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THE STATE OF WILDLIFE TRADE IN MACAU

Wilson Lau
Royce To



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TRAFFIC
the wildlife trade monitoring network

The State of Wildlife Trade in Macau

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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ABBREVIATIONS & ACRONYMS

B2C	Business to Consumer
Catty	Unit of measurement; one catty = 0.61 kg
CEPA	Hong Kong Special Administrative Region and Macau Special Administrative Region Closer Economic Partnership Arrangement
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNY	Chinese Yuan Renmenbi (USD1 = CNY6.793)
Decree Law 45/86/M	Regulation on the implementation of the Agreement on International Trade in Endangered Species of Wild Fauna and Flora in Macau (關於瀕臨絕種野生動植物之國際貿易協定在澳門地區實施之管制, Regulamenta para aplicação no território de Macau da Convenção sobre o Comércio Internacional das Espécies da Fauna e da Flora Selvagens Ameaçadas de Extinção)
DSE	Macau Economic Bureau (經濟局 Direcção dos Serviços de Economia)

DSEC	Statistics and Census Bureau (統計資料, Direcção dos Serviços de Estatística e Censos)
GDP	Gross Domestic Product
HKD	Hong Kong Dollar (USD 1 = HKD 7.847)
Hong Kong	Hong Kong Special Administrative Region of the People's Republic of China
HZMB	Hong Kong-Zhuhai-Macau Bridge
HS codes	Harmonised System codes, established by the World Customs Organization for classifying commodities in trade
IAM	Municipal Affairs Bureau (市政署, Instituto para os Assuntos Municipais)
Kg	Kilogramme (1,000 g, where g = grammes)
Law 2/2017	Law implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (《瀕危野生動植物種國際貿易公約》執行法 Lei de execução da Convenção sobre o Comércio Internacional das Espécies da Fauna e da Flora Selvagens Ameaçadas de Extinção)
MA	CITES Management Authority
Macau	Macau Special Administrative Region of the People's Republic of China
Mainland China	People's Republic of China
MOP	Macau Patacas (USD1 = MOP8.04)
.mo	Suffix to denote websites from Macau
Nesoi	Not Elsewhere Specified or Included
QTSAS	Quality Tourism Services Accreditation Scheme
SA	CITES Scientific Authority
SAR	Special Administrative Region of the People's Republic of China
t	Metric tonnes
Taiwan PoC	Taiwan Province of China
TWD	New Taiwan Dollar (USD1 = TWD30.896)
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar

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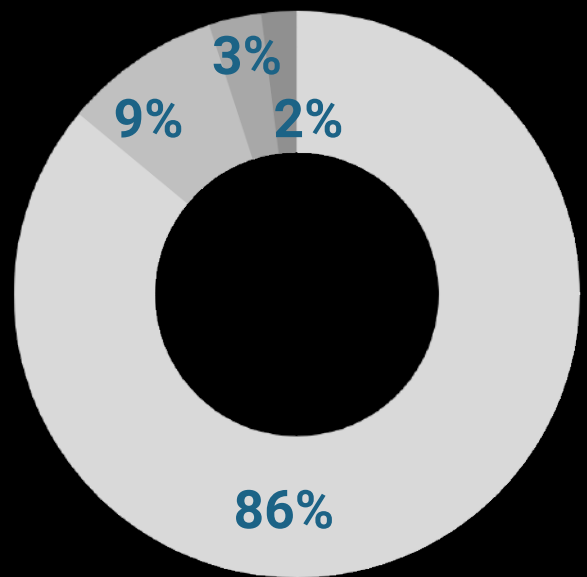
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Box 1: Types of dishes with shark fin.

Macau imports around

**USD\$97
million**

worth of wildlife
products per year



Seafood **86%**

Traditional Medicine **9%**

Pets **3%**

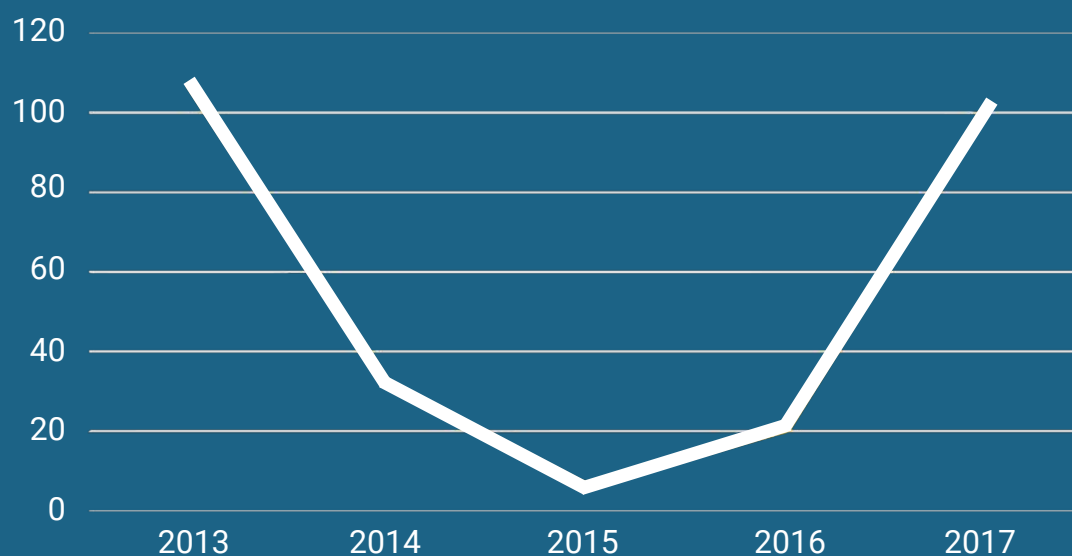
Fashion, Wild Meat, Exhibition,
Ornaments, and Furniture **2%**

Macau is the **third-largest** destination
market for shark fins by value

100 tonnes

of shark fins are
imported annually

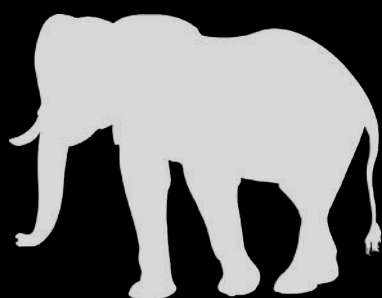
Between 2013 and 2017
Macau carried out
267 wildlife seizures



Number of seizure cases



Orchids and other plants are the most commonly seized wildlife products in Macau.



Elephant ivory is a commonly seized wildlife product in Macau.



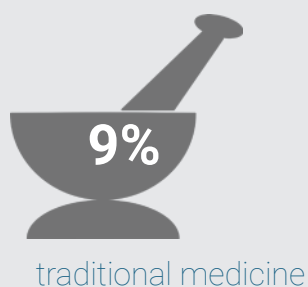
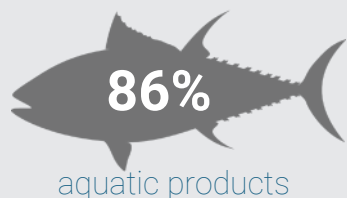
EXECUTIVE SUMMARY

MACAU WILDLIFE IMPORTS

Macau imports around

**USD\$97
million**

worth of wildlife
commodities per year

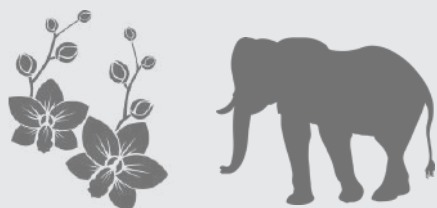


MACAU WILDLIFE IMPORTS

Analysis of wildlife seizures
between 2013 and 2017
indicates a reported

267 cases

of non-compliance to CITES



Plant species, followed by
elephant ivory, were the most
frequently seized commodities

EXECUTIVE SUMMARY

Macau Special Administrative Region (SAR)¹ is a voracious consumer of wildlife products, despite having few wildlife of its own within its small territory (30.5 km²) of 623,000 residents. From shark fins to live pet birds, decorative ivory and shells to ginseng roots, much of the wildlife purchased locally is imported from other countries/territories. While a variety of wildlife is conventionally consumed in Cantonese cuisines, the recent rise in wildlife availability in Macau may be attributable to the growing affluence of its inhabitants and massive growth in inbound tourism over the past decade and more. Wildlife demand in the territory may be set to grow further, with the continued rise in tourism expected from infrastructure developments, including the recent opening of the Hong Kong-Zhuhai-Macau Bridge (HZMB), which links Macau with residents in neighbouring regions.

A downside to the increased ease of access and flow of people into Macau is the added pressure on authorities effectively to enforce and counter risks of illicit goods trafficking, including illegal wildlife products. Recent prohibitions in wildlife trade, including that of elephant ivory in mainland China, could lead to smugglers seeking alternative routes to reach their intended consumers. Without corresponding restrictions to trade in Macau, the territory could become a target of ivory smuggling.

Wildlife trade in Macau has not previously been assessed or quantified in a comprehensive manner. This report addresses this, with its main objective to establish a more encompassing picture of wildlife trade in Macau. The extent to which local laws enable effective regulatory controls of wildlife markets, and the combatting of illegal wildlife trade, is also scrutinised, via case studies of the trade in elephant ivory and shark fins, products of historic and contemporary relevance in Macau. Surveys were conducted to assess markets for the trade in these case study products, while trade data and seizure data were used to grasp the size and composition of wildlife trade, both legal and illegal.

The Macau SAR Government recently updated its legislation for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Law 2/2017), which came into force on 1st September 2017. The revised law increased maximum fines from MOP500 (USD62) in the 1986 law to MOP500,000 (USD62,025) in the 2017 law. This increase makes Macau's wildlife crime penalties further in line with those in neighbouring Hong Kong SAR² (a maximum HKD10 million (~USD1,274,364)) and mainland China (maximum of RMB200,000 (USD29,441)). However, the lack of imprisonment terms in Macau is in stark contrast to both Hong Kong (maximum of 10 years) and mainland China (maximum life imprisonment), and thus pales in comparison in terms of potential deterrent effect on would-be wildlife smugglers.

1 Hereafter referred to as "Macau".

2 Hereafter referred to as "Hong Kong"

Analysis of wildlife seizures between 2013 and 2017 indicates a reported 267 cases of non-compliance to CITES. Seizure volumes were dominated by plant species, the most sizeable and frequent being orchid seizures (172–587 kg per year), as well as other plant species such as agarwood, cycads and majesty palms. Elephant ivory was the next most frequently seized commodity, and was typically carried by smugglers as luggage possessions. The total number of seizures in Macau does not make it a significant hub for illegal wildlife trade, however it is notable given the proportion of seizures to the territory's geographical size and population. Ensuring sufficient law enforcement capacity will be vital in reinforcing Macau's border security from such wildlife trafficking attempts.

Macau imports around USD97 million worth of wildlife commodities per year (2005–2016) mostly for local consumption. Wildlife import values are dominated by aquatic food (86% of all wildlife imports), followed by traditional medicine (9%) and pets (3%). Live fish such as carps, groupers, eels and tilapia, dominate the aquatic food trade. Imports of CITES-listed species also increased noticeably during 2011–2016, with double the amount of imports compared to the 2005–2010 period. This increase is mostly attributable to the import of CITES-listed reptiles, herbaceous plants and timber products. CITES-listed reptiles are imported in large volumes for leather use, more than half of which are reportedly sourced from the wild. The high level of extraction from the wild is of concern, as their CITES listing suggests the species are already under threat in the wild or may become so without strict regulation. Imports of wildlife ornamentals are also notable for species derived from the wild, including import of live corals for the aquarium trade; and elephant ivory, hippo teeth and corals for carving, and other mammal species as hunting trophies.

Shark fins are one of the more visible wildlife products available in Macau. Import records show an average 100 tonnes of shark fins (dried, salted in brine or smoked) entered Macau annually during 2012–2017, worth ~USD6 million per year, while re-exports were at 13% of import levels. This makes Macau the third largest importer of shark fins in the world by value³. Shark fins are typically offered as a soup at wedding banquets, served in the middle of a 13 course meal, as well as on à la carte menus at Chinese restaurants. Surveys of banquet and restaurant menus in Macau found 40% of hotels and 32% of Chinese restaurants surveyed serving shark fins. Shark fin specialty restaurants and dried seafood outlets were also surveyed to understand the forms in which shark fins are sold.

An average 100 tonnes of shark fins enter Macau annually, making it the third largest importer of shark fins in the world by value.

Most shark fin dishes do not specify the type of shark being used. Where further descriptors are used, only a small percentage specify terms that are distinguishable at the species level, typically in Chinese and in specialty shark fin restaurants, while other descriptors that indicate the cooking method and fin position tend to be more common. However prices tend to be higher for shark fin dishes using species-specific terms than all other categories of shark fin dish. The species that are most commonly used, amongst dishes that make

3 The hierarchy of major global importers of shark fin will vary according to the sources of data used and the product forms included within the comparative analysis. The analysis in this review does not include frozen fin due to there being no evidence of it being imported into Macau, whereas the global analysis within a recent TRAFFIC publication (Okes and Sant 2019) considers all forms of fin products in trade.

the species explicit, include Lemon Shark *Negaprion brevirostris*, Dusky Shark *Carcharhinus obscurus* and Blue Shark *Prionace glauca*, which is consistent with shark species found in the Hong Kong market. Surveys of shark fin serving restaurants did produce findings of two shark fin dishes that purport to include the use of CITES-listed shark fins, though none were found at the dried seafood outlets surveyed.

The trade of ivory was perhaps most prevalent during the 1980s, when Hong Kong's ivory manufacturing businesses had expanded to Macau, seeking cheaper labour and rents, and most importantly the lack of CITES controls over the trade in raw ivory. With the passage of Macau's own CITES-implementing laws in 1986, imports and re-exports of ivory in Macau became few and sporadic. The late 2000s brought an uptick in pre-Convention ivory imports, which peaked in 2012 with 393 kg, consistent with import patterns in neighbouring Hong Kong and mainland China during this period.

A 2014 survey found ivory factories that existed more than a decade ago were no longer in business, and the few ivory items that were found were in antiques shops. The current survey found even fewer outlets offering ivory for sale (from 22 outlets in 2014 to 6 outlets in 2017), but with slightly more ivory displayed, much of it in one outlet that specialised in ivory products (300+ items). Prices in 2017 have nevertheless decreased, between 5% and 76%, depending on the type of product, from 2014 survey levels, with the biggest price drops found in name seals, figurines and chopsticks. Knowledge of CITES and local laws amongst ivory traders were generally poorly communicated to the researcher; only one trader mentioned trade restrictions, while there were no mention of CITES permits for taking ivory out of Macau. With market closures in mainland China, or shortly to be implemented in Hong Kong (in 2021), Macau will soon become an enclave for legal ivory trade in the country, a legal inconsistency that could make the territory a target for illegal ivory flows and laundering. Tighter management of the ivory market and enforcement of its borders is therefore critical.

The recently signed (13th November 2018) Memorandum on cooperative and mutual assistance arrangements between Customs administrations at HZMB is indicative of the collaboration potential on law enforcement in the region, and should include within its purview the combatting of wildlife trafficking. The current report also finds that, within wildlife markets in Macau, additional effort to ensure compliance amongst traders with CITES trade provisions is needed. Along with existing efforts to increase public awareness of CITES, authorities should consider more punitive measures to deter wildlife trade infractions, including the increase in law enforcement presence in the market as a deterrence against activities that contravene the law.



RECOMMENDATIONS

The following measures are also recommended to the Macau SAR Government to improve management of wildlife trade and minimise threats to endangered wildlife:



Update wildlife crime laws

Review current laws with the intent of increasing deterrence to commit wildlife crimes, noting the currently weak penalties—for both fines and imprisonment terms—and extend capacity for tackling organised crime to include wildlife-related crimes.



Improve regulation of markets

Macau should improve its regulation of trade in priority CITES-listed species in the domestic market. This is especially important for commodities that are not easily distinguishable at the border, and would therefore be a challenge to ensure CITES compliance. Priority commodities such as shark fins and orchids would benefit from this.



Enhance enforcement

Investment should be placed in building the capacity to identify CITES-listed species, using both conventional methods (e.g. species identification training) and emerging tools (e.g. real-time Polymerase chain reaction (PCR) assay, product labels, markings and microchips), or in establishing networks between law enforcement officers and species experts from academia, non-governmental organisations (NGOs) and researchers for enabling rapid response to suspicious items and provision of advice. Collaborations with enforcement counterparts in Zhuhai, Hong Kong, and other localities, are also recommended to enable a rapid enforcement response to illegal wildlife trade.



Support responsible consumption

Develop more targeted initiatives that are directed at consumers of CITES listed species, in keeping with the recent CITES Resolution on Demand Reduction strategies to combat illegal trade in CITES listed species (CITES Resolution Conf. 17.4). For example, efforts should aim to foster a more discerning public about responsible consumption of shark products.

A close-up photograph of a white ceramic bowl filled with a light brown, textured soup. A pair of black chopsticks is lifting a piece of translucent, gelatinous food from the bowl. The background is blurred, showing a dark surface and a circular object.

1 INTRODUCTION

The objective of this report is to establish a more encompassing picture of wildlife trade in Macau. A general overview of trade commodities data, trade in CITES-listed species and seizure records is provided, enabling a better understanding of the scale and composition of legal and illegal wildlife trade in the territory over the past decade.

INTRODUCTION

Trade has been at the centre of Macau's development for centuries. It provided a means of access for European traders to China, becoming an important node in the flourishing maritime trade routes of the time, and profiting from the lucrative trade with Japan, for example in 1547, when Imperial China had prohibited trade to wrestle with rampant piracy. The territory was also a channel for illicit trade during the colonial period, such as the smuggling of foreign products into the closed borders of mainland China during the 1950s (Trigo de Sousa, 2009).

Despite a 450 year presence, Portugal (and China) had exercised limited authority over the territory of Macau during the centuries of colonialism (Clayton, 2013). Traders and smugglers made use of Macau's freewheeling environment for a range of dubious trading activities, including the smuggling of gold, illicit drugs, money laundering (Simpson, 2013), and more recently by mainland Chinese taking advantage of regulatory loopholes to override restrictions in moving currencies out of the mainland (Frangos *et al.*, 2012).

This reputation for facilitating trade in restricted goods had once extended to endangered wildlife. In 1986, the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), through a Notification to the Parties, requested Parties to cease trade in wildlife with Macau, then a territory under Portuguese administration, due to its refusal to rescind from trade in African Elephant ivory, rhino horns and musk from musk deer without proper CITES documentation (Burns, 1990). The ban was withdrawn after four months when the territory under Portuguese administration in Macau implemented stricter requirements (Burns, 1990) and eventually, the introduction of a specific CITES-implementing law (Decree-Law 44/86/M).

This regulation has remained unchanged for 30 years, essentially becoming stale and outdated. For example, maximum penalties for an infraction involving a CITES Appendix I species ranged from MOP500–5,000 (USD62–620), which is woefully inadequate as a deterrent for

wildlife crimes in today's world. The revision of wildlife laws in 2017 with the passage of Decree Law 2/2017 is therefore a welcome relief for providing a much needed update for regulating wildlife trade in the territory.

During this time, Macau underwent considerable political and economic changes. The territory was returned to Chinese sovereignty in 1999 but operates a transitional autonomy as a Special Administrative Region (SAR) and has experienced an economic resurgence with the expansion of gambling concessions and an associated boom in construction and tourism income. Today, Macau continues to forge closer links with neighbouring Zhuhai in Guangdong Province and Hong Kong SAR, as indicated emblematically with the opening of the Hong Kong-Zhuhai-Macau Bridge (HZMB) in October 2018. This has led to an ever-increasing number of border crossings with neighbouring Zhuhai and international flights via the Macau International Airport.

The increasing ease of access, flow of people and trade into Macau does have its downsides. Security analysts have pointed to threats to the city such as a heightened terrorism risk, arising from the city's openness to foreign investments in the gambling industry (Fraser, 2017). Equally, the increased accessibility amplifies the challenge of managing cross-border trade in wildlife. Recent prohibitions on domestic ivory in mainland China, for example, could drive smugglers to seek alternative routes to funnel ivory into the country (Macau Daily Times, 2015). Without corresponding restrictions to trade in Macau, the territory could become a target for ivory smuggling.

The increased accessibility into Macau amplifies the challenge of managing cross-border trade in wildlife.

Wildlife trade in Macau has not been extensively examined, though the previous studies on specific taxa groups have identified endangered species in its markets, including the Giant Salamander *Andrias davidianus* (Lau *et al.*, 1997), a once thriving industry and market for ivory carvings (Martin, 2006; Martin and Vigne, 2016), and shark fin consumption as linked to the free-wheeling casino-tourism trade (Ho and Shea, 2015). The objective of this report is to establish a more encompassing picture of wildlife trade in Macau. A general overview of trade commodities data, trade in CITES-listed species and seizure records is provided, enabling a better understanding of the scale and composition of legal and illegal wildlife trade in the territory over the past decade. The extent to which the revised law enables improved regulatory controls over wildlife markets and in combating illegal wildlife trade will also be scrutinised. In particular, the ivory and shark fin trade in Macau will be assessed in two case studies, to review the current scale of trade, and in doing so, evaluate how well the revised regulations facilitate government oversight of the trade and markets for wildlife in the territory.



大厚海參 \$60



原隻花膠 \$168



花膠湯 \$168



花膠扒 \$168



關東遼參 \$198



鮮鮑/幹鮑



19 聚寶佛跳牆 \$118 \$268



28頭 24頭 18頭



22 孖寶鮑魚: 干鮑+鮮鮑 \$258



23 魚標鵝掌天白菇 \$38



20 聚寶佛跳牆 \$488 \$938



21 鮑魚掛麵 \$38 \$68 \$88



24 豬婆海參煲 \$168



25 薑蔥 7 鮑片煲 \$88



26 鮑魚/海參/花膠 \$268 \$298 \$398



27 招牌阿膠純官燕(配翅) \$168 \$298



28 龍牙官燕蓋 \$98/\$198



29 椰汁官燕蓋 \$68/\$80



30 紅蓮炖雪蛤 \$28



31 雲腿/幹貝津白 \$38 \$58



2 METHODOLOGY



METHODOLOGY

Assessment of Macau's wildlife trade included an analysis of trade and seizure data, and market surveys for two commodities as case studies.

Trade data analysis

To understand the nature of wildlife trade in Macau, trade commodities records and CITES trade data were used to assess the overall scale and scope of the trade.


Macau trade commodities data were sourced from UN Comtrade, and verified with data from the Statistics and Census Service (Direcção dos Serviços de Estatística e Censos, DSEC) where possible. Data for 2005–2016 inclusive were downloaded in October 2018 and June 2017, respectively. However, not all data were available for all relevant commodities during this time period, either due to no trade occurring, when data was simply missing or unavailable (data for the entire year of 2013 for Macau were missing in the UN Comtrade database), or when data were suppressed (DSEC data)³. DSEC data were, for numerous commodities, restricted to the years 2012–2016. Hence analysis of trade trends were primarily done using UN Comtrade data, which had data on the full period of interest, 2005–2016.

UN Comtrade data are submitted in 6-digit commodity codes, following the World Customs Organization's Harmonized System (HS). Macau's DSEC data build on the 6-digit codes by adding two additional digits for its set of domestic codes (8-digit codes). This has allowed for more commodities specific codes to be developed, and is used in the analysis to provide greater resolution to the UN Comtrade data analyses, where possible. An example of the higher resolution domestic codes in Macau is the HS 6-digit code 030193 Live carp, which is further disaggregated by the DSEC into four 8-digit codes, namely 0319350 Live big-head; 030019360 Live mud carp; 03019370 Live grass carp; and 03019390 Live carp, nesoi⁵. Though commodity codes are typically developed for the purpose of setting tariff rates and informing regional economic planning by governments, analysis of wildlife-specific commodity codes can also enable trade trends to be uncovered and tracked (Chan *et al.*, 2015), and is used for this latter purpose in this report.

A considerable portion of Macau's commodities codes are related to "wildlife", including items that are used for food (e.g. aquatic food and wild meat), tonics and/or medicines, ornaments (e.g. elephant ivory or aquaria corals), fashion (e.g. reptile skin) and furniture (e.g. timber).

⁴ The latter reason is apparently indicative of trade by fewer than three trading entities in a given year, and for the purpose of maintaining trade confidentiality of these businesses, DSEC may withhold data for commodities in those years (DSEC, *pers. comm.* 31/05/2017).

⁵ Not Elsewhere Specific or Included.



These categories of wildlife commodities are used in the analysis of trade data (Section 4) to illuminate the composition of Macau's wildlife trade, using both the list of HS codes for "wildlife" and categories developed in Andersson *et al.* (in press).

Although trade quantities (kg, no. of items, etc.) and values (US dollars (USD)) are given in UN Comtrade database records, only values are used when comparing between wildlife categories. There is some variance in the units of measurement used for different wildlife categories, which hinders comparisons by the quantity traded, (e.g. timber reported in cubic metres, and aquatic food in kg).

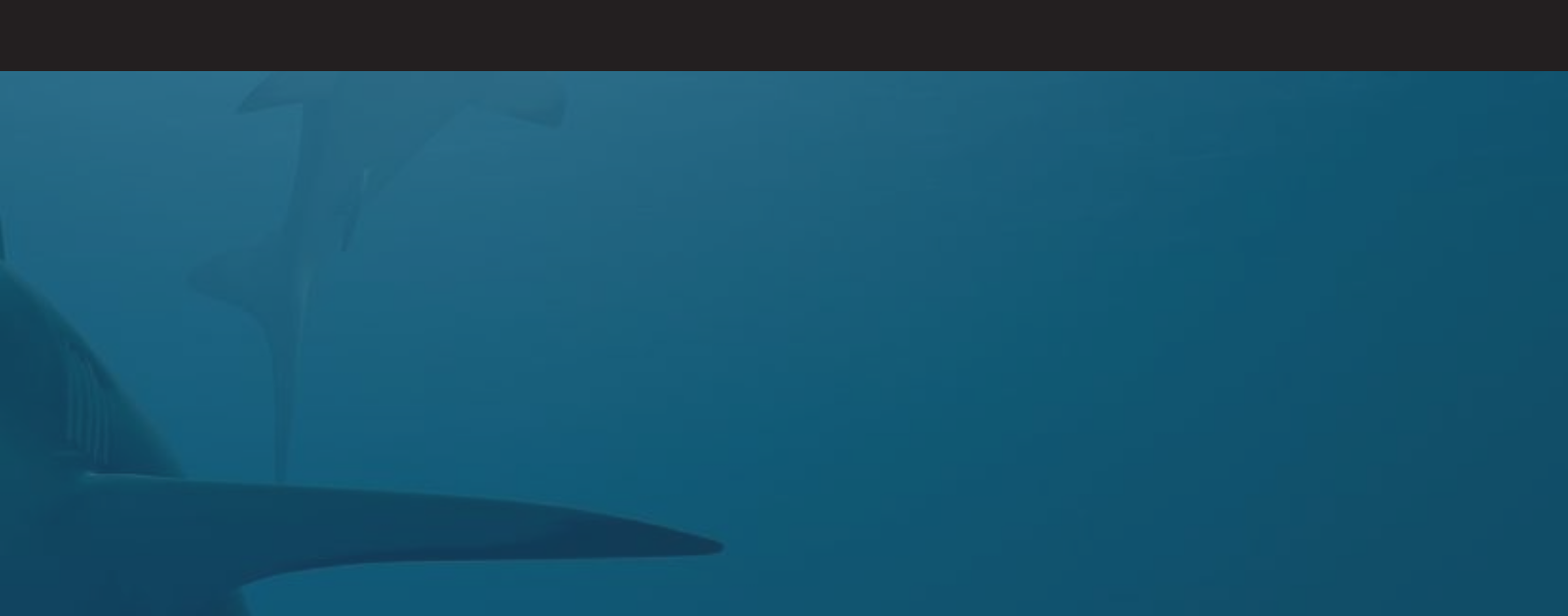
For any given trade record, the country of origin may be different from the last port of export before the commodity arrived in Macau, i.e. the country of consignment. Indeed, confirmation from the Economic Bureau (DSE, *pers. comm.*, 31/05/2018) and market traders (Section 6: shark fin survey findings) appear to suggest that a sizeable proportion of imported goods (including wildlife products) arrives in Macau via Hong Kong, which has much greater air freight and sea port connections. For this reason, comparisons are made between DSEC shark fin import data and Hong Kong's trade commodities data on Hong Kong–Macau shark fin re-exports to verify and highlight discrepancies where they exist.

CITES trade data analysis

CITES trade data were extracted on 5th February 2018 from the CITES trade database for the period 2002–2016. The most recent annual data available for Macau were 2016 (CITES, last updated 27/06/2018⁶). Macau's submitted data for imports and exports were used in the majority of cases, although there were some comparisons made between importer and exporter countries/territories where significant differences in reported trade exist.

Trade records in the CITES trade database allow for a range of units to be used. For import and export data from Macau, the majority of trade was recorded in either the number of items (unit: blank) or by weight (kg), with a plethora of other

6 Annual Reports of CITES Parties: https://cites.org/sites/default/files/annual_reports.pdf (accessed 18th May 2016).



less frequently used units, e.g. bottles, cans, sets, pairs, litres. Only trade that was recorded in number of pieces or by weight is included in the CITES trade data analysis for the current report, which enables the quantity of trade in different commodities to be compared. The only exception is the use of “pairs” as the unit of measure, e.g. pair of chopsticks, which is added to the number of items count as two items. Declarations in kg and number of items represent the bulk of the trade in CITES-listed species, though the exclusion of CITES trade recorded in other units means that trade quantities described in this report are slightly lower than actual reported quantities in the CITES trade database.

Wildlife commodities sourced from the wild or ranched, as oppose to captive bred or artificially propagated, are highlighted in the report. CITES database codes I, O, U, W and blank are classified as wild-sourced, while the code R is for ranched wildlife.

Seizure data analysis

Information about seizures in Macau were sourced from media reports on Macau and international news media websites, as well as from TRAFFIC’s global database of wildlife seizures (TRAFFIC’s database). As the Government of Macau SAR does not appear to be publishing reports of wildlife seizures as they occur, it is likely that seizure reports collected from media outlets provide only a partial indication of the dynamics of illegal wildlife trade in Macau. Nevertheless, seizure data provide useful information about the type of wildlife products that are being smuggled and trade routes undertaken, and smuggling methods employed by traffickers where available.

A quick review of e-commerce websites indicated very few items of the two commodities of interest—elephant ivory and shark fins—available. This included reviews of “.mo”⁷ and Chinese-language e-commerce websites, and was subsequently excluded from the analysis.

7 In other words, websites ending with the domain suffix “.mo”, e.g. the e-commerce websites <https://ebuy.mo/>.

4 CITES AND TRADE LEGISLATION



CITES AND LEGISLATION CONTROLLING COMMERCIAL TRADE IN MACAU

Macau's wildlife trade legislation and its application

Portugal became a CITES party in 1981 and extended the Convention local requirements to Macau a few years later in early 1986 (2nd February). Macau subsequently enacted Decree Law 45/86/M⁸ the same year (25th September) to regulate wildlife trade in the territory under the CITES framework.

The Decree Law 45/86/M was unchanged for more than three decades, during which time Macau had transitioned from Portuguese to Chinese sovereignty (in 1999). Under the “one country, two systems” framework, Macau's status as a Special Administrative Region (SAR) of China enabled it to maintain its own set of laws, including its wildlife trade regulations. Internationally, all CITES-related matters are represented by China on Macau's behalf.

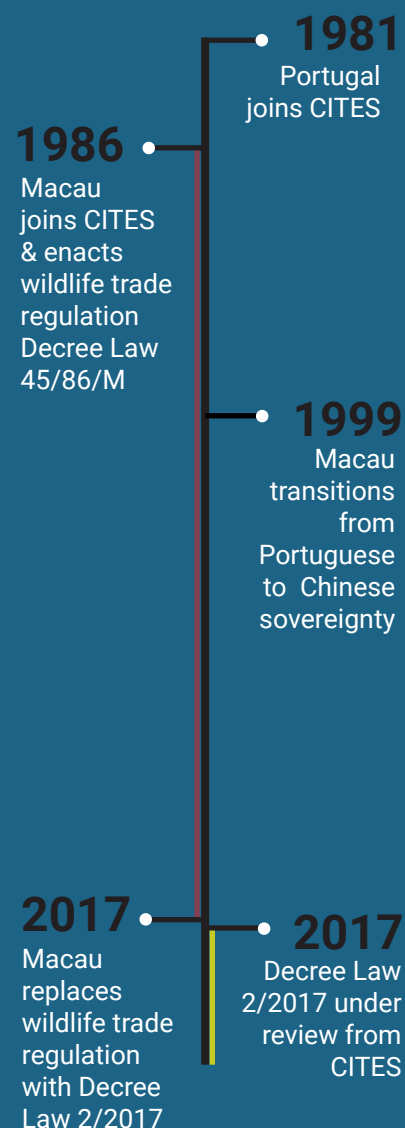
The Macau SAR Government recently replaced Decree Law 45/86/M with Law 2/2017⁹, which came into force on 1st September 2017. This newly revised legislation is currently being analysed with the CITES Secretariat as of October 2017, with the potential change in status for Macau from a Category 2 classification, where the legislation does not meet the requirements for implementing CITES, to Category 1, where legislation is believed to meet the requirements (CITES, 2018). Major changes in the revised law include:

- 1) Increased maximum penalties (Article 31(1), 32(1) and 32 (3))**—maximum penalties for contraventions involving Appendix I species increased 100 times as much, from MOP500 (USD62) in the 1986 law to MOP500,000 (USD62,189) in the 2017 law (Table 1). The renewed fines range from MOP200,000–500,000 (USD24,876–62,189), as well as having the specimen confiscated. Penalty infractions involving Appendix II and Appendix III species previously had a maximum penalty of MOP2,500 (USD311), but have now increased to MOP100,000 (USD12,438) for Appendix II, and MOP50,000 (USD6,219) for Appendix III species. Previous offences (within one year) lead to a doubling of the maximum penalties, while valid certificates issued to the offender could be revoked.

8 The full name of 45/86/M is 關於瀕臨絕種野生動植物之國際貿易協定在澳門地區實施之管制 Regulamenta para aplicação no território de Macau da Convenção sobre o Comércio Internacional das Espécies da Fauna e da Flora Selvagens Ameaçadas de Extinção. (Translation: Regulation on the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in Macau)

9 The full name of 2/2017 is 《瀕危野生動植物種國際貿易公約》執行法 Lei de execução da Convenção sobre o Comércio Internacional das Espécies da Fauna e da Flora Selvagens Ameaçadas de Extinção. (Translation: Law implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora)

MACAU CITES TIMELINE



- No changes made to Decree Law 45/86/M
- Decree Law 2/2017 under CITES review for Category 1 (meets requirements) classification

2) Mandatory registration of specimen holders (Article 24 (1))—The following person or institution is required to register with the Government for the trade or possession of CITES-listed species:

- Importers and exporters of all CITES-listed species
- Breeders and nursery owners of all CITES-listed species
- Taxidermists of Appendix I species
- Scientific institutions with CITES-listed species

3) Scientific Authority (SA) (Article 25(2)) - The Municipal Affairs Bureau (IAM) was appointed as the CITES SA of Macau. IAM (previously the Civic and Municipal Affairs Bureau) has been acting as the scientific advisory body from 1986, with CITES implementation in Macau, but was not officially designated as the CITES SA until 2017 (through Law No. 2/2017).

	45/86/M (25th September 1986)	2/2017 (1st September 2017)
Appendix I	500–5,000 (USD62–USD622)	200,000–500,000 (USD24,876–USD62,189)
Appendix II	250–2,500 (USD31–USD311)	5,000–100,000 (USD622–USD12,438)
Appendix III	250–2,500 (USD31–USD311)	3,000–50,000 (USD373–USD6,219)

Table 1: Comparison of maximum penalties for wildlife crimes under laws established in 1986 (45/86/M) and 2017 (Law No. 2/2017)

In the context of domestic trade, it is worthwhile mentioning that under 45/86/M (Article 17, Article 18 and Article 19), the registration of ivory stock with the Government was considered mandatory. This requirement was no longer in effect in the revised law 2/2017. While new regulations specified that no Appendix I species, including ivory, could be traded locally—including the “purchase, proposal to purchase, sale and offer for commercial purpose and their use for profit” (Article 21(1) and 21(2) of 2/2017)—pre-Convention specimens will continue to be allowed with the appropriate CITES documentation, i.e. CITES export/re-export certificate) (Article 21(3)). This pre-Convention date varies for different CITES Appendix I species depending on the date in which the species was listed in the CITES appendix. For example, the pre-Convention date for Asian Elephants *Elephas maximus* is 1976, 1990 for African Elephants *Loxodonta africana*, while the Indian Pangolin *Manis crassicaudata* is 2017 (Macau Economic Bureau, pers. comm. 25/6/2018).

	Macau	Mainland China	Hong Kong	Taiwan PoC
Fine	MOP500,000 (~USD62,189)	CNY200,000 (~USD29,441)	HKD10,000,000 (~USD1,274,364)	TWD300,000 (~USD9,710)
Imprisonment	Nil	Life	10 years	Nil
Other punishment	Forfeiture of specimen	Confiscation of personal properties	Forfeiture of specimen	Repeal of trade registration (can no longer conduct trade)

Table 2: Maximum penalties in neighbouring jurisdictions of Macau

Comparisons of regulations between Macau and neighbouring jurisdictions

The degree of deterrence in Macau’s revised law is assessed through a comparison of maximum penalties within neighbouring jurisdictions. This could be one factor for would-be smugglers intending to channel illicit ivory into the Chinese market, to target jurisdictions with the least severe consequence if detected. Maximum penalties for wildlife trade infractions in mainland China¹⁰, Hong Kong¹¹ and Taiwan PoC¹² are compared to Macau (Table 2).

Violations in wildlife trade in Macau attract a maximum fine of MOP500,000 (~USD62,189), which is the second highest amongst the jurisdictions examined, after Hong Kong. A comparably higher level of fine is justifiable given that Macau has one of the highest GDP per capita in the world (IMF, 2018), although it is still some 20 times less than Hong Kong’s maximum fines. This sizeable difference is further exacerbated by the lack of imprisonment rendered for wildlife crimes in Macau, compared with a maximum of 10 years in Hong Kong, with the courts in the latter territory more and more willing to consider higher fines than the precedent, and to deem wildlife offences an indictable crime, which would potentially enhance the fines and imprisonment terms (ADMCF, 2019). Both mainland China and Taiwan PoC have lower levels of fines compared to Macau, but actual penalties issued in mainland China for wildlife crimes are some of the highest in the region, and its courts have the capacity to inflict a maximum term of life imprisonment with confiscation of personal properties. In this context, deterrence in terms of possible penalties for wildlife infractions in Macau are somewhat softer than some neighbouring jurisdictions.

According to UN Resolution 69/314¹³, illicit wildlife trade by organised groups should be considered as a serious crime with a minimum imprisonment of four years¹⁴. The lack of imprisonment terms under the newly revised legislation in Macau (and Taiwan PoC) suggests that the current set of penalties are insufficient in dealing with wildlife crimes of a more serious and organised nature.

10 中华人民共和国濒危野生动植物进出口管理条例 (Translation: Regulations of the People’s Republic of China on Import and Export of Endangered Wild Animals and Plants)

11 Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance

12 Taiwan PoC is a non-CITES party but implements wildlife trade regulations in accordance with CITES requirements. Regulations on Import and Export of Endangered Species of Wild Fauna, Flora and Related Products

13 69/314 Tackling illicit trafficking in wildlife

14 Article 2(b) United Nations Convention Against Transnational Organised Crime and the Protocols Thereto, UNODC



4 TRADE DATA ANALYSIS

TRADE DATA ANALYSIS

Macau is almost entirely dependent on other countries/territories to meet its basic food, water and energy needs. Much of its use and consumption of wildlife products, therefore, are sourced from other countries/territories. An overview of wildlife trade is provided below using trade records from DSEC, CITES and UN Comtrade¹⁵, although there are shortcomings to these datasets (see Methodology) that limit the analysis, namely the disparities in the recording of trade between the data sources (differences in units), limiting the comparability of data, e.g. the proportion of controlled wildlife trade (CITES data) compared with unrestricted trade (DSEC and UN Comtrade data) in a particular commodity. Some of the data discrepancies between and within datasets are highlighted, to emphasize areas requiring further clarity.

Macau imported around USD97 million worth of wildlife commodities per year, during the period 2005–2016. Only a fraction of this, ~USD2.5 million annually, or 2.7%, was re-exported, which suggests the majority of Macau's wildlife imports are intended for local use and consumption. Import values increased four-folds during the period examined, from ~USD44 million (2005) to ~USD160 million (2016). In contrast, exports declined during the same period, from their peak of ~USD5 million (2006) to USD283,000 (2016), with major downturns during the years 2010, 2011 and 2016 (Figure 1).

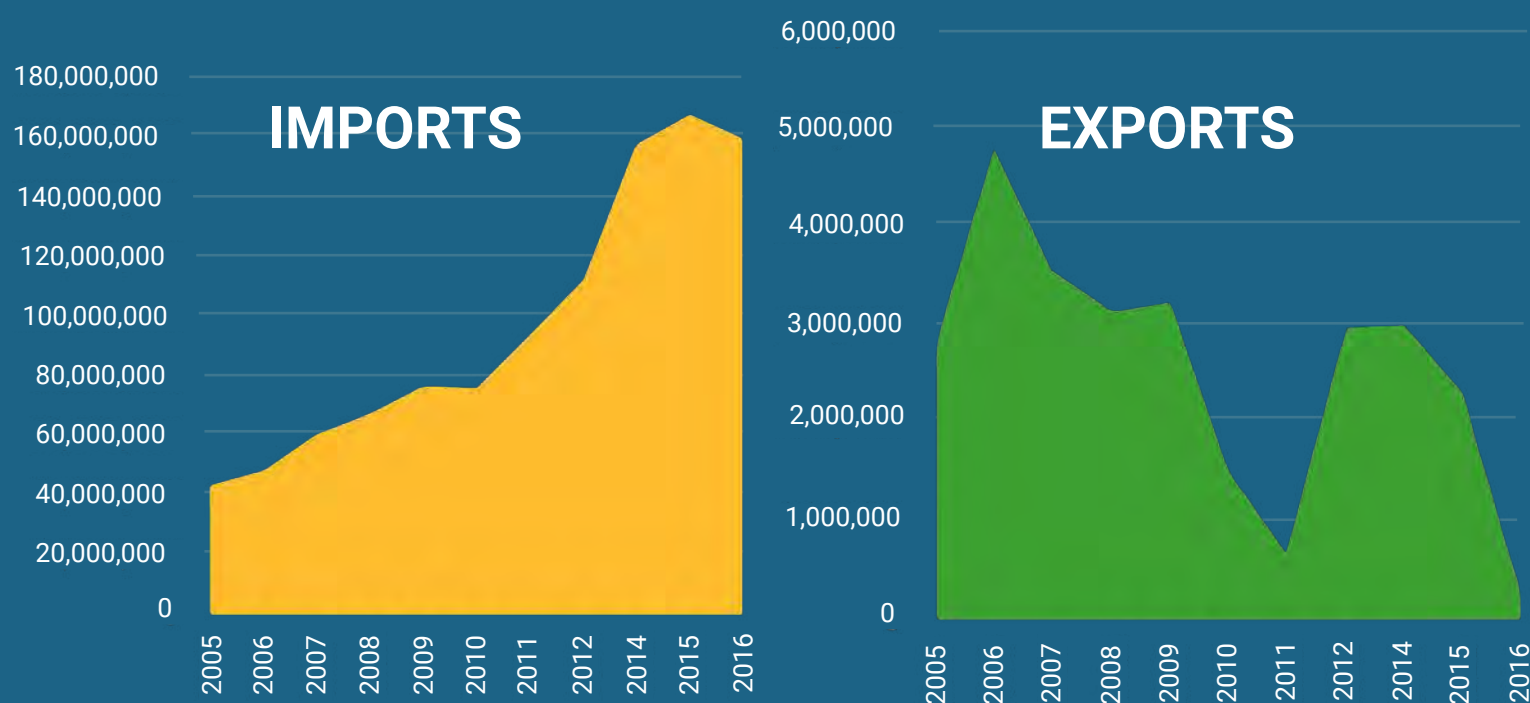


Figure 1: Imports (left) and exports¹⁶ (right) of wildlife products in Macau, by value (USD). Source: UN Comtrade.

¹⁵ The UN Comtrade database did not have any data on the relevant wildlife codes for the year 2013, which appears to be an anomaly in the data rather than the actual state of trade, as other sources (e.g. DSEC data) indicate that wildlife trade took place that year. Hence all analyses using the Comtrade dataset do not include 2013.

¹⁶ UN Comtrade combines re-exports and exports in the "export" measure, hence its use in this figure. DSEC data indicate that there were few, if any, exports (domestic production) of wildlife in the various categories of wildlife commodities, so "exports" in this figure should largely represent wildlife re-exports.

The trade data were further disaggregated into categories based on the intended use of the various wildlife commodities, using categories developed in Andersson *et al.* (in press), in order to generate further insights about the use and consumption of wildlife goods in Macau. A total of eight categories are used, including aquatic food, traditional medicine, pets, fashion, wild meat, exhibition, ornaments, and furniture (Table 3).









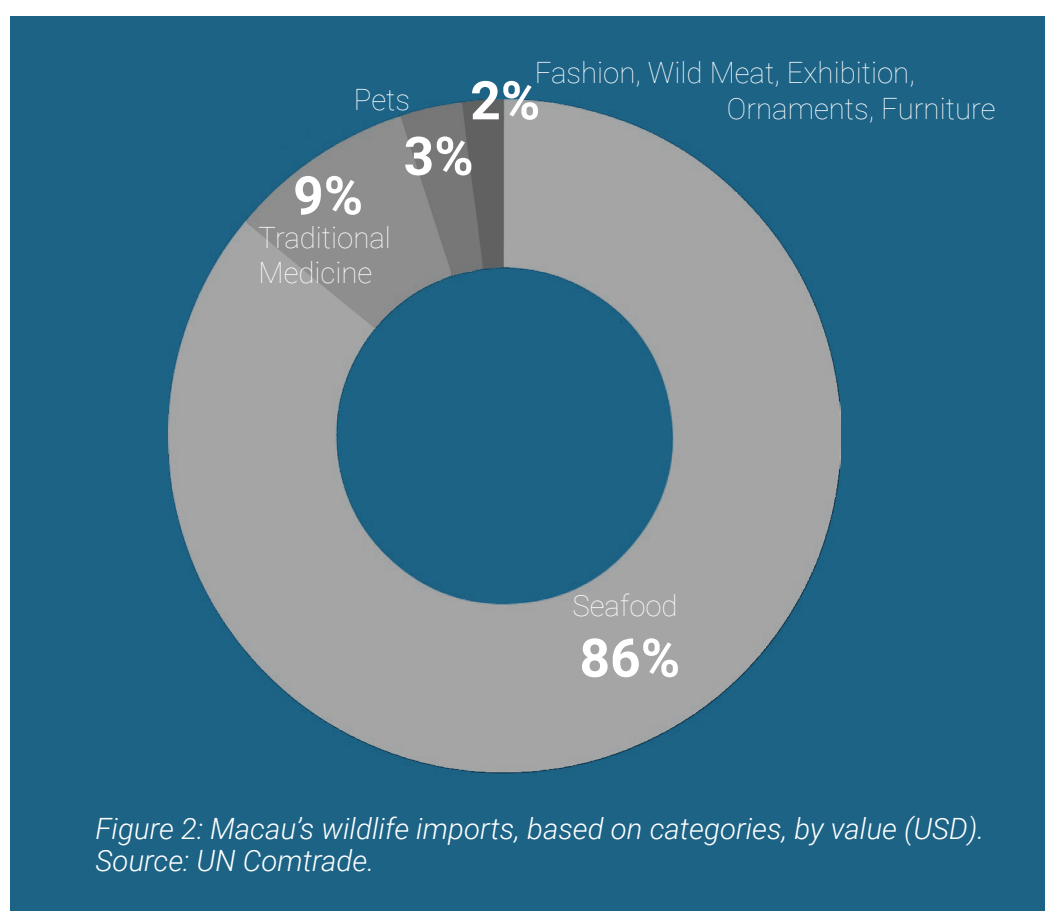
Categories	Key Products
 Aquatic food	Live carp, scallops, shrimps & prawns, cuttlefish & squid, crabs, oysters, salmon
 Furniture	Logs and sawnwood from tropical and non-tropical timber, including meranti, beech, oak wood
 Traditional Medicine	Ginseng root, liquorice root, ambergris, castoreum, products of civet & musk (<i>Moschus</i> spp.), tortoise-shell, whalebone, coca leaf
 Pets	Live birds (incl. Pisttacíformes), ornamental fish, live reptiles
 Fashion	Mink furs, reptile leather
 Wild Meat	Meat and offal of primates, reptiles, frog legs
 Exhibition	Live mammals
 Ornaments	Unworked and worked coral shells, ivory, bone, tortoise-shell, antlers

Table 3: Key products of wildlife commodity categories (adapted from Andersson *et al.*, in press).

Wildlife import values are dominated by aquatic food (86% of all wildlife imports), followed by traditional medicine (9%) and pets (3%) (Figure 2). Less than 3% of import values in the aquatic food, traditional medicine, pets, wild meat and exhibition categories are re-exported, which would suggest that these imports were consumed locally.

An exception to this is the fashion category, which is evidently intended for the export market, with 84% of all imports being re-exported. To a lesser extent, around a quarter of all imports of the ornaments category are re-exported. Re-exports of both categories abruptly ended in 2010, which would in part explain the decline in overall re-exports from 2010 onwards.



Aquatic food trade

The high value of Macau's aquatic food trade is not only due to a greater quantity of aquatic food imports compared with other wildlife commodities, but also the strikingly steep increase in the value of aquatic food imports over time. While the quantity of aquatic food imports has wavered within the range 20,000 t to 26,000 t during the period 2005–2016, aquatic food import values have increased at an annual rate of 15% over the 12 year period, reaching a high of USD143 million in 2015 (Figure 3).

Re-exports and exports of aquatic food are comparatively miniscule, a mere 3% of import levels. The rate of re-export and export have reduced considerably in recent years, with levels at less than 1% of imports between 2010 and 2016, which would indicate that the majority of aquatic food imported is consumed locally.

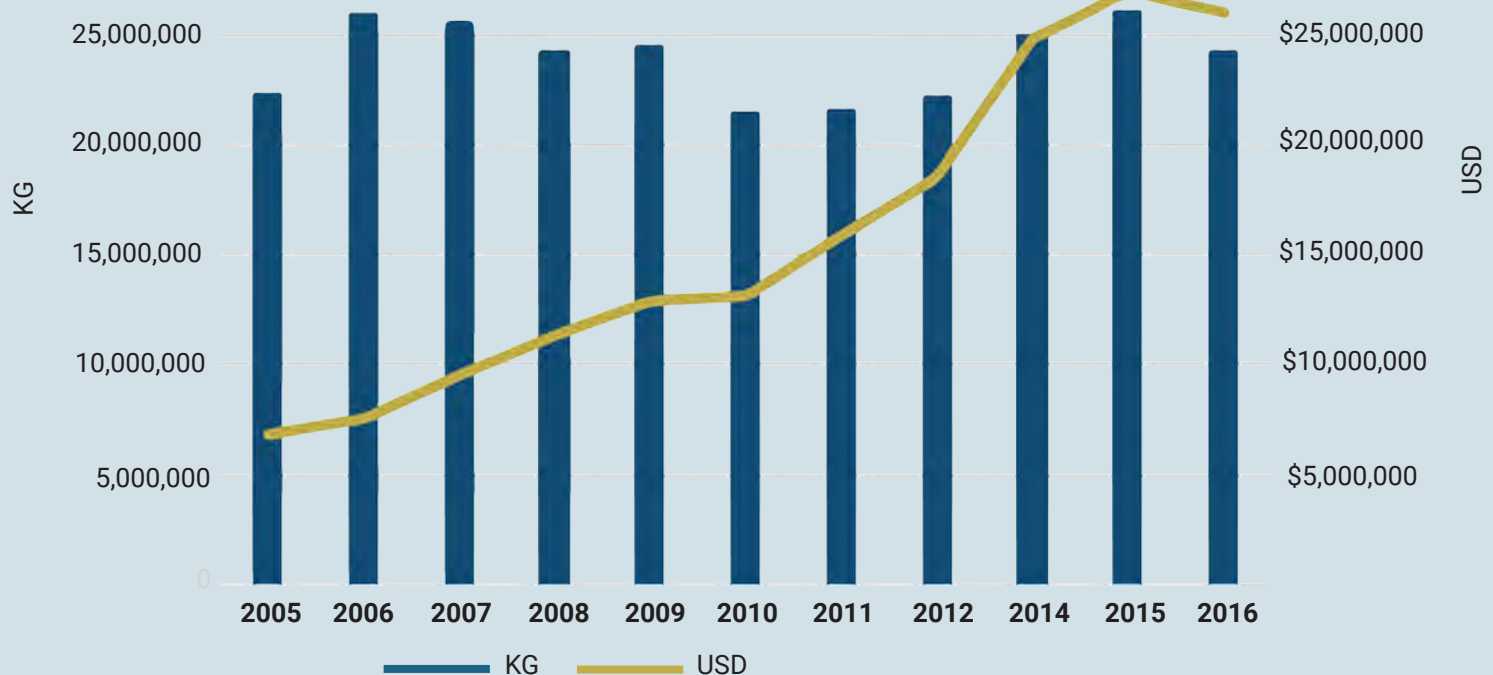


Figure 3: Imports of aquatic food in Macau, quantities (kg) and values (USD), 2005–2016.
Source: UN Comtrade.

Of the variety of aquatic food in trade, live fish comprises around a quarter of all aquatic food imports, with ~5,900 t imported per year on average. A large proportion of the live fish imports are comprised of live carps (46%), which are primarily sourced from mainland China and likely to be derived from farms, and therefore unlikely to be wild-harvested. Other major live fish imports include live groupers, as well as live eels and tilapia. Live fish was a major contributor to the increase in the value of aquatic food imports overall, with an average increase in value of 11.5% per year over the examined period.

Molluscs were the second most imported aquatic food type by quantity, with 23% of the total. They are also notable for having some of the highest valued commodities, including abalone (imports worth USD90/kg). Indeed, the growth in value of aquatic food imports during the period 2011–2016 was led by increases in the value of molluscs and crustaceans, such as rock lobsters. Other aquatic invertebrates also dominate the list of high-value aquatic food commodities, including sea urchins (live/fresh/chilled, USD135/kg) and sea cucumber (USD45/kg).

Trade in CITES-listed species

Similar to trends in the import of wildlife commodities, imports of CITES-listed species accelerated after the year 2011. The average number of items imported increased from ~9,600 items per year (plus ~380 kg) during 2005–2010, to ~18,200 items per year (plus ~20,200 kg) in the period 2011–2016. This increase is mostly attributable to the rise in imports of CITES-listed reptiles, plants and timber products (Figure 4), rather the impact of recent (post-2011) listings of highly-traded species onto the CITES Appendices.

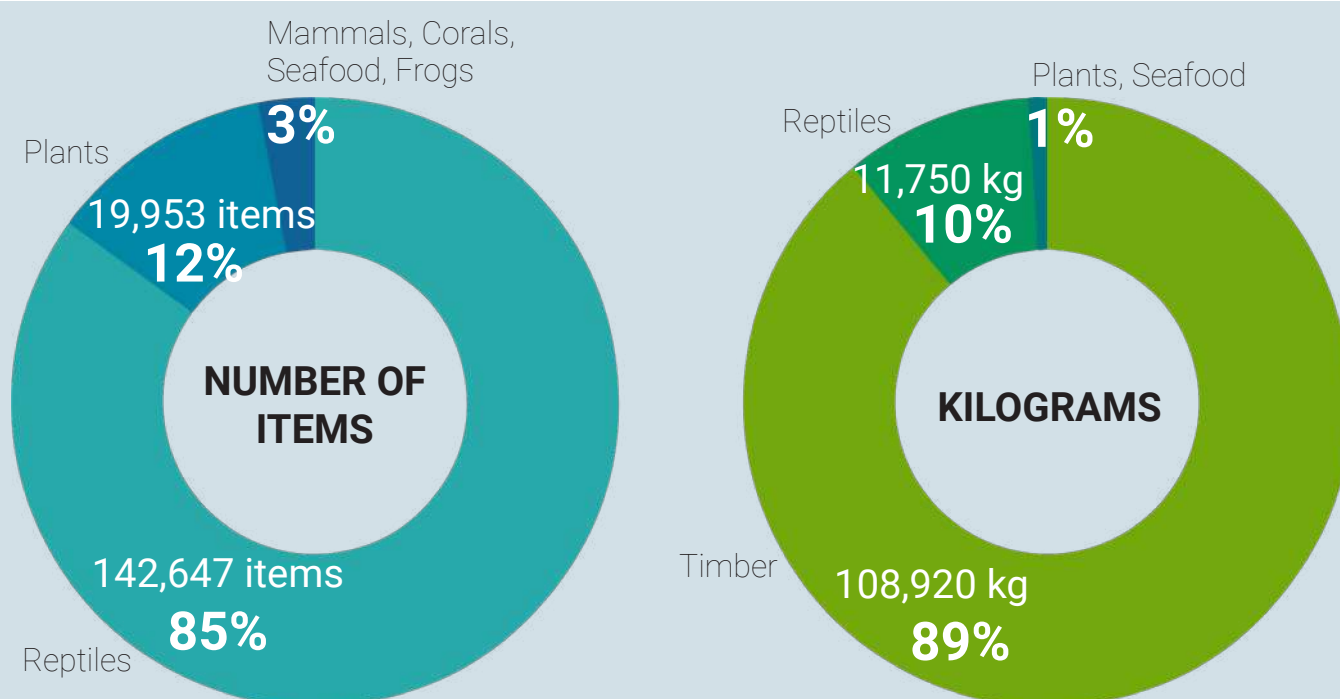


Figure 4: Imports of CITES-listed species to Macau during 2005–2016, by taxa groups, number of items (left) and kg (right). Source: UNEP-WCMC CITES Trade Database.

Macau exported considerably fewer CITES-listed species than it imported, ranging between 2 items to 525 items per year. The only exception was in 2006, when 16,175 items were exported, of which 15,000 were exports of live frogs (Figure 5). This did not correspond with records in the CITES trade database of imports of live frogs in 2005–2006. Nevertheless, shipments of live frogs may have been part of DSEC's import declaration records, where over 5 million items were declared during 2004–2006 under a generic code (HS code 01069000: Other live animals, nesoi) which includes live frogs.

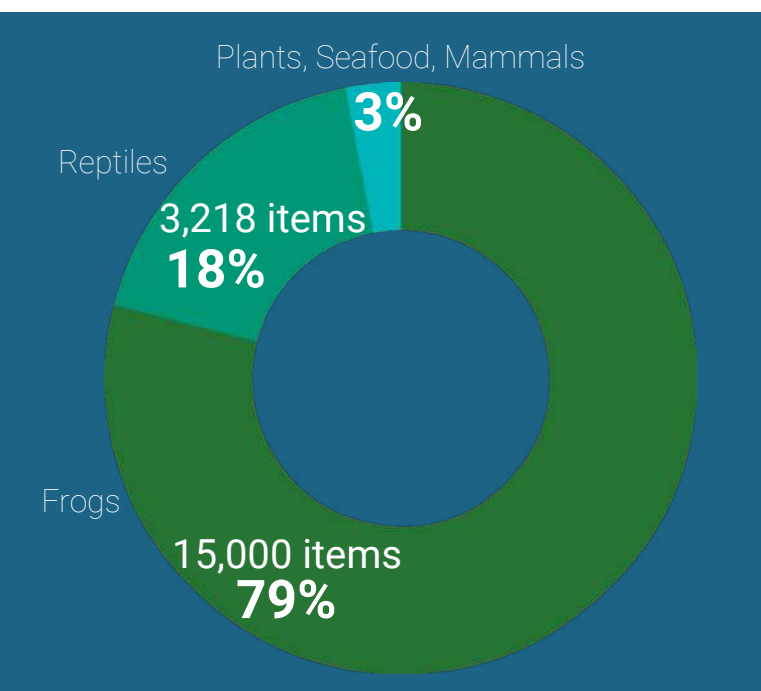


Figure 5: Exports of CITES-listed species during 2005–2016, by taxa group, number of items. Source: UNEP-WCMC CITES Trade Database.

The trade in CITES-listed reptiles is further examined below, separately for its use in leather products and uses in food, medicine and as pets. The ornamental trade is also assessed, given their sizeable impact on endangered and/or CITES-listed species.

Trade in CITES-listed reptiles for leather¹⁷

Not all data of trade in leather products were disclosed in DSEC's trade records, hence the scale of the leather trade—including CITES and non-CITES listed species traded for leather—is not known. CITES trade records do provide some insights of trends for the leather trade, with imports fluctuating considerably during the examined period. In 2008, there was an abrupt increase in imports of ~28,500 items, before sharply declining to ~3,200 items during 2009–2010 (Figure 6). Leather imports gradually rose to an average ~15,800 items per year during 2012–2016.

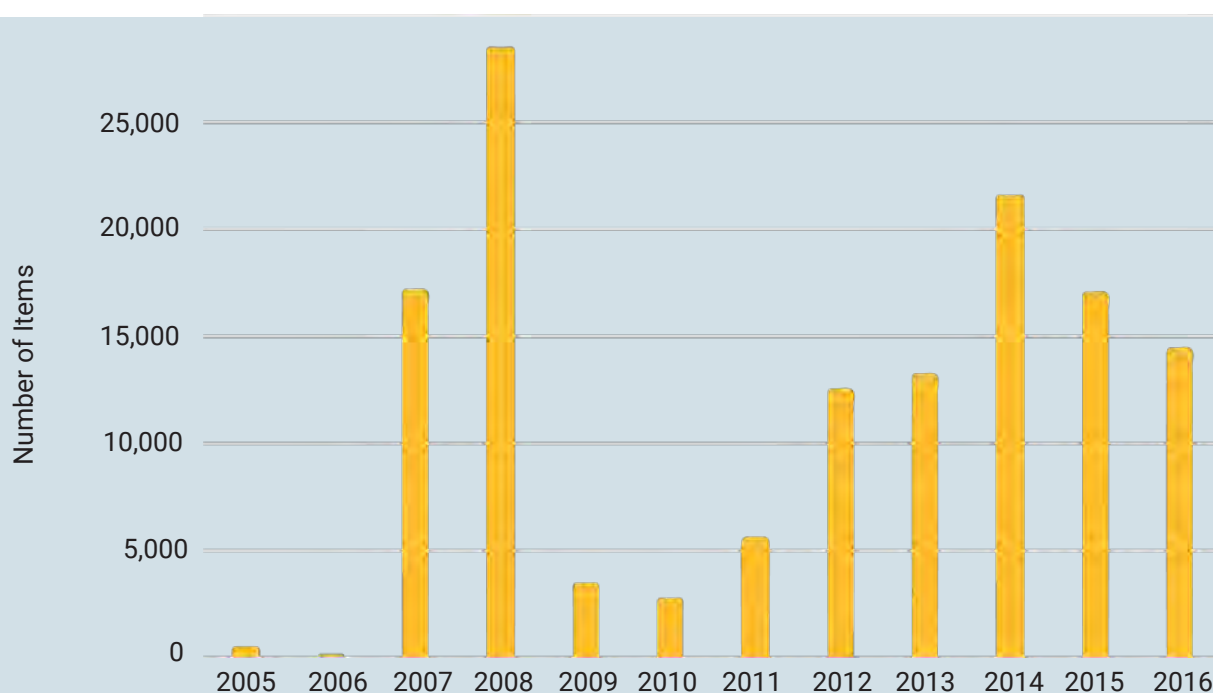


Figure 6: Imports of leather into Macau, no. of items, 2005–2016. Source: UNEP-WCMC CITES Trade Database.

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Leather products are determined based on the CITES-listed species and reported "term", with the latter indicating the product form being traded. In this respect, all reptiles species (e.g. crocodiles, snakes) that were reported under the "term" as "leather products (large)", "leather products (small)", "garments", "jewellery", "skin pieces", "skin", were considered to be uses of leather.

Crocodiles, snakes and lizards were the primary taxa groups imported for leather use. The Spectacled Caiman *Caiman crocodilus*, Nile crocodile *Crocodylus niloticus*, American Alligator *Alligator mississippiensis*, Water Monitor *Varanus salvator* and Reticulated Python *Python reticulatus* were the top five imported species used in the leather trade (Table 4).

Overall, there were slightly more wild-sourced CITES-listed species in leather imports (52%) than captive bred (42%) and ranched (6%). Of the reptile species where over 1,000 pieces were imported between 2005 and 2016, the Water Monitor, New Guinea Crocodile *Crocodylus novaeguineae*, American Alligator and the Nile Monitor *Varanus niloticus* were primarily sourced from the wild¹⁸ (>90%). The high level of extraction from the wild is of concern, especially since their CITES listing would suggest the species is under threat in the wild from trade.

Common name	Species	Import Quantity	% source from wild
Spectacled Caiman	<i>Caiman crocodilus</i>	53,030 pieces	31%
Nile Crocodile	<i>Crocodylus niloticus</i>	32,497 pieces	1%
American Alligator	<i>Alligator mississippiensis</i>	20,962 pieces	96%
Water Monitor	<i>Varanus salvator</i>	10,175 pieces	100%
Reticulated Python	<i>Python reticulatus</i>	5,541 pieces	45%
Saltwater Crocodile	<i>Crocodylus porosus</i>	5,093 pieces	10%
New Guinea Crocodile	<i>Crocodylus novaeguineae</i>	2,520 pieces	100%
Burmese Python	<i>Python bivittatus</i>	2,282 pieces	0%
Nile Monitor	<i>Varanus niloticus</i>	1,321 pieces	100%
Siamese Crocodile	<i>Crocodylus siamensis</i>	922 pieces	0%

Table 4: Top 10 imports of CITES-listed species for leather use, by volume (number of pieces), 2005–2016. Source: UNEP-WCMC CITES Trade Database.

Reptiles from a wide range of countries were sourced for leather use, most notably Zimbabwe with imports of the Nile Crocodile, Colombia and Bolivia for the Spectacled Caiman, USA for the American Alligator, as well as Indonesia and Malaysia, where species such as the Water Monitor, Reticulated Python, Saltwater Crocodile, Borneo Short-tailed Python *Python breitensteini* and Brongersma's Short-tailed Python *Python brongersmai* were sourced.

Reptile imports from several key countries were in fact sourcing a significant proportion of their traded reptiles from the wild. Some of these are especially astounding given the high volumes of reptiles that were traded with Macau. They include imports from USA (96% wild-sourced), Bolivia (99.6%), Indonesia (94%), Venezuela (100%) and Malaysia (99%) (Table 5).

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Taken as eggs or juveniles from the wild.

Source Countries	Volume of wild-sourced pieces	Key wild-sourced species ¹⁹	% sourced from the wild
USA	19,868 pieces	American Alligator	96%
Bolivia	9,789 pieces	Spectacled Caiman	99.6%
Indonesia	7,351 pieces	Water Monitor, Reticulated Python, Saltwater Crocodile, Borneo Short-tailed Python, Brongersma's Short-tailed Python, New Guinea Crocodile	94%
Venezuela	6,329 pieces	Spectacled Caiman	100%
Malaysia	6,068 pieces	Water Monitor, Reticulated Python	99%
Papua New Guinea	2,855 pieces	New Guinea Crocodile, Saltwater Crocodile	71%
Argentina	984 pieces	Black-and-white Tegu (Salvator merianae)	100%
Chad	772 pieces	Nile Monitor	100%
Mali	478 pieces	Nile Monitor	100%

Table 5: Source countries for Macau's reptile imports for leather use with the highest number of wild-sourced species traded, 2005–2016. Source: UNEP-WCMC CITES Trade Database.

¹⁹ Other species with few imports were not included, even though they may also be wild-sourced.

Much of the leather imported to Macau was consigned via an intermediate country, possibly for production and manufacturing, including Singapore (53,889 pieces), and several European countries including Italy (46,287 pieces), France (19,879 pieces), Switzerland (10,849 pieces) and the UK (3,972 pieces). In less than 1% of cases was the leather imported into Macau directly from the country of origin, with most arriving through a country of consignment. This suggests that the trade chain in leather products, at least according to Macau's imports, are international in nature (Figure 7).

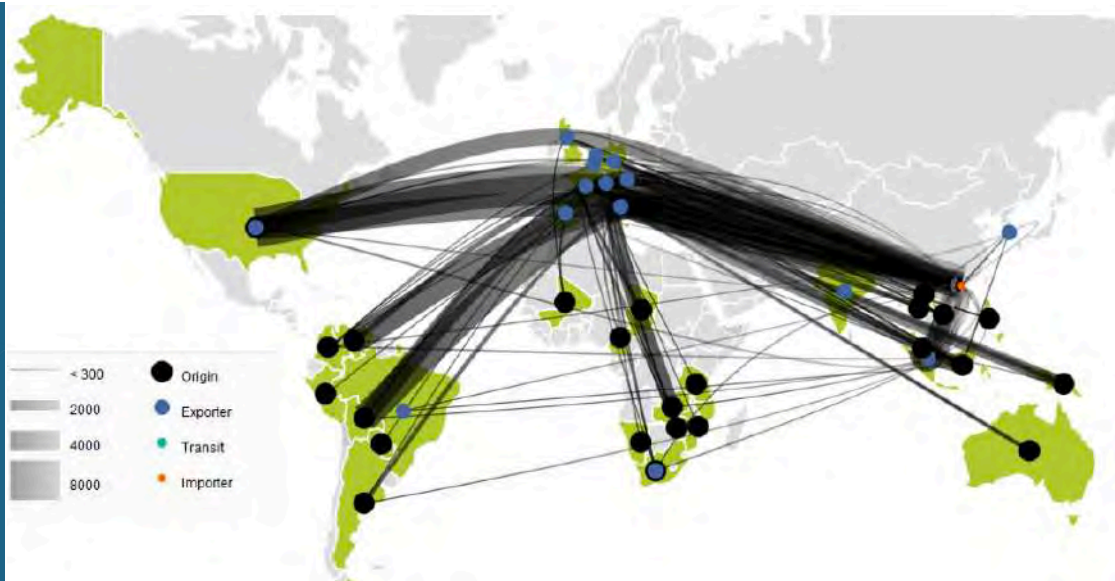


Figure 7: Trade route of Macau's import of CITES-listed wildlife used for leather, including countries of origin, export and transit, based on quantities traded (no. of pieces), 2005–2016. Trade records of less than 50 items between countries in a given year were excluded. Source: UNEP-WCMC CITES trade database. Graphic generated using TradeMapper, a tool developed by TRAFFIC and WWF-UK.

Re-exports of CITES listed wildlife for leather use were only a fraction of their imports. Between 2005 and 2016, there were 2,937 pieces of leather from CITES-listed species that were re-exported from Macau, a mere 2% of import levels. This contrasts with the high ratio of re-exports for the fashion category overall (84%), which includes both the trade in leather and fur products.

The top species that were imported into Macau for leather use were also being re-exported, including the American Alligator, Spectacled Caiman, Nile Crocodile and Reticulated Python. The main destinations to which Macau re-exported CITES listed wildlife for leather use between 2002 and 2015 included Switzerland (1,013 pieces), Italy (1,022 pieces), USA (277 pieces), France (178 pieces) and Singapore (126 pieces). Besides USA, these were all the top major trading partners for Macau's import of CITES listed wildlife for leather use, suggesting the products might have been sent back to the production companies for redistribution.

Trade in CITES-listed reptiles for food, medicine and pets

The other major uses of reptiles are in the pets, food and traditional medicine industries, which are considered together as these uses are virtually indistinguishable in trade data. A total of 5,253 items and 11,750 kg of CITES-listed reptiles were imported for food, medicine and pets during 2005–2016. Re-exports were miniscule by comparison, with 381 items re-exported during the same period.

Reptiles for food, pets and medicines were either imported as meat or live. The meat trade was made up of just one CITES-listed species, the Siamese Crocodile (CITES Appendix I). The live reptile trade was more varied, with 48 species (all CITES Appendix II) imported during the examined period. Snakes, chameleons and tortoises were some of the more popular reptile imports. These were imported from just five countries: Thailand, Canada, USA, Ukraine, and Germany, although the specimens originated from at least 22 countries, with the top reported sources being Thailand, Ghana, Colombia, USA, and Nicaragua (Figure 8).

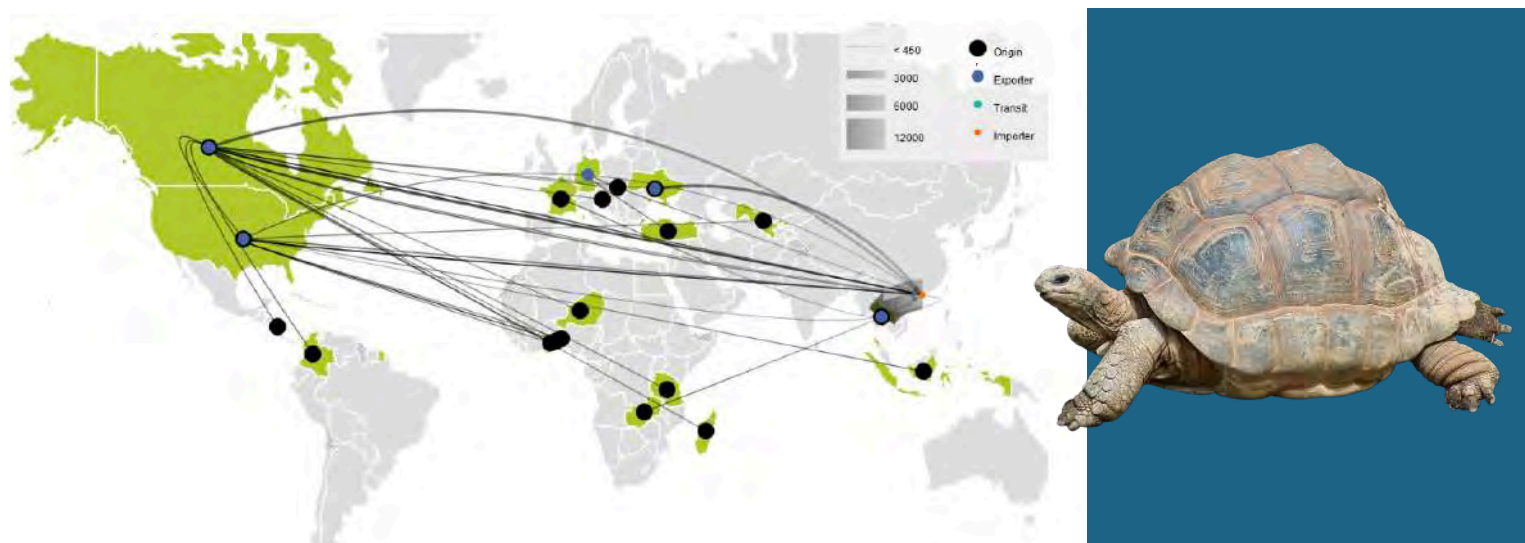


Figure 8: trade route of Macau's import of CITES-listed reptiles used for food, pets and medicine, including countries of origin, export and transit. Trade records of less than 10 items in a given year was excluded. Source: UNEP-WCMC CITES trade database. Graphic generated using TradeMapper, a tool developed by TRAFFIC and WWF-UK.

The proportion of wild-sourced reptile imports for the food, pets and medicine trades (11%) is comparatively lower than the trade in reptile leather (43%). Of the top 10 species imported, only the Russian Tortoise *Testudo horsfieldii* and Carpet Chameleon *Furcifer pardalis* had imports sourced from the wild, at 18% and 28% respectively, while the rest were primarily declared as being captive bred (Table 6).

Common names	Species	No. of Items	% Wild
Siamese Crocodile	<i>Crocodylus siamensis</i>	11,750 kg	0%
Boa Constrictor	<i>Boa constrictor</i>	1,470	0%
Ball Python	<i>Python regius</i>	1,132	0%
Veiled Chameleon	<i>Chamaeleo calyptatus</i>	1,029	0%
Russian Tortoise	<i>Testudo horsfieldii</i>	342	18%
Diamondback Terrapin	<i>Malaclemys terrapin</i>	216	0%
Carpet Python	<i>Morelia spilota</i>	164	0%
African Spurred Tortoise	<i>Centrochelys sulcata</i>	119	0%
Carpet Chameleon	<i>Furcifer pardalis</i>	76	28%
Kenyan Sand Boa	<i>Gongylophis colubrinus</i>	58	0%

Table 6: Top imports of live CITES-listed species for food/pets/medicine, by quantities (number of items and kg), 2005–2016. Source: UNEP-WCMC CITES Trade Database.

On the re-export of reptiles for food, pets and medicine, the largest record occurred in 2006 with 120 African Spurred Tortoises *Centrochelys sulcata*. Many of the species that were declared for re-export did not have a corresponding import record, although they were generally few in number, including the Lesser Chameleon *Furcifer minor*, Parson's Chameleon *Calumma parsonii*, and the Yellow-spotted River Turtle *Podocnemis unifilis*.

Consistently with imports, there were fewer wild-sourced (8%) or ranched species (18%) in reptile re-exports for food, pets and medicine than those bred in captivity (72%). The Ball Python was notable with all re-exports deriving from ranched specimens (37 items), while all re-exports of the Boa Constrictor originally sourced from Honduras were also from ranched specimens.

Trade in CITES-listed wildlife as ornaments

There were three distinct components that made up the ornamentals trade: the import of live corals and ornamental fish for the aquarium trade; and the import of elephant ivory, corals and similar materials for carving, and other mammal species as hunting trophies (Figure 9).

Trade commodities data indicate that there were over 680 t of ornamental wildlife products imported during 2005–2016, amounting to ~USD4.6 million. Of this, a total of 2,598 items of CITES-listed ornamental species were imported between 2005 and 2016. Around 14% of imported quantities were re-exported, totalling 306 items of CITES-listed ornamental species.

Almost all imports of CITES-listed species for the ornamentals trade were for commercial purposes (99%), with all ornamental carvings declared as being derived from the wild, while all Arowana Osteoglossidae (ornamental fish) imports were reportedly sourced from hatcheries.

Coral imports, including live, raw and carved corals, make up 43% of all CITES-listed ornamental species imports, with 1,129 items imported between 2005 and 2016. A total of 41 species and genera of corals were imported. There were no re-exports of corals during the same period.

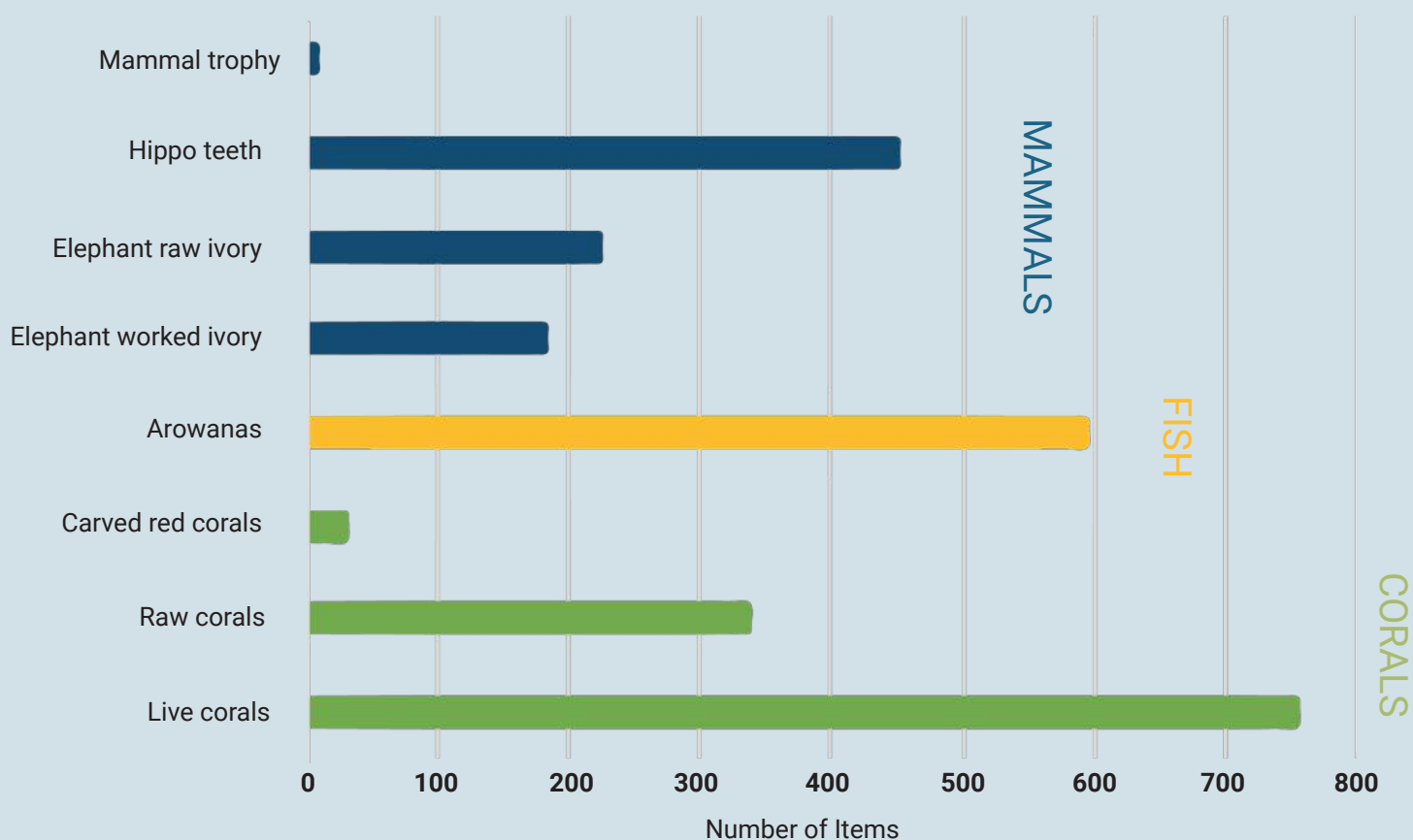


Figure 9: Import of CITES-listed species for the ornamentals trade, no. of items imported, 2005–2016. Source: UNEP-WCMC CITES Trade Database.

There was disparate trade in other ornamental species throughout the period 2005–2016. Notably, there was the single import record of 598 Asian Arowanas *Scleropages formosus* in 2015, and the import of 758 live corals in 2007–2008. The only exception is the trade in elephant ivory, where the trade was fairly consistent with annual imports during the period of study. The greatest concentration of ivory imports occurred between 2009 and 2013, especially that of raw ivory tusks (Figure 10). Imports of ivory overall peaked in 2012 with 109 pieces imported (see Chapter 7 for more on ivory). Furthermore, there were nine import trophies of various mammal species during the examined period, including Leopard *Panthera pardus*, Asian Black Bear *Ursus thibetanus*, Black Rhino *Diceros bicornis*, Polar Bear *Ursus maritimus* and Tiger *Panthera tigris*.

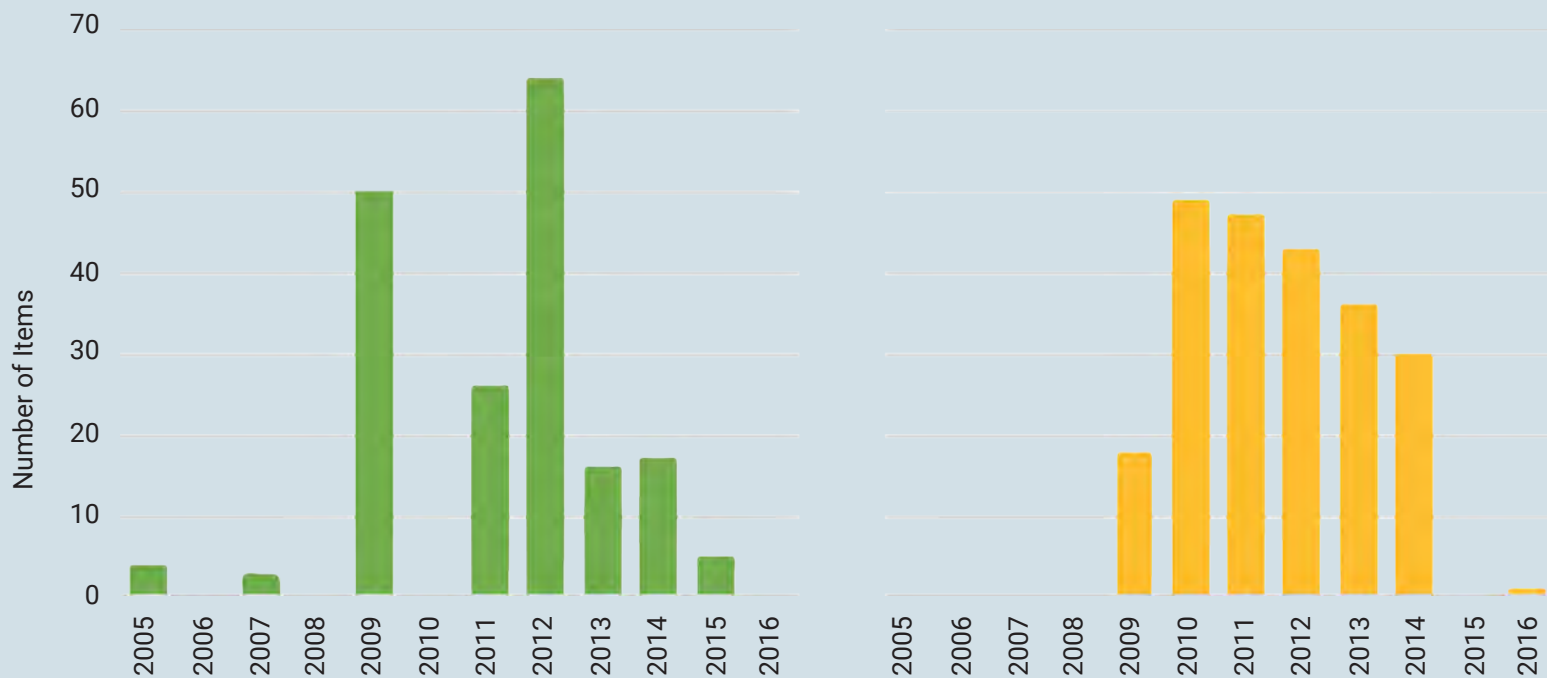


Figure 10: Import of raw and worked ivory in Macau, 2002–2015. Source: UNEP-WCMC CITES Trade Database.

South-east Asian countries were major source origins for the import of ornamental species. Imported live corals were mainly sourced from Indonesia, while carved corals originated from Japan, but imported from Italy. The large consignment of Asian Arowana in 2015 were imported from Malaysia. The import of various mammalian species as carvings and trophies were primarily drawn from Europe, USA and Canada, although the countries of origin were central and southern African countries.



5 Wildlife Seizures

WILDLIFE SEIZURES

Between 2013 and 2017, Macau Customs Service reported 267 cases of non-compliance to CITES²⁰ (Figure 11). For comparative purposes, Hong Kong reported 1,986 seizure cases over the same period (HKCED, 2014–2018). For Macau, wildlife seizures fluctuated considerably during these five years, with 2013 having the highest number of cases recorded (107 cases), followed by 2017 (101 cases), while 2015 had a low of just 5 cases.

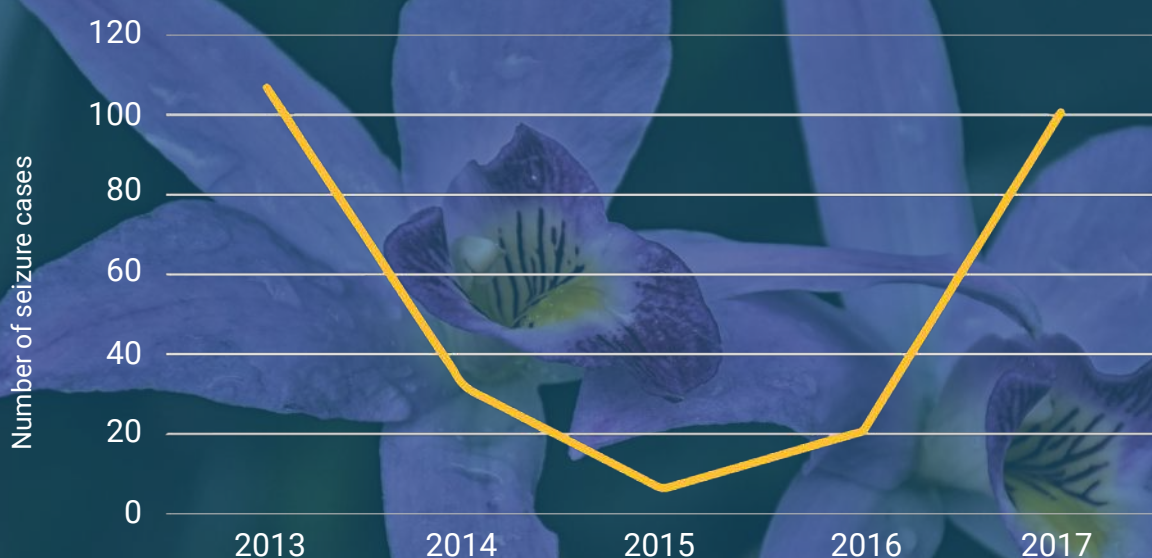


Figure 11: Number of seizure cases of non-compliance to CITES, 2013–2017. Source: Macau Yearbook 2014–2018.

Though records of all seizures during this period are not publicly available, media reports and the Macau Yearbook do provide some indication of the range of species and products confiscated, as well as highlight seizure cases of notable quantity and value. From these data, seizures of orchids appear the most frequent, with confiscations taking place in all years during 2013–2017, ranging from 172 kg to 587 kg per year. Other plant species were also significant, largely due to a handful of seizures of significant quantities. Two shipments of agarwood in 2013, totalling 2,004 kg, were intercepted at Macau’s Inner Harbour Ferry Terminal. Seizures of 1,080 kg of cycads in 2014, and 1,050 kg of Majesty Palms in 2015, also led to the high flora count in seizure records.

Elephant ivory is also one of the more commonly seized items and was typically carried by smugglers as luggage possessions. Ivory smuggling tends to elicit some atypical concealment methods, including two seizures in 2013 where ivory was dipped in chocolate (GCS, 2013a), ivory tusks that were painted black and declared as ebony wood (GCS, 2012), or carried in large nylon sacks on a speedboat off the coast of Coloane in Macau, awaiting pick up. This latter method was used in a 2014

20 This refers to CITES-listed species only. However, cases involving wildlife, both CITES and non-CITES listed species, could have also been seized by the Macau Customs Service, and recorded under seizure cases of “external trade law” non-compliance.

Macau

267

wildlife seizure
cases

2013–2017

Hong Kong

1,986

wildlife seizure
cases

2013–2017



seizure of 39.4 kg of ivory tusk and cut pieces (GCS, 2014), as well as a 2010 seizure, where ~197 kg of raw ivory and 33 kg of worked ivory were uncovered, including 16 whole tusks of up to 2 m long (GCS, 2010). This 2010 seizure was reportedly the largest ivory seizure in Macau since 2003, when 170 kg of ivory was seized (Global Times, 2010), although an even larger shipment of 3,500 kg of ivory, which was intercepted in Hong Kong, was reported destined for Macau (TRAFFIC, 2018).

Such large-scale seizures may indicate the possibility of organised criminal involvement, although the infrequency of these seizures does not confer Macau as a territory of concern for illegally traded ivory (Milliken *et al.*, 2013, 2016, 2019). Analysis of the Elephant Trade Information System (ETIS) in 2016 (assessing seizures in 2012–2014) puts Macau with a cluster of countries/territories for having an “occasional transit role” (Milliken *et al.*, 2016), however the territory reported no ivory seizures in 2015–2017, which placed it amongst others with the lowest frequency of seizures in the 2019 ETIS analysis (based on seizures in 2015–2017). Given that Macau has been the target of large-scale ivory shipments prior to 2015, it could still emerge as a transit point for illegal ivory in future (Milliken *et al.*, 2016). Vigilance in border control is therefore vital.

Elephant ivory is one of the more commonly seized items and was typically carried by smugglers as luggage

A wide variety of other wildlife products have been interdicted during the period 2013–2017, though in much smaller quantities. This includes products for medicinal and tonic uses such as ginseng and dried seahorse, as well as endangered fauna—turtles, hippo meat, bird bone, tiger teeth, live snakes, pangolin scales and bear bile. Although the traded quantities may be small, they could represent a significant number of individual animals involved. A 2013 seizure of 69 tiger claws (0.2 kg), for example, represents between 18 and 69 dead tigers (GCS, 2013b).

Furthermore, there are a number of cases occurring across the border from Macau and reported by the Zhuhai and Hong Kong Customs authorities that may either be destined for Macau, or were derived from there without detection in Macau. The growing number of border points—seven as of the end of 2018, compared to three in 1999—considerably increases the scale of the law enforcement challenge in shielding Macau from the cross-border trade in illegal wildlife. Greater co-operation and information exchange between operational staff in the law enforcement agencies of Macau, Zhuhai and Hong Kong could be one important way of confronting this increased border pressure, and potentially beneficial to all sides in boosting enforcement capacities, such as in conducting risk assessments.

Seizures of orchids appear the most frequent, with confiscations in all years during 2013–2017

A photograph of a market stall selling shark fins. The fins are light yellow and are displayed in large plastic bags. A yellow price tag is visible in the center, with Chinese text and a price of \$4,800 per catty. The background is dark, and the lighting is bright, highlighting the texture of the shark fins.

6 CASE STUDY: SHARK FIN MARKET

INTRODUCTION

Shark fin (Yu Chi, 魚翅) is considered a luxury Chinese delicacy in Macau. Together with abalone, sea cucumber and fish maw, these food delicacies form part of the four major aquatic food components in Chinese cuisine (known to locals as Bao-Shen-Chi-Du (鮑參翅肚)), and are commonly included in celebration dinners with family, friends and work colleagues.

Shark fin, both served as dishes and sold as dried ingredients, was commonly observed in Macau. For example, along Rua da Felicidade, a narrow street in Macau's UNESCO-listed old town, shark fin restaurants are interspersed with tourist souvenir and handicraft shops. Shark fin soup is typically offered in Chinese banquet menus, especially for celebratory events such as weddings.

Dried shark fins are also found in dried seafood shops across Macau. Rua de Cinco de Outubro, near the historic centre of Macau, is a major thoroughfare for the buying of dried aquatic food, including dried shark fins. Shop displays typically include a very large, one metre high, unprocessed piece of dried shark fin, which is known as Tian Jiu Chi, and is believed to be either the caudal fin from Whale Sharks *Rhinodon typus* or Basking sharks *Cetorhinus maximus*. These shops stock a large variety of dried shark fin products, as well as a few that processes shark fins in the shop's backrooms behind the retail area. Readymade shark fins packets (i.e. rehydrated dried shark fins, Shui Pan Chi, see Appendix I) are also sold, to a clientele that are seeking greater convenience in traditional food fare.

To examine the domestic trade and availability of shark fins in Macau, market surveys and trade data analysis were conducted. Commodities trade data and CITES trade data were used in the analysis of shark fin imports and re-exports. Shark fin dining practices and availability were also assessed, including consumption at wedding banquets, fine dining restaurants and shark fin specialty restaurants. Macau's domestic trade in shark fins was also assessed through a survey of dried seafood outlets, conducted in Cantonese, as well as online, with a rapid survey of e-commerce websites (.mo sites only).



TRADE DATA ANALYSIS

Shark fin trade data during the period 2012–2017 were analysed. Although data prior to 2011 were available for download, an update of HS codes in 2012 resulted in changes in the way some shark commodities were grouped (DSEC, *pers. comm.* to TRAFFIC, 4th January 2018). To avoid analysis of trends based on dissimilar commodity groups, only data from 2012 onwards were used in the analysis. UN Comtrade data for shark commodities were also downloaded for the period 2012–2016, however 2017 data were not available at the time of writing hence UN Comtrade data and other data sources were compared for the period 2012–2016 only.

Data on imports, re-exports and exports were extracted from DSEC, where available. While the distinction between re-exports and exports exist for some commodities, for others, they appear to be indistinguishable, with the same numbers given for both categories of trade flows. In these cases, analysis is denoted by “(re-) exports”.

Scale of shark fin trade

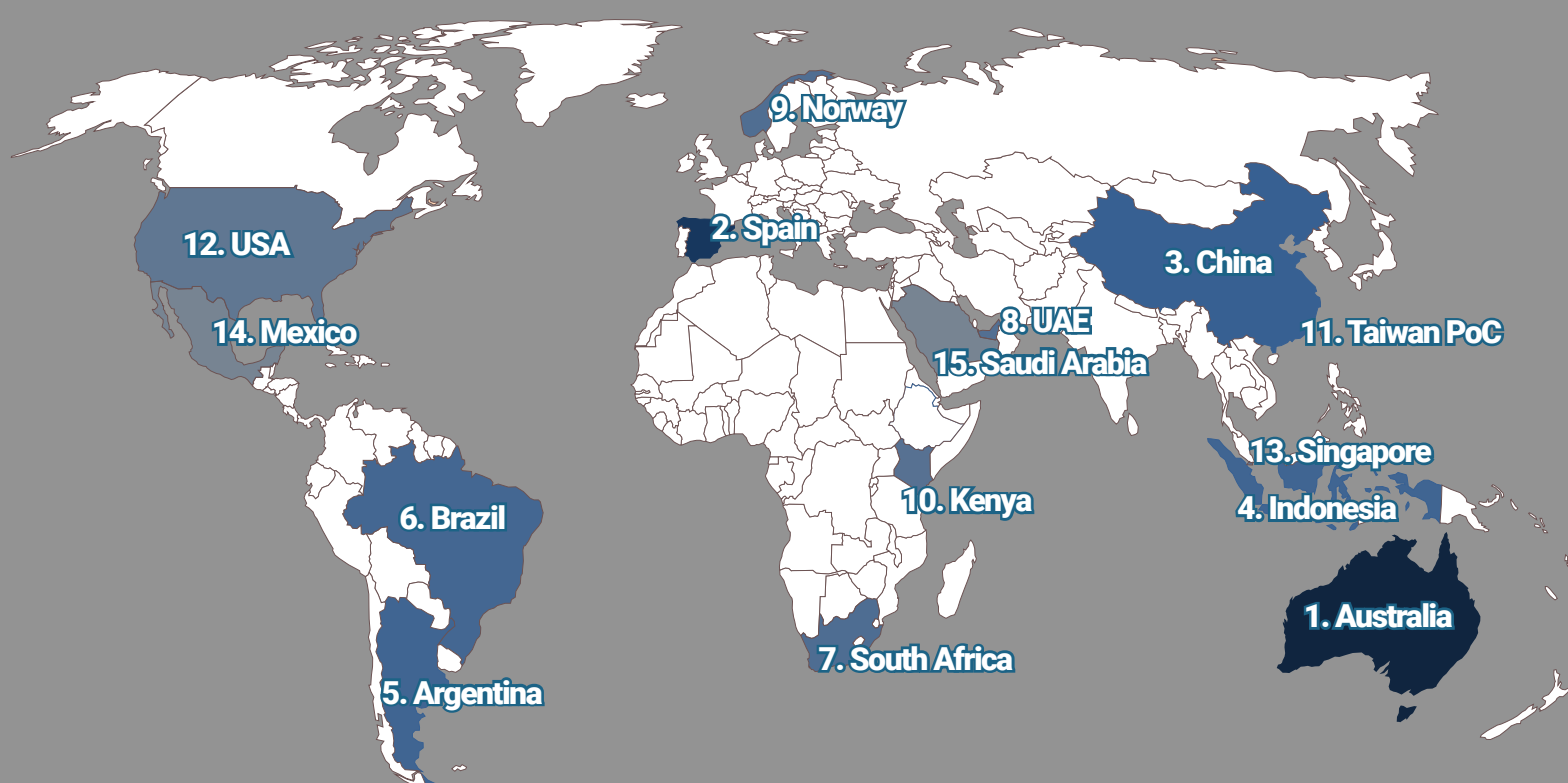
Macau is the fifth largest importer of dried shark fins in the world, by quantity. The territory imported an average ~100 t of shark fins (dried, salted, in brine or smoked) between 2012 and 2017 (DSEC, accessed 20th May 2019), although import levels declined to their lowest point in 2017, to ~69 t. During the same period, Macau (re-)exported on average ~13 t of shark fins (dried, salted, in brine or smoked) annually, which was a fraction of import levels (~13%).

Macau is the fifth largest importer of dried shark fins in the world, by quantity

Macau's import of shark fins (dried, salted, in brine or smoked) is worth an average ~MOP48 million (~USD6 million) annually. By trade value, Macau is ranked third in the world for the shark fin trade (dried, salted, in brine or smoked), according to UN Comtrade data and Macau's statistics department (DSEC). This is a considerable volume of trade and consumption for a territory with just over 600,000 inhabitants, although the proportion of shark fin trade (dried, salted, in brine or smoked), at just over 3% of global trade value, pales in comparison to Hong Kong and Singapore, which combined comprises over 86% of the global trade.

Macau's imports of shark fins (dried, salted, in brine or smoked) are derived from origins in every continent except Antarctica (Figure 12). The greatest quantity of dried shark fin imports during 2012–2017 was from Australia, though globally is not considered a top 10 exporter of shark fins. Other major sources for Macau's dried shark fin imports were Spain, mainland China and Indonesia, all of which have sizeable annual exports of shark fin products to the rest of the world. Many of Macau's re-exports were destined for Hong Kong, with less than 1% re-exported to mainland China and Singapore.

TOP 15 SOURCES FOR SHARK FIN IMPORTS



1. Australia	174,544 kg	6. Brazil	23,166 kg	11. Taiwan PoC	3,132 kg
2. Spain	144,318 kg	7. South Africa	10,628 kg	12. United States	2,525 kg
3. Mainland China	84,246 kg	8. UAE	7,685 kg	13. Singapore	2,519 kg
4. Indonesia	62,255 kg	9. Norway	6,535 kg	14. Mexico	1,694 kg
5. Argentina	54,949 kg	10. Kenya	5,493 kg	15. Saudi Arabia	1,518 kg

Figure 12: Major source countries/territories for Macau's import of shark fins (dried, salted, in brine or smoked), 2012–2017

Discrepancies in Macau data

There are major discrepancies in Macau's import data on shark fins (dried, salted, in brine or smoked) from DSEC compared with other datasets. Data from exporters on exports of shark fins (dried, salted, in brine or smoked) to Macau, as sourced from the UN Comtrade dataset, differ markedly from Macau's corresponding import data, with two times more shark fins reported in the UN Comtrade data in 2013, to 10–30 tonnes less between 2014–2016 (Figure 13). The data discrepancies between Macau's imports and exporters points not only to inaccuracies in data reporting, but also the possibility of under-reporting.

Data comparison with Hong Kong's re-exports also found that Macau had consistently reported a greater quantity of dried shark fin imports. These two datasets are comparable as many of Macau's dried shark fin imports are re-exported from Hong Kong's ports (DSEC *pers. comm.* to TRAFFIC, 4th January 2018). On average, Macau's shark fins (dried, salted, in brine or smoked) import data (~98 t per year) were more than double those of Hong Kong's equivalent shark fin re-exports data (~44 t) during the period 2012–2017 (Figure 13). Curiously, the top origins from which Macau's shark fin (dried, salted, in brine or smoked) imports were sourced—Australia and Spain—differed hugely from Hong Kong's records. For example in 2015, Macau reported imports of ~33 t from Australia and ~27 t from Spain, which is a fraction of Hong Kong's records that show a mere 83 kg from Australia and ~2.5 t from Spain as origins of its re-exports to Macau. Misreporting in either/both Macau and Hong Kong could be a factor for the differences in trade records. Hong Kong's data also reports ~327 t of frozen shark fins, as well as 736 kg of prepared or preserved shark fins that were re-exported to Macau between 2012 and 2017 that were not reported in Macau's shark fin import data.

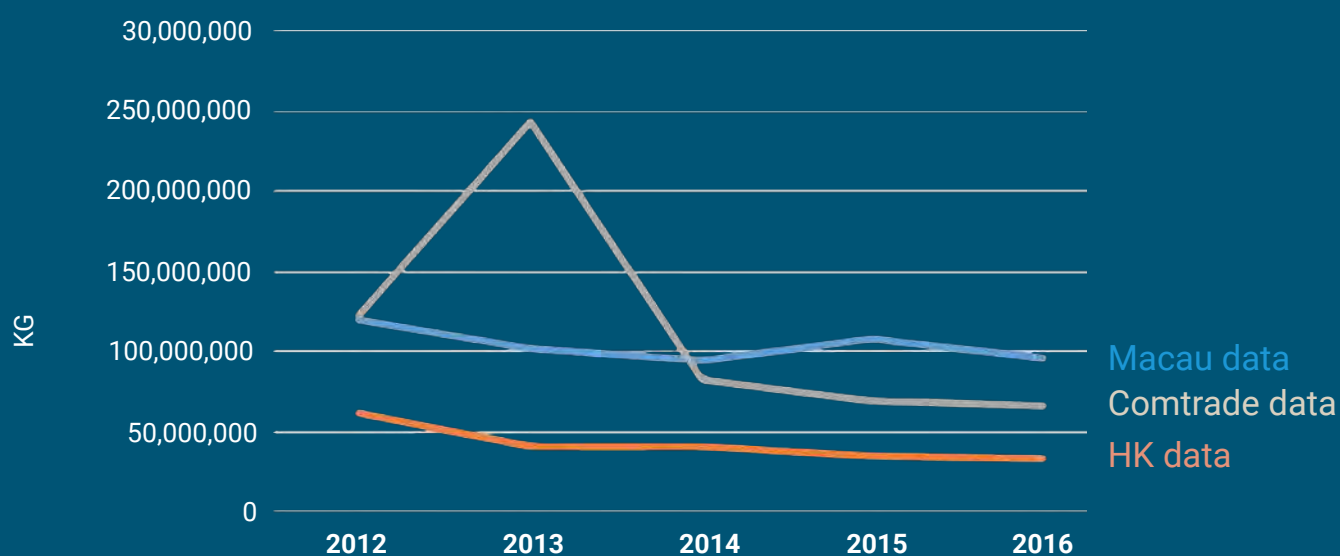


Figure 13: Data comparison between Macau (import data), Hong Kong (re-exports to Macau) and UN Comtrade (exporter data). Imports of shark fins to Macau, dried, salted or in brine, 2012–2016, kg. Source: Macau Statistics and Census Service, Hong Kong Census and Statistics Department, UN Comtrade.

HOTEL BANQUETS

Shark fins are typically offered in soup at wedding banquets, served in the middle of a 13 course meal. These banquets are commonly held at hotels or Chinese restaurants, and menus are quite standardised across the industry with shark fins a common feature amongst other high-value dishes such as abalone and sea cucumber.

To understand the serving of shark fin dishes in Chinese wedding banquets, banquet packages offered by star-rated hotels in Macau were examined. Hotel wedding banquets were selected over Chinese restaurants as banquet packages were more readily obtainable over the internet, with set menus that are likely to reflect the rest of the offerings in Macau. Hotel banquet packages were primarily sourced through the hotel's website, or requested through a hotel representative via email. All star-rated hotels²¹ that offered Chinese-style wedding banquet services and had banquet menus available were included in the survey sample. Star-rated hotels were divided into four tiers: 3-Star (including 3-Star apartment), 4-Star, 5-Star and 5-Star Deluxe. The number of hotels that serve shark fin soup, category of shark fin used and menu price were collected to produce the following results and analysis.

Number of hotels offering shark fin soup

Of the 66 star-rated hotels in Macau, 31 were found to provide Chinese wedding banquets, and 27 of those had accessible banquet menu packages for analysis. These hotels were not evenly distributed across all four categories of star-rated hotels. Higher star-rated hotels tended to offer more Chinese wedding banquets than lower star-rated hotels. Furthermore, though menus and prices change on a roughly annual cycle, the banquet menus collected should have been relevant at least until the end of 2018, as wedding couples tend to make banquet bookings around 12-months ahead of the actual reception date.

11 hotels (out of 27 hotels with menus available) offered shark fin soup

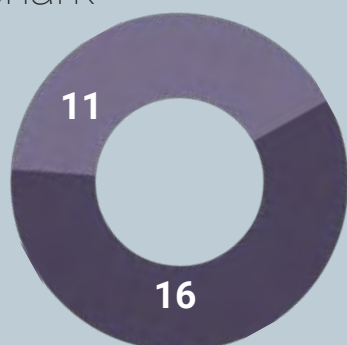
Banquet packages from 11 hotels (out of 27 hotels with menus available) offered shark fin soup in their menus—16 hotels did not have shark fins in their wedding banquet packages (Figure 14). One hotel that included shark fin soup in its banquet menu offered it as an upgrade option in all its menu packages, with non-shark fin soup (using other luxury ingredients such as abalone or birds' nest soups) as the prevailing option.

21

The full list of star-rated hotels was accessed from the website of the Macau Government Tourism Office (<http://en.macaotourism.gov.mo/index.php>) in November 2017.

40%

of surveyed hotel
wedding banquets
served shark
fin soup



66 star-rated hotels



31 advertised wedding banquets

27 wedding packages acquired



11 included shark fin dishes

Figure 14: Number of hotels surveyed and found with shark fin dishes on their menu

Hotels typically have several menus for wedding couples to choose from, within each there are slight variations of dishes on offer. Four out of the 10 hotels with shark fins in their banquet packages offered shark fins soup on all their menus; five hotels offered shark fin soups in half of their menus, while one hotel had shark fin soups on 40% of its menus. Together, this amounted to 33 menus from 11 of Macau's star-rated hotels offering shark fin soups.

Shark fin soup

Within the 33 menus, there was a total of 28 unique shark fin soup dishes offered by the hotels. From the Chinese name, the category of shark fin used could be identified in 19 (approximately 68%) of the dishes (Table 7). These included 12 dishes of Bao Chi, four dishes of Ji Chi, two dishes of Gou Chi and one dish of Yu Chun. Since all descriptions were based on the processed fin needles (Bao Chi) and fin position (Ji Chi, Gou Chi and Yu Chun), there was no information as which species of shark was used.

	Processed fin needles	Fin position			Unspecified
Names	Bundled fin needles (Bao Chi)	Dorsal fin (Ji Chi)	Lower caudal fin (Gou Chi)	Upper caudal fin (Yu Chun)	Shark fin (Yu Chi/Chi)
Number of dishes	12	4	2	1	9

Table 7: Shark fin names used in hotel wedding banquets

Pricing

The price of a wedding banquet was calculated on a per table basis, which typically seats 12 per table. These packages often come with complementary services such as photography, wedding cakes and venue decorations, although prices between hotels and wedding packages can vary according to the level of service and perceived quality being offered.

In the majority of cases, the package price did not appear to be influenced by the inclusion of shark fin soup in the menu. Indeed, the average price of wedding packages with shark fin soup was somewhat less (MOP11,969 (USD1,489)) than those without shark fin soup (MOP13,267 (USD1,650)). There was an exception to this, with one hotel offering shark fin soup as an upgrade to its wedding packages, at 5–16% increments. Price differences were more apparent for wedding packages in different star hotels, with packages in five-star deluxe hotels the most expensive, as one would expect given the higher perceived value and opulence (see Figure 15).

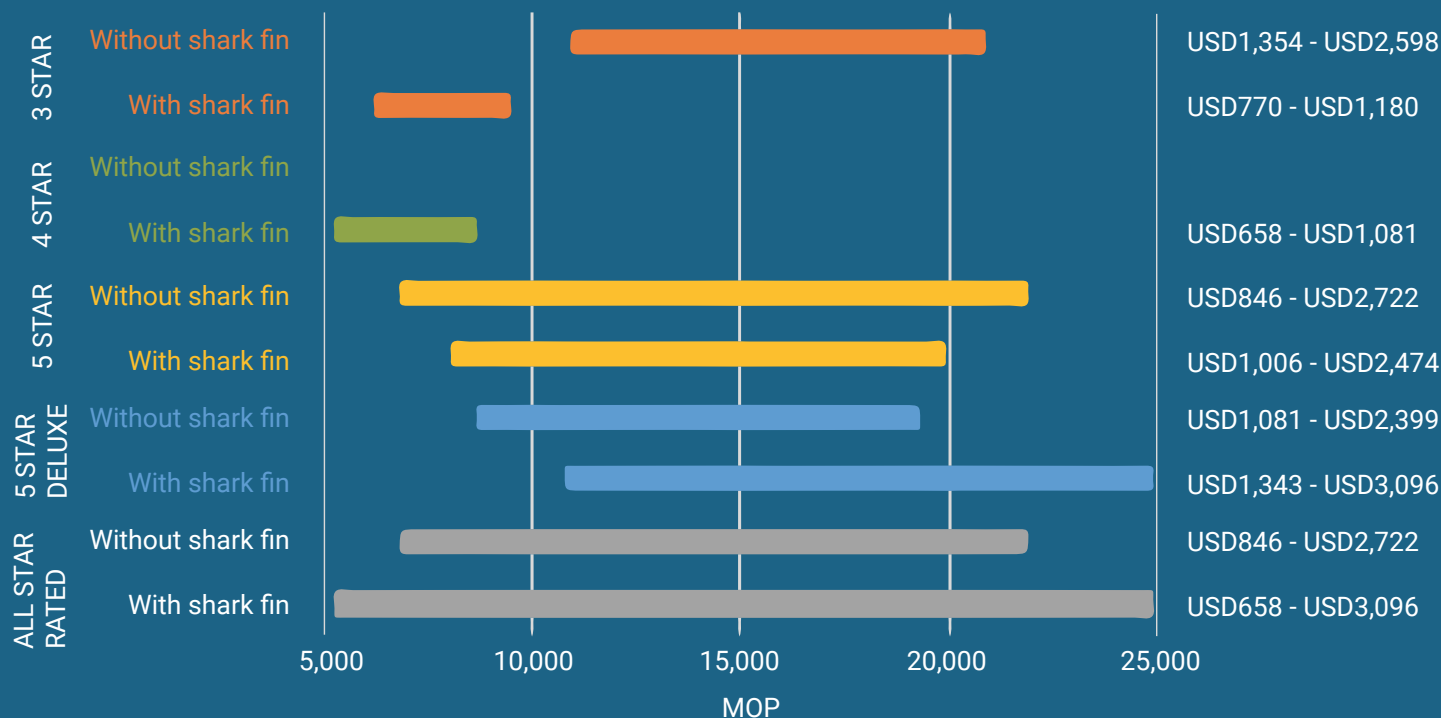


Figure 15: Price Range of Wedding Banquet Menus

CHINESE RESTAURANTS (QTSAS-LISTED)

Shark fin dishes can often be ordered à la carte at Chinese restaurants in Macau. Shark fins come in a variety of dishes, including soup, dim sum (bite-sized dishes for brunch), stir fry dishes, and with rice and noodles.

Due to the vast number of Chinese restaurants in Macau, surveys were confined to fine dining restaurants. Sampling for the surveys made use of the Quality Tourism Services Accreditation Scheme (QTSAS)²², which was developed by the Macau Government to promote tourism operators, including restaurateurs, through the scheme's recognition of their service quality. Restaurants listed by QTSAS were used so that a broad range of fine-dining Chinese restaurants could be captured independent of food quality (as emphasised in the Michelin Guide).

QTSAS classifies restaurants into four categories based on their level of service quality: deluxe restaurants, first class restaurants, second class restaurants and food and beverage establishments. The QTSAS list of restaurants²³ was filtered to include only certain (Chinese) cuisines: Chinese, Hot Pot, Shanghai, Chinese/International and Hunan. Where possible, menus were downloaded from the restaurant websites, or sourced from on-site visits. The variety of shark fin dishes, category of fin being offered, and price, were recorded.

Surveyed restaurants

In total, 69 restaurants listed on QTSAS offered the selected Chinese cuisines, with 23 restaurants classified as deluxe, 36 as first class, and 10 as second class. There were no Chinese restaurants included in the category of food and beverage establishments, which are mainly international fast-food, cafés and dessert chains.

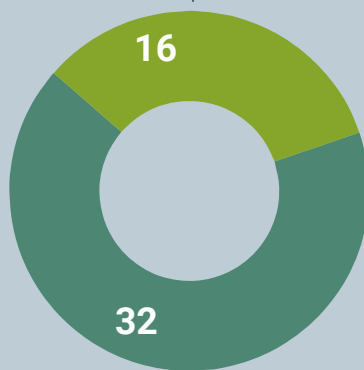
A total of 48 out of the 69 QTSAS-listed restaurants were surveyed, with ~70% of restaurants in each class category included in the sample (Figure 16). The survey found around two thirds of the Chinese restaurants surveyed (32 out of 48 restaurants) where shark fin dishes could be ordered (Figure 16). Second class restaurants were most likely to offer shark fin dishes (100% of restaurants surveyed), followed by first class restaurants (63%) and deluxe restaurants (59%).

²² http://industry.macaotourism.gov.mo/en/page/content.php?page_id=219

²³ This list of restaurants were generated on 5th December 2017 which should be equivalent to the 2016 QTSAS awardees.

66%

surveyed QTSAS
listed restaurant
serves shark fin soup



69 QTSAS-listed Chinese
restaurants



48 surveyed restaurants



32 shark fin dishes on
the menu

Figure 16: Number of QTSAS-listed restaurants with shark fin dishes on the menu

Shark fin dishes

There was a total of 179 unique²⁴ shark fin dishes recorded in the menus of the 32 Chinese restaurants serving shark fin out of the 48 surveyed. The number of shark fin dishes offered at these 32 restaurants ranged from one to 11 dishes, with an average of 5.59 dishes per restaurant. There was not a great variance amongst the different restaurant classes in the number of dishes on offer, although the average dish number was higher for second class restaurants (6.14 dishes), than first class restaurants (5.73 dishes) and deluxe restaurants (5 dishes).

The most prevalent use of shark fins in Macau's Chinese restaurants was in soup form (85% of all dishes in the surveyed restaurants), and dominant amongst all classes of restaurants (Table 8). Next most common was the use of shark fin as a main dish (8.9% of dishes), either stir-fried or steamed, while other types of dishes were offered comparatively less frequently.

²⁴ Some dishes were offered with multiple portions at different price points.

Box 1: Types of dishes with shark fins

In Macau, several types of dishes were found to use shark fins either as a main ingredient, or as one of a variety of ingredients:

1. **Soup (152 dishes)**—Shark fin soup was either double-boiled or braised with chicken broth and other ingredients (e.g. bamboo piths and whelk), then served as an appetiser before the entrée.
1. **Main dish (16 dishes)**—As a main dish, shark fin is often prepared as a stir fry or steamed with other ingredients, such as eggs and crab meat.
2. **Rice (2 dishes)**—Shark fin can also be cooked with a thick gravy and served with rice. This dish was popularised in Hong Kong and its origins can be traced back to the days of the stock market boom in the 1970s, where it is said that the dish “shark fin mixed with rice” (魚翅撈飯) was being ordered by a growing middle class as a sign of status and prestige. The dish continues to conjure up a sense of nostalgia and extravagance for people in the region.
3. **Dim sum (7 dishes)**—Shark fin is typically used for dim sum in a bite-size dumpling called Yu-Chi-Guan-Tang-Jiao (魚翅灌湯餃), or shark fin dumpling bathed in broth.
4. **Hot Pot broth (2 dishes)**—Specific to hotpot restaurants that serve raw ingredients (such as slices of meats, vegetables and noodles) for customers themselves to cook in a boiling broth for consumption. The broth typically uses meat (e.g. pork), aquatic food (e.g. fish) or spice (e.g. mala sauce). Shark fin broth is sometimes offered as one of the choices, and typically marketed at a higher price, ranging from MOP550 (USD68) to MOP2,800 (USD348) per pot.

Shark fins are sometimes included in dishes where their use may not be explicit from the name of the dish. One example is a highly regarded soup “Buddha jump over the wall, 佛跳牆”, which uses high quality dried aquatic food double-boiled in a broth, with various kinds of meat. Surveys for the report excluded such items unless the use of shark fin was explicitly mentioned.

Although currently limited, the offering of shark fins as a premium broth for hotpot appears to be a new marketing gimmick that has not yet been observed in restaurants in neighbouring Hong Kong (WWF-HK, *pers. comm.* to TRAFFIC on 14th December 2017). Close monitoring is required to track the spread of this practice amongst hotpot restaurants in this region.

	Deluxe Restaurant	First Class Restaurant	Second Class Restaurant	All Restaurants
No. of Dishes	50	86	43	179
Soup	45	70	37	152
Main Dishes	3	8	5	16
Rice	0	2	0	2
Dim Sum	2	4	1	7
Hotpot	0	2	0	2

Table 8: Variety of shark fin dishes across the surveyed QTSAS-listed restaurants

Shark fin categories

Names of shark fin dishes can be revealing as they can give an indication to the cooking method and presentation of the processed fin needles, the fin type (position of the fin on a shark) and/or the shark species used (see Appendix 1). These names therefore enable product and price differentiation amongst the different dishes offered.

Not all shark fin dishes on menus provide this additional information, but of the 179 dishes recorded in the survey, 121 dishes (~68%) could be assigned to one of the three categories of shark fin dishes. The most common name used was in the “processed fin needles” category (~53%), which describes the cooking and presentation of fin needles. Dishes that specify the shark species were the next most common, with ~40% describing the dishes as either Hai Hu Chi, Hu Die Qing Chi, Wu Yang Chi or Ya Jian Chi (Figure 17 and Table 9). Dishes that outlined the specific “fin position” were the least frequent, comprising ~7% of dishes. Interestingly, the use of species in dish names was much commoner in lower tier restaurants (second class restaurants: 58%, first class restaurants: 36%, deluxe restaurants: 29%), while deluxe restaurants favoured descriptions of the fin positions (20%, compared to 3.6% in first class and 3.2% in second class restaurants), i.e. Gou Chi, to signify quality in the shark fins used (Figure 17 and Table 9). No CITES-listed species were recorded in the survey of QTSAS-listed restaurants.

For dishes described by the presentation of the processed fin needles, restaurants were more likely to offer Bao Chi, where the cooked fins are bundled into a fan-shape, than San Chi, where the fin needles are cooked and separated into haphazard strands.

Dishes that specify the fin type used were all found to be Gou Chi, or caudal fins, amongst the surveyed restaurants. They include Jin San Gou Chi, a name that historically refers to top quality shark fins from San Francisco, though today its use denotes high quality rather than actual provenance (Wu, 2016). It is quite

CASE STUDY: SHARK FIN MARKET

possible that other fin types were included in the dishes identified in the survey, but not reflected in the name of the dish. Lin (2010) had previously found that Ji Chi, or dorsal fins, are commonly used in Bao Chi, a name used in the processed fin needles description of shark fin soup and that Yi Chi, or pectoral fins, are used in San Chi, also a processed fin needles descriptor of shark fin soup. This was also verified in discussions with traders at dried seafood outlets for this report.

Shark fin dishes specifying species used were dominated by Hai Hu Chi, or Dusky Shark *Carcharbinus obscurus*, and Hu Die Qing Chi, or Lemon Shark *Negaprion brevirostris*, with 67% and 29% of dishes in this category respectively. Much fewer dishes included the use of Wu Yang Chi, or Silky Shark *Carcharhinus falciformis* and Ya Jian Chi, or Blue Shark *Prionace glauca*, with 6% and 2% of the category each (Figure 17 and Table 9).

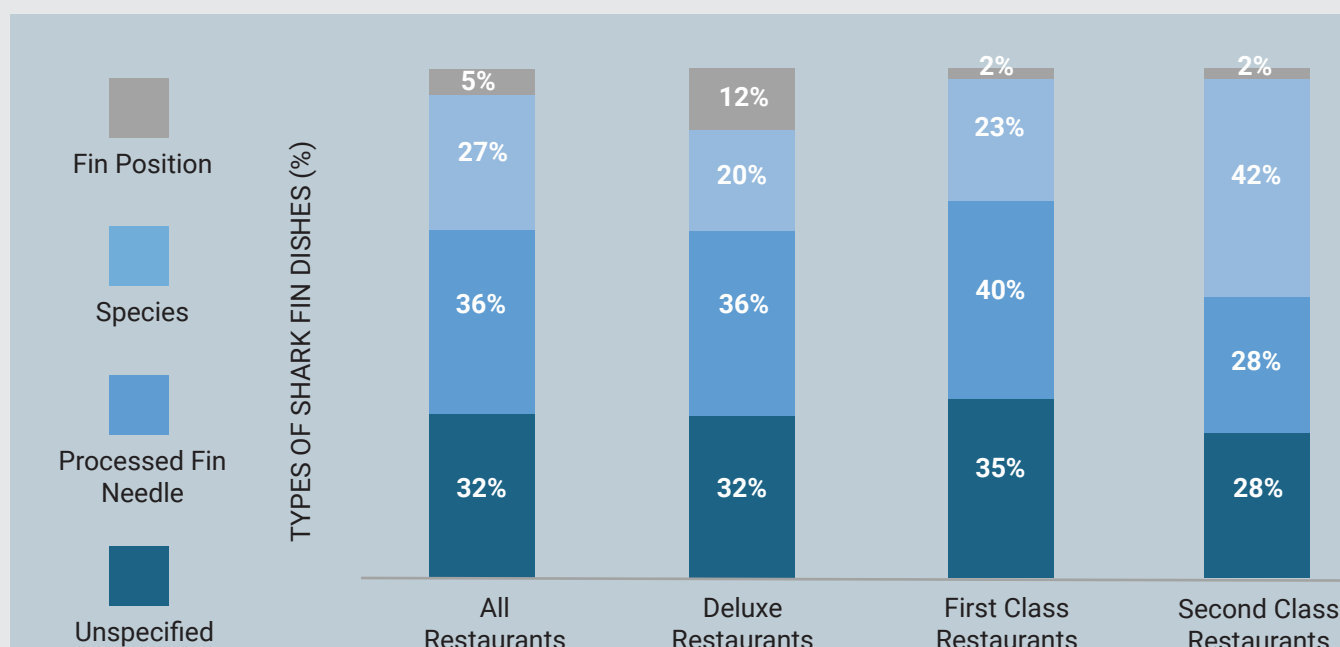


Figure 17: Distribution of shark fin dish categories by restaurant class

Category	Names	Deluxe	First Class	Second Class	All Restaurants
Processed Fin Needles	Bundled fin needles (Bao Chi)	16	27	9	52
	Loose fin needles (San Chi)	2	7	3	12
Fin position	Lower caudal fin (Gou Chi)	6	2	1	9
Species	Dusky Shark (Hai Hu Chi)	6	16	10	32
	Lemon Shark (Hu Die Qing Chi)	2	4	8	14
	Silky Shark (Wu Yang Chi)	1	0	0	1
	Blue Shark (Ya Jian)	1	0	0	1
Unspecified	Shark fin (Yu Chi/Chi)	16	30	12	58
TOTAL		50	86	43	179

Table 9: Available shark fin dishes by category

Pricing

Prices of shark fin dishes at different restaurants depended upon a variety of factors, including the serving methods (e.g. soup, stir fry, dim sum etc.), additional ingredients used (e.g. fish maw, crab meat, sea whelk etc.), portions (e.g. per head, regular (Chinese: 例), portion (Chinese: 份) etc.), quantity of shark fin used (weighted in taels), shark fin category, as well as business specific differentiation such as the prestige of restaurants, all of which makes the prices of shark fin dishes a challenge to compare. Nevertheless, an analysis of prices was conducted using soups, as the commonest form in which shark fins are offered, and included all menu prices in the sample where a per person serving equivalent for a dish could be calculated²⁵.

There were altogether 122 bowls of shark fin soup from 18 restaurants analysed. Their price ranged between MOP115 (USD14) and MOP1,888 (USD235) per person per serving, with an average price of MOP560 (USD70) per person per serving.

Average prices varied somewhat between different shark fin categories, although there were considerable price range overlaps and large variances in price points (Figure 18). Shark fin categorised by species had the highest average price per person per serving (MOP874 (USD109)), followed by the fin position (MOP603 (USD72)), processed fin needles (MOP438 (USD54)) and unspecified categories (MOP267 (USD33)).

**Price ranged
between
MOP115
(USD14) and
MOP1,888
(USD235) per
person per
serving**

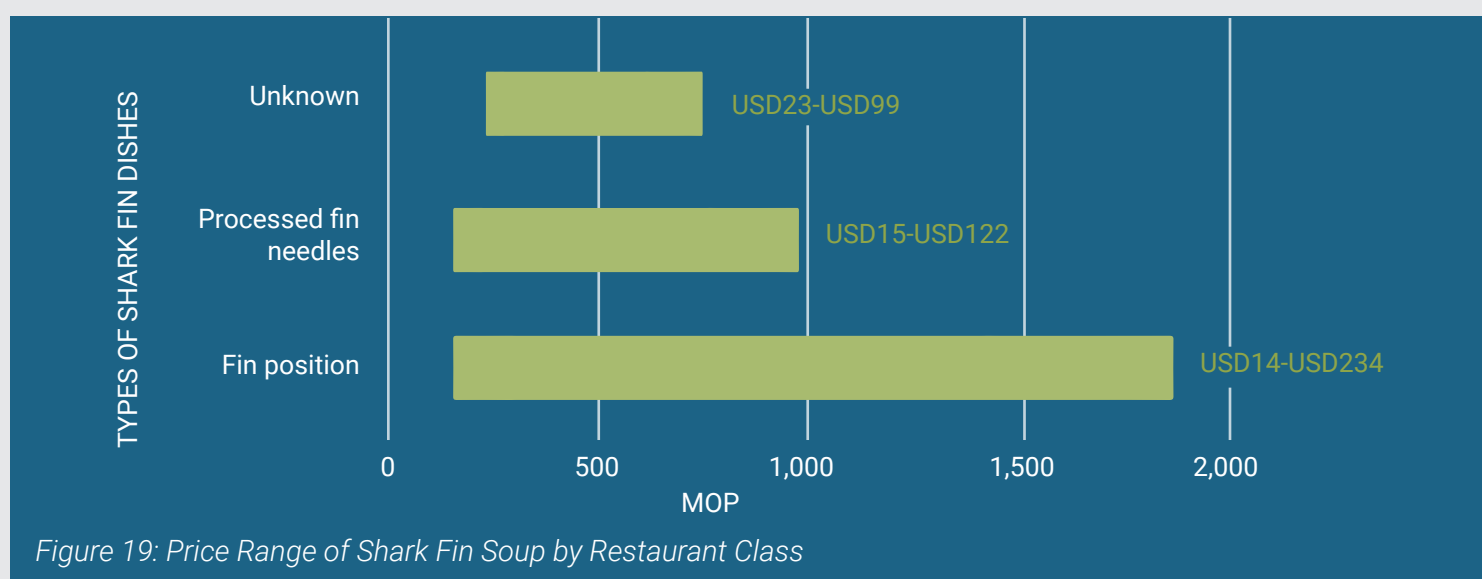
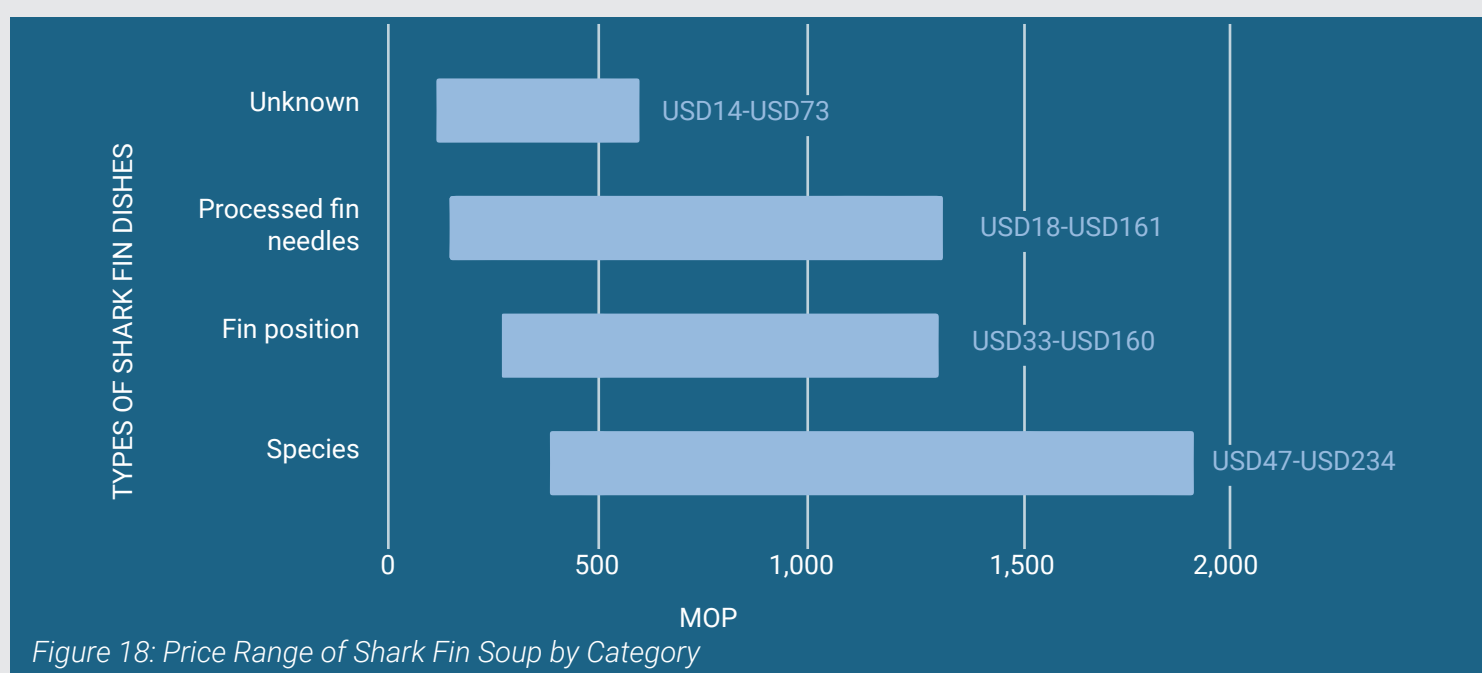
Prices for shark fin soup also varied across different restaurant classes. Deluxe class restaurants had the broadest range of prices (per person per serving) for shark fin soups (Figure 19). While the lowest price offered for shark fin soup at a deluxe class restaurant (MOP115 (USD14)) was not too dissimilar to the lowest price at other restaurant classes (between MOP123 (USD15) for first class restaurants and MOP188 (USD23) for second class restaurants), the priciest shark fin soup at a deluxe restaurant (MOP1,888 (USD235)) was far more expensive, roughly double the upper range price at other restaurant classes (MOP980 (USD122)).

However, prices were noticeably different for shark fin soup by category across restaurant classes. Average prices for shark fins by species were significantly higher in deluxe restaurants than other classes, at MOP1,198 (USD149) per person

25

Menu prices for shark fin soup were sampled where the price was given as a per person serving, or if a per person serving price could be deduced (e.g. price indicated a six person serving of shark fin soup). Should a given dish offer multiple serving portions, e.g. prices given in 4, 6, or 12 persons serving, only the smallest per serving unit (i.e. 4 in this example) was used to calculate the per person serving. Furthermore, shark fin soups using a mixture of shark fin categories were sometimes found in shark fin speciality restaurants (e.g. shark fin soup with a mix of "fin position" and "processed fin needles" descriptions) and were omitted from the analysis too.

per serving (Figure 19). Shark fin soup specifying the species name was generally priced higher in all restaurant classes, especially at deluxe and second-class restaurants where the average prices for shark fin soups in the species category were higher than other categories, at MOP1,981 (USD149) and MOP736 (USD88), respectively. Average prices for shark fin soup that specified the fin position were comparatively lower at MOP603 (USD75), while shark fin soup emphasising processed fin needles on the menu were also less expensive, at MOP438 (USD54) on average. This suggests that the use of specific species names denotes a sense of quality, differentiating the dishes from other categories of shark fin soup and justifying a higher price.



SHARK FIN SPECIALTY RESTAURANTS

Apart from QTSAS-listed restaurants, a plethora of restaurants also served shark fin dishes. Market surveys were conducted at restaurants that included “shark fin” (Yu Chi, 魚翅), and variations of the term, in the name of the restaurants and are referred to as shark fin speciality restaurants in this report. There are two main types of speciality restaurants:

1. Casual, fast dining restaurants: restaurants with minimal service, that tend to place focus on shark fin and other Chinese delicacies (e.g. abalone, fish maw and bird’s nest). Customers are expected only to spend a short amount of time there and order 1–2 dishes.
2. Dining restaurants: fine-dining restaurants not otherwise listed on QTSAS. These restaurants serve a variety of dishes, but emphasize their specialisation in shark fin dishes.

Speciality restaurants were selected through an initial search of online food and restaurant guides²⁶ and the phone directory²⁷, which revealed 15–20 of such restaurants located in Macau. Two main streets were then selected for onsite surveys, where a high number of specialty restaurants were located, namely Rua da Felicidade (福隆新街) in the Macau Peninsula (~135 m in length), and Rua Do Regedor (地堡街) in Taipa (~215 m in length). A number of the target restaurants were closed during the site survey in December 2017. Information from menus was recorded, including details about the availability of shark fin dishes, shark fin category and prices.

Restaurants

A total of seven shark fin speciality restaurants were surveyed, with four restaurants found along Rua da Felicidade, and three restaurants on Rua Do Regedor. There were more fast casual restaurants (five restaurants) than dining restaurants (two restaurants) (Table 10).

	Fast Casual Restaurants	Dining Restaurants
Macau Peninsula (Rua da Felicidade)	3	1
Taipa (Rua do Regedor)	2	1

Table 10: Number of Shark fin Specialty Restaurants Surveyed

Some of these restaurants could be operated under the same business entity, given the similarities in the restaurant name (two fast casual restaurants) and use of the same dining menu (two dining restaurants under different names).

²⁶ This included OpenRice (<https://www.openrice.com/zh/macau>) and iFood Macau (<http://www.ifoodmacau.com>)

²⁷ Macau Yellow Pages (<https://en.yip.mo>)

Shark fin dishes

Fast casual restaurants offered the highest number of shark fin dishes, ranging between five and 24 dishes per restaurant. Meanwhile, dining restaurants offered around seven shark fin dishes per restaurant. A total of 84 shark fin dishes were offered at the speciality restaurants surveyed (Table 11). The majority of dishes were shark fin soups (~93%). The rest were shark fins served with either noodles or rice (3.6%) and others (3.6%) that included boiled vegetables in shark fin stock and deep-fried shark fin balls.

	Soup	Noodle & Rice	Others
Fast Casual Restaurant (5 surveyed, 70 dishes)	64	3	3
Dining Restaurants (2 surveyed, 14 dishes)	14	0	0
Total (7 surveyed, 84 dishes)	78	3	3

Table 11: Variety of Shark fin Dishes offered by Fast Casual Restaurants

Shark fin categories

Similar to QTSAS-listed restaurants, the shark fin speciality restaurants used a variety of ways to label shark fin dishes in their menus. There were more shark fin dishes defined by species (28 dishes) than by the layout of processed fin needles in the dish (22 dishes) or by fin position (13 dishes), or a mix of both (1 dish). Nearly a fifth of all shark fin dishes were defined as Bao Chi, referring to the clustering of processed fin needles in a fan-like presentation, the most frequent descriptor used for shark fin dishes. There were also 20 dishes (out of 84) that were not further defined beyond simply “shark fins” (Yu Chi or Chi), and could not be elaborated on upon enquiries to restaurant staff (labelled as “unspecified” in Table 12).

Six different species were named in species-defined dishes. They included two CITES-listed species, i.e. Da Bai Sha Chi, or Great White Shark *Carcharodon carcharias* (CITES Appendix II) and Wu Yang Chi, or Silky Shark *Carcharhinus falciformis* (CITES Appendix II). In addition, several dishes mentioned Tian Jiu Chi, which could refer to either Niu Pi Tian Jiu Chi, or Whale Shark *Rhincodon typus* or Nuo Wei Tian Jiu Chi, or Basking Shark *Cetorhinus maximus*, both of which are listed on CITES Appendix II. Restaurant staff could not confirm which type of Tian Jiu Chi is being used, even after multiple enquiries.

Category	Names	Fast Casual	Dining	All
Processed Fin Needles (22 dishes)	Bundled fin needles (Bao Chi)	17	2	21
	Loose fin needles (San Chi)	1	0	1
Fin position (13 dishes)	Lower caudal fin (Gou Chi)	12	0	12
	Dorsal fin (Ji Chi)	1	0	1
Species (26 dishes)	Lemon Shark (Hu Die Qing Chi)	2	2	4
	Guitarfish (Qun Chi)	2	2	4
	Dusky Shark (Hai Hu Chi)	2	2	4
	Blue Shark (Ya Jian Chi)	4	0	4
	Whale/Basking Shark (Tian Jiu Chi)	8	0	8
	Silky Shark (Wu Tang Chi)	0	2	2
Mixed shark fin (3 dishes)	<i>Bundled fin needles + Lower caudal fin (Bao Chi + Gou Chi), Whale/Basking Shark + Great White Shark (Tian Jiu Chi + Da Bai Sha Chi)</i>	4	0	3
Unspecified (20 dishes)	Shark fin (Yu Chi/Chi)	18	2	20
TOTAL		70	14	84

Table 12: Available shark fin dishes by shark fin category

Pricing

Analysis of prices was limited to shark fin soups, and converted to a per person per serving price. There were altogether 80 shark fin soup dishes identified from seven restaurants. The price range was between MOP29 (USD3.50) and MOP1,288 (USD160).

Average prices of shark fin soup by category at speciality restaurants followed a trend to the QTSAS-listed Chinese restaurants, with the highest average price charged for species-specific dishes (MOP549 (USD68)) and by fin position (MOP315 (USD39)), and similar average prices for dishes defined by processed fin needles (MOP239 (USD30)), and unspecified (MOP87 (USD11)) (Figure 20).

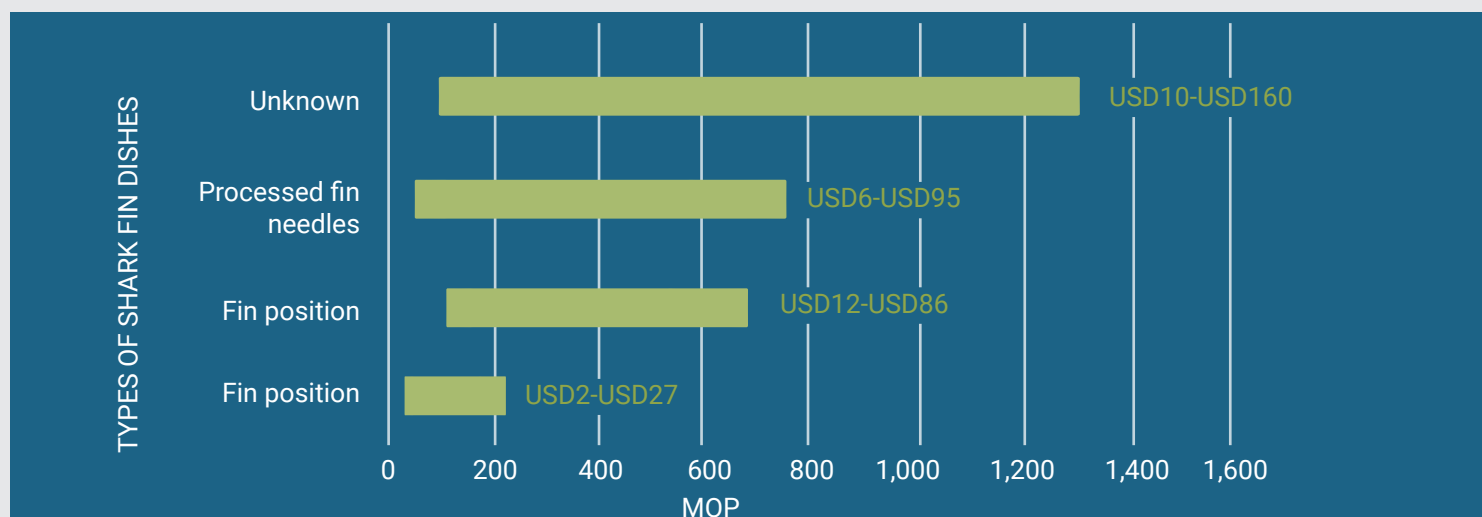


Figure 20: Price Range of Shark Fin Soup by Category

DRIED SHARK FIN

Dried shark fins can be found in numerous dried seafood outlets across Macau that operate as retailers selling directly to consumers, and as wholesalers, to supply dried shark fins for Macau's restaurants and hotels. Market surveys of dried seafood outlets were conducted over two days in December 2017 on several streets and alleyways along Avenida de Almeida Ribeiro (新馬路), Rua da Felicidade (福隆新街), Avenida de Horta e Costa (高士德大馬路) and Rua Cinco De Outubro (十月初五街), as recommended by the Macau Tourism Office as prime spots for dried seafood shopping. Rua Cinco De Outubro in particular is considered an area that caters for local residents rather than tourists. The following information was collected on dried seafood outlets:

1. Percentage of dried shark fin displayed in the shop verses other items
2. Types of dried shark fin offered and price range
3. Origin and transit countries, if labelled or mentioned by shop staff.
4. Any offering of non-dried shark fin products, i.e. Shui Pang Chi (Rehyfrated dried shark fins ready for consumption).

Dried seafood outlets

A total of 15 dried seafood outlets were surveyed, including two that served dual functions of being a dried seafood retailer and a restaurant (one shop) and a bakery (one shop). Two other outlets also had processing facilities at the back of the store, drying raw shark fins (Sheng Huo) for retail (Shou Huo) and prepared (Rehyfrated) shark fins (Shui Pan Chi) for restaurant use.

The proportion of dried shark fins compared to other dried seafood products was relatively high amongst the sample of outlets. In 12 out of the 15 surveyed outlets, dried shark fins comprised 50% or more of the products displayed for sale, with one outlet exclusively selling dried shark fins. Dried shark fins made up fewer than 25% or less of the displayed items in the remaining outlets (three outlets), with one having around 5% of their displays as dried shark fins.

In 12 out of the 15 surveyed outlets, dried shark fins comprised 50% or more of the products displayed for sale

Shark fin

In contrast to the restaurant trade, dried seafood outlets had fewer varieties of shark fin products. Just over half of the surveyed outlets had two varieties, a third had 3-4 varieties while two outlets (13%) had only one variety of dried shark fin products for sale (Figure 21).

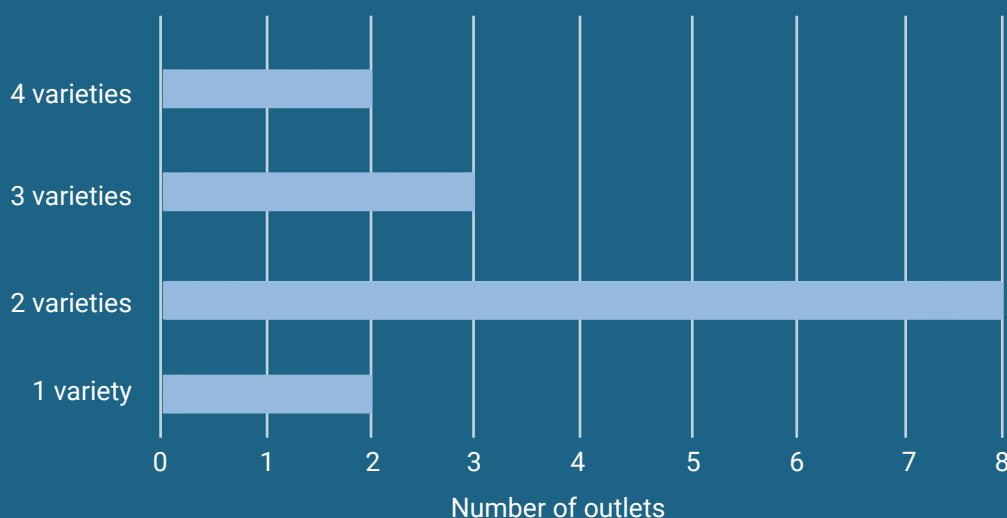


Figure 21: Number of varieties of dried shark fins at dried seafood outlets.

In addition to dried shark fin, three shops offered ready made shark fin (Shui Pan Chi), all named in the Bao Chi category.

A description of the fin position was the commonest way of naming and labelling dried shark fin products. Gou Chi, or caudal fins, were the most frequently available shark fin, being sold at 14 of the 15 surveyed outlets, followed by Ji Chi or dorsal fin (7 outlets). Some surveyed outlets included shark fins species names for some products, including Ya Jian Chi or Blue Shark (three shops), and Hai Hu Chi or Dusky Shark (two shops) (Table 13).

The origin of dried shark fin products was also noted, when labelled, or if shop staff knew when asked. Of the 15 surveyed outlets, all but four were able to disclose the origins of their shark fin stocks. Sources included Asia-Pacific countries/territories, such as Thailand, Indonesia, Hong Kong and Fiji, and Central/South American countries, including Mexico, Panama, and Brazil. Several traders said their stocks were from South America, while one trader mentioned processing being carried out in Japan, taking advantage of the country's advanced skills in dehydration technology to produce dried shark fins. Five traders also specified a transit stop in Hong Kong prior to the stocks arriving in Macau; no other locations for transit were mentioned.

CASE STUDY: SHARK FIN MARKET

Names	Fin position				Species			Unspecified
	Lower caudal fin (Gou Chi)	Dorsal fin (Ji Chi)	Upper caudal fin (Yu Chun)	Pectoral fin (Yi Chi)	Blue Shark (Ya Jian Chi)	Dusky Shark (Hai Hu Chi)	Sand Shark (Huang Jiao Chi)	Shark fin (Yu Chi/Chi)
Number of dishes	14	7	2	1	3	2	1	2

Table 13: Shark fin categories in the surveyed shops

Pricing

The unit of measure used for dried shark fins in Macau is the catty (Jin, 斤), which is equivalent to 605 g (although a conversion factor of 1 catty to 600 g is typically used by traders). Products with species-specific labels had some of the highest prices, with the maximum price of Hai Hu Chi, or Dusky Shark at MOP16,800 (USD2,084) per catty, followed by Huang Jiao Chi, possibly Sand Tiger Shark *Carcharias taurus*, costing MOP8,080 (USD1,002) per catty. Gou Chi, or caudal fins, also had a high maximum price of MOP7,800 (USD968). Dried shark fins can roughly be grouped into three tiers based on their retail price (Figure 22):

1. High-price: Hai Hu Chi (Dusky Shark), Huang Jiao Chi (possibly Sand Tiger Shark), Gou Chi (caudal fin)
2. Mid-range price: Ji Chi (dorsal fin), Ya Jian Chi (Blue Shark)
3. Low-price: Chi Pian (pectoral fin) and Yu Chun (upper caudal fin)

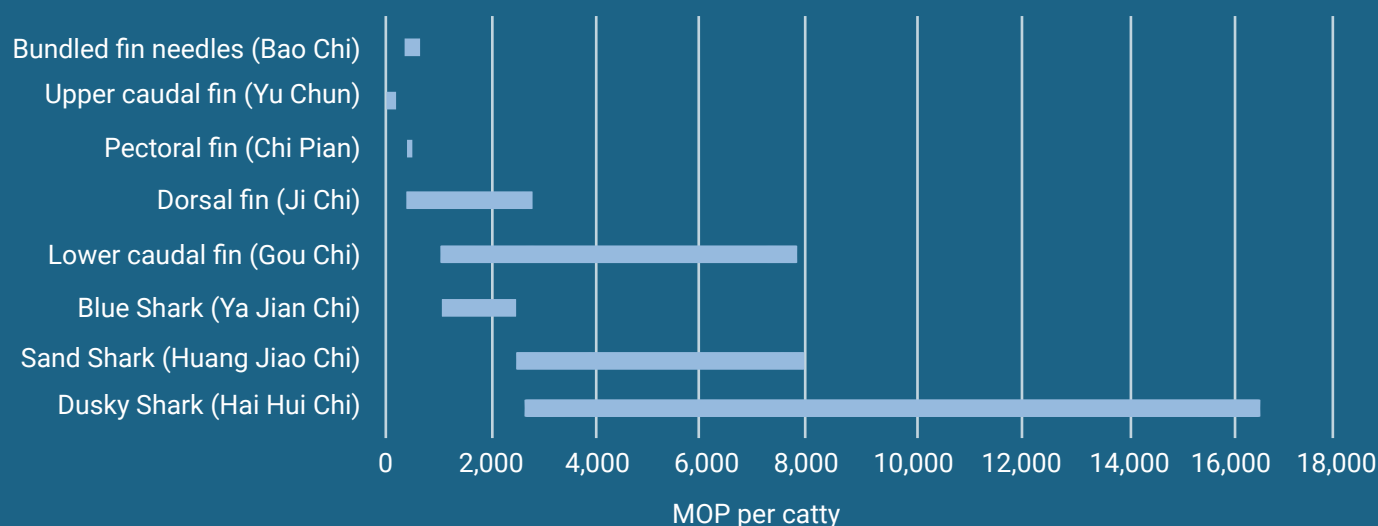


Figure 22: Pricing of shark fin by categories, MOP per catty.

Pricing—rehydrated shark fin (Shui Pan Chi)

Of the 15 surveyed dried seafood outlets, three outlets also offered Shui Pan Chi, or Rehydrated shark fins, stored in refrigerators. These simply need reheating for consumption in soup. All the Shui Pan Chi encountered was sold as Bao Chi, where fin needles are bunched together. Prices ranged between MOP280 and MOP720 per catty (USD35–90), sold with complimentary chicken stock. According to traders, the price differences depended on the size of the fin needles.

E-COMMERCE TRADE

A rapid survey of e-commerce outlets selling shark fin products was conducted. The survey was restricted to Macau based e-commerce sites (.mo domain) as a quick review of mainland China and Hong Kong-based e-commerce sites did not find any where shark fin products were dispatched from Macau.

Only one Macau-based online retail site (business-to-customer, B2C) offering dried shark fin was found. The site operates as a platform for individual companies to set up their own online pages. On the site, one company was found with two advertisements for shark fin products, including dried shark fins (250 g per pack), and a packet of soup base with dried shark fin and other dried ingredients (100 g per pack). There was minimal descriptive text, but the product packaging showed the products were simply labelled as “shark fins” (Yu Chi), with no information about their source.

**Only one
Macau-based
online retail
site offering
dried shark fin
was found**

The price for dried shark fins (MOP518 (USD64) per 250 g) equates to MOP1,260 (USD157) per catty, which is similar to the average price for dried shark fins simply labelled as Yu Chi at dried seafood outlets. The 100 g soup packet with dried shark fins was offered for MOP238 (USD30), which equates to MOP1,440 (USD179) per catty, well beyond the cost of Shui Pan Chi, or Rehydrated shark fins, sold at dried seafood outlets. The company also operates physical stores across Macau, and requires customers to pick up their online purchases in store, without the option for home delivery as is usual in online trade.



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CASE STUDY CONCLUSIONS

Trade records show that Macau imports around 100 t of dried shark fins annually, the 5th largest importer of shark fins globally, with 13% (re-)exported from the territory. The remaining dried shark fins are assumed to be consumed locally each year, a considerable level of consumption by a local population of just over 600,000, although it is believed a considerable proportion of dried shark fins are bought by tourists and taken out of Macau as personal possessions and thus not captured in re-export data (DSE, *pers. comm.* to TRAFFIC, 31st May 2018).

The volume of shark fins imported is certainly reflected in market surveys. Shark fin dishes are a prevalent feature in fine-dining restaurant menus (two thirds of QTSAS-listed Chinese restaurants surveyed). The consumption of shark fins is entrenched in the culinary traditions in Macau, and shark fins continue to be a part of wedding banquet menus (40% of hotels surveyed), although many hotel groups have succumbed to pressure to cease offering shark fins (Ho and Shea, 2015). Furthermore, the existence of numerous shark fin speciality restaurants in Macau, of which 15 were found through market surveys, points to an abundance of consumer demand for shark fin dishes.

Establishments serving and specialising in shark fins may have been sustained in part through the influx of tourists to Macau, numbers of whom have been rising for over two decades. Shark fin consumption would certainly have been spurred on by the growing number of hotels and casinos that have been built, and the accompanying growth in the number of Chinese restaurants located within them. Outside of hotels and casinos, the thoroughfares of central Macau are also hotspots for the tourist trade, and it is within these areas where many of the fine-dining and shark fin speciality restaurants are situated, and a sizeable proportion of the clientele may be visiting tourists.

However, market surveys do indicate the persistence of local demand, as evident through discussions with traders, as well as the rows of dried seafood outlets along Rua Cinco De Outubro, a key shopping area for local Macau residents, with many thriving outlets. Prices in outlets along Rua Cinco De Outubro and other dried seafood outlets in the tourists areas of the Macau Peninsula and Taipa were not significantly different. The market surveys revealed that some of the restaurants and dried seafood outlets appear to be owned by the same entity, which could be one reason for this lack of price variation.

Market surveys indicate the persistence of local demand, as evident through discussions with traders

Soup remains the commonest shark fin dish at restaurants and hotel banquets, although other forms were also offered, e.g. dim sum, stir fry. Notably, shark fins were also found in hotpot restaurants, used as part of a soup base. This type of use, according to experts in Hong Kong, was previously unknown, and could be an indication of how shark fins are finding new uses and markets.

There are some similarities in the terms used in Macau for shark fins compared to Hong Kong (Lin, 2010; Kwong, 2013; Wu, 2016) and other markets in China (Wu, 2016). Beyond the use of generic terms such as Yu Chi (shark fin), a variety of other terms are in use, referencing the fin position, the layout of fin needles in a dish, and the shark species. Amongst the various establishments, shark fin speciality restaurants used the greatest number of terms for shark fins, followed by QTSAS-listed restaurants (eight terms) and dried seafood outlets (four terms). Since Macau's dried seafood outlets are a key provider of shark fins to local restaurants, the results are counter-intuitive, as one would assume that the further up the trade chain, the greater the clarity and resolution about the type of shark being sold.

The most frequent species in dishes where the species used is explicit, include Lemon Shark *Negaprion brevirostris*, Dusky Shark *Carcharhinus obscurus* and Blue Shark *Prionace glauca*, which is consistent with shark species found in the Hong Kong market (Fields *et al.*, 2017). Although species-specific terms were not the most prevalent, survey findings reveal that the use of such terms coincides with

higher prices for the dish, which may motivate traders and restaurateurs to use species-specific terms to elevate the value of a shark fin dish. Increasing use of species-specific terms would certainly assist government agencies in monitoring the shark fin trade, given the huge variety of shark species in trade and the high proportion of threatened shark species (Fields *et al.*, 2017), as well as the need to enforce the shark fin trade in compliance with recent shark listing in the CITES appendices.

The inability to track the legality of a shark product being offered at point of purchase is worthy of review by Macau's CITES MA and the CITES Secretariat

Surveys of shark fin serving restaurants found two dishes purporting to include CITES-listed shark fins, although none were found at the dried seafood outlets surveyed. As most of the CITES-listed shark species are currently in Appendix II of the Convention, trade in these species is still possible with the relevant CITES permits. It is curious therefore that there are no records of trade in CITES-listed shark species between 2010 and 2016. Whether trade in CITES-listed species did occur in 2017, therefore justifying the species' menu listing, will need to be verified once the annual trade data become available. There is currently no way to ascertain whether a CITES-listed shark fin being offered as a restaurant dish was initially imported into Macau legally. The inability to track the legality of a shark product being offered at point of purchase, and hence the need for increased traceability after import, is worthy of review by Macau's CITES MA and the CITES Secretariat.

According to dried seafood traders, shark fin stocks in Macau originate from Asia-Pacific, Central and South America. This largely matches records in trade data, where the top 10 sources were all from these two regions, with the exception of Spain and South Africa. Although not all traders mentioned a transit country/territory, ones that did all said their stocks had been imported via Hong Kong, elaborating that shark fin consignments are consolidated in the territory before being shipped to Macau. Transit points are not provided in Macau's trade statistics data, but the territory's statistics department (DSEC) have previously confirmed that the majority of shark fin imports are transferred through Hong Kong prior to arriving in Macau. The Closer Economic Partnership Agreement (CEPA) between Macau and Hong Kong enables tariff-free trade for numerous commodities, including shark fins, which explains the benefit for Macau to make use of Hong Kong's larger port and logistics infrastructure to source goods from around the world.

CASE STUDY RECOMMENDATIONS

Encourage traceability—in order to manage trade in CITES-listed species

There is currently no way to assess and ensure CITES compliance on sharks in Macau. This is due in part to the piecemeal approach to species-specific articulation by traders in the supply chain, and also the lack of a mechanism to follow through with CITES documentation after import into Macau. A traceability system that enables CITES-listed sharks to be tracked in-country/territory is necessary for effective CITES compliance and monitoring. Given the importance of shark fin trade and consumption in the territory, the Macau Government should take a lead in developing such a system, based on guidance being developed by CITES (CITES Secretariat, 2019, CoP18 Doc 42).

Ensure industry compliance

Industry should be engaged by Macau's CITES MA to increase their awareness about CITES-listed sharks and to foster compliance with Macau's local CITES-implementing legislation. Observations from market surveys suggest many of the shark fin speciality restaurants are operated by a handful of companies, and that compliance practices could be altered if these major industry players were made aware of the legal requirements in sourcing CITES-listed sharks. Similarly, restaurants found in Macau's casino-hotels are leased through a handful of companies with licensed gambling concessions, and CITES compliance could be better enforced through a top-down directive and awareness building exercise.

Awareness campaigns targeting shark fin traders and restaurant owners could also focus on encouraging the practice of specifying the species used in shark fin dishes. Market surveys suggest this is being used to charge higher prices, and proliferating this practice with a wider range of dishes and shark species could have a positive effect on improving species specification along the supply chain, and potentially facilitating government monitoring and compliance within the industry.

Tools for effective enforcement

There have been no published cases of contravention relating to CITES-listed shark fins at the Macau border or in the market. Effective enforcement of Macau's CITES legislation is challenged by difficulties in species identification and differentiation between CITES certified and other trade. To address this, Macau's Customs officers would benefit from training in identification of CITES-listed species, although enforcement authorities should consider the use of various tools to assist them, such as DNA examination, and the use of visual identification apps for shark fins.

Consumer research

As indicated in market surveys for this report, demand for shark products in Macau derives from local residents and also tourists. Further research is necessary to understand these different consumer groups, examining what drives their demand (cultural, social, hedonistic), consumption frequency and intention, as well as their perspectives on alternatives to shark products and on shark conservation. Such consumer surveys could become the basis for campaigns and initiatives to reduce motivations to consume shark products that are derived from unsustainable or illegal sources, and the identification of viable alternatives. A study of Macau's shark consumers could also be useful as a litmus test for consumption patterns in the region—both a local population well-accustomed to consumption of shark products, and touristic behaviour that may be indicative of the wider attitudes toward shark product consumption in their respective home countries.

7. CASE STUDY: IVORY MARKET

BACKGROUND

Imports of ivory in Macau occurred in two distinct waves: the first roughly between 1981 and 1990, with the second from 2009 to 2014.

First Wave

During the ten-year period between 1981 and 1990, records in the CITES database indicate ~27 t and ~9,000 pieces of ivory were imported into Macau. However, previous studies have indicated a much greater volume of trade—the import of ivory tusks alone amounted to around 42 t in 1984, 97 t in 1985 and 71 t in 1986 (Martin, 2006). This reflects the unruliness of international laws on the ivory trade and the recording of trade at the time, and Macau's role as an entrepôt for ivory in the 1980s with the sheer volumes of trade being conducted (Milliken and Melville, 1989).

***China's export
of ivory to Macau
was most
pronounced
just as Macau
implemented
CITES into local
law in 1986***

The influx of ivory during the 1980s was due in part to the expansion of Hong Kong ivory manufacturing businesses in Macau. Macau boasts cheaper labour and rents, and importantly was not CITES compliant with respect to raw ivory trading until 1986. Hong Kong and other CITES Parties already had stricter import restrictions in place, and this loophole benefited ivory operations in Macau with the import of lower cost ivory tusks without CITES certificates. Hong Kong businesspeople in Macau would import raw ivory tusks that were not eligible for import into Hong Kong for carving in Macau, before exporting it to Hong Kong²⁸, which by then was one of the largest ivory markets in the world (Martin, 2006).

The CITES regulation that came into effect in Macau in 1986 constricted the open flow of ivory into the territory. This had a severe impact on ivory businesses, leading some to close down, move abroad, and reduce the scale of their operations. In 1989, CITES further imposed an international trade ban on ivory, making it illegal to trade in ivory unless it was pre-Convention ivory, or ivory acquired before 1975 (for Asian elephants) and 1976 (for African elephants), and accompanied with a CITES permit as proof of legality. This development dealt a further blow to Macau's ivory businesses.

Hong Kong and mainland China had dominated the ivory trade with Macau during 1981 to 1989, being the source of 99% of Macau's ivory imports. China's export of ivory to Macau was most pronounced in 1985 and 1986, with 6,420 pieces imported just as Macau implemented CITES into local law in 1986. Macau's CITES imports of ivory between 1986 and 1989 were predominantly derived from Hong Kong, which may have been pre-emptive moves by traders ahead of the international ivory trade ban that came into force in January 1990.

²⁸ CITES restrictions on worked ivory did not come into place until 1989, when a ban on all international ivory trade except pre-Convention (1976) ivory was instituted.

The influx of ivory imports during this time added considerably to Macau's legal stockpiles. Registration of ivory tusks, which began in 1986, recorded 22 t of raw tusks (Martin, 2006). This figure was reduced in 1989 to 17.7 t, which included both raw and worked ivory (Martin, 2006), and could be accounted for by the 5.5 t of ivory exported to Hong Kong during 1987–1989 as reported in the CITES trade database.

Second Wave

With CITES regulations in place, ivory trade in Macau (of pre-Convention ivory) were reduced to trace levels from 1991 to around 2008. In this period, Macau went from a territory under Portuguese administration to a Special Administrative Region of China in 1999, and experienced a reorientation of its economy with an influx of casino and hotel developments and becoming a destination for millions of foreign visitors. This led to rapid economic development of casino businesses and services to support touristic interests, including restaurants and high-end brands and outlets. The wealth of the city and its residents concurrently increased, with overall GDP rising to USD45 billion in 2016, a nine-fold increase from USD6 billion in 1999 (World Bank, accessed on 11th May 2018).

A 2014 survey inspected the ivory market in Macau to assess whether the increased affluence of local residents and visitors had enlarged the demand and availability of ivory (Martin and Vigne, 2016). The survey found ivory factories that existed more than a decade ago were no longer in business, and the majority of ivory items were located in antiques shops with few items on display. The mainland Chinese tourists flocking to Macau's casinos and other attractions has not led to higher demand for ivory products.

There was, however, an uptick in imports of pre-Convention ivory between 2009 to 2014, as reported in the CITES trade database (Figure 23). A total of 393 kg of pre-Convention ivory were imported, peaking in 2012 with 107 kg. These imports appear incongruous with the market conditions found in the 2014 survey. Just over half of the imports, or 223 pieces, were raw tusks, which is startling as the 2014 survey found no ivory carving factories for processing raw tusks into polished and/or worked ivory items remaining in Macau.

Comparisons between Macau's ivory imports and those of mainland China and Hong Kong indicate a similar pattern of trade from 2009 onwards, although Macau's were a fraction of the volumes imported by Hong Kong and mainland China (Figure 24). The congruence in CITES ivory import trends could be an indication that the same driving force—ivory demand in mainland China—was influencing all three markets.

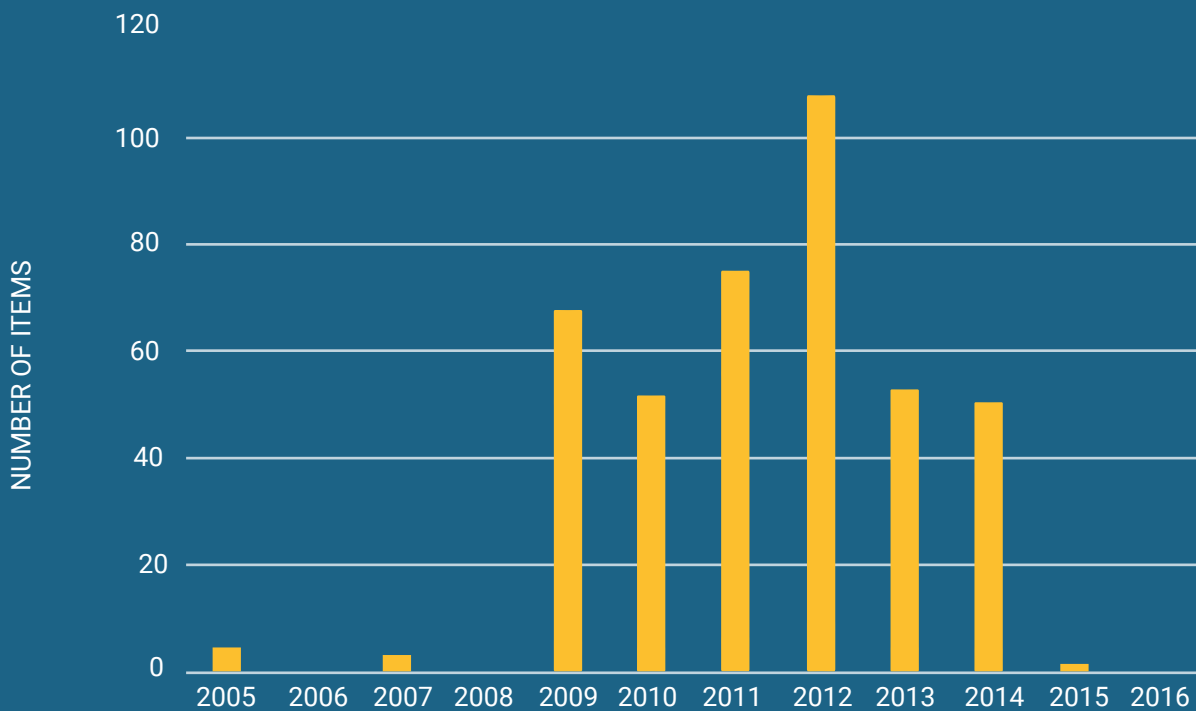


Figure 23: Import of wild-sourced elephant ivory to Macau, 2005–2016, no. of items (pieces). Wild source: I, O, U, W, blank (CITES Codes). Source: CITES trade database.

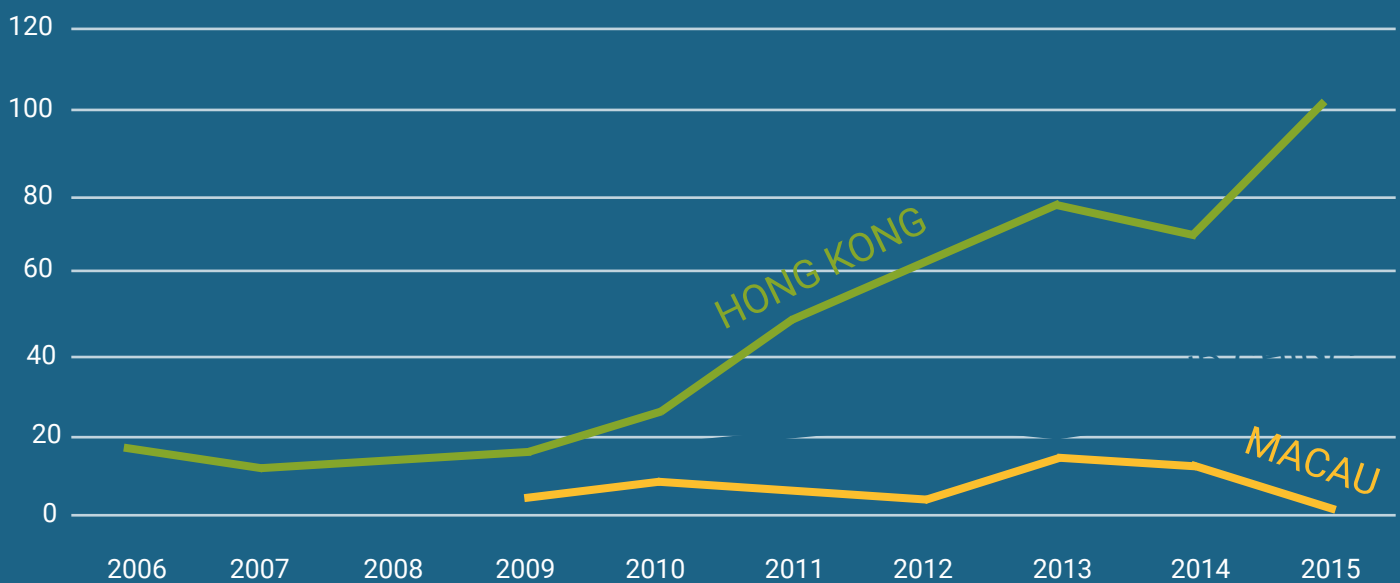


Figure 24: Comparison of imports of wild-sourced elephant ivory between Hong Kong, mainland China and Macau, 2006–2015, no. of records. Source: CITES trade database.

The expansion of legal CITES ivory trade in the three jurisdictions during 2009-2015 was accompanied by a corresponding increase in incidence of illegal ivory trade in Hong Kong and mainland China, including ivory derived from the poaching of elephants. Hong Kong Customs intercepted record levels of large-scale ivory seizures during this period, which may include the possible involvement of organised criminal networks. The expansion of mainland China's regulated ivory factories and retail outlets in the past decade also encouraged a parallel black market of unlicensed outlets to develop, as well as a thriving illegal ivory market online (Guan and Xu, 2015; Xiao and Wang, 2015; Xu *et al.*, 2016). However, both mainland China and Hong Kong have since come under increased regulatory scrutiny, with regulations to close ivory markets now in place across mainland China (in effect as of 31st December 2017), and the passage of a bill that will phase out Hong Kong's ivory market by the year 2022.

These regional developments could have an impact on Macau and its regulated ivory market, and need to be considered together with information on the current state of Macau's ivory market. This case study provides an update from ivory market surveys in Macau in the results section. Macau's recent update of its law implementing CITES (No. 2/2017) also imposes new rules on the territory's ivory traders (see section 3). Its efficacy in countering illegal trade practices will need to be assessed in the context of the modus operandi of traders in the ivory market, which is addressed in the Discussion section of the case study.

METHODS

To assess the availability of ivory products (including non-elephant ivories) in Macau, market surveys were conducted in December 2017. The surveys focused primarily on antiques and gift shops, and the survey locations and shops were identified through:

- Previous ivory surveys by Martin (2006) and Martin & Vigne (2016)
- A pilot study in August 2017 in key touristic areas of Macau
- Over-the-counter enquires with the Macau Tourism Office
- Conversations with antiques shop owners about the location of ivory-selling shops
- Information from locals and online searches

From these sources, the following eight streets were identified for detailed surveys:

- Rua De São Paulo (大三巴街)
- Rua de Nossa Senhora Do Amparo (關前後街)
- Rua Das Estalagens (草堆街)
- Av. de Almeida Ribeiro (新馬路)
- Rua da Felicidade (福隆新街)
- Rua de D. Belchior Carneiro (高園街)
- Rua de Santo Antonio (花王堂街)
- Rua da Palha (賣草地街)



These locations are concentrated in the Macau Peninsula. The researchers found no evidence of ivory outlets in Taipa and Coloane.

Information was collected on the number of ivory items displayed for sales, product type and price range. Insights from shop personnel were also gleaned on issues relating to price, and ivory origin, as well as their knowledge of recent developments in mainland China and Hong Kong concerning plans to end the trade in ivory²⁹. Shop personnel were also asked, in Cantonese, if ivory items could be taken out of Macau, to assess their knowledge of local restrictions on trade and other regulations, e.g. CITES.

RESULTS AND ANALYSIS

A total of seven shops with ivory (including mammoth ivory) on display were identified. These shops were scattered in five of the streets surveyed.

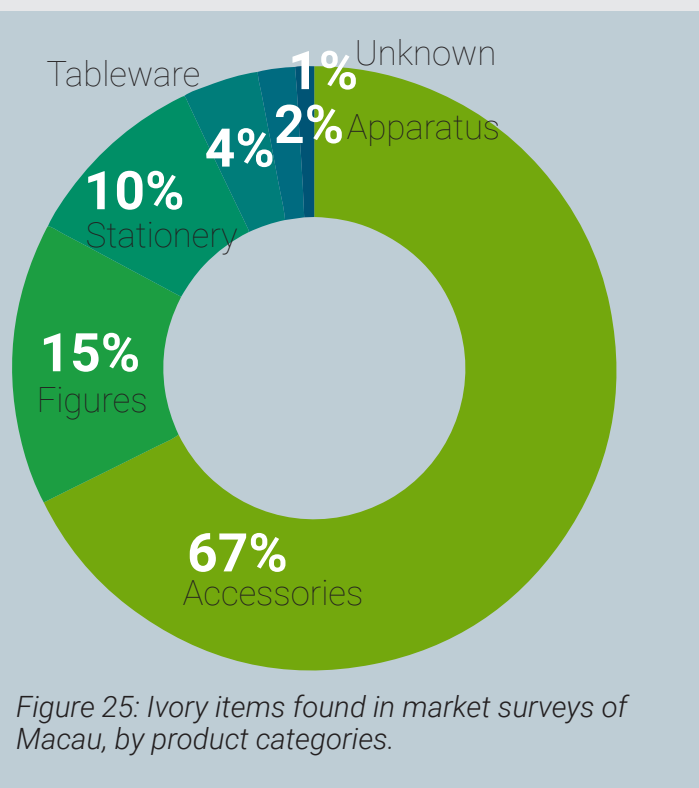
The majority of the shops with ivory items displayed (six out of seven) were antiques outlets, while the remaining shop was a specialised stationery outlet for Chinese calligraphy with an accompanying carving service for rendering the hallmark on ivory name seals.

While most shops had only a handful of ivory items, one antiques shop appeared to specialise in ivory, with more than 75% of its products comprising ivory items, amounting to ~300 pieces. The Chinese calligraphy shop had ~30 ivory items (though these accounted for only 5% of all displayed items), while other outlets had fewer than five ivory items (making up less than 5% of all displayed items).

One antiques shop claimed that its ivory products on display were all mammoth ivory, while another antiques shop had five mammoth ivory items and one walrus ivory item on display. Shop personnel in two of the shops displaying what appeared to be elephant ivory items claimed they were in fact elephant bone.

29

At the time of the survey in December 2017, mainland China was close to shutting down all legal ivory outlets (deadline of 31st December 2017), while Hong Kong had yet to vote on an amendment bill to phase out local ivory trade (which ultimately occurred one month later, on 31st January 2018).



IVORY ITEMS

Collectively, a total of 347 elephant ivory pieces (including six items claimed by traders to be elephant bones), 55 mammoth ivory pieces, and one walrus ivory piece were recorded.

Figures 38 (and Appendix II) classifies each of the elephant ivory items found into product categories, and in some cases by size, based on the criteria used in Lau *et al.* (2016). The majority of ivory items found were accessories (~67%), followed by figurines (~15%) and stationery items (~10%) (Figure 25). Small accessories such as toothpicks, pendants, lapel pins and belt buckles were the most common (51% of the total), while roughly a quarter of the ivory pieces found were very small accessory items (<2 cm in length; 24% of

the total) such as rings, earrings and bracelets, and medium-sized figurines (>10 cm in length; 12% of the total) such as crucifixes and Cantonese magic balls. Other items consisted of tableware (e.g. chopsticks and cutlery), apparatus (cigarette holders) and name seals. Four medium-size (>10 cm) polished tusks were also displayed.

Except for mammoth ivory, none of the displayed ivory items had an accompanying price tag, although prices were gathered from shop personnel, with prices outlined in Figure 40 representing the first asking price. The most expensive item found was a Cantonese magic ball (of desk-lamp size) displaying elaborate and sophisticated craftsmanship, priced at MOP13,000 (USD1,617). The least expensive ivory items were small-sized accessory items such as pendants, lapel pins and toothpicks, which were priced between MOP100 (USD12) and MOP150 (USD19). Generally, prices seemed to depend on both the size and degree of craftsmanship required. Prices for carved figurines were some of the highest found (MOP4,500 (USD560)–MOP13,000 (USD1,617)), while prices for cigarette holders, name seals and chopsticks ranged between MOP1,000 (USD124) to MOP3,000 (USD373), and even cheaper were accessory items (MOP150 (USD13)–MOP350 (USD44)), which required less material and possibly were machine carved (Figure 26).

Prices for various ivory items had largely decreased since the 2015 survey of Macau's ivory market (Martin and Vigne, 2016). Differences in craftsmanship notwithstanding, prices of ivory items by category—including pendants, chopsticks, name seals and figurines—had dropped by 5% to 76% since the 2015 survey, with the exception of earrings, where the same price was recorded, and cigarette holders, where a higher price was found in the latest survey (Table 14). Generally, the survey found a bigger price reduction for larger items (up to 20 cm, such as chopsticks, name seals and figurines) than smaller items (<2 cm, such as earrings and pendants).

The mammoth ivory pieces found in the 2017 survey were all medium to large sized figurines (10 cm to tusk size), with prices starting from MOP300,000 (>USD37,313), which is distinctly higher than elephant ivory prices.

Item	2015 (Martin & Vigne 2016) N = 22 outlets	2017 (current survey) N = 7 outlets	Percent Change
Earrings (per pair)	38	38	0%
Pendants (5 cm)	592	563	-5%
Chopsticks (per pair)	396	150	-62%
Name seal (2x6 cm)	525	125	-76%
Cigarette Holder (10–15 cm)	125	162.5	30%
Figurine (up to 20 cm)	3,250	1,125	-65%

Table 14: Comparison between past and current surveys of average (mean) prices for ivory items on display, MOP.³⁰

30 Exchange rate used in Martin & Vigne (2016) was USD1 = MOP8.07. The same exchange rate is used in this figure (i.e. including 2017 survey prices) to facilitate comparison.

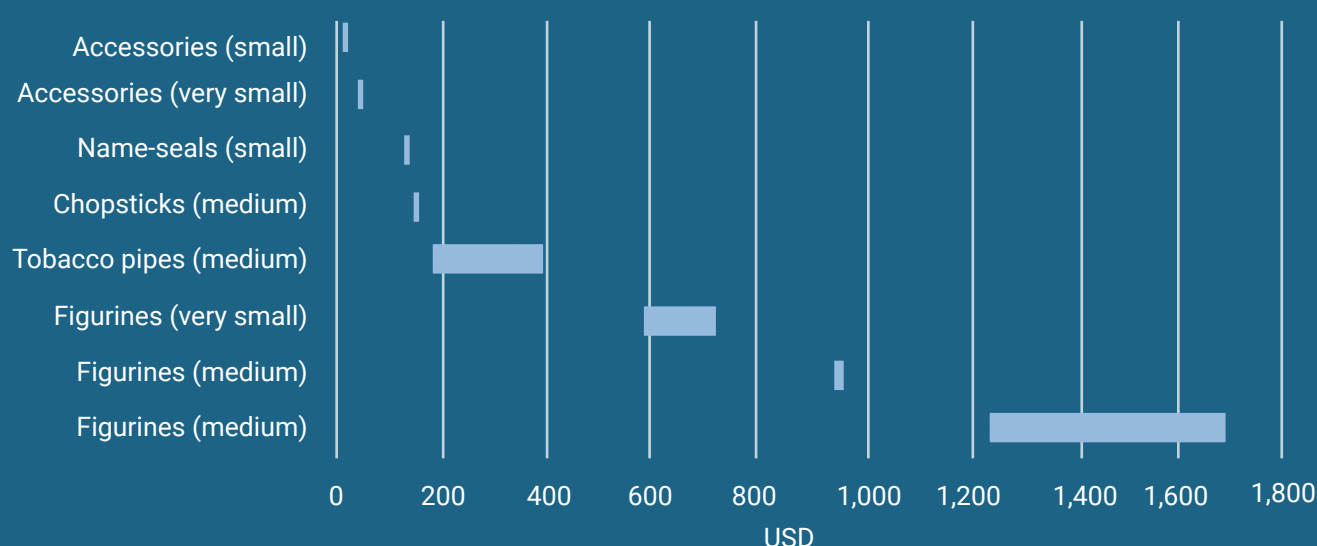


Figure 26: Price range for various ivory items on display during the 2017 survey.

Additional information on the Macau ivory market from traders

In addition to the ivory items on display, traders were also asked about the ivory market in Macau. One trader recalled a thriving ivory carving industry, with as many as 20 factories located along Rua das Estalagens (草堆街) and Rua da Palha (賣草地街) during its prime, which could relate to the 1980s (Martin, 2006). Popular products at the time included carved ivory figurines from the historic Chinese tales of the eighteen arhats (Shi Ba Luo Han, 十八羅漢), and the eight immortals crossing the sea (Ba Xian Guo Hai, 八仙過海). Prices of such ivory items could be more than MOP10,000 (~USD1,244). While numerous carvers were based at these factories, most are believed subsequently to have returned to mainland China. Today, no ivory shops can be found on Rua das Estalagens and Rua da Palha; instead it is a central location for touristic outlets selling souvenirs, pharmacies, and delicatessens.

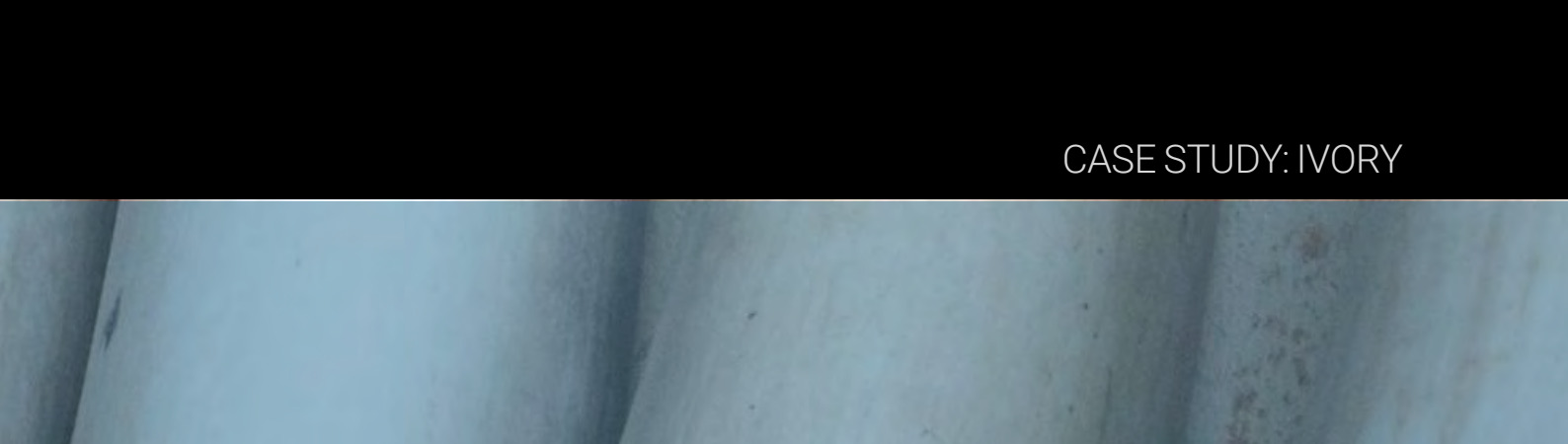
Other elephant materials

Two of the seven shops claimed their products were made of elephant bones, including five small-sized figurines in one shop, and in another, one medium-sized (~20 cm) cigarette holder. When asked how products made of elephant bone can be distinguished from other materials, both traders were unable to provide further information. These products were priced in the range MOP3,000–MOP7,000 (USD373–USD871), comparable to other ivory products of similar size.

Awareness of regulations

When asked about the age of the ivory, half of the shops with ivory items displayed suggested they were “very old”. One trader (with a small ivory stockpile) specifically mentioned CITES, and that their ivory products were pre-Convention. The remaining two shops did not appear to have any knowledge about CITES regulations. The shop with mammoth ivory on display had multiple posters in its windows promoting mammoth ivory as distinct from, and not regulated like elephant ivory.

To assess compliance with CITES and local ivory trade regulations, traders were asked if purchased ivory items could be taken out of Macau. Only one trader stated that ivory items were intended for purchase within Macau (referring to a medium-size figurine), while four traders (out of six) said that ivory items could be taken out of Macau. Representatives from the Macau Tourism Office said that ivory products are subjected to regulatory border controls and that tourists need to be responsible for complying with any legal requirements over their purchases.



One trader spoke about the recent legislative changes in Macau. The trader was told in the summer of 2017 that the government would, by October 2017, no longer allow the sale of ivory unless the items were registered with the government. The trader considered it too much hassle to comply with this given that he only possessed a handful of items, and did not intend to register their products but to sell them when requested.

One trader indicated more ivory stocks than those on display, including Buddha statues (medium-size), pendants (very small size) and bracelets (small size), with prices ranging between MOP4,000 and MOP5,000 (~USD498–622) per item.

The same trader also revealed that some of his ivory products were being sold to buyers from Hong Kong, with the intention of reselling them online after they returned to Hong Kong. This was occurring roughly on a monthly basis, with sales of three to five items each trip, with a total value of around MOP5,000–MOP6,000 (~USD622–746)—claimed to be just adequate to cover the buyer's trip expenses with something to spare. There was no further information regarding how many people were involved, or when it started, although it seems from the trader that this was occurring regularly.

CASE STUDY CONCLUSIONS

Market surveys revealed a considerable drop in the number of shops with ivory displayed since the previous market survey in 2015 (Martin & Vigne, 2016). In the roughly three-year period between surveys (January 2015–December 2017), the number of shops with ivory reduced from 22 to six shops. Indeed, a pilot study in August 2017 found two shops with ivory items on display were either no longer displaying them or appeared to have closed by the time of the December 2017 survey. Traders said that in recent years fewer people were browsing through their stores explicitly for ivory products, and even fewer making a purchase.

Fewer retail outlets did not translate to a decline in the number of ivory items displayed for sale. The 2017 market surveys found 347 ivory items for sale, compared to 327 items in the 2015 survey (Martin and Vigne, 2016) (Table 15). Ivory stocks of traders in Macau are likely to be higher than this: one trader said that further ivory items could be shown upon request.

	2004	2015	2017
Number of ivory shops	21	22	6
Number of ivory items	1,718	327	347

Table 15: Overview of ivory stocks in Macau by various parameters

Despite its smaller market size, the historical importance of Macau as a hub for ivory manufacturing and trade, as well as its remnant ivory stockpiles, should not be understated. During the first wave of ivory trade in Macau (1981–1989), the territory played an ancillary role as large ivory businesses in Hong Kong took advantage of Macau’s cheaper labour and a less restricted market for the supply of illegally-sourced ivory to establish factories and outlets for ivory processing and trade (Martin, 2004). Although the scale of ivory trade in Macau has diminished since then, a second wave of ivory imports was evident between 2009 and 2014, during which only pre-Convention ivory can legally be traded. Both neighbouring Hong Kong and mainland China recorded a similar resurgence in CITES ivory imports during the same period, which could indicate that these markets were under the same influence in the trade’s escalation and eventual decline³¹ (Lau *et al.*, 2017). With ivory market closures now in place in mainland China and soon to be implemented in Hong Kong (TRAFFIC, 2017) and Taiwan PoC (TRAFFIC, 2018), Macau will have the only domestic ivory market in the region. Whether this stimulates ivory demand in the near future remains to be seen. The current status of both legal and illegal ivory stockpiles in mainland China and Hong Kong are not well understood, but those who possess them may seek locations where the ivory could be moved, and potentially laundered. This is a potential threat to Macau and a challenge for its law enforcement, requiring strengthened borders to counteract, and sustained surveillance of local markets to uncover.

Traders’ knowledge of CITES and local laws in regards to ivory trade was generally poorly communicated to the researcher, with only one trader mentioning restrictions to trade, and no reference being made to the need for CITES permits when taking ivory out of Macau.

Much less is known about the state and scale of business-to-business trade, as alluded to by one ivory dealer of regular visits made by intermediary traders, whose purchases were intended for resale in Hong Kong and online. This is likely to involve ivory pieces not displayed but held in warehouses or backroom stockpiles. In 1989, Macau had ~17 t of registered ivory tusks (Martin, 2006), and over time, this quantity should have reduced, but the status of the registered stockpiles has not been updated in recent years. The Macau Economic Bureau has recently begun notifying ivory dealers of the need to register all ivory stockpiles, including worked

31 Mainland China is where much of the ivory processing took place prior to the mandatory closure of ivory factories in 2017, and where raw ivory imports into Hong Kong were once destined (Lau *et al.*, 2017).

ivory. However, one shopkeeper indicated his intention to bypass the system due to the paperwork requirements involved for only the few items still in his possession. This could indicate that a voluntary system for registering ivory would likely not be adhered to by all commercial ivory traders. Such observations imply that there is scope to exploit Macau's regulations on wildlife trade, and highlight the need to increase deterrence against contraventions of the revised law 2/2017.

CASE STUDY RECOMMENDATIONS

Consider a ban on local ivory trade

Macau may soon become one of the few remaining bastions in the Asia region with an open, but regulated, ivory market, and where demand for ivory could continue to flourish. One effective option for the Macau Government would be to follow the lead of other neighbouring countries/territories in closing the local ivory market, which would further reinforce current tightening of international imports and exports of ivory for commercial purposes. Outlets encountered with ivory displayed were mainly antiques shops with a handful of ivory items on their shelves, and do not appear to be dependent on ivory trade as their main form of business. A stocktake of registered ivory stockpiles by Macau's CITES MA would be useful to grasp the extent and future viability of local ivory trade, as well as a survey of ivory businesses in the city to understand the business outlook of the city's ivory traders.

Improve management and enforcement of licensed ivory traders

Lax regulations and enforcement of Macau's ivory market have in the past allowed traders to operate with impunity, with suggestions from traders that certain aspects of the ivory trade regulations can be evaded. Macau's new wildlife laws enable enforcement authorities to have greater powers and oversight over ivory traders, which should be operationalised to improve monitoring and strict enforcement of licensed outlets, and stamping out of unlicensed trade. This should include audits and annual reviews of registered commercial ivory, monitoring of trade activities through electronic transaction reports on a monthly basis to the CITES MA, and promoting transparency by publishing annual ivory trade statistics.

Border enforcement co-operation in intercepting ivory

Ivory passing through Macau's land and sea borders (for passenger ferries) has effectively become illegal, with bans on ivory imports and exports in mainland China (from 31st December 2017) and Hong Kong (from August 2018). For enforcement purposes, this adds considerable clarity about the legal status of ivory found at the border. Co-operation between enforcement officials in interrupting illegal ivory trade on either side of the border will be essential, particularly for the interception of ivory in possession for non-commercial purposes that continues to be exempted in Macau's law, and will need to be captured instead on the mainland China or Hong Kong border. Prompt reporting of seizure data to the Elephant Trade Information System (ETIS) is encouraged to ensure that ETIS analyses can more fully inform risk assessments of global trade routes of illegal ivory for CITES Parties.

8. CONCLUSION & DISCUSSION





CONCLUSION AND DISCUSSION

Effects of the economy on wildlife trade and consumption

The 1999 transfer of Macau to Chinese sovereignty and the subsequent efforts to boost the economy led by the liberalisation of the casino gambling industry, catalysed an era of unprecedented economic growth in Macau. Windfall profits from the gambling industry have been funnelled into government coffers in terms of gaming taxes, with revenues from this sector alone making up 91% of Macau's annual gross domestic product (GDP) in 2017–2018. Financial reserves of the Macau Government are among the largest in the world, enabling the city to reach the status of having the second highest GDP per capita in the world (The World Bank, 2018). Annual cash handouts to residents every year since 2008 (Macau SAR Government, 2018) from government budget surpluses suggest developments over the past two decades have added to the affluence of the population.

This rise in affluence amongst citizens could perhaps explain the increase in trade of various high-value wildlife products during the study period. This includes imports of live groupers and dried scallops, as well as imports of shark fin, fish maw, abalone and sea cucumber, considered the four “treasures of the sea” in Cantonese cuisine and amongst the top 10 aquatic food commodities with some of the highest values (USD) per kg in Macau. The four-fold increase in value of wildlife imports overall, as well as the rise in imports of CITES-listed species since 2011, could be linked to the increasing ability of some residents to afford to buy them³².

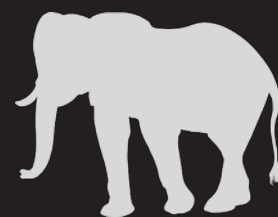
The rapid increase in inbound tourism may also have contributed to the rise in demand for wildlife products, with visitor numbers increasing four-fold in the 20 years since the 1999 handover, to over 35 million visitors in 2018 (DSEC, 2019). Tourism as a driver of wildlife demand is perhaps best illustrated by the prominence of shark fin serving restaurants in Macau, many of which are strategically located in touristic areas, though of course are equally accessible to local residents. Chinese travellers in particular are likely to associate a trip to Macau, and the thought of a potential windfall at the casino, with certain indulgences like a bowl of shark fin soup. Similarly, it is no coincidence that outlets selling high-end brands are

32 Though higher expenditure, especially on luxury items, could be restricted to certain segments of the population, including government subsidised celebrations that enable certain groups to benefit. Considering Macau is edging towards a high Gini coefficient, a measure of income inequality, the spread of wealth through gaming revenues and taxes for the Government has not improved quality of life equitably for all (Master, 2015).

located adjacent to casinos, many of these outlets are key importers of leather handbags, clothing and accessories, which may have buoyed the growth in CITES-listed and non-CITES reptile imports to Macau.

This link is less apparent between the ivory trade and increased visitor flows. The number of ivory selling outlets and displayed items, as surveyed for this report, have decreased compared with previous market surveys in 2011 (Martin and Vigne, 2015) and 2004 (Martin, 2006). Although the level of legal ivory imports (with CITES permits) was consistent throughout the period 2005–2015, there was a particular spike in 2009 and 2013 of raw ivory imports, which would appear to contradict the general downturn in the local market. These were apparently imported by a trading company in Macau that is now finding it difficult to resell them (DSE, *pers. comm.* 31st May 2018). Overall it does not appear as though tourists in Macau are shopping for ivory products, unlike other gambling hubs serving Chinese tourists, such as Mong La, a border town on the Myanmar–China border, where wildlife markets, including ivory ornamentals, thrive alongside casino establishments (Nijman and Shepherd, 2014).

Overall it does not appear as though tourists in Macau are shopping for ivory products, unlike other gambling hubs serving Chinese tourists



Effectiveness of wildlife governance

Border control

The number of cases of illegal trade in CITES-listed species in Macau have fluctuated in recent years, although the most recent full year on record shows an upturn to 101 cases in 2017. For comparison, Hong Kong, the neighbouring SAR, recorded 434 cases of infractions concerning CITES-listed species in 2017 (Customs and Excise Department, 2018) although it has more than 10 times the population. Relative to Hong Kong, Macau is not as significant a hub for illegal wildlife trade, however it is notable given its geographical size and population.

The number of visitors to Macau is expected to grow. The recent opening of the Hong Kong–Zhuhai–Macau Bridge (HZMB) on 24th October 2018, for example, has led to a 15.3% increase in tourist numbers in November 2018 compared to the same month a year earlier. This increase in the number of border crossings has evidently facilitated a greater ease of access amongst travellers to Macau, while it could concurrently be pushing current enforcement capacities to their limits.

The increase in road and sea connections is creating a need to scale up collaborations with enforcement counterparts across Macau's borders. The recently signed (13th November 2018) *Memorandum on cooperative and mutual assistance arrangements between customs administrations at the HZMB ports attests to the opportunity for collaboration*, and sets an important foundation (Hong Kong Constitutional and Mainland Affairs Bureau, 2018). This joint arrangement now needs to be operationalised to include within its purview the combating of wildlife trafficking. Recent joint operations between law enforcement agencies from Hong Kong and Guangdong illustrate the power of initiatives at a regional level to interrupt organised criminal activities. Greater involvement of Macau's enforcement agencies in regional efforts should yield benefits in reinforcing the territory's borders.

Enforcement in the market

Compliance with CITES trade provisions also needs to be enhanced amongst traders within the territory. Market surveys conducted for this report show a lack of knowledge and/or willingness amongst traders to communicate the legal restrictions in taking ivory products across borders. There is also the enforcement challenge of differentiating between CITES and non-CITES listed shark fins in the market.

DSE invests considerable efforts in awareness raising activities, particularly in targeting community groups and trade associations, such as those of antiques dealers and dried seafood traders (DSE, *pers. comm.*, 31st May 2018). Such activities are a major feature of the department's CITES mainstreaming efforts, enabling industries to keep up-to-date on the evolving CITES provisions within local laws. This should be complemented with a more punitive approach to deter wildlife crime. Increasing surveillance of the market is one way to achieve this. Among the recommendations of this report are the auditing of licensed ivory stocks, and the carrying out of intelligence-led surprise inspections. The physical presence of enforcement officers creates the perception of active surveillance of the market, which should lead to greater aversion to contravening the law.

***Market surveys
show a lack
of knowledge
or willingness
amongst traders
to communicate
the legal
restrictions in
taking ivory
products across
borders***

Working with the judiciary to reinforce the seriousness of wildlife crimes could also increase deterrence, especially if it is reflected in penalties comparable to those issued for the illegal trade of other contraband. The revised maximum penalties in the recently updated CITES implementing law in Macau also fall short of levels elsewhere in the region. The Macau SAR Government should therefore consider increasing penalties for wildlife crimes to levels that have an effective deterrent function.

RECOMMENDATIONS

The following measures are also recommended to the Macau SAR Government to improve management of wildlife trade and minimise threats to endangered wildlife:



Update wildlife crime laws

Review current laws with the intent of increasing deterrence to commit wildlife crimes, noting the currently weak penalties—for both fines and imprisonment terms—and extend capacity for tackling organised crime to include wildlife-related crimes.



Improve regulation of markets

Macau should improve its regulation of trade in priority CITES-listed species in the domestic market. This is especially important for commodities that are not easily distinguishable at the border, and would therefore be a challenge to ensure CITES compliance. Priority commodities such as shark fins and orchids would benefit from this.



Enhance enforcement

Investment should be placed in building the capacity to identify CITES-listed species, using both conventional methods (e.g. species identification training) and emerging tools (e.g. real-time PCR assay, product labels, markings and microchips), or in establishing networks between law enforcement officers and species experts from academia, non-governmental organisations (NGOs) and researchers for enabling rapid response to suspicious items and provision of advice. Collaborations with enforcement counterparts in Zhuhai, Hong Kong, and other localities, are also recommended to enable a rapid enforcement response to illegal wildlife trade.



Support responsible consumption

Develop more targeted initiatives that are directed at consumers of CITES listed species, in keeping with the recent CITES Resolution on Demand Reduction strategies to combat illegal trade in CITES listed species (CITES Resolution Conf. 17.4). For example, efforts should aim to foster a more discerning public about responsible consumption of shark products.



遠年鰻魚花膠
每斤 \$2280

遠年鰻魚花膠
每斤 \$2280

遠年鰻魚花膠
每斤 \$2280

遠年鰻魚花膠
每斤 \$2280

剝淨金山大勾翅
每斤 \$1680

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特級日本鰻魚
每斤 \$13800

頂級日本遠參
每斤 \$680

頂級日本遠參
每斤 \$680

頂級日本遠參
每斤 \$650

頂級日本遠參
每斤 \$650

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APPENDIX I: SHARK FIN CATEGORIES

The shark fins recorded in this report include an array of Chinese terms that fall into the categories of processing stage, fin needle type, fin position and species. Many of the shark fin terms found in Macau can be traced back to Chinese publications of Lin (2010) and Kwong (2013), who wrote from the perspective of traders in Hong Kong. With references to the aforementioned authors, Wu (2016) had already translated some of the dried shark fin terms in her report into the dried shark fin trade across China, i.e. Jin Shan Fin (金山翅), Ya Jian Fin (牙揀翅), Gou Fin (勾翅) and Hai Hui Fin (海虎翅). In this report, the naming framework and definition by Lin (2010) and Kwong (2013) was used and adjusted to the situation in Macau, with terms verified with traders and restaurant staff.

The Categories

Dried shark fin could be referred to the following names under four main categories. These names were not mutually exclusive, meaning that a given dried shark fin could be named one way or the other and the Chinese names could be written in several variations. For example, Ji Chi, the dorsal fin of a shark (see Fin Position) could be named as Bao Chi in the dining menu with variation of Bao Chi (鮑翅) and Pai Chi (排翅) (see Fin Needle).

1. Processed Stage: There were three major types of shark fin names in this category, i.e. Sheng Huo (生貨), Shou Huo (熟貨) and Shui Pan Chi (水盤翅).

Dried raw shark fins referred to as Sheng Huo were unprocessed fins that have been dehydrated for preservation and transport. As it goes through the procedures of removing the skin and cartilaginous platelets, leaving only the collagen fibres (fin needles, 翅針), the final product is then referred to as Shou Huo or Gan Huo (乾貨). Shark fin that endures further processing to Rehydrate the shark fin into a ready-to-serve state is called Shui Pan Chi. In retail outlets, Shui Pan Chi is typically packed in 1 catty packets (equivalent to 605 g although 600g is used as the industry standard) with pricing varying by the length and thickness of the fin needles. The purchase of Shui Pan Chi is usually complimented with chicken stock for ready made consumption.

2. Processed Fin Needle: There were two major types, i.e. Bao Chi (包翅) and San Chi (散翅).

Rehydrated shark fins served bundled together in restaurants are referred to as Bao Chi or sometimes as Pai Chi (排翅) and presented in a fan-shape. Conversely, if the Rehydrated shark fin is presented as loose fin needles, then it is typically called San Chi or sometimes Tui Chi (推翅).

To enhance a product the names are sometimes changed so that a character that has a different meaning but the same phonetic sound is used in place of the actual term, to promote good fortune and intention (Yi Tou, 意頭), e.g. restaurants have been found to use San Chi as Sheng Chi (生翅) in their menus, as well as 鮑翅 instead of the correct 包翅 for Bao Chi. Bao (鮑) may be a reference to abalone (鮑魚), another luxury aquatic food product, though it is not typically mixed with shark fins in the same dish.

3. Fin Position: There were four major types in this category, i.e. Gou Chi (勾翅), Ji Chi (脊翅), Yi Chi (翼翅) and Yu Chun (fish lip) (魚唇):

A. Gou Chi: refers to the lower part of the caudal fin (tail fin) of a shark. Due to the high concentration of thick and long fin needles without cartilaginous platelets, it is perhaps the most renowned and commonly found shark fin in dried seafood shops.

A prefix will sometimes be added in front of Gou Chi, specifying the source country or species. For example, Jin Shan (金山), the former Chinese name of San Francisco was used to market Ji Shan Gou Chi (金山勾翅), which gives the connotations of a top-quality dried shark fin product, and to many refers to the stringent and hygienic processing in the United States (Wu, 2016).

B. Ji Chi: refers to the dorsal fin of a shark. In Chinese, Ji Chi could also be written as Zhi Chi (只翅). According to Lin (2010) and discussions with traders in market surveys for this report, Ji Chi is typically used with Bao Chi (see Processed Fin Needles above) in dining menus. The fin needles of Ji Chi are shorter than those of Gou Chi.

C. Yi Chi: refers to the pectoral fin of a shark. In Chinese, Yi Chi is sometimes written as Chi Pian (翅片). According to Lin (2010) and discussions with traders in market surveys for this report, Yi Chi is typically used with San Chi (see Processed Fin Needles above). The fins were described as being the thinnest, and the fin needles the smallest, compared with other varieties described under Fin Positions.

D. Yu Chun (fish lip): refers to the upper caudal fin that does not yield any fin needles. The English translation of the term, i.e. fish lip, should not be confused as referring to the shark's mouth.

4. Species: although infrequent, the use of species-specific names for products connotes better quality with some of the highest prices found. The list of species-specific terms below were informed by previous studies (Lin, 2010; Wu, 2016; Fields *et al.*, 2017) and verification of their use, where relevant, with shark fin traders in Macau. Each term includes the trade name (transliteration and in Chinese characters), common name in English and scientific name.

1. Hai Hu Chi (海虎翅): Dusky Shark *Carcharbinus obscurus*
2. Ya Jian Chi (牙揀翅): Blue Shark *Prionace glauca*
3. Huang Jiao Chi (黃膠翅): Sand Shark (*Odontaspidae*, consisting of *Carcharias Taurus*, *Odontaspis ferox* and *Odontaspis noronhai*)
4. Hu Die Qing Chi (蝴蝶青翅): Lemon Shark *Negaprion brevirostris*

5. Wu Yang Chi (五羊翅): Silky Shark *Carcharbinus faleiformis*
6. Qun Chi (群翅/裙翅): Ring-streaked guitarfish *Rhionbatos hynnicephalus* and Giant guitarfish *Rhynchobatus djiddensis*
7. Tian Jiu Chi (天九翅), which could be:
 - a) Tian Jiu Gou Chi (天九勾翅) / Niu Pi Tian Jiu Chi (牛皮天九翅): Whale Shark *Rhincodon typus* – CITES-Listed (Appendix II)
 - b) Nuo Wei Tian Jiu Chi (挪威天九翅): Basking Shark *Catohinus maximus* – CITES-Listed (Appendix II)
8. Da Bai Sha Chi (大白鲨翅) or Niu Pi Sha Chi (牛皮鲨翅): Great White Shark *Carcharodon carcharias* - CITES-Listed (Appendix II)

In addition, the terms used for other CITES-listed (Appendix II) with Chinese names are included below:

1. Liu Qiu Chi (琉球翅): Requiem Shark *Carcharhinus longimanu*
2. Gu Yi Chi (骨翼翅): Great Hammerhead Shark *Sphyrna mokarran*
3. Chun Chi (春翅): Smooth Hammerhead Shark *Sphyrna zygaena*
4. Mi Gu Chi (密骨翅): Thresher sharks *Alopias spp.*

Lin (20210) and Kwong (2013) did not include an accompanying trade name in Chinese for the following CITES-listed (Appendix II) shark species. However, it is reasonable to believe that the following Chinese trade names could apply:

1. Requiem Shark *Carcharhinus falciformis* – Liu Qiu Chi (琉球翅)
2. Scalloped Hammerhead *Sphyrna lewini* – Chun Chi (春翅) or Gu Yi Chi (骨翼翅)
3. Mackerel Shark *Lamna nasus* – Niu Pi Sha Chi (牛皮鲨翅)

Summary

The following is a summary of the Chinese trade names for shark fin products in use:

Category	Chinese Name	English Translation	Meaning/Remarks
Processed Stage	生貨, Sheng Huo	Dried raw shark fins	Dried raw shark fins without fin needle exposed
	熟貨, Shou Huo or 乾貨, Gan Huo	Processed raw shark fins	Processed dried shark fins with fin needles only, ready for sale
	水盤翅, Shui Pan Chi	Rehydrated shark fins	Rehydrated dried shark fins ready to be reheated for consumption, retailers usually accompany Shui Pan Chi with chicken stock
Processed Fin Needles	包翅, Bao Chi or sometimes 排翅, Pai Chi with variation of 鮑翅, Bao Chi	Bundled fin needles	Rehydrated dried shark fins with fin needle intact, in fan-shape
	散翅, San Chi or sometimes 推翅, Tui Chi with variation of 生翅 Sheng Chi	Loose fin needles	Rehydrated dried shark fins with fin needle separated
Fin Position	勾翅, Gou Chi	Lower caudal fin (tail fin)	High concentration of shark fin needles can be yielded from Gou Chi, due to the lack of cartilaginous platelet. Fin needles are thick and long. The most used label for dried shark fins for sale in dried seafood shops in Macau. 金山 Jin Shan, the former Chinese name of San Francisco, USA is very often prefixed to Gou Chi. Species name can be prefixed to Gou Chi to indicate the species used in the dish.
	脊翅, Ji Chi with variation of 只翅, Zhi Chi	Dorsal fin	Ji Chi may be the most common type of shark fins used in the serving of Bao Chi.
	翼翅, Yi Chi with variation of 翅片, Chi Pian	Pectoral fin	Yi Chi may be the most common type of shark fins used in the serving of San Chi. This fin is usually very thin and the needles are the smallest amongst other types in the fin position category.
	魚唇, Yu Chun	"Fish Lip", the upper caudal fin portion without fin needles	It is a non-shark fin needle product that could be included in dining menus or sold at dried seafood shops. It has the lowest price of all shark fin products, ranging between MOP60 (USD7)–MOP280 (USD35) in this survey.
Species	海虎翅, Hai Hu Chi	Dusky Shark <i>Carcharbinus obscurus</i>	non-CITES listed, recorded in this survey
	牙擦翅, Ya Jian Chi	Blue Shark <i>Prionace glauca</i>	non-CITES listed, recorded in this survey
	黃膠翅, Huang Jiao Chi		non-CITES listed, recorded in this survey
	蝴蝶青翅, Hu Die Qing Chi	Lemon Shark <i>Negaprion brevirostris</i>	non-CITES listed, recorded in this survey

Category	Chinese Name	English Translation	Meaning/Remarks
Species	群翅, Qun Chi, with variation of 裙翅, Qun Chi	Ring-streaked Guitarfish <i>Rhionbatos hynnicephalus</i> Giant Guitarfish <i>Rhynchobatus djiddensis</i>	non-CITES listed, recorded in this survey
	天九翅, Tian Jiu Chi with variation of two species: i) 天九勾翅/牛皮天九翅, Tian Jiu Gou Chi/Niu Pi Tian Jiu Chi, Whale Shark ii) 挪威天九翅, Nuo Wei Tian Gou Chi, Basking Shark	i) Tian Jiu Gou Chi/ Niu Pi Tian Jiu Chi, Whale Shark <i>Rhiniodon typus</i> ii) Nuo Wei Tian Gou Chi, Basking Shark <i>Catrhinus maximus</i>	Tian Jiu Chi was recorded in this survey. However, the exact species it refers to is unclear. There were two possibilities, i) is CITES listed ii) is CITES listed
	大白鯊翅, Da Bai Sha Chi	Great White Shark <i>Carcharodon carcharias</i>	CITES listed, recorded in this survey
	五羊翅, Wu Yang Chi	Silky Shark <i>Carcharhinus falciformis</i>	CITES listed, recorded in this survey
	琉球翅, Liu Qiu Chi	Oceanic Whitetip Shark <i>Carcharhinus longimanu</i>	CITES listed, no record in this survey
	No Chinese name	Scalloped Hammerhead Shark <i>Sphyrna lewini</i>	CITES listed, no record in this survey
	骨翼翅, Gu Yi Chi	Great Hammerhead Shark <i>Sphyrna mokarran</i>	CITES listed, no record in this survey
	春翅, Chun Chi	Smooth Hammerhead Shark <i>Sphyrna zygaena</i>	CITES listed, no record in this survey
	密骨翅, Wu Gu Chi	Thresher sharks <i>Alopias spp.</i>	CITES listed, no record in this survey
	No Chinese name	Mackerel shark <i>Lamna sp.</i>	CITES listed, no record in this survey

APPENDIX II: NUMBER OF ELEPHANT IVORY ITEMS BY CATEGORY AND SIZE

	1 shop with 300+ items	5 shops	Total
Accessories (approximately 67%)	237	2	239
Very Small (e.g. rings, earrings, bracelets)	81	0	81
Small (e.g. toothpicks, pendants, lapel pins)	143	0	143
Small (e.g. belt buckle)	0	2	2
Medium (e.g. backscratcher, comb, necklace)	13	0	13
Apparatus (approximately 2%)	0	1	8
Medium (e.g. tobacco pipe)	7	0	7
Medium (e.g. tobacco pipe, claimed elephant bone)	0	1	1
Figures/Figurines (approximately 15%)	47	7	54
Very Small (e.g. figures, box)	0	2	2
Small (e.g. figure, claimed elephant bone)	0	5	5
Medium (e.g. crucifix, Cantonese magic ball, figures)	43	0	43
Medium (e.g. small tusk)	4	0	4
Stationery (approximately 10%)	6	30	36
Medium (e.g. brush pen holder)	6	0	6
Small (e.g. name seals)	0	30	30
Tableware (approximately 4%)	15	0	15
Medium (e.g. cutlery)	4	0	4
Medium (e.g. chopsticks)	6	0	6
Medium (e.g. vase)	2	0	2
Unknown (approximately 1%) (medium sized)	3	0	3
Total	305	40	352

*Size references:

1. Very small- Jewellery like rings, earrings. Up to ~2 cm
2. Small – 2 cm to 10 cm
3. Medium – larger than 10 cm but smaller than a tusk
4. Large – tusk size (no ivory found in this category)
5. A set – this usually for a set of tableware (knife, fork, spoons) (no ivory found in this category)



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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