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SHORT REPORT

TRAFFIC is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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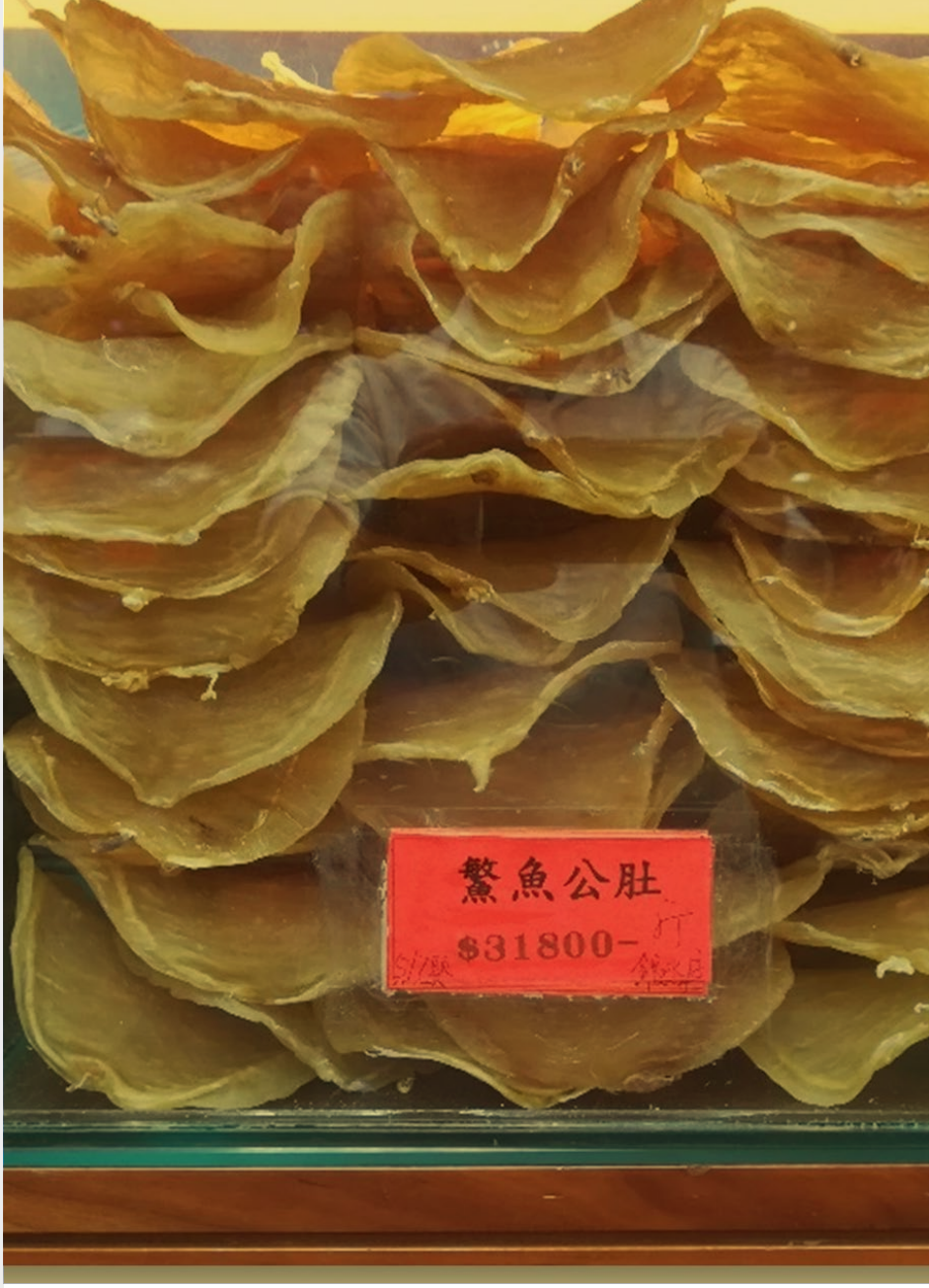

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INTRODUCTION

FISH SWIM BLADDERS, COMMONLY REFERRED TO AS FISH MAW ONCE PROCESSED, ARE AMONG THE MOST POPULAR SEAFOOD DELICACIES IN EAST ASIAN MARKETS AND ARE A VALUABLE IMPORT COMMODITY IN HONG KONG SAR[1] (HEREAFTER HONG KONG) AND CHINA SPECIFICALLY (WEN *ET AL*., 2015).

Believed to have special medicinal properties, fish swim bladders are used in Chinese cuisine and traditional medicine for immune boosting and as a recovery tonic (Jing Wen *et al*., 2015). They are considered one of the big four traditional delicacies in market destinations along with sea cucumber, shark fin and abalone (Jing Wen *et al*., 2015), all of whose wild source populations have suffered declines due to unsustainable levels of harvesting to supply the high levels of demand. Together with the fact that fish maw is increasingly used as a substitute for shark fins as the shark fin trade declines (WWF, 2018; Shea and Ho, 2014; Sadovy de Mitcheson *et al*., 2018), there is cause for concern that the high demand and high value of the product may lead to unsustainable harvesting in source countries.

The demand for fish maw throughout Asia currently places pressure on related fisheries and fish populations globally, with species such as the Chinese Bahaba *Bahaba taipingensis,* or the Totoaba *Totoaba macdonaldi* (endemic to Mexico), being fished to near extinction for their high valued swim bladders (Tuuli *et al*., 2016). The overexploitation of high priority fish has opened up the market to a wider variety of species from a range of origins, tapping into global markets to feed the high demand in East Asia (Clarke, 2004). Many of the growing source fisheries are in Africa, with the Nile Perch *Lates niloticus*, being the preferred fish from the region for fish maw trade (Nakaweesi, 2013).

However, little information is currently available on the fish maw harvesting, processing (see Box 1) and trade practices in Africa, particularly for fish maws sourced from marine species. Despite the Nile Perch being an invasive species, unsustainable harvesting practices are still a concern as this could impact negatively on those dependent on the catch and trade for their livelihoods. It is possible that some of the fish maw trade may be product sourced from aquaculture operations, however there is currently little evidence that this is the case (Bagumire *et al*., 2018). In addition, the number of countries involved, and the diversity of shapes and sizes of maws seen on the market suggest the trade is supplied by a wide range of species and sources.

Hong Kong is a major transit hub and the world's largest importer and re-exporter of dried seafood including fish maw (Clarke, 2002). Trade statistics suggest that fish maw traded from the African continent to Hong Kong has expanded in the 2012 to 2019 period, in quantity, value and in the number of African countries from which Hong Kong is reporting imports. While fish maw trade appears to be growing, exports from African countries are severely underreported, making it harder to identify, monitor and regulate possible unsustainable and illegal fishing linked to the trade. This report aims to provide a rapid assessment of the fish maw trade from Africa to Hong Kong and provide recommendations for improved trade monitoring and regulation and further research, where necessary.

[1] Hong Kong Special Administrative Region of the People's Republic of China

METHODS

To understand better the trade dynamics of the fish maw trade from Africa to Hong Kong, a comparative trade data analysis of fish maw imports and exports for African exporting countries to Hong Kong was conducted. Data for mass (kg) and value (USD) were sourced from United Nations International Trade Statistics Database (UN Comtrade) for the period 2012–2019 based on the three Harmonised System (HS) codes that include the term "fish maws" (Table 1), as well as from the Hong Kong Census and Statistics Department using the two fish maw specific codes (Table 2) available. Data prior to 2012 were not assessed as codes referring to fish maw only came into effect in 2012.

TABLE 1

Harmonised System codes for international fish maw trade – UN Comtrade

CODE:	DESCRIPTION:
030299	Fish; fresh or chilled, fish fins (other than shark fins), heads, tails, maws and other edible fish offal.
030399	Fish; frozen, fish fins (other than shark fins), heads, tails, maws and other edible fish offal.
030572	Fish; edible offal, fish heads, tails and maws.

TABLE 2

Hong Kong Census and Statistics Department codes for international fish maw trade

CODE:	DESCRIPTION:
030572	Fish heads, tails, and maws, dried
03057210	Fish maws, dried

The HS is administered by the World Customs Organization and used globally to standardise the representation of commodities in trade. The system consists of approximately 5,300 commodity codes describing products grouped into chapters and sections based on taxonomic similarities, e.g. Chapter 3 for "Fish and crustaceans, molluscs and other aquatic invertebrates" and Chapter 6 for "Live trees and other plants". The codes are harmonised internationally at a detailed six-digit (HS-6) level with the allowance for countries to use additional digits to narrow commodity classifications even further according to specific tariff and statistical requirements they may decide to introduce unilaterally. Given that a broad range of commodities can be produced from a single species (e.g. South African Hake *Merluccius capensis* is traded in fresh or frozen form with different HS codes), and similarly that a broad range of species can contribute to a single commodity (e.g. there is a code with a description "wood – sawn or chipped" that comes from different species), HS codes are not always specific to a taxon (Gerson *et al.*, 2008).

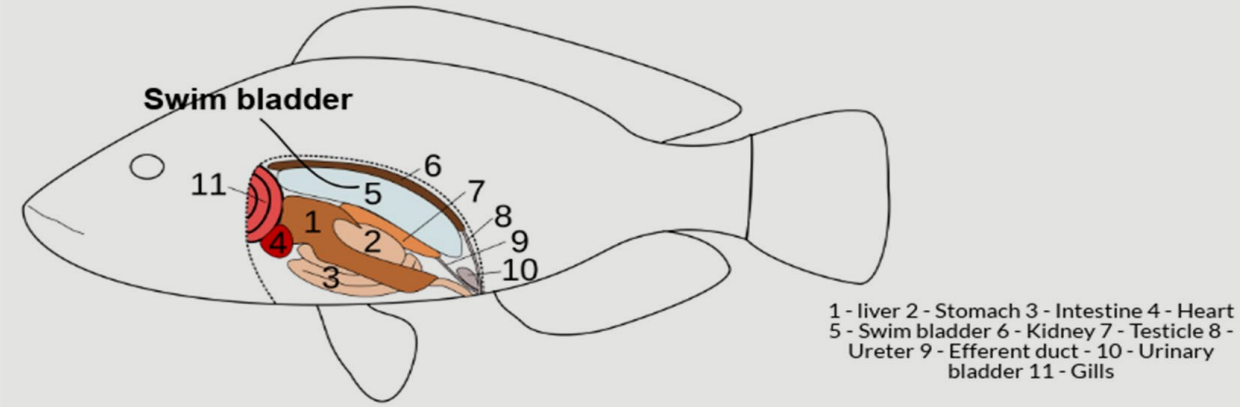
While the data sourced from UN Comtrade are based on code descriptions that also include fish heads and tails, in practice these items account for very little of the trade recorded under these codes due to common international fishing practices regarding fish heads and tails (Bland 2014). As fish heads and tails are normally discarded in favour of fish fillets and swim bladders, the vast majority of trade recorded under the HS codes describing "heads, tails and maws" is attributed to fish maws (Bland 2014). Furthermore, an analysis of Hong Kong's import records for the "fish heads and tail" specific code (03057290) indicated very little trade from African countries for this commodity—very small quantities of fish heads and tails were imported from Somalia in 2016, 2018 and 2019; and there was one import record from Senegal in 2019.

In addition, when analysing import records sourced from the Hong Kong Census and Statistics Department (Table 2), the broad HS code (030572) sourced from UN Comtrade yielded the same results as the fish maw specific code (03057210) developed by Hong Kong, further indicating that fish heads and tails account for very little of the trade. Thus, in this report when referring to data sourced from UN Comtrade, the term "fish maw" and not "fish maw, tails and heads" is used.

The trade analysis focuses on reported imports of fish maw specific products by Hong Kong, comparing Hong Kong fish maw import data with data on fish maw exports to Hong Kong by African countries.

BOX 1

PROCESSING OF FISH SWIM BLADDERS



1 - liver 2 - Stomach 3 - Intestine 4 - Heart 5 - Swim bladder 6 - Kidney 7 - Testicle 8 - Ureter 9 - Efferent duct - 10 - Urinary bladder 11 - Gills

1. Starting with a longitudinal cut along the fish, the swim bladder is removed and washed several times to clean away blood vessels and exterior tissues (Tuuli *et al*., 2016).

2. After being cleaned thoroughly, the swim bladders are laid out to dry in the sun until partially dry, where they are then smoked in sulfur for many hours (Tuuli *et al*., 2016).

3. From this stage they are either sold to merchants or further processed into flat forms for packaging and sale (Jing We *et al*., 2015).

4. The dried, processed swim bladders must then be rehydrated for culinary or medicinal use through soaking or salt frying (Jing Wen *et al*., 2015).

IMAGE 1

The photo to the right shows fish maws sold alongside abalone and shark fin, with fish maws retailing at the highest price out of the three

RESULTS

HONG KONG FISH MAW TRADE WITH AFRICA

FOR HONG KONG REPORTED IMPORTS UNDER THE THREE FISH MAW RELATED HS CODES (TABLE 1), 36 AFRICAN COUNTRIES ACCOUNT FOR 22% OF HONG KONG'S IMPORTS (FIGURE 1). OUTSIDE OF AFRICA, THE KEY SOURCE COUNTRIES INCLUDE BRAZIL, INDIA, CHINA, SURINAME, AND GUYANA.

The top three African source countries over the 2012 to 2019 time-period were Uganda, Kenya and Tanzania, together accounting for 85% of imports by Hong Kong from Africa (Figure 1). The fish maw trade between African countries and Hong Kong increased from 2012 to 2016 but then experienced a decline in 2017, with a significant increase in 2018, and another decline in 2019 (Figure 2).

There is no published information to explain the changes in trade from African countries to Hong Kong, however it has been noted that fish maws are a growing business in East African countries (Bagumire *et al*., 2018) and in destination markets, fish maws are increasingly used as a substitute for shark fins as the shark fin trade declines (WWF, 2018; Shea and Ho, 2014; Sadovy de Mitcheson *et al*., 2018). There are major discrepancies in the reported imports by Hong Kong from African countries and reported exports from African countries to Hong Kong. Hong Kong reported imports from 36 African countries, while only 6 African countries reported exports to Hong Kong between 2012 and 2019.

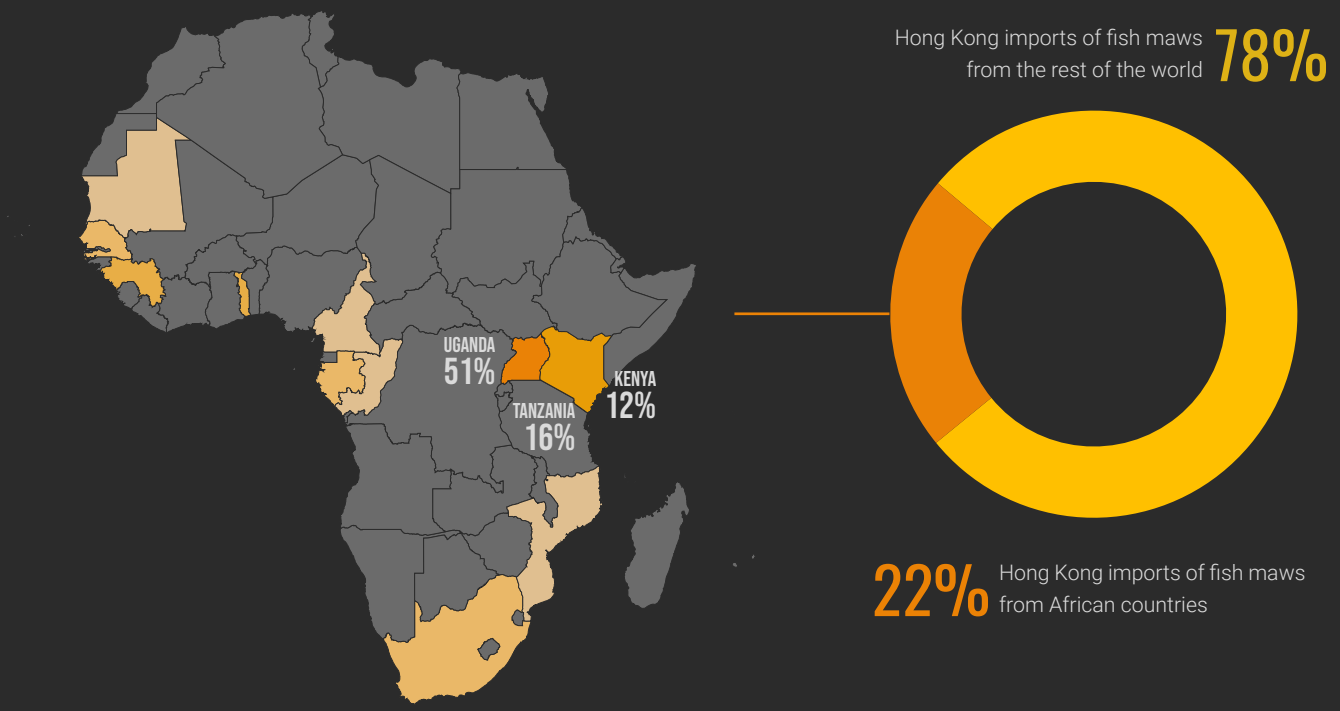


FIGURE 1

Proportion of imports reported by Hong Kong from African exporting countries compared to Hong Kong reported imports from the world, 2012–2018—with the top three exporting country contributions indicated. Source: UN Comtrade

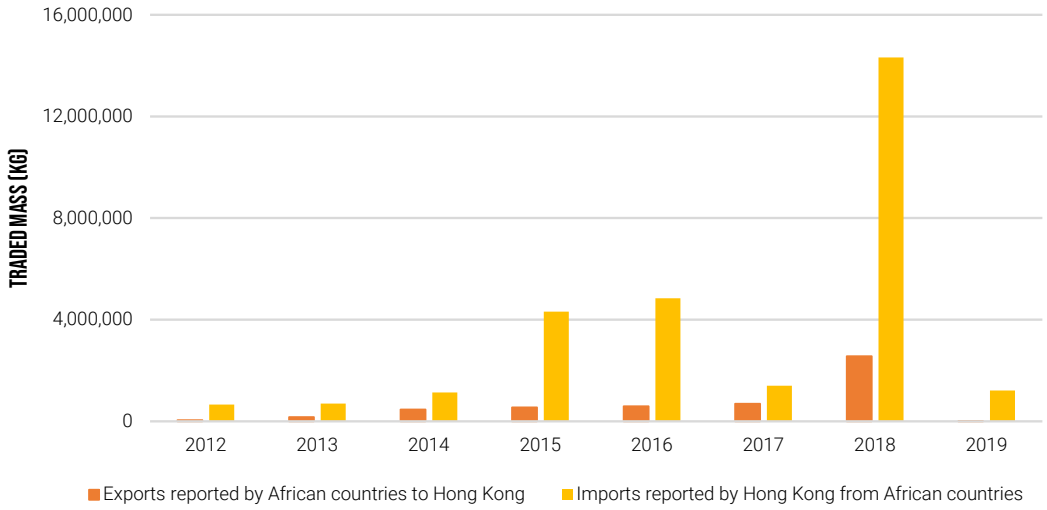


FIGURE 2

Reported exports of fish maw from African countries to Hong Kong and reported imports by Hong Kong from African countries, 2012–2019.. Source: UN Comtrade

As the fish maw trade has expanded to include more African exporting countries, the average reported export trade value (USD/kg) decreased from USD105/kg in 2012 to USD9/kg in 2019 (Figure 3). It is unclear what caused the decline since 2012, however it may also have been due to under-reporting to avoid taxes or tariffs in exporting countries. In direct contrast to this trend, Hong Kong import data show that there was an increase in value from USD52/kg for imports from African countries in 2012 to USD121/kg in 2019, with prices seemingly following a cyclical pattern also reflected in prices from non-African countries. Over the same time period, Hong Kong imports from non-African countries showed a drop in value from USD75/kg in 2012 to USD52/kg in 2019 (Figure 3) while reported export values from non-African countries to Hong Kong have increased from USD25/kg in 2012 to approximately USD72/kg in 2019. Despite the decline in reported export value from African countries, fish maws remain the most valuable part of the fish, often fetching more than the fish itself (Kaggwa 2018; Box 2), which has in some countries such as Uganda, proved to be problematic for the regulation of growing fishing industries (Box 2).

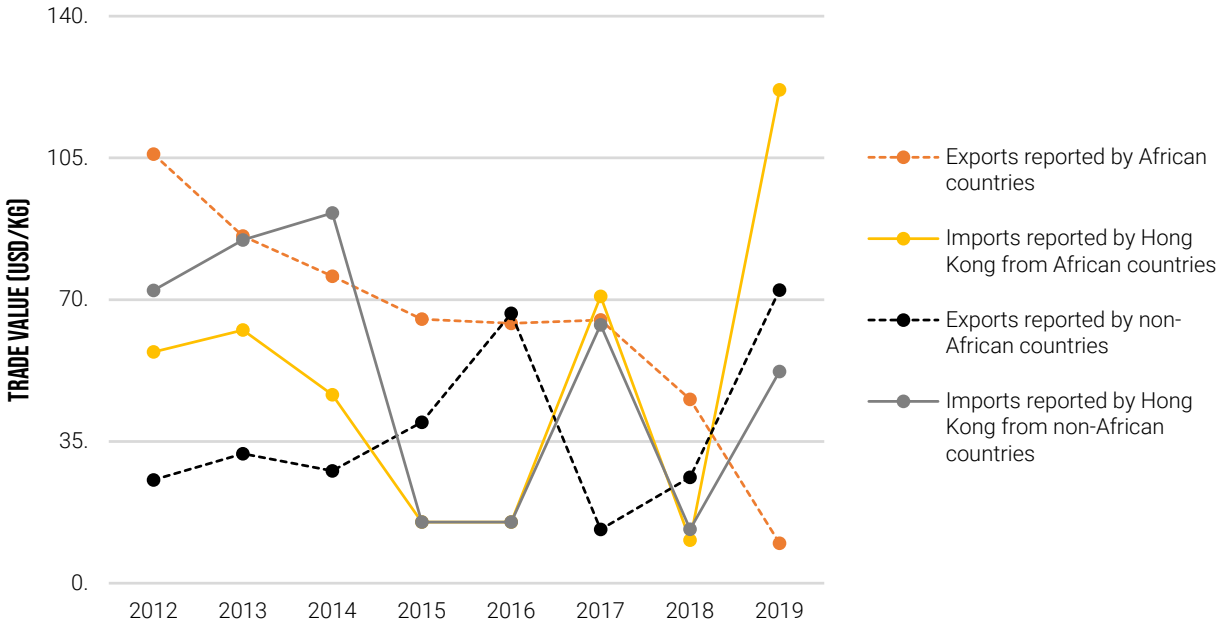


FIGURE 3

Trade value (USD/kg) for fish maw exports reported by all African and non-African countries compared to imports reported by Hong Kong from African and non-African countries, 2012–2019. Source: UN Comtrade

BOX 2

REGULATION OF FISH MAW TRADE IN UGANDA AND ILLEGAL NILE PERCH FISHING IN LAKE VICTORIA

The growing fish maw trade in Uganda, supplied by Nile Perch from Lake Victoria, has caused a rift between policy makers, buyers, and sellers. Traditionally, Nile Perch swim bladders are the property of the suppliers, even if the entire fish is taken to fish factories (Kaggwa, 2018). Once the fish are cleaned and processed, the swim bladders are given back to the suppliers who then sell the swim bladders to predominantly Chinese traders (Kaggwa, 2018). In comparison to the rest of the fish, which can fetch up to USD9.43/kg for a fish weighing more than 50 kg, the swim bladder has a much higher unit value, earning approximately USD188.70 for a 1 kg swim bladder.

A recent report on the Ugandan fish maw trade notes that the customary standards have been threatened by new mandates set by the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) that are meant to streamline and regulate the growing fish maw industry (Kaggwa, 2018). The first mandate requires suppliers exclusively to sell to recognised fish factories and traders, and requires the whole fish (swim bladder included) to be bought by the fish factories rather than returned to the supplier (Kaggwa, 2018). Following this, another mandate was posted in January 2018 which prohibited the gutting of fish at the landing or unregulated sites (Kaggwa, 2018). The implementation of these mandates has caused conflict between the majority of African suppliers, the MAAIF, and the majority of Asian factory owners. The mandates severely cut the profits of the suppliers, who are unable to sell the high-value swim bladders to private traders, while the factory owners benefitted greatly (Kaggwa, 2018).

Prior to the 2018 mandates, when fish factories would give back the maw to suppliers of fish in Uganda, there was a perception that the Ugandan regulatory system favoured the legal maw trade (Bagumire *et al*., 2018). Bagumire *et al*., (2018) suggest that the new dynamic, plus the lack of Chinese buyers in Kenya, has resulted in maws being smuggled from Kenya and Tanzania to Uganda to be sold and exported.

To add to the already strained fishing industry in Lake Victoria, there is an ongoing battle against illegal fishing of Nile Perch in an effort to revitalise the depleted fish stocks (Tairo, 2018). Through the use of illegal nets, dynamite, and even poison to catch the fish, Lake Victoria's Nile Perch populations have dramatically decreased (Dausen, 2017). The illegal fishing activities target juvenile fish—classified as any fish measuring less than 50 cm—which effectively limits the ability of fish populations to reach maturity, reproduce, and sustain the stocks (Dausen, 2017).

The East African Community (EAC) states of Uganda, Kenya, and Tanzania have launched "Operation Save the Nile Perch" to restore the fish stocks (Tairo, 2018). Each country is expected to contribute USD600,000 to curb illegal fishing of Nile Perch in Lake Victoria, to ensure that fish populations reach maturity and are sustained (Tairo, 2018).

The analysis of trade between African exporting countries and Hong Kong shows both a rapid growth and declines in fish maw exports from African countries, as well as significant discrepancies between reported exports and reported imports (Table 3), highlighting possible inadequate trade regulation in the source countries. This trend of under- or un-reported exports is found in all of the top exporting countries upon comparison of reported exports against reported imports and is most pronounced in the case of Kenya, where zero exports are reported for all years studied (Table 3). The differences in reporting between exporting and importing locations are concerning as they may reflect trade in products sourced from illegal fishing operations or be indicative of unregulated or under-reported harvest and trade (Box 2). Discrepancies in trade reporting alone does not definitively indicate a product link with illegal and unregulated fishing as these discrepancies may be related to ineffective reporting regimes and lack of customs capacity within source countries. Nevertheless, it is still a cause for concern which requires further research to determine what may be leading to such large differences in reporting.

TABLE 3

Reported exports of fish maws from Uganda, Tanzania, and Kenya to Hong Kong vs the reported fish maw imports by Hong Kong from Uganda, Tanzania and Kenya for the period 2012–2019. Source: UN Comtrade

	UGANDA EXPORTS TO HONG KONG SAR	HONG KONG SAR IMPORTS FROM UGANDA	TANZANIA EXPORTS TO HONG KONG SAR	HONG KONG SAR IMPORTS FROM TANZANIA	KENYA EXPORTS TO HONG KONG SAR	HONG KONG SAR IMPORTS FROM KENYA
2012	48,425	137,811	0	956	0	390,262
2013	165,575	304,950	60	45,289	0	165,924
2014	448,005	516,928	15,927	114,071	0	301,061
2015	519,003	1,811,635	26,335	667,525	0	769,257
2016	487,384	2,686,193	93,712	955,032	0	292,602
2017	516,003	543,637	167,851	316,628	0	234,096
2018	532,880	4,728,845	2,025,263	2,241,635	0	6,068,789
2019	0	372,138	0	377,914	0	189,427
TOTAL	**2,717,275**	**11,102,137**	**2,329,148**	**4,719,050**	**0**	**8,411,418**

HONG KONG FISH MAW IMPORTS FROM AFRICA

Hong Kong has developed more detailed, 8-digit HS codes to capture data on the trade in dried fish heads, tails and maws than those under the standard 6-digit HS system reported to UN Comtrade. Since 2015, Hong Kong has used the HS code 03057210 to describe dried fish maw commodity alone. Analysis of fish maw specific trade from 2015–2019, sourced from the Hong Kong Census and Statistics Department, may provide a more accurate representation of the import dynamics for fish maws imported by Hong Kong. There are major discrepancies between UN Comtrade data and the Hong Kong Census and Statistics Department data for reported fish maw imports by Hong Kong. The reason for these discrepancies could not be determined.

According to Hong Kong Census and Statistics Department data, Hong Kong imported a total of 16,899 tonnes of fish maw over the period 2015–2019 combined, 80% of which originated from 13 countries (Figure 4). Brazil, Uganda, Tanzania, Viet Nam, and India were the top five source countries.

The import value of fish maws varies significantly depending on the country of origin (Figure 5). The total import value of fish maws from Brazil was the highest for the time period under study, averaging USD68 million per year. The import values of fish maw from the top African countries (Uganda, Tanzania and Kenya) were lower in comparison but increasing in the case of Tanzania and Uganda, although the latter decreased in value in 2019 (Figure 5). Overall, the combined average value of fish maw imports from all countries in Africa was USD97 million per year between 2015 and 2019..

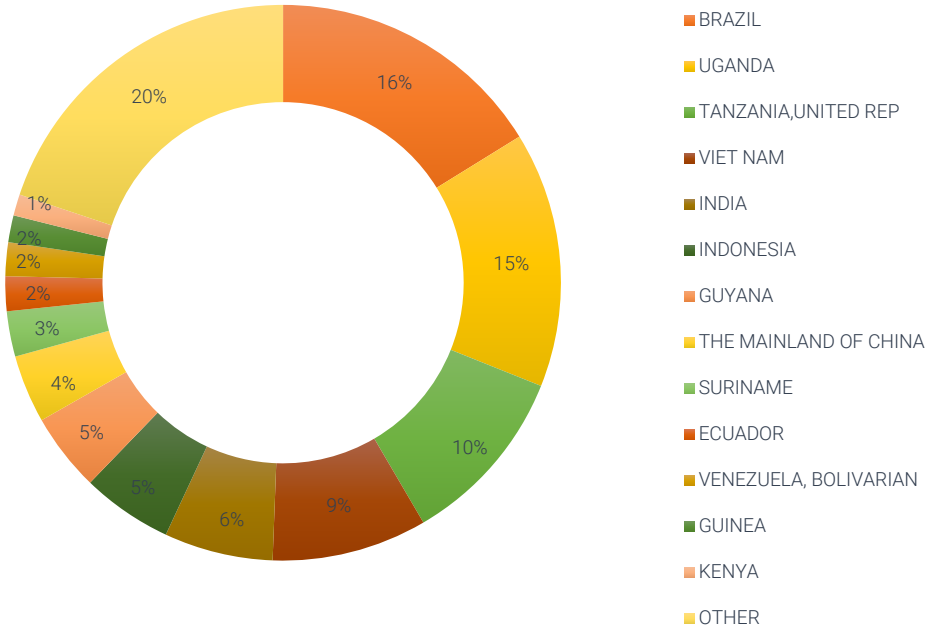


FIGURE 4

The countries of origin accounting for 80% of Hong Kong imports of dried fish maw (HS code 03057210) over the 2015–2019 period combined. Source: Hong Kong Census and Statistics Department

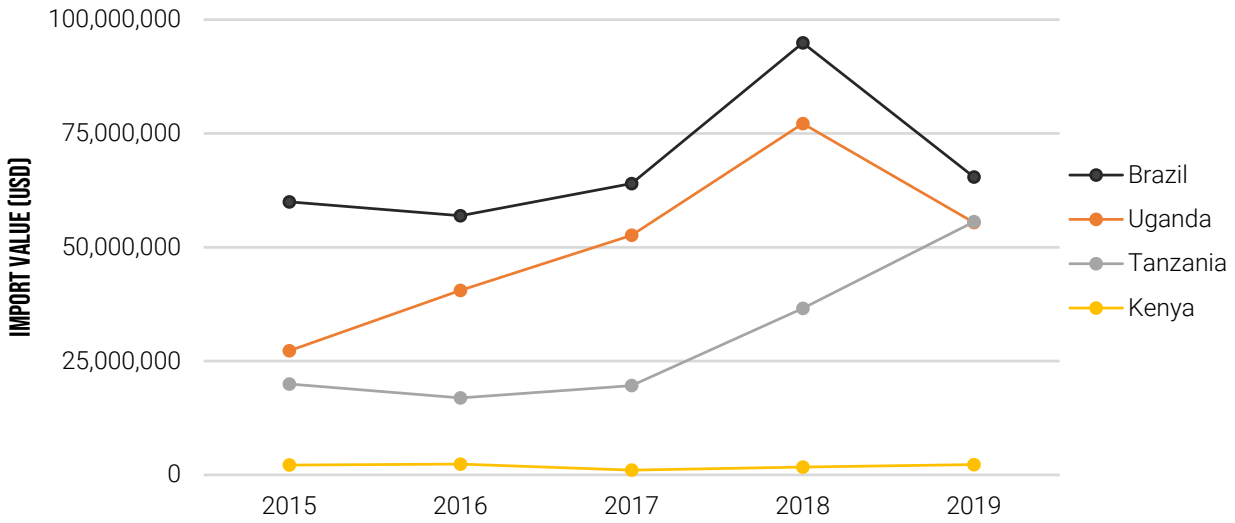


FIGURE 5

Hong Kong's reported import value of dried fish maw (HS 03057210) from the top three African countries of origin (Uganda, Tanzania, and Kenya) in comparison to the value of imports from Brazil, 2015–2019. Source: Hong Kong Census and Statistics Department

The total trade value (USD/kg) of fish maws imported from non-African countries was higher between 2015 and 2017. However, in 2018 and 2019, the trade value of fish maws sourced from African countries showed an increase compared to the value of fish maws sourced from the rest of the world (Figure 6). The import value reported by Hong Kong differs significantly between UN Comtrade data for Hong Kong (Figure 3) and the values reported by the Hong Kong Census and Statistics Department (Figure 6).

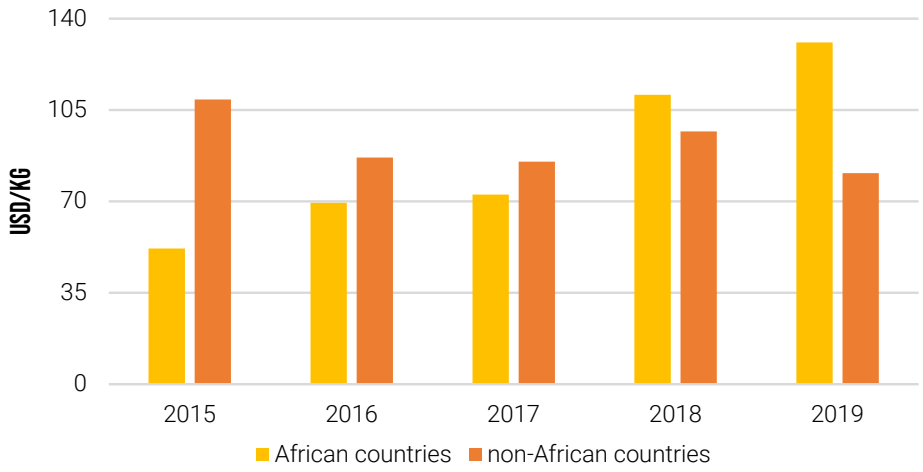


FIGURE 6

Trade value (USD/kg) for fish maws imported from African vs non-African countries, 2015–2019.

MARINE FISH MAW TRADE: HONG KONG IMPORTS FROM AFRICA

The UN Comtrade results focused on the top African fish maw trading countries (Kenya, Tanzania, Uganda) with this trade being based on a freshwater species, the Nile Perch, sourced from Lake Victoria. While this species dominates the fish maw trade from African countries to Hong Kong, there has been a growing number of Hong Kong imports from African coastal States over the 2015–2019 period. Trade from these African coastal States is believed mainly to involve fish maws sourced from marine not freshwater fisheries. The following analysis examines Hong Kong's imports of fish maws from African coastal States, excluding Kenya and Tanzania.

The number of African coastal States (excluding Tanzania and Kenya) from which Hong Kong imported fish maws, and where it is assumed the source of fish maws is marine fish species, increased from 19 in 2015 to 30 by the end of 2019 (Table 4). The 2019 figure represents almost 80% of African coastal States.

Guinea was the highest exporter of marine maw products in Africa, accounting for 22% of Hong Kong's imports of fish maws from African coastal States, followed by Togo, Senegal, Sierra Leone, and Congo (Table 4).

Fish maws ready for sale in China

TABLE 4

Hong Kong imports of fish maw by mass (kg) from African coastal States (excluding Kenya and Tanzania), 2015–2019. Source: Hong Kong Census and Statistics Department..

	2015	2016	2017	2018	2019	TOTAL
GUINEA	64,685	60,674	64,489	39,711	34,863	264,422
TOGO	36,778	24,552	19,736	15,874	17,927	114,867
SENEGAL	30,469	22,813	20,052	9,636	23,634	106,604
SIERRA LEONE	21,840	18,090	19,203	19,592	19,693	98,418
CONGO	2,363	3,699	22,645	34,160	32,340	95,207
GABON	10,965	14,755	24,539	20,092	15,704	86,055
SOUTH AFRICA	8,421	28,762	11,951	11,914	12,250	73,298
MAURITANIA	11,821	14,327	17,218	11,595	14,230	69,191
CONGO, DRC	11,737	8,762	6,993	10,249	14,116	51,857
CAMEROON	1,644	9,776	12,483	9,283	8,794	41,980
NIGERIA	1,694	7,332	6,711	5,897	14,594	36,228
EGYPT	5,090	3,840	3,689	3,088	7,679	23,386
MOZAMBIQUE	3,111	2,686	4,694	3,744	4,651	18,886
GAMBIA	4,702	4,090	8,366	1,575	0	18,733
ETHIOPIA	0	0	945	2,395	14,368	17,708
MOROCCO	1,328	4,078	4,613	2,437	3,128	15,584
SUDAN	4,153	4,448	3,071	1,583	1,331	14,586
MADAGASCAR	0	2,848	4,508	1,339	5,764	14,459
COTE D'IVOIRE	964	1,140	244	5,206	5,591	13,145
ANGOLA	3,276	836	2,036	2,871	3,557	12,576
LIBERIA	177	1,717	1,420	5,542	1,332	10,188
BENIN	0	0	0	1,313	1,549	2,862
GHANA	0	0	0	1,095	1,359	2,454
MAURITIUS	0	1,541	402	0	0	1,943
TUNISIA	0	0	0	1,295	0	1,295
SOMALIA	0	0	0	912	125	1,037
DJIBOUTI	0	0	0	801	0	801
NAMIBIA	0	0	0	203	0	203
GUINEA-BISSAU	0	0	0	0	103	103
TOTAL	**222,248**	**240,803**	**260,008**	**223,402**	**259,282**	**1,205,743**

Although Guinea is the highest exporter of marine maw products, the value of fish maws sourced from Guinea is much lower in comparison to the rest of the top African coastal States, except for Sierra Leone (Figure 7). The value of fish maws sourced from Togo is significantly higher, averaging USD189/kg over the five-year period, followed by Congo with an average of USD87/kg, Senegal with an average of USD51/kg and finally Guinea with an average of USD33/kg. As there are no available data on the fish species harvested in these countries that supply the fish maw trade or any other information on processing and trade dynamics, it is not known why there is such a discrepancy in these unit values.

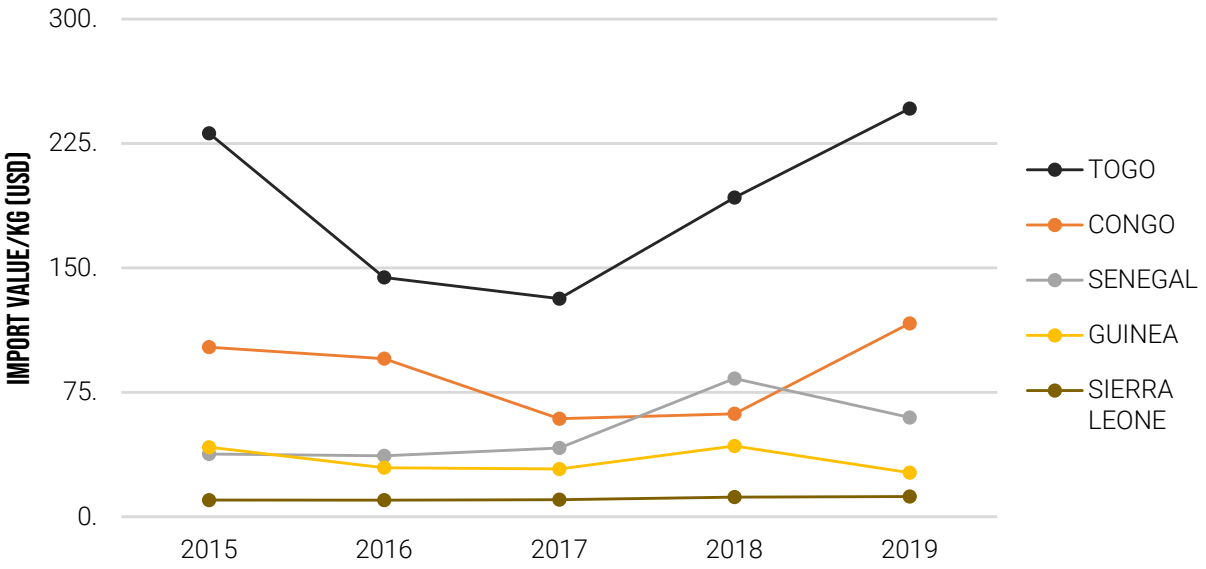


FIGURE 7

Hong Kong reported import value (USD/kg) for fish maws imported from the top five African coastal States (excluding Kenya and Tanzania), 2015–2019. Source: Hong Kong Census and Statistics Department

Of some concern are the significant discrepancies for HS Code 030572 between what Hong Kong has reported to UN Comtrade and the customs data sourced from the Hong Kong Census and Statistics Department (Table 5). Import records under HS code 030572 for the top African countries in the Hong Kong Census and Statistics Department, which includes fish heads, tails and maws, reflects almost exactly the same mass (kg) as import records for the fish maw specific code—HS Code 03057210 (Fish maws, dried), indicating the trade under the broad HS code (fish heads, tails, and maws) may only reflect dried fish maw trade, although this is not confirmed. However, Hong Kong import records for the same five countries for the same time period accessible through UN Comtrade under HS codes 030572 (fish heads, tails and maws) differs significantly from the imports reported by the Census and Statistics Department (Table 5). Furthermore, an analysis of Hong Kong Census and Statistics Department import records for the "fish heads and tail" specific code (03057290) indicated very little trade from African countries for this commodity—very small quantities of fish heads and tails were imported from Somalia in 2016, 2018 and 2019; and there was one import record from Senegal in 2019. It is unclear why the Hong Kong import records for the same HS code (030572) differ significantly between the two data sources, as it should not be the case. This study did not determine whether discrepancies exist for all HS Code 030572 imports from all countries for all years.

TABLE 5

Hong Kong import records for HS codes 030572 and 03057210 for imports (in kg) from Uganda, Tanzania, Guinea, Kenya, and Togo as reflected in the Hong Kong Census and Statistics Department and UN Comtrade databases, 2015–2019.

	HK CENSUS AND STATISTICS DEPARTMENT (HS: 03057210) FISH MAWS, DRIED	HK CENSUS AND STATISTICS DEPARTMENT (HS: 030572) FISH HEADS, TAILS AND MAWS	UN COMTRADE (HS: 030572) FISH HEADS, TAILS AND MAWS
Uganda	2,512,925	2,512,926	10,142,448
Tanzania	1,777,246	1,777,246	4,558,734
Guinea	264,422	264,422	512,396
Kenya	209,010	209,010	7,554,171
Togo	114,867	114,867	928,006
TOTAL	**4,878,470**	**4,878,471**	**23,695,795**

FISH MAWS ASSOCIATED WITH THE **TRANSPORT OF ILLICIT WILDLIFE COMMODITIES**

Fish maw trade between Africa and Hong Kong appears to be used in some instances as a means of smuggling illegal wildlife products. This may be in part due to legal trade in fish maws being an easy cover combined with minimal trade controls. In 2013, more than 775 pieces of ivory were found hidden among fish maw in a 20 ft container from Uganda destined for Malaysia (Anon, 2013). In addition to concealing products in fish maw consignments, by mis-labelling shipments under the broad fish maw codes, shipments of illegal commodities can easily enter large ports like Hong Kong, as was the case in a customs seizure of undeclared dried seahorse and dried shark fin (Anon, 2018). In February 2017, 1,066 kg of pangolin scales packed into 22 containers were seized at the airport, bound for Vientiane, Laos. The shipment was labelled as "fish maw" and had arrived from Lubumbashi, Democratic Republic of the Congo, via Nairobi (TRAFFIC, 2017). In 2018, officials in Hong Kong seized 140 kg of dried seahorses and 220 kg of dried shark fin, amounting to an estimated value of USD420,000 (Anon, 2018). The container was declared as fish maws, but upon further investigation customs officials uncovered the illegal commodities and placed two directors of a dried seafood shop in Sheung Wan under arrest (Anon, 2018). In a similar incident in August 2017, an illegal shipment of 301 kg of pangolin scales valued at USD900,291 was uncovered in Malaysia (Anon, 2017). The shipment came from the Republic of the Congo and was declared as fish maw with incorrect final destination labels (Anon, 2017).

In South Africa, it has been noted that fish maws that have been confiscated were often being shipped with seahorses and amongst illicit dried abalone, but due to a lack of knowledge around maws and similar products, authorities did not record these species or were even aware of their legality (*pers comm*, South African Department of Agriculture, Forestry and Fisheries, 2019).

Hong Kong customs seized dried seahorses and shark fins from a container declared as fish maws, 2018. Photo supplied https://www.info.gov.hk/gia/general/201806/07/P2018060700869.htm

The use of unspecified fish maw labelling as a cover for smuggling of illegal commodities is not the only concern with the broad labelling system. Fish maws are categorised under three HS codes (Table 1), none of which specify the species that the fish maw was harvested from. The lack of specification in the labelling system leaves high valued fish populations vulnerable to over exploitation (Tuulie *et al*., 2016). Based on DNA sequencing and molecular research on fish maws conducted by Jing Wen *et al*., (2015) and Tuulie *et al*., (2016), the more popular fish species have been identified, but this research only offers information on a small portion of the international fish maw trade. For Kenya, Tanzania, and Uganda the fish species in question is the Nile Perch fished from Lake Victoria (Tuulie *et al*., 2016). The species imported from other exporting countries (including Guinea, Togo, Senegal, Madagascar, and South Africa) have not been identified, placing the source species for these fish maws in question and indicating a need for increased specification.

Seized pangolin scales labelled as fish maw are shown by Malaysian Customs officials after a press conference held in Sepang, Malaysia on 2nd August 2017. https://nationalpost.com/pmn/news-pmn/malaysia-seizes-ivory-pangolin-scales-from-africa

CONCLUSIONS AND RECOMMENDATIONS

FISH MAW IS A HIGHLY LUCRATIVE TRADE COMMODITY AND THE DEMAND IN EAST ASIA HAS SEEN AN INCREASE IN SUPPLY FROM AFRICAN COUNTRIES, WITH MORE THAN 80% OF AFRICAN COASTAL STATES EXPORTING FISH MAW TO HONG KONG.

This rapid assessment shows that while trade in fish maw from Africa to Hong Kong is expanding, large discrepancies exist in reported imports compared to reported exports. These discrepancies warrant further investigation to determine whether they reflect under- or mis-reporting by exporters from African countries, and/or whether the maws have been sourced from illegal fishing operations, which often leave fish populations vulnerable to overfishing and exploitation and threatens the sustainability of the international fish maw trade. Any under-reporting and non-reporting of exports by African countries may be preventing governments from generating much needed revenues and taxes, which could be significant given the very high value of fish maw. Aside from the discrepancies in reported trade, the lack of species specification in HS codes limits the ability of trading countries to make use of trade monitoring and regulatory systems to support sound fisheries management. The combination of non-specific HS codes for fish maws in trade, the high levels of trade, and the fact that there are very few international trade controls associated with fish maws makes them an ideal cover for other wildlife products being traded illegally, including seahorses, shark fins, and pangolin scales. To ensure the future sustainability of the fish maw trade between Africa and Asia, and to support efforts to address unsustainable and illegal fishing for targeted species and related fish maw trade, the following recommendations are made.

RECOMMENDATIONS

1 ANALYSIS OF SPECIES INVOLVED IN TRADE

Further investigation is required to understand the current marine fish species being used for fish maw trade to assess the possible impact of trade on all species concerned. Collaboration with government agencies and/or academic institutions to conduct DNA analysis for molecular identification of species is recommended as an initial step. This should, where possible, be focused on the key exporting countries of Guinea, the Republic of the Congo, Sierra Leone, Senegal, and Togo.

2 INVESTIGATION INTO DATA DISCREPANCIES: SOURCE COUNTRIES

Further research and collaboration with the relevant government departments in Africa (in particular Guinea, Kenya, the Republic of the Congo, Senegal, Sierra Leone, Togo, Uganda, and Tanzania) is recommended to investigate the discrepancies in reporting of trade statistics, and to understand better the products being traded under the current HS codes being used to classify maws.

3 INVESTIGATION INTO DATA DISCREPANCIES: HONG KONG

Further investigation and collaboration with relevant agencies in Hong Kong to determine why reported Hong Kong import data for code 030572 in the Hong Kong Census and Statistics Department database differs from data for the same code, as reported by Hong Kong to UN Comtrade.

4 CREATION OF NEW HS CODE

The creation of a separate 6-digit HS code for dried fish maw, that only applies to dried fish maw and does not include fish tails or heads through established World Customs Organization mechanisms.

5 IMPROVED TRADE REGULATIONS

Improved trade regulation of fish maw by exporting countries in Africa (in particular Guinea, the Republic of the Congo, Senegal, Sierra Leone, and Togo) to limit opportunities for fish maw sourced from illegal fishing operations to be traded.

6 AWARENESS WITHIN LAW ENFORCEMENT

Create awareness within law enforcement and customs agencies of key African exporting countries and Hong Kong of the potential for illicit wildlife products to be smuggled through borders either with, or concealed as, legal fish maw consignments. Further trade assessments could potentially develop more sophisticated risk profiles of "fish maw" shipments being exported out of certain countries, given past seizure patterns.

7 NATIONAL REGULATION

Research in Africa and Asia on harvest and trade dynamics associated with the trade in fish maw sourced from marine species is recommended, specifically including:

- the extent to which the aquaculture sector is currently involved in the maw trade, and the potential for the industry to support the trade in the future;
- processing methods and an understanding of conversion ratios between dried and wet fish maws;
- the supply chain in both origin and market destinations (wild and farmed sources), with insight from suppliers in global fish maw trade hubs, to determine any similarities, opportunities and risks;
- consumer preferences and demand, to build knowledge on this issue and allow for informed management, trade monitoring and regulatory measures.

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