, both licit and illicit (see Anderson et al. 2011).

Another location that may see an increase in sea cucumber crime in the future is the Andaman and Nicobar islands, an archipelago of 572 islands 150 km north of Aceh, Indonesia. On 7 November 2020, the Indian Coast Guard apprehended a Myanmarese boat with 12 fishers and 60 kg of sea cucumbers on board near Rutland Island (Mangal 2020; Economic Times 2020). This represents only one case, and as such it is too soon to tell whether roving bandits will target this region for sea cucumbers, but authorities must remain vigilant. Both Lakshadweep and the Andaman and Nicobar islands are dispersed archipelagoes that included many remote and often uninhabited islands, characteristics that challenge monitoring and enforcement activities, and thereby make them particularly vulnerable to illegal fishing.

Conclusion

Sea cucumber crime in Sri Lanka and the south of India is on the rise. One of the reasons why this growing problem has come to light is an increase in monitoring and enforcement on the part of Indian and Sri Lankan authorities. The dramatic increase in arrests and seizures in 2019 and 2020 attests to this increased vigilance. Other actions have also been taken. India formed the Lakshadweep Sea Cucumber Protection Task Force (Pandey 2020). In August 2020, the Union Ministry of Environment, Forest and Climate Change announced the formation of a number of "anti-poaching camps" to increase monitoring capacity on the uninhabited islands of Suheli, Thinnakara and Veliyapani in Lakshadweep (Shaji 2020b). India also created the world's first conservation area for sea cucumbers in February 2020 – the Dr K.K. Mohammed Koya Sea Cucumber Conservation Reserve, a 239 km^2 area near Cheriyapani, Laksadweep (Chatterjee 2020c).

As this study demonstrates, sea cucumber poaching and smuggling is highly organised and transnational in nature. Groups of fishers illicitly remove hundreds of kilograms of sea cucumbers that are then smuggled though highly coordinated networks. Given these characteristics, sea cucumber crime must be considered a form of transnational organised crime (Phelps Bondaroff et al. 2015).

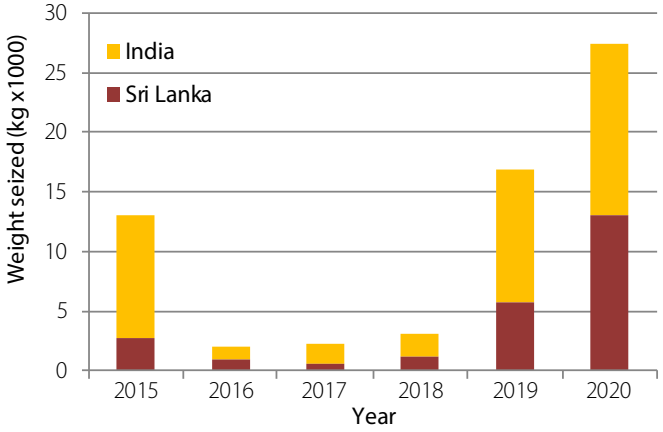


Figure 3. Total annual sea cucumber seizures (combined wet and dry weights) in Sri Lanka and India, 2015–2020.

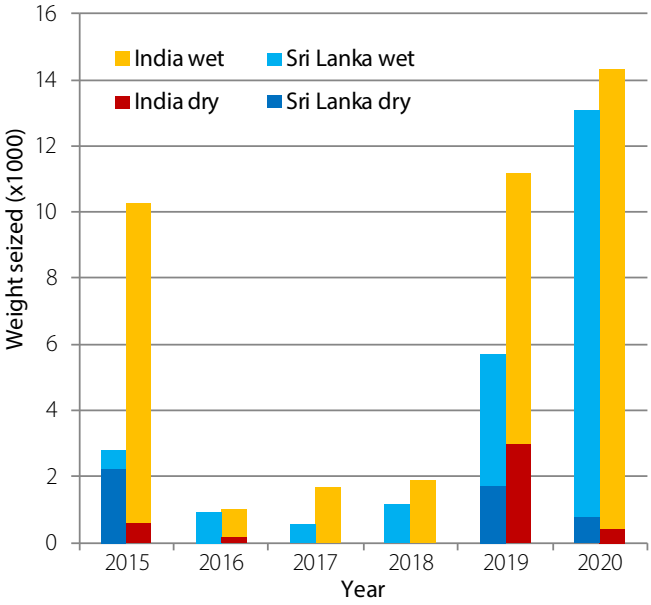


Figure 4. Sea cucumber seizure by state (wet/live or dry/processed) in Sri Lanka and India, 2015– 2020.

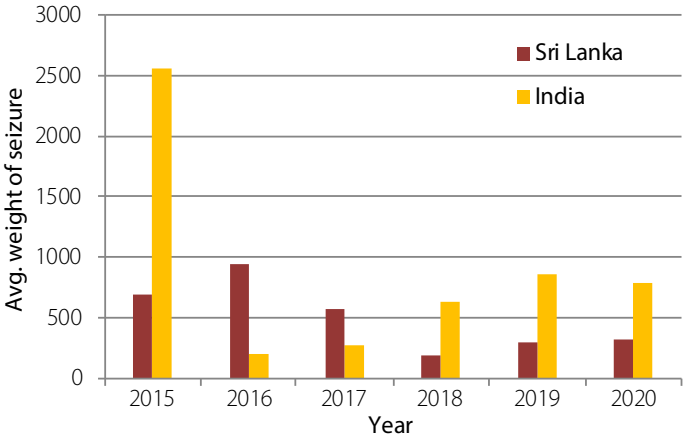


Figure 5. Average weight of sea cucumber seizures (combined wet and dry weights) in Sri Lanka and India, 2015–2020.

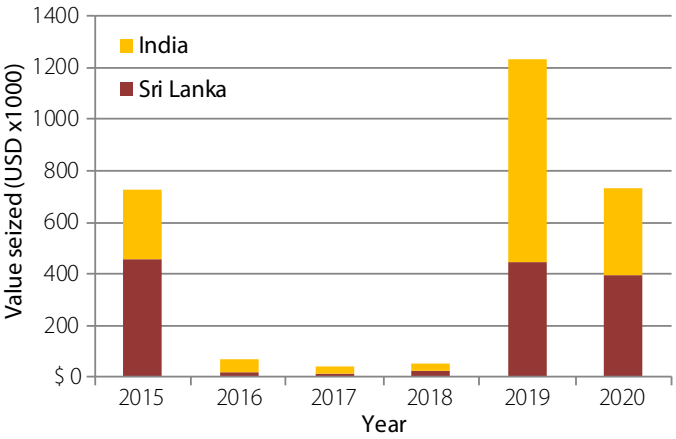


Figure 6. Value (USD) of seized sea cucumbers by year in Sri Lanka and India, 2015–2020.

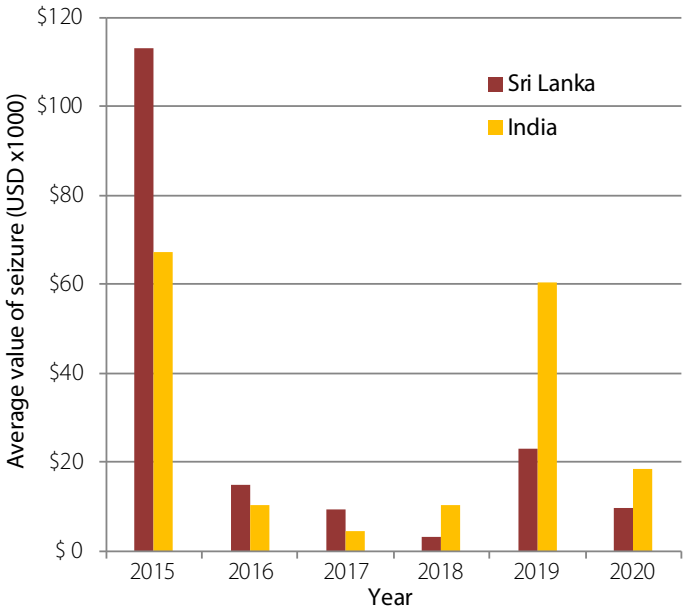


Figure 7. Average annual value of sea cucumber seizures by Sri Lankan and Indian authorities, 2015–2020.

It is promising to observe that increasingly this appears to be how Indian and Sri Lankan authorities are treating the issue. In India, a number of cases have been referred to the Central Bureau of Investigation (CBI) (see Pandey 2020; Shaji 2020a), an agency whose jurisdiction covers law enforceable by the Indian Government, multi-state organised crime, multi-agency, and international cases (CBI n.d.). Another case involving the seizure of over 2 t of sea cucumbers in the Nagapattinam and Ramanathapuram districts on 9 March 2020 was handled by the Organised Crime Intelligence Unit of the Tamil Nadu State Police (Arockiaraj 2020). In Sri Lanka, the navy regularly conducts patrols for illegal, unreported, and unregulated (IUU) fishing, and follows up on reports and tips from the public, thus netting an increasing number of sea cucumber poachers and smugglers. Investigations in cooperation with terrestrial law enforcement are also common (Sri Lanka Navy 2020c; 2020d). These existing efforts need to continue, with monitoring and enforcement agencies properly trained and resourced to intensify efforts.

Cooperation is key to effectively combating transnational organised sea cucumber crime. Increased coordination and cooperation between Indian and Sri Lankan authorities is required (intergovernmental and interagency cooperation). Furthermore, these same authorities must look to strengthen cooperation with other states, particularly market states, in order to disrupt other stages of illicit sea cucumber value chains. States should ensure that penalties and sanctions serve as an effective deterrent and that they are promptly imposed.

Sea cucumber crime should continue to be monitored in order to track potential shifts by roving bandits as enforcement and monitoring efforts increase in the Gulf of Mannar and Palk Bay area. Additional research is also needed. Analysis of the characteristics and demographics of those involved in sea cucumber crime should also be conducted in order to identify push and pull factors so that these can be addressed. While Sri Lanka is a key gateway for those seeking to smuggle sea cucumbers out of India, it is clear that other routes are also being employed. Additional work is required to identify these routes.

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