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TRAFFIC[®] POST

NEWSLETTER ON WILDLIFE TRADE IN INDIA

► Special Edition : **Sharks, Rays & Skates**

TRAFFIC's newsletter on wildlife trade in India was started in September 2007 with a primary objective to create awareness about poaching and illegal wildlife trade.

Illegal wildlife trade is reportedly the fourth largest global illegal trade after narcotics, counterfeiting and human trafficking. It has evolved into an organised activity threatening the future of many wildlife species.

TRAFFIC Post was born out of the need to reach out to various stakeholders including decision makers, enforcement officials, judiciary and consumers about the extent of illegal wildlife trade in India and the damaging effect it could be having on the endangered flora and fauna.

Since its inception, TRAFFIC Post has highlighted pressing issues related to illegal wildlife trade in India and globally, flagged early trends, and illuminated wildlife policies and laws. It has also focused on the status of legal trade in various medicinal plant and timber species that need sustainable management for ensuring ecological and economic success.

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Dr Saket Badola, IFS
Head of TRAFFIC, India Office

Dear Readers

Whether in India or globally, marine species have received lesser conservation attention than terrestrial species. Several marine species face real survival threats today. The human-induced challenges of climate change and plastic pollution, coupled with the unsustainable levels of extraction for legal and illegal trade, have pushed several marine species to the brink of extinction. While the concerns for charismatic elasmobranchs (sharks and rays) get some attention, the plight of 'lesser known' species such as sea cucumbers, sea horses, molluscs fails to generate the required level of concern. Hence generating awareness is the key to conserving the lesser-known marine species in India.

Taking note of this, we have dedicated the first Issue of TRAFFIC Post for 2022 to highlight the conservation challenges faced by the inhabitants of the marine ecosystem.

This Issue includes a status review of elasmobranchs harvesting in India and suggests that the required regulatory framework be applied scientifically and urgently. India is one of the four largest catchers of sharks and rays worldwide. Despite an export ban on shark fins from India, these activities still occur. Enhancing enforcement capacities, mainly on correct identification up to species level, can be a substantial leap forward to stop the illicit shark fin trade. TRAFFIC's 3D shark fins were developed and printed to assist in species identification can prove to be a helpful tool.

The strides towards sustainable harvest are crucial for the long-term survival of the elasmobranch species and to ensure the livelihood and food security of many local coastal community members. The suggested steps in the article on elasmobranch are crucial for their conservation and protection.

The gills of Manta and Mobula Rays are in high demand in the international market. The present Issue also covers the assessment of predominantly illegal harvesting in India and suggests a way to curb their illicit trade.

Wildlife traders are fast spreading their illicit business in cyberspace. As a result, TRAFFIC has surveyed prime e-commerce platforms to study the extent of prohibited marine trade taking place online. The study results were concerning and should be recognised by the stakeholders, including enforcement agencies and affected e-commerce companies. Though TRAFFIC has initiated several steps, both at the global and national levels, to combat this new-age threat of wildlife cybercrime, a lot needs to be done in this sphere, much of which we have tried to communicate through this newsletter.

This Issue of TRAFFIC Post also brings important news about the new batch of wildlife sniffer dogs who recently completed their training and joined the fight to protect India's wildlife. With the deployment of the newly trained 14 wildlife sniffer dog squads, the total number of wildlife sniffer dogs trained under TRAFFIC's popular programme has reached 88. TRAFFIC is proud of the achievements of the wildlife sniffer dogs across the country.

As the world is still reeling under the threat of COVID, we shifted many of our awareness and capacity-building activities to the online mode as an adaptive management strategy. While we succeeded in our endeavour to remain connected to our stakeholders, we sincerely hope that the world will soon come out of the miasma of pandemic and will be able to act more constructively for the conservation of wild flora and fauna.

Wish you all a very Happy New Year!

A | IN FOCUS



A1. MANTA AND DEVIL RAYS IN TRADE IN INDIA: OVERVIEW OF CONSERVATION AND PROTECTION ISSUES

Mayuri Chopra, Senior Programme Officer, TRAFFIC, India Office

Manta and devil rays are charismatic diamond-shaped cartilaginous fishes of the Mobulidae family. The family constitutes of two species of manta rays, namely Giant Manta Rays *Mobula birostris* and Reef Manta Rays *Mobula alfredi* and eight species of devil rays, namely Sicklefins Devil Ray *Mobula tarapacana*, Spinetail Devil Ray *Mobula japanica*, Bentfin Devil Ray *Mobula thurstoni*, Shortfin Devil Ray *Mobula kuhlii*, Longhorned Pygmy Devil Ray *Mobula eregoodoo*, Pygmy Devil Ray *Mobula munkiana*, Atlantic Devil Ray *Mobula hypostoma*, and East Atlantic Pygmy Devil Ray *Mobula rochebrunei*. Giant Manta Rays and Reef Manta Rays are grouped as manta rays, while all other mobulids are grouped as devil rays. Manta means 'cloak' or blanket in Spanish, describing the look of the species.

Manta rays have distinct cephalic lobes positioned at the terminal (front end of their body) while devil rays have their lobes positioned slightly on the underside or sub-terminally. These lobes or 'horns' earn devil rays the 'devil' title.

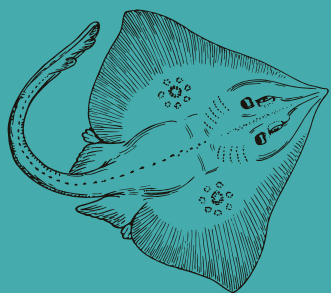
Manta rays are among the lowest fecund elasmobranchs, a significant concern for their population. Giant Manta Rays reach sexual maturity only after five years and give birth to only one or two pups after a gestation period of 13 months. Reef Manta Rays reach maturity after 6-8



Mobula birostris © Jürgen Freund / WWF

years of their lifespan and only give birth to one pup every two to three years (Zacharia *et al.*, 2017).

Mobulids depend on primary productivity as filter feeders and play an essential role in their ecosystems. Except for large sharks and a few dolphin species, mobulids do not have many large predators. However, they are threatened by human acts of targeted capture and demand for their gill plates.

HIGHLY INTELLIGENT!

Manta rays are reported to have the largest brain-to-body size ratio of all known fish species. They have a high cognitive function and are self-aware in front of a mirror like their distant terrestrial cousins, elephants, and primates (Ari, et al., 2016).



Mobula birostris © Jürgen Freund / WWF

HABITAT AND DISTRIBUTION IN INDIA

Mobulids are found in tropical, subtropical and temperate waters with fragmented regional populations. The Giant Manta Ray is reported in both the east and west coast of Indian waters. Sightings on the distribution of Reef Manta Rays in Indian waters are scarce. India's main devil ray species are Bentfin Devil Ray, Spinetail Devil Ray, Sicklefins Devil Ray, Shortfin Devil Ray and Longhorned Pygmy Devil Ray (Kizhakudan et al., 2015).

LEGAL AND CONSERVATION STATUS

None of the mobulid species in India are protected under the Wildlife (Protection) Act, 1972, or any other national legislation.

INTERNATIONAL REGULATION	SPECIES	LEGAL PROTECTION OR REGULATORY MEASURE
CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)	All mobulid species	Listing of manta rays (2014) and all rays under genus <i>Mobula</i> (2017) (under Appendix II of CITES, regulating all international trade in species)
CMS (Convention on the Conservation of Migratory Species of Wild Animals) Signatories	All mobulid species	All mobulid species are now protected under Appendices I and II of the CMS, which requires member countries to enact legislation protecting the species within their territorial waters (CMS, 2017).
IOTC (Indian Ocean Tuna Commission)	All mobulid species	Resolution 19/03 on the conservation of mobulid rays caught in Association with Fisheries in the IOTC Area of Competence. In the Indian Ocean, Resolution 19/03 on the conservation of mobulid rays caught in association with IOTC fisheries was introduced in 2019. Under this, it is prohibited to retain mobulids caught accidentally or targeted in the IOTC Area of Competence in any fishery (other than those for subsistence). Following best practice, handling and release guidance available for gillnet fisheries, purse seine, longline, and others, is provided and aims to increase the survival of mobulids caught incidentally during fishing operations.

Table 1: International regulation of mobulids

Source: Table from Lawson et al. 2017 (modified)

According to the International Union of Conservation of Nature's (IUCN) Red List of Threatened Species, Oceanic Manta Ray *Mobula birostris* is 'Endangered' and Reef Manta Ray *Mobula alfredi* is listed as 'Vulnerable'. Sicklefins Devil Ray *Mobula tarapacana*, Spinetail Devil Ray *Mobula japanica*, and Bentfin Devil Ray *Mobula thurstoni* are listed as 'Vulnerable' in Southeast Asia. Due to the escalating threats and declining population trends globally, Oceanic Manta Ray *Mobula birostris* was recently uplisted from 'Vulnerable' to 'Endangered' in 2020.

THREATS

Gill plates of mobulids are used in traditional medicine and at dried-seafood markets (known as *Peng Yu Sai*, "Fish Gill of Mobulid Ray"). They are marketed as a cure for many health issues ranging from acne to cancer. Due to bycatch in non-specific gears and targeted catch to meet market demand, capture fisheries are a significant threat to the mobulid species (Zacharia *et al.*, 2017). Due to mobulids' unusual dimensions, size, aggregations, and curious behaviour, they often get entangled in fishing nets.

Other threats to mobulids include ingestion of plastic debris, boat collision injuries, the impact of climate change on a primary food source (planktons), and habitat alteration by human interference.

TRADE OF MOBULIDS IN INDIA



Gill plates of *Manta birostris* © Paul Hilton / WWF

India is among the top five source countries for mobulid gill plate based on a market survey study conducted in major demand countries (Hong Kong, Singapore, Macau, Taiwan, and Southern China) between 2009 and 2015 (O'Malley *et al.*, 2017). During this period, the primary demand was from China and Hong Kong. China was identified as the centre of trade, accounting for 99% of the total estimated market volume of 60.5 tons of dried gill plates in 2011, increasing to twice 120.5 tons by 2013. However, due to conservation campaigns and government policies, the demand declined between 2013 and 2015 by 37%. However, despite this recorded decline between 2013 and 2015, it was estimated that approximately 130,000 mobulids were reported in markets (estimated from volume) in China in 2015, approximately twice the number from 2011 (O'Malley *et al.*, 2017). Under the same study, Hong Kong surveys reported that the annual gill plate market volume for 2015 was 3,000-4,000 kg per year, increasing 28 times the market volume of 125 kg per year in 2011. O' Malley *et al.*, 2017, suggested that the efforts to reduce gill plate sales in China, coupled with the dramatic increase in market volumes in Hong Kong after 2013, may indicate Hong Kong emerging as the new centre of trade.

TRAFFIC analysed India's export data from 2018 and 2019 of gill plates of family 'Mobulidae' available in the CITES Trade Database, UNEP World Conservation Monitoring Centre, Cambridge, UK. The current data analysis aimed to assess the trade volume of mobulids traded from India and gain a deeper understanding of trends in mobulid trade reported from the country.

Wherever species-level information was not available, the manta spp. were grouped as manta rays, and the mobula spp. were grouped as mobula rays (*Note: This categorisation is purely based on the nomenclature used by reporting countries for recorded data in the CITES Trade Database and does not depict the recently accepted nomenclature*). Where species-level data is available, the species are separately mentioned in other instances.

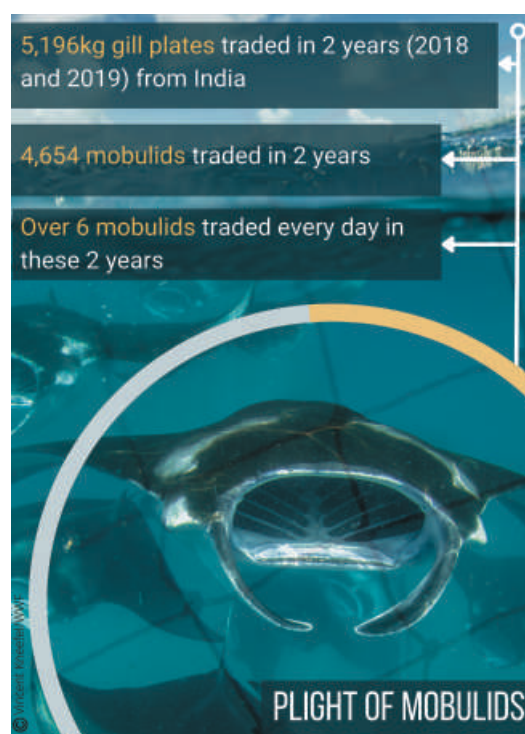
This trade volume was thereafter used to estimate the number and mobulids extracted and exported species. The number of mobulids was estimated by converting the gill plate volumes using the average weight of dried gill plates of traded species (Table 2).

Table 2: Average weight of dried mobulid gill plate

SPECIES	MEAN WEIGHT (KG)
<i>Manta</i> spp.	5
<i>Mobula</i> spp.	1.5
<i>Mobula tarapacana</i>	2.5
<i>Mobula japonica</i>	0.5

*(Source: O'Malley *et al.*, 2017)

Note: Unidentified *Mobula* spp. conversion weight is the mean of *Mobula tarapacana* and *Mobula japonica*, for the purpose of estimation.



The findings of the analysis of the family 'Mobulidae' gill plate export data of India for 2018 and 2019 are as below:

1. Number of mobulids traded from India: A total of 5,196 kg of gill plates were exported from India in 2018 and 2019. When analysed species-wise (when data was available), *Mobula japanica* contributed to the highest exported gill plate weight of 1502.8 kg, followed by unidentified *Mobula* spp. with 1483.15 kg. Additionally, approximately 1125 kg of *manta* spp. and 1084.65 kg of *Mobula tarapacana* gill plates were exported.

Based on weight conversion factors, over 4,654 individuals of mobulid species were recorded in trade during 2018 and 2019, suggesting that over six manta or devil rays were traded every day from India.

Table 3: Manta and devil rays exported from India between 2018 and 2019

SPECIES	TOTAL WEIGHT OF GILL PLATES EXPORTED (KG)	ESTIMATED NUMBER OF INDIVIDUALS
Manta spp. (Manta ray)	1125	225
Mobula spp. (Devil ray)	4070.6	4,429
Total	5195.6	4,654

Source: CITES Trade database, UNEP World Conservation Monitoring Centre, Cambridge, UK

Note: (Species nomenclature as reported in CITES)

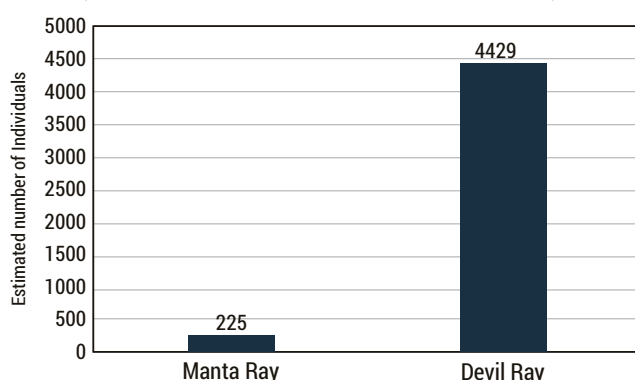


Figure 1: Estimated number of individuals traded based on the reported quantities of manta and devil gill plates exported from India in 2018 and 2019.

2. Trade of manta vs. devil rays: Based on the data analysis findings, amongst all traded gill plates from India, 78% of the volume of gill plates was from devil rays (*Mobula* spp), and 22% were from manta rays. Due to the smaller size and comparatively much lower dried gill plate yield per animal for devil rays, the numbers of devil rays are 4,429, and manta rays are 225 individuals. Hence, devil ray gill plate volumes dominated India's major portion of gill plate trade in 2018 and 2019.

3. Reporting discrepancy in trade data: In the CITES Trade Database, the exporter and the importer quantity can be recorded for every reported consignment. The data on mobulid gill plates exported from India for 2018 and 2019 in the CITES trade database reported a total of ten consignments, all exported to Hong Kong.

Amongst these 10 cases, eight incoming consignments were reported by Hong Kong in the two years, while four exporting consignments were reported from India. Surprisingly, only two cases were common in reports submitted by both countries. Even there, the quantities reported had significant discrepancies.

While Hong Kong reported a total of 4318.95 kg gill plate traded in its reported eight cases, only 1815.3 kg were reported by India in four cases reported by it in 2018 and 2019. There was a discrepancy in reports from Hong Kong (importer) and India (exporter) in the two consignments reported by both countries. India reported an export of 691.65 kg of gill plates of *Manta* spp. (Manta rays) while Hong Kong reported an import quantity of 533.65 kg for the same consignment. In the same year, for a consignment of gill plates of *Mobula* spp. (Devil rays), India reported an export quantity of 405 kg, while Hong Kong reported 1183.65 kg.

It shows that even the reporting process has significant scope for improvement.

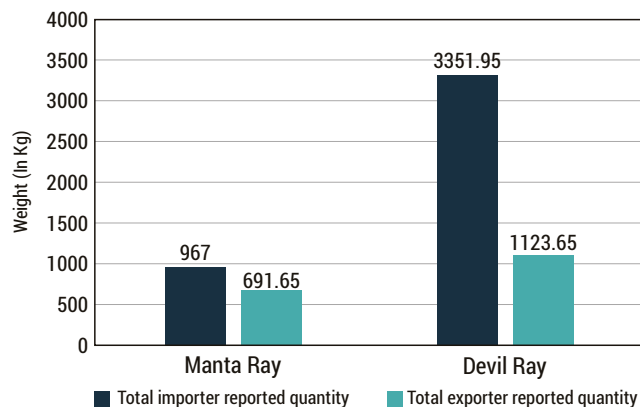


Figure 2: Importer (Hong Kong) and exporter (India) reported quantities for gill plates (kg) in 2018 and 2019



© Humane Society India

DISCUSSION

The vulnerability of mobulids due to extremely low fecundity, dependency on planktons that are affected by climate change, lack of regulations in the country, and over-harvesting may lead to detrimental effects on their population and can render the species survival in jeopardy. The study estimates that over six individuals of mobulids were traded every day from India during 2018 and 2019. However, these estimates are conservative as the reported data only represents actual trade and only a fraction of the total landing quantity.

The full extent of mobulid landings in India is unknown; however, several published references report significant manta and devil ray landings along the coast of India using various gears such as trawl, gillnet and longline fisheries (Nair *et al.*, 2015). One study (Kizhakudan *et al.*, 2017) suggests that mobulid catches in India are as high as 11% of everyday landings in population hotspot areas, with catch numbers exhibiting a decreasing trend during the last decade. According to the same study and available fishery reports, at least 690 manta rays and 24,260 devil rays have been reported to be landed.

However, fisheries management in India is limited due to inadequate mechanisms for identification, reporting of products, monitoring, and recording of information. Therefore, this data is a product of the available trade data rather than the true reflection of the actual landings entering international trade across the various landing centres in India's east and west coast, Lakshadweep and Andaman and the Nicobar Islands. Furthermore, the trade cases were not reported by the importer or exporter in totality. This discrepancy in reporting all trade is inadequate. It does not comply with the reporting mechanisms for all trade between CITES signatories.

Sustainable trade in CITES Appendix II listed species is facilitated by necessary documentation, including a Non-Detriment Finding (NDF) study for species traded, conducted in the country of origin, proving that extraction and trade are not detrimental to species survival. NDF species studies are conducted every three years to reassess the species population's status and revisit the recommendation. The trade of these species is then regulated by a quota system, setting trade limits. The last NDF study for manta rays was conducted in 2017 (Zacharia *et al.*, 2017), while NDF for devil rays has not been completed due to its recent listing in CITES. However, the conducted NDFs lack information on the trade of species and hence may lead to inaccuracy in decision-making by policymakers.

As these species are scarce and require policymakers' attention, it is essential to maintain the post-landing records and trace them until the finished product. The records are crucial as there is no manta or devil ray specific regulation that can help monitor the landed and traded amounts. The monitoring is vital because a low fecund species group such as mobulids has limited capacity to recover if overexploited.

RECOMMENDATIONS

- A correct estimation of population stock estimates will help inform CITES Non-detriment findings correctly. Well-informed population stocks will enable to inform policymaker decisions by the Fisheries Department, Gol, and Fishery survey of India.
- Regular monitoring of landings is required by a responsible body like the Department of Fisheries to record the actual extent of extraction. This will help in the effort to ensure sustainable fishing levels of vulnerable species.
- A Non-Detriment Finding study needs to be conducted for devil rays as obligatory under CITES regulation. The study will help set the trade quota for these species, resulting in better management and sustainability of population stock.
- A traceability mechanism for all domestic and international trade is required for all manta and devil ray products to ensure sustainable sourcing and their trade and use are not detrimental to species survival.
- There is insufficient research assessing threats to mobulids in India due to fisheries, trade, and other drivers. A focused threat assessment study on mobulid will help conservationists and policymakers to employ the correct measures to combat specifically identified threats.
- Globally, manta ray tourism has attracted revenue and rehabilitation of habitat sites. Applying this approach and learning in India would promote ethical dive tourism in aggregation sites and support healthier population stocks.

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Great hammerhead © Joost van Uffelen / WWF

A2. MECHANISM TO IMPROVE CONSERVATION AND PROTECTION OF ELASMOBRANCHS IN INDIA: AN OVERVIEW

Dr Merwyn Fernandes, Senior Coordinator, TRAFFIC, India Office

Elasmobranchs are a subclass of cartilaginous fishes (Chondrichthyes) that include sharks, rays, and skates. Globally there are approximately 1200 species of elasmobranchs, of which around 160 species have been recorded in Indian waters, including 88 species of sharks, 53 species of rays, and 19 species of skates (Kizhakudan *et al.*, 2015).

LEGAL STATUS

In India, ten elasmobranch species are listed under India's Wildlife (Protection) Act, 1972, giving them protection against hunting, trade, or any other forms of exploitation. The international trade in certain species is also regulated under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) (Table 1). Further, there is also a blanket ban on shark fins exported from India under the EXIM Policy since 2015. However, there is no legal protection for the remaining elasmobranch species, and they can be freely captured and traded.

TRADE IN ELASMOBRANCH

The vast coastline and expansive fisheries operations along India's coastline and within the exclusive economic zone has resulted in the annual harvest of over 82,000 tonnes of sharks, skates, and rays for 2019-20 (Fisheries

Statistics 2020) making India, one of the world's top five catchers of sharks (Okes and Sant 2019). In India, elasmobranchs are mainly captured for their skin, meat, oil (liver), and cartilage that are locally consumed, and traded both locally and internationally. While, the growing demand for derivatives such as shark-fins, manta, and devil ray gill-plate sold as the most valuable products in Southeast Asian cultures for traditional cuisines and medicines (Clark *et al.*, 2006) drives the global trade.

CHALLENGES OF ELASMOBRANCH FISHERIES: BACKGROUND

In India, elasmobranch has been reported in capture fisheries since the 1950s. As fisheries operation came under the production sector with lesser restriction till recently, the exploitation continued unabated and it increased manifold with the advent of mechanised crafts (in the early 1990s), extensive use of non-selective gears and targeted shark fishery practiced in areas such as Gujarat, Andhra Pradesh (Whale Shark *Rhincodon typus*) and Tamil Nadu (shark fishery at Thootur). The high mobility of a few species coupled with overlapping jurisdiction of several countries with different fishing laws and inconsistent population data also presents a challenge.

COMMON NAME	SCIENTIFIC NAME	CITES APPENDICES	WILDLIFE (PROTECTION) ACT, 1972 –SCHEDULE
Pondicherry Shark	<i>Carcharhinus hemiodon</i>		I
Speartooth Shark	<i>Glyphis glyphis</i>		I
Gangetic Shark	<i>Glyphis gangeticus</i>		I
Ganges Stingray	<i>Himantura fluviatilis</i>		I
Porcupine Ray	<i>Urogymnus asperimus</i>		I
Whale shark	<i>Rhincodon typus</i>	II	I
Sawfishes - seven species	<i>Pristidae</i> spp.	I	Knifetooth Sawfish <i>Anoxypristis cuspidata</i> : I Freshwater Sawfish <i>Pristis microdon</i> : I Green Sawfish <i>Pristis zijsron</i> : I
Guitarfish – six species	Family Rhinobatidae	II	Giant Guitarfish <i>Rhynchobatus djiddensis</i> : I
Mako Shark - two species	<i>Isurus</i> spp.	II	
Manta rays – two species	<i>Manta</i> spp.	II	
Devil rays – nine species	<i>Mobula</i> spp.	II	
Thresher sharks - three species	<i>Alopias</i> spp.	II	
Silky Shark	<i>Carcharhinus falciformis</i>	II	
Oceanic Whitetip Shark	<i>Carcharhinus longimanus</i>	II	
Wedgefish – ten species	Family Rhinidae	II	
Scalloped Hammerhead Shark	<i>Sphyrna lewini</i>	II	
Great Hammerhead shark	<i>Sphyrna mokarran</i>	II	
Smooth Hammerhead Shark	<i>Sphyrna zygaena</i>	II	

Table 1: List of elasmobranch species protected and regulated in India

Inherent issues, such as extremely low fertility among elasmobranchs, have made them a fragile fishing resource. Alongside this, the exceptionally high demand for specific body parts (e.g. shark fins) compared to low demand for other body parts leads to excessive wastage of the harvested stock and results in skewed economic benefits for the traders.

IMPACTS OF OVER FISHING

The increasing international demand for elasmobranchs has drastically impacted its population in recent times. Globally a decline of 71% in the population of oceanic sharks and rays from 1970's levels was assessed, primarily due to an 18-fold increase in fishing pressure (Pacoureau *et al.*, 2021). The effects of unsustainable harvest are also noticed in India via a steady decline in the length of the captured elasmobranchs, indicating that the larger, older individuals have already been fished, and the population structure of the group is getting skewed towards the lower age class (Akhilesh *et al.*, 2021). Maharashtra reported a significant decline in the total harvest of elasmobranchs from 5,779 tonnes in 2014 to 1,786 tonnes in 2019, with the majority of the catch representing juveniles (Akhilesh *et al.*, 2021).



Shark fin soup © WWF Hongkong

Along with the broad concerns of overharvesting at an unsustainable level, several underlying problems include:

- the illegal and targeted fishing of protected species for illicit wildlife trade
- employing unscientific methods in fisheries operations
- use of unethical fishing practices
- ever-increasing levels of marine pollution
- impacts of climate change on marine species population dynamics and their movement



Hammerhead shark © Brian J. Skerry / Nat Geo stock

WAY FORWARD

A large population in India is dependent on marine resources for food and livelihood. As the trade in elasmobranchs products is fast expanding and the population structures are becoming distorted, efforts need to be made to regulate the harvests better. These corrective management measures will ensure that unnatural extirpation of marine fauna is prevented, sustainability of the species is secured, and the balance in the marine ecosystem is maintained.

The following suggestions can help set elasmobranch fisheries on the path of recovery and towards long-term sustainable harvest.

i. Improvement in capture fisheries operations, especially concerning juvenile mortality and bycatch reduction.

Coastal states and the Union territories in India have regulations regarding capture fisheries, seasonal closures, and delineating areas of operation. However, considering the decline in elasmobranch stocks and increase in juvenile capture, these regulations may need to be strengthened and better executed. Promotion of devices such as square-mesh at the codend (the rearmost part of the trawl net), long gillnet (placed at six feet below the water's surface for tuna fishing), and LED-based nets can help reduce accidental capture of non-targeted species, juvenile capture, and mortality.

Use of a Vessel Tracking System (like the one implemented in Kerala) and specifying a Minimum Landing Size for all commercial fisheries should be implemented across all marine fishing states and Union Territories in India to help reduce juvenile mortality and prohibit illegal fishing activities.

ii. Incorporating the understanding of elasmobranchs ecology into fisheries management.

The management of fisheries focuses on enhancing the catch, with little attention to ecological factors such as

the composition and population structure of the harvested stock. This results in age class skewness of the population, thus negatively influencing species' long-term survival. The situation can be addressed by internalising the targeted or harvested group's ecology to maintain the core population to perform its ecological role while simultaneously harvesting it at a sustainable level.

Approaches that use systematic spatial planning go a long way to conserve and protect priority sites for conservation, as seen in the Mediterranean sea for elasmobranchs (Giménez, *et al.*, 2020). In India, if such an approach is used with existing information on the critical habitats of the threatened elasmobranchs (Hanfee 2001, Gupta *et al.*, 2020). It is also integrated with the existing legal framework and will aid the decision-making process, ensuring necessary protection and conservation for vulnerable populations within India's marine and oceanic environments.

iii. Systematic database on capture and trade at the species level

India reports an overall high capture in elasmobranchs; however, there is a lack of more specific information such as the landed stock species, size, and sex. This data, if collected systematically, can help in making real-time managerial decisions. It will also help in more efficient NDFs (Non-detrimental Findings) studies to assess and suggest sustainable harvest levels for the species.

Carrying an NDF study is an essential part of the compliance for CITES-listed Appendix II species. An NDF study for the Hammerheads *Sphyrna* spp, Oceanic white-tip *C. longimanus* and Manta spp has been undertaken in India (Zacharia *et al.*, 2017).

Species-specific long-term studies (Clark *et al.*, 2006), and advanced technologies, can shed light on the species, amount in the supply chain, and the implementation of monitoring frameworks (Cardeñosa *et al.*, 2020). Hence

efficient data collection at the landing and its timely analysis is crucial for informed decisions in the Indian fisheries sector.



Considering the expanse of such operations and resource constraints in India, participatory monitoring mechanisms by engaging fisher's communities and business houses and ensuring better collaboration among law enforcement agencies (LEA) is required. It will also address research gaps, support real-time data analysis, and monitor the efficiency of regulatory frameworks while ameliorating the complex

problem in Indian fisheries (Fowler *et al.*, 2002).

iv. Identification of legally protected elasmobranchs

As most traded elasmobranchs derivatives are meat, skin and fins, correct species identification poses a considerable challenge because the trade of only a few specific species is prohibited under WPA, 1972 or regulated under CITES (Table 1). Mis-declaring the protected species on Customs permits is one of the prime modes of trafficking protected species worldwide. There is a need for capacity-building resources for LEA officials to ensure correct species identification of trades stock and their derivatives. Efforts such as TRAFFIC's latest 3D fin models to identify CITES-listed species by LEA can be of great help.

Advanced DNA-based technologies can also help correctly identify the traded products up to the species level. This will help implement existing regulations and facilitate smoother legal trade. For efficiency, it would be prudent to use these technologies at the main entrepot in India.

v. Policy for elasmobranchs

Trade-driven depletion in the elasmobranch population has adversely impacted the marine ecosystem (Rose 1996; Hanfee 1999). To address this issue, several elasmobranch specific policies were developed.

In 1999, the International Plan of Action for Conservation and Management of Sharks (IPOA-Sharks) was adopted by the Food and Agriculture Organisation (FAO). Each country was encouraged to implement a National Plan of Action (NPOA) if its fishing vessels directly capture sharks or capture them as a bycatch.

Additionally, an NDF was developed and adopted by CITES in 2014 (Mundy-Taylor *et al.*, 2014). The primary objective was to facilitate elasmobranch fisheries

dependent countries to assess their population for sustainable harvest.

Though measuring the effectiveness and impacts of existing protection measures and the current trade regulations for commercially exploited aquatic species remained a challenge (Friedman *et al.*, 2017), several countries across the globe did prepare and implement NPOA.

However, the progress in India remained slow. While two drafts of NPOA have been prepared and presented by the Central Marine Fisheries Research Institute (CMFRI) (Kizhakudan *et al.*, 2015) and Bay of Bengal Large Marine Ecosystem (BOBLME) way back in 2015, the same is yet to be finalised and adopted by the Government of India. Once the NPOA is adopted, this will have to be incorporated individually by the states and Union Territories. This needs to be prioritised.

vi. Traceability and sustainable trade for elasmobranchs

The limitations of the WPA 1972, to effectively implement the laws for protected species that are fished and traded nationally and internationally is a matter of conservation concern. Similar is the case with CITES, where the trade in species listed in Appendix I are completely banned (except under certain specific conditions) while trade of Appendix II listed species is regulated by the limits set out from the NDFs study.

So far, NDFs of only a few species have been conducted. Even in these cases, the assessments took three years to complete. As per CITES regulations, the assessment for earlier CITES-listed elasmobranchs species (2014) are to be revised and for elasmobranchs species listed in 2019 are to be urgently finished.

Apart from the above, developing mechanisms to trace the origin of stock has also been suggested by CITES and are being developed globally. When deployed with adequate technology, this mechanism can create a digital fence between legal and illegal captured elasmobranchs and ensure that the legal products of elasmobranchs will not be mixed with products whose legal route or source of capture cannot be traced. This will help monitor the trade in CITES-listed species, thereby facilitating sustainable, traceable, and equitable exchange across the trade chain.

In India, such a mechanism needs to be standardised and institutionalised within the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying and the Marine Product Export Development Authority (MPEDA) under the Ministry of Commerce and Industry. Such a traceability system will ensure more acceptability of Indian products in the international market and even fetch premium prices.



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SHARKTRACE

To address the issue of traceability, TRAFFIC has developed a system called *SharkTrace*. Presently in the trial phase, the system can trace the shark product from the capture point to the consumer. However, this is only possible when all stakeholders are on board, right from the fishing vessel, traders, exporters, and enforcement agencies. This will deter illegal trade and permit legal trade. At the same time, the information collected at the fishing vessel can facilitate better data for the NDF's.

CONCLUSION

For the long term sustainability of elasmobranch harvesting, urgent actions need to be implemented. These will ensure the protection of various species in a healthy population structure and ensure sustained yield for fisheries operations. Better implementation of CITES regulations, including proven traceable mechanisms, will also lead to higher revenues from legal trade in the international market. GoI and State/UT government, with support from research organisations, will have to play an active role in regulating elasmobranch trade to ensure a healthy marine ecosystem.

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B

TRAFFIC UPDATES (INDIA)



B1. FOURTEEN NEW WILDLIFE SNIFFER DOGS JOIN INDIA'S FORCE TO CURB WILDLIFE CRIME



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On 20th November 2021, 14 young dogs and their 28 handlers completed a seven-month-long training course to join India's growing wildlife sniffer dog force.

The latest batch passed out from the Basic Training Centre Indo-Tibetan Border Police Force (BTC-ITBP) camp in Panchkula, Haryana, and is the ninth batch to be trained since the launch of TRAFFIC and WWF-India's pioneering 'Wildlife Sniffer Dog' training programme in 2008. To date, 88 wildlife sniffer dog squads have been trained.

The dogs have been taught to detect wildlife articles such as tiger and leopard skin, elephant tusk, skin and antlers of spotted deer and sambar at the training institute. The dog handlers have also learned how to train their dogs to identify scents of other wildlife articles, allowing them to develop new skills in the field.

During the seven month training at BTC-ITBP camp, activities included rugged terrain training for forests, check posts, luggage search, parking lots, and vehicles. The trainers used small-sized wildlife articles to accustom the dogs to find targets with low scent concentration in these complex environments.

Three of these wildlife sniffer dog squads will join the Maharashtra Forest Department; two each will join the Chhattisgarh, Karnataka, and Odisha Forest Departments, and one each will join the Uttar Pradesh, Gujarat, and Tamil Nadu Forest Department.

Two dog squads will be deployed by the Southern and West Central regions of Indian Railways under TRAFFIC's newly formed alliance with the Railway Protection Force (RPF). Last year, RPF deployed two specialised wildlife sniffer dog squads for the first time in India to curb the smuggling of wildlife articles through the extensive railway network.

Dr Saket Badola, Head of TRAFFIC's India Office, said, "Wildlife sniffer dogs trained under the programme work relentlessly in tough terrains and have so far assisted the agencies in over 400 wildlife crime cases. It is further heartening to see that other agencies such as the Railway Protection Force and Customs are interested in deploying wildlife sniffer dogs".

Mr Ravi Singh, Secretary-General and CEO, WWF-India, added, "Starting with just two wildlife sniffer dogs in 2008, today that number has grown to 88. The dedication and commitment of the wildlife sniffer dog squads are admirable, and the dogs have been a game-changer in the efforts against wildlife crime. We wish the best of success to the 14 newly trained wildlife sniffer dog squads in their mission to curb poaching and illegal wildlife trade".



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B2. CATCHING UP WITH SUPER SNIFFERS

TRAFFIC and WWF-India's wildlife sniffer dogs, popularly called 'Super Sniffers', have dedicated themselves to the cause of curbing wildlife crime in India. The latest updates from their deployment areas provide a clear testimony of their relentless efforts.

DATE	NAME OF THE DOG / HANDLER(S)	AGE / SEX OF THE DOG	YEAR / STATE OF DEPLOYMENT	ACHIEVEMENT
7th June 2021	Dog Emily / Handler Dukha Bandhu Behera	Four years / Female	Year 2017 / Odisha Forest Department	In the Kukudakhola area of Satkosia Division, Angul, Odisha, they helped seize the skin and meat of Barking Deer and also helped recover ammunition.
10th June 2021	Dog Nirman / Handler Rajkishore Prajapati	Six years / Male	Year 2016 / Madhya Pradesh Forest Department	In the Unchehra Range, Village Uraichuaa, Madhya Pradesh, they assisted on a wildlife crime case that involved the seizure of two Wild Buffalo and Sambar skins.
12th June 2021	Dog Tina / Handler Padam Singh Rajput	Four years / Female	Year 2018 / Madhya Pradesh Forest Department	In the Sukhtava Forest Range, Village Chaartekra, they helped solve a wildlife case involving poaching of Spotted Deer. The efforts by the squad led to the recovery of deer meat.
6th September 2021	Dog Shera / Handler Kailash Jabalpur	Six years / Male	Year 2015 / Madhya Pradesh Forest Department	In the village Khadra, Forest Range Bahoriband, Katni Forest Division, Madhya Pradesh, the squad helped solve a leopard poaching case.
28th October 2021	Dog Limpsy / Handler Amit Subba Zhemjung	Five years / Female	Year 2017 / West Bengal Forest Department	In the Maheshmari Village, Milanore, under Beat Gulma, West Range, the squad helped solve a wild boar poaching case and helped recover the hidden body parts.
28th October 2021	Dog Nirman / Handler Raj Kishore Prajapati	Six years / Male	Year 2016 / Madhya Pradesh Forest Department	In the Satna Forest Division, Range Majgawa Forest Area, the squad helped solve a Sambar poaching case.
31st October 2021	Dog Shera / Handler Kailash	Six years / Male	Year 2015 / Madhya Pradesh Forest Department	In Village Bharratola, East Karanjia Forest Range of Dindori Forest Division, the squad helped with the seizure of three antlers of Spotted Deer.

B3. TWO NEW WILDLIFE CAMPAIGNS LAUNCHED ON WORLD ENVIRONMENT DAY 2021

World Environment Day celebrated on 5th June every year, provides an opportunity to highlight issues and efforts related to preserving and conserving nature. In 2021, UN Environment Programme (UNEP), Wildlife Crime Control Bureau (WCCB), TRAFFIC, and WWF-India, launched two campaigns, 'Not your medicine' and 'Sad emojis' to highlight the threats to protected species from wildlife trafficking and illegal wildlife trade in India.

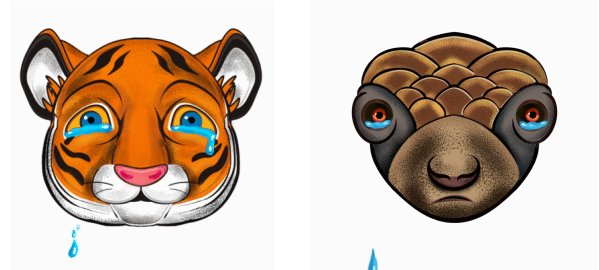
The campaigns were launched by Shri Soumitra Dasgupta, Additional Director General of Forests (Wildlife), Ministry of Environment Forest and Climate Change (MoEF&CC) and were designed by the renowned advertising agency Ogilvy.

Demand for wildlife for medicines with no scientific backing is a significant driver for trafficking and illegal trade of protected wildlife and its parts and derivatives.

The first campaign sent a message that protected wildlife species are not your medicine through powerful visuals.

The campaign included the Indian Rhinos *Rhinoceros unicornis*, pangolins, and Tokay Geckos *Gekko gecko*, all targeted for illegal and unscientific use in the medicine trade in India and abroad.

The second campaign – **Sad emojis** – focused on human emotions to raise awareness about the trafficking of wildlife for illegal trade. Five endangered wildlife species, tiger, bear, owl, tortoise, and pangolin, were featured as



sad emojis that could be shared on social media for day-to-day interaction.

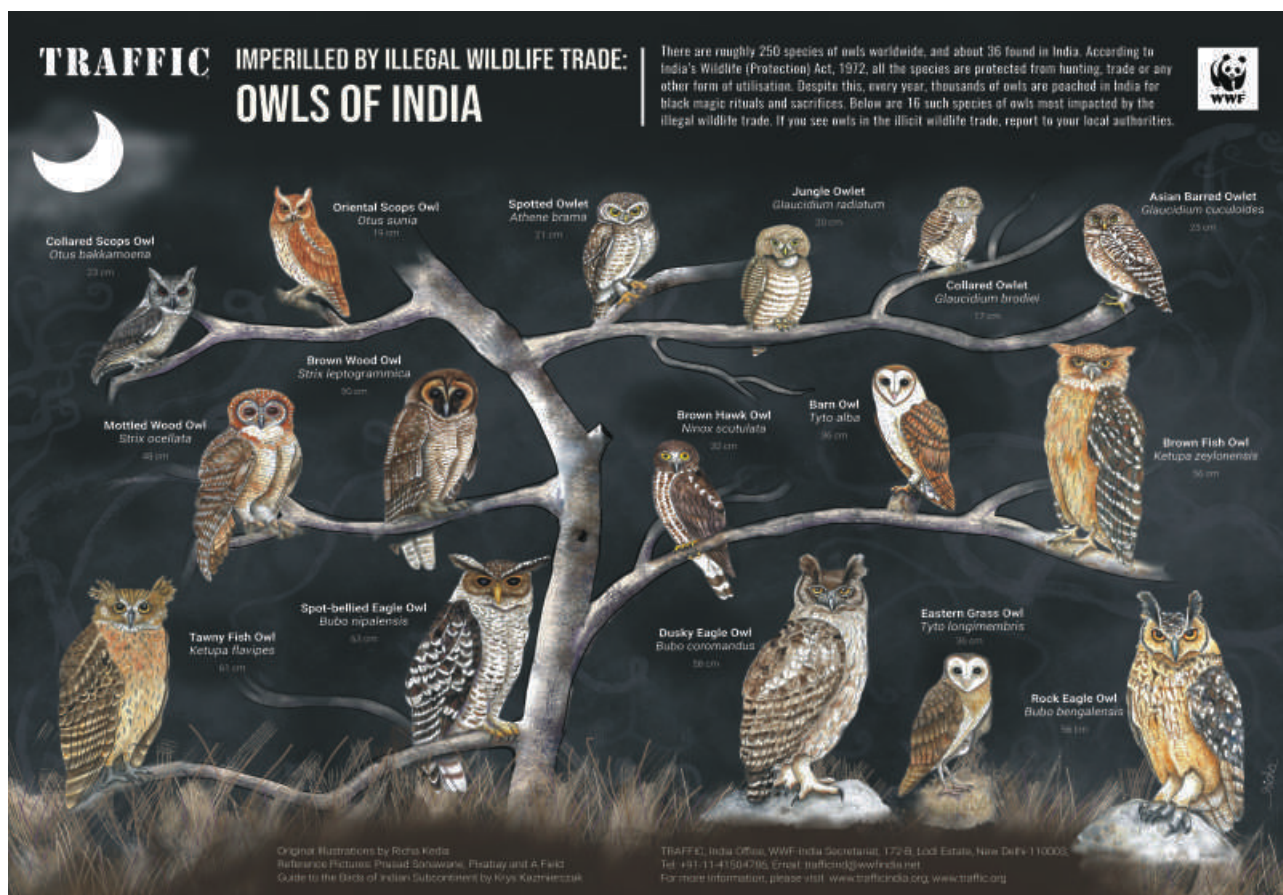
The campaign was showcased on social media platforms and supported celebrities and influencers concerned for the cause. It was distributed and used by policymakers, government officials, law enforcement staff, forest departments, airport officials, partner agencies, and people at national and sub-national levels. The campaign successfully reached 120 million people and featured on hoardings and displays at airports across India.

Paytm, an e-commerce company, also lent strong support for the campaign. Through many interventions on their website and social media, it helped reach over 65 million Paytm users.

You can download and use the campaign at <https://www.wwfindia.org/?20182/world-environment-day-2021>



B4. TRAFFIC AND WWF-INDIA INTENSIFY EFFORTS TO CURB OWL POACHING AND SACRIFICE AHEAD OF DIWALI



Owls in India are victims of superstitious beliefs and rituals that are often promoted amongst the unsuspecting public by local mystic practitioners. Hundreds of birds are sacrificed for mystic traditions and practices across the country, which usually peak around the festival season of Diwali.

On 4th August 2021, on the International Owl Awareness Day, TRAFFIC and WWF-India organised a webinar on owls. It was hosted by wildlife experts such as Dr Dhananjai Mohan, Director, WII; Dr Prachi Mehta, Executive Director- Research, WRCS; Mr Ravi Singh, SG&CEO, WWF-India; Dr Merwyn Fernandes and Dr Saket Badola from TRAFFIC's India Office.

A new identification poster on 16 owl species commonly found in the illegal wildlife trade was also released by Dr Dhananjai Mohan during the webinar – organised months ahead of Diwali to highlight owl conservation and protection issues.

The poster titled '*Imperilled by illegal wildlife trade: Owls of India*' is a collage of beautiful illustrations of owls

providing basic information about the species. It has been designed keeping in mind the wildlife law enforcement gap related to identifying wildlife species in the illegal trade.

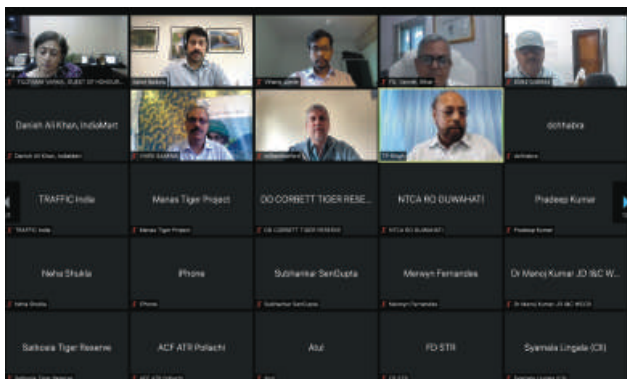
India is home to about 36 owl species, and all of these are protected under the Wildlife (Protection) Act, 1972, making poaching, trade, or any other form of exploitation a punishable offence. They are also listed in Appendix II of CITES, thus tightly regulating their international trade.

Despite the legal restrictions, owls continue to be killed, especially in smaller towns and villages. Owl parts such as the skull, feathers, ear tufts, claws, heart, liver, kidney, blood, eyes, fat, beak, tears, eggshells, meat, and bones are prescribed for ceremonial *pujas* and rituals.

The poster '*Imperilled by illegal wildlife trade: Owls of India*' has been distributed free of cost to various enforcement agencies across India.

Watch the webinar on owls at <https://fb.watch/aThlkqJ-Wx/>

B5. STAKEHOLDERS MEETING TO IDENTIFY FUTURE STEPS FOR CURBING WILDLIFE CYBERCRIME IN INDIA



The growing popularity and reach of the internet are changing how we live our lives and improving businesses. However, its illicit use to trade wildlife products severely impacts wildlife conservation. Illegal wildlife trade through internet has become a growing menace endangering the future of several wildlife species in India.

An important virtual meeting of crucial stakeholders was organised on 16th August 2021 by TRAFFIC, WCCB, US Embassy, New Delhi and WWF-India. The meeting deliberated on the trends in wildlife cybercrime in India and ideated with the stakeholders to develop a joint strategy to combat it. It was attended by nearly 30 officials representing enforcement agencies (Federal and State), industry groups, and e-commerce companies.

Dr Saket Badola, IFS and Head of TRAFFIC's India Office, Vihang Jumle (ex-TRAFFIC, India Office), Tilotma Varma IPS and Additional Director of WCCB and William Harford,

representing US Embassy, New Delhi presented their views on the issue in the meeting while other participants shared their experiences.

Giavanna Grein, Senior Programme Officer, TRAFFIC US, gave a video presentation on the Coalition to End Wildlife Trafficking Online (a group of internet companies working jointly to curb illegal wildlife trade in cyberspace). She gave an insight into the goals, objectives, activities undertaken, and the successes achieved by the Coalition so far. The presentation shared details of different initiatives to involve internet companies, build their staff capacities, and involve citizens to curtail wildlife cybercrime.

After understanding the sheer scale of illegal wildlife trade in cyberspace, the stakeholders agreed to prepare a joint strategy to curb online wildlife crime in India with support from all the stakeholders.

This meeting followed the first stakeholders meeting organised in September 2019 by TRAFFIC, WCCB, US Embassy, New Delhi, and WWF-India with the Indian law enforcement agencies and internet companies to bring attention to the online illegal wildlife trade. It was attended by over 50 senior officials from various wildlife law enforcement agencies – state forest department, paramilitary forces (SSB, ITBP, CISF, BSF and Assam Rifles), police – plus internet companies including Google India, Quickr, Flipkart, IndiaMART and representatives from FICCI and CII; CZA, NTCA, GTF, IFAW, IUCN, and WTI.

B6. MADHYA PRADESH FOREST OFFICIALS UNDERGO TRAINING TO CURB WILDLIFE CRIME

To strengthen the protection of the rich wildlife resources of Madhya Pradesh, TRAFFIC, with support from the State Forest Department, organised a specialised training programme for officials to enhance their capacity and skills in wildlife law enforcement.

The training took place at the Forest Guard Training Institute, Tala, Bandhavgarh Tiger Reserve, on 11-12

November 2021. Over 35 enforcement officials from the Forest Divisions of Bandhavgarh Tiger Reserve, Shahdol Forest Division and Umaria Forest Division of Madhya Pradesh attended the training.

Surendra Mehra IFS, Chandra Prakash Sharma, Dr A.B. Srivastava PhD, and TRAFFIC personnel designed and conducted the training. The sessions focused on the



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latest trends in illegal wildlife trade, common trade routes, modus operandi of traffickers and smugglers, commonly traded derivatives, identifying wildlife articles, using the forensic kit to collect evidence and the transport sector's role in wildlife trafficking.

Detailed sessions on India's Wildlife (Protection) Act, 1972 highlighted the powers of a forest officer, offences under the Act, and procedures to be followed while handling a wildlife crime case.

Due to increased illegal wildlife trade on digital platforms, TRAFFIC also included specialised sessions on monitoring, detecting, and curbing wildlife cybercrime.

B7. SNAPSHOTS OF WILDLIFE AWARENESS GENERATION INITIATIVES BY TRAFFIC IN INDIA



Short film on Tigers released: To mark Global Tiger Day on 29th July 2021, TRAFFIC's India Office, in collaboration with WWF-India, showcased a short awareness film on Tigers in India titled '10 Facts about India's National Animal' on social media platforms.

The short film takes one through significant facts about the tigers, legal protections, and the illegal wildlife trade threats. It encourages individuals to take action to conserve and protect the species.

WATCH & SHARE this short film at <https://fb.watch/8XoAB9r00z/>



Live session on Instagram about sharks On the Shark Awareness Day on 14th July 2021, Animal Planet India, in collaboration with TRAFFIC and WWF-India, organised an interactive session on Instagram about sharks and their conservation issues. Dilpreet B. Chhabra, Senior Manager - Communications, TRAFFIC's India office, and Vinod Malayiethu, wildlife expert and the Team Leader, Marine Conservation Programme, WWF-India, hosted the session.

If you have missed it or would like to watch it again, log on to https://www.instagram.com/tv/CRTxB9UqhLc/?utm_medium=copy_link

B8. SNAPSHOTS OF TRAINING AND INTERACTIONS ON ISSUES RELATED TO ILLEGAL WILDLIFE TRADE

- ▶ Dr Saket Badola, Head of TRAFFIC's India Office, hosted a **session on wildlife cybercrime for the FICCI-NIDM Certificate Online Training Programme** on 2nd September 2021. The session was organised by the National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India, collaborating with the Federation of Indian Chambers of Commerce and Industry (FICCI).
- ▶ **Session on wildlife laws and regulations for Indian Revenue Service (IRS) officers** by Dr Saket Badola, Head of TRAFFIC's India Office, on 21st September 2021 and 28th October 2021, respectively.
- ▶ From 1st – 6th October 2021, Dr Merwyn Fernandes, Coordinator, TRAFFIC's India Office, participated in a **webinar series on illegal wildlife trade** during the celebration of Azadi Ka Amrit Mahotsav (an initiative of the Government of India to celebrate and commemorate 75 years of independence). The event was organised by the Wildlife Crime Control Bureau (WCCB), the United Nations Development Programme (UNDP), and the Ministry of Environment, Forests, and Climate Change (MoEFCC).
- ▶ **Keynote address on “Wildlife Conservation and Management”** by Dr Saket Badola, Head of TRAFFIC's India Office, during a one-week online interdisciplinary faculty development programme on “Wildlife Conservation and Management” organised by the Ministry of Education, Government of India, and Daulat Ram College in collaboration with Hansraj College, the University of Delhi between 4th-9th October 2021.
- ▶ A capacity enhancement workshop for field officers on controlling killing, trade and other crimes on elephants in India was organised by the Wildlife Institute of India and Elephant Cell, MoEFCC from 22-23 November 2021. During his sessions, Dr Saket Badola, Head of TRAFFIC India gave insights into the poaching of elephants for their ivory and the steps that can be taken to deal with this threat.



- ▶ A documentary on biodiversity of Lakshadweep Islands titled “Lakshadweep Islands- Coral Reel for Life” was released by Dr Saket Badola, IFS, Head of TRAFFIC's India Office, on 21 December 2021 at Sardar Patel Auditorium, Atal Paryavaran Bhawan, Kavaratti, Lakshadweep. The film has been made by the Lakshadweep Forest and Environment Department to showcase the unique marine life of the archipelago. It was conceptualised and produced by Shri Damodhar A.T., IFS, Secretary, Environment and Forest, Lakshadweep Administration. You can watch the documentary at <https://www.youtube.com/watch?v=toNJaJxHvZs>



C1. FIRST-EVER 3D-PRINTED REPLICA SHARK FINS BY TRAFFIC TO HELP PROTECT SHARKS



© TRAFFIC

Global assessments estimate that between 26 and 73 million sharks are traded each year. But the actual figure is likely to be far higher when conservative values of unreported bycatch or illegal fishing are accounted for. Despite national and international regulations, illegal harvesting and trade of sharks and their derivatives, especially shark fin, continues. Identifying protected shark species purely from their fins – especially those caught and smuggled illegally – is enormously challenging.

Knowing this, TRAFFIC created a set of 3D printed and painted replica fins to assist customs and other enforcement officers globally to identify species and help curb the illegal shark trade.

The printed fins made from 3D scans of real dried shark fins represent a dozen regularly traded sharks. Eleven of

them are CITES-listed species, including Great Hammerhead Shark *Sphyrna mokarran*, Oceanic Whitetip Shark *Carcharhinus longimanus*, and Silky Shark *Carcharhinus falciformis*.

The 3D scan files and associated painting instructions for 22 fins are now available free on TRAFFIC website as part of the organisation's ongoing efforts to combat this illegal trade.

The replica fins have been developed to be nearly impossible to differentiate from the real thing. A selective laser sintering process using nylon as the primary material forms part of the development process, giving the fins a slightly rough, sandpaper-like texture – similar to real dried shark fins found in trade.

Distinctive markings and colouration, which are crucial for accurate identification, are incorporated into the replica fins' development. Comprehensive painting guidance is included in the downloadable files to ensure the 3D fins can be accurately replicated for use by law enforcement agencies across the world.

TRAFFIC has developed the replica fins with the support of the South African Department of Forestry, Fisheries and Environment, and US shark expert Debra Abercrombie and with active input from several committed South African-based service providers.

<https://www.traffic.org/news/traffic-bites-back-at-illegal-wildlife-traders-with-the-worlds-first-ever-3d-printed-replica-shark-fins/>

D

TRAFFIC ALERTS



D1. SHARK FIN WEIGHING 23.5KG SEIZED FROM TWO DUBAI-BOUND AIR PASSENGERS IN CHENNAI



© naturepl.com / Jeff Rotman /
WWF-Canon

In October 2021, the Customs Air Intelligence unit officials at the Chennai Airport seized 23.5kg of processed shark fins smuggled to Dubai by two passengers. The officials maintained a special vigil based on intelligence about smuggling wildlife (marine) products to Dubai. They kept a close watch on two passengers carrying carton boxes and moving suspiciously. The duo was intercepted after clearing immigration and proceeding for a security check. Senior officials said that this was the first seizure of wildlife products since the COVID-19 induced lockdown, while the last seizure of shark fins was in December 2019.

TRAFFIC ADDS.....

India is home to about 160 shark and ray species. Of these, 88 species of sharks belong to 44 genera from 21 families, 53 species of rays belong to 19 genera from 10 families, and 19 species of skates belong to 10 genera from 4 families (Kizhakudan *et al.*, 2015). India's Wildlife (Protection) Act, 1972 protects ten sharks and ray species in India against poaching, trade and other forms of exploitation. India had also imposed a blanket ban on the export of shark fins in 2015. However, this ban does not extend to other shark products and derivatives.

As per TRAFFIC's global study (2019)¹, each year between 2007-2017, 256,571 metric tonnes of sharks, rays and skates were caught on average by the world's top three sharks and rays catching nations. Of which, on average, India contributed nearly 26.26%.

The global shark fishery is driven by demand for shark fins and meat (Okes and Sant, 2019). Shark fins are the most sought-after shark product. They are used for making 'shark fin soup' a food delicacy, reportedly among the world's most valuable fishery products. Its other products are also demanded, albeit to a lesser extent. Shark's meat is used as food, skins as leather and liver oil as a lubricant in cosmetics and as a source of vitamin A.

Chondroitin sulphate is produced from shark cartilage is used as nutraceutical supplements. The jaws and teeth are extracted to make curios.

Protecting sharks in India needs a holistic approach that helps curb the illicit trade of protected shark species but also allows for sustainable shark trade that is not a threat to the conservation of the species.

SOURCES:

Kizhakudan, S.J., Zacharia, P.U., Thomas, S., Vivekanandan, E. and Muktha, M., 2015. *CMFRI marine fisheries policy series-2; guidance on national plan of action for sharks in India* (No. 2, pp. 1-102). Central Marine Fisheries Research Institute.

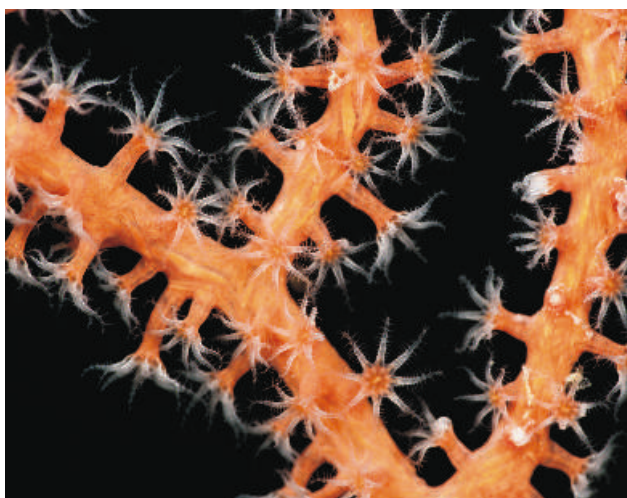
MP Sidharth 2020, '23.5kg shark fin worth over Rs 16 lakh seized from two Dubai-bound passengers in Chennai', *Zee News*, 29th October, viewed 18th August 2021, <<https://zeenews.india.com/india/23-5kg-shark-fin-worth-over-rs-16-lakh-seized-from-two-dubai-bound-passengers-in-chennai-2320870.html>>

Niedermüller S., Ainsworth G., de Juan S., Garcia R., Ospina-Alvarez A., Pita P., and Villasante S. 2021. The shark and ray meat network a deep dive into a global affair. WWF
¹Okes, N., & Sant, G. 2019. An overview of major shark traders, catchers and species. TRAFFIC, Cambridge, UK.



E1. CYBERSPACE: A GROWING HUB FOR ILLEGAL TRADE IN LESSER-KNOWN MARINE SPECIES

Vihang Jhumle (ex-TRAFFIC India Team); Dr Saket Badola, IFS, TRAFFIC, India Office



© Jürgen Freund / WWF

Illegal wildlife trade is already amongst the top four global criminal activities and is further foraying into newer unheard realms, such as cyberspace.

Similar to terrestrial species, several marine species such as sharks, sea sponges, corals, sea fans and molluscs (shells) continue to be threatened due to overexploitation – (Pacoureau *et al.*, 2021) (Martin *et al.*, 2016) (Nijman, 2019) and unsustainable illegal trade ' (Di Minin *et al.*, 2019) (Cannas *et al.*, 2019). However, marine species receive much less attention from policymakers and enforcement agencies and become the silent victims of the illegal wildlife trade as they continue to be illegally extracted from their habitats for commercial purposes.

In addition, the growth of the internet is speeding up a largely inconspicuous illegal trade of many lesser-known marine species by making it seamless for sellers to connect and trade with a large group of buyers.

To better understand and highlight the nuances of the cyber trade of these lesser-known marine products, TRAFFIC conducted a short online survey focusing on the sale of wildlife articles made of sea fans *Gorgonians* and Top Shell *Trochus niloticus*.

ILLEGAL TRADE OF SEA FANS (GORGONIANS) ON CYBERSPACE

Sea fans are a type of 'soft corals' found in oceans worldwide, from low inter-tidal waters to extreme depths. The characteristic feature of sea fans is their flat-fan-like structure formed by their intricately branching tree-like colonies. The associated algae give them characteristic red, yellow, or orange hues. Due to this beautiful colouration, they are called 'flowers of the sea bottom'.

Sea fans play a significant role in the global coral reef ecology as structuring species (Ponti *et al.*, 2018) (Boavida *et al.*, 2016). They have been found to provide resistance to the growth of invasive algae *Caulerpa cylindracea* and support the macroinvertebrates population in their habitat (Verdura *et al.*, 2019).

About 500 species of sea fans, *Gorgonia*, are found across the globe, of which approximately 171 species



© Tom Vierus / WWF-US

have been reported from India (Yogesh Kumar & Raghunathan, 2015). In India, the maximum diversity is reported from Andaman and Nicobar archipelago. They are also present in the northeast coast, Gulf of Mannar, Palk Bay, Arabian coast, Lakshadweep Islands, and Gulf of Kachchh (Yogesh Kumar & Raghunathan, 2015).

The traditional threats to sea fans are primarily attributed to destructive/unregulated fishing practices (trawling and bottom-set gillnets) (Dias *et al.*, 2020), water pollution, excessive siltation, and occasional natural calamities like cyclones and tsunamis, especially to those restricted to the shallow regions.

A significant threat to sea fan species is also from the unauthorised collection for trade. The beautiful colouration, unique and ornate web/tree-like pattern and potential use in medicine have made them a target for the illegal wildlife trade worldwide. They are sold in large quantities for aquariums and in curio shops and as good luck charms.

In India, the commercially exploited sea fans are divided into four general types: Black, Flower, Red and Monkey-tail. Sea fans are commonly referred to as *Indrajaal* in India. Due to the misbelief regarding its supernatural powers, they are often sold by occult practitioners.

Considering their rampant extraction and trade threatening their existence, India in 2001 accorded sea fans the highest level of protection under the Wildlife (Protection) Act, 1972 by listing them in Schedule I (Part 4 (A)). This sea fans' collection, possession, or trade is a punishable offence.

Despite this legal protection, they are still extracted from ocean beds, dried out, and framed to be kept in homes to attract wealth and good fortune. They are sold in various colours, and the price is generally a function of the size and relative level of intactness.

While many enforcement agencies monitor their physical trade, the online markets are not much studied.

Hence, TRAFFIC conducted a short online survey to understand and highlight sea fans' ongoing illegal trade on cyberspace in India. After a preliminary survey analysis

to identify the websites that feature sea fans for sale, TRAFFIC conducted three online surveys covering these websites in April, August and December 2020 and made the following observations:

a. Sea fans were sold under different names such as *Indrajaal*, *Maha Indrajaal*, *Mayajaal*, *Brahmajaal*, Sea Plant, Coral Dry Plant, Dry Plant, Sea Coral Plant, Energised Plant, Natural *Abhimantrit*, Holy Plant, Sea Herb, and *Vaastu Kawach*.

b. During the first survey (April 2020) of the e-commerce sites, a total of 20 websites hosting 55 sea fan trade-related posts were found. The second survey (August 2020) found 16 websites hosting 46 posts, and the third survey (December 2020) found 18 websites hosting 47 posts.

Tables of distribution for sea fan-related posting on various websites:

Table 1: Survey 1 (April 2020)

NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR SEA FANS
India Mart	13
Flipkart India	11
Amazon India	8
Ebay	3
Snapdeal	3
Others ¹	17
Grand Total	55

¹Others include websites: Shopclues, Alibaba, Rediff Shopping, Whiteauravastastore, Rudraksh Mart, Salebhai, Astrohubmart, Vastu Store, Tantrik Laboratories, TimeShopee, Indian Institute of Astrology and Gemology, Venture Bookshop, Justdial, Aghor Tantra Mantra Yantra, Lalkitab Vastu.

Table 2: Survey 2 (August 2020)

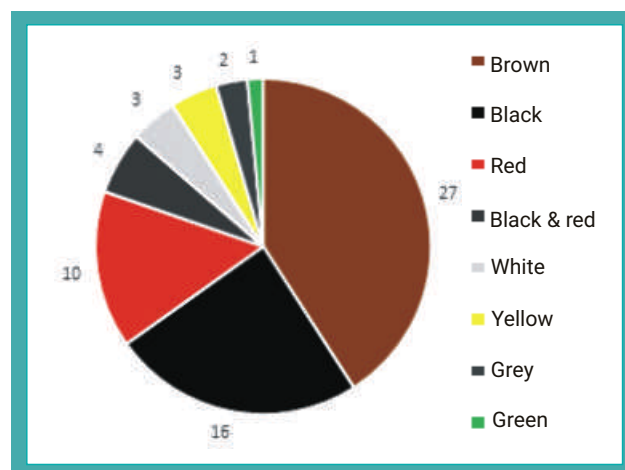
NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR SEA FANS
India Mart	12
Flipkart India	11
Snapdeal	5
Shopclues	3
Amazon India	2
Ebay	2
Alibaba	2
Others ²	9
Grand Total	46

²Others include: Vastu Store, Tantrik Laboratories, TimeShopee, Indian Institute of Astrology and Gemology, Venture Bookshop, Justdial, Aghor Tantra Mantra Yantra, Lalkitab Vastu, Whiteauravastastore, Rudraksh Mart, Astrohubmart.

Table 3: Survey 3 (December 2020)

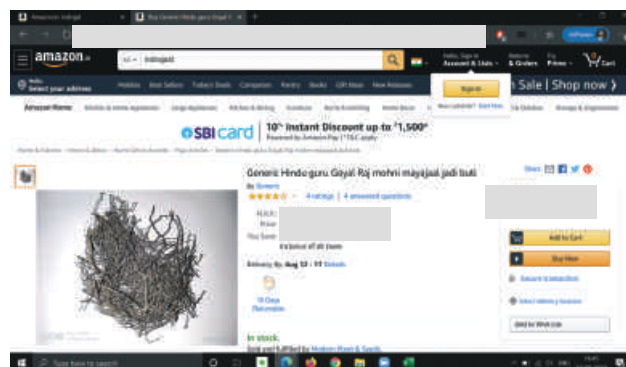
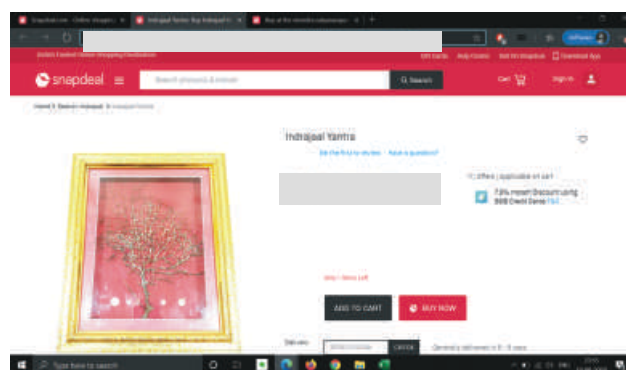
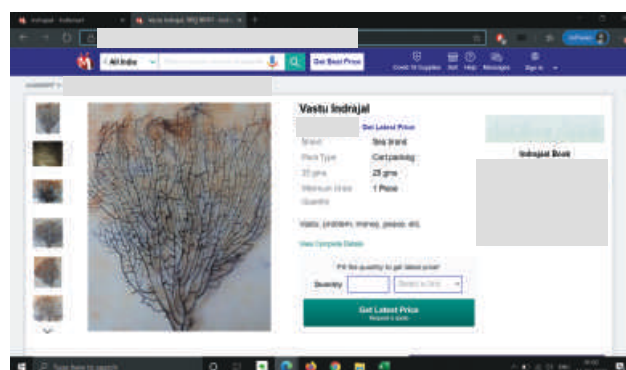
NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR SEA FANS
India Mart	12
Flipkart India	11
Snapdeal	4
Shopclues	4
Ebay	2
Vastu Store	2
Others ³	12
Grand Total	47

³Others include: Indian Institute of Astrology and Gemology, Salebhai, Justdial, TimeShopee, Astromantra, Whiteauravastustore, Tantrik Laboratories, Rediff Shopping, Rudraksh Mart, Lalkitab Vastu, Astrohubmart, Pooja Store.



Graph 1: Listing of different colours of sea fan offered for sale

Given below are some images of sea fan in illegal wildlife trade on cyberspace:



ILLEGAL TRADE OF TOP SHELL (TROCHUS NILOTICUS) ON CYBERSPACE



© Jürgen Freund / WWF

Top Shell *Rochia nilotica* (also known as *Trochus niloticus*) is a sea snail of the Tegulidae family of phylum Mollusca. It is found in tropical and subtropical waters of the western Pacific oceans from the Andaman Islands to Fiji and the northeastern coast of Australia. In India, its distribution is restricted to the Andaman and Nicobar Islands. It is comparatively more abundant in the Nicobar Islands, especially on the eastern side of Galathea Bay (Ramakrishna et al., 2010).

The length of the shell of this species varies between 50-165 mm and its diameter between 100-120 mm. Shells of the larger snails of the species have a thick inner layer of Nacre (also known as mother pearl). This organic-inorganic composite material gives these shells their distinct bright pearly appearance. These shells are highly sought after worldwide and are used to make 'mother of pearl' ornamental products such as artisanal jewellery, pendants, buttons, beads, necklaces and home décor products. They are also polished, cut into various sizes, and used in the shell craft industry. The lime industry uses these species where the fine lime extracts find application in pottery glazes and toothpaste. They also make floor tiles, metallic paints, and shampoo (Murphy et al., 2010). Increased use by industries is a significant cause of the species' over-exploitation.

In India, *Rochia nilotica* is listed in Schedule IV of the Wildlife (Protection) Act, 1972, thus imposing restrictions on its extraction and trade.

India is a niche market for these shells - locally called 'Moti Shankh' (Pearl Shell or Moti Conch) - primarily used for religious purposes. Though it comes in different colours, the demand in India is centred on the white shells that resemble a pearl and have a shiny iridescent appearance. These shells are considered 'sacred' and are believed to attract wealth and fame.

The illegal collection has been routinely reported in middle and north Andaman, Little Andaman, and some Nicobar Island and Kundol Island (Ramakrishna et al., 2010). As the vigilance on trade via physical markets has increased, the trade has shifted to online platforms.

TRAFFIC conducted a short study on its online trade to highlight its illicit online trade. Three online surveys in July, August and December 2020 were completed, and the observations were made as follow:

a. Top Shells are sold under different names like *Moti Shankh*, *Pearl Moti Shankh*, *Pearl Conch*, *Moti Conch*, *Moti Shankh Conch*, *Moti Shell*, *Stone Moti Shankh*, *Sacred Shankh*, *Mother of Pearl*, *Real Seed Original Moti Shankh*, *Energised Moti Shankh*, and *Heera Shankh*.

b. During the first survey (July 2020), the study found 18 websites that hosted 70 posts related to the species. The second survey (August 2020) found 17 websites hosting 83 such posts. The third survey (December 2020) found 28 websites hosting 104 listings.

c. The three surveys for Top Shells revealed 122 individual posts by over 86 different sellers over 30 websites.

d. The study could not determine the locations of most of the *Moti Shankh* sellers as no additional information like personal website addresses was provided with the listings. Some of the sellers who had provided the details were believed to be from Uttar Pradesh, Haryana, and Madhya Pradesh.

Though second and third surveys found several old posts, many new listings were also observed.

The presence of old posts indicates towards lack of fear of legal repercussions among the illegal traders. Also, open posting of their addresses indicates towards this. A constant increase in the number of websites posting these listings and overall listings showed a consistently increasing trend.



© Dr R. Ravinesh

Tables of distribution for Top Shell related posting on various websites:

Table 5: Survey 1 (July 2020)

NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR TOP SHELLS
India Mart	21
Flipkart	14
Amazon	11
ShopClues	7
Snapdeal	4
Others ⁴	13
Grand Total	70

⁴Others include PaisaWapas, OLX, Shell Wala, Exporters India, Om Pooja Shop, Dharmik Shakti, Paytm Mall, Trade India, Govind Foundation, Mahakal Cosmos, INRDeals, Abhimantrit, JayMahaKaal.

Table 6: Survey 2 (August 2020)

NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR TOP SHELLS
India Mart	21
Flipkart	19
Amazon	16
ShopClues	9
Snapdeal	6
Others ⁵	12
Grand Total	83

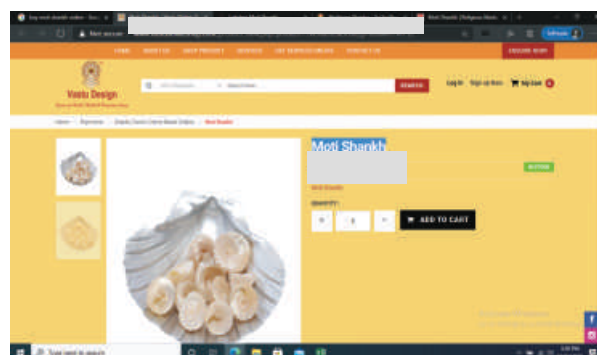
⁵Others include Exporters India, Om Pooja Shop, OLX, Shell Wala, Paisa Wapas, PayTmMall, Govind Foundation, AbhiMantrit, INRDeals, Trade India, JayMahaKaal, Mahakal Cosmos.

Table 7: Survey 3 (December 2020)

NAME OF WEBSITE	NUMBER OF POSTS WITH SALE OFFERS FOR TOP SHELLS
India Mart	32
Flipkart	31
ShopClues	8
Snapdeal	6
PayTmMall	3
INRDeals	2
Others ⁶	22
Grand Total	104

⁶Others include Vastu Design, Shivaago, Pooja Shop Online, Hindu Portal, Exporters India, Desert Cart, Amazon India, Ratnatraya, Govind Foundation, Religious Marts, Shell Wala, Siddhshree, Dharmik Shakti, Speroh, The PujaMart, JayMahaKaal, Sri Sai Pooja Samagri, Mahakal Cosmos, Trade India, Om Pooja Shop, AbhiMantrit, Paisa Wapas.

Given below are some images of sea fan in illegal wildlife trade on cyberspace:



CONCLUSION

Sea fans *Gorgonians* and Top Shell *Rochia nilotica* are protected under India's Wildlife (Protection) Act, 1972. The Information Technology Act, 2000 also prohibits the internet and electronic devices like phones and computers from trading any product or article banned by any other law. Despite this, the findings from both surveys conducted by TRAFFIC revealed the widespread presence of online trade of sea fans and Top Shell.

The study found that many sellers openly shared their addresses while posting related to the sale of these species. It indicates either a lack of awareness among the sellers about the legality of trading these species or inadequate wildlife law enforcement.

The TRAFFIC study found that a few posts remained common through subsequent surveys indicating that even the e-commerce sites did not remove them.

At the same time, several new postings indicated an ongoing unchecked trade, with no fear of getting caught amongst the sellers. Several sellers openly posting their contact details also strengthens the last conclusion.

In short, the online surveys of e-commerce web portals in India clearly showed a robust presence of online trade in protected marine species and their parts and derivatives. This paints a grim picture for conserving these "lesser-known" marine species. The trade was prevalent on many "popular" and "less popular" websites.

To address these issues, the existing laws in India to curb cybercrime need to be amended to include wildlife-related cybercrimes more explicitly. For this, the Information Technology Act 2000 and Information Technology [Intermediary Guidelines (Amendment) Rules] 2018, must be revised to make internet companies pay more attention to preventing the use of their platforms to sell illegal wildlife products.

Law enforcement agencies generally find it challenging to keep pace with the fast-changing technologies. Therefore, it is crucial to build specialised capacities within wildlife law enforcement agencies and equip them with the vital tools to detect, intercept, and prevent Internet use for illegal wildlife trade.

Mechanism to collect, retrieve, and analyse wildlife cybercrimes (and seizures) also needs to be strengthened and enhanced.

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Identification card on Top Shell
(Protected Molluscs of India- Identification tool developed by TRAFFIC)

TRAFFIC

the wildlife trade monitoring network

Protected Molluscs (Seashells) of India

WWF

COMMERCIAL TROCHUS/TOP SHELL

Rochia nilotica

(*Trochus niloticus*—as mentioned in WPA, 1972)

a. Conical in shape; b. Flame like stripes of deep orange colour.

- **SIZE:** Length: 50–165mm; Width: 100–120mm.
- **IDENTIFICATION FEATURES:**
 - Shell large, conical shape, heavy, body whorl wide, flattened and more than the shell length.
 - Columella smooth.
 - Shell ornamented with flame like stripes of vermillion in colour.
 - Operculum circular, thin, corneous, orange-brown.

TRAFFIC

the wildlife trade monitoring network

Protected Molluscs (Seashells) of India

WWF

COMMERCIAL TROCHUS/TOP SHELL

Rochia nilotica

(*Trochus niloticus*—as mentioned in WPA, 1972)

a. Conical in shape; b. Flame like stripes of deep orange colour.

● CONSERVATION STATUS:	● DISTRIBUTION:
WPA, 1972	Schedule IV
CITES	Not Listed

SOFT PART EXTENSIVELY USED FOR FOOD AND ORNAMENTAL PURPOSE.

MOTHER-OF-PEARL LAYER IS A COMMERCIAL PRODUCT IN BUTTON MAKING.

JANUARY 2022

WORKING TO ENSURE THE TRADE IN WILD PLANTS AND ANIMALS IS NOT A THREAT TO THE CONSERVATION OF NATURE

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