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State of the global market for shark products

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Blacktip reef shark, Barcelona's Aquarium. Spain. ©FAO/Alessia Pierdomenico.

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Preparation of this document

This publication is intended to complement and inform the International Plan of Action for the Conservation and Management of Sharks, developed in 1998 to address concerns over possible negative effects of increased shark catches on vulnerable shark populations.

It is also intended as a part complement to, and part continuation of, *Shark Utilization, Marketing and Trade* (FAO Fisheries Technical Paper No. 389), published in 1999. Much of that paper remains valid, e.g. the information on product utilization and processing, as well as that on the biological characteristics of shark species. Consequently, the present publication focuses primarily on providing an updated picture of the world market for shark products using data that in many cases have only become available in recent years, such as origin and destination data. Where data are still lacking, an effort has been made to estimate the relevant figures through examination of the trade databases of the world's major traders of shark products. This increased availability of data is believed to have allowed a more accurate – and up-to-date – initial evaluation of the relative importance of each country or territory, thus providing a more solid basis on which to target investigative efforts. The country-by-country assessments of shark fin trade recording practices also constitute another important area of focus that had not previously been addressed. However, given the primary objective of this study (above), those details that are necessarily not captured in such a broad-scale review will need to be identified and elucidated in regional or country-specific studies.

Abstract

Even as the total declared value of world trade in shark products approaches USD1 billion traded per year, the state of knowledge of this increasing globalized market remains limited. This technical paper attempts to address some of the remaining information gaps. Specifically, the investigative efforts focus primarily on the available quantitative and qualitative data relating to the key market characteristics of the major traders of shark products and their trading partners. For the purposes of the publication, the world shark trade is most efficiently described in terms of the two most-traded products: shark fins and shark meat. Hence, the report is accordingly divided into two parts. Each individual country section includes a summary of the role and the relative importance of the country or territory in the global market, combined with a description of the specifics of the trade flows between it and its major trading partners, and an analysis of the apparent trends as reflected in trade statistics. Where appropriate, the section dealing with trade is complemented by an analysis of domestic trade and markets within the relevant country or territory. As no in-depth field studies were conducted to gather data specifically for this publication, its focus is necessarily on the existing trade records of the world's major traders of shark products and, in the case of the domestic trade and market sections, on primarily qualitative information from a variety of sources, compiled with the assistance of the IUCN Shark Specialist Group.

This technical paper also attempts to identify specific problems with current trade recording mechanisms, specifically with regard to their suitability for gathering detailed, consistent and accurate data on the trade in shark products. The issues in question, considered to be more widespread and pertinent in the case of shark fins, include missing data, miscoded or aggregated products, and the difficulty of identifying what proportion of traded quantities, or changes in these quantities over time, is the result of double-counting or modification by processing. This state of affairs itself represents an area where more analysis and research are needed in order to assess the appropriateness and effectiveness of current trade recording mechanisms, both for the purpose of describing and analysing the world market for shark-derived products and also for the further purpose of facilitating the monitoring of trade in CITES-listed species. As such, this publication includes, in addition to its market description and analysis component, a country-by-country evaluation of the trade recording systems for shark fins currently in place in major shark markets and producing countries. Where judged necessary, this is combined with an assessment of the likely reliability of the associated data.

Finally, this technical paper offers a concise set of expert recommendations directed at international organizations, regional fisheries management bodies, national authorities and the industry itself, each of which seeks to advance the common goal of ensuring the sustainable utilization of shark populations. These recommendations represent practical policy and industry responses to the most important issues and challenges that have arisen from the current knowledge of the state of the global market for shark products, further informed by the findings of this paper.

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Contents

Abbreviations and acronyms

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
HKCSD	Hong Kong SAR Census and Statistics Department
HS	Harmonized Commodity Description and Coding System
ICAAT	International Commission for the Conservation of Atlantic Tunas
IUCN	International Union for Conservation of Nature
IUU	illegal, unreported and unregulated (fishing)
MSC	Marine Stewardship Council
NGO	non-governmental organizations
NPOA	national plan of action
ppm	parts per million
UNEP	United Nations Environment Programme
WCO	World Customs Organization
WTO	World Trade Organization

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1. Introduction

OVERVIEW

People have caught and consumed sharks[1] for many hundreds of years, but only in recent decades have strengthening demand and the various forces of economic globalization combined to create a truly global market (Figure 1). Today, industrial and artisanal fleets from all over the world supply traditional Asian markets for shark fins (this includes skate and ray fins), while the meat of the same captured sharks is increasingly being diverted along separate supply channels to meet demand in growing markets such as Brazil. This lengthening of supply chains means that shark products will pass through multiple countries as they move along regional trading routes or undergo various processing stages before consumption. Meanwhile, a combination of demand growth and antifinning regulations intended to encourage the full utilization of carcasses has seen the market for shark meat expand considerably. In turn, this has led to fishers seeing sharks increasingly as commercial species to be actively targeted, rather than bycatch species landed unintentionally while targeting more-valuable species such as tuna or swordfish. The net effect of all these developments has been to increase fishing pressure on many shark populations, including those whose geographical distance from the end consumer had previously kept them relatively untouched. It has also greatly complicated the task of ensuring that the economic incentives driving the now-global industry do not result in the continued unsustainable utilization of shark resources. It is in this latter capacity that international bodies such as FAO can play an important role.

Official FAO statistics (FAO, 2011–2014) conservatively put the average declared value of total world shark fin imports at USD377.9 million per year from 2000 to 2011, with an average annual volume imported of 16 815 tonnes. In 2011, the last year for which full global data are available, the total declared value of world exports was USD438.6 million for 17 154 tonnes imported. The corresponding 2000–2011 annual average figures for shark meat were 107 145 tonnes imported, worth USD239.9 million; while in 2011 only, the reported figures for total world imports of shark meat were USD379.8 million and 121 641 tonnes for value and volume, respectively. The significant difference between the unit value of trade in both commodity categories reflects the much higher value of shark fins, which retail as some of the most expensive seafood items in the world. Historically, this discrepancy has sometimes seen fishers adopt the controversial policy of removing fins from the captured shark before discarding the less valuable remainder, alive or dead, in order to maximize the value of the contents of their limited hold space. However, the emergence of new markets for shark meat, together with stricter regulatory requirements, has at the same time created greater incentives for full utilization of shark carcasses and exposed the resource to a new source of demand that may increase, or at least maintain, its vulnerability to overexploitation even if demand for shark fins weakens in the long term. This is an important point to consider, as it implies that even where antifinning campaigns from environmental groups are successful in terms of decreasing consumption of shark fins

[1] For readability purposes, the term "shark" will be used interchangeably with "chondrichthyan fishes" throughout this document unless specifically stated otherwise. The term includes all elasmobranchii (true sharks, skates and rays) and holocephali (chimaeras or ghost sharks). However, depending on the specificity of capture statistics and/or commodity descriptions as reported by the country or customs territory being discussed, taxonomic classification will always be made at as low a level as possible.

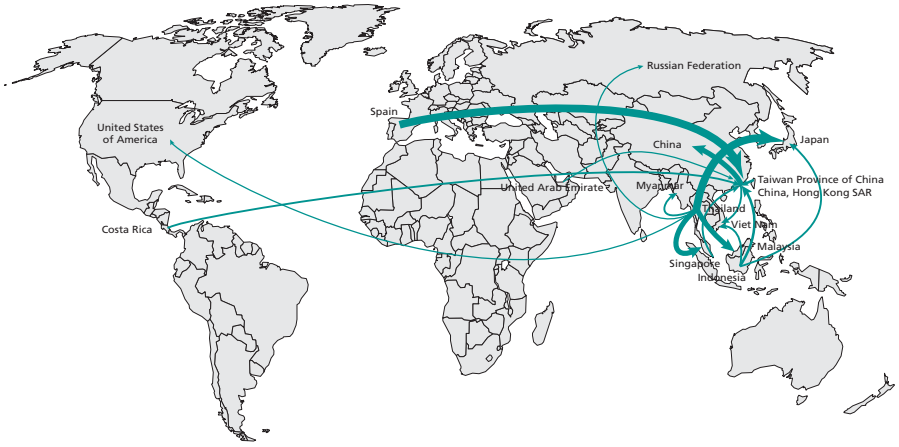
and/or reducing the prevalence of the practice among fishers of shark, the pressing need to maintain and develop monitoring and regulatory systems remains.

At the international level, the markets for meat and fins are largely distinct from each other; the world's major shark producers generally export both commodity types, but there is much less overlap between importers. However, the widespread practice of recording trade in shark fins within aggregated commodity categories together with shark meat presents obvious difficulties to any attempt to analyse the two markets separately. Even where customs authorities do maintain separate categories for meat and fins, there are often other issues with data quality and reliability that may result in a distorted or obscured picture of the real situation and inhibit meaningful analysis. The quantitative summary of the world market for shark products that constitutes the bulk of this publication must thus be considered in conjunction with an evaluation of the trade recording practices of the world's most important producers, traders and consumers of shark products, particularly in the case of shark fins.

FIGURE 1
Estimates based on FAO statistics of global trade flows of shark fins and other shark products, 2008–2011

WORLD SHARK FIN TRADE MAP

Major flows (> 300 tonnes yearly)



WORLD TRADE MAP OF NON-FIN SHARK COMMODITIES

All flows (> 1 000 tonnes yearly)

Note: The maps indicate the borders of the Republic of the Sudan for the period specified. The final boundary between the Republic of the Sudan and the Republic of South Sudan has not yet been determined.

Source: Various (see Appendix 3 for full list).

SHARK FINS

The vast majority of shark fins are destined for consumption in a relatively small selection of countries and territories in East and Southeast Asia such as China, Hong Kong SAR, Taiwan Province of China, Singapore, Malaysia and Viet Nam. However, the world's largest consumers of shark meat are found in South America and Europe, with the most important importers being Italy, Brazil, Uruguay, Spain and the Republic of Korea – the latter being the major importer of skate and ray meat. In the case of fins in particular, the term "exporters" covers both primary producers such as Indonesia and Spain, whose vessels actually catch the sharks, and re-exporters, a role that may be further divided into pure traders, such as the United Arab Emirates, and processing traders such as China. This classification is helpful but not perfect, however, and most countries are involved, if only to a minor extent, in all three activities.

As well as being one of the largest consumer markets for shark fins, China, Hong Kong SAR has historically been the most important trader of shark fins in the world, accounting for the majority of recorded imports and value since data first became available, and also establishing itself as the world's largest exporter from the late 1980s onwards. China, Hong Kong SAR is also notable for being the only customs territory that that has historically distinguished between four different types of shark fin in its trade database, maintaining separate commodity codes for frozen, dried, processed and unprocessed shark fins. China, Hong Kong SAR is not a producer, and essentially the entirety of its outgoing trade consists of shark fins that have been imported from shark-catching countries or regional traders and then re-exported. Singapore's role in the world market for shark fins is similar, while China and Taiwan Province of China produce significant volumes of shark domestically in addition to consuming, importing, processing and trading fins (as exports and re-exports). The world's major shark fin exporting producers are Spain, Indonesia, Taiwan Province of China, and Japan, although the aforementioned issues with data quality and reliability that characterize shark fin trade and shark capture statistics make it difficult to quantify accurately the relative importance of each individual producing country. In particular, it is difficult to describe in any detail the role of countries such as Costa Rica, which appear to not only produce shark fins domestically but also act as important trading hubs for neighbouring countries and other foreign fleets fishing in the surrounding waters.

SHARK MEAT

While global trade in shark fins appears to have decreased slightly since the early 2000s, global trade data show the trade in shark meat expanding steadily over the last decade or so, and the latest FAO official figure of 121 641 tonnes (USD379.8 million) of chondrichthyan meat imported in 2011 represents an increase of 42 percent by volume compared with 2000. This growth is probably driven in large part by the need to supply increasing global demand for seafood when the potential for increased production from alternative wild marine fish stocks is extremely limited. Another reason behind this growth may well be the widespread implementation of finning regulations that require that shark carcasses be landed together with their fins – often employing a 5 percent fin-to-carcass weight ratio – thus potentially prompting the development of markets on which the meat can be sold. However, it is important to recognize that the trend of rising unit values for traded shark meat across many key trading countries, even as global supply volumes increase, also points to strong and growing underlying consumer demand.

Large producers such as Spain and Taiwan Province of China, in addition to their roles as suppliers to the shark fin markets, now also export large volumes of shark meat to their respective major markets of Italy and Brazil. Uruguay has also emerged as an important re-exporter of processed shark meat, supplying the rapidly expanding

Brazilian market. European and North American markets such as the United States of America, Italy and France seem to have a preference for dogfish species, although this is possibly influenced by sanitary regulations that prevent the import of larger shark species owing to high mercury content. Demand in South and Central American and Asian markets, in contrast, appears to be mainly for larger species. The Republic of Korea is notable for importing relatively small quantities of true shark meat but accounting for the vast majority of world imports of skate and ray meat.[2] In general, markets for shark meat are much more diverse and geographically dispersed than those for shark fins, and as a result there is considerable potential for expansion.

INFORMATION GAPS AND DATA PAUCITY

Relatively little is known about the increasingly globalized market for shark-derived products. Usable data on utilization and trade are still restricted to the two most-traded products, shark meat and shark fins. Other products such as shark liver oil and shark skin are also traded, but these quantities are minimal by comparison and, consequently, the available data are extremely limited. Even in the case of meat and fins – as this publication demonstrates – the available data cover only a proportion of what is actually caught and traded. Capture statistics, although improving, are often aggregated, i.e. do not distinguish between species, while the majority of existing trade records do not allow consistent identification of product forms or reliable tracking of values or volumes traded over time. In addition, the species of shark being traded is only rarely identified in trade records for shark meat and never for shark fins. Knowledge of the specific characteristics of domestic markets is also very limited, and there is little concrete information on such things as the types of products being marketed, the prices of these products at different points in the supply chain, the profile of the typical consumer, and the major demand drivers.

This information is crucially important for those concerned with the environmental effects of the exertion of market forces on shark populations, as well as for those who are directly involved in economic activities within the industry and who are thereby dependent on the continued existence and relative abundance of sharks for their well-being. This technical paper thus attempts to do three things. First, it seeks to address, as much as the data allow, the gaps in the knowledge of the crucial features of the world market for shark products and to identify the key features and trends that characterize this market. Second, it attempts to illuminate the gaps that remain as a result of data paucity. Finally, in light of these findings, it offers a range of recommendations for policy and other action to be taken at the national and international levels to attempt to achieve the sustainable utilization of chondrichthyan populations.

[2] With the exception of the Republic of Korea, which maintained distinct commodity codes for skate and ray meat for the period under review, skate and ray meat trade statistics before 2012 were generally recorded within aggregated commodity categories and not included within non-fin commodity categories described with reference to the term “shark” or “dogfish”.

2. Key issues, trends and recommendations

KEY ISSUES AND TRENDS

As already stated, this analysis was necessarily focused on those chondrichthyan products that are most often distinguished and recorded in international trade: shark fins and shark meat. As a result, the key issues able to be identified in this document pertain primarily to trends and patterns for these two products. Issues relating to domestic utilization of these products, and trade and utilization of other products, in particular meat from skates and rays, were only partially addressed. In summarizing the information available from existing sources, the remaining data gaps for these products are highlighted below.

Aggregate trends in shark fins and shark meat

If a market were making full use of a resource, theory would suggest that traded quantities would vary in parallel, or perhaps as a slight lag, with harvested quantities. If this pattern were to hold for both shark fin and shark meat trades, it would be expected that traded quantities would peak in 2003 when chondrichthyan capture production reached its maximum level (about 896 000 tonnes) and then level out in 2008–2011 at quantities about 17 percent below the maximum (about 746 000 tonnes; Table 1). This is precisely the pattern observed for the shark fin trade. Total imported quantities reached a maximum in 2004 (about 19 500 tonnes) and subsequently dropped to levels 18 percent lower (about 16 000 tonnes) in 2008–2011 (Table 3; total export quantities show an identical result). In contrast, shark meat follows a completely different pattern. Import and export quantities rose steadily from 2000 to 2011 at an average rate of 4.5 percent per year (Tables 5 and 6). This result can be attributed to one or more of the following factors: a real increase in shark meat utilization; an increase in the quantity of shark meat in international trade; and an increase in the quantity of shark meat in international trade declared as shark meat (as opposed to undifferentiated fish). Current data are insufficient to determine which of these factors were most important, given the difficulties with validating the reliability of data that are detailed in this publication, but a combination of data-based, circumstantial and anecdotal evidence strongly supports the statement that there has been a real increase in the shark meat trade. Taking the shark fin and shark meat aggregate trends together, the results suggest that shark fin supplies are limited by the existing levels of chondrichthyan capture production, but shark meat is underutilized by international markets, and the import–export trade may thus continue to expand.

This finding, while supported by the aggregate data, probably oversimplifies the relationship between capture production and trade. One way this occurs is that a single landed shark recorded in the capture production database may be double-counted in the trade databases as an import and a re-import (or an export and a re-export) as well as in processed and unprocessed forms. Adjusted estimates have not been attempted here because few countries provide data that distinguish between country of origin (imports) and country of consignment (re-imports), and many countries do not report exports separately from re-exports. Moreover, many countries do not maintain distinct codes for unprocessed and processed sharks, and thus standardizing product weights, e.g. for water content, is impossible. These are some of the reasons why trade in shark

products is often most effectively monitored using statistics from key trade centres rather than through the compilation of global statistics.

Trends in shark fins based on key trade centres

China, Hong Kong SAR has traditionally been the most important entrepôt for the shark fin trade, not only because of its high volume of trade and its duty-free status, but also because it maintains separate codes for processed and unprocessed shark fins in both dried and frozen forms. However, some of the information value of its shark fin trade statistics has been lost as a result of changes in coding practices implemented in 2012 that re-classified frozen shark fins as frozen shark meat. As China, Hong Kong SAR imported no frozen shark meat prior to 2012, it is reasonable to assume that imports of frozen shark meat in 2012 are frozen shark fins, but with growth in the international trade of shark meat this assumption may not hold for long. Using average adjusted figures for its shark fin trade for 2008–2010 as reported by Hong Kong SAR Census and Statistics Department (HKCSD) as a baseline (about 5 600 tonnes), the trade increased by 10 percent in 2011 but fell by 22 percent in 2012, owing mainly to variation in dried, unprocessed fin imports.

The forces causing the 2012 decline in the shark fin trade observed in China, Hong Kong SAR are almost certainly external. A number of factors have all been mooted as the cause of the decline. They include: increased domestic chondrichthyan production by the Chinese fleet; new regulations in China on government officials' expenditures; consumer backlash against artificial shark fin products; increased regulation of finning; other trade bans and curbs (e.g. airline cargo policies); entry into the WTO in 2001; and subsequent trade agreements between China and China, Hong Kong SAR; and a growing conservation awareness. It is probable that all of these factors have had at least some influence, and establishing a clear basis for relative attribution may never be possible. Given the relationship between traded quantities and capture production, 2012 capture production figures, once available, may also help to interpret this trend. In any case, indications are that the shark fin trade through China, Hong Kong SAR and China will continue to contract.

In counterpoint to these declining shark fin trends in what were believed to be the largest trading centres, this publication has highlighted a number of new developments based on recent trade figures and changes in coding practices. Most strikingly, Thailand has surpassed China, Hong Kong SAR as the world's largest exporter, and estimates suggest that its main trading partners Japan and Malaysia may be among the world's top four export markets for shark fins. As all three countries are among the top 15 chondrichthyan capture production countries globally (Table 1), the full scope of their shark fin markets may be even larger than the trade-based estimates suggest. One critical uncertainty is the extent to which these exports contain ingredients such as water, other soup components or artificial shark fin. In contrast to the large high-value fins traded through China, Hong Kong SAR and Singapore, markets in Thailand, Malaysia and Japan are known to focus on small low-value fins. This suggests that the latter markets may have a higher tolerance for artificial shark fin and a greater demand for inexpensive ready-to-eat soup products. Unlike China, Hong Kong SAR and China, there are no indications of a shark fin market contraction in these countries.

Trends in shark meat based on key trade centres

Trade monitoring for shark meat is less straightforward than for shark fins as there are no dominant entrepôts whose statistics can be used as global indicators. Instead, several of the traditional markets for shark meat, i.e. Spain, Mexico and Taiwan Province of China, also have high chondrichthyan capture production that supplements imported supplies. Conflicting trends of increasing exports and decreasing imports in Spain, decreasing imports in Mexico, and increasing exports and imports in Taiwan province

of China are thus somewhat difficult to interpret. Italy, a large traditional shark meat market with little capture production of its own, has shown steady imports for many years. In contrast, even with high chondrichthyan capture production, the growth of the market in Brazil has prompted imports of shark meat to increase by eightfold since 2000 (from 2 621 to 21 067 tonnes, source: FAO) and rank Brazil as the world's largest importer in 2011. These trends caution that, while traditional markets may be stable, new markets may determine the global trend.

In some cases, consumers are receiving mixed messages about the consumption of shark meat. On one hand, some shark stocks have been certified to the Marine Stewardship Council (MSC) standard and others, although not certified, are under management designed to ensure sustainable utilization. Advocates of full utilization would argue that sharks killed inadvertently during fishing operations should be landed and consumed. In some cases, consumption of chondrichthyan meat has been advocated on ecological grounds (see section on United States of America shark meat). On the other hand, some conservation campaigns discourage the consumption of any shark products owing to conservation concerns and others emphasize the levels of contaminants that can be found in shark tissue. These messages will probably affect trade in different ways. For example, some small-bodied coastal sharks are more likely to be sought for their meat and are less likely to have high contaminant levels. Large pelagic sharks such as blue shark are more likely to be sought for their fins or used in low-grade fish ball or surimi products, and are more likely to have high contaminant levels. Consumer sentiment may thus affect demand for different sharks in different ways.

Fishing pressure on chondrichthyans is expected to be determined not only by the conspicuous demand for shark fins but also by the less visible demand for shark meat. To some extent, the increasing amounts of shark meat observed in international trade may be arising from the wider application of restrictions on shark finning, which, if complied with, may encourage landings of sharks whose fins are intended to be utilized. In this case, larger quantities of shark meat in international trade will not necessarily signal higher shark catches. However, the increasing trend observed in shark meat trade unit values in many key trading countries in the past decade, even as the quantity of shark meat being traded has risen substantially, suggest that underlying demand for these products is increasing. Thus, there are likely to be areas where demand for shark meat is sufficiently high such that, even if demand for shark fins declines, existing fishing pressure will not. To the extent that shark meat may represent an underutilized resource in some areas, it is also possible that markets may be turning to sharks to supplement protein supplies as traditional fisheries reach levels of full utilization or overutilization. These points illustrate the importance of continuing to monitor both trades and of appreciating the potential connections between them.

Trends in species composition

Shark species are not necessarily exchangeable commodities. Although artisanal fishers may utilize whatever species of sharks or other fish they catch in similar ways, markets supported by international trade often have distinct preferences. Hammerhead, oceanic whitetip and blue sharks are preferred for shark fin soup whereas dogfish, mako and tope sharks are preferred for meat. Therefore, shark population impacts exerted by fin and meat markets would be expected to differ in ways that may not be apparent in aggregated trade statistics. Moreover, non species-specific trade statistics will not identify shifts in utilization between species within each trade, for example, when less-resilient species are fished down and more-prolific species take up the slack. It might thus be expected that stable levels in both shark fin trade and capture production figures are more and more supported by blue sharks, whose reported capture production as recorded in FAO databases increased from 5 percent to 14 percent of

the total between 2000 and 2011 (Eriksson and Clarke, 2015). Shark meat supplies too may be increasingly reliant on blue sharks as identified in the markets of Japan, Spain, Taiwan Province of China and Uruguay.

Utilization of shark fins and shark meat not recorded in international trade

One of the most egregious gaps in the discussions of shark fin and shark meat markets in this document is the inability to account for domestic consumption. In some cases, for example New Zealand shark meat, an estimate was attempted by subtracting exports from capture production. In other cases, for example Costa Rica and Panama shark meat, such calculations resulted in negative numbers, possibly owing to under-reporting of national chondrichthyan capture production. This type of under-reporting is particularly likely when there is a high proportion of small-scale and/or artisanal vessels in the national fleet, i.e. as in many of the developing countries not profiled in this report (Gillett, 2011).

Quantifying domestic consumption is particularly problematic for countries with large distant-water fleets such as China, Japan and Taiwan Province of China, because in addition to uncertainties in chondrichthyan catch reporting it is often not known whether catches are attributed to the flag State or the coastal State (or landing State), or whether these catches ever reach the home market. Countries such as China, which have changed their reporting practices or have substantially altered the size of their distant-water fleets, present further challenges in terms of inconsistent biases over time.

Additional difficulties arise if products are exported in a form that is more highly processed than the form in which the fish was landed. In such cases, processing yields should be factored into the equations. However, this is often impossible, especially if commodity codes aggregate product forms. Finally, if capture production figures include discards (i.e. total catches) rather than landings only, the amount of domestic consumption may be overestimated by assuming that discarded quantities represent consumption. Each of these issues represents a major obstacle, and suggests that uncertainties regarding domestic consumption will take considerably longer to resolve than uncertainties regarding international trade.

Utilization of products other than shark fins and shark meat

Another major shortcoming of this study of chondrichthyan trade is its inability to analyse products other than shark fin and shark meat. Foremost among these unanalysed products is skate and ray meat, of particular importance because these fishes have comprised more than half of the taxonomically differentiated chondrichthyan landings for many years (Dulvy *et al.*, 2014). While some discussion of skate and ray meat has been included where possible, most countries other than the Republic of Korea did not implement HS codes to distinguish these products until 2012. Nevertheless, the potential importance of skates and rays in the global trade is underlined by the Republic of Korea's second-highest rank worldwide for total chondrichthyan meat imports, with 85 percent of these imports comprised of skates and rays. With more of the trade being captured by species-specific codes, it is expected that the potentially large and heretofore hidden skate and ray meat trade will be further uncovered.

Along with this lack of recognition of role of skates and rays in the chondrichthyan meat trade, the presence of rays in the fin trade is often overlooked. The fins of sawfishes (Pristidae), guitarfishes (Rhinobatidae) and wedgefishes (Rhynchobatidae) are highly prized by shark fin traders, and this has been a key factor in the overexploitation of these species. A recent analysis found that rays account for five of the seven most threatened chondrichthyan taxa (sawfishes, wedgefishes, sleeper rays, stingrays and guitarfishes) (Dulvy *et al.*, 2014). All sawfishes have been listed on CITES Appendix I. Despite this recognition of threats, it is not currently possible in FAO databases

– compiled from national statistics published by Members – to separate ray fins from other shark fins, or to track sawfish rostra in trade.

Other products that could not be fully addressed by this study include shark cartilage, shark livers and liver oil, and manta or mobula gill rakers. Anecdotal information (Table 7) suggests that, of these three products, shark livers and liver oil is the most widely utilized. Sources in Belize, France, India, Indonesia, Kenya, Malaysia, New Zealand, the Sudan and the United States of America noted either local or export uses for this product. The source from India noted that exports of squalene from deep-sea shark livers were twice as valuable as exports of shark meat (K.V. Akhilesh, personal communication, December 2013). The source from New Zealand indicated that local supplies of shark livers were insufficient and that raw materials had to be imported from India, Indonesia and Senegal (Carson, 2013). Cartilage production was only reported from Canada, China, Japan, South Africa, the Sudan and the United States of America but is believed to be considerably more widespread. The source from Japan indicated that pectoral fin cartilage is the best raw material for producing chondroitin; blue sharks are frequently utilized but manufacturers can also use cow and pig cartilage (Nakamura, 2004). Manta or mobula gill raker trade was only reported as an export trade from India, Indonesia, Mozambique and Sri Lanka. The source in Sri Lanka noted that these products can fetch up to USD110 per kilogram for mobula gill plates and up to USD190 for manta gill plates (D. Fernando, personal communication, December 2013).

The limitations and possibilities of chondrichthyan trade statistics

This analysis has reviewed the trade of chondrichthyan species, but it is the exploitation rate of these species, not the trade *per se*, that will ultimately determine the future of these populations. It is possible for a species to be heavily traded but still maintain robust populations; it is also possible for a species to be lightly traded but be threatened with extinction. As a result, trade is but one pathway through which sustainable utilization can potentially be assessed, monitored and controlled. For sharks, other pathways such as high seas fisheries management, national initiatives, and consumer sentiment are also critical avenues for shark conservation actions. For these reasons, it is important to avoid considering trade-based systems in isolation. By combining them with other forms of management, particularly fisheries management, both are strengthened and become more effective.

SUMMARY OF KEY ISSUES AND TRENDS

- Chondrichthyan capture production and the trade in shark fins both peaked in 2003–04 and have subsequently levelled out at quantities 17–18 percent lower (2008–2011).
- Trade in shark meat shows a different pattern of steady growth at 4.5 percent per year (2000–2011), but it is not clear what, if any, proportion of this increase was due to more species-specific commodity coding in trade databases.
- The shark fin trade appears limited by capture production, whereas the shark meat trade will probably continue to expand as the trend towards full utilization of carcasses continues.
- However, stability in trade statistics does not necessarily indicate stability in the resource. Shifts in species composition may be masked as less-resilient species are replaced by more-prolific ones.
- Trade in shark fins through China, Hong Kong SAR, which has served as an indicator for many years, rose by 10 percent in 2011 but fell by 22 percent in 2012.
- A number of factors may have contributed to the downturn in the trade of fins through China, Hong Kong SAR. They include: increased domestic chondrichthyan production by the Chinese fleet; new regulations in China on

government officials' expenditures; consumer backlash against artificial shark fin products; increased monitoring and regulation of finning; a change in trade dynamics related to China's entry into the World Trade Organization in 2001 and subsequent trade agreements with China, Hong Kong SAR; other trade bans and curbs; and a growing conservation awareness.

- At the same time, new figures suggest the shark fin markets in Thailand, Malaysia and Japan, although focused on small low-value fins, may be among the world's largest.
- Co-mingling of frozen shark fins and meat in China, Hong Kong SAR under single commodity codes in trade databases since 2012 complicates year-on-year tracking of standardized fin quantities as an indicator of global trade trends.
- Other major trading countries have since 2012 combined dry and frozen fins into a single category, severely compromising standardized trade tracking.
- As of 2012, several countries took the useful step of reporting trade in ray and skate meat separately from shark meat.
- New markets for shark meat such as that in Brazil, which has increased imports eightfold since 2000, may be driving the observed global rise in the shark meat trade.
- Trade unit values for shark meat have been following an increasing trend in the past decade or so, despite the increase in supply resulting from fuller utilization of carcasses, suggesting that underlying demand for these products is growing.
- Domestic consumption of chondrichthyans is very difficult to estimate given the uncertainties in existing data.
- Trade in skate and ray meat is poorly understood, but the Republic of Korea is the world's second-largest importer of chondrichthyan meat, and 85 percent of those imports are skates and rays.
- The trade in ray fins and rostra, frequently from highly threatened species, is also poorly understood and often overlooked.
- Trade in shark cartilage, shark livers and liver oil, and manta or mobula gill rakers was observed in a wide variety of countries for both local and export use but could not be quantified.

RECOMMENDATIONS

The following sections describe specific suggestions for improving trade monitoring systems for chondrichthyan products, and at the same time better integrating these systems with existing tools for conservation and management. Recommendations for further standardizing commodity codes to allow continued trade monitoring, integrating trade and fisheries management systems, and using trade systems to identify and support legal and sustainable fisheries are discussed below.

Further standardize commodity codes by product to allow continued monitoring

After many rounds of discussion, the WCO recommended that as of 2012 all 179 of its members should implement specific commodity codes for shark fins as well as for ray and skate meat. This should have been a positive step towards more effective monitoring of the trade. However, it has resulted in a critical loss of information from some major shark fin markets. As result, it will become increasingly more difficult to understand what role market forces are exerting on chondrichthyan resources.

Prior to 2012, trade statistics from China, Hong Kong SAR provided the most useful window on trends in the shark fin trade. One reason for this is that China, Hong Kong SAR maintains distinct commodity codes for processed, unprocessed, dry and frozen fins. These codes allow adjustments for double-counting and water content (potentially 75 percent of frozen fin weights), and calculation of a consistent

indicator of the level of trade. While its distinct codes still exist, as of 2012 traders have been directed to declare frozen shark fins as "frozen shark meat" rather than as "shark fins in brine" (as had been the case since 1998). As a result, its trade statistics for shark fins do not reflect the dominant product form (frozen), and the co-mingling of frozen fins with frozen shark meat complicates year-on-year tracking of standardized fin quantities.[3]

In Singapore, another major entrepôt for the shark fin trade, frozen fins have been reclassified twice in the past ten years – from "prepared fins" to "frozen shark meat" to, in 2012, "shark fins". While the separation of frozen shark fins from frozen shark meat was helpful, frozen and dried shark fins are now combined under a single commodity code. This means that for Singapore, as well for other countries following the WCO directive – including Indonesia and Canada, which unified prior dried and frozen fin categories – standardization of water content in fin imports is now impossible. The overall result of the shark fin coding changes appears to be of limited benefit. While the quantity of shark fins traded is now visible in a greater number of countries (e.g. New Zealand and Spain), the ability to standardize quantities and provide consistent indicators of the level of trade remains severely compromised.

On a more positive note, following the WCO recommendation to introduce a distinct commodity code for ray and skate meat, several countries (including Canada, China, France, Japan and the United States of America) joined the Republic of Korea in reporting these quantities separately. This development will be very useful for trade tracking of ray and skate meat, particularly if ray fins are, as expected, declared as shark fins.

Although there may be limited appetite for tackling this subject again at the WCO, further modification of the commodity coding system for chondrichthyan products is necessary in order for meaningful trade monitoring to continue. As a matter of urgency, separate commodity codes should be implemented for four shark fin products: unprocessed dried, processed dried, unprocessed frozen and processed frozen. If WCO recommendations fall short, this may, like the 2012 recommendations, not only result in suboptimal monitoring but also worsen existing systems. For many of the reasons outlined below, national authorities responsible for shark management should prioritize marshalling in-country support for these commodity coding changes and not leave the matter to be lost among competing trade issues and priorities. One effective means of doing this would be to modify the national commodity coding system as a gesture of support for shark conservation and management efforts.

Integrate trade and fisheries management systems

Similar to the use of product-specific commodity codes, individual countries may choose to establish species-specific commodity codes to facilitate trade monitoring of protected species. Most frequently, such efforts have been aimed at CITES-listed species. The chondrichthyans listed prior to the 2013 CITES Conference of Parties (CoP16), i.e. great white shark, whale shark, basking shark and the sawfishes, are not commonly encountered in large-scale managed fisheries. However, with the addition of porbeagle, oceanic whitetip, and three species of hammerhead sharks, as well as two species of manta rays, there is now a clear nexus between CITES-listed species and fish species required to be reported to fishery management authorities. National CITES authorities are likely to rely heavily on information from fisheries statistical systems when considering non-detriment findings in support of CITES export permits.

[3] Effective 1 January 2015, the China, Hong Kong SAR Government reversed its directive to traders to classify frozen shark fin as frozen shark meat and reinstated a separate commodity code for unprocessed, frozen shark fin (0303-8110).

Conversely, fisheries statistical systems that provide catch estimates vital for stock assessment purposes would be strengthened by linkages with trade databases.

Given this new ground for cooperation between CITES and fisheries management systems, a number of steps could be taken to ensure these systems work together for maximum effectiveness. First, using CITES as an impetus, national authorities should ensure that there are appropriate taxonomically specific data-recording systems for both fisheries and trade. At a minimum, this would include the categories of great white, whale, basking, porbeagle, oceanic whitetip and hammerhead sharks, and mantas and sawfishes, i.e. eight categories. As witnessed by the improvement in the FAO capture production databases, some national logsheet recording practices already require this or a greater level of detail. Similarly, some countries have already implemented or have begun implementing commodity codes for the CITES-listed species. Given that the CITES listing process has already considered whether these species are sufficiently distinct in trade, identifying these species in fisheries should be comparatively easier.

Second, countries should then ensure that these species-specific data are shared appropriately between their national fisheries management and CITES authorities. Such sharing would facilitate CITES non-detriment findings, provide fisheries management with feedback on catch estimates, and highlight where further data improvements are necessary. Countries may choose to use their NPOA-Sharks as the basis for describing how CITES and fisheries management authorities will cooperate on CITES-listed species, and to designate any other species for monitoring. They may also establish other frameworks for monitoring domestic consumption or other non-trade uses such as local fishmeal production.

Finally, integration of trade and fisheries management should be pursued at the international level as well. The CITES Secretariat (or United Nations Environment Programme [UNEP] World Conservation Monitoring Centre, which manages the CITES Trade Database) should establish a formal process of liaison with regional fisheries management bodies to cross-check datasets, discuss data quality issues, identify patterns and report back to national authorities. In addition to CITES, there may be opportunities for UNEP's Secretariat for the CMS to join this process and participate on coordination issues for co-listed CMS species (i.e. basking, great white, whale and porbeagle sharks and giant manta).

Use trade systems to identify and support legal and sustainable fisheries

Certification is a third area in which improved trade monitoring of chondrichthyan products can synergize other systems working towards conservation and management. Certification can take the form of documentation of legal provenance, e.g. the Illegal, Unreported and Unregulated (IUU) Catch Certificate Regulation (EC 1005/2008) of the European Union (Member Organization) or regional fisheries management organizations' catch documentation schemes (if expanded to include sharks). Certification can also take the form of conformance with a sustainability standard, e.g. the MSC standard.

Combating the trade in illegal shark fins is often mentioned as part of ongoing efforts to stamp out IUU fishing. Shark fins may be illegal products in a number of ways including, *inter alia*, being taken in violation of restrictions on shark finning, originating from a protected species or a protected area, or being sourced from IUU fishing vessels. Monitoring, control and surveillance efforts for each type of violation would benefit from reliable information on quantities and patterns of shark fins in trade. By maintaining ready access to the type of integrated trade and fishery datasets advocated above, national authorities could respond quickly to information requests from enforcement personnel at the national, regional or international level (e.g. INTERPOL or the UN Office on Drugs and Crime). These data need not in

all cases be species-specific, but information standardized by product form will be essential to generate estimates of the number or weight of sharks/rays involved.

Even if chondrichthyan meat or fin products are legally produced, there are likely to be growing concerns, particularly in some markets, about the sustainability of this trade. While it should be recognized that research into the distribution of the costs and benefits of certification along the supply chain is ongoing, it is generally accepted that some certification systems often provide a reward in terms of a market advantage to those fisheries that can demonstrate sustainability and traceability. In the case of chondrichthyan species, by providing verification data to support the chain of custody, improved trade recording systems for these species can help consumers distinguish between sustainable and unsustainable fisheries. One example of the need for this type of verification is the announcement by one airline company that in future it will only accept shark fin cargo originating from sustainable sources.[4]

It is important to acknowledge that chondrichthyan catches support fishers' livelihoods and local economies, as well as provide a key source of protein to consumers. However, chondrichthyan resources must be managed sustainably to ensure continued use without damage to populations and ecosystems. At an international scale, tracking the products of these fisheries through trade monitoring helps to identify stakeholders and creates opportunities for those stakeholders to connect and contribute to systems that support sustainable use. At the local or national scale, documenting domestic utilization and trade can provide important information for fisheries management and allow better long-term monitoring of stock status.

SUMMARY OF RECOMMENDATIONS

- Separate commodity codes should be implemented for unprocessed dried, processed dried, unprocessed frozen and processed frozen shark fins as a matter of urgency in order to continue meaningful trade monitoring.
- National authorities should consider amending their national commodity coding systems to include these categories as a gesture of support for shark conservation and management while advocating for a World Customs Organization (WCO) directive.
- National authorities should ensure that there are appropriate taxonomically specific data recording systems for both fisheries and trade concerning species pertinent to both the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and fisheries management authorities.
- National authorities should ensure that such taxonomically specific data are shared between relevant national systems, and use national plans of action (NPOAs) for the conservation and management of sharks to consider further opportunities for trade monitoring to contribute to improved management.
- Intergovernmental organizations such as CITES, Convention on the Conservation of Migratory Species of Wild Animals (CMS) and regional fisheries management organizations should consider establishing formal liaison and data-sharing protocols on species of shared interest.
- National authorities should maintain integrated trade and fishery datasets for chondrichthyan products to allow prompt and efficient participation in enforcement actions against illegal, unreported and unregulated (IUU) fishing.
- Fishers, traders, distributors and retailers interested in offering certified-sustainable chondrichthyan products should actively participate in constructing trade monitoring systems that support traceability and effective management.

[4] www.scmp.com/news/hong-kong/article/1314878/cathay-pacifics-ban-non-sustainable-shark-fin-cargo-delayed

As alluded to above, and as the country-by-country analysis contained in this following section of this paper shows, assessing the global trade in chondrichthyan fish products is a complex and challenging task. Data are missing, products are miscoded or aggregated, and quantities may be double-counted or modified by processing. These limitations mean that a trade-based analysis cannot provide a definitive assessment of the degree to which sharks, skates, rays and chimaeras are utilized. A trade analysis can, however, provide critical complementary information for population assessments where catch information is limited, as is often the case for these species. Trade analysis can also provide important insights into society's demand for these products and thus help to predict market forces acting on these species in the future. Ultimately, the aim is to gain an understanding of the status of chondrichthyan populations through biology, oceanography, fishing operations and trade, with each aspect contributing some of the pieces necessary to construct a management system to ensure sustainable use.

The following sections discuss the key issues emerging from this analysis, as well as those that are known to be important but cannot be parameterized owing to data limitations. They also describe how trade information can be used alongside other tools to support conservation and management for chondrichthyan species.

3. Country trade and market profiles

DATA USED FOR THIS STUDY

Descriptions of trade flows and trends found in this report are primarily based on analysis of trade statistics as reported to FAO by its Members or directly by the customs authorities of the relevant country or territory (Table 1 and Figure 2). In general, these two sets of figures are similar, although they may differ in certain cases (e.g. Taiwan Province of China). In contrast, the sections focusing on domestic markets are based mainly on qualitative information gathered from various experts and industry sources about conditions in that country or territory and the influences that are shaping those.

Country-specific information for the sections on domestic trade and markets were compiled with the assistance of the Shark Specialist Group of the International Union for Conservation of Nature (IUCN) led by co-chairs Drs Nick Dulvy and Colin Simpfendorfer. Material sourced from these specialists is referenced as personal communications representing their personal views rather than the views of their host institutions. As no in-depth studies were conducted to source new data for this report, the country-specific descriptions presented here are limited to existing information, and any omissions are likely to reflect real gaps in current knowledge.

With regard to data time frames, for the purposes of this study, the data series used are generally either for the 12 year period from 2000 to 2011, or for the 13 year period from 2000 to 2012. The former time frame is used for global comparisons, as 2011 is the last available year in FAO official statistics for which all Members have reported their trade in shark fins (or indeed any seafood products). The full 2000–2012 period is referred to when focusing on trade into or out of an individual country or customs territory that has made available trade statistics through 2012 that are assumed to be comparable with those from previous years. Depending on data availability and/or reliability, different periods may be used in some cases. Appendix 3 provides the full list of country or customs territory data sources.

Finally, all trade value figures referred to in this study, for both shark fins and shark meat, are as declared by traders, and are not based on market unit values. Together with volume, value figures can be used to calculate the unit value of the traded product, but the unit value is often not a good predictor of prices at other points in the supply chain. Once again, this is particularly true in the case of shark fins, because of the difficulty of identifying the specific form in which the product is being traded.

NOTE ON SHARK FIN TRADE STATISTICS

In the case of shark fins in particular, it is important to understand the FAO statistics (as reported by Members) do not necessarily accurately reflect the quantity of actual shark fin material being traded, and also that apparent trends over time may be misleading. The following section offers a more in-depth treatment, on a country-by-country basis, of the specific issues with currently available trade data. These have already been touched upon above, but it is nevertheless helpful here to outline the three basic difficulties that were faced in conducting the quantitative analysis of the shark fin trade for this paper.

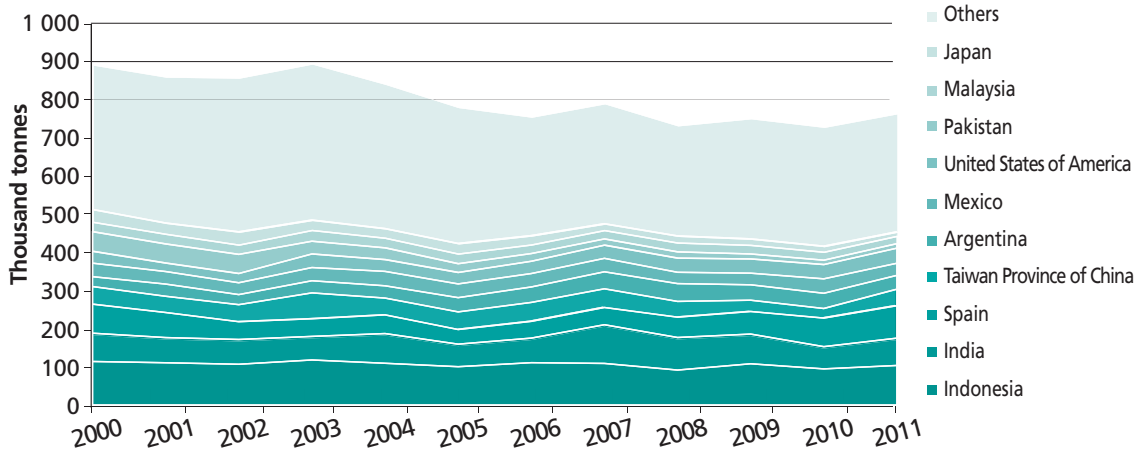
First, as alluded to above, the frequent introduction and subsequent removal of revised commodity codes that may or may not identify shark fins explicitly is

commonplace among trading countries, thus increasing or decreasing reported volumes but not accurately reflecting real volumes.

Second, only certain customs authorities maintain separate commodity codes for frozen and dried shark fins. This an important distinction because frozen fins can weigh up to four times as much as dried fins owing to additional water content (Clarke, 2004). Because of these data limitations, the proportion of frozen versus dried fins making up trade volumes at global level is not known, and it is therefore impossible to determine exactly how much of the reported quantities consists of shark fin and how much is accounted for by water content. Prepared and preserved fins, usually in canned or pouched form, may present similar difficulties unless identified explicitly in trade records, as a result of their containing ingredients other than shark fins such as soup broth. This has important implications when considering unit values as calculated by dividing value by quantity. Specifically, it may not be clear whether a high unit value points to a higher value of the shark fin itself – which would probably be a result of its size or species – or whether it simply reflects a relatively lower proportion of water content and/or other non-fin components.

Finally, the supply chains conveying shark fins from fishing vessel to consumer are complex and global in nature, incorporating multiple transshipment stages through different customs territories. In a typical case, the shark fin may be produced (separated from the carcass upon capture or landing) in one country, exported to a regional trader, re-exported to a processing centre, processed and re-exported once again to the consuming country. Assuming that the shark fin in this case is recorded explicitly as such at every stage – although this may be unlikely given the issues with shark fin trade recording in many countries outlined in this report – it will be recorded as an import and export on three separate occasions. Without a better understanding of these supply chains, allowing researchers to establish which shark fins are likely to be re-exports and which are not (few customs authorities make this distinction in their databases), it is not possible to know precisely what proportion of globally aggregated figures comprises fins that have been counted more than once.

FIGURE 2
Top chondrichthyan producers, 2000–2011



Source: FAO (2013).

TABLE 1
World captures of chondrichthyan fishes, 2000–2011

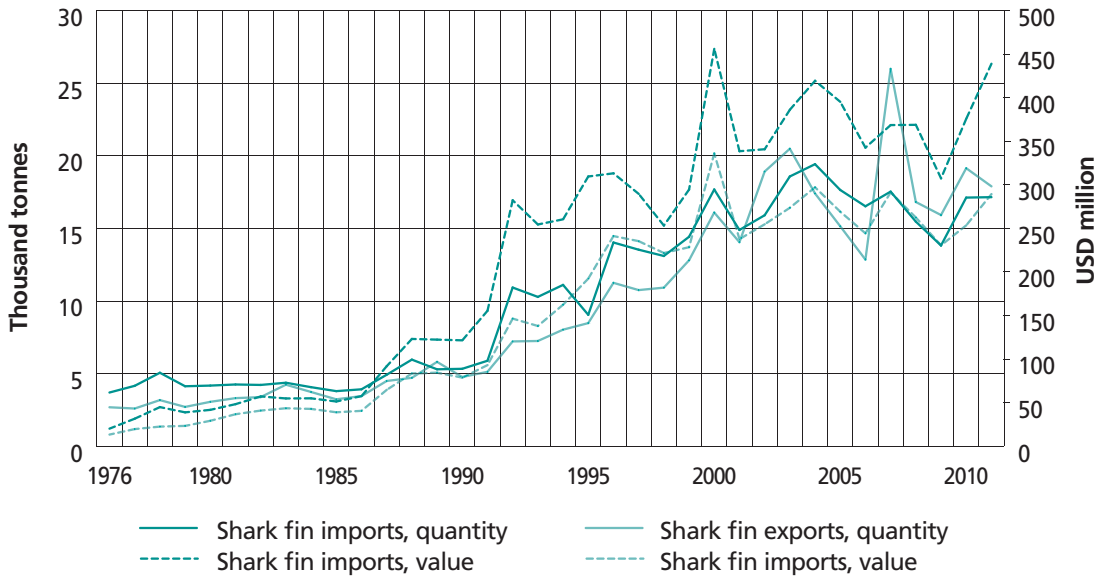
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGE	%	Rank
Indonesia	113 626	110 311	106 398	117 559	108 944	100 037	110 528	108 539	91 247	107 658	94 318	103 245	106 034	0.13	1
India	76 057	67 971	66 923	63 771	79 825	61 056	66 367	103 246	87 254	79 747	60 313	73 572	73 842	0.09	2
Spain	80 357	69 986	50 998	50 656	53 330	42 807	48 311	49 597	57 634	63 521	79 101	89 212	61 293	0.08	3
Taiwan Province of China	45 923	42 355	44 412	67 432	43 797	45 945	49 375	48 707	41 042	29 401	24 967	43 073	43 869	0.05	4
Argentina	25 750	31 784	26 251	31 691	32 039	37 161	40 323	44 359	46 461	40 199	39 707	36 065	35 983	0.04	5
Mexico	35 260	32 718	30 888	34 429	37 540	35 832	34 976	35 080	29 503	30 305	37 662	31 589	33 815	0.04	6
United States of America	30 935	22 072	24 076	35 372	30 732	29 793	32 004	34 287	36 906	37 069	37 214	39 331	32 483	0.04	7
Pakistan	51 170	49 863	49 904	33 248	30 687	22 877	20 127	16 284	16 335	13 019	11 400	11 752	27 222	0.03	8
Malaysia	24 521	25 209	24 167	27 948	25 053	25 094	22 240	21 764	22 988	22 342	20 621	18 995	23 412	0.03	9
Japan	31 873	27 696	32 879	25 543	23 475	25 930	22 795	16 212	16 857	15 292	14 175	10 238	21 914	0.03	10
Brazil	21 585	20 408	21 737	20 849	20 046	23 753	18 392	17 239	19 657	21 009	21 270	25 960	20 992	0.03	11
France	24 952	25 799	23 136	22 755	21 800	21 476	19 082	19 618	17 251	19 415	18 684	16 363	20 861	0.03	12
Thailand	24 689	24 278	30 208	32 540	27 646	20 745	16 215	13 116	9 079	8 969	6 683	8 220	18 532	0.02	13
New Zealand	17 718	19 796	21 238	18 459	16 647	18 032	16 783	17 409	15 965	16 745	18 022	16 171	17 749	0.02	14
Sri Lanka	34 380	29 400	32 753	32 838	26 559	7 610	7 700	4 248	4 410	4 861	8 145	6 455	16 613	0.02	15
Portugal	12 783	13 855	14 017	16 999	12 765	15 373	16 856	20 234	19 052	18 509	19 576	19 084	16 592	0.02	16
Nigeria	13 238	14 626	13 449	15 179	13 560	13 882	14 444	15 292	15 131	17 970	21 625	18 491	15 574	0.02	17
Iran (Islamic Republic of)	12 155	11 635	10 619	15 963	18 318	17 443	15 015	13 187	11 678	13 342	13 615	12 032	13 750	0.02	18
Republic of Korea	15 394	14 011	11 961	12 567	12 506	10 110	10 841	12 210	8 970	12 764	13 326	14 126	12 399	0.02	19
United Kingdom	17 389	19 346	16 832	19 581	16 232	10 632	8 119	6 442	5 764	5 127	4 634	5 435	11 294	0.01	20
Peru	15 405	11 870	14 249	8 613	8 640	9 710	8 620	6 627	6 238	8 692	10 715	10 641	10 002	0.01	21
Canada	12 899	13 718	13 980	12 366	12 806	12 733	8 807	10 233	5 903	6 622	3 477	3 235	9 732	0.01	22
Yemen	5 000	7 100	8 600	11 000	12 000	12 800	12 593	10 920	5 544	10 305	8 923	9 548	9 528	0.01	23
Australia	7 543	9 238	9 674	10 519	11 515	11 037	9 176	8 269	8 894	8 648	6 951	6 737	9 017	0.01	24
Senegal	10 757	10 058	8 575	7 904	8 887	8 257	10 457	9 931	5 930	7 098	7 758	5 525	8 428	0.01	25
Venezuela (Bolivarian Republic of)	5 491	4 718	7 619	11 294	12 567	10 776	6 316	7 329	8 078	8 471	5 106	5 337	7 759	0.01	26
Libya	-	-	-	-	-	-	-	-	-	8 937	8 595	5 190	7 574	0.01	27
Costa Rica	12 901	9 659	9 007	11 558	4 737	5 314	3 321	4 364	5 035	4 024	3 850	3 635	6 450	0.01	28
Madagascar	5 736	5 735	5 730	5 728	5 725	5 726	5 717	5 668	5 617	5 617	5 699	5 670	5 697	0.01	29
Oman	3 891	3 830	4 002	6 089	5 707	5 631	6 122	5 498	6 176	5 478	5 944	7 803	5 514	0.01	30
Philippines	4 319	5 303	5 734	6 177	5 776	4 746	5 309	5 197	4 752	5 226	5 513	5 061	5 259	0.01	31
Morocco	5 599	3 711	4 062	4 639	4 879	6 187	5 296	5 183	6 739	4 734	4 669	3 197	4 908	0.01	32
Chile	5 751	5 636	4 391	6 969	5 627	4 885	4 641	4 515	3 333	3 597	3 717	3 107	4 681	0.01	33
Maldives	13 523	11 935	11 498	11 522	947	896	856	782	537	457	158	16	4 427	0.01	34
Panama	5 502	5 855	6 127	3 901	5 109	5 577	3 841	3 727	4 844	7 033	744	411	4 389	0.01	35
Bangladesh	-	-	-	-	-	-	-	-	4 767	3 933	4 033	4 205	4 235	0.01	36
United Republic of Tanzania	4 800	5 000	4 000	4 050	4 141	4 040	3 093	3 844	4 008	3 979	4 597	4 965	4 210	0.01	37
Uruguay	3 032	3 010	4 248	6 023	6 205	5 261	4 734	5 076	3 284	3 138	2 112	2 802	4 077	0.01	38
Russian Federation	5 937	4 876	4 770	4 542	5 463	2 586	1 884	2 952	2 077	2 659	3 635	3 634	3 751	0.00	39
Ecuador	807	2 790	2 120	1 400	1 226	1 254	2 229	4 693	6 632	5 168	5 519	9 160	3 583	0.00	40
Others	54 425	64 418	77 732	66 050	69 306	79 202	63 629	70 125	62 971	61 904	63 921	66 776	66 705	0.08	
Total	893 073	861 579	858 964	895 723	842 764	782 206	757 134	792 003	734 543	752 984	730 694	766 064	805 644		

Note: FishStatJ, includes skates and rays. *Source:* FAO (2013)

SHARK FINS (INCLUDES SKATES AND RAYS)

Tables 2 and 3 provide an overview of global exports and imports of shark fins for the period 2000–2011. Figure 3 shows the trend in the global trade in shark fins from 1976 to 2011.

FIGURE 3
World trade in shark fins, 1976–2011



Source: FAO (2013).

TABLE 2
World exports of shark fins, 2000–2011

World exports of shark fins, tonnes, 2000–2011 (FishStatJ, all shark fin types summed, includes re-exports)															
Exporter	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
China, Hong Kong SAR	8 545	6 531	8 927	9 113	8 560	7 134	5 963	5 684	5 308	4 935	5 060	3 362	6 594	0.38	1
Thailand	70	61	34	29	29	44	18	13 188	4 742	5 005	7 141	7 723	3 174	0.18	2
Indonesia	1 166	479	771	1 288	943	1 554	1 073	801	1 320	1 437	2 378	1 607	1 235	0.07	3
China	2 065	1 693	1 814	2 199	2 476	1 400	569	552	394	382	314	489	1 196	0.07	4
Taiwan Province of China	1 134	1 084	1 068	1 289	1 330	1 279	1 063	1 016	916	974	1 144	1 067	1 114	0.06	5
Singapore	548	447	613	940	1 125	1 538	1 863	1 690	677	296	390	238	864	0.05	6
Viet Nam	28	1 469	3 099	3 188	91	228	169	157	693	347	98	223	816	0.05	7
United Arab Emirates	519	378	507	476	468	562	428	496	515	460	501	479	482	0.03	8
Yemen	8	9	183	141	141	180	318	527	629	260	431	347	265	0.02	9
Malaysia	15	10	25	8	634	104	127	447	460	347	260	417	238	0.01	10
Japan	242	230	208	220	205	168	181	197	163	164	164	131	189	0.01	11
India	415	284	274	244	218	104	145	96	95	107	98	135	185	0.01	12
United States of America	366	335	441	486	93	65	34	36	37	77	42	38	171	0.01	13
Peru	170	137	114	109	104	155	178	245	134	155	202	206	159	0.01	14
Trinidad and Tobago	-	-	-	-	-	7	23	10	106	186	129	364	118	0.01	15
Ecuador	94	118	120	88	102	0	1	12	124	131	184	226	100	0.01	16
Brazil	-	-	4	82	179	157	118	131	113	85	49	59	98	0.01	17
Bangladesh	-	-	-	-	166	7	195	351	17	15	8	11	96	0.01	18
Pakistan	105	88	89	-	-	-	-	-	-	-	-	-	94	0.01	19
Panama	122	108	125	90	103	97	78	66	61	47	37	24	80	0.00	20
Others	484	594	499	495	442	369	313	281	317	513	516	753	465	0.03	
Total	16 096	14 055	18 915	20 485	17 409	15 152	12 857	25 983	16 821	15 923	19 146	17 899	17 562		

TABLE 2 (continued)

World exports of shark fins, USD1 000, 2000–2011 (FishStatJ, all shark fin types summed, includes re-exports)

Exporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVERAGE	%	Rank
China, Hong Kong SAR	159 735	104 953	118 747	128 646	138 005	127 102	103 840	97 183	101 181	80 316	73 198	88 918	110 152	0.41	1
Singapore	25 451	16 762	22 642	30 793	35 940	36 348	44 693	44 274	27 382	15 901	23 088	20 295	28 631	0.11	2
China	51 951	39 529	34 434	38 123	40 966	21 792	10 682	12 138	7 501	8 474	6 971	12 218	23 732	0.09	3
Thailand	2 598	1 405	970	905	1 036	1 916	772	48 424	26 279	24 795	32 545	40 245	15 158	0.06	4
United Arab Emirates	18 328	11 060	14 534	12 465	10 152	14 959	13 649	14 609	16 228	13 242	17 912	14 823	14 330	0.05	5
Indonesia	13 095	8 220	8 414	10 204	10 936	8 065	9 174	7 303	7 047	10 833	13 563	13 570	10 035	0.04	6
Japan	10 997	9 864	7 781	8 492	10 262	8 140	9 091	8 735	8 457	6 824	8 591	8 759	8 833	0.03	7
Taiwan Province of China	6 112	4 373	4 866	4 398	5 106	9 938	10 313	8 946	8 551	8 756	12 078	13 663	8 092	0.03	8
Yemen	180	200	4 040	3 530	4 683	5 156	7 962	10 926	15 532	10 736	13 942	12 428	7 443	0.03	9
Peru	6 115	4 697	4 405	4 552	5 088	7 256	6 838	10 648	7 127	6 945	10 990	13 648	7 359	0.03	10
India	7 804	5 658	5 746	4 184	4 513	3 663	5 037	3 879	7 496	12 504	8 946	8 310	6 478	0.02	11
United States of America	3 521	3 167	3 485	4 096	4 868	3 898	3 171	2 642	2 059	3 776	3 357	2 922	3 414	0.01	12
Panama	3 047	2 764	3 015	3 270	3 860	3 544	2 600	4 836	2 615	3 310	1 457	1 481	2 983	0.01	13
Guinea	2 583	2 558	1 143	2 087	4 018	2 809	2 002	1 692	2 665	2 228	3 290	4 376	2 621	0.01	14
Togo	-	-	-	-	-	1 760	1 847	2 100	1 900	2 900	4 100	3 600	2 601	0.01	15
Senegal	4 331	5 170	-	2 915	2 537	8	2 678	14	-	-	-	-	2 522	0.01	16
Oman	-	-	3 048	1 828	-	-	-	-	-	-	-	-	2 438	0.01	17
Costa Rica	8 552	7 057	1 807	1 464	123	-	-	69	-	282	251	628	2 248	0.01	18
Brazil	-	-	60	1 065	2 405	2 292	1 894	2 313	2 825	2 338	1 376	2 109	1 868	0.01	19
Pakistan	2 145	1 633	1 704	-	-	-	-	-	-	-	-	-	1 827	0.01	20
Others	9 252	8 411	13 643	10 418	12 402	10 308	7 902	10 351	17 429	16 203	17 607	27 098	13 419	0.05	
Total	335 797	237 481	254 484	273 435	296 900	268 954	244 145	291 082	262 274	230 363	253 262	289 091	269 772		

Source: FAO (2013).

TABLE 3
World imports of shark fins, 2000–2011

World imports of shark fins, tonnes, 2000–2011 (FishStatJ, all shark fin types summed)															
Importer	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
China, Hong Kong SAR	11 451	10 462	10 938	12 352	11 040	10 348	9 370	10 209	9 984	9 395	9 891	10 322	10 480	0.62	1
China	4 646	3 129	3 555	3 818	4 776	3 353	2 662	2 545	2 012	732	183	160	2 631	0.16	2
Malaysia	57	72	68	46	985	860	1 060	1 220	1 197	1 331	3 676	3 489	1 172	0.07	3
Singapore	629	507	632	1 431	1 593	1 933	2 044	2 163	848	557	591	595	1 127	0.07	4
Taiwan Province of China	499	432	315	480	525	434	709	572	796	988	1 157	1 262	681	0.04	5
Myanmar	-	-	-	-	-	-	-	42	2	119	813	601	315	0.02	6
Indonesia	127	41	46	144	193	332	293	84	220	150	237	101	164	0.01	7
China, Macao SAR	114	111	116	108	96	120	106	119	123	132	119	116	115	0.01	8
Thailand	66	81	60	103	121	113	102	405	103	44	63	96	113	0.01	9
Timor-Leste	-	-	-	-	-	-	-	-	-	112	96	131	113	0.01	10
Canada	-	-	91	66	69	112	110	94	118	184	107	104	106	0.01	11
United States of America	66	51	39	11	14	27	47	29	29	21	34	58	36	0.00	12
Peru	0	-	-	0	1	1	8	2	28	54	77	71	24	0.00	13
United Arab Emirates	-	-	-	-	-	-	0	-	-	-	-	26	13	0.00	14
South Africa	22	2	15	12	-	-	-	-	-	-	-	-	13	0.00	15
Democratic People's Republic of Korea	-	1	1	0	1	1	2	25	1	0	69	0	9	0.00	16
Australia	-	-	-	-	-	9	7	11	7	7	6	16	9	0.00	17
Brunei Darussalam	-	-	15	3	-	-	-	1	-	-	2	-	5	0.00	18
Republic of Korea	5	6	18	4	5	2	6	2	4	2	3	6	5	0.00	19
Brazil	-	-	-	-	4	2	-	-	-	-	-	-	3	0.00	20
Others	0	1	0	0	0	2	0	12	1	0	0	0	1	0.00	
Total	17 682	14 896	15 909	18 578	19 423	17 649	16 526	17 535	15 473	13 828	17 124	17 154	16 815		

TABLE 3 (continued)

World imports of shark fins, USD1 000, 2000–2011 (FishStatJ, all shark fin types summed)															
Importer	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
China, Hong Kong SAR	392 367	292 588	282 571	308 245	329 778	306 968	253 689	276 690	288 019	247 087	296 167	345 469	301 637	0.80	1
Singapore	27 906	18 938	24 059	40 573	43 291	48 102	52 501	53 570	38 412	27 576	36 690	43 863	37 957	0.10	2
China	25 512	18 784	21 951	22 307	27 523	18 467	13 890	12 052	10 994	4 490	968	1 065	14 834	0.04	3
Taiwan Province of China	3 798	2 389	1 817	3 473	4 052	4 667	4 172	6 268	8 761	7 400	10 315	14 273	5 949	0.02	4
Canada	-	-	4 307	5 323	5 134	5 261	5 480	4 994	6 508	6 217	6 487	6 351	5 606	0.01	5
China, Macao SAR	1 045	1 771	2 325	2 471	2 831	3 324	3 728	5 313	5 920	6 149	7 124	7 570	4 131	0.01	6
Malaysia	251	254	550	233	1 900	2 060	2 721	2 855	3 418	3 809	10 369	10 248	3 222	0.01	7
Indonesia	1 352	910	643	1 540	2 407	2 486	1 274	366	1 515	1 120	970	1 762	1 362	0.00	8
United States of America	2 403	1 109	1 079	117	358	790	1 497	1 733	1 808	1 018	1 240	1 895	1 254	0.00	9
Australia	-	-	-	-	-	1 056	891	1 182	1 351	902	1 128	915	1 061	0.00	10
Thailand	832	856	568	1 045	1 256	1 317	1 141	1 898	925	651	761	1 021	1 023	0.00	11
Myanmar	-	-	-	-	-	-	-	39	40	372	2 173	1 635	852	0.00	12
United Arab Emirates	-	-	-	-	-	-	15	-	-	-	-	1 209	612	0.00	13
Democratic People's Republic of Korea	-	491	296	175	268	331	1 222	1 154	579	24	267	8	438	0.00	14
Republic of Korea	128	191	263	168	268	109	157	82	167	119	223	602	206	0.00	15
Peru	1	-	-	3	4	4	52	12	141	246	546	688	170	0.00	16
South Africa	30	11	95	151	-	-	-	-	-	-	-	-	72	0.00	17
Timor-Leste	-	-	-	-	-	-	-	-	-	29	24	29	27	0.00	18
Brunei Darussalam	-	-	35	18	-	-	-	2	-	-	26	-	20	0.00	19
Djibouti	-	-	-	-	-	15	-	-	-	-	-	-	15	0.00	20
Others	23	20	15	15	32	21	6	82	7	3	0	1	19	0.00	
Total	455 648	338 312	340 574	385 857	419 102	394 978	342 436	368 292	368 565	307 212	375 478	438 604	377 922		

Source: FAO (2013).

China, Hong Kong SAR

Snapshot

- China, Hong Kong SAR is the world's largest trader of shark fins and has historically also represented a major consumer market.
- Its primary role is as an entrepôt, as domestic production is minimal and the processing industry is mainly small-scale.
- Shark fins are imported mainly from shark producing countries before being re-exported to processing centres and markets, particularly China.
- From 2000 to 2011, China, Hong Kong SAR recorded average annual shark fin imports of 10 490 tonnes, worth USD302 million (Figure 5).
- From 2000 to 2011, it recorded average annual shark fin exports of 6 556 tonnes, worth USD110 million (Figure 5).
- Exports and imports have fallen gradually in about the last decade.
- China, Hong Kong SAR has historically maintained the most detailed and consistent trade records for shark fins.
- However, in 2012, frozen shark fins began to be recorded in trade databases as frozen shark meat.

Overview

From 2000 to 2011, China, Hong Kong SAR maintained its position as by far the world's largest trader of shark fins, controlling the majority of global trade. In this period, China, Hong Kong SAR imported shark fins worth an average of USD378 million (10 480 tonnes) per year, representing about 80 percent of the global total in value terms (62 percent of total volume). The corresponding annual average for exports, which in the case of China, Hong Kong SAR consist almost entirely of re-exports, was USD110 million (6 594 tonnes) per year, or 41 percent of the world total in value terms (38 percent by volume).

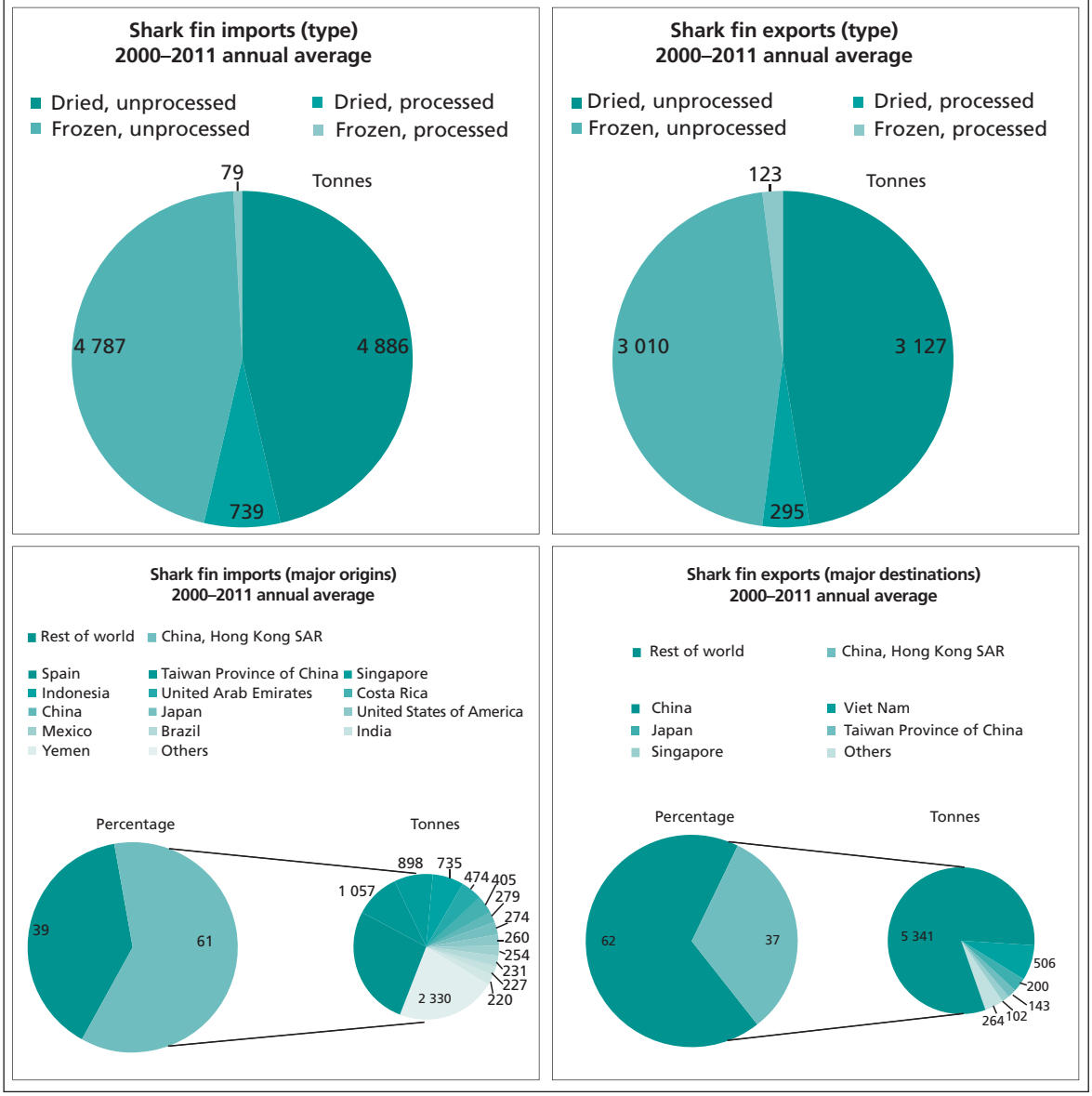
The dominant position of China, Hong Kong SAR in the international market is based on its role as a mass importer and re-exporter, acting as a supplier to a number of other, mainly Asian countries (such as China) in addition to its own domestic market. Its contribution to shark fin production is minimal. From 2000 to 2011, China, Hong Kong SAR reported average chondrichthyan captures of 333 tonnes, an insignificant quantity in practical terms when compared with the world's top three producers in 2011: Indonesia (106 034 tonnes), India (73 842 tonnes) and Spain (61 293 tonnes). Indeed, of the total 70 697 tonnes of shark fins exported by China, Hong Kong SAR from 2000 to 2009, only 3 tonnes were domestically produced exports.

Trade recording

China, Hong Kong SAR is unique in distinguishing between four different types of shark fin commodities in its trade databases. These are:

- sharks' fins (with or without skin), with cartilage, dried, whether or not salted but not smoked;
- sharks' fins (with or without skin), without cartilage, dried, whether or not salted but not smoked;
- sharks' fins (with or without skin), with cartilage, salted or in brine, but not dried or smoked;
- sharks' fins (with or without skin), without cartilage, salted or in brine, but not dried or smoked.

FIGURE 4
China, Hong Kong SAR shark fin trade profile



Source: Hong Kong SAR Census and Statistics Department (2013).

This four-way classification system generally serves to distinguish between shark fins after primary processing – without cartilage – and non-processed, with cartilage, fins (the terms processed and unprocessed are used in the remainder of this report to refer to fins recorded as without cartilage and with cartilage, respectively). In addition, by use of the description "salted or in brine" to refer to frozen fins, it identifies fins that may weigh up to four times more than their dried counterparts owing to water content (the term frozen is used in the remainder of this report to refer to fins that are recorded under the description salted or in brine). When one considers, in addition, the status of China, Hong Kong SAR as a duty-free port where traders, in theory, have less incentive to under-report to customs, as well as its prominent role in the international market, it can be taken as the most reliable and useful source of data in analysing the shark trade (Clarke, 2009).

Although, as mentioned, China, Hong Kong SAR had previously consistently recorded shark fins specifically as such in customs databases, there is statistical

evidence that from 2012 onwards a significant proportion of frozen fins has been reclassified within an aggregated commodity category (code) described as "dogfish and other sharks, frozen, excluding fillets, livers and roes". This was confirmed by the Hong Kong SAR Census and Statistics Department (P. Lam, Hong Kong SAR Census and Statistics Department, personal communication, 28 November 2013). The revised coding system is reflected clearly in the close correspondence between decreases in reported traded volumes of frozen shark fins and contemporaneous increases in reported traded volumes of high-value frozen shark meat, with the particular selections of origin and destination countries and unit values matching those previously associated with frozen shark fin imports. Thus, comparisons between 2012 and previous years must be treated with caution, as an apparent drop in trade is largely explained as a statistical anomaly resulting from the implementation of the new commodity coding system. For the purposes of this study, the following section focus first on the shark fin trade of China, Hong Kong SAR as reported from 2000 to 2011, and then, where necessary, the trade in frozen shark meat in 2012 is examined separately

Note: as this document goes to press, it has become apparent that Hong Kong SAR has resinstated separate commodity codes for frozen shark meat and frozen shark fins as of January 1st 2015. This positive development should reduce the distorting effects of trade data aggregation that are referred to above, and thereby allow for more consistent and reliable monitoring of shark fin trade flows through the region.

Exports

Overview

For China, Hong Kong SAR exports of shark fins from 2000 to 2011, the largest share consisted of "dried, unprocessed" fins for both value (annual average of USD49.5 million, representing a 45 percent share) and quantity (annual average of 3 127 tonnes, representing a 48 percent share). "Frozen, unprocessed" fins accounted for 35 percent of the total value (USD38.5 million annual average) and 46 percent of the volume (3 010 tonnes) over the same period. For "dried, processed" and "frozen, processed" fins, the corresponding proportions are 14 percent (USD14.8 million) or 4.5 percent (295 tonnes) and 5.5 percent (USD6 million) or 1.9 percent (123 tonnes), respectively. Export volumes of the "dried", and "frozen, unprocessed" fins followed a continuous downward trend over this period, and the 2011 figures of 1 309 tonnes of "dried, unprocessed" fin imports and 1 699 tonnes of "frozen, unprocessed" fin imports represent declines of 69 percent (71 percent by value) and 53 percent (18 percent by value) compared with 2000, respectively. The total decline in shark fin exports from China, Hong Kong SAR over this period was 59 percent by volume and 39 percent in terms of value.

In 2012, China, Hong Kong SAR recorded exports of 659 tonnes (16.9 million), 112 tonnes (USD12 million), 77 tonnes (USD1.6 million) of "dried, unprocessed"; "dried, processed"; and "frozen, unprocessed" fins, respectively. In the same year, China, Hong Kong SAR reported an export volume of 1 543 tonnes, worth USD27 million, of high-valued "frozen shark meat", destined mainly for China.

For exports, it is the processed fins, both "dried" and "frozen", that command higher unit values. Average unit values from 2000 to 2012 for the "dried, processed" and "frozen, processed" categories were USD52/kg for the former and USD48/kg for the latter, while exports of unprocessed fins were worth USD16/kg for "dried, unprocessed" and USD13/kg for "frozen, unprocessed". It should be recalled here that "frozen" forms include the additional weight of water used in the freezing process. Unit values for unprocessed fins remained relatively stable throughout the period, but processed fins varied considerably, for reasons that are unclear. Unit values of the "dried, processed" product form in particular ranged from a low of USD28/kg in 2007 to a peak of USD116/kg in 2012.

Partners

With an average share of 81 percent of yearly fin export volume (5 341 tonnes) and 68 percent of value (USD74.1 million) from 2000 to 2011, China is the principal destination for shark fin exports from China, Hong Kong SAR. These exports are almost entirely re-exports and consist primarily of unprocessed fins, specifically the "frozen, unprocessed" and "dried, unprocessed" product forms, which respectively made up 50 percent and 46 percent in quantity terms (2 694 tonnes and 2 482 tonnes annually) and 49 percent and 48 percent of value (USD36.3 million and USD35.9 million) of exports from China, Hong Kong SAR to China over the same period. Historically, it has made economic sense, mainly because of cheaper labour costs, to export unprocessed raw material to China for processing before either selling the finished product on the domestic Chinese market or re-exporting it to China, Hong Kong SAR (Clarke, Milner-Gulland and Bjørndal, 2007). However, exports of "dried, unprocessed" fins from China, Hong Kong SAR to China have declined significantly in recent years, from 3 685 tonnes (USD66 million) to 152 tonnes (USD6.6 million) in 2011. Exports of "frozen, unprocessed" fins to China also fell, from 3 504 tonnes (USD41.1 million) in 2000 to 1 103 tonnes (USD29.9 million) in 2011. Over the same period, China's share of the total China, Hong Kong SAR export volume decreased from 89 percent in 2000 to 37 percent in 2011. In 2012, China, Hong Kong SAR recorded 939 tonnes of frozen shark meat exports to China, worth USD15.8 million. The high unit value (USD17/kg) of these exports suggests that they include a major proportion of frozen fins.

There are probably a number of factors behind the observed decline in the shark fin trade through China, Hong Kong SAR to China. These are assumed to include, to varying degrees: new regulations on government officials' expenditures introduced by the Government of China; a widespread consumer backlash against artificial shark fin products; increased monitoring and regulation of finning practices; and a the growing conservation awareness among Chinese consumers following numerous campaigns by environmental groups concerned with the threat demand for shark fins poses to shark populations as well as the controversial nature of shark finning itself. Finally, China's entry into WTO in 2001 may have resulted in a shift in tariff schedules or other trade dynamics that has negatively affected shark fin trade volumes along the China, Hong Kong SAR route.

After China, Viet Nam is the second-most important destination for shark fin exports from China, Hong Kong SAR in terms of volume, with an average 506 tonnes exported per year from 2000 to 2011, representing an 8 percent share of the total. These fins were quite low-valued at about USD4/kg, and consisted, in volume terms, of 61 percent (79 percent by value) "dried, unprocessed" and 39 percent (20 percent by value) "frozen, unprocessed". As a result of the low unit value, Viet Nam's share of the shark fin export value from China, Hong Kong SAR was lower, at only 2 percent, or an average of USD2 million per year. Viet Nam's importance as an export destination is a recent trend, with export quantities from China, Hong Kong SAR almost zero until 2005, at which point volumes grew rapidly to a peak of 3 218 tonnes (USD10.3 million) in 2010, representing 64 percent of total export volume for that year (14 percent of value), before dropping back to 1 176 tonnes (USD5 million) in 2011. In 2012, China, Hong Kong SAR reported exporting 84 tonnes of frozen shark meat to Viet Nam worth USD278 000.

Looking at value rather than volume, Japan is the second-most important destination for shark fin exports out of China, Hong Kong SAR, with an average annual value exported of USD7 million from 2000 to 2011. The corresponding average annual volume was 200 tonnes. The unit value of these exports was USD35/kg, almost 9 times that of exports destined for Viet Nam. Exports from China, Hong Kong SAR to Japan consisted mainly of "dried, unprocessed" fins, at 77 percent of total volume and 47 percent of total value. "Frozen, unprocessed" fins made up 12 percent of

volume and 34 percent of value. In 2012, China, Hong Kong SAR exported 102 tonnes (USD3.2 million) of frozen shark meat to Japan, equating to a high unit value of USD35/kg, strongly suggesting that most of these exports are in fact shark fins.

Singapore is another important destination for high-value fins from China, Hong Kong. From 2000 to 2011, China, Hong Kong SAR exported, on average, 102 tonnes of shark fins per year to Singapore, worth USD5.5 million. This means an average unit value of USD54/kg. Singapore-destined exports are a mix of different product forms: 31 percent (34 percent of value) "dried, unprocessed", 34 percent (12 percent) "frozen, unprocessed", 18 percent (39 percent) "dried, processed", and 17 percent (15 percent) "frozen, processed". In 2012, China, Hong Kong SAR reported exports of 227 tonnes of frozen shark meat to Singapore worth USD3.6 million.

Other major destinations for exports from China, Hong Kong SAR from 2000 to 2011 were Canada (33 tonnes or USD4 million annual average; mainly "dried, processed"), Taiwan Province of China (143 tonnes or USD3.7 million; mixture of "dried, processed"; "dried, unprocessed"; and "frozen, unprocessed"), China, Macao SAR (52 tonnes or USD3.4 million; mixture of "dried, processed" and "frozen, unprocessed"), the United States of America (43 tonnes or USD2.7 million; mixture of "frozen, processed" and "dried, processed"), the Republic of Korea (49 tonnes or USD2.5 million; mainly "frozen, processed"), Thailand (55 tonnes or USD1.4 million; mainly "dried, unprocessed"), and Malaysia (18 tonnes or USD1.2 million; mixture of "dried, processed" and "dried, unprocessed").

Imports

Overview

"Dried, unprocessed" fins made up an average 47 percent (4 886 tonnes annual average) of total imports by China, Hong Kong SAR in volume terms (Table 4) and 68 percent (USD206.3 million) by value in the period 2000–2011, while "frozen, unprocessed" represented 46 percent (4 787 tonnes) and 22 percent (USD66.1 million) of volume and value, respectively. Frozen fins weigh up to four times as much as dried fins owing to water content, and thus the volume is relatively inflated. Imports by China, Hong Kong SAR of "dried, processed" fins declined significantly from a peak of 1 661 tonnes (USD66 million) in 2004 to 266 tonnes (USD17.1 million) in 2011. Imports of "frozen, processed" fins, meanwhile, dropped from 302 tonnes (USD5.2 million) in 2000 to 49 tonnes (USD1.6 million) in 2011. The relatively more pronounced drop in "dried" fins may be related to their being more affected by the recent airline transport ban than "frozen" fins (which are normally transported by sea).

In 2012, China, Hong Kong SAR reported imports of 3 319 tonnes (USD154.9 million) of "dried, unprocessed" fins, 188 tonnes (USD1.9 million) of "frozen, unprocessed" fins, and 14 tonnes (USD840 000) of dried, processed fins. In the same year, China, Hong Kong SAR reported a total of 4 959 tonnes of high-valued "frozen shark meat" imports, worth USD64.3 million. The majority of these imports originated in Spain or Singapore.

In terms of import unit values, expressed as US dollars per kilogram, the "dried, unprocessed" and "dried, processed" fins consistently command higher unit values. This is primarily a result of the fact that the "frozen" products have retained their initial water content that is lost through drying, and thus have a higher ratio of weight to value. Freezing for transport and storage purposes can further inflate the product weight compared with "dried" fins. From 2000 to 2012, average import unit values for "dried, unprocessed" and "dried, processed" product forms were USD43/kg and USD38/kg, respectively. For "frozen, unprocessed" and "frozen, processed" fins, the corresponding averages were USD14/kg and USD18/kg, respectively.

TABLE 4
Imports of dried and frozen shark fins by China, Hong Kong SAR, 2008–2012

	A Dried shark fins with cartilage (coded as 0305-5950 until Jan. 2012, then 0305-7111)	B Salted (frozen) shark fins with cartilage (coded as 0305-5960 until Jan. 2012, then 0305-7121)	C Shark fins NESOI (new code 0305-7190 established Jan. 2012)	D (Sum of A, B/4 and C) Total adjusted shark fins with cartilage	E Frozen shark meat (coded as 0303-7500 until Jan. 2012, then 0303-8100)	F (Sum of D and E/4) Total adjusted (potential) shark fins with cartilage
			(tonnes)			
2008	4 131	5 619	na	5 536	0	5 536
2009	4 328	4 923	na	5 559	0	5 559
2010	4522	4 948	na	5 759	0	5 759
2011	4 907	5 070	na	6 175	0	6 175
2012	3 117	188	0	3 164	4 959	4 404

Notes:
The 2012 total trade figures declined 49 percent if frozen shark meat is ignored (Column D), but only 29 percent if frozen shark meat is assumed to be frozen shark fins (Column F, reasonable given there was zero trade before 2012). Moreover, frozen shark meat imports in 2012 approximated the most recent three-year average levels for unprocessed frozen shark fins. The decrease in trade in 2012 was predominantly due to dried shark fin trade volumes (potentially more affected by recent airline transport bans than frozen products [which are transported by sea]). More than 99 percent of frozen shark meat products (0303-8100; unadjusted for water content) were imported by sea in 2012, which may help explain why they did not decrease. The HKCSD confirmed that shark fin traders are advised to report frozen shark fins as frozen shark meat (0303-8100) rather than as salted shark fins (0305-7121) (P. Lam, personal communication, Hong Kong SAR Census and Statistics Department, 28 November 2013). As the HKCSD is aware that frozen shark fins comprise the majority, if not the entirety, of the declarations under 0303-8100, it is not clear why a frozen fin commodity code was not established under the World Customs Organization Harmonized System's shark fin heading of 030571 when the China, Hong Kong SAR commodity codes were revised in January 2012. Reporting of frozen shark fins as frozen shark meat is consistent with reporting practices in China.

Source: Hong Kong SAR Census and Statistics Department (2013).

Partners

The origin countries of shark fin imports by China, Hong Kong SAR are more diverse than the destination countries for exports. The largest source of its imports is Spain, Europe's largest shark producer, with 27 percent in quantity terms (2 846 tonnes) or 17 percent in value terms (USD50.8 million) of its shark fin imports from 2000 to 2011, corresponding to an average unit value of USD18/kg. In Spain's case, 2012 has been excluded from the analysis owing to the high probability that frozen shark fins began to be reported as frozen shark meat for that year. As the majority (86 percent of volume and 74 percent of value from 2000 to 2011) of imports from Spain consist of "frozen, unprocessed" fins, this is an important consideration, and according to 2012 trade records, China, Hong Kong SAR did in fact import 2 103 tonnes of frozen shark meat from Spain, having imported none in previous years. These imports were valued at USD32.5 million, which equates to a unit value of USD15.4/kg. Over the 2000 to 2011 time frame, "dried, unprocessed" and "dried, processed" products, respectively, made up 8.2 percent (234 tonnes per year) and 5.2 percent (148 tonnes) of import volume and 13.1 percent (USD6.7 million per year) and 11.9 percent (USD6 million) of value. However, the relative proportion of "dried, processed" fins, versus "dried, unprocessed" imported by China, Hong Kong SAR from Spain has been dropping in recent years.

The average share for Taiwan Province of China in shark fin imports by China, Hong Kong SAR in volume terms from 2000 to 2011 was 10 percent at 1 057 tonnes per year, representing 8 percent of value or USD23.9 million annually. This equates to an average unit value of USD23/kg. The most important product in the case of Taiwan Province of China case was the "dried, unprocessed' form, which made up 52 percent of the total volume of imports originating from Taiwan Province of China into China, Hong Kong SAR, and 75 percent of the value. "Frozen, unprocessed" fins made up 46 percent of volume and 22 percent of value over the same period. From 2000 to 2011, with the exception of a dip during the global financial crisis, the volume of imports by China, Hong Kong SAR from Taiwan Province of China remained approximately

stable. In 2012, China, Hong Kong SAR recorded 367 tonnes of frozen shark meat imports (probably fins) from Taiwan Province of China, worth USD3.8 million.

Indonesia, the world's largest shark producer, was the third-most important origin country in terms of value for imports into China, Hong Kong SAR over the same period, with an 8 percent share of its import value at USD24.6 million per year on average. By volume, Indonesia was fourth after Singapore, with average volumes of 735 tonnes per year. About 61 percent of this quantity consisted of "dried, unprocessed" fins, representing 85 percent of the value. A further 30 percent of the volume (8 percent of the value) was "frozen, unprocessed" fins. The high proportion of unprocessed fins reflects Indonesia's role in the market as a primary producer of raw material. Similarly to Spain and Taiwan Province of China, imports from Indonesia explicitly recorded as shark fins dropped steeply in 2012, although China, Hong Kong SAR reported 367 tonnes (USD2.4 million) of frozen shark meat imports from Indonesia that year.

Singapore supplied 9 percent of the total volume of shark fin imports by China, Hong Kong SAR from 2000 to 2011, an average of 898 tonnes per year. These imports were worth an average of USD20.7 million per year, 7 percent of the total. In terms of quantity, 27 percent of these imports consisted of "dried, unprocessed" product forms, making up 43 percent of the value, while 63 percent of the quantity (45 percent of value) was "frozen, unprocessed" fins. Imports from Singapore in the latter category steadily increased from 2000 through to 2011, rising in volume from 290 tonnes (USD5.7 million) to 946 tonnes (USD21.5 million) in 2011, before dropping drastically to 43 tonnes (USD712 000) in 2012. However, in 2012, China, Hong Kong SAR reported 227 tonnes of frozen shark meat imports (probably fins) from Singapore, worth USD3.6 million.

Imports from another of the world's major shark fin raw material exporters, the United Arab Emirates, contributed 5 percent of shark fin imports by China, Hong Kong SAR by volume for 2000 to 2011, with an annual average of 474 tonnes imported worth USD16.1 million (5 percent of the total). These imports were made up almost entirely of "dried, unprocessed" raw material. Although imports from the United Arab Emirates fell somewhat in 2012 in line with the general trend, the drop was of a relatively lesser magnitude, making the United Arab Emirates the top origin of imports by China, Hong Kong SAR in value terms in 2012 with a total of USD13 million (305 tonnes). The contribution by the United Arab Emirates to imports by China, Hong Kong SAR has been obscured by the larger volumes of frozen, unprocessed shark fins contributed by other nations with better conditions for transporting and storing frozen products. Once frozen product weights are standardized (see below), the relatively more important role of the United Arab Emirates as a supplier to the shark fin market becomes apparent. Other major sources of shark fin imports by China, Hong Kong SAR, listed in descending order by average annual value from 2000 to 2011, are: Mexico (254 tonnes or USD14.9 million; mainly "dried, unprocessed"), Brazil (231 tonnes or USD13.1 million; mainly "dried, unprocessed"), Japan (274 tonnes or USD11.5 million; mixture of "dried, unprocessed" and "frozen, unprocessed"), Australia (82 tonnes or USD8.8 million; mainly "dried, unprocessed"), the United States of America(260 tonnes or USD8.7 million; mixture of "dried, unprocessed" and "frozen, unprocessed"), Yemen (220 tonnes or USD8.5 million; mainly "dried, unprocessed"), Costa Rica (405 tonnes or USD7.7 million; mixture of "dried, unprocessed" and "frozen, unprocessed"), India (227 tonnes or USD6.7 million; mixture of "dried, unprocessed" and "dried, processed"), and China (279 tonnes or USD6.2 million; mixture of "dried, unprocessed" and "dried, processed"). Recent years have also seen an increase in imports from producing South American countries such as Argentina, Peru and Ecuador as well as a number of African countries.

Trade volumes adjusted for water content

In the case of the China, Hong Kong SAR, because trade in shark fins from 2000 to 2011 was recorded under four commodity categories distinguishing between dried and frozen fins, it is possible to estimate the quantities of actual material being traded, i.e. shark fins minus water content. This is particularly useful in the case of producing countries in that it allows a more direct comparison of the quantities of shark fin being produced between countries such as the United Arab Emirates, which exports exclusively dried shark fins, and Spain, which trades primarily in frozen forms. To make this comparison, all quantity figures for frozen fins were divided by four, as per the previously identified conversion factor for frozen to dried weight. These quantities were then added to the volumes for dried fins as reported in order to estimate the total dried weight of shark fin material being traded.

Using this method of estimation, the major shark fin export destination (total of unprocessed and processed fins) for China, Hong Kong SAR remains China, with 79 percent of the average annual volume exported from 2000 to 2011 (3 319 tonnes). In second place is Viet Nam with 9 percent (357 tonnes), followed by Japan with 2 percent (178 tonnes), Taiwan Province of China with 2 percent (98 tonnes), Singapore with 1 percent (63 tonnes), Thailand with 1 percent (54 tonnes), China, Macao SAR with 1 percent (41 tonnes), Canada with 1 percent (27 tonnes), and the United States of America with 1 percent (23 tonnes).

Spain remains the number one origin for shark fin imports by China, Hong Kong SAR, but its relative proportion of the average annual import volume is much reduced at 15 percent (998 tonnes). Taiwan Province of China remains in second place with a 10 percent share (691 tonnes). Indonesia is third with 8 percent of the total (567 tonnes). The importance of the United Arab Emirates as an exporter is more evident, as expected, and it takes a 7 percent share of the total volume at 473 tonnes per year, followed by Singapore with 7 percent (471 tonnes), China with 4 percent (254 tonnes), Mexico with 4 percent (248 tonnes), Japan with 4 percent (237 tonnes), Brazil with 3 percent (231 tonnes), India with 3 percent (225 tonnes), and Yemen with 3 percent (220 tonnes).

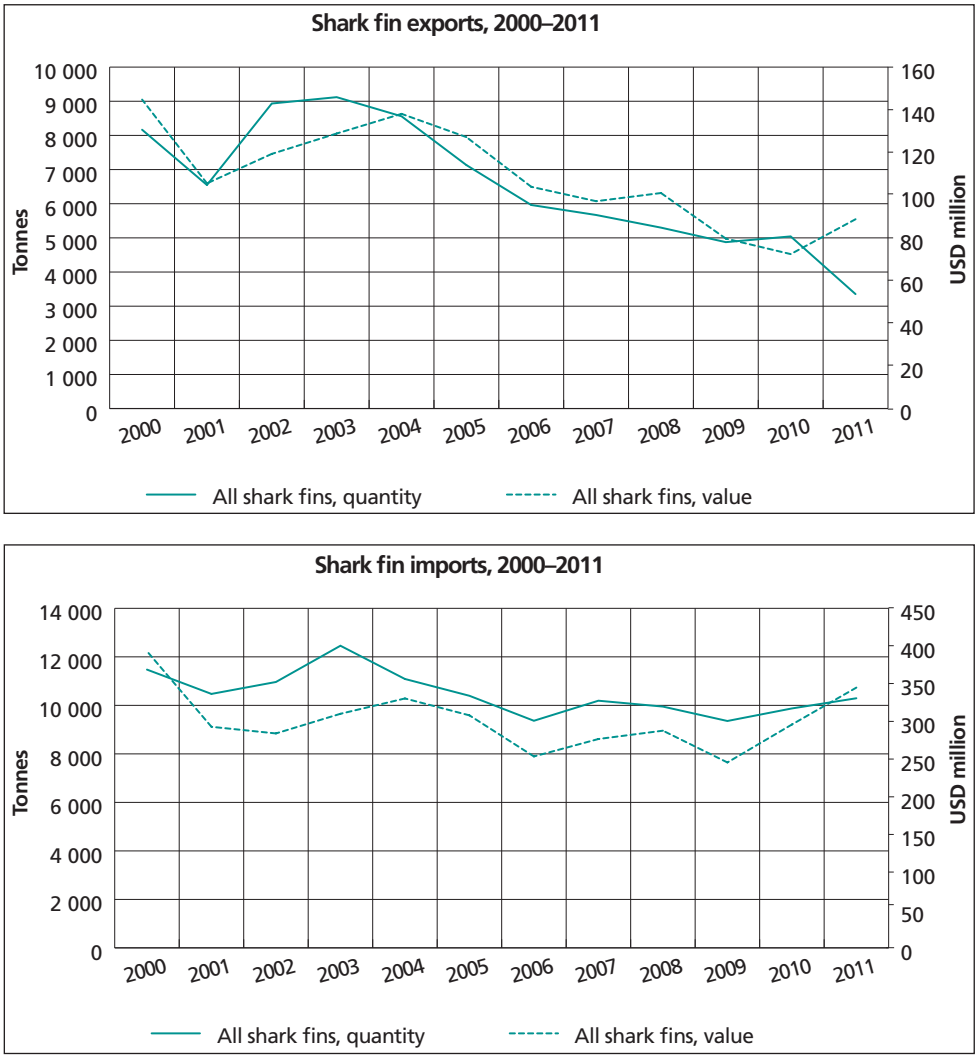
Domestic trade and markets

China, Hong Kong SAR procures almost all of its chondrichthyan products from imports. In 2011, it reported less than 400 tonnes per year of shark, ray and skate capture production as compared with more than 10 000 tonnes of imported shark fins. Lam and Sadovy de Mitcheson (2011) characterize the local shark stocks as "collapsed" due to overexploitation and note that most landings are of small-bodied and/or immature sharks that would not be expected to produce high-value shark fins. Regionally, shark landings are typically minced and used for low-value "fishball" products, but in China, Hong Kong SAR sharks may also be used to produce fishmeal for the large mariculture industry.

Although China, Hong Kong SAR holds the top rank among shark fin importers, this signifies its importance as a trading centre rather than as a consumer *per se*. A large portion of shark fin imports are either passed directly to processing factories (typically in Guangdong Province, China), or are auctioned to wholesalers that process or re-sell the fins. As described above, the distinction between trading and consuming is facilitated in China, Hong Kong SAR, unlike in other countries, by differentiation of unprocessed and processed, and dried and frozen, shark fins in customs statistics. In theory, it should be possible to subtract the re-exports by China, Hong Kong SAR of processed fins from its imports of processed fins to obtain an estimate of domestic consumption. However, doing so for data from 2000 to 2010 produces annual estimates

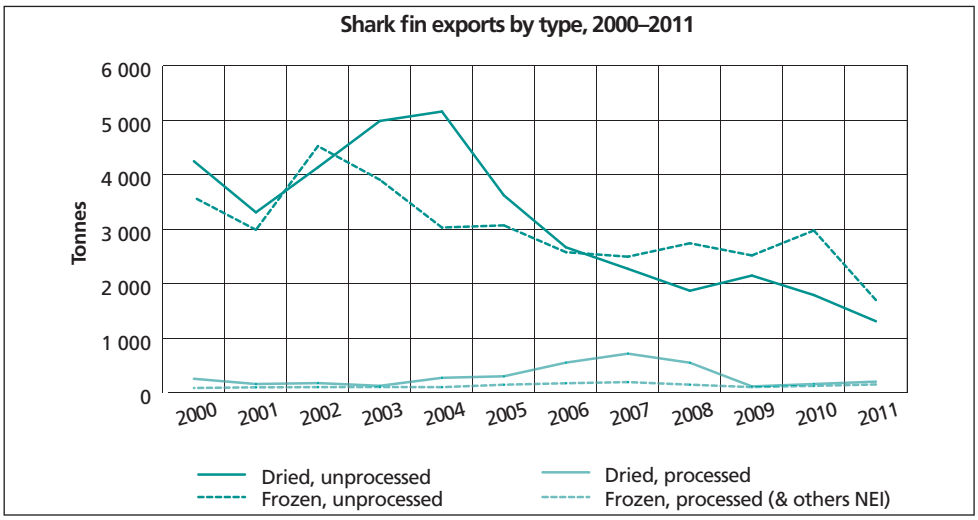
ranging from almost 1 400 tonnes in 2004 to almost –500 tonnes in 2007.[5] The negative values in some years (i.e. years in which re-exports exceeded imports) could be due to local processing of imported unprocessed fins, stockpiling, or mis-declaration of product forms. In any case, these results suggest that this method may not be a reliable means of estimating domestic consumption trends in China, Hong Kong SAR.

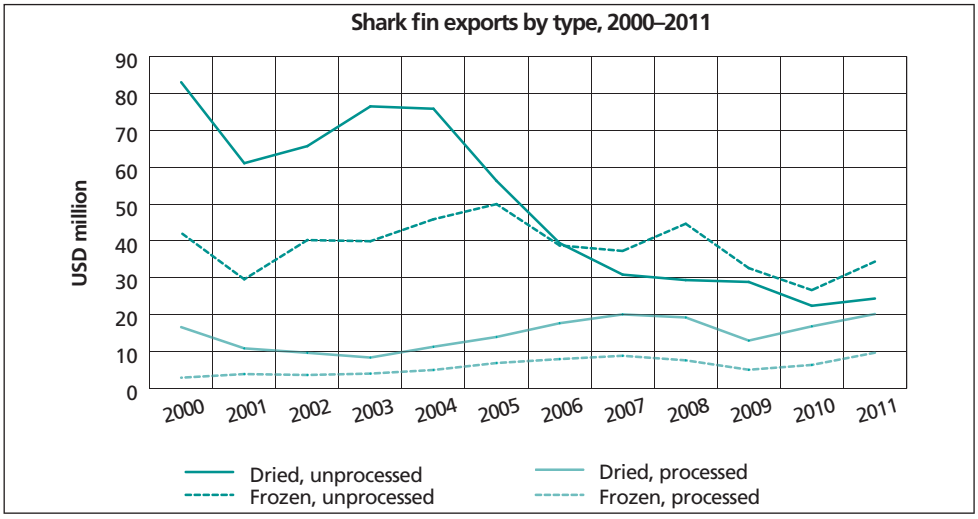
FIGURE 5
China, Hong Kong SAR shark fin trade, 2000–2011



[5] Hong Kong SAR Census and Statistics Department (2013).

FIGURE 5 (continued)





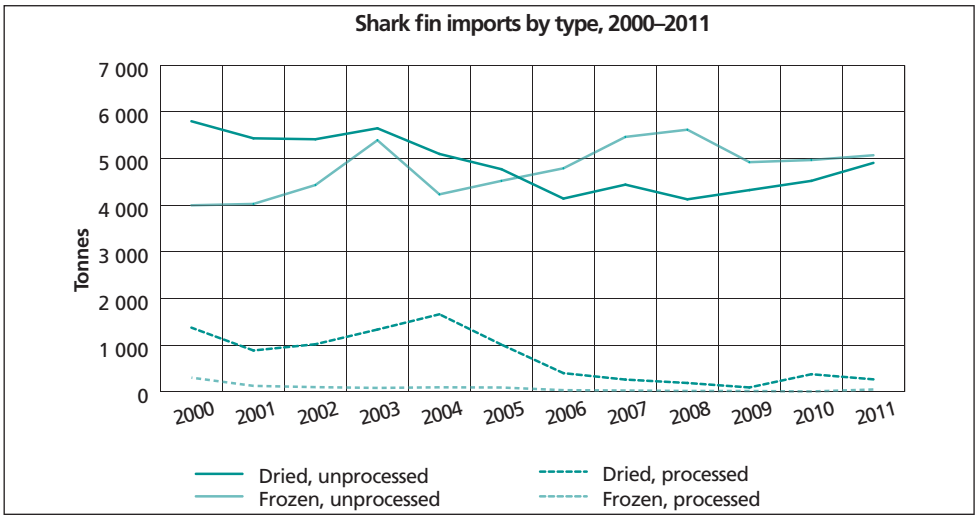
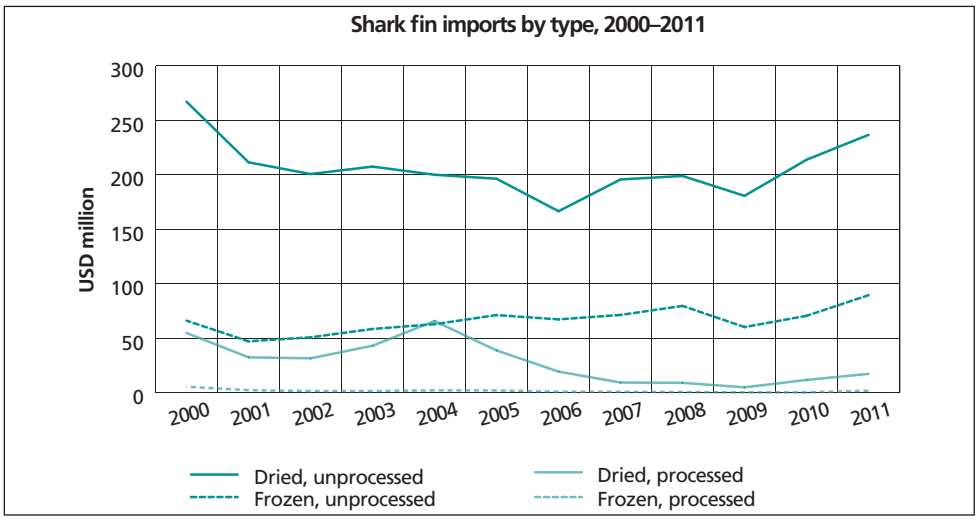
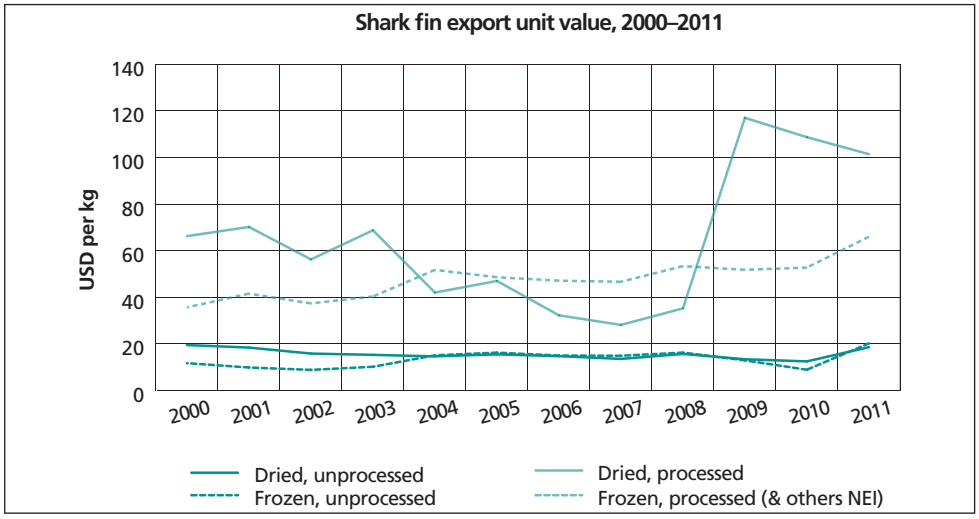
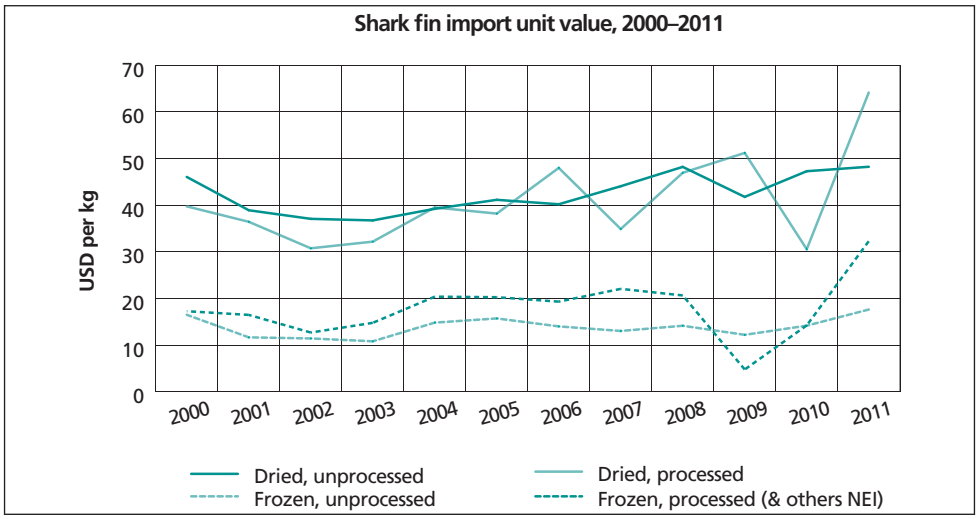


FIGURE 5 (continued)







Source: Hong Kong SAR Census and Statistics Department (2013).

Lacking a reliable indicator of domestic consumption based on customs statistics, consumer trends in China, Hong Kong SAR have mainly been assessed through public surveys conducted by non-governmental organizations (NGOs). One such survey, released in March 2011, found that more than 80 percent of respondents had eaten shark fin in the previous 12 months and that 58 percent of the respondents had not changed their consumption pattern during that time (decreased consumption was reported by 36 percent). When asked whether they would accept not being served shark fin at a wedding banquet, 78 percent replied affirmatively. Only 40 percent of respondents had ever eaten shark fin at home, suggesting that despite the presence of ready-to-eat products in retail shops it remains a celebratory dish usually eaten in restaurants.[6] As a complement to survey-based information, the Shark Fin Trade Merchants Association of China, Hong Kong SAR reported a 50 percent decrease in sales in 2012 and attributed this to NGO advocacy. The trade association asserted that 10 percent of the total trade of China, Hong Kong SAR in shark fins was consumed domestically.[7] Both sources appear to agree that consumption has decreased in recent years and this trend is expected to continue with the announcement by the Government of China, Hong Kong SAR of a ban on serving shark fins (and other luxury wildlife products) at official banquets in September 2013.[8] In addition, several airlines have recently implemented policies prohibiting the shipping of shark fins as cargo.[9]

China

Snapshot

- China is historically the world's foremost consumer market for shark fins and is also a major producer, processing centre and re-exporter.
- It is the world's second-largest importer by quantity and third-largest by value.
- From 2000 to 2011, it recorded average annual shark fin imports of 2 634 tonnes, worth USD14.8 million (Figure 7).
- From 2000 to 2011, it recorded average annual shark fin exports of 1 196 tonnes, worth USD23.7 million (Figure 7).
- China's imports and exports of shark fins have declined dramatically since the early 2000s owing to decreased demand, increased domestic production, a change in trading dynamics or reporting practices, or probably a combination of the above.
- China has reported frozen shark fins as frozen shark meat since May 2000, and currently records trade in dried shark fins only.

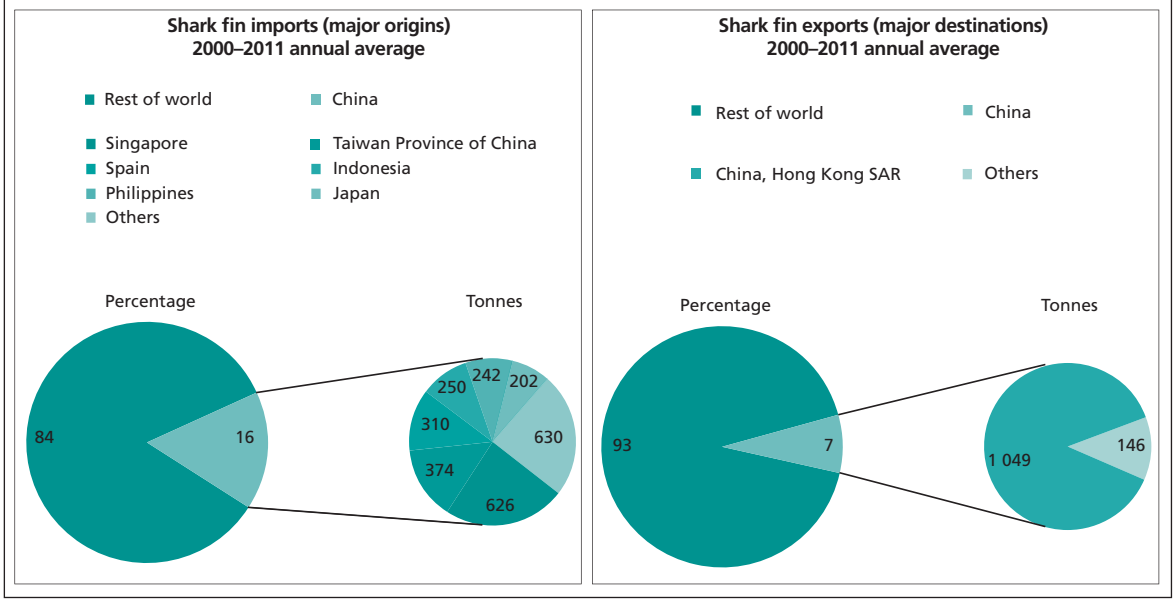
Overview

China has historically been the world's foremost consumer of shark fins, which are highly valued in Chinese culture as high-status food items with many purported health benefits. In trade terms, from 2000 to 2011, China recorded average yearly shark fin imports of 2 631 tonnes at USD14.8 million, making the country the second-largest importer in volume terms behind China, Hong Kong SAR, and the third-largest (behind China, Hong Kong SAR and Singapore) in terms of value. These reported figures represent 16 percent of the 2000–2011 world total in volume terms, while the value share was 4 percent. China is also important as an exporter, exporting an

[6] www.globalocean.org.uk/site_media/uploads/sharks/bloom_survey_results.pdf
[7] www.scmp.com/news/hong-kong/article/1120051/shark-fin-trade-victim-anti-chinese-conspiracy-say-traders?page=all
[8] www.bloomberg.com/news/2013-09-14/hong-kong-bans-shark-fin-from-official-menus-to-save-species.html
[9] www.scientificamerican.com/article.cfm?id=have-we-saved-the-sharks

average of 1 196 tonnes (USD23.7 million) of fins annually from 2000 to 2011. China's exports constituted 7 percent of the volume of world exports over this time frame, and 9 percent of the value. The difference in average unit value of China's shark fin imports versus that of its exports, USD5.6/kg compared with USD19.8/kg, points to its traditional importance as a processing centre and supplier of processed fins to markets in East and Southeast Asia. With regard to domestic production, the average recorded chondrichthyan capture production volume of 1 464 tonnes (2000–2011) is insufficient to supply the large domestic market, but with an average of 2.4 million tonnes of China's catches recorded under the general category "marine fishes nei", the exact extent to which China's fleet may be supplying domestic demand for shark fins is difficult to establish.

FIGURE 6
China shark fin trade profile



Source: China Customs (2013).

Trade recording

From May 2000 onwards, following a decision to record frozen shark fins under the same code as frozen shark meat, China customs recorded trade statistics for shark fins in one category only up until 2005, when two more categories were added. However, statistics for these newer product classifications show that minimal trade in these products has taken place. The commodity descriptions for these shark fin commodity codes were as follows:

- May 2000 onwards: dried shark fins, not smoked;
- Added in 2005: prepared/preserved shark fins in airtight containers, minced; and other prepared/preserved sharks fin, minced.

This classification system is less informative than that of China, Hong Kong SAR customs. It is presumed that the last two categories refer to processed fins, but there is no specific category for fins in frozen form. As pointed out above, this is an important consideration considering the significantly decreased raw material yield of frozen fins, and particularly so in China's case given the statistics from China, Hong Kong SAR, which show a substantial average yearly volume of about 2 491 tonnes of "frozen, unprocessed" fins, worth USD36.2 million, exported to China from 2000 to 2012. The observation that, for the same period, China's customs records show a yearly average

of only 92 tonnes (USD238 000) imported from China, Hong Kong SAR within the category "frozen shark meat", which supposedly includes frozen shark fins, suggests inconsistency even in the available aggregated data. Indeed, when comparing total shark fin exports to China as recorded by China, Hong Kong SAR – dried fins included – with the imports originating from China, Hong Kong SAR reported by China in the same period, large discrepancies can be seen between the two in all relevant shark commodity categories (Clarke, 2004) (see also Appendixes 1 and 2).

Imports and exports

The characterizing trend, from 2000 to 2012, was the steady and substantial decline of China's trade in shark fins as reported in official statistics. However, the extent to which this represents a real decline, rather than a shift in the composition of China's shark fin trade towards frozen fins that are not reported as such, is unclear. Considering also the discrepancies between China's available trade statistics and those of its major partner (China, Hong Kong SAR), as identified above, it is necessary here to again introduce a note of caution in interpreting the data that are presented in the following paragraphs.

From 2000 to 2012, imports fell from 4 613 tonnes (USD25.5 million) to 113 tonnes (USD1.4 million) in 2012, a total drop over the 13 year period of 98 percent in volume. Comparing 2000 with 2011, China's share of the world market (imports of shark fins) decreased from 26 percent to 1 percent by volume, while the corresponding decrease by value was from 6 percent to 0.2 percent, the lower figures here being the result of China's tendency of importing a relatively higher proportion of lower-valued, unprocessed fins. The unit value of China's shark imports remained relatively steady through the period until 2012, when it effectively doubled to USD12.7/kg. The average unit value of China's shark fin imports from 2000 to 2012 was quite low at USD5.7 kg.

Meanwhile, the decline in recorded exports, consisting almost entirely of dried fins, was of a similar magnitude, with an 84 percent drop in volume recorded from 2000 (2 065 tonnes) to 2012 (339 tonnes). Over the same period, the value of shark fin exports dropped by 77 percent from USD52 million to USD11.7 million. From 2000 to 2011, this decline resulted in a decrease in China's share of world exports from 13 percent to 3 percent in volume, and from 15 percent to 4 percent in value. The unit value of these exports fluctuated substantially, dropping from USD25.1/kg in 2000 to a low of USD15.6/kg in 2005 before rising steeply to USD34.6/kg in 2012. The average figure for the full period was USD20.2/kg.

The reasons behind the striking decline in trade volumes are not entirely clear, and as mentioned above, the extent to which the apparent drop is an accurate reflection of a real trend or rather the result of increasing proportions of fins that are not reported as such is also uncertain.

An examination of the trade records of other major exporters (China, Hong Kong SAR, Singapore, Taiwan Province of China, Japan, India, Thailand, Indonesia and Malaysia) reveals a general trend of declining exports to China reflected over roughly the same time frame. This suggests that the drop in traded volumes is real, at least to some extent. This is supported by reports from inside China pointing to a declining market. These are discussed in more detail in the following section on the Chinese domestic trade and markets.

However, the possibility must also be acknowledged that China's commodity code revision that reclassified frozen shark fins has encouraged its trading partners to do the same, and thus an increasing proportion of frozen fins in trade between China and these partners would appear as an overall decline in the statistics of these countries also. There is also the possibility that a shift in trade dynamics, possibly resulting from China's entry into the WTO in 2001, has prompted a diversification of supply sources to include exporting countries that do not themselves identify shark fins explicitly in

their trade databases and are now offloading directly in Chinese ports rather than in China, Hong Kong SAR, where shark fins are more visible in trade records.

Partners

According to China's customs statistics, the top six originating countries for shark fin imports from 2000 to 2012 were Singapore (an average of 578 tonnes per year or USD3.2 million), Taiwan Province of China (345 tonnes or USD2.2 million), Spain (286 tonnes or USD1.4 million), Indonesia (231 tonnes or USD1.2 million), the Philippines (223 tonnes or USD1.2 million), and Japan (187 tonnes or USD1.7 million). However, imports from all six countries had declined to effectively zero by 2012, when China imported fins from only four countries: Senegal (39 tonnes or USD248 000), Viet Nam (32 tonnes or USD262 000), China, Hong Kong SAR (29 tonnes or USD181 000) and Taiwan Province of China (4 tonnes or USD667 000). With the exception of a single tonne of fins in the "prepared or preserved" category from Taiwan Province of China, all these imports are dried, as are the vast majority of shark fin imports into China as recorded in trade statistics over the previous years, with the exception of very minimal quantities of "prepared or preserved" fins. However, as pointed out above, the possibility cannot be excluded of a contemporaneous increase in imports of frozen, unprocessed fins, which since 2000 have not been explicitly identified as shark fins in trade statistics.

Three countries and territories make up essentially the entirety of China's shark fin export market: China, Hong Kong SAR, Japan and Singapore. Of these, China, Hong Kong SAR takes by far the largest share of exports, with a yearly average export volume of 983 tonnes (USD19.4 million) from 2000 to 2012, compared with 94 tonnes (USD1.9 million) in Japan's case and 27 tonnes (USD683 000) for Singapore. Export volumes from China to China, Hong Kong SAR dropped by 90 percent in quantity over the same period (from 1 907 tonnes to 189 tonnes) and 85 percent in terms of value (USD45.8 million to USD6.8 million). Meanwhile, export volumes to Japan and Singapore remained relatively stable. If one accepts that a real reduction took place in the quantity of raw material – unprocessed fins – imported by China, this would explain the decline in exports to China, Hong Kong SAR, as these exports generally consist of fins that are imported, processed and then re-exported for consumption in China, Hong Kong SAR (Clarke, Milner-Gulland and Bjørndal, 2007).

Domestic trade and markets

As described above, the overall trends in imports and exports suggest that China's shark fin trade began shrinking in 2004 and since 2010 has been negligible. In addition to the influence of trade reporting practices, the role of domestic production could explain some of this decline. China's reported capture production of sharks had increased from below 1 000 tonnes per year prior to 2008 to 2 000-3 000 tonnes per year until 2011,[10] but it is not known whether this rise reflects an increase in catches or merely an increase in species-specific (or shark-specific) reporting of catches. Moreover, this amount of increase would not have been sufficient to compensate for the decrease in trade if demand had remained constant throughout the period.

Until the mid-1990s, shark fin cuisine in China was found almost exclusively in the southern provinces of Guangdong and Fujian, and in the major cities of Beijing and Shanghai, but it is now served throughout China mainly on celebratory occasions (Clarke, Milner-Gulland and Bjørndal, 2007; Fabinyi, 2012). Shark fin processing

[10] FAO – FishStatJ capture production data.

from imported materials appears concentrated in Guangdong Province, but shark meat processing operations in Puqi, Zhejiang Province, reportedly also process fins.[11]

There are no known independent and ongoing sources of shark consumption data in China, but media reports cited Beijing-based traders complaining in October 2013 of a 70 percent drop in sales volumes and cutting prices by one-third (from USD165 to USD110 for 500 g).[12] A Beijing-based Chinese academic affiliated with the China Ministry of Commerce has reported a decline in sales of shark fin soup of 70 percent at luxury hotels and of 50 percent at shark fin specialty restaurants between January and September 2013. This source considered that about half of the decline could be attributed to new rules for government hospitality expenses that were announced in 2012[13] (the other causes of decline were not mentioned). Article 10 of implementation guidelines issued in December 2013 specifically forbids consuming shark fin, bird's nest and other luxury dishes including those made from protected animal species.[14]

Although all of the proscribed food items are not specified,[15] there are reports of declining sales of other luxury seafoods such as abalone, sea cucumber, lobsters and crab (Wang, 2013; Wang, 2013). It is not known whether these reports, which are primarily based on information from Beijing, reflect trends in shark fin consumption outside of the government sector and throughout all of China (Fabinyi and Liu, 2014). Indeed, there are concerns that the fall in the price of shark fin products resulting from the demand vacuum left by the aforementioned restrictions on hospitality expenses could encourage private consumption to become more widespread in the future, particularly with the continuing income growth in China that generally leads to increased consumption of luxury food items such as shark fins.[16]

However, it is also possible to identify recent developments that have negatively affected private consumption of shark fins. One of these is the media's reporting on incidents of artificial shark fin being marketed as real shark fin (Fabinyi and Liu). A CCTV investigative report on this topic in January 2013 found that more than 85 percent of samples tested contained less than 5 percent real shark fin. This has reportedly heightened public concerns about false marketing and resulted in a consumer backlash.[17] Another potential factor is a growing awareness of conversation issues relating to shark finning among the Chinese public, prompted largely by numerous campaigns inside and outside China to reduce shark fin consumption.[18]

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[11] http://invisiblephotographer.asia/2011/06/19/photoessay-sharkvillage-lamyikfei/ www.theguardian.com/world/2013/feb/12/shark-fishing-china-puqi-conservation

[12] www.independent.co.uk/voices/comment/in-china-shark-fin-soup-is-losing-its-fashion-8894495.html

[13] www.independent.co.uk/news/world/asia/shark-fin-soup-off-the-menu-chinas-crackdown-on-extravagant-banquets-gives-sharks-a-second-chance-8795235.html

[14] www.gov.cn/jrzg/2013-12/08/content_2544591.htm

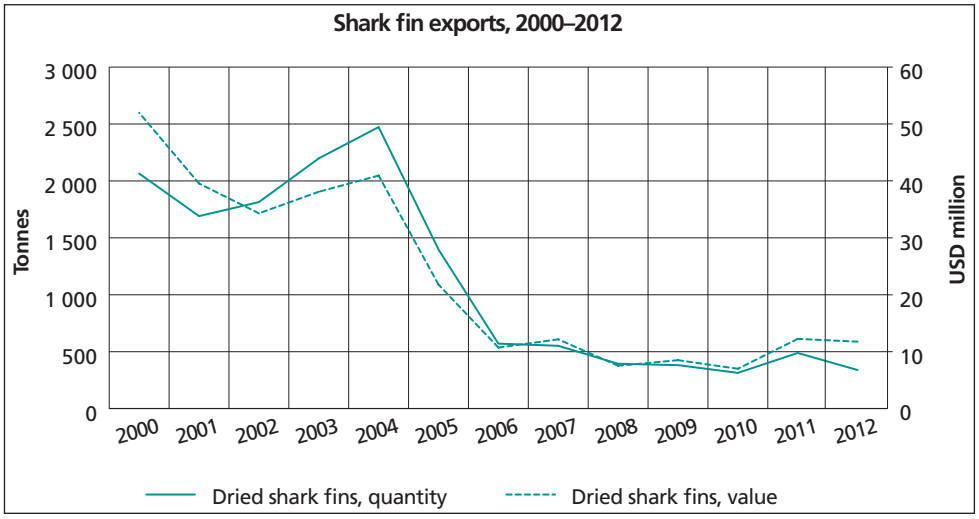
[15] www.gov.cn/jrzg/2013-12/08/content_2544642.htm

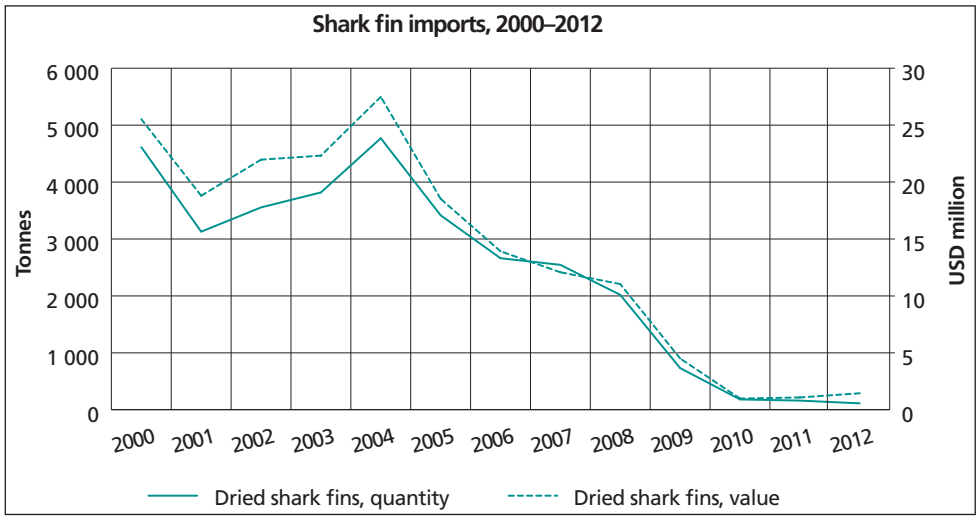
[16] www.chinadialogue.net/blog/6644-Shark-fin-consumption-falls-amongst-rich-but-what-about-the-rest-/en

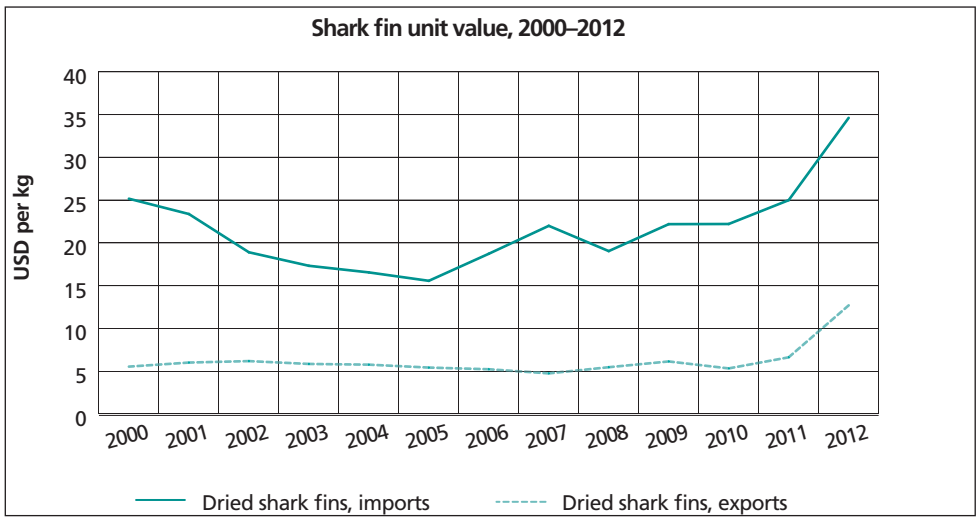
[17] http://big5.cntv.cn/gate/big5/jingji.cntv.cn/2013/01/16/ARTI1358293236914883.shtml

[18] www.washingtonpost.com/world/in-china-victory-for-wildlife-conservation-as-citizens-persuaded-to-give-up-shark-fin-soup/2013/10/19/e8181326-3646-11e3-89db-8002ba99b894_story.html

FIGURE 7
China shark fin trade, 2000–2011







Source: China Customs (2013).

Singapore

Snapshot

- Singapore is a the second-most important entrepôt for the world shark fin trade after China, Hong Kong SAR, ranking as the world's second-largest importer and exporter in value terms.
- It has limited domestic production and a relatively small domestic market.
- From 2000 to 2007, it recorded average annual shark fin imports of 1 583 tonnes, worth USD43 million (Figure 9).
- From 2000 to 2007, it recorded average annual shark fin exports of 1 218 tonnes, worth USD34.1 million (Figure 9).
- Shark fins have been reclassified several times in Singapore's trade databases, and frozen (prepared, ready for use) shark fins appear to have been recorded as frozen shark meat from 2008 to 2011.
- Taking into account the gaps in available data resulting from the reclassification of shark fins, it appears that trade in shark fins through Singapore has been increasing.

Overview

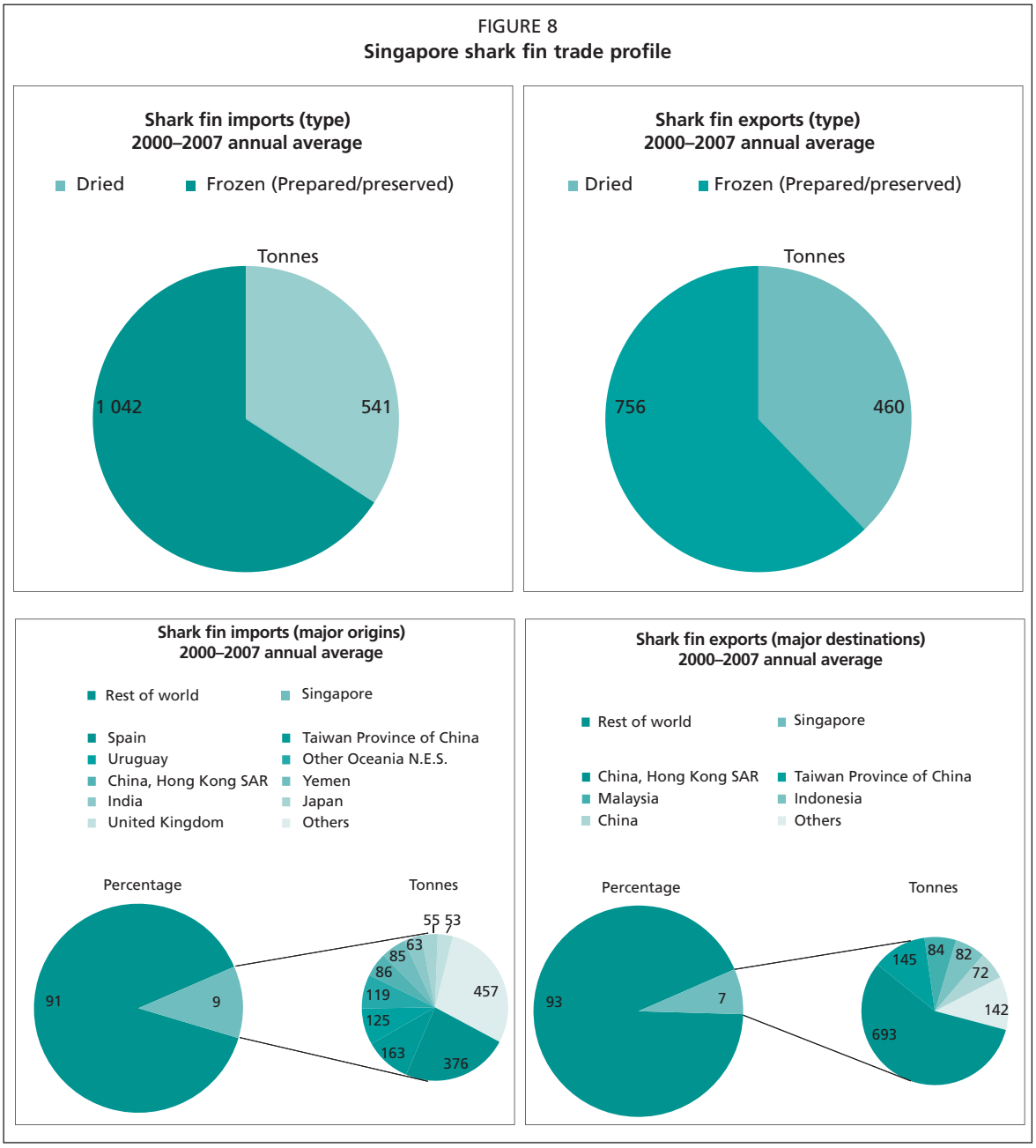
Singapore's role in the international market for shark fins is similar to that of China, Hong Kong SAR – it is an importer and re-exporter with minimal domestic shark production. Its domestic consumer base is considerably smaller in comparison with China, Hong Kong, but neighbouring Malaysia constitutes a significant market. Over the 12 year period from 2000 to 2011, based on statistics reported to FAO (whose accuracy is discussed below), Singapore took an average 7 percent share of total world imports of shark fins in volume terms and 10 percent by value (1 127 tonnes or USD40 million), while the equivalent figures for world exports were 5 percent of volume and 9 percent of value (864 tonnes or USD28.6 million). This makes Singapore the second-largest importer and exporter in value terms after China, Hong Kong SAR over this period. Considering quantity only, it falls to fourth (after China, Hong Kong SAR, China and Malaysia) for imports, and sixth (after China, Hong Kong SAR, Thailand, Indonesia China and Taiwan Province of China) for exports, pointing to the relatively higher unit value of Singapore's fin trade – about USD35/kg for both imports and exports. In addition to publicly reported trade statistics, as of the mid-2000s, and potentially thereafter, Singapore received large quantities of shark fins originating from British Indian Ocean Territory that are not reported in the publicly available statistics (Clarke, 2005). As China, Hong Kong SAR, Singapore's contribution to primary (raw material) production of shark fins is insignificant, with an average domestic chondrichthyan production volume from 2000 to 2011 of only 188 tonnes.

Trade recording

Singapore customs previously recorded trade in shark fins under two basic categories: dried; and prepared, ready for use. The latter category was split into two further categories in 2007, one for "prepared, ready for use fins in airtight containers", and another for those not in airtight containers. There is no specific reference to whether fins are frozen or not, and such ambiguities make it problematic to identify how and whether frozen fin quantities are recorded. Clarke (2005) states that in Singapore "unprocessed frozen fins are tallied as prepared shark fin in published statistics". Given the sharp decline in the quantities reported in the prepared shark fin category in 2008 after it was split, and the concomitant increase in Singapore's reported exports of frozen shark meat in the same year, it appears that frozen shark fins were reported as prepared shark fin through 2007 and then as frozen shark meat from 2008 to 2011.

In 2012, Singapore's shark commodity coding system underwent another revision that removed the specification of "dried" from the description of (unprepared) shark fins. Given the sharp increase in reported traded quantities of shark fins in 2012 as compared with dried shark fins in 2011, and through comparison of Singapore's trading statistics with those of China, Hong Kong SAR, it appears that in 2012 Singapore moved frozen shark fins from the commodity code for frozen shark meat to the general shark fins code.

FIGURE 8
Singapore shark fin trade profile



Source: International Enterprise Singapore (2013).

Imports and exports

As a result of the difficulty of accurately estimating Singapore's trade in the four-year period from 2008 to 2011 (i.e. as discussed above, frozen shark fins were combined with frozen shark meat), this section restricts its focus to the period from 2000 to 2007, and also the year 2012.

From 2000 to 2007, Singapore's imports of shark fins trended steeply upwards, doubling in volume over the eight-year period and reaching 2 162 tonnes (USD53.6 million) in 2007. The major component of this increase was rapid growth in imports of "prepared, ready for use" fins (i.e. unprocessed frozen fins), with 2007 volume and value roughly three times that recorded in 2000. In terms of average annual volume and value imported, prepared, ready-to-use fins accounted for 66 percent (1 042 tonnes annual average) and 45 percent (USD19.5 million annual average) of the total figures, respectively. Meanwhile, imports of dried fins, which made up the remainder of Singapore's shark fin imports as reported, followed a slight downward trend over this period. In 2012, Singapore imported a total of 2 708 tonnes of shark fins worth USD61.2 million, with 94 percent of the volume (80 percent of the value) recorded under the new aggregated code shark fins, and the remainder described as "prepared, ready for use".

Over the same eight-year period from 2000 to 2007, Singapore's shark fin exports followed a similar overall trend to that of imports, climbing steeply and steadily for five years and peaking in 2006 (1 862 tonnes or USD45 million) and 2007 (1 690 tonnes or USD44 million). This trend was driven primarily by a boom in exports of "prepared, ready for use" fins, which made up 62 percent (annual average of 757 tonnes) of export volume and 36 percent (annual average of USD12.4 million) of value from 2000 to 2007, after approximately tripling in volume and value over this period. The remainder of Singapore's shark fin exports, up until 2007, were made up of dried fins. In 2012, Singapore reported a total of 2 261 tonnes exported, worth USD42.2 million, with 96 percent of the volume (92 percent of value) classified under the new aggregated code shark fins. When these figures are tallied for all forms of shark fins, figures for 2012 represent a large increase in quantity and a small decrease in value as compared with 2007.

Partners

Looking at annual averages for the full 2000–07 period, the leading origin country of Singapore's shark fin imports in quantity terms was Spain with 24 percent (376 tonnes or USD5.1 million) of the total, followed by Taiwan Province of China with 10 percent (163 tonnes or USD2.5 million). Imports from Spain grew rapidly, from 4 tonnes in 2000 to 1 107 tonnes in 2007. It is also worth pointing out here that both Spain and Taiwan Province of China maintain large tuna fleets in the Indian Ocean, which is probably where many of the shark fins landed in Singapore originated. In third, fourth and fifth place respectively are Uruguay (125 tonnes or USD2.2 million) with 8 percent, a customs territory described as Other Oceania N.E.S. also with 8 percent (119 tonnes or USD2.2 million) and China, Hong Kong SAR at 5 percent (86 tonnes or USD5.6 million). By average value, China, Hong Kong SAR ranked first with 13 percent, followed by Spain with 12 percent, Indonesia with 10 percent (USD5.2 million or 46 tonnes), India with 8 percent (USD3.4 million or 63 tonnes), Yemen with 7 percent (USD2.8 million or 85 tonnes) and Taiwan Province of China with 6 percent. Imports from China, Hong Kong SAR and Indonesia generally consisted of a mix of fins in both the dried and "prepared, ready for use" (frozen) category. Indian-origin imports are largely dried raw material, while imports from Taiwan Province of China, Spain and Uruguay were primarily low-valued "prepared, ready for use" (frozen) fins.

By average annual volume, Singapore's top four export partners from 2000 to 2007 were China, Hong Kong SAR with 57 percent (693 tonnes or USD21.3 million), Taiwan Province of China with 12 percent (145 tonnes or USD1.6 million), Malaysia with 7 percent (84 tonnes or USD4.8 million) and Indonesia with 7 percent (82 tonnes or USD1.7 million). By value, these were China, Hong Kong SAR with 62 percent, Malaysia with 14 percent, Indonesia with 5 percent and Taiwan Province of China with 5 percent. Exports to China, Hong Kong SAR consisted of a mix of dried and "prepared, ready for use" (frozen) fins, with the latter type accounting for 56 percent of volume and 32 percent of value over the eight-year period and dried making up the remaining proportion. Exports to Malaysia were a similar mix, while the shark fins directed to Taiwan Province of China and Indonesia consisted mainly of "prepared, ready for use" (frozen) fins.

In 2012, the most important origin countries for Singapore's shark fin imports were Spain (692 tonnes or USD11.2 million in 2012), Uruguay (630 tonnes or USD9.4 million), Namibia (297 tonnes or USD4.5 million), China, Hong Kong SAR (282 tonnes or USD9.7 million) and Indonesia (131 tonnes or USD6.2 million). The major export destinations in the same year were China, Hong Kong SAR (1 230 tonnes or USD22.1 million), China (351 tonnes or USD5.1 million), Japan (233 tonnes or USD3.7 million), Taiwan Province of China (157 tonnes or USD2.4 million) and the Philippines (136 tonnes or USD2.3 million). The vast majority of these exports are now classified in the customs database as simply shark fins.

Domestic trade and markets

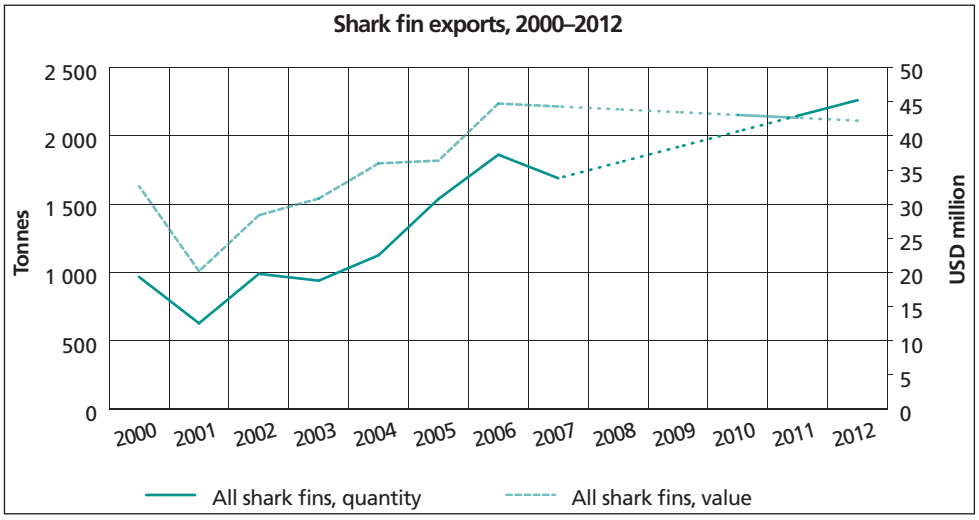
A study of the domestic market for shark products in Singapore in the mid-2000s estimated Singapore's domestic consumption of shark fins at 300–400 tonnes per year (or 900–1200 tonnes per year of unprocessed fins) (Clarke, 2005). This figure approximates Singapore's reported production of shark fin in 2003 of 1 021 tonnes,[19] but this was a particularly high value in comparison with the 120–475 tonnes reported in other years from 2000 to 2009. Therefore, it is difficult to know whether the domestic consumption estimate for 2003 was also high compared with other years. Recent media reports cite a representative of the Singapore shark fin trade industry as claiming that domestic sales of shark fins to hotels and restaurants in Singapore fell by one-third between 2011 and 2012.[20]

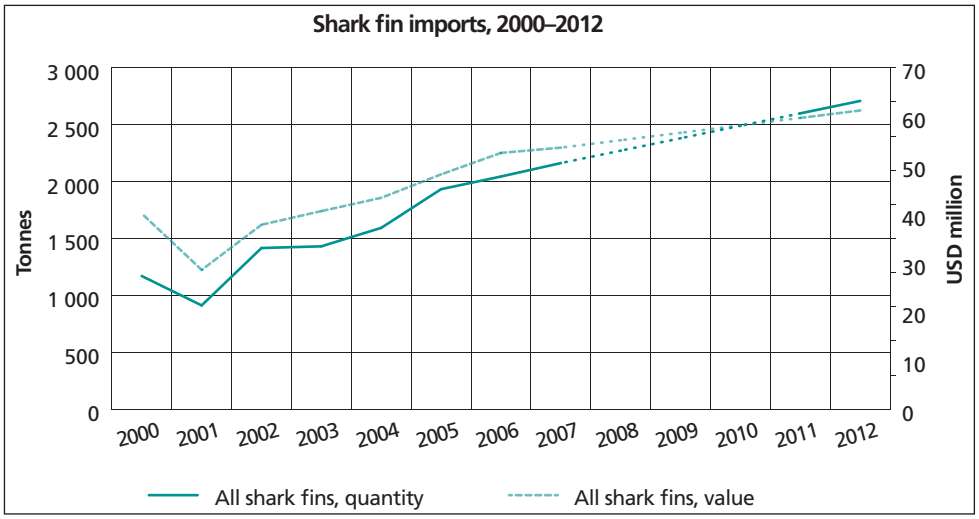
This representative also stated that wholesale prices fell by 30–50 percent over the same period with processed fins then selling for USD150–200/kg. The mid-2000s study reported average retail prices of USD218/kg for fine loose fin needles in "nests", USD305/kg for small whole fins in dried form, and USD332/kg for thicker loose fin ray "nests". Species observed on the Singapore market included blue shark, guitarfish, thresher sharks, mako sharks, dogfish sharks, school shark, spotted estuary smooth-hound, elephant fish, and various requiem sharks (*Carcharhinus* spp.).

Interviews conducted with traders in the mid-2000s revealed a lack of concern about environmental campaigns but anxieties over the effects of the economic slow down. In contrast, recent media reports from Singapore indicate both the catering industry and the traders themselves are increasingly reacting to pressures regarding the sustainability of the shark fin supply.[21]

[19] FAO – FishStatJ 2011 production data.
[20] http://news.asiaone.com/news/singapore/sharks-fin-sales-and-wholesale-prices-dive
[21] Ibid.

FIGURE 9
Singapore shark fin trade, 2000–2012





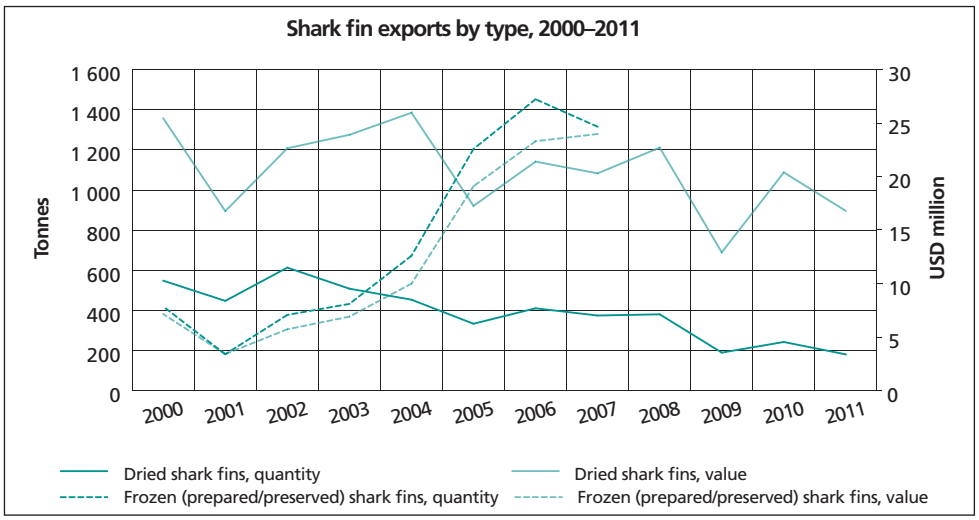
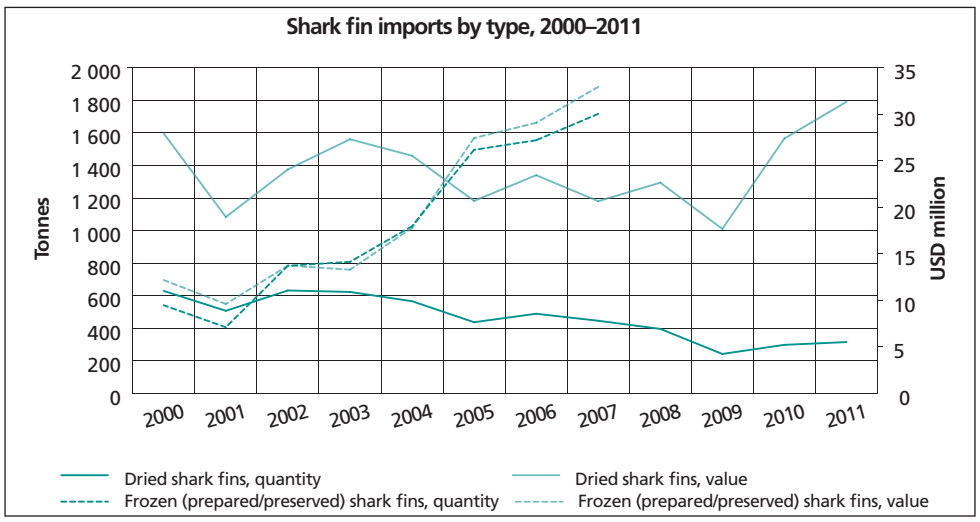
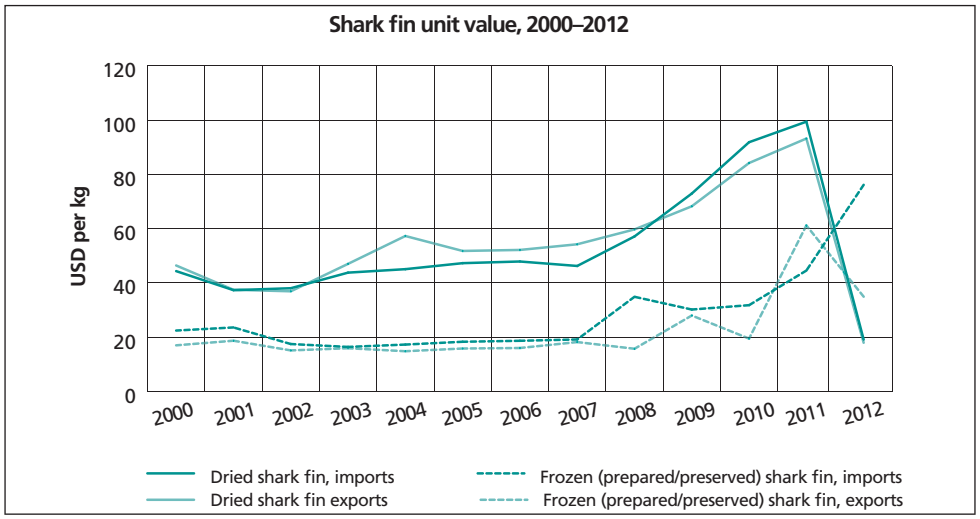


FIGURE 9 (continued)





Source: International Enterprise Singapore (2013).

Taiwan Province of China

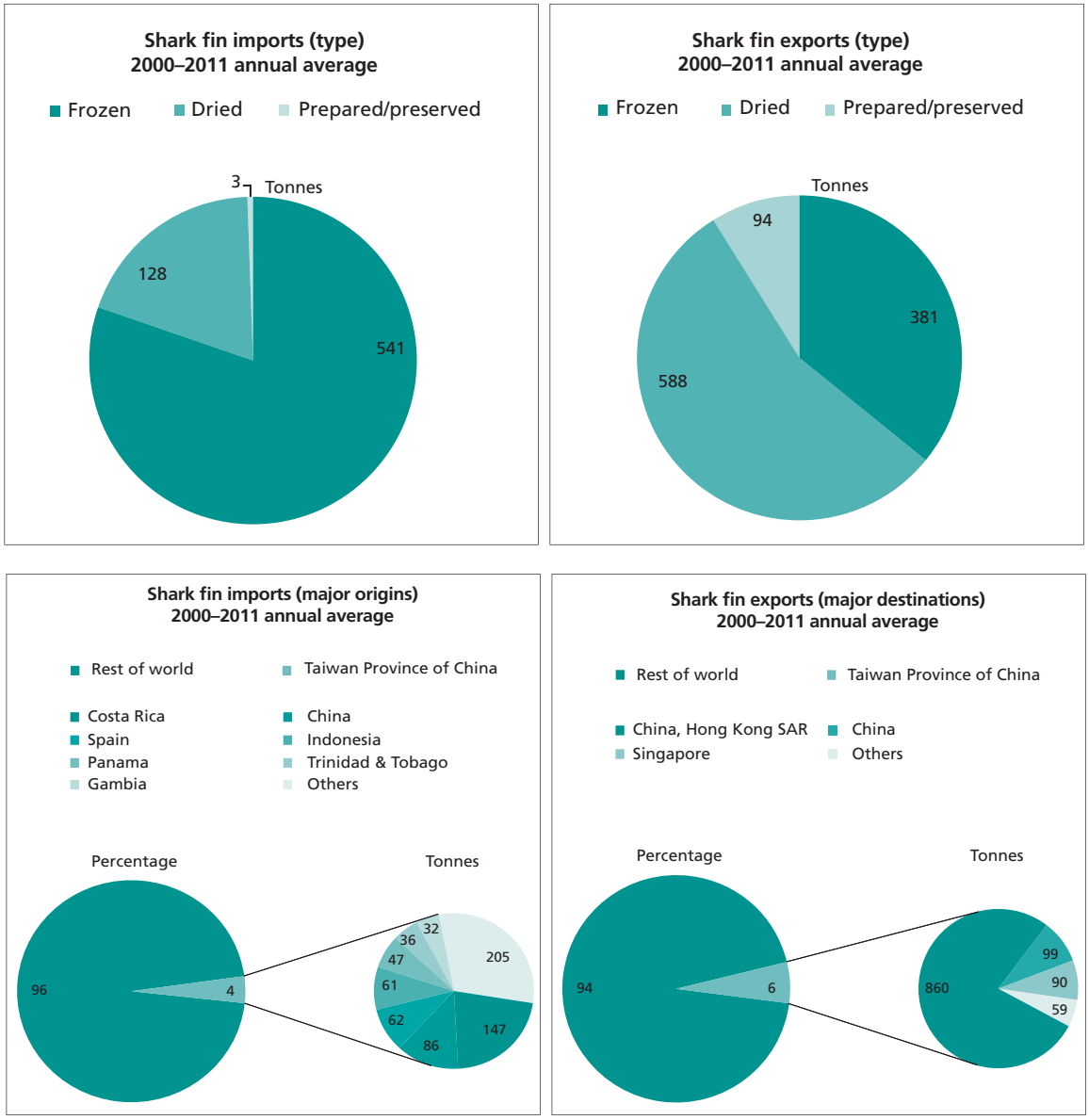
Snapshot

- Taiwan Province of China is a major producer, consumer, trader and processor of shark fins.
- It ranks as the world's fourth-largest shark producer and fifth-largest importer and exporter in volume terms.
- It imports relatively low-valued, unprocessed shark fins sourced from a diversified supply network of shark-producing countries, while China, Hong Kong SAR is the major export destination.
- From 2000 to 2011, Taiwan Province of China recorded average annual shark fin imports of 681 tonnes, worth USD5.9 million (Figure 11).
- From 2000 to 2011, it recorded average annual shark fin exports of 1 114 tonnes, worth USD8.1 million (Figure 11).
- Its trade records classify shark fins as frozen, dried or prepared/preserved but not as processed/unprocessed.
- From 2000 to 2011, reported imports of shark fins by Taiwan Province of China rose while its exports remained approximately stable.

Overview

Taiwan Province of China differs from the major shark-fin trading centres of China, Hong Kong SAR and Singapore in that, in addition to being an important importer and exporter, it is also a significant domestic producer of sharks and thus fins. As a result, observable trends in its trade cannot be taken as indicative of global patterns. Its distant-water fleets, which account for the major proportion of shark captures, fish all over the Atlantic, Indian and Pacific Oceans. Comparing the average yearly production of Taiwan Province of China, its average of 43 869 tonnes from 2000 to 2011 represents the fourth-largest chondrichthyan capture production in the world over this period, although volumes declined considerably in 2009 (29 310 tonnes) and 2010 (24 352 tonnes) before recovering in 2011 to 43 073 tonnes. It should also be noted that, until 2007, Taiwan Province of China recorded chondrichthyan production in two aggregated shark and ray categories only: "rays, stingrays, mantas nei" and "sharks, rays, skates, etc. nei". In 2007, five species-specific categories were added: blue shark, shortfin mako, silky shark, ocean whitetip shark and Japanese topeshark. However, the major proportion of production (86 percent of the total from 2007 to 2011) is still recorded under the aggregate category "sharks, rays, skates, etc. nei". As a result, as in any case of aggregated data, it is difficult to estimate the actual production of sharks for the purpose of fin production. This is particularly true considering that certain ray and skate species are also sometimes fished for their cartilage for use in shark fin soup. With regard to its role as a trader, Taiwan Province of China was on average the fifth-largest exporter of shark fins by volume from 2000 to 2012, with an average yearly volume of 1 114 tonnes exported, and the eighth-largest exporter in terms of value (yearly average: USD8.1 million). It was also the fifth-largest importer over the period by volume (681 tonnes average yearly volume), and the fourth-largest by value (USD5.9 million). Given the size of its domestic production, however, these figures do not fully represent the importance of Taiwan Province of China as a consumer and processor. In general, Taiwan Province of China may also be characterized as a trader in relatively low-valued (unprocessed and frozen) fins; the average unit value of its shark fin trade from 2000 to 2012 was USD8.9/kg for imports and USD7.5/kg for exports.

FIGURE 10
Taiwan Province of China shark fin trade profile



Source: Taiwan Directorate General of Customs (2013).

Trade recording

Taiwan Province of China customs records of the shark fin trade are relatively detailed compared with the majority of other trading countries, second only to China, Hong Kong SAR in terms of the precision of the commodity description. Shark fins are recorded in three distinct categories: "dried, frozen" (including "salted and in brine") and "prepared or preserved". These same three categories have been maintained through 2013, with no trade so far recorded under the generalized code of the Harmonized Commodity Description and Coding System (HS) for sharks (030571) introduced in 2012. As in the case of China, Hong Kong SAR, the clarification of whether or not the fins are frozen makes it possible, in theory, to estimate the quantity of raw material being traded through Taiwan Province of China and potentially approximately estimate catch volumes using an appropriate methodology. Considering the role of Taiwan Province of China as a primary producer and trader of raw material

low-valued fins, it is assumed that the majority of fins classified within the dried and frozen categories are unprocessed.

Imports and exports

Although Taiwan Province of China has traditionally exported about twice as much shark fin as it has imported, this has been changing in recent years. From 2000 to 2011, import volumes (and values) trended steeply upwards, and the 2011 total recorded imports of 1 260 tonnes represent an increase of 153 percent since 2000, although volumes were down in 2012, at 635 tonnes. The corresponding increase in terms of value was even larger, with shark fin imports in 2011 worth USD14.2 million, a 275 percent rise compared with 2000, but falling back to USD7.1 million in 2012. The upward trend in volume was the result of steadily increasingly import volumes of frozen fins, which by 2011 represented 83 percent of total import volume. The upward trend in total value, however, was driven primarily by a large increase in the unit value of dried fin imports, which by 2011 represented 76 percent of the total. Export volumes remained relatively stable from 2000 to 2011, at an average of 1 108 tonnes, the majority of which (55 percent) was dried shark fins. Total export value rose by 128 percent from 2000 to 2011, with increases in unit values for all fin commodity groups. In 2012, the export volume fell back to 543 tonnes (USD7.8 million).

Partners

Imports of shark fin by Taiwan Province of China come from a variety of different sources, with 11 different countries accounting for 4 percent or more of the total volume. The major proportion of imports originate in primary producing countries, and at least some are most probably landed in foreign ports by vessels from Taiwan Province of China, operating as part of distant-water fleets, before importation into Taiwan Province of China. The top five origins by volume from 2000 to 2012, in descending order, were: Costa Rica with a 21 percent share (141 tonnes or USD292 000), China with 13 percent (89 tonnes or USD1.9 million), Spain with 9 percent (61 tonnes or USD725 000), Indonesia with 9 percent (58 tonnes or USD839 000), and Panama with 7 percent (44 tonnes or USD132 000). In value terms, the top 6 partners account for 80 percent of the total value: China with 31 percent, Indonesia with 14 percent, Spain with 12 percent, China, Hong Kong SAR with 10 percent (USD538 000 or 23 tonnes) and India with 8 percent (USD459 000 or 16 tonnes). The relative importance of the different origins has been changing in recent years, as imports from Costa Rica, almost entirely low-valued frozen fins, declined significantly and imports from China, Spain, Singapore, Trinidad and Tobago, Panama and Indonesia increased. The majority of import volume consists of frozen fins, although significant quantities of higher-valued dried fins also come from China, India and Indonesia.

The major destination for shark fin exports from Taiwan Province of China continues to be China, Hong Kong SAR, which took a 77 percent share of export volume (821 tonnes) and a 65 percent share of value (USD5.9 million) from 2000 to 2012. Exports to China, Hong Kong SAR are primarily dried fins (63 percent of volume and 71 percent of value) with some lesser quantities of frozen fins (32 percent of volume and 20 percent of value). Statistics from China, Hong Kong SAR suggest these exports are almost entirely unprocessed raw material. After China, Hong Kong SAR, the two other major export destinations are China and Singapore, although both volumes and values are relatively small in comparison, despite recent increases. China-destined exports came to an average of 96 tonnes a year (USD947 000) from 2000 to 2012, while the average figure for Singapore was 86 tonnes (USD693 000). These exports were made up of dried, frozen and "prepared and preserved" fins, although since 2008 the proportion of frozen fins has increased significantly for both countries, and dried fin exports to China have been zero since 2010. Another noticeable

trend is the steeply rising unit value of frozen fin exports from Taiwan Province of China to China, which steadily increased from USD0.75/kg in 2004 to USD23.1/kg in 2012.

Domestic trade and markets

Taiwan Province of China is among the world's top five importers and exporters of shark fin, and ranks fourth in global chondrichthyan capture production. This combination of trading and production, along with the potential for high domestic consumption, makes Taiwan Province of China one of the most important but also one of the most complex of the world's shark fin markets. A simple comparison of import and export quantities for 2012 suggests a differential of 100 tonnes remained in Taiwan Province of China. However, such comparisons are complicated by the mix of "dried unprocessed", "frozen unprocessed", and prepared shark fin imports and exports, and by the fact that domestic landings are expected to supplement imports and increase the local supply. Moreover, with such a large distant-water presence, it is not known how landings by the Taiwan Province of China fleet in foreign ports are included in trade statistics. For these reasons, there is insufficient information in the available statistical datasets to reliably estimate domestic consumption for Taiwan Province of China.

There has been little investigation of the Taiwan Province of China shark fin trade in the past decade (McCoy, 2006). The only known information on domestic trading and processing patterns derives from interviews with four traders based in China, Hong Kong SAR, Japan and Singapore in 2008 (Clarke, unpublished data). These individuals agreed that the sourcing of frozen shark fins at sea (i.e. from pelagic fishing operations) has been for some time, and continues to be, largely controlled by companies based in Taiwan Province of China using both fishing and transport vessels. These sources suggested that the main harbour in Taiwan Province of China for landings is Donggang (Tung Kang) on the southern coast just south of Kaohsiung. Donggang, along with Su'Ao on the northeast coast, is a primary landing point for the coastal longline fleet of Taiwan Province of China; distant-water longliners usually land sharks in Kaohsiung. Frozen shark fins are dried at processing plants located nearby and then shipped to China. While transport of shark fins to Taiwan Province of China on transport vessels should be recorded as imports, this would not necessarily be the case for fishing vessels from Taiwan Province of China, and thus this situation suggests that reported imports by Taiwan Province of China may underestimate its total supply. Two interviewees also mentioned that vessels from China receive unprocessed fins from suppliers based in Taiwan Province of China through transshipment in the Taiwan Strait, and then land them, rather than import them, in ports in China. The majority of respondents agreed that Taiwan Province of China is merely a transit point and that its consumption of shark fins is not high.

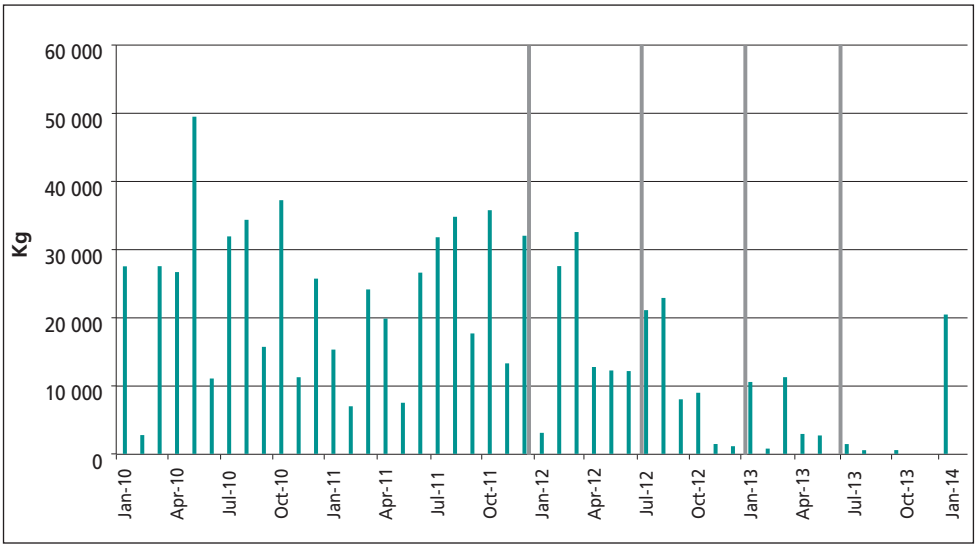
In January 2012, Taiwan Province of China promulgated a regulation requiring that sharks be landed with their fins naturally attached.[22] The regulation applied immediately to vessels using ice for catch preservation. For vessels of more than 100 tonnes using freezers, the regulation was phased in over time. For the first six months, fins and carcasses were required to conform to a 5 percent weight ratio, for the next six months removed fins were required to be tied to the carcass, and as of 1 January 2013 fins were required to be naturally attached. Vessels using freezers but of less than 100 tonnes were given one year (2012) to apply the 5 percent ratio, followed by six months to tie fins to the carcass (January–June 2013) before being required to conform to the naturally attached rule in July 2013. The regulation does not apply to sharks caught

[22] www.fa.gov.tw/cht/AnnounceShark/content.aspx?id=1&chk=8e606978-56f8-4ef2-a8ee-aacbc4d549a7&pa

by "fishing vessels within the competence of international fisheries organizations and unloaded at foreign ports".

According to data from Donggang and Su'Ao harbours, i.e. harbours primarily used by the smaller ice-based longliners, there has been no substantial shift in the quantities of frozen shark fins traded since the ban.[23] This situation can probably be explained by the fact that both ports have been receiving large quantities of whole shark carcasses for many years; therefore, landings patterns did not need to change to comply with the regulation. In contrast, the quantity of frozen fins traded through Kaohsiung has dropped as the ban has been progressively phased in, with the exception of high quantities recorded in January 2014 (Figure 11). This trend could be explained either by the implementation of the regulation, a decrease in demand for shark fins (see China and China, Hong Kong SAR shark fin sections above), or a combination of both. Moreover, these data do not necessarily indicate a decrease in shark catches or landings as the larger freezer-based longliners landing in Kaohsiung may have the option of unloading sharks at foreign ports. Taiwan Province of China Fisheries Administration compliance statistics indicate that, of the more than 1 000 vessels inspected since the ban, only two in 2012 and nine in 2013 were found to be in violation. In each year, 16–21 percent of the inspected vessels were freezer longliners.[24] Although this information may be ambiguous in terms of the continuing role of Taiwan Province of China in producing shark fins for the global trade, it does suggest that the supply to its domestic market has dwindled since 2012. Media reports indicate that prices dropped to half their former level in 2013, with high-quality fin prices declining from USD46 to USD23/kg, and lower-quality fins from USD23 to USD12/kg.[25]

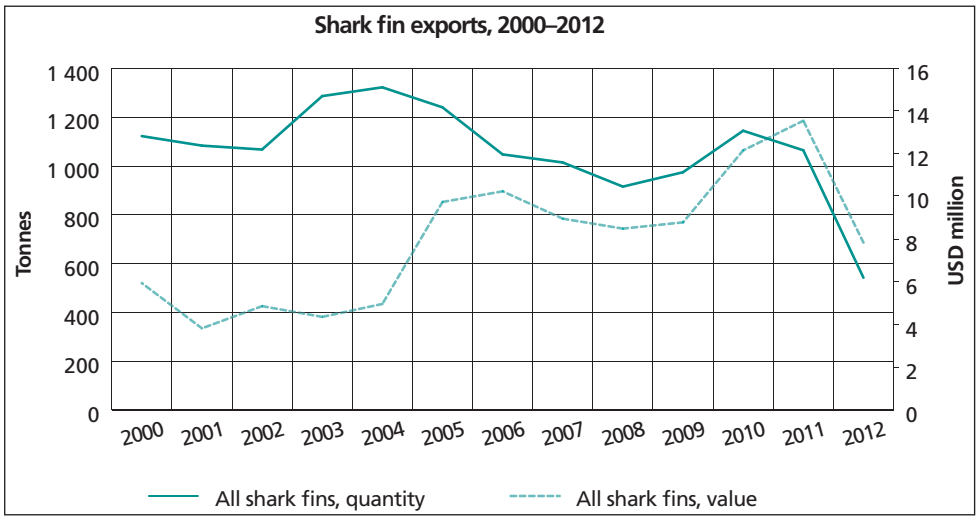
FIGURE 11
Quantity of frozen shark fins traded at Kaohsiung, Taiwan Province of China, January 2010 – January 2014

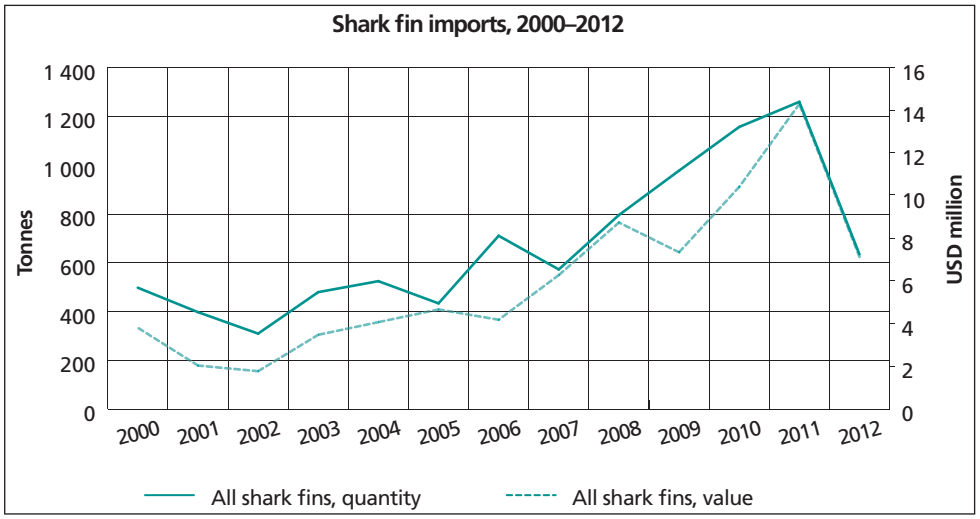


Note: Lines indicate the dates of implementation of Taiwan Province of China's regulations regarding shark finning for various sizes and types of vessels (see text).
Source: Taiwan Province of China Ministry of Agriculture Statistics, accessed at http://m.coa.gov.tw/outside/AquaticTrans/Search.aspx

[23] Taiwan Province of China Ministry of Agriculture Statistics, accessed at http://m.coa.gov.tw/outside/AquaticTrans/Search.aspx
[24] www.fa.gov.tw/cht/PublicationsAchievementCount/content.aspx?id=3&chk=33b5490f-4b5f-4089-98ea-25da034bc6e2&param=pn%3d1
[25] www.libertytimes.com.tw/2013/new/mar/22/today-south6.htm#

FIGURE 12
Taiwan Province of China shark fin trade, 2000–2012





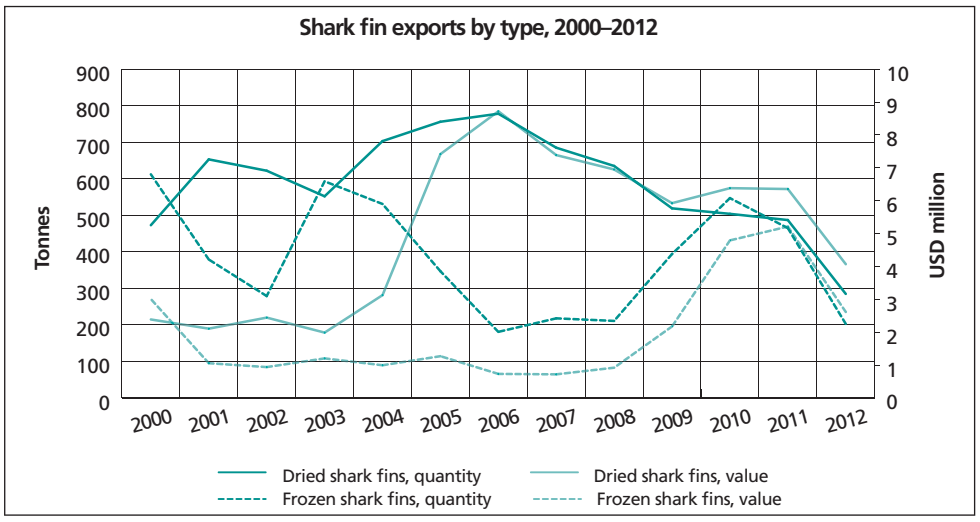
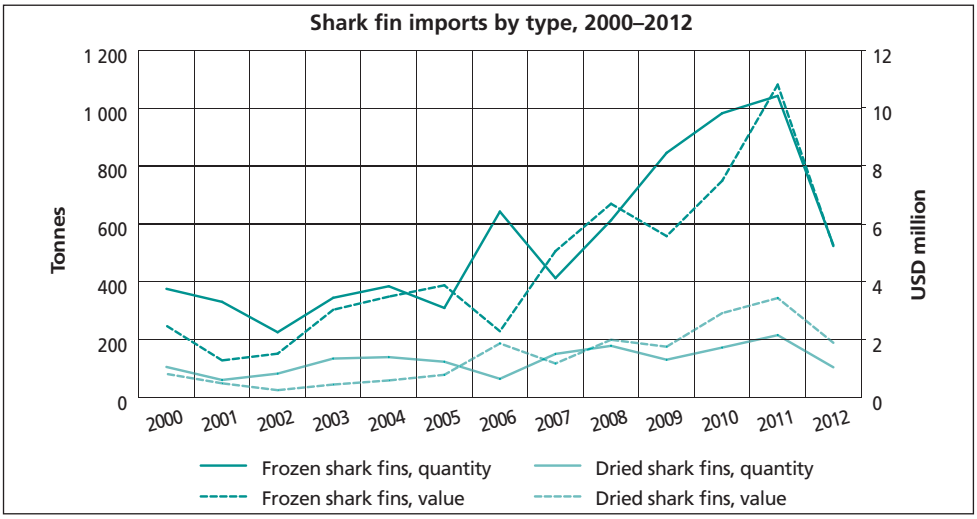
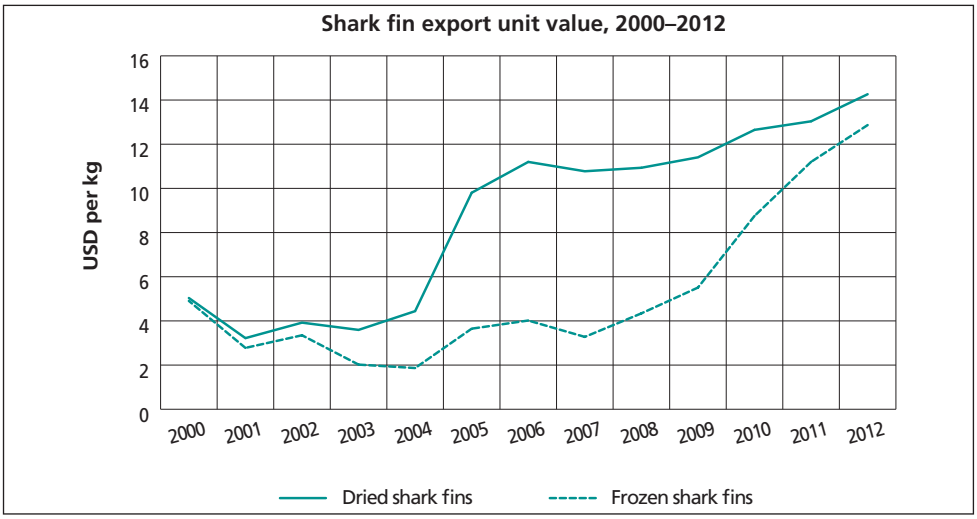
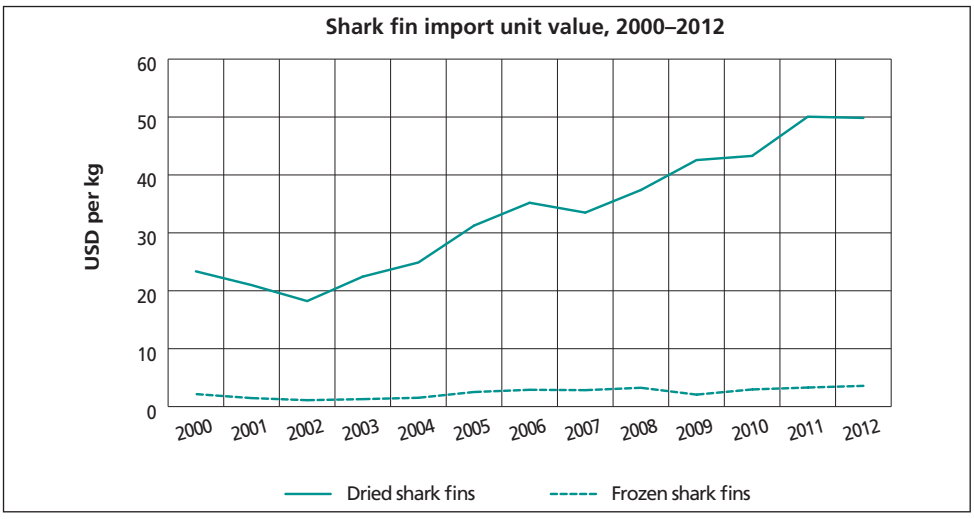


FIGURE 12 (continued)







Source: Taiwan Directorate General of Customs (2013).

Malaysia

Snapshot

- Malaysia is a major shark producer with a large consumer market for shark fins, posting large import volumes of low-valued shark fins.
- It ranks as the world's ninth-largest shark producer and third-largest importer in volume terms.
- Thailand is the major origin of Malaysian imports, supplying primarily low-valued processed fins.
- From 2000 to 2011, Malaysia recorded average annual shark fin imports of 1 172 tonnes, worth USD3.2 million (Figure 14).
- From 2000 to 2011, it recorded average annual shark fin exports 238 tonnes, worth USD902 000 (Figure 14).
- Malaysian authorities have consistently distinguished between prepared or preserved, dried and frozen shark fins, but revisions of commodity codes, whose descriptions may or may not identify shark fins explicitly, have been frequent.
- Malaysian statistics show steady growth in shark fin import volumes in the last decade, but large discrepancies between volumes recorded before and after 2004 suggest that this may be a case of increased identification of shark fins in trade records rather than a real increase in trade quantities.

Overview

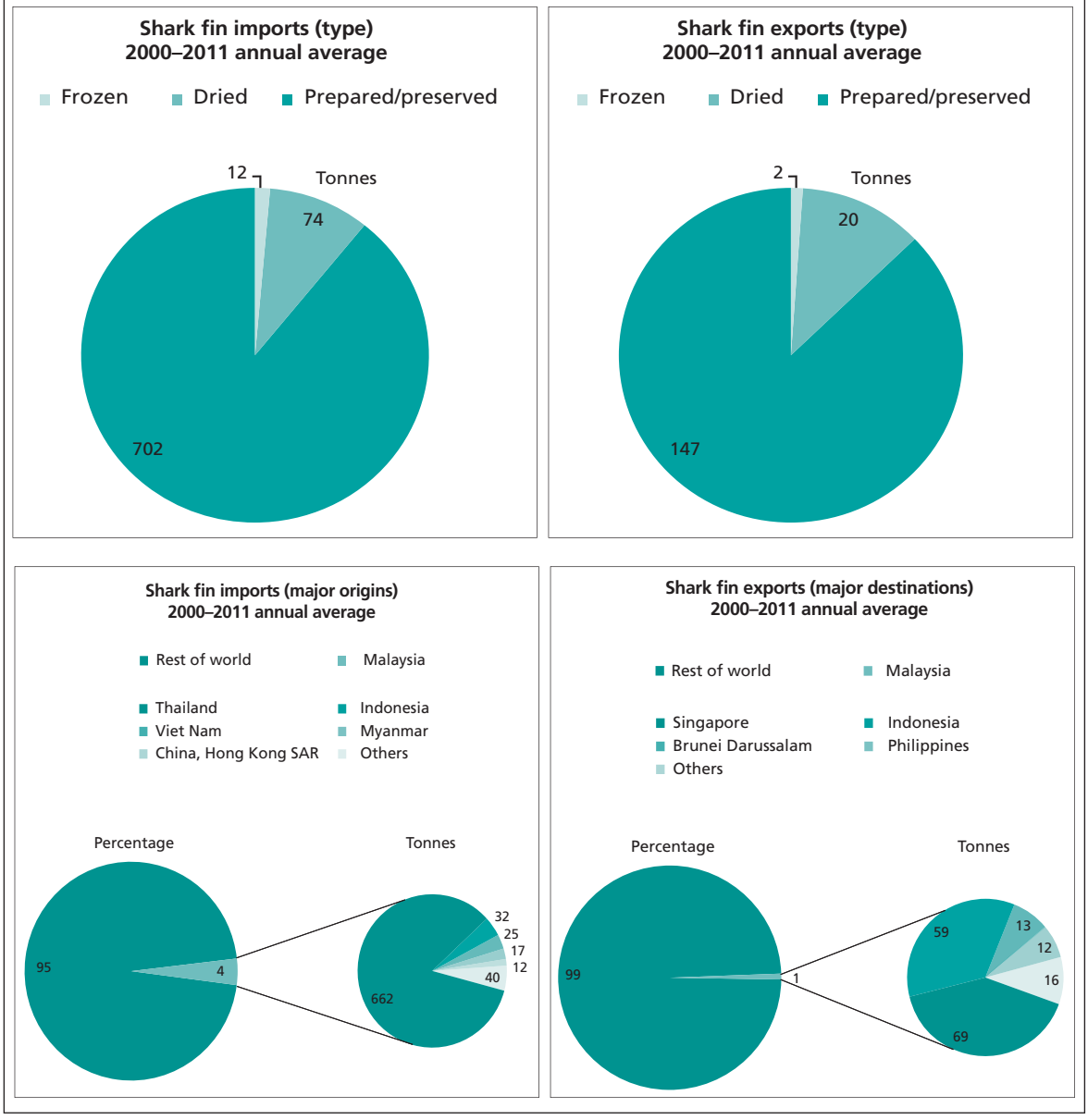
Malaysia, with a large ethnic Chinese population, is an important secondary market for shark fins (Clarke 2005), taking an average share of 7 percent of world import volume (1 172 tonnes) from 2000 to 2011. This makes Malaysia the fourth-largest importer in terms of volume in the world over this 12 year period. It is of less importance as an exporter, however, with a corresponding average of 1.4 percent of global volume (238 tonnes). In addition, despite the relatively large volumes, Malaysia's trade in shark fins consists primarily of very low-valued product, and thus accounts for an average of only 0.3 percent (USD902 000) of total world export value and 0.9 percent (USD3.2 million) of total import value. Full 2000–2012 figures translate into an average unit value of USD4.6/kg and USD2.9/kg for exports and imports, respectively, reflecting a domestic market preference for much cheaper, mainly canned, shark fin, some of which is also exported. Malaysia is also quite an important chondrichthyan producer, with a 2000–2011 average capture production of 23 412 tonnes, making it the ninth-largest over the same period. Although 67 percent of these captures are classified as "rays, stingrays, mantas nei" rather than sharks specifically, it is known (McDavitt, 2005) that at least some of these species are also utilized in the production of shark fin soup.

Trade recording

An accurate analysis of Malaysia's shark fin trade records is difficult given the unclear descriptions in commodity categories, multiple disaggregating and re-aggregating code changes over time, and inconsistencies in the published figures that suggest shark fins have previously been recorded under other categories and not reported explicitly as shark fins. More specifically, from 2000 to 2011, trade statistics for shark fins were recorded by Malaysian customs under 9 different commodity codes, only 2 of which were not discontinued at some point in this period. Although it is generally desirable to have as many commodity codes as necessary to adequately differentiate between shark fins according to appropriate criteria, in Malaysia's case, the level of aggregation has remained constant with the introduction of new codes. While there a consistent distinction made between "prepared or preserved", "dried" and "frozen" shark fins, a

large discrepancy between reported statistics for "prepared or preserved" fins before and after 2004 suggests that this product form may have previously been included under a more aggregated category. As in all other countries apart from China, Hong Kong SAR, there is also no reference to the extent of processing that the product has undergone, such as whether it has had cartilage removed.

FIGURE 13
Malaysia shark fin trade profile



Source: Department of Statistics Malaysia (2013).

Imports and exports

Despite some uncertainties as to the accuracy of the figures as reported before 2004, it is clear that Malaysia's imports of shark fins increased considerably from 2004 to 2012. The 2004 reported import volume of 850 tonnes represents a jump of some 813 tonnes from the previous year, while the 2012 figure of 1 433 tonnes reflects a further increase of 123 percent compared with 2004. In value terms, the shark fin import total was USD237 000 in 2003, USD1.8 million in 2004 and USD6.3 million in 2012 – a 251 percent increase from 2004 to 2012. The proportionally larger increase in value is mainly due to the increasing value per kilogram of "prepared or preserved" shark fins, which from 2004 to 2012 accounted for an average of 92 percent of total shark fin import volume and 85 percent of value. It is assumed that the majority of the imports within this commodity category are canned or possibly pouched shark fins. Dried fins are the second most imported product form, with an average quantity of 71 tonnes (USD283 000) imported annually from 2000 to 2012, while the average yearly volume for frozen fins for the same period was only 13 tonnes (USD167 000). For exports from 2004 to 2012, the relative proportions of the different product forms are similar, with "prepared or preserved" fins accounting for 89 percent of volume and 72 percent of value. Exports of "salted and in brine" and dried fins are minimal, although generally somewhat higher valued.

Partners

The vast majority of Malaysia's shark fin imports come from Thailand. From 2004 to 2012, Thai-origin shark fins made up, on average, 87 percent (1077 tonnes) of the total shark fin import volume and 80 percent (USD2.8 million) of the value. These imports consist almost entirely of "prepared or preserved" fins, most probably primarily canned, or possibly pouched, product. Both the value and volume of prepared or preserved product imported from Thailand increased steadily from 2004 to 2012. The unit value of these imports also increased, resulting in a 326 percent increase in value over this period compared with a 148 percent increase in volume. It should be noted here that Thailand's trade records do not match those of Malaysia, with Thai authorities reporting average annual exports to Malaysia – of all shark fin types – of only 67 tonnes (USD198 00) since Thailand first began reporting "prepared or preserved" shark fins under a separate code in 2007. In 2012, Malaysia imported shark fins from 8 different countries, but in comparison with Thailand, imports from other origins are minimal, with China, Hong Kong SAR (17 tonnes or USD219 000), Indonesia (37 tonnes or USD117 000) and Viet Nam (38 tonnes or USD122 000) the next top 3 origins, on average, from 2004 to 2011. Indonesia and Viet Nam supply a mix of "prepared or preserved" and dried fins, while imports from China, Hong Kong SAR generally consist of frozen or dried product.

Malaysia exports shark fins to relatively few countries; and, as with imports, trade is almost entirely confined within a relatively small geographical area. From 2004 to 2012, Singapore accounted for the largest share by volume (39 percent or 95 tonnes) and value on average (40 percent or USD438 000), although these figures decreased significantly in the years following the 2008 crisis. From 2010 to 2012, Malaysia exported an average of only 40 tonnes (USD276 000) of shark fins to Singapore. Indonesia was the second-most important destination country for Malaysian exports over the same period, with an average share of 34 percent of volume (82 tonnes) and 22 percent of value (USD239 000). Exports to both Singapore and Indonesia consist almost totally of "prepared or preserved" shark fins, generally of quite low value, and most probably primarily canned or pouched product. After Singapore and Indonesia, the next 2 most important destination countries for Malaysian exports from 2004 to 2012 were Brunei Darussalam (25 tonnes or USD94 000) and the Philippines (16 tonnes or USD33 000).

Domestic trade and markets

The large quantity of processed shark fins imported by Malaysia in recent years suggests that domestic consumption is high, and it may be even higher if Malaysia's rank among the top ten domestic chondrichthyan capture production nations provides it with additional supplies that are processed and consumed locally. A study conducted in 2003–04 in six major Malaysian shark landing ports found that most fin products are consumed locally with only the largest and most valuable fins exported (SEAFDEC, 2006). If this finding reflects the current situation, it suggests that consumption rates in Malaysia may be among the world's highest.

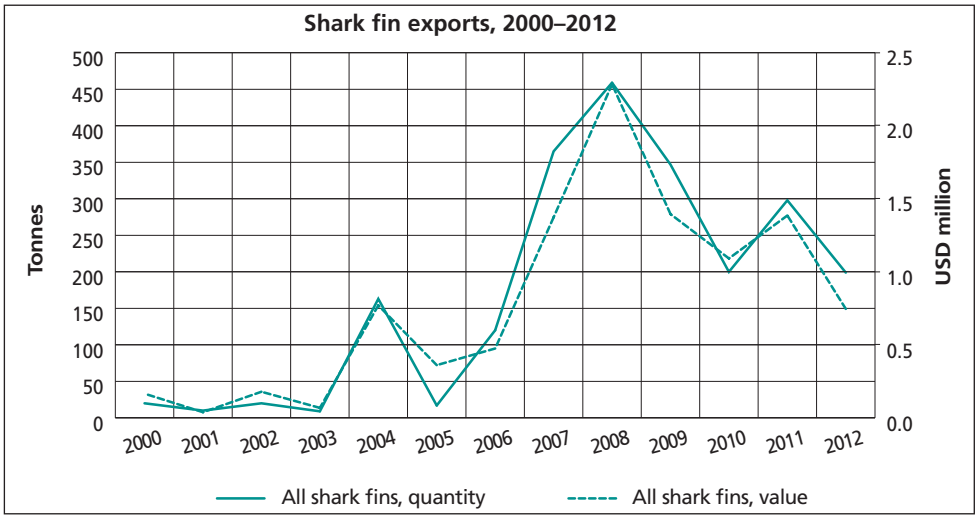
The 2003–04 study found that sharks landed in Hutan Melintang, Kuantan, Mukah, Bintulu, Kota Kinabalu and Sandakan are often sold in whole form (i.e. fins attached) to traders without much variation in price by species or size. One exception to this is larger sharks, from which fins are removed and sold separately, typically for export and processing overseas. Fin processors in at least some of these areas process the fins of small (either small-bodied or juvenile) sharks for local consumption. Price quotes from Kota Kinabalu of less than USD8/kg for dried unprocessed fins, and less than USD13 for dried processed fins, illustrate the low-value nature of these products (SEAFDEC, 2006).

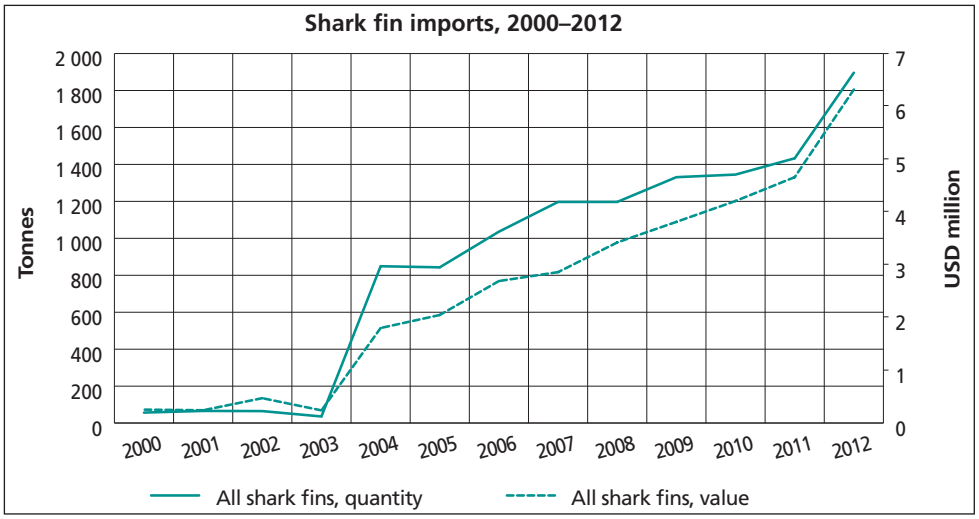
Separate wholesale and retail outlet surveys conducted for the same study in Kuala Lumpur and Penang, both of which have large ethnic Chinese communities, found that traders in these locations import their fins rather than source them locally. These traders considered that the Malaysian market offered poorer-quality fins than those demanded by the China market, although limited quantities of high value fins were also observed in some outlets. One processor/wholesaler was producing fins in wet form for restaurant use and also selling (separately) packs of artificial shark fin that could be mixed with the wet fins. Traders indicated at that time that consumer acceptance of artificial shark fin was high owing to its high quality and lower price (SEAFDEC, 2006).

Although current trends in Malaysia's domestic shark fin trade are not well understood, there are media reports that the Government of Malaysia has banned shark fin soup from official banquets since 2007,[26] and Sabah State (where the Kota Kinabalu and Sandakan landing ports are located) has proposed a ban on shark targeting and shark finning.[27] Specialist sources contacted for this study indicate the shark fin trade is decreasing owing to declines in local shark landings. This source quoted current prices as USD30–50 for a set of small-sized fins, and USD50–70 for a set of medium-sized fins (A. Ali, personal communication, December 2013).

[26] www.google.com/hostednews/afp/article/ALeqM5joY14wM8i-TlqgI17VnbqEM4X3DA
[27] www.thestar.com.my/News/Nation/2013/08/24/sabah-proposed-shark-fin-ban.aspx/

FIGURE 14
Malaysia shark fin trade, 2000–2012





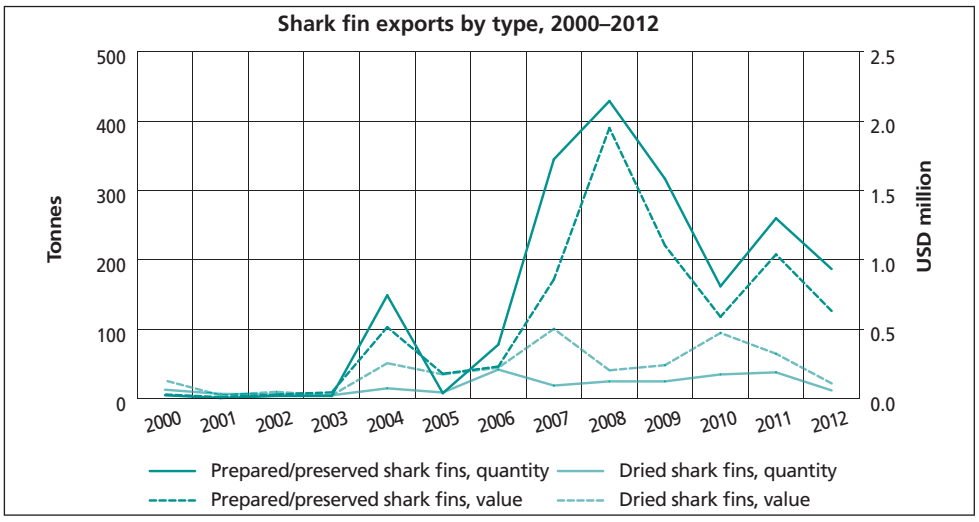
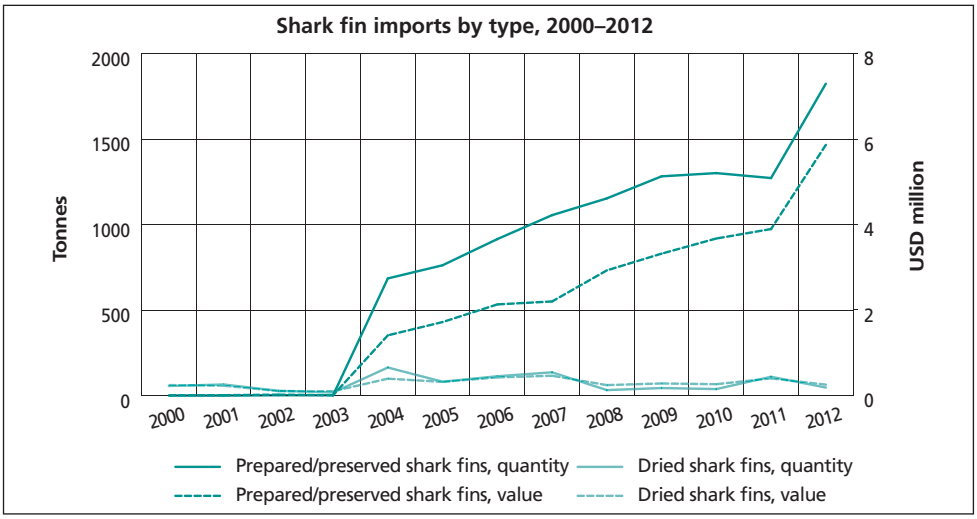
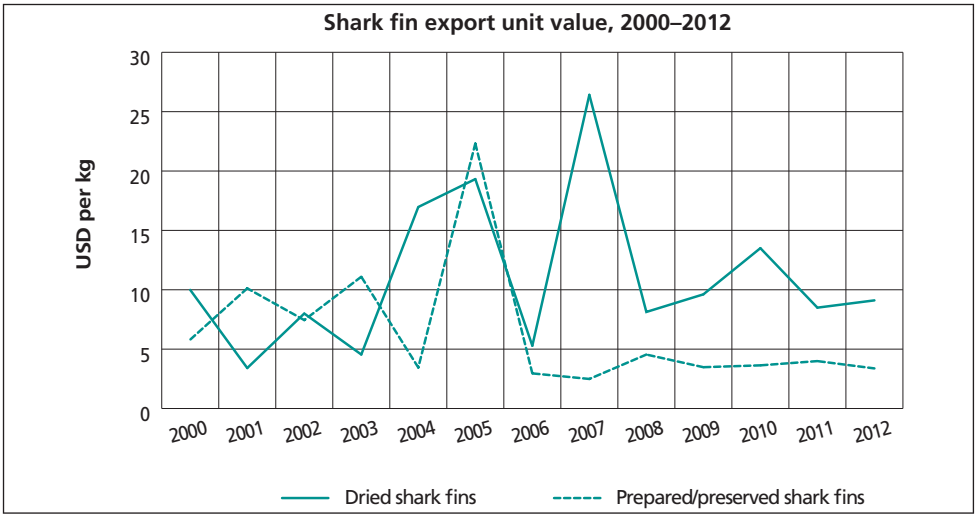
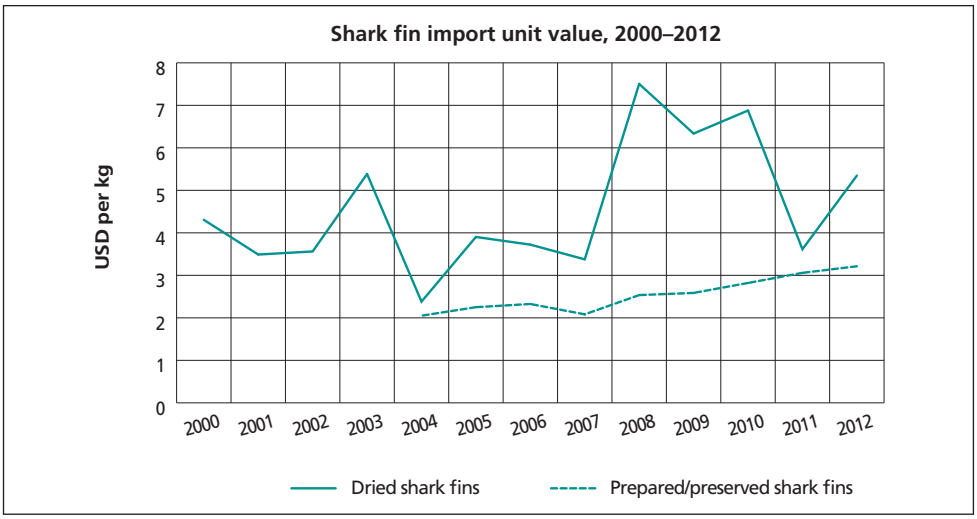


FIGURE 14 (continued)







Source: Department of Statistics Malaysia (2013).

Indonesia

Snapshot

- Indonesia is a major producer and exporter of shark fins.
- Its imports are negligible but the extent to which its large domestic production is absorbed by the domestic market is not known
- Indonesia ranks as the world's top shark producer and third-largest exporter in terms of quantity.
- It exports to a relatively small selection of major entrepôts and markets in East and Southeast Asia.
- From 2000 to 2011, it recorded average annual shark fin exports of 1 235 tonnes, worth USD10 million (Figure 16).
- It has historically recorded trade in dried shark fins only, before adding two extra categories for prepared or preserved and frozen fins in 2009, and then subsequently removing the latter category (frozen) in a 2012 revision.
- Its statistics show significant variation in shark fin export volumes, but it is unclear to what extent this is the result of coding revisions.

Overview

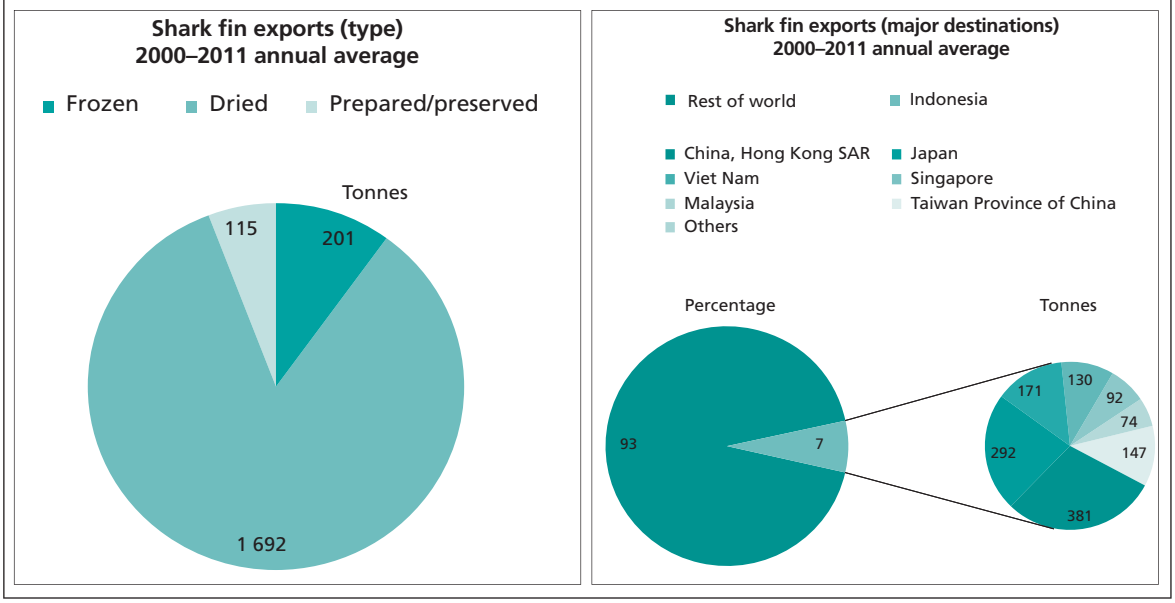
Indonesia has been the world's largest producer of chondrichthyans since 1998, and average yearly production from 2000 to 2011 was 106 034 tonnes. When Indonesia chondrichthyan capture production statistics were disaggregated from 2 into 11 species groups in 2005, it became apparent that an average of 42 219 tonnes of annual production (2005–2011) consisted of ray species, but the extent to which such species are utilized in shark fin soup is not clear. Given the volume of captures it records, Indonesia's natural role in the international market for shark fins is that of a primary producer and exporter of raw material. In terms of trade volumes, Indonesia exports as reported represented an average of 7 percent (1 235 tonnes) of the world's total yearly exports of shark fins from 2000 to 2011, and 4 percent of the value (USD10 million). This makes Indonesia the world's third-largest exporter in quantity terms and the sixth-largest in value terms for this period. The relatively lower value of the exports is the result of their consisting primarily of raw material, specifically "dried, unprocessed" fins. Indonesia is of much less importance as an importer, accounting for a yearly average of 1 percent (164 tonnes) of total import volume and 0.4 percent (USD1.4 million) of total import value from 2000 to 2011.

Trade recording

As is typical in most shark-fin trading countries, Indonesia records trade in shark fins in three main categories: dried, frozen and "prepared or preserved". The last two codes, however, were only introduced in 2009, and it is not clear whether they were previously included within an aggregated dried category. There is no other reference to the degree or type of processing that the fin has undergone, although it is assumed that the majority of exports are unprocessed. This is less clear in the case of imports. There is also the issue of the remaining aggregation in the case of the frozen commodity code, whose full description, "marine fish, incl sharks fin, salted but not dried or smoked and in brine", implies that frozen shark fins are recorded under a code that probably includes other fish products. This is not ideal for the purposes of accurately quantifying the trade in shark fins, because without being able to separate shark fins from other fish products in trade statistics, the already difficult task of estimating live weight equivalent of trade volumes becomes effectively impossible. In 2012, the quality of data deteriorated further, when the distinction between dried and frozen fins was

removed from the coding system, and all recorded shark fin trade was categorized either as "prepared or preserved" or simply as "shark fins, fit for human consumption".

FIGURE 15
Indonesia shark fin trade profile



Source: Statistics Indonesia (2013).

Imports and exports

The average yearly quantity of shark fins exported by Indonesia for the full period from 2000 to 2012 was 1 225 tonnes, valued at USD10.1 million. From 2000 to 2010, Indonesia saw its yearly shark fin export volumes follow an overall upward trend, with significant variation from year to year. Notably, exported volumes effectively doubled from 2008 to their peak in 2010 at 2 591 tonnes (USD14.4 million) and 2011 at 1 795 tonnes (USD14 million), before falling to 507 tonnes (USD8.6 million) in 2012 after the introduction of the new commodity code. Average unit value of each exported kilogram, with the major proportion being unprocessed raw material, was relatively low at USD8.3/kg. As stated, until 2009, all trade in shark fins was recorded under a single commodity code, referring only to dried fins. From 2009 to 2011, the average proportion of exports consisting of dried fins was 84 percent by volume and 79 percent by value. For *"prepared or preserved"* fins, the share over the same period was 6 percent of volume and 15 percent of value, while the corresponding figures for frozen fins were 10 percent and 6 percent, respectively. With regard to Indonesia's imports, from 2000 to 2011, the average yearly quantity was 156 tonnes with a value of USD1.3 million. These were again primarily dried fins, and the relative proportions from 2009 to 2011 were 73 percent dried, 24 percent "prepared or preserved" and 3 percent frozen.

Partners

From 2000 to 2012, 92 percent of the value (66 percent of the volume) of Indonesia's exports was accounted for by just three markets: China, Hong Kong SAR, Japan and Singapore. The volume of yearly exports to these three markets averaged 368 tonnes (USD5.7 million), 279 tonnes (USD2.3 million) and 160 tonnes (USD1.3 million), respectively. The major component of the spike in export volume from 2009 to

2011 was the emergence of Viet Nam as a destination for cheap exports from Indonesia, with a unit value of USD0.7/kg. Viet Nam imported 235 tonnes (USD277 000), 1240 tonnes (USD706 000) and 572 tonnes (USD416 000) in 2009, 2010 and 2011, respectively. From 2000 to 2011, when the different product forms were recorded under distinct codes, exports to China, Hong Kong SAR consisted of 99 percent dried fins (value and quantity), which also made up 68 percent of the value and 57 percent of the quantity exported to Singapore. The remainder of Singapore-destined exports was a mix of "prepared or preserved" product and slightly higher-valued frozen product. High-valued "prepared or preserved" fins made up 66 percent of the value of exports to Japan, but only 32 percent of the volume, while 67 percent of the volume and 34 percent of the value consisted of dried fins. Other important destination countries for Indonesia shark fin exports, in terms of quantity, from 2000 to 2012 were Malaysia (USD116 000 or 85 tonnes), and Taiwan Province of China (USD118 000 or 68 tonnes).

Indonesia is a relatively minor importer of shark fins. From 2000 to 2012, these imports came mainly from Singapore (39 tonnes or USD392 000), Argentina (29 tonnes or USD489 000), Japan (25 tonnes or USD76 000) and Thailand (18 tonnes or USD11 000).

Domestic trades and markets

Considering its potential importance, information on Indonesia's domestic shark fin production and trade is very limited. A study conducted in 2004 indicated that Pelabuhan Ratu and Cilacap (both on Java) are the major landing ports for sharks, but Muara Baru (Jakarta), Benoa (Bali) and Bitung (Sulawesi) are also important shark-landing centres. Trade routes for exported fins were reported to flow towards hubs in Jakarta and Surabaya, and there was reportedly no local consumption of fins. Prices were quoted at as high as > USD100 for top quality requiem and thresher shark fins and as high as > USD200 for top quality guitarfish (ray) fins (SEAFDEC, 2006).

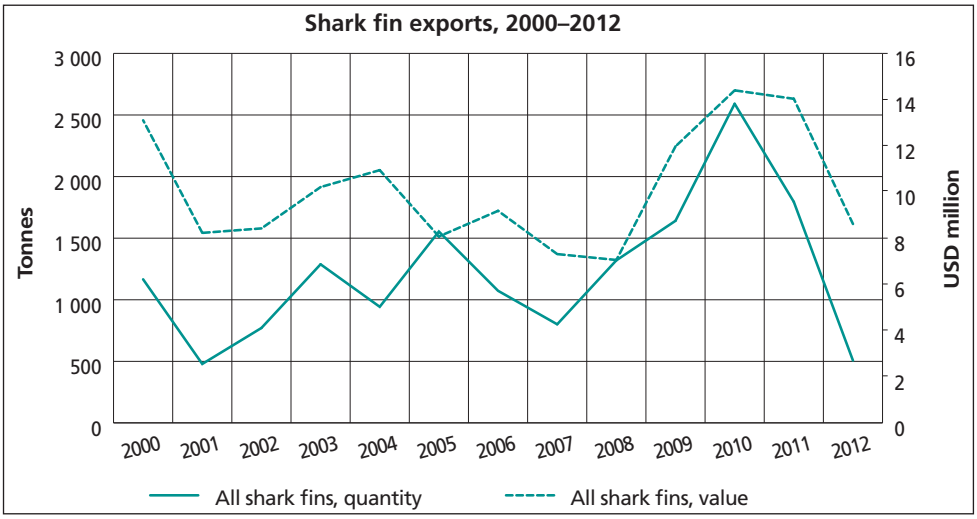
Interviews with four traders based in China, Hong Kong SAR, Japan and Singapore in 2008 provide further insight into shark fin trading routes within Indonesia (Clarke, unpublished data). Most islands have their own collection centre, and many of these feed larger shark fin consolidation centres in Surabaya and Benoa (Bali). Surabaya is said to be the largest and most important collection centre for Indonesian fishers, with 10–20 dealers located there. One respondent estimated that 90 percent of the shark fin produced by Indonesian fishers transits Surabaya. Bali is also an important collection centre, but it is said to focus more on the fins of pelagic sharks produced by foreign fleets targeting tuna, and thus the Bali trade is dominated by blue shark. Small-sized fins are processed in Indonesia (at least one Japanese trader maintained a factory there) and sent to Singapore, Thailand, Malaysia and perhaps even China, Hong Kong SAR. Larger-sized premium fins are sent to China, Hong Kong SAR or China. One trader indicated that, of the entire supply of shark fins from Indonesian waters, only 20 percent are sourced from the Indonesian land-based supply chain. The remaining 80 percent are collected at sea by operators from Taiwan Province of China (see section on Taiwan Province of China). Although the nature of the trade was believed to be primarily export-oriented, demand for high-value fins by wealthy ethnic Chinese residents in major Indonesian metropolitan areas was also considered strong.

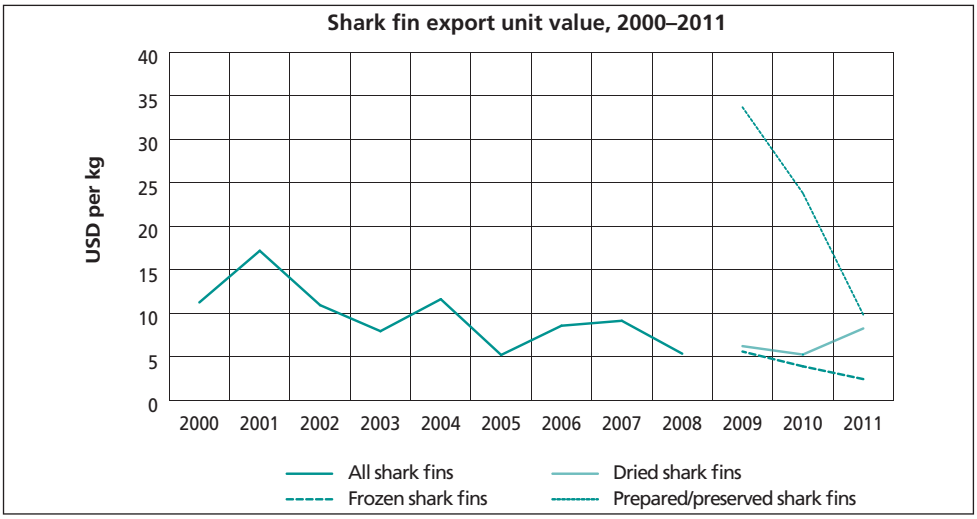
The present situation with regard to Indonesia's domestic trade and consumption is not well documented. Media reports state that Garuda Airlines, Indonesia's national carrier, banned the transport of shark fins as cargo in October 2013.[28] The report stated that Garuda had previously transported 36 tonnes of shark fins per year. Another report in November 2013 quotes a fisher's claim that shark fin prices have declined by more than 50 percent (from USD141 to USD79/kg).[29]

[28] www.thejakartaglobe.com/news/garuda-bans-shark-fin-transport-on-flights-wwf-indonesia/

[29] www.thejakartapost.com/news/2013/11/04/govt-seeks-ways-curb-shark-fin-exports.html

FIGURE 16
Indonesia shark fin trade, 2000–2012





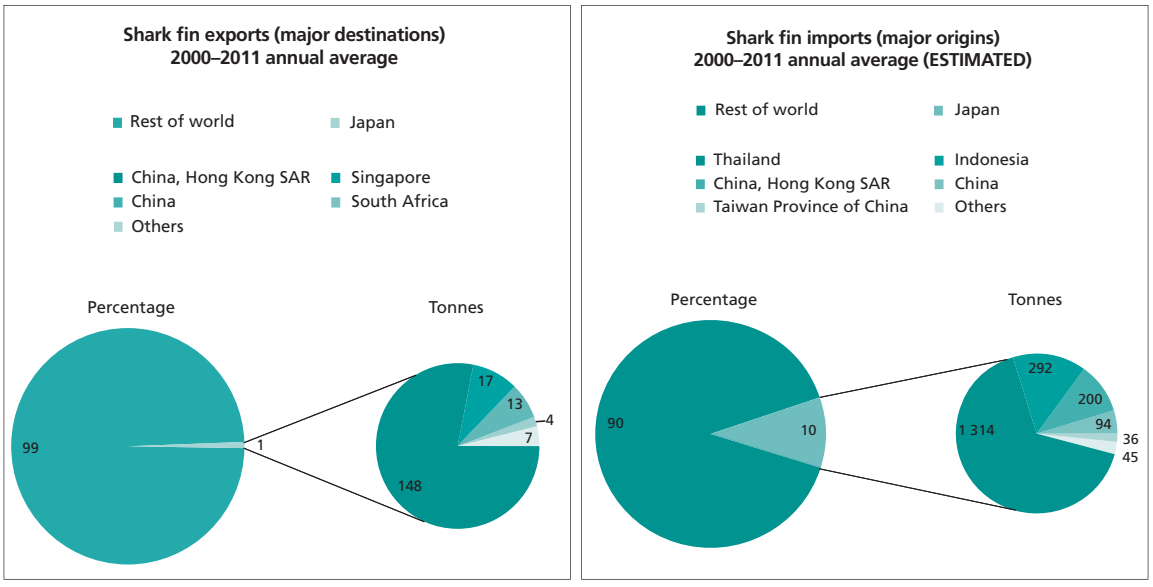
Source: Statistics Indonesia (2013).

Japan

Snapshot

- Japan is a relatively large producer and exporter of shark fins, and also appears to have a substantial domestic market.
- It ranks as the world's tenth-largest producer and eleventh-largest exporter of shark fins in terms of volume.
- From 2000 to 2011, it recorded average annual shark fin exports of 189 tonnes, worth USD8.8 million (Figure 18).
- Estimation of Japan's imports on the basis of major partners' export series points to substantial import volumes, particularly of processed fins.
- According to this method of estimation, Japan's imports of shark fins from 2000 to 2011 were about 2 015 tonnes, worth USD16.7 million, which would make Japan one of the world's largest importers of shark fins (Figure 18).
- The major proportion of Japan's reported exports are destined for China, Hong Kong SAR, China or Singapore.
- Japan records exports in dried shark fins only, and does not record shark fin imports explicitly as shark fins.
- Its statistics show a steady decline in exports of (dried) shark fins since 2000.

FIGURE 17
Japan shark fin trade profile



Source: Japan Ministry of Finance (2013), various (see Appendix 2).

Overview

Japan is an important producer and exporter of shark fins, and was the world's tenth-largest producer of chondrichthyans on average from 2000 to 2010, according to FAO statistics, with 21 914 tonnes. However, capture production volumes steadily declined over this period and were 68 percent in 2011 (10 238 tonnes) of those in 2000. It should be noted that these statistics remain highly aggregated, with two major chondrichthyan groups ("sharks, rays, skates, etc. nei" and "rays, stingrays, mantas nei") and a single species-specific group for the whip stingray. In terms of trade, Japan was the world's seventh-largest exporter of shark fins by value with an average yearly export value of

USD8.8 million from 2000 to 2011. This represented 3 percent of the world total value of shark fin exports. A relatively higher proportion of unprocessed, lower-valued fins compared with the major processing centres and entrepôts put it in eleventh place in quantity terms, with an average of 189 tonnes per year being exported, equating to a 1.1 percent share of the world total. Japan's importance as an importer is less clear, as Japan does not record shark fin imports. Although the ethnic Chinese population in Japan is relatively small, there are many Chinese restaurants, and an estimation from the trade records available from major exporters (China, Hong Kong SAR, China, India, Indonesia, Malaysia, Singapore, Taiwan Province of China, Thailand and the United States of America)[30] suggests that Japan imported in the region of 2 000 tonnes of shark fins on average from 2000 to 2011. If accurate, this figure would make Japan the third-largest importer, by volume, of shark fins in the world for this period. This ranking would be assuming that all other reported figures are accurate.

Trade recording

As stated, Japanese customs record exports of shark fins only. These are recorded consistently under a single code, under the description "fins of dogfish and other sharks, dried, but not smoked". Thus, it does not record exports of "prepared or preserved" fins or frozen fins, even though import statistics of its major trading partners include significant quantities of both types originating in Japan. The lack of any import records for shark fins is an even more pressing concern, as export statistics from Japan's trading partners record consistently high volumes of all shark fin product types destined for Japan. Presumably, shark fins are recorded within aggregated categories, although this would mean that Japanese customs are employing different commodity categorizations for imports than for exports. In any case, a comparison of Japan's trade records with those of its partners utilizing more specific commodity codes, such as China, Hong Kong SAR, Singapore, Taiwan Province of China, and China, would suggest that under-reporting and/or reporting under aggregated commodity categories is taking place for both imports and exports. This situation is problematic for any attempt to conduct an accurate assessment of the trade in shark fins, especially if Japan is importing fins directly from producing countries such as Spain that do not themselves keep records of trade in fins. Indeed, Japan's trade statistics reveal an average of 337 tonnes of frozen shark meat imported from Spain per year from 2000 to 2012, with a unit value (USD16/kg) that is unrealistically high for shark meat unless fins are included. This issue is explored in more detail in the shark meat section of this publication.

Imports and exports

According to official statistics, Japan's export volumes of shark fins decreased steadily from 2000 to 2012. The 2012 figure of 131 tonnes was a 52 percent drop compared with 2000. The decline was equally reflected in value terms, with imports worth USD5.1 million in 2012 representing a 54 percent fall in value compared with 2000. Japanese fin exports are high-value, with an average unit value over this period of USD46.4/kg. Japan is a raw material producer rather than a major processing centre, and hence its shark fin exports are primarily in unprocessed form. The high unit value of these exports is presumably a result of their being in dried form as opposed to frozen, and owing to a higher proportion of Japanese-produced fins being taken from more desirable species of shark, specifically larger pelagics that are fished by the tuna fleets. Keeping in mind that Japan's import figures have been constructed using major traders' export series (China, China, Hong Kong SAR, India, Indonesia, Malaysia, Singapore, Taiwan Province of China, and Thailand),[31] it would appear that despite

[30] See Appendix 2.
[31] See Appendix 2.

not recording any shark fin imports in official trade statistics, Japan imported at least 2 015 tonnes per year with an average value of USD16.7 million from 2000 to 2012. This figure does not take into account the quantities of frozen fins that may be being exported from these partners to Japan but, with the exception of China, Hong Kong SAR and Taiwan Province of China, are not recorded as such in trade statistics.

Partners

From 2000 to 2012, according to official statistics, Japan exported shark fins to a total of 22 countries and territories. The major destination market for these exports was China, Hong Kong SAR, which took an average 77 percent share (141 tonnes) of the yearly export volume and an 85 percent share (USD7.1 million) in terms of value. However, there was a significant decline of 72 percent in volume (54 percent in value) over the 13 year period to 57 tonnes (USD2.9 million) in 2012. These shark fins were traded at an average of USD50/kg. The next two most important destination countries were Singapore with an average share of 9 percent (17 tonnes) of volume and 9 percent (USD759 000) of value, and China with 7 percent of volume (13 tonnes) and 3 percent (USD218 000) of value. In China's case, a post-2004 decline was witnessed, reinforcing the trend in imports as recorded by Chinese authorities. Exports to other countries – again according to official statistics – were minimal.

Noting that Japan's imports are estimated using the trade records of major exporters (see above), it may be assumed that major partners from 2000 to 2012 were Thailand (70 percent of volume and 41 percent of value), Indonesia (14 percent of volume and 14 percent of value), and China, Hong Kong SAR (9 percent of volume and 41 percent of value). From 2000 to 2012, Thailand recorded an average of 1 410 tonnes of shark fins exported to Japan per year, at an average value of USD6.9 million, but it should be noted that these exports were zero before 2007, when they were probably being recorded under a more aggregated category. Restricting the focus to the five years from 2007 to 2011, the yearly average is 3 056 tonnes at USD14.8 million. Thailand's exports to Japan were mainly "prepared or preserved" shark fins, while the major proportion of exports originating from China, Hong Kong SAR and Indonesia to Japan consisted of dried fins, with those originating from China, Hong Kong SAR being mainly "dried, processed". In terms of average unit values for these top three partners, shark fin exports from China, Hong Kong SAR to Japan fetched the highest unit values at USD36.1/kg, followed by those from Indonesia at USD8.1/kg and Thailand at USD4.9/kg.

Domestic trade and markets

As discussed above, it is estimated that in recent years Japan has imported about 3 000 tonnes of processed shark fin per year. Japan is not known to be an entrepôt for processed shark fins, and this possibility cannot be ruled out owing to Japan's lack of an export commodity code for processed shark fins, but it is a reasonable assumption that processed imports are destined for domestic consumption. Moreover, any domestic processing of fins generated by Japan's fishing fleets would serve to supplement the supply of imported processed shark fin for domestic consumption. Therefore, despite the lack of documentation in trade statistics *per se*, information suggests that Japan may be one of the world's largest markets for shark fin.

In addition to Japan's domestic processed-fin trading network, there is also a distinct flow of unprocessed shark fins from Japan's fishing fleets through landing ports to export consolidation centres in the Osaka/Kobe and Yokohama areas and on to foreign entrepôts and processing centres. Fins from nearshore fisheries landing whole sharks, such as those based in Kesennuma (which recorded 8 962 tonnes of shark landings in 2012[32]), Choshi or Kii-Katsuura (Nakamura, 2004), may thus either

[32] www.kesennuma-gyokyou.or.jp/html/toukei-siryou.html

be processed domestically or exported. Shark fin exports have been a valuable source of revenue for Japan since the development of its longline fisheries in the early twentieth century (Okamoto, 2004). Nevertheless, Japanese consider shark fin to be a Chinese foodstuff usually consumed only in Chinese restaurants, and this may explain why Japan's comprehensive market statistical systems for marine products typically do not include categories for shark fins.

The extent to which the March 2011 earthquake and tsunami disaster damaged shark fin factories in the area around Kesennuma is not known, and nor is whether this event may have acted to dampen domestic consumption. Moreover, as of August 2008, Japan implemented a requirement for all of its vessels fishing in national waters or landing in national ports to land all parts of sharks (i.e. a ban on finning) (Camhi *et al.*, 2009). This regulation may have reduced the supply of shark fins from nearshore and coastal vessels that previously did not land sharks in whole form. The effect on domestic supplies and consumption trends is unknown.

FIGURE 18
Japan shark fin trade, 2000–2012

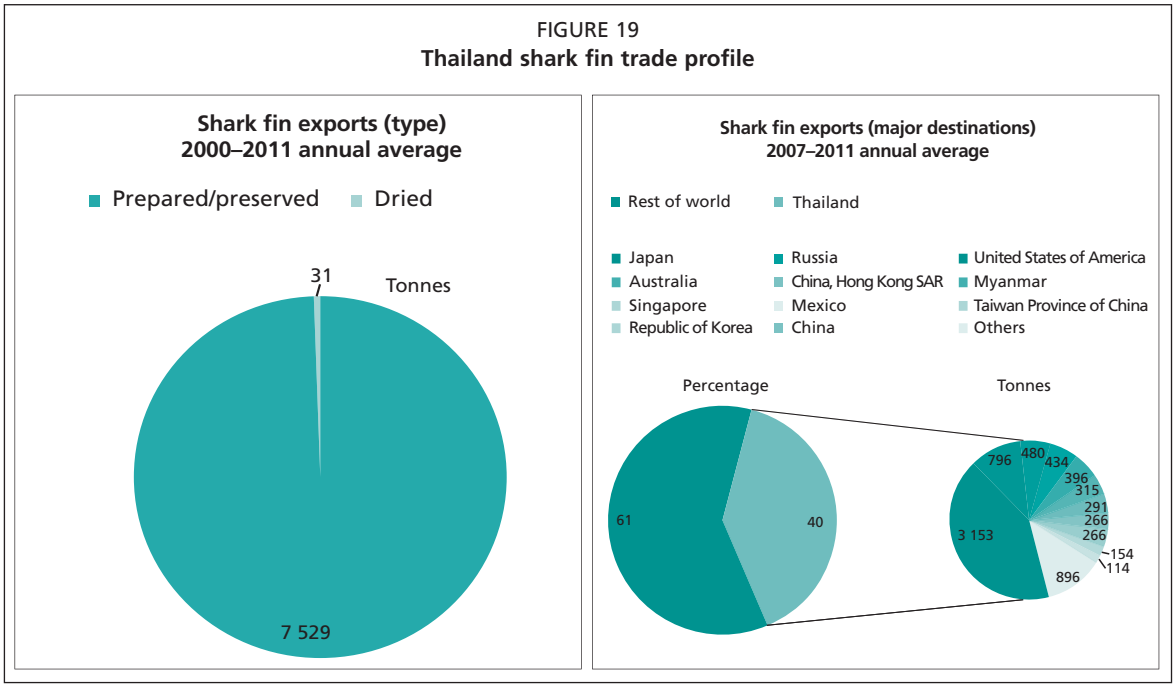
Source: Japan Ministry of Finance (2013), various (see Appendix 2).

Thailand

Snapshot

- Thailand's primary role in the world market for shark fins is as the major exporter of low-value, processed shark fins.
- It is not clear where the raw material for Thailand's shark fin exports is sourced from, as its domestic shark production would appear insufficient to account for reported quantities, and Thailand records minimal shark fin imports.
- Thailand exports mainly to secondary consumer markets such as Japan, the Russian Federation, the United States of America and Australia.
- From 2007 (when prepared/preserved shark fins first began to be recorded in Thai customs databases) to 2011, it recorded average annual shark fin exports of 7 560 tonnes, worth USD34.5 million (Figure 20).
- Its trade records distinguish between two categories of prepared or preserved fins and an additional category for dried fins.
- There is a very large discrepancy between reported export volumes before and after 2007, probably the result of commodity coding revisions that explicitly identified prepared/preserved (processed) shark fins that had previously been recorded in aggregated commodity categories.

FIGURE 19
Thailand shark fin trade profile



Source: Thai Customs Department (2013).

Overview

As a large-scale exporter of low-valued processed fins and prepared products, Thailand occupies a distinct position in the global market for shark fins. There is an active domestic market for fins – Thailand has a relatively large ethnic Chinese population of some 9 million – but the true extent of domestic consumption is not known. With regard to trade, specifically exports, estimating the relative importance of Thailand requires some caution as there is an extremely large discrepancy between the figures as published before 2007 and those from 2007 onwards. This is most probably due to the introduction of new commodity codes, rather than a reflection of a real increase in shark fin exports. Thus, the majority of this section refers to figures and trends as

recorded from 2007 to 2012, or for global comparisons from 2007 to 2011. Over this latter period, Thailand was the top exporter in the world in terms of volume with an average of 7 560 tonnes exported each year, 40 percent of the world total, and 2 690 tonnes more than China, Hong Kong SAR. However, the considerably lower unit value of its fin exports meant that Thailand was the second-largest exporter in value terms over the 3 year period, with an average of USD34.5 million exported per year. Thailand has also historically been an important producer of chondrichthyans, posting average capture volumes of 18 532 tonnes from 2000 to 2011, under two aggregated categories of "Rays, stingrays, mantas nei" and "Sharks, rays, skates, etc. nei". However, these volumes have declined by 89 percent since 2003, and in 2011 the figure was only 8 220 tonnes.

Trade recording

Before 2007, Thai customs recorded shark fins under one code only, with the description "shark fins, dried, whether or not salted". In 2007, this code was changed and the (presumed) equivalent category was simply renamed "sharks fins". As a result, it is not clear either whether fins recorded within this new category were only in dried form, or whether the previous code was used also for fins in other forms (such as frozen) also, despite the description. Also in 2007, two entirely new commodity codes, within the general "fish, prepared or preserved, nesoi" code group, were referred to FAO as shark fin categories (although the commodity description does not explicit state this): "in airtight containers", and "other". Under these codes, Thailand began posting extremely high volumes of low-valued shark fin exports, particularly so in 2007. "In airtight containers" are presumed to be canned, while "other" may refer to pouched fin needles. As mentioned above, there does not seem to be a rationale for interpreting these previously unseen volumes as a dramatic real increase in shark fin exports, particularly in light of declining shark captures. It is much more likely that these fins were previously recorded under aggregated or unidentified categories, and thus that Thailand had been exporting much greater quantities of shark fins than was reflected in official trade statistics. However, without more information as to the specific form of the products within the new categories (water content, type of preservation, etc), it is difficult to estimate the precise quantities of raw material involved. It is also necessary to consider the possibility that at least a proportion of these exports are artificial shark fins, a mix of artificial and real fins, or real fins prepared with additives (soup broth, etc.) that inflate that product weight without increasing the value to the same extent and, thereby, result in a lower unit value.

Imports and exports

From 2000 to 2006, trade records show Thailand exported a yearly average of 41 tonnes of shark fins at USD1.4 million, all within the dried commodity category. From 2007 to 2012, the average exported volume per year, as recorded, was 7 209 tonnes with a value of USD33.8 million. In 2007 alone, Thailand posted total shark fin exports of 13 188 tonnes (USD51.8 million). Subsequently, exports fluctuated between 4 742 tonnes (USD26.1 million) in 2008 and 7 723 tonnes (USD40.2 million) in 2011. Exports during the latter 2007–2012 period consisted almost entirely of exports in the "prepared or preserved" category, with 79 percent (5 664 tonnes) of the total volume and 83 percent (USD28.1 million) of the total value made up of shark fins in the "other" category, while those "in airtight containers" contributed 21 percent (1 517 tonnes) of the volume and 15 percent (USD5 million) of the total value. By comparison, exports of dried fins are almost zero. Between 2007 and 2012, the average yearly volume was 28 tonnes with a value of USD672 000. Thailand's shark fin product is significantly cheaper than that of the majority of other exporters, with per kilogram average unit values of USD5, USD3.3 and USD23 for "other", "in airtight containers" and "shark

fins", respectively. In the case of the prepared and preserved products, as noted above, the relatively lower unit value could be the result of cheaper additional ingredients adding to the product weight. In general, however, it would appear that Thai suppliers focus mainly on low-value markets, most probably retailers and possibly lower-end Chinese restaurants where quality is not so important. Thailand is also a minor importer of shark fins, primarily of dried fins, and registered a pre-2007 average volume of 92 tonnes (USD1 million), and 136 tonnes (USD1.1 million) over the second period.

Partners

Japan is the principal destination for Thailand's shark fin exports, accounting for 42 percent (3 056 tonnes) of the average yearly volume from 2007 to 2012 and 44 percent (USD14.8 million) of the value. Almost all these exports were recorded under the "prepared or preserved" type "other", assumed to be pouched product. Although shark fin consumption is not traditional in Japan, there are numerous Chinese restaurants that probably cater to consumers who are not as concerned about the quality of the fins as they might be in China or China, Hong Kong SAR, where there is a historical and cultural connection to the dish. The second-most important importer of Thai fins over the period was the Russian Federation, with an average 10 percent (739 tonnes) of the volume and 12 percent (USD4 million) of the value. The Russian Federation is a similar case to Japan, with the imports probably supplying the market provided by a small ethnic Chinese population, in addition to the possible re-exporting of fins to other smaller countries in the region. The United States of America, in third place, is another example of a low-value market. Average yearly exports to the United States of America from 2007 to 2012 were 431 tonnes at USD1.8 million, the lower unit value the result of a 65 percent proportion of cheaper canned product rather than pouched ("other"). Exports to Australia (average of 398 tonnes or USD2.3 million) are also mixed, although with a higher proportion of pouched product, while Myanmar (343 tonnes or USD868 000) imports mainly canned product. Other export destinations are China, Hong Kong SAR (339 tonnes at USD1.5 million), Singapore (266 tonnes or USD1.5 million), Taiwan Province of China (231 tonnes or USD1.2 million) and South Africa (148 tonnes or USD329 000). Thai exports of dried fins are primarily to China, Hong Kong SAR and Singapore.

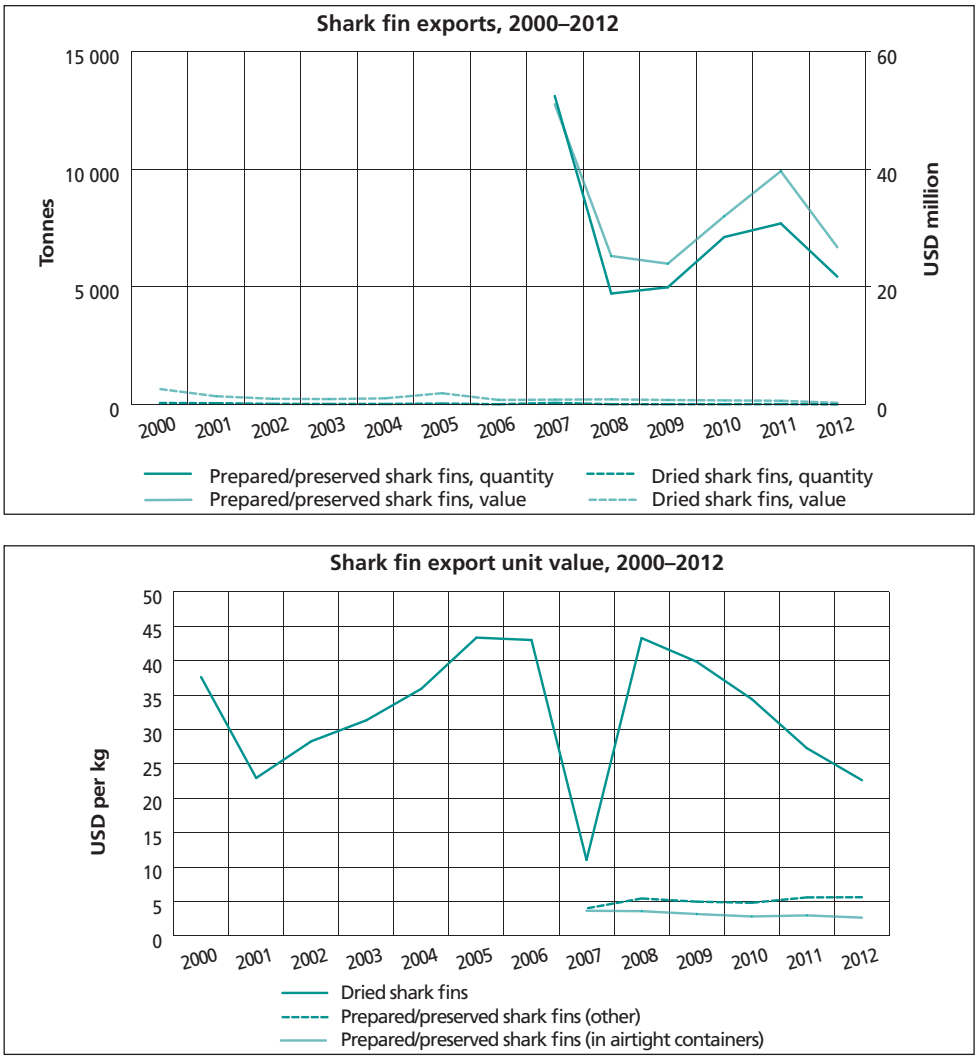
In terms of volume, the largest share (36 percent) of Thailand's imports from 2007 to 2012 came from China, with an average of 50 tonnes at USD175 000. However, this figure is skewed by the 279 tonnes of low-valued canned product imported in 2007. In terms of consistent supply, China, Hong Kong SAR is the major source of shark fins for Thailand, representing 30 percent (41 tonnes) of the volume and 44 percent (USD474 000) of the average yearly value. These imports are all dried fins, with an average unit value of USD11.7/kg.

Domestic trade and markets

Thailand represents another shark fin market whose influence on global trade patterns has not been widely recognized. Perhaps as a result, its domestic trade and consumption characteristics have not been investigated in depth. The one recent study that has assessed the Bangkok market found processors and traders particularly unwilling to provide information about the trade (SEAFDEC, 2006). The cryptic nature of the trade was further emphasized by the lack of any company labels on products surveyed in retail outlets. Instead, products were branded by circular red stickers with gold-embossed pictures, e.g. a "thumb's up", or Chinese characters for "double happiness", "star" or "dragon", and shopkeepers would not divulge the contact details of the supplier (SEAFDEC, 2006).

In contrast to the low-value nature of the products produced by Thailand's shark-fin processing industry (see preceding discussion of exports), products offered by retailers in the Bangkok survey were among the most expensive ever observed, i.e. USD1 000/kg. Shops selling these high-grade products appeared to be linked to large shark-fin merchants in China, Hong Kong SAR, and to be selling their wares to tourists from Singapore, Taiwan Province of China or China, Hong Kong SAR (SEAFDEC, 2006).

FIGURE 20
Thailand shark fin trade, 2000–2012



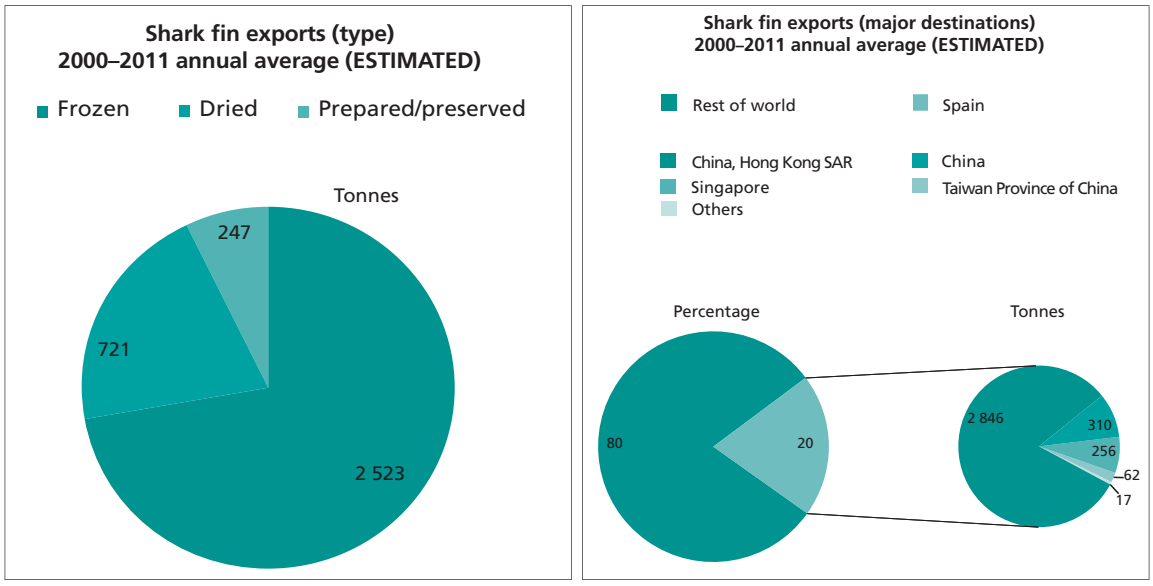
Source: Thai Customs Department (2013).

Spain

Snapshot

- Spain is one of the world's largest producers and exporters of shark fins, with effectively no domestic market of its own.
- It ranks as the world's third-largest shark producer, and capture statistics show a strong upward trend in recent years.
- Spanish customs databases do not identify shark fins explicitly, although it is possible to estimate Spanish exports through examination of the trade records of major importers.
- Estimated by this method, Spain's average annual exports of shark fins, from 2000 to 2011, were about 3 490 tonnes, worth USD57.9 million (Figure 22).
- Spain appears to export entirely to major markets in East and Southeast Asia, mainly China, Hong Kong SAR.
- The major proportion of Spain's exports are frozen shark fins, which is likely to result in underestimation of the true figures as many major importers do not explicitly record trade in frozen fins.

FIGURE 21
Spain shark fin trade profile



Source: Various (see Appendix 1).

Overview

Spain is a major producer and exporter of shark fins, with high shark capture volumes and a non-existent domestic market. From 2000 to 2011, Spanish captures of "sharks, rays & chimeras" averaged 61 293 tonnes, the third highest after Indonesia and India and 8 percent of the global total. In Spain's case, volumes have been rising in recent years, despite an appreciable mid-decade dip. Indeed, the 2011 figure of 89 212 tonnes was the second-highest ever (after 1997) and represents 11 percent and 108 percent increases compared with 2000 and 2005, respectively. The major component of this growth has been blue shark captures, which were 70 791 tonnes in 2011, having doubled since 2000. Spain's place in the world shark fin trade is much more difficult to quantify, however, because Spanish customs do not record trade in shark fins. Spain's shark fin export

series can thus only be constructed from the import statistics of its trading partners. This study estimates the figures using the trade records of China, Hong Kong SAR, China, Singapore, Malaysia, Taiwan Province of China, Indonesia, the United States of America and Canada, which together account for about 98 percent of world shark fin imports (using 2000–2011 global figures)[33] in both value and quantity terms. This method of estimation is conservative, as both China and Singapore, two of the world's major importers, are known to record frozen fins – constituting the major proportion of Spain's shark fin exports – as frozen shark meat, and thus these amounts of traded frozen fins cannot be clearly distinguished. In addition, there are other countries, such as Japan, that are not included in the estimation but which import significant quantities of high-value "frozen shark meat" from Spain. With these caveats in mind, estimation using this method puts Spain's average yearly exports of shark fins in the region of 3 490 tonnes, valued at USD57.9 million, from 2000 to 2011. If the estimated quantity for Spain is included in the total, this equates to a 17 percent share of the world's export volume and 18 percent of its total value. In terms of average exports per year for the same period, this puts Spain in second place after China, Hong Kong SAR for both volume and value, underlining its importance as a producer. With virtually no domestic market, it is not surprising to find that Spain's imports of shark fins, estimated using the equivalent method, are effectively zero.

Trade recording

As stated above, although trade in other shark meat products is recorded, until 2011 Spanish customs did not use any commodity codes that identify shark fins specifically. Even with the introduction of a standardized HS code for shark fins (030571) by the WCO in 2012, Spain's reported exports of shark fins are far below those reported by its partners. This presents obvious problems for those attempting to accurately quantify Spain's trade in fins and identify trends over time. The method of estimation using import series is a possible solution to this problem. However, it depends on the assumption that the selected partner countries with available data account for the vast majority of exports, and also that the figures as recorded by the various different customs authorities are reliable and comparable. This latter assumption, in particular, is questionable given the aforementioned issue with hidden reporting of frozen shark fins within commodity categories described as "frozen shark meat". It is probable that shark fin exports are in fact being recorded in Spain itself, at least to some extent, but only within aggregated categories or under relatively ambiguous commodity descriptions. However, it is effectively impossible to accurately estimate the proportion of shark fins versus that of shark meat if both product types are recorded under the same code. It is clear that it inhibits meaningful analysis and/or monitoring once one considers the significant difference between the two products in terms of value, markets and the conversion factors used to calculate the volume of shark captures used to produce them.

Exports

Spain's exports of shark fins, as estimated from trading partners' reported imports of shark fins, would appear to have declined markedly since 2000. These figures show quantities peaking briefly in 2007 at 4 578 tonnes, then subsequently dropping in 2012 to 1 092 tonnes, representing a 77 percent decline from 4 686 tonnes in 2000. A 28 percent increase in unit value, from USD15.5 to USD19.9/kg over the same period, meant the corresponding drop in value terms was slightly less than 70 percent, falling from USD72.7 million in 2000 to USD21.7 million in 2012. However, it is considered extremely probable that these statistics do not reflect a real trend but rather are the

[33] See Appendix 1.

result of changes in trade recording practices, particularly in light of the observation that Spain's reported shark captures have actually been increasing over recent years. As noted above, there is statistical evidence that suggests certain countries, including some of the largest shark-fin traders, are recording higher and higher proportions of frozen shark fins as frozen shark meat. This is particularly problematic when attempting to estimate Spain's exports using its partners' import series, as Spain exports mainly frozen fins. This coding issue can distort the true situation in two important ways. First, it will result in a substantial underestimation of the quantity of fins being exported by Spain overall. Second, it will overemphasize the importance of export destinations such as China, Hong Kong SAR that explicitly record – at least until recently – trade in frozen fins whereas other destinations may not.

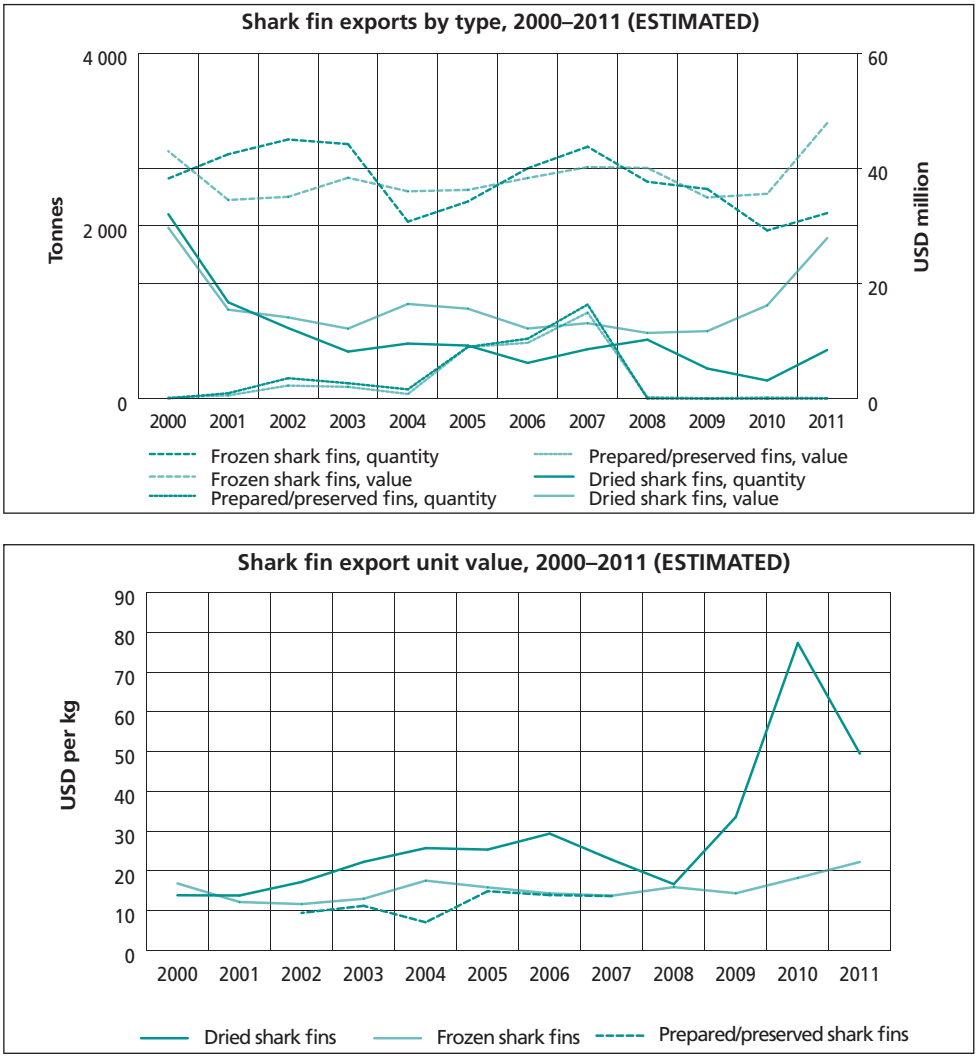
The inconsistent coding practices must also be kept in mind when estimating the average shares of different product forms in Spain's exports. To do this, the various export series were separated into the standard dried, frozen and "prepared or preserved" categories, where possible, from 2000 to 2011. By value, the shares based on reported trade were 66 percent frozen (USD38.3 million), 28 percent dried (USD16.3 million) and 5.7 percent "prepared or preserved" (USD3.3 million). Volume shares for these forms were 72 percent (2 523 tonnes), 21 percent (721 tonnes) and 7 percent (247 tonnes), respectively. However, owing to the coding issues outlined above, the frozen proportion is likely to be substantially underestimated. In terms of unit values, dried fins were worth an average of USD22.6/kg over the same period, frozen averaged USD15.1/kg and "prepared or preserved" sold for USD13.3/kg. Relative to other primary producers, these values suggest that Spain is supplying a higher-quality fin, which is probably due to the composition of (relatively large) shark species from which the fins originate (capture statistics suggest mainly blue shark).

Partners

The major destination for Spain's shark fin exports, based on comparison of the official statistics as published by the various customs authorities, is China, Hong Kong SAR. From 2000 to 2012, exports to China, Hong Kong SAR accounted for, on average, 80 percent of the total volume (2 648 tonnes) and 86 percent of total value (USD47.6 million). However, this share is probably being overestimated as a result of China, Hong Kong SAR explicitly reporting frozen shark fins as such in its trade statistics, while other partners, to varying degrees, may not. This consideration is particularly pertinent when observing that, in the case of China, Hong Kong SAR, "frozen, unprocessed" fins took an 86 percent share in quantity terms and a 76 percent share by value, while the corresponding figures for "dried, unprocessed" fins were 8.2 percent and 13 percent. As reported by China, Hong Kong SAR, there has been a substantial decline in these exports since 2000, however, particularly in 2012 when Spanish-origin imports into China, Hong Kong SAR dropped to 276 tonnes, compared with 2 460 tonnes in 2011 and 3 159 tonnes in 2000. It is probable that the 2012 figure may have been the result of the introduction of new commodity coding system for shark fins in 2012, rather than evidence of a real decrease in volumes. Specifically, traders in China, Hong Kong SAR were directed to declare frozen shark fins, which constitute the major proportion of Spanish exports, as frozen shark meat as of 2012. The next two most important destinations for Spanish shark fin exports, according to the estimate, in order, are Singapore and China. Singapore accounted for 9 percent (290 tonnes) of the total volume and 8 percent (USD4.3 million) of the total value, while in China's case the shares were 9 percent (286 tonnes) and 2 percent (USD1.3 million). All but a minor proportion of Singapore's shark fin imports from Spain were in "prepared or preserved" form, while Chinese customs only records fins under dried commodity descriptions. While in Singapore's case the inclusion of frozen shark fins within the "prepared or preserved" category is possible though inconsistent coding practices

(see section on Singapore), in China's case it is clear that the government guidance issued in May 2000 (Clarke, 2004) to record frozen shark fins as frozen shark meat has distorted the true figures. What is noticeable in both cases, and particularly for Singapore, is the large variation in quantities over the 2000–2012 period. From 2007 to 2008, most probably as a result of the coding anomaly examined in the Singapore section of this study whereby frozen shark fins were recorded as frozen shark meat, Singapore's imports of shark fins from Spain dropped from 1 107 tonnes to 4 tonnes, and from 2011 to 2012 volumes jumped back up from 48 tonnes to 692 tonnes. China, in contrast, has recorded zero imports from Spain from 2010 onwards, after seeing steep a decline from the 2000 figure of 1 469 tonnes.

FIGURE 22
Spain shark fin trade, 2000–2011



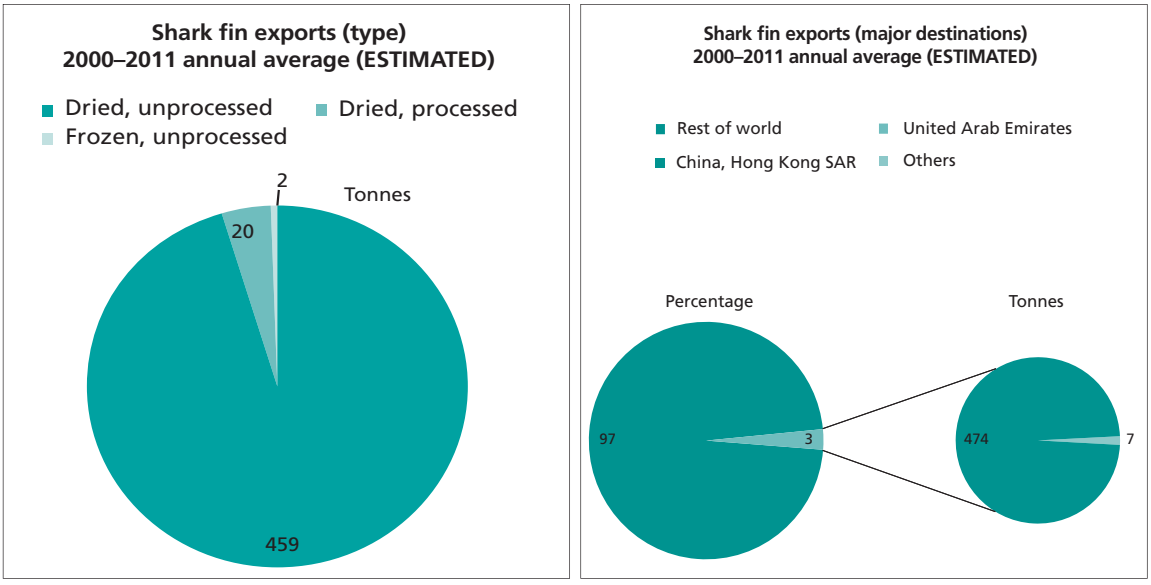
Source: Various (see Appendix 1).

United Arab Emirates

Snapshot

- The United Arab Emirates is a major exporter and regional trader of shark fins, with a minimal domestic market and low shark captures.
- It ranks as the world's eighth-largest exporter of shark fins by volume.
- It exports almost entirely dried shark fins, mainly to China, Hong Kong SAR.
- It does not report trade in shark fins, and exports are estimated from the statistics of major importers.
- Estimated by this method, average annual exports of shark fins from the United Arab Emirates, from 2000 to 2011, were about 482 tonnes, worth USD14.3 million (Figure 24).
- Owing to a lack of available data, the extent to which the United Arab Emirates imports shark fins from other regional producers is unknown, although the large discrepancy between export and production volumes suggests that the United Arab Emirates is importing from other countries in the region and/or under-reporting production.
- Export volumes of shark fins from the United Arab Emirates have remained approximately stable since records began in the late 1990s.

FIGURE 23
United Arab Emirates shark fin trade profile



Source: Various (see Appendix 1).

Overview

As Spain, the United Arab Emirates is an important exporter of unprocessed fins, with little or no domestic market of its own. From 2000 to 2009, exports of shark fins from the United Arab Emirates contributed 3 percent (482 tonnes) to the total world export volume on average per year, and 5 percent (USD14.3 million) to total value, which equates to an average unit value of USD29.7/kg. However, the "shark, skate and ray" captures of the United Arab Emirates are relatively low, at a yearly average of 2 073 tonnes from 2000 to 2011. This figure is less than 1 percent of the world total, making the United Arab Emirates the forty-ninth-largest producer according to officially reported statistics. Even at conservative fin-to-body conversion

rates, the discrepancy between export volumes and captures is large, and suggests that captures are being significantly under-reported and/or that the United Arab Emirates is importing fins from other countries and then re-exporting them. The real reason for the discrepancy is probably a combination of the two, with the available anecdotal evidence pointing to regular shark fin shipments destined for the United Arab Emirates arriving from Oman, Iran (Islamic Republic of), and other emirates as well as from various African countries. These shark fins are directed through the United Arab Emirates before being exported to the major markets of East Asia, owing to a combination of better trade infrastructure, ease of doing business and established trading relationships between the United Arab Emirates and the relevant partners in East and Southeast Asia.

Trade recording

The United Arab Emirates does not report annual volumes and values of total traded shark fins to FAO, and there are no specific commodity codes for shark fins in official trade statistics. As a result, an approximation of its exports was obtained by examining the import records of selected major importers (Canada, China, China, Hong Kong SAR, Indonesia, Malaysia, Singapore, Taiwan Province of China and the United States of America).[34] In the case of imports of shark fins by the United Arab Emirates from its regional partners, however, the lack of available data from relevant partners, as well as from the United Arab Emirates itself, means that detailed statistics are effectively impossible to obtain. This represents a significant information gap considering that, using a conservative dried-fin-to-whole-body conversion ratio of 2.3 percent, total reported captures by the United Arab Emirates in the "shark, skates and rays" category account for only about 10 percent of its total fin exports from 2000 to 2011.

Exports

Based on the export records as constructed from the group of trade partners listed above, annual exports of shark fins from the United Arab Emirates remained relatively stable until 2010, with an average of 484 tonnes (USD16.4 million) per year, before dropping off in 2011 and 2012. The 2012 figure of 305 tonnes at USD13.1 million represents a 44 percent decrease by volume and a 42 percent decrease by value since 2000. The average unit value of shark fin exports from 2000 to 2012 was USD34.5/kg, with a major decline from USD41.2/kg in 2000 to USD24.6/kg in 2004 followed by a steady recovery of prices to USD42.8/kg in 2012. The fact that dried fins, with little or no water content, make up essentially the entirety of the export volumes serves to explain the relatively high unit value. Almost all the exports are destined for China, Hong Kong SAR, with the exception of very small quantities imported by Singapore.

Using an equivalent method of estimation[35] suggests very minor quantities of shark fins are imported by the United Arab Emirates. However, it should again be emphasized that the most likely sources of significant volumes – other producing countries in the region – do not identify shark fins specifically in their trade records.

Domestic trade and markets

The export trade in shark fins has been an important component of the economy of the United Arab Emirates since at least the 1880s. However, domestic utilization of shark fins in the United Arab Emirates is negligible despite the fact that most sharks appear to be landed whole with fins removed at the point of sale. With the exception of a limited market for small sharks and guitarfish, elasmobranchs are generally considered to be of low value as food fish in the United Arab Emirates (Moore, 2012).

[34] See Appendix 1.
[35] See Appendix 2.

FIGURE 24
United Arab Emirates shark fin trade, 2000–2012

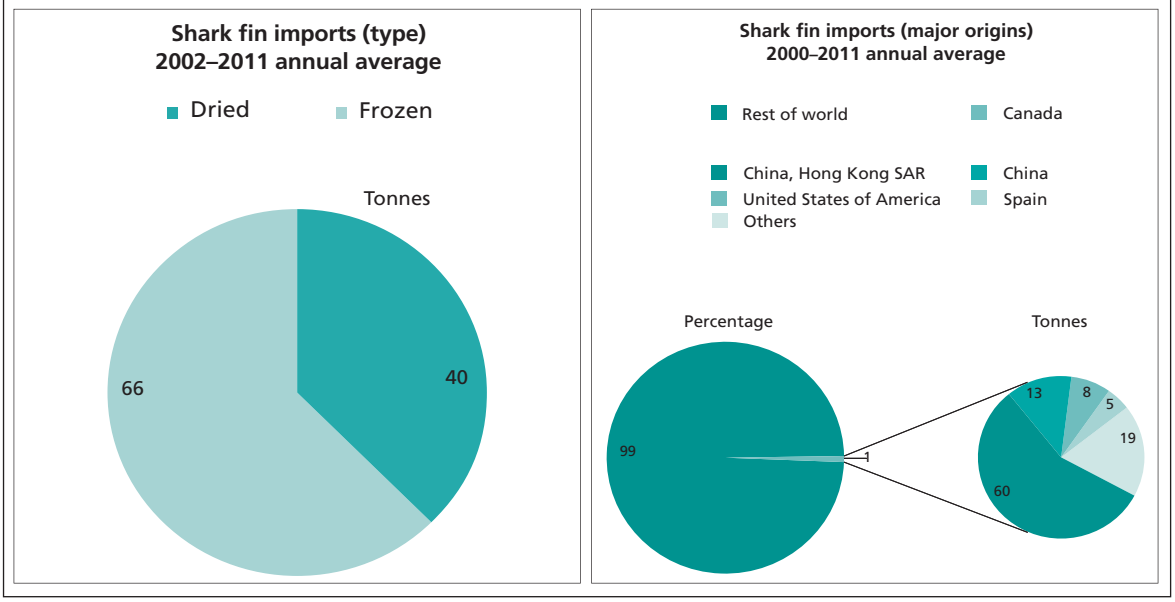
Source: Various (see Appendix 1).

Canada

Snapshot

- Based on reported statistics, Canada is the largest importer of shark fins outside Asia.
- It ranks as the world's eleventh-largest importer of shark fins.
- Its imports consist primarily of very high-value fins in frozen and dried form, most of which are processed before importation.
- From 2000 to 2011, Canada recorded average annual shark fin imports of 106 tonnes, worth USD5.6 million (Figure 26).
- It consistently maintained two distinct commodity categories for dried and frozen shark fins until 2012, when both types were aggregated under a single, non-specific category only.

FIGURE 25
Canada shark fin trade profile



Source: Statistics Canada (2013).

Overview

Canada is the largest importer of shark fins outside East Asia, supplying a domestic market assumed to be composed primarily of Chinese-Canadians, who make up around 4 percent of the population. Canada began reporting shark-fin-specific trade statistics to FAO in 2002. From 2002 to 2011, the yearly volume of Canadian shark fin imports averaged 106 tonnes, or 0.6 percent of the world total. While this quantity is relatively minor compared with some of the world's major importers, these imports were worth an average USD5.6 million per year over the same period, representing a 1.5 percent share of the total and making Canada the world's fourth-largest importer in value terms after China, Hong Kong SAR, Singapore and China. The high average unit value of USD53.1/kg points to a market preference for more-expensive traditionally prepared whole fins rather than canned or other lower-quality products. Trade records show zero shark fin exports up until 2012, when 69 tonnes (USD750 000) of exports were recorded by customs authorities after the introduction of the new HS code.

Trade recording

From 2002 to 2011, Canada reported imports of shark fins under two separate commodity codes, described as "shark fins, frozen" and "shark fins, dried, whether or not salted but not smoked". Although not specified, it is assumed that these are mainly processed fins ready for consumption. In 2012, with the introduction of a new standardized six-digit code for shark fins, Canada dispensed with the two separate categories and published figures under the six-digit aggregated category only. This was not solely due to the new recording system, as it is possible to include disaggregated (6+ digits) commodity categories under the single standardized code. The reasons behind the change in recording policy are thus not clear, particularly considering that the new system was not intended to encourage increased aggregation of shark fin trade statistics. Among other things, an undesirable result of such aggregation is that it is impossible to distinguish between dried and frozen fins and, consequently, to estimate accurately the quantity of material being traded. Owing to uncertainty as to whether the figures reported in 2012 are comparable with those from 2000 to 2011, 2012 is treated separately in the next section.

Imports

By volume, Canadian shark fin imports from 2002 to 2011 consisted primarily of frozen fins, with the average yearly figure of 66 tonnes representing 62 percent of the average total volume (106 tonnes). However, the water content of frozen fins increases the product weight. As a result, it is dried fins that accounted for the major share of the total value, averaging USD5.3 million per year or 94 percent of the total. After declining steeply from 2002 to 2005, imports of dried fins remained relatively stable until 2011, while frozen fin imports followed an upward trend and were 683 percent higher in 2011 than 2002 by value and 314 percent higher by volume. In terms of average yearly figures from 2002 to 2011, the top three origins for Canadian fin imports are China, Hong Kong SAR, China and Spain. Of these, China, Hong Kong SAR has historically been the major partner since records began, accounting for a 34 percent share (USD1.9 million) of the total yearly import value and 50 percent (57 tonnes) of the total yearly volume from 2002 to 2011. Imports from China, Hong Kong SAR have been falling, however, and in 2011 Canada imported only 39 tonnes from China, Hong Kong SAR at USD360 000. Meanwhile, Spanish-origin imports of dried fins, as reported, are notable for their extremely high unit value; yearly averages from 2005 to 2011 for volume and value were 7 tonnes and USD1.8 million, respectively, for an average unit value of USD257/kg. It is unclear why Spanish-origin fins are fetching such high prices from Canadian importers, particularly as Spain does not generally trade in processed fins.

In 2012, Canada recorded 106 tonnes of shark fins under the new single code, compared with 103 tonnes the previous year. However, value fell from USD6.4 million in 2011 to USD2.3 million in 2012, pulling the unit value down by 65 percent to USD21.8/kg. This may indicate a shift in the composition of the imports to include more lower-valued fins, although it is more likely that the new coding system has resulted in certain reporting adjustments or errors.

Domestic trade and markets

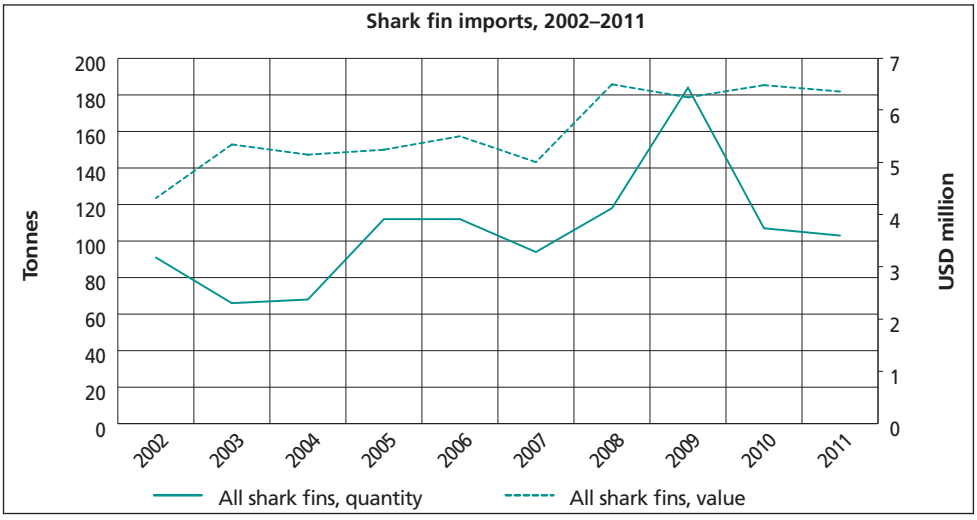
It is expected that Canada does not process shark fins domestically in substantial quantities and, therefore, the extent of Canada's consumption is approximated by the quantity of its imports. This assumption appears to be confirmed by the fact that Canada's two largest suppliers are China, Hong Kong SAR and China, both major sources of processed shark fins. However, since 2005, the province of British Columbia has imported 4–9 tonnes per year of dried shark fins from Spain (A. Cosandey-Godin and Y. Yao, personal communication, December 2013). If these fins are unprocessed,

this implies that Canada has capacity to process shark fins for its domestic market, and leaves open the possibility that domestic capture production of sharks may be supplementing import fins to supply domestic demand. No further information on this issue could be sourced.

As of 2011, about 60 percent of Canada's dried shark fin imports were destined for British Columbia and about 40 percent were destined for Ontario, with very small quantities also reported by Quebec and Alberta. For frozen fins, 94 percent were destined for Ontario, with 2–4 percent each headed for British Columbia and Alberta, and negligible quantities received by Quebec and Newfoundland. In the past decade, Canada's three most populous provinces (Ontario, British Columbia and Quebec) have received more than 95 percent of Canada's imported shark fins.

In the past two years, more than a dozen municipalities across the country have passed by-laws to ban the sale and possession of shark fins. Although the majority of the restaurants serving shark fins are in large cities, such as Vancouver and Richmond (British Columbia) and Toronto (Ontario), and Toronto is one of the cities that has adopted a ban, most of the cities with bans have not played a major role in the fin trade. In December 2012, the Ontario Superior Court overturned the shark fin ban in Toronto, and local legislators are now working on a new ban with a more limited scope (i.e. a prohibition on sales but not on consumption or possession *per se*).[36] These developments are being closely monitored by other cities that have, or are considering, shark fin bans. Calgary (Alberta) has decided not to pursue a similar measure.[37] There is insufficient information to evaluate the effect of these bans on the import of shark fins, but it is suspected that they have not had any significant impact (A. Cosandey-Godin and Y. Yao, personal communication, December 2013).

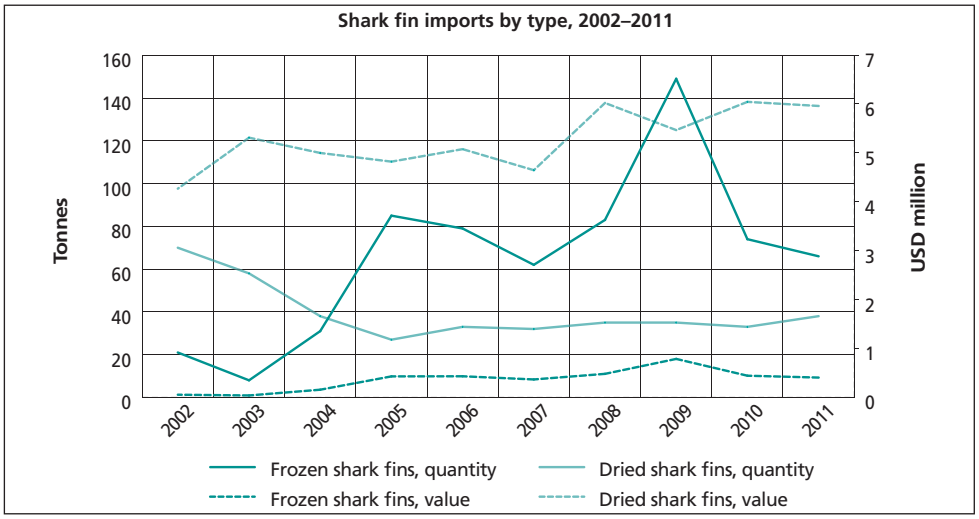
FIGURE 26
Canada shark fin trade, 2002–2011

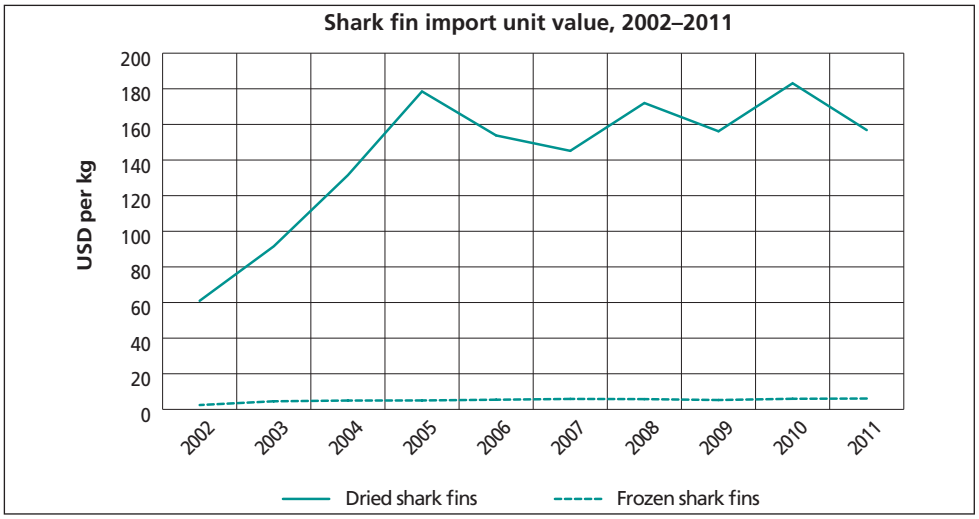


[36] www.thestar.com/news/city_hall/2013/02/19/sharkfin_ban_resurfaces_as_toronto_council_backers_seek_new_narrower_rule.html

[37] www.calgaryherald.com/news/calgary/Council+shelves+push+shark/8440252/story.html

FIGURE 26 (continued)





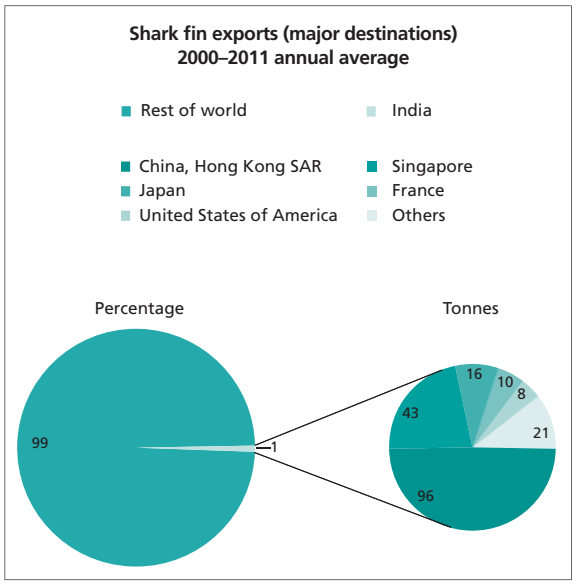
Source: Statistics Canada (2013).

India

Snapshot

- India is one of the world's largest shark producers and an important exporter of shark fins, with little or no market of its own.
- From 2000 to 2011, it ranked as the second-largest producer of sharks and the twelfth-largest exporter of shark fins by volume.
- From 2000 to 2011, it recorded average annual shark fin exports of 185 tonnes, worth USD6.5 million (Figure 28).
- The major proportion of Indian exports, mainly dried fins, is destined for China, Hong Kong SAR.
- India records outgoing trade in dried shark fins only, but import partner records suggest frozen shark fin exports are minimal in any case.
- Its trade statistics show a significant decline from 2000 to 2012 in shark fin export volumes, but a steep increase in the unit value of its exports.

FIGURE 27
India shark fin trade profile



Source: India Ministry of Commerce (2013).

Overview

India posted average chondrichthyan captures of 73 842 tonnes from 2000 to 2011, all recorded as "sharks, rays and skates", making it the world's second-largest producer of chondrichthyans until 2009, when it was overtaken by Spain. India has virtually no domestic market for shark fins, but has traditionally been an important supplier to the international market. Production volumes have remained more or less consistent over the past 13 years or so, although export volumes have diminished considerably over the same period. India exports mainly dried fins to markets in East Asia. Looking at average figures from 2000 to 2009, India's annual exported volume of 185 tonnes per year equates to 1.1 percent of the world total, while the corresponding average value of USD6.5 million represents 2.4 percent of the total. The average unit value of these exports over the 12-year period was USD35.1/kg, close to that of shark fin exports by the United Arab Emirates, although the price has been increasing steeply in recent years.

Trade recording

Since 2000, India has recorded trade in shark fins under one category only, under the description "edible shark fins of wild life". There is no reference to whether the fin is dried or frozen, processed or unprocessed, making it difficult to estimate raw material proportions from official statistics. However, an examination of the import records of its major trading partners suggests that India's exports are almost entirely dried fins. Given the Indian climate and the relatively low technological capacity of the Indian shark fishing fleet, it would make sense that fishers and/or traders choose to sun-dry the fins before export rather than freezing them. In addition, the import statistics of China, Hong Kong SAR include some 20 percent of Indian-origin imports within the "dried, processed" category, indicating that a proportion of the product arrives already processed. The summed India-origin imports of China, Hong Kong SAR, Singapore, China, Taiwan Province of China, the United States of America, Canada and Indonesia[38] also suggest consistent under-reporting of volumes (about 50 percent less) by Indian exporters if one assumes that higher figures are more accurate. A study conducted in the mid-2000s found that India's shark fin exports would be 2.2 times greater than the quantity of reported exports if calculations were based on reported capture production figures, and 5.2 times greater if based on import data from China, Hong Kong SAR (Hausfather, 2004).

Exports

According to official statistics, the two main destinations for India's shark fin exports are China, Hong Kong SAR and Singapore. From 2000 to 2012, China, Hong Kong SAR accounted for an average 51 percent share (98 tonnes) of total volume per year, and 66 percent (USD4.6 million) of total value. For Singapore, the corresponding shares were 21 percent (40 tonnes) and 19 percent (USD1.3 million). However, the volume of exports to both countries decreased considerably from 2000 to 2012. Including all destinations, India's shark fin exports in 2012 were down by 65 percent compared with 2000. In contrast, the total value of these exports, USD13.1 million in 2012, was 45 percent higher than in 2000. This is because of a large increase in the unit value of the exports, which was 5 times higher in 2009, at USD112/kg than in 2000, before falling back slightly over the following years to USD78.2/kg in 2012. Although there are a number of potential explanations for this trend, perhaps the most plausible is that India is increasingly exporting processed shark fins, thereby decreasing the quantity (weight) of exports but increasing the value.

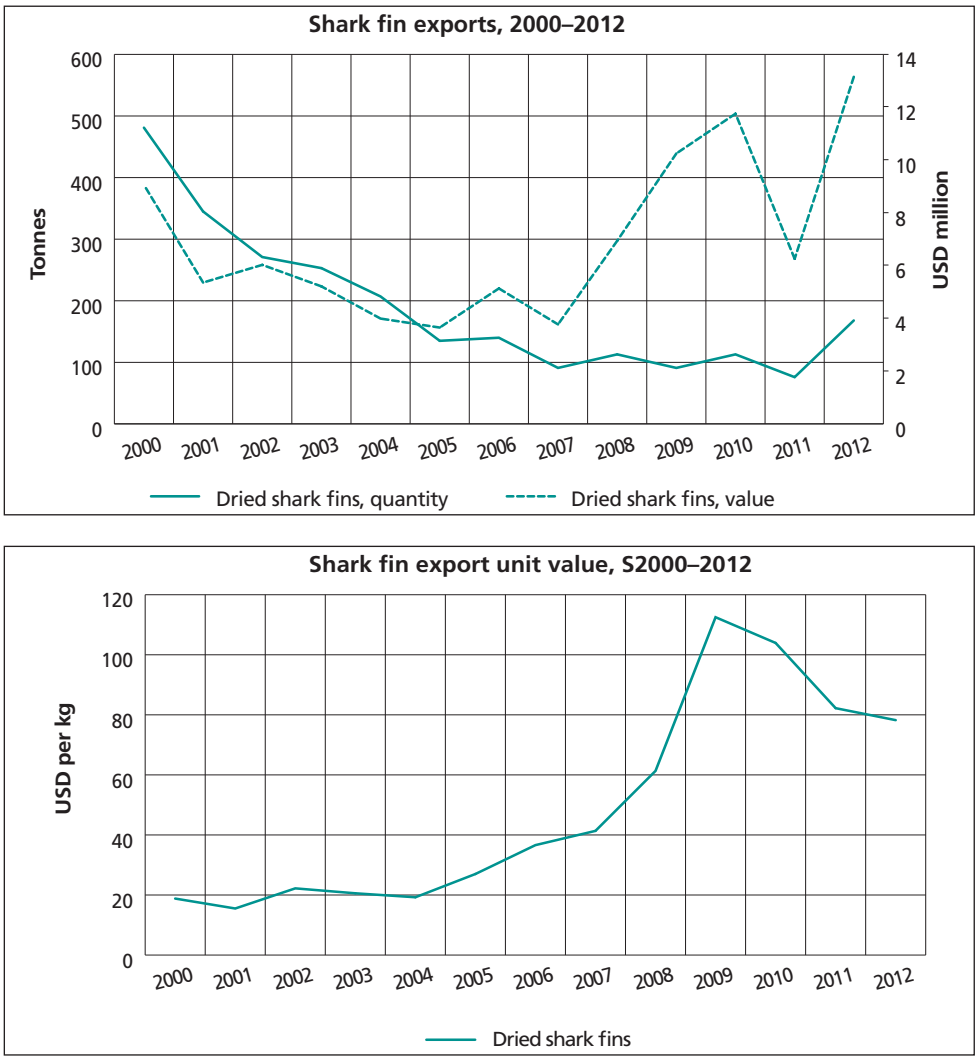
Domestic trade and markets

Previous studies have indicated that although there is a small domestic market catering to major hotels with ethnic Chinese guests, most shark fin production in India is exported, usually in dried unprocessed form (Hausfather, 2004, Verlecar *et al*., 2007). A review of shark fisheries in India suggests that shark fin processing takes place after export (Vivekanandan, 2001), although this may have changed in the past decade as Internet searches can now locate a number of companies throughout India offering processed shark fin products. It is reported that Chennai and, to a lesser extent, Mumbai serve as consolidation hubs exporting shark fins collected from landings sites along both east and west coasts. In 2009, prices were reported at USD72/kg for small-sized fins, USD93/kg for medium-sized fins and USD145/kg for large-sized fins of sharks and guitarfishes, while shark teeth sold for USD21/kg and ray gill rakers sold for USD10/kg (Mohanraj *et al*., 2009).

[38] See Appendix 1.

In August 2013, India announced a new policy of requiring that sharks be landed in national ports with their fins naturally attached.[39] However, it is expected that most fisheries catching sharks in India prior to the ban, with the exception of those in the Andaman Islands (Vivekanandan, 2001), were landing whole carcasses. Therefore, it would not be expected that the new ban on finning would greatly affect shark fin production and trade in India.

FIGURE 28
India shark fin trade, 2000–2012



Source: India Ministry of Commerce (2013).

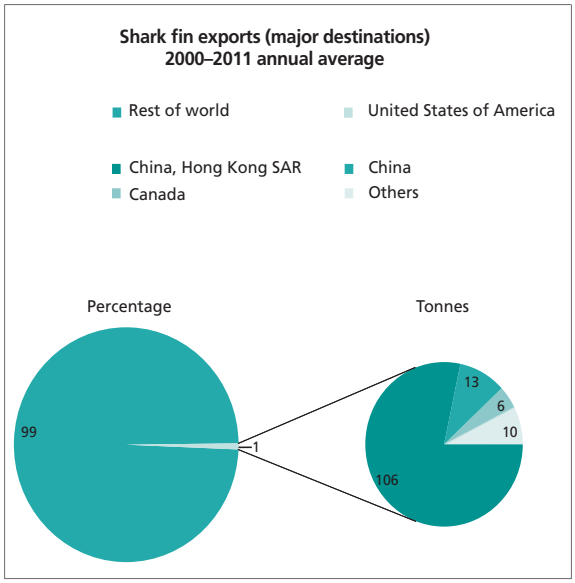
[39] http://articles.timesofindia.indiatimes.com/2013-08-26/flora-fauna/41454521_1_fins-shark-conservation-second-largest-shark-catching-nation

United States of America

Snapshot

- The United States of America is an important producer of sharks, a relatively large exporter and a minor importer of shark fins.
- It exports mainly unprocessed raw material to China, Hong Kong SAR and China.
- It ranks as the seventh-largest shark producer in the world, with the composition of captures shifting to smaller species, rays and skates in recent years.
- From 2000 to 2011, it recorded average annual shark fin exports of 171 tonnes, worth USD3.4 million (Figure 30).
- It records trade in dried shark fins only, but trade records of major importers show non-trivial quantities of imports of frozen shark fins originating from the country.
- Its statistics show a significant decline in the volume of shark fins exports since 2003, although the decline in value has been considerably less.

FIGURE 29
United States of America shark fin trade profile



Source: U.S. Department of Commerce, Bureau of Census (2013).

Overview

Although not a major market or producer, the United States of America is both an importer and exporter of shark fins, as well as being the seventh-largest producer of chondrichthyan fishes in the world. According to official statistics as reported to FAO, the United States of America imported an average of 36 tonnes (USD1.3 million) of shark fins per year from 2000 to 2011, or 0.2 percent and 0.3 percent of the total world volume and value, respectively. In the same period, it exported an average of 171 tonnes at USD3.4 million, equivalent to 1 percent of global volume and 1.3 percent of value. Average unit values were USD20/kg for exports and USD35.3/kg for imports, with exports believed to consist primarily of unprocessed raw material and imports mostly of consumption-ready products Production volumes of the aggregated chondrichthyan category increased by 27 percent from 2000 to 2011, to 39 331 tonnes, but the

comprehensive species-specific capture data compiled by the United States of America reveals that the captures of large shark species (makos, requiem and hammerhead sharks) actually declined by 80 percent in the same period. The overall increase in chondrichthyan captures was driven mainly by ray, skate and dogfish rather than larger species. The sharp decline in shark fin exports in 2003 is probably related to the implementation by the United States of America of shark finning regulations, which took effect in February 2002.[40]

Trade recording

The United States of America records trade in shark fins under one commodity code only, with the description "shark fins dried whether or not salted not smoked"[41]. There is no reference to whether the fin is processed or otherwise. Comparisons of official FAO statistics with United States customs data and other sources reveal a number of inconsistencies, while there is also a discrepancy between the country's annual export figures and those constructed by summing the import series of major importers (Canada, China, China, Hong Kong SAR, Indonesia, Malaysia, Singapore and Taiwan Province of China),[42] the latter being some 71 percent higher on average in volume terms and 186 percent higher by value (the potential difference between FOB export values and CIF import values must be acknowledged, although it is considered extremely unlikely to account for a difference of this magnitude).

Similarly, imports by the United States of America as obtained by summing major exporter series (China, China, Hong Kong SAR, India, Indonesia, Malaysia, Singapore, Taiwan Province of China and Thailand)[43] are more than seven times higher than the official figure by volume and three times higher by value. However, it should be noted that the major component of this extreme discrepancy is exports from Thailand destined to the United States of America of "prepared or preserved" fins as recorded by Thai customs authorities from 2007 onwards, which do not appear to be recorded as shark fins explicitly by United States authorities. Further scrutiny of China, Hong Kong SAR trade data also indicates both exports to and imports from the United States of America of frozen fins, despite the fact that the United States of America records trade in dried fins only. As in many other cases, this incompatibility of the trading partners' statistics, in terms of shark fin commodity categories and the accompanying descriptions, is probably a major factor behind observed discrepancies.

Imports and exports

According to official statistics of the United States of America, the 2012 total export volume of 51 tonnes represents an 86 percent decline compared with 2012. Total value decreased by 19 percent over the same period, again as reported by United States authorities. As reported, 79 percent (102 tonnes per year) of the country's total shark fin export volume from 2000 to 2012 went to the China, Hong Kong SAR, accounting for 82 percent (USD2.8 million) of the value

However, the method of estimation by partner import series indicates a 49 percent decline in the total volume of shark fin exports from the United States of America from 2000 to 2011, and a 64 percent drop in total value. Imports by China, Hong Kong SAR account for 93 percent of the total volume and 94 percent of value. Of these, "frozen, unprocessed" fins made up 49 percent of the volume and 16 percent of value, while "dried, unprocessed" fins accounted for 46 percent of volume and 78 percent of value. A notable shift has taken place in the composition of imports by China, Hong Kong SAR from the United States of America in recent years, with the proportion of

[40] www.nmfs.noaa.gov/sfa/hms/shark_finning/fax_fr_shark_f.PDF
[41] Note that from 2012 this category was renamed "shark fins".
[42] See Appendix 1.
[43] See Appendix 2.

"dried, unprocessed" steeply increasing and the proportion of "frozen, unprocessed" declining.

According to trade statistics of the United States of America, the total annual average quantity imported from 2000 to 2012 was 36 tonnes, worth USD1.2 million, the majority coming from China, Hong Kong SAR (26 percent of volume and 7 percent of value), China (19 percent of volume and 20 percent of value) and New Zealand (12 percent of volume and 49 percent of value).

However, summing partner export series suggests that these figures may be substantial underestimations of the real quantity of shark fin imports, with Thailand reporting a yearly average of 431 tonnes of "prepared or preserved" fins exported to the United States of America from 2007 to 2012 (see section on Thailand for explanation of the restriction to this period only) – more than double the entire amount of imports reported by the United States of America for this period. However, these are probably pouch or canned shark fins and, as a result, may include substantial quantities of materials not derived from shark fins. Excluding Thailand, the sum of the export series of the selected countries gives an annual average volume imported by the United States of America from 2000 to 2011 of 62 tonnes, worth USD3 million. Again, it is exports from China, Hong Kong SAR that constitute the major share, with 69 percent of volume and 91 percent of value, mainly "frozen, processed" shark fins.

Domestic trade and markets

As described above, the majority of the imports of dried shark fins by the United States of America are likely to be processed fins intended for consumption. While the country's domestic consumption can thus be assumed to be at least as high as these import figures indicate (i.e. about 36 tonnes per year), there are two other potential sources of shark fin supply to the domestic market. First, it appears that processed shark fin in frozen form may not be declared as shark fin (see discussion of Thailand's exports to the United States of America above) and, therefore, potentially about another 430 tonnes per year of shark fin products are consumed in the United States of America. The actual shark fin content of these products (i.e. the proportion of real shark fin versus artificial shark fin, other ingredients and water content) cannot be estimated. Second, there is little information on whether any of the country's domestic production of shark fins is channelled into local markets for consumption. Based on recent cases of enforcement of shark-related regulations, most of which involve warehouses storing unprocessed fins rather than factories processing fins, and given that shark fin processing is concentrated in specialized facilities usually in Asian countries with low labour costs, it seems unlikely that shark fin processing occurs in the United States of America on any significant scale. Given these uncertainties, while it is likely that the amount of shark fin consumed in the United States of America is of the order of several hundred tonnes per year, the actual quantity cannot be determined with any degree of accuracy.

Sources in the United States of America state that production of shark fin by the country's vessels has decreased in recent years (J. Carlson, personal communication, January 2014). In contrast, reported shark fin imports by the United States of America rose from 20–30 tonnes in 2007–09, to 34 tonnes in 2010, 58 tonnes in 2011, 44 tonnes in 2012, and 54 tonnes for January–November 2013.[44] In 2011, the unit value of imports was the lowest since 2007 (NOAA, 2013). This trend of increasing quantity and lower value of imports occurred despite the adoption of bans on trade and possession by several states and territories during this same period. The State of Hawaii was the first to implement a ban in July 2010, and as of January 2014 American Samoa, California, Delaware, Guam, Illinois, Maryland, New York, Northern Mariana Islands, Oregon

[44] www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/trade-by-product

and Washington had followed suit. In 2013 (until November), 93 percent of all of the fins imported into the United States of America transited the Los Angeles customs district.[45]

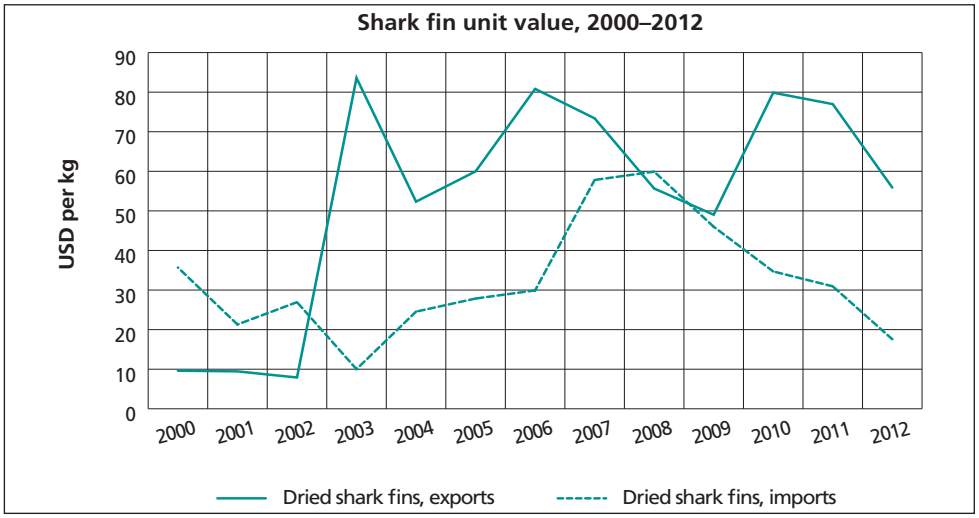
Export data for the United States of America on shark fins shows that most are shipped from Texas (Galveston–Houston or Dallas–Fort Worth customs districts), Los Angeles or New York, and that the shark fins are mainly destined for China, Hong Kong SAR.[46] It is possible that these areas serve, or have served, as hubs for consolidation of shark fins from domestic landing sites along the East, Gulf and West coasts. The effects of the trade and possession bans in California and New York on such export consolidation businesses are unknown.

FIGURE 30
United States of America shark fin trade, 2000–2012

[45] www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/trade-by-all-us-customs-districts

[46] Ibid.

FIGURE 30 (continued)



Source: U.S. Department of Commerce, Bureau of Census (2013).

Costa Rica

Snapshot

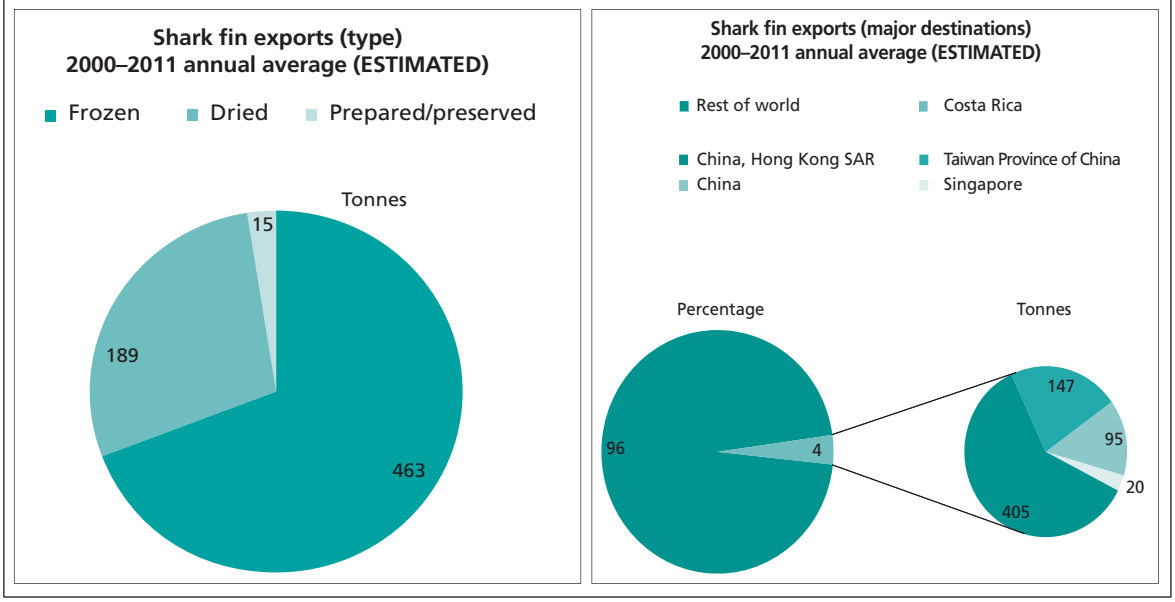
- Costa Rica is an important exporter of shark fins and a key trading post for shark fishing fleets in the region.
- After years of steep decline, its domestic production of sharks is now relatively small, ranking twenty-eighth in the world.
- China, Hong Kong SAR is the major destination for shark fins originating from Costa Rica.
- Costa Rican customs authorities record trade in shark fins under one code only, with no reference to the stage of processing or to whether the shark fin is frozen or dried.
- There is a large discrepancy between Costa Rican exports as reported by Costa Rica, and the figures obtained through summing Costa Rican-origin imports of major importers:
- From 2000 to 2011, Costa Rica recorded average annual shark fin exports of 67 tonnes, worth USD1.9 million (Figure 32).
- Estimated by the partner method, Costa Rica's average annual exports of shark fins over the same period were 668 tonnes, worth USD8.9 million (Figure 32).

Overview

Concrete information on the specifics of Costa Rica's shark fin production and trading activities are difficult to obtain. However, anecdotal evidence suggests that foreign vessels from distant-water fleets land large quantities of freshly taken shark fins at private docks in Costa Rican territory before they are shipped to markets in East Asia. Costa Rica has no appreciable market of its own, and from 2000 to 2011 posted relatively low average shark captures of 6 450 tonnes per year – not including captures by foreign-flagged vessels fishing in Costa Rican waters – registering a decline of 72 percent from 12 901 tonnes in 2000 to 3 635 tonnes in 2011. Although these capture volumes could account for the yearly average shark fin exports of 67 tonnes as reported to FAO, summing the Costa Rica origin import series of major importers (Canada, China, China, Hong Kong SAR, Indonesia, Malaysia, Singapore and Taiwan

Province of China)[47] indicates that the official export figures may not accurately reflect the actual quantity of fins flowing from Costa Rice. The series constructed using the partner method, from 2000 to 2011, puts the average export volume at 668 tonnes per year, almost 10 times the official figure. Similarly, the figures as reported to FAO put the average yearly value of the country's shark fin exports at USD1.9 million per year, while the estimated series gives USD8.9 million per year (the potential differences between CIF import values and FOB export values must be noted when using partner trade data). If the estimated figures are accurate, they make Costa Rica the eighth-largest exporter in the world in volume terms, and seventh in value terms, over this period.

FIGURE 31
Costa Rica shark fin trade profile



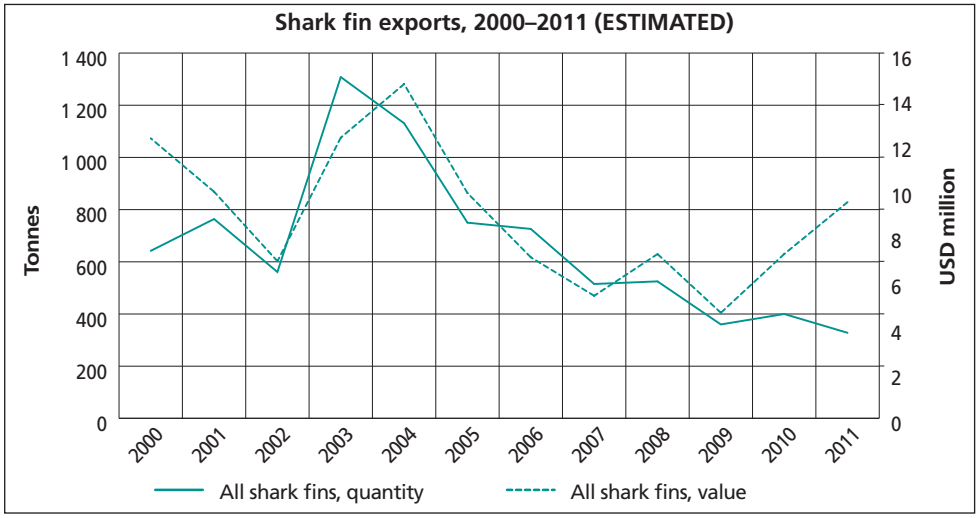
Source: Various (see Appendix 1).

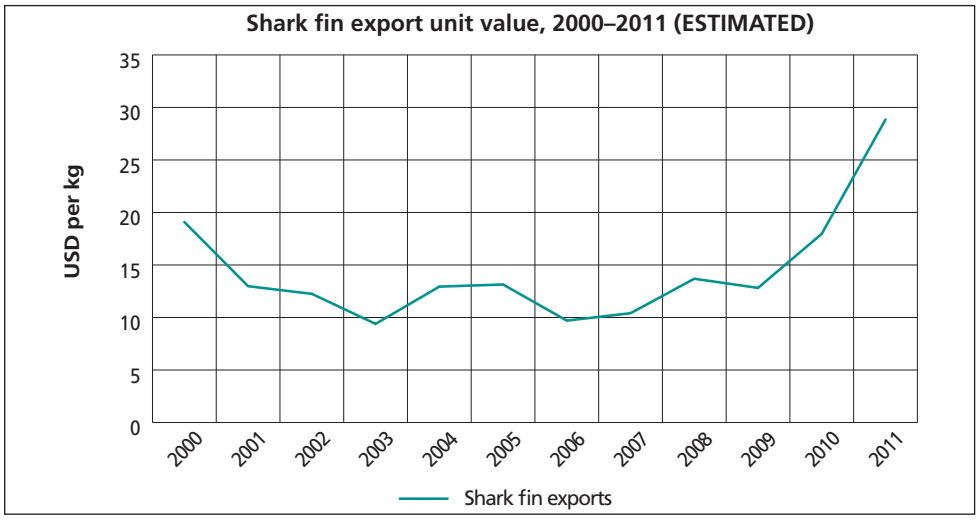
Trade recording

From 2003 to 2012, Costa Rica recorded trade in shark fins under one commodity code only, "Aleta De Escualo Salado. N.T. 68". Translating to "salted shark fin", this code was replaced in 2012 by the standardized HS code for shark fins (030571). There is no reference to whether the fin is frozen or dried, or to whether it is processed or not. However, the summed import series of Costa Rica's major trading partners suggests that about 60 percent of the volume exported by Costa Rica consists of frozen fins. In addition, as pointed out previously, the volumes and values recorded under these codes are generally much lower than those reported by Costa Rica's trade partners.

[47] See Appendix 1.

FIGURE 32
Costa Rica shark fin trade, 2000–2011





Source: Various (see Appendix 1).

Exports

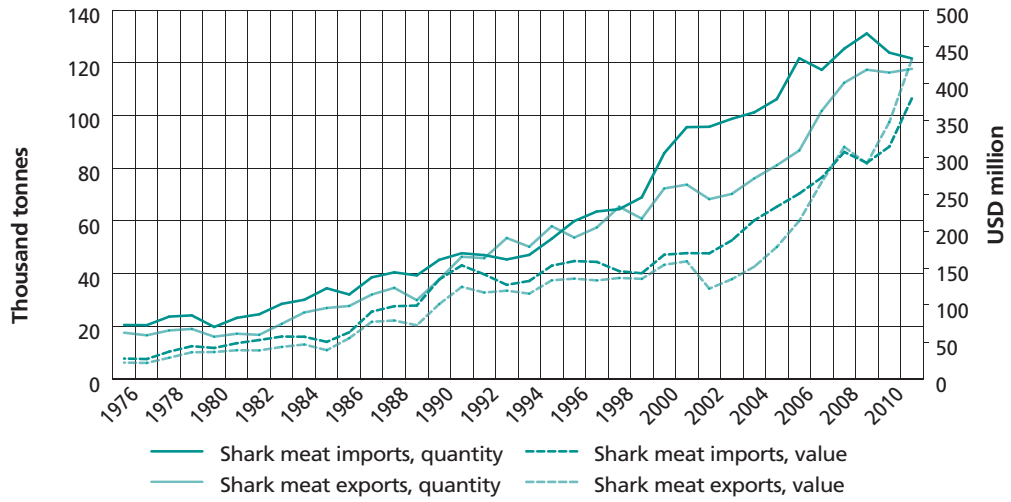
Of the group of 8 major importers used to estimate Costa Rican shark fin exports, China, Hong Kong SAR, Taiwan Province of China, China and Singapore effectively account for 100 percent of the group total volume and value from 2000 to 2011. China, Hong Kong SAR is the most important export destination, with an average 61 percent share (405 tonnes) of yearly volume and an 86 percent share (USD7.7 million) of yearly value. Shark fin exports from Costa Rica to China, Hong Kong SAR consist of a mix of dried and frozen unprocessed fins. Dried fins made up on average 22 percent of volume and 59 percent of value in the period, while the frozen product form accounted for 78 percent by volume and 40 percent by value. This equates to unit values of USD52/kg for dried and USD9.8/kg for frozen, suggesting that the raw material exported in frozen form is generally lower-valued, even allowing for water content. From a peak of 957 tonnes in 2003, in 2011 volumes from Costa Rica to China, Hong Kong SAR were down to 252 tonnes. The average yearly share of total export volume for Taiwan Province of China was 22 percent (147 tonnes) over the same period, consisting of frozen fins only, but a much lower-valued unit value of only USD2.1/kg put the total value share at 3 percent (USD296 600). China posted minimal imports

from Costa Rica until 2004, but imported an average of 216 tonnes per year from 2005 to 2009 before volumes dropped back to zero. However, as has been mentioned previously, China does not record trade in frozen fins. Another observation is that, although China records trade in dried fins only, the unit value of China's imports from Costa Rica (USD4.4/kg) is extremely low. Singapore's imports from Costa Rica averaged 60 tonnes (USD1.4 million) of mainly "prepared or preserved" fins from 2000 to 2004, with no imports from 2004 onwards.

SHARK MEAT (INCLUDES SKATES AND RAYS)

Tables 5 and 6 summarize the figures for global exports and imports of shark meat for the period 2000–2011.

FIGURE 33
World trade in shark meat, 1976–2011



Source: FAO (2013).

TABLE 5
World exports of shark meat, 2000–2011

World exports of shark meat, tonnes, 2000–2011 (FishStatJ, all shark meat types summed, includes re-exports)															
Exporter	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
Taiwan Province of China	4 422	6 687	6 525	7 584	11 266	13 762	17 261	20 655	21 772	25 946	27 151	26 392	15 785	0.17	1
Spain	16 539	12 377	11 647	11 560	11 767	14 044	15 022	17 604	16 590	17 197	18 427	21 517	15 358	0.17	2
Uruguay	295	326	778	940	1 013	1 411	4 102	7 975	12 048	17 423	15 629	11 417	6 113	0.07	3
Argentina	309	436	341	579	660	733	737	11 370	13 259	8 427	9 532	10 065	4 704	0.05	4
Japan	3 576	3 258	3 716	4 087	4 841	5 339	4 143	3 612	4 700	5 399	5 467	5 073	4 434	0.05	5
Costa Rica	3 858	7 658	6 593	5 757	4 104	5 090	3 587	2 429	4 301	1 850	1 583	1 600	4 034	0.04	6
Panama	4 450	7 462	5 859	3 714	4 899	5 353	3 433	2 660	3 523	5 190	562	346	3 954	0.04	7
United States of America	6 319	3 669	4 068	3 011	2 367	2 491	3 059	3 845	6 934	2 786	3 396	4 390	3 861	0.04	8
New Zealand	3 926	3 203	3 928	3 492	2 823	3 835	3 942	4 239	3 182	3 359	4 872	3 561	3 697	0.04	9
United Kingdom	4 470	6 317	5 227	4 796	4 597	3 759	1 798	1 234	783	844	678	780	2 940	0.03	10
Canada	3 123	4 446	4 594	4 197	4 142	3 197	3 716	2 676	2 000	1 505	947	471	2 918	0.03	11
Chile	560	945	442	5 351	3 031	2 951	2 765	3 670	2 325	1 810	1 851	1 734	2 286	0.03	12
Singapore	1 671	1 415	975	1 433	2 474	1 622	1 269	828	3 648	3 820	3 066	4 188	2 201	0.02	13
Portugal	1 827	1 942	2 016	1 441	1 593	1 697	2 215	2 179	1 197	2 096	3 063	3 560	2 069	0.02	14
Namibia	213	271	459	266	48	1 526	2 314	2 744	1 803	2 368	3 333	3 314	1 555	0.02	15
Ireland	3 424	328	394	261	3 793	1 554	4 279	1 676	1 944	147	123	30	1 496	0.02	16
France	1 164	1 428	1 408	1 502	1 048	1 014	1 043	1 779	1 251	1 498	1 436	1 553	1 344	0.01	17
Indonesia	147	28	36	513	244	1 209	1 893	1 657	1 804	1 425	1 915	1 367	1 020	0.01	18
Norway	1 761	1 709	1 235	1 139	1 119	1 095	837	716	807	685	664	371	1 012	0.01	19
South Africa	454	346	406	448	1 081	1 359	1 126	894	1 154	1 822	1 172	1 039	942	0.01	20
Others	9 806	9 500	7 613	8 164	9 199	8 056	8 161	7 332	7 388	11 751	11 389	14 909	9 439	0.10	
Total	72 314	73 751	68 260	70 235	76 109	81 097	86 702	101 774	112 413	117 348	116 256	117 677	91 161		

Table 5 (continued)

World exports of shark meat, USD1 000, 2000–2011 (FishStatJ, all shark meat types summed, includes re-exports)															
Exporter	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
Spain	42 675	37 229	17 196	18 162	25 059	35 842	64 771	80 019	76 582	67 764	88 007	127 162	54 974	0.25	1
Taiwan Province of China	5 043	8 337	7 801	9 406	11 151	14 970	18 196	22 330	24 896	28 848	37 987	40 947	17 952	0.08	2
Singapore	5 214	3 777	2 222	4 087	3 766	2 781	2 291	2 710	33 308	27 750	36 934	63 010	14 835	0.07	3
New Zealand	8 194	7 885	9 167	10 953	12 050	14 449	14 397	17 388	15 095	15 997	21 704	18 932	13 413	0.06	4
Uruguay	516	345	652	513	1 026	1 972	7 150	16 409	26 706	34 264	38 395	32 610	12 557	0.06	5
United States of America	16 643	9 892	9 056	7 173	5 922	6 617	8 258	12 320	17 311	10 402	13 016	16 863	11 759	0.05	6
Argentina	2 507	4 487	676	1 274	1 291	1 731	1 884	23 807	33 843	14 663	21 102	23 039	10 119	0.05	7
Canada	6 545	9 805	9 108	11 169	13 907	12 291	11 741	10 047	5 981	7 131	4 555	2 458	8 350	0.04	8
Japan	8 893	8 704	6 425	5 808	6 841	8 213	7 595	5 231	6 228	6 614	8 604	8 502	7 394	0.03	9
France	4 627	5 990	6 010	6 914	6 083	5 778	6 475	9 137	8 506	9 247	9 846	10 575	7 241	0.03	10
Panama	4 186	8 760	6 482	5 017	9 239	11 545	6 672	4 898	7 458	9 625	681	644	5 803	0.03	11
United Kingdom	7 677	9 853	8 381	8 009	8 157	6 242	5 100	4 779	2 543	2 316	2 020	3 599	5 770	0.03	12
Portugal	3 421	4 011	3 326	2 355	3 640	4 713	5 931	5 660	4 445	5 854	12 540	14 670	5 624	0.03	13
Chile	907	1 670	593	10 360	6 158	7 299	7 688	10 616	7 284	5 241	5 870	6 340	5 432	0.02	14
Costa Rica	4 573	11 390	6 905	6 432	6 397	7 150	4 675	3 887	6 233	2 348	1 235	2 747	5 033	0.02	15
China	3 069	4 987	5 656	3 301	1 516	970	1 145	425	763	3 159	4 207	16 943	3 774	0.02	16
Denmark	4 307	4 275	4 186	4 697	5 013	4 775	4 328	3 263	3 414	2 597	2 402	1 603	3 756	0.02	17
Netherlands	6 150	1 883	1 575	1 743	2 327	1 429	1 843	2 969	2 877	2 590	2 793	2 897	3 307	0.01	18
Namibia	214	87	643	157	53	2 950	2 509	4 370	2 754	5 540	7 198	6 928	2 784	0.01	19
Norway	2 854	2 770	2 236	2 473	2 860	3 082	2 608	2 615	2 465	1 868	2 169	1 309	2 475	0.01	20
Others	16 324	13 100	13 968	14 996	19 562	23 851	28 862	23 929	25 596	27 987	26 415	30 871	22 122	0.10	
Total	154 539	159 237	122 264	134 999	152 018	178 650	214 119	266 809	314 288	291 805	347 680	432 649	230 755		

Souce: FAO (2013).

TABLE 6
World imports of shark meat, 2000–2011

World imports of shark meat, tonnes, 2000–2011 (FishStatJ, all shark meat types summed)															
Importer	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
Republic of Korea	16 982	16 617	20 081	25 020	21 870	23 124	24 468	24 663	20 436	21 063	20 479	19 812	20 656	0.19	1
Spain	13 913	16 324	17 409	16 187	17 503	16 220	14 084	13 768	10 996	12 047	11 505	15 477	14 237	0.13	2
Italy	13 708	13 219	11 322	9 448	10 440	12 757	13 059	11 881	10 450	10 206	9 369	10 043	11 526	0.11	3
Brazil	2 621	3 484	4 650	5 498	9 010	10 256	12 245	11 816	18 439	22 147	19 769	21 067	11 036	0.10	4
Uruguay	262	108	61	90	333	1 105	6 076	13 191	18 331	21 716	20 642	13 223	7 393	0.07	5
Mexico	2 416	7 041	7 452	10 825	7 704	7 986	7 177	5 838	5 643	3 546	3 721	3 222	5 650	0.05	6
China	3 953	2 801	5 198	4 713	5 135	5 391	4 848	5 575	6 725	5 666	4 537	4 335	4 622	0.04	7
France	4 613	4 776	4 499	4 655	3 308	3 350	3 603	3 581	3 243	3 825	3 504	3 369	3 996	0.04	8
Singapore	1 550	1 901	1 658	2 059	2 785	1 941	1 312	1 002	3 685	3 943	3 304	5 556	2 474	0.02	9
Nigeria	355	1 700	1 443	35	1	-	12 788	2 922	3 231	-	-	4	2 399	0.02	10
United Kingdom	2 084	2 571	2 469	2 167	2 538	1 789	1 490	1 999	1 634	2 176	2 511	2 135	2 191	0.02	11
Portugal	2 068	1 772	2 251	1 810	2 041	2 402	3 011	2 358	1 788	2 668	1 359	1 940	2 037	0.02	12
Taiwan Province of China	3 178	1 716	82	388	263	501	363	1 089	3 528	3 629	4 659	2 778	1 731	0.02	13
Peru	58	26	224	1 245	1 109	955	1 204	2 579	2 875	2 910	4 716	4 298	1 710	0.02	14
Costa Rica	168	1 891	588	1 636	2 227	1 237	1 748	1 411	1 663	3 352	900	1 866	1 452	0.01	15
Greece	2 179	2 168	1 613	1 671	1 790	1 261	1 651	852	838	902	924	1 024	1 446	0.01	16
United States of America	2 362	2 573	2 127	944	1 297	1 075	1 524	1 354	1 094	431	165	175	1 290	0.01	17
Denmark	1 582	1 697	1 338	1 282	1 206	1 084	1 025	581	605	536	552	302	1 010	0.01	18
Japan	1 443	885	1 199	1 391	1 116	1 193	944	935	951	617	565	447	998	0.01	19
Viet Nam	-	57	-	-	13	66	92	2 395	1 111	900	2 098	2 170	893	0.01	20
Others	10 215	12 241	10 037	7 654	9 491	12 502	8 989	7 513	8 067	8 803	8 542	8 398	9 371	0.08	
Total	85 710	95 568	95 701	98 718	101 180	106 195	121 701	117 303	125 333	131 083	123 821	121 641	110 330		

TABLE 6 (continued)

World imports of shark meat, USD1 000, 2000–2011 (FishStatJ, all shark meat types summed)															
Importer	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**AVERAGE**	**%**	**Rank**
Republic of Korea	26 200	25 123	29 949	41 293	35 849	43 539	50 176	65 159	61 476	52 238	57 136	64 917	43 915	0.18	1
Italy	35 091	34 028	26 757	24 924	30 493	35 431	40 535	38 187	34 155	34 383	33 174	39 327	34 080	0.14	2
Spain	23 880	30 616	30 387	33 766	41 940	35 039	30 359	32 030	27 670	25 770	30 889	42 712	30 930	0.13	3
Brazil	2 502	3 002	3 428	3 422	6 661	8 880	14 836	20 556	34 851	39 861	44 745	49 267	18 029	0.08	4
Japan	17 677	9 807	11 975	16 524	19 622	23 981	18 275	19 652	19 530	14 206	12 882	17 254	16 192	0.07	5
Singapore	3 077	3 858	2 640	2 187	3 073	2 831	1 691	2 781	28 390	26 399	34 511	69 431	14 116	0.06	6
France	10 824	10 346	11 366	13 240	11 408	12 331	13 244	12 519	12 007	13 531	12 755	13 446	12 462	0.05	7
China	10 030	7 968	13 490	11 757	12 516	10 192	10 931	12 172	14 985	12 123	10 098	11 106	11 015	0.05	8
Mexico	2 565	7 202	8 828	11 886	10 557	13 234	12 148	10 001	10 486	6 356	7 467	5 875	8 279	0.03	9
Uruguay	183	70	32	50	183	698	4 874	13 045	19 382	20 967	24 837	19 853	8 094	0.03	10
United Kingdom	4 357	5 156	4 928	4 810	10 761	5 657	4 627	5 777	4 715	6 011	7 231	6 405	5 982	0.03	11
Portugal	2 919	2 620	3 095	2 816	4 564	6 100	8 162	5 919	3 128	4 406	2 605	4 107	4 019	0.02	12
United States of America	3 628	4 769	3 789	2 461	4 085	4 256	3 226	3 067	3 027	2 143	1 670	1 735	3 176	0.01	13
Germany	4 323	3 044	1 990	2 080	3 128	4 279	3 097	1 602	1 197	1 026	967	1 017	2 404	0.01	14
Australia	2 089	2 122	1 214	1 137	1 588	2 553	1 897	2 969	2 419	3 039	3 655	3 673	2 363	0.01	15
Belgium	1 834	1 317	1 820	1 165	1 182	3 470	3 068	2 417	2 719	3 295	3 878	2 661	2 362	0.01	16
Greece	3 132	2 711	1 856	2 005	2 877	1 959	2 696	1 766	1 709	1 673	2 074	2 527	2 344	0.01	17
Denmark	2 637	2 817	2 350	2 666	2 785	3 242	3 154	1 810	1 750	1 348	1 512	1 028	2 270	0.01	18
Netherlands	2 821	2 646	1 819	1 706	1 274	994	1 359	1 980	1 771	1 546	1 789	2 108	2 084	0.01	19
Nigeria	215	771	897	14	5	-	9 478	2 697	3 724	-	-	12	1 863	0.01	20
Others	8 270	10 349	7 483	7 705	10 232	14 509	13 197	16 711	18 276	22 295	20 720	21 384	14 261	0.06	
Total	168 254	170 342	170 093	187 614	214 783	233 175	251 030	272 817	307 367	292 616	314 595	379 845	246 878		

Source: FAO (2013).

Spain

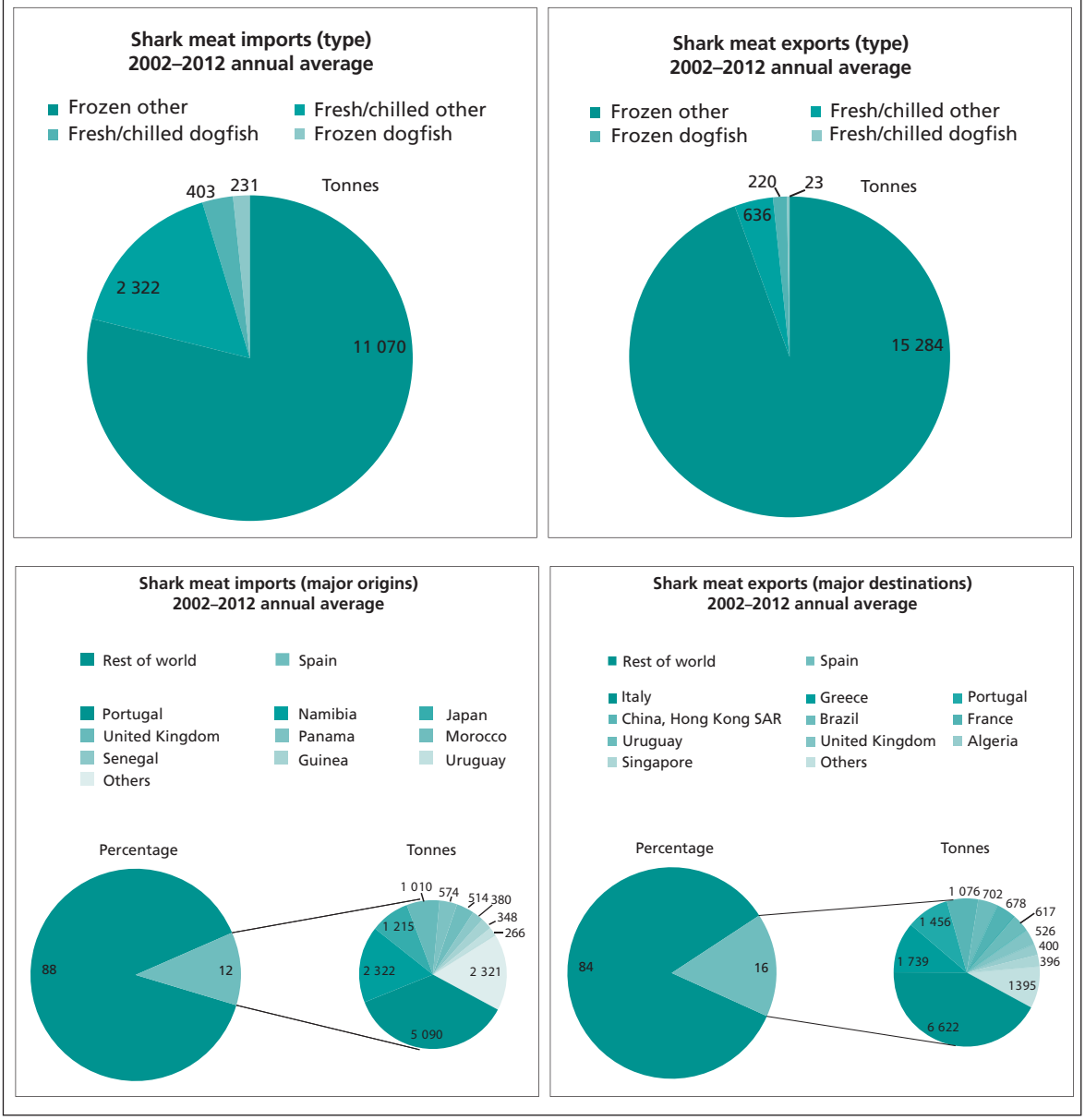
Snapshot

- Spain is one of the world's largest shark producers, and one of the world's largest traders of shark meat.
- It records the third-highest shark captures in the world, and ranks as the second-largest importer and exporter in terms of volume.
- Its shark meat imports are sourced entirely from other major shark-fishing nations, with a large proportion landed directly in Spanish ports by foreign fishing vessels.
- Spain exports shark meat primarily to major European markets, primarily Italy.
- From 2002 to 2011, it recorded average annual shark meat imports of 14 077 tonnes, worth USD31.7 million (Figure 35).
- From 2002 to 2011, it recorded average annual shark meat exports of 15 608 tonnes, worth USD60 million (Figure 35).
- In the past decade or so, it has seen a decline in shark meat imports in parallel with an increase in exports, possibly owing to increased supply from its domestic fleet.

Overview

In addition to being one the world's leading producers of unprocessed shark fins, Spain is also a major trader of shark meat. From 2000 to 2011, Spain accounted for an average 13 percent share per year (14 237 tonnes) of the world total import volume and the same proportion (USD30.9 million) of total import value. In the same period, it was the world's second-largest exporter of shark meat by volume, after Taiwan Province of China, and the largest by value, accounting for 17 percent (15 358 tonnes) of total export volume and 25 percent (USD55 million) of total value. From 2000 to 2011, Spanish captures of "sharks, rays and chimeras" averaged 61 293 tonnes, the third-highest after Indonesia and India, and 8 percent of the global total. In Spain's case, catch quantities have been rising in recent years, particularly blue shark catches. Other species caught in significant quantities are porbeagle and shortfin mako, in addition to much smaller quantities of dogfish species and various rays and skates. A sizeable proportion of Spanish imports is expected to consist of shark carcasses landed directly in Spanish ports by foreign high seas fishing fleets, particularly Portuguese. These carcasses are most probably landed together with fins (either attached or separated), with the fins subsequently being exported to markets in Southeast and East Asia, and the meat either being consumed domestically or being exported to (mainly) other European markets. The remainder of shark meat for export and domestic consumption is sourced from Spanish fleet captures. Spain has a substantial domestic market for shark meat, although anecdotal evidence suggests it is often marketed under other names.

FIGURE 34
Spain shark meat trade profile



Source: Agencia Tributaria (2013).

Imports and exports

The introduction of antifinning legislation in 2002 (Spain), 2004 (International Commission for the Conservation of Atlantic Tunas [ICAAT]), 2005 (various regional fisheries), 2009 and 2013 (the European Union [Member Organization]) has seen a major shift in the dynamics of international trade in shark meat, and has significant implications for Spain as a major producer. This is the result of requirements that have changed over time but have generally incorporated sanctions or other regulatory measures intended to reduce or eliminate the discarding of shark carcasses at sea if fins are to be landed. This has essentially created an increase in the supply of shark meat that was initially unrelated to market demand. Previously, fishing vessels could save hold space by finning and discarding sharks, which could then be filled with the carcasses of more commercially valuable species such as swordfish or tuna. Although it is not clear how widespread this practice was among shark fishing fleets, the considerably

higher value of the shark fin compared with the rest of the carcass meant that this made economic sense. Now, however, antifinning regulations have required these fishers to reserve a much larger proportion of vessel hold space for shark carcasses, and prompted them to seek new markets for the shark meat that is landed. In some cases, vessels that previously targeted a variety of large pelagic species such as tuna and swordfish now target sharks exclusively. Spain, as one of largest shark fishing nations, has thus seen a large increase in the supply of shark meat into its ports. This development may explain the opposing trends seen in imports and exports of shark meat from 2002 to 2012 – a drop in import volume of 18 percent, to 14 351 tonnes in 2012, and an 80 percent rise in export volume, to 21 426 tonnes, over the same period. Despite these increased supply volumes, the unit value of traded shark meat across the world over the last decade has been steadily increasing – evidence that underlying consumer demand for shark meat is growing. In Spain's case, the increase in unit value has meant the decline in total import value from 2002 to 2012 was virtually nil, despite the drop in volume, while the increase in export value was 233 percent, to USD55.6 million in 2012.

Overall, looking at the period 2002–2012 for which data are available, Spain imported an average of 14 039 tonnes of shark meat per year, worth USD31.4 million. This consisted of 81 percent frozen in terms of volume (77 percent in terms of value), while the remainder was in "fresh or chilled" form. With the disaggregation of statistics to identify porbeagle meat at the species level from 2009 onwards, it is possible to estimate species proportions of 15 percent porbeagle in volume terms (18 percent by value), 1 percent dogfish (2 percent) and 84 percent (80 percent) other species. For exports, the average annual figures over this period were 16 196 tonnes, worth USD61.6 million. About 96 percent of the volume (95 percent of the value) consisted of frozen shark meat, and the remainder was "fresh or chilled". From 2009 to 2012, 10 percent of the volume exported by Spain was recorded as porbeagle (9 percent of value) and the remainder as other, non-dogfish species.

In 2012, Spain reported trade in rays and skates under dedicated codes, as per the WCO revision of the HS commodity categories.[48] The total volume imported by Spain in 2012 was 912 tonnes, worth USD2.1 million, a mixture of frozen and "fresh or chilled" product. The equivalent figures posted for exports were 2 546 tonnes, worth USD7.4 million, further emphasizing the importance of Spain as a producer and exporter of chondrichthyes. By volume, 86 percent of the export volume and value was made up of frozen rays or skates, while the remainder was "fresh or chilled".

Partners

From 2002 to 2012, the major origin county of Spain's shark meat imports was Portugal. Portugal's average share of Spain's annual import volume over this period was 39 percent (5 609 tonnes) while its share of value was 46 percent (USD15.1 million). These imports were 56 percent frozen by volume and 61 percent by value, while the remainder consisted of "fresh or chilled" shark meat. By species, as recorded from 2009, the proportions were 73 percent of volume (72 percent of value) other shark species and the remainder porbeagle, while dogfish imports from Portugal were essentially nil. Compared with 2002, 2012 figures show increases in imports of Portuguese origin of 24 percent in volume, to 7 532 tonnes, and 33 percent in value, to USD16.8 million. As stated previously, a large proportion of these imports is probably landed directly in Spanish ports by Portuguese vessels, subject to the same antifinning regulations as the Spanish fleet. After Portugal, Spain also imported significant quantities of shark meat, in terms of average annual volume and value, from Namibia (2 290 tonnes or USD4.1 million), Japan (1 215 tonnes or USD1.3 million), the United Kingdom of

[48] Note that rays and skates were not recorded as sharks before 2012, but were included within more aggregated categories.

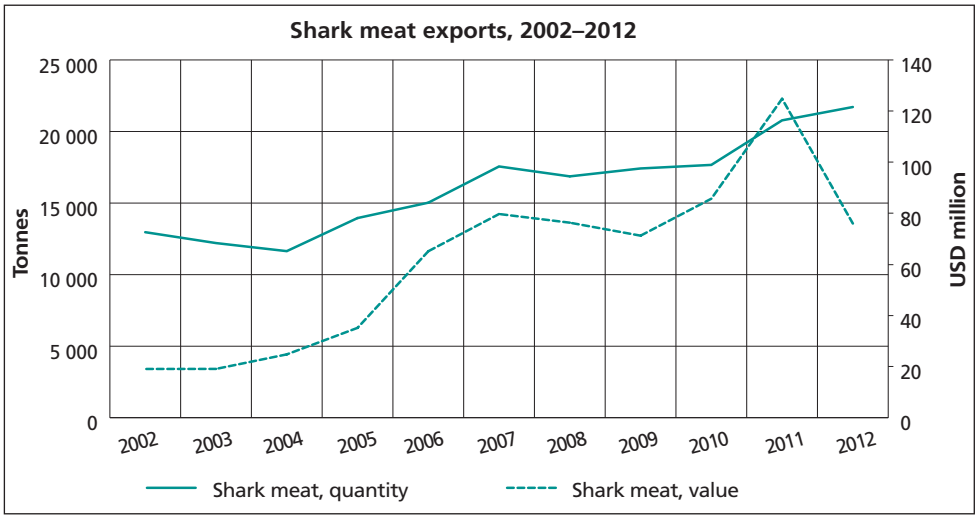
Great Britain and Northern Ireland (1 016 tonnes or USD3.2 million) and Morocco (583 tonnes or USD1.9 million). The major proportion of these imports consisted of frozen shark meat of non-dogfish species. Volumes from these partners were relatively stable from 2002 to 2012, with the exception of the United Kingdom of Great Britain and Northern Ireland, which saw a significant decline in Spain-destined shark exports, exporting 77.4 percent by volume less in 2012 than in 2002.

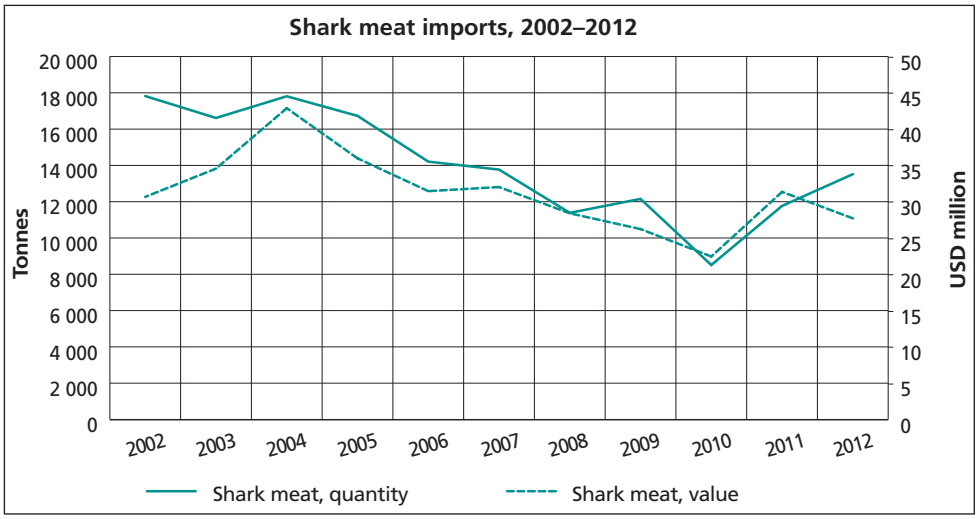
The majority of Spain's ray and skate imports in 2012 originated in Falkland Islands (Malvinas), Portugal and the United Kingdom of Great Britain and Northern Ireland. Falkland Islands (Malvinas) accounted for 394 tonnes, worth USD817 000, or 42 percent of volume and 39 percent of value. Portugal and the United Kingdom of Great Britain and Northern Ireland each accounted for 20 percent shares of the total value, representing 18 and 17 percent of the volume, respectively.

Spain's major export market is Italy, Europe's top consumer of shark meat. Exports to Italy constituted, on average, 46 percent (6 394 tonnes) of the annual export volume from 2002 to 2012, and 50 percent (USD15.4 million) of the annual value. About 93 percent of this volume, and 87 percent of the value, consisted of frozen shark meat, with the reminder made up of "fresh or chilled". Looking at data from 2009 onwards, when porbeagle was identified in trade records at a species level, the average annual volume exported to Italy was 71 percent (57 percent of value) other shark species, 28 percent (42 percent) porbeagle and 1 percent (1 percent) dogfish species. The average unit value of these Italy-destined exports was USD2.4/kg. Greece and Portugal accounted for 12 percent (1 655 and 1 629 tonnes, respectively) each of the average annual export volume, and 12 percent (USD3.7 million) and 8 percent (USD2.5 million) of value, respectively. Exports to Greece declined somewhat over the period, to 1 305 tonnes in 2012, but the volume of exports to Portugal increased by 272 percent to 3 782 tonnes in 2012. Brazil is another important growth market for Spain's shark meat exports, with volumes increasing from zero in 2007 to 3 982 tonnes (USD6.1 Million) in 2012, making it the second-largest export market after Italy in that year. Uruguay also began to import large volumes from Spain, posting an annual average of 1 032 tonnes from 2009 onwards, at USD1.3 million. Spanish exports to South America are generally lower valued (Brazil USD1.1/kg, Uruguay USD1.2/kg) than those to European markets (Italy USD2.4/kg, Portugal USD2.3 kg). This is partly the result of the proportion of higher-valued fresh and chilled shark meat included in European-destined exports, although different species composition and additional (value-adding) processing in the European case may also be contributing factors.

The major destination for Spain's exports of rays and skates in 2012 was Portugal, with Portugal-destined exports accounting for 59 percent of the total volume and 60 percent of the value (1 496 tonnes, worth USD4.5 million). In terms of both volume and value, 86 percent of these exports were made up of frozen product, and the remainder was in "fresh or chilled" form. In the same year, Spain exported 293 tonnes, worth USD737 000, to the Republic of Korea, all in frozen form. Exports destined for Italy and France amounted to 186 tonnes (USD592 000) and 146 tonnes (230 000), respectively.

FIGURE 35
Spain shark meat trade, 2000–2012





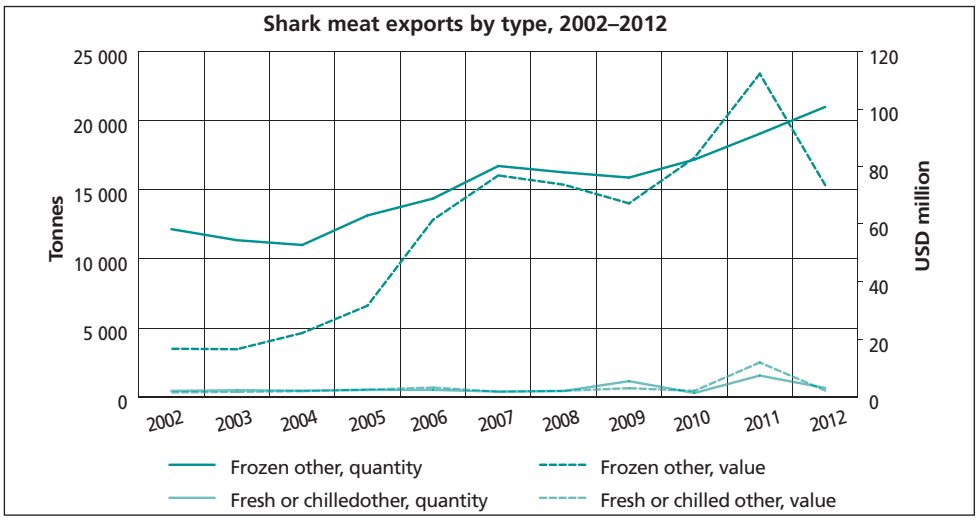
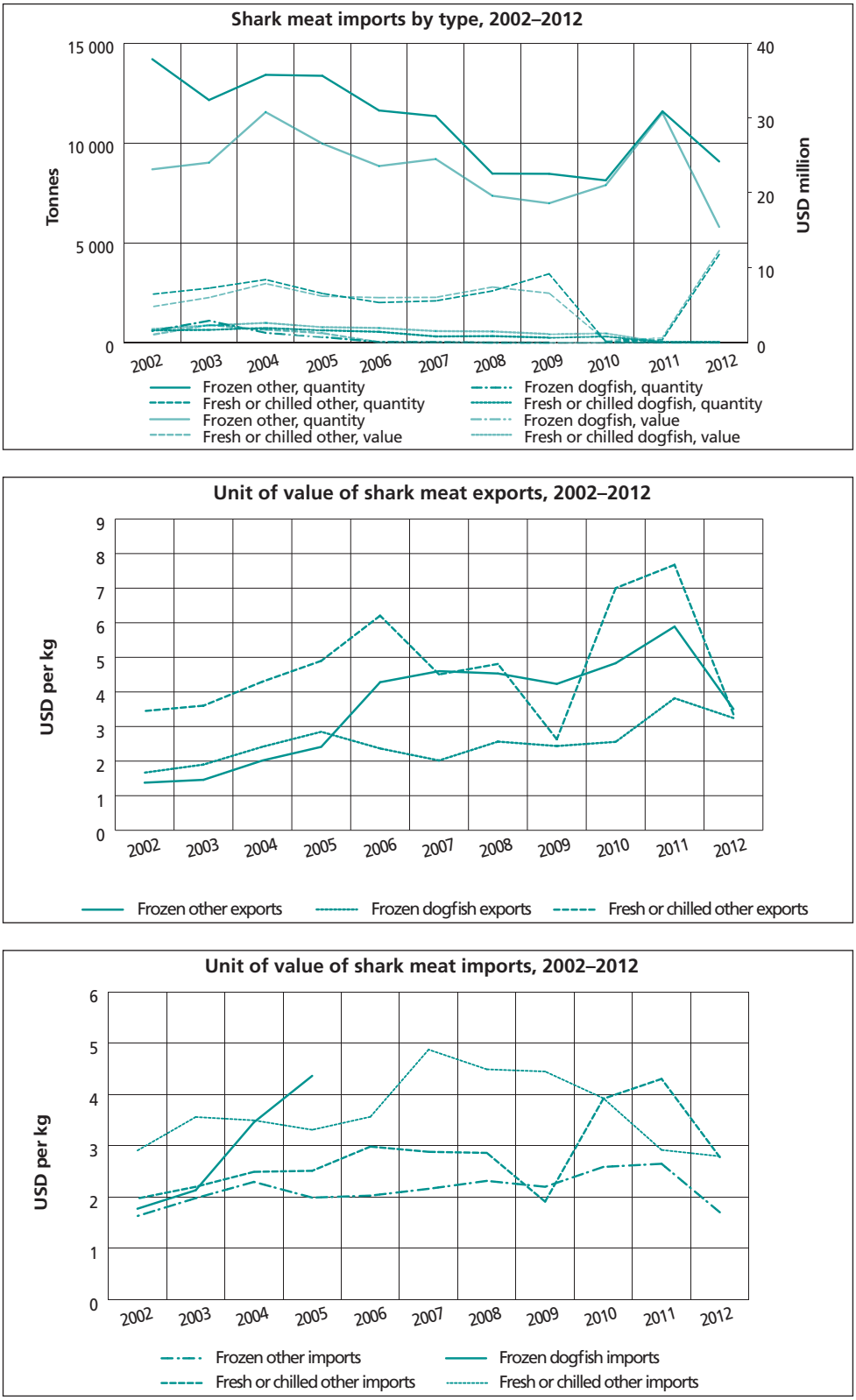


FIGURE 35 (continued)



Source: Agencia Tributaria (2013).

Domestic trade and markets

Given Spain's high chondrichthyan capture production quantities (about 60 000 tonnes per year) and the presence of strong domestic demand for shark and ray meat, it is probable that Spain's domestic consumption is not limited to levels indicated by its import statistics (about 15 000 tonnes per year). On the other hand, it is not necessarily the case that all of Spain's capture production is channelled into the domestic market, especially if some of Spain's catches are landed in other countries (e.g. Uruguay or Brazil) with a high demand for shark meat. (There may also be other proximate markets for Spain's shark catches, as Mauritania reports that chondrichthyan meat is mainly exported to other parts of Africa, e.g. Ghana and Nigeria [A. Dia, personal communication, December 2013]). In any case, Spain's distant-water fishing fleets and active import and export trade make it difficult to estimate accurately the extent of domestic consumption in what is probably one of the world's largest markets for chondrichthyan meat.

Wholesale market unit values accessed in 2013 indicate that in Madrid blue shark sold for USD7.63/kg in fresh form and USD4.42/kg in frozen form. Similar sources for Barcelona quote unit values of USD14.17/kg for mako shark in fresh form and USD5.21/kg in frozen form (Clarke, Francis and Griggs, 2013). However, the major market is expected to be Vigo, a prime landings port, and unit values there for blue shark ("quenlla") are lower and very stable at about USD2.30/kg (form not specified).[49] At the retail level, shark meat is often sold as "cazón" or "marrajo" (rather than "tiburón"). There have been poll results cited in the media indicating that Spanish consumers are not aware that these products are actually derived from sharks. In addition to the use of shark meat, skate and ray wings are also used in traditional stewed dishes throughout the region.[50]

Spain, as part of the European Union (Member Organization), has strict food standards governing concentrations of heavy metals in imported shark meat. These permitted maximum levels are 1.0 parts per million (ppm) for mercury, 0.3 ppm for lead, and 0.05 for cadmium (European Commission, 2006). Trade sources have suggested that these standards may create a bias towards imports of small sharks by markets in the European Union (Member Organization), such as Spain, although a consumer preference for meat from small sharks for other reasons has also been noted (Clarke, Francis and Griggs, 2013).

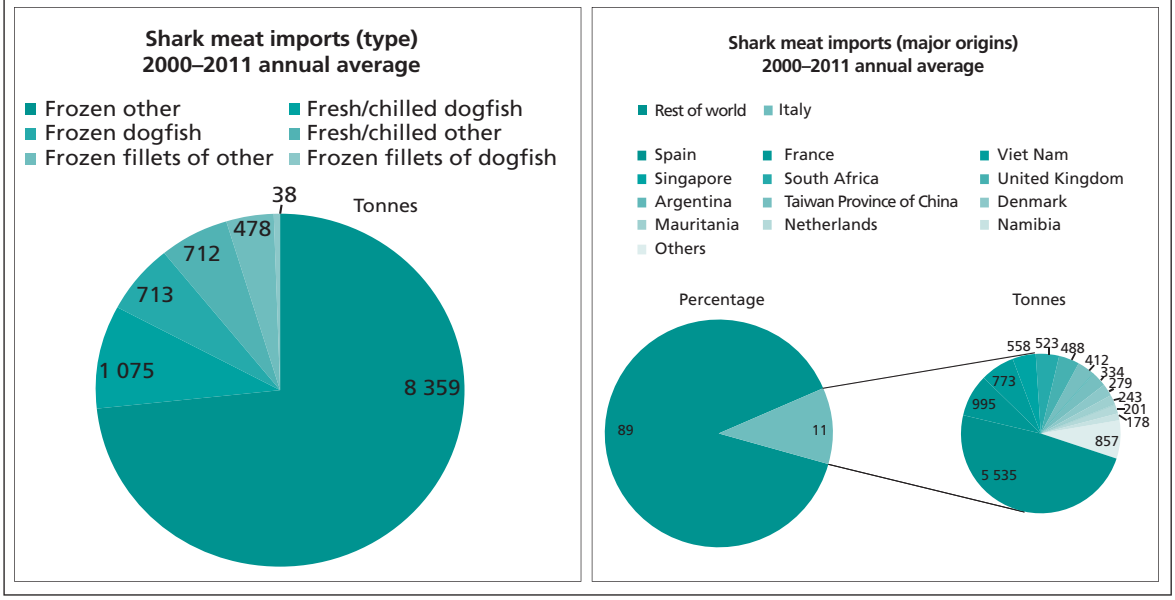
[49] www.pescadegalicia.com/ (selecting Vigo and "Quenlla")
[50] www.spanish-food.org/seafood-skate-in-alioli-sauce.html

Italy

Snapshot

- Italy is one of the world's largest consumer markets for shark meat, and is primarily supplied through imports from major European producers.
- It ranks as the third-largest importer of shark meat in the world by volume.
- It imports mainly larger shark species, but historically there has also been significant consumption of dogfish species.
- From 2000 to 2011, It recorded average annual shark meat imports of 11 526 tonnes, worth USD34.8 million (Figure 37).
- Import volumes have been slowly dropping in recent years, driven mainly by a decrease in imports of dogfish species.
- Import unit values for both dogfish and larger shark species have been following a strong upward trend since 2000.

FIGURE 36
Italy shark meat trade profile



Source: Italy Customs (National Institute of Statistics) (2013).

Overview

From 2000 to 2011, Italy imported an average of 11 526 tonnes of shark meat per year, equivalent to 11 percent of the world total volume. These imports were worth USD34.8 million annually on average, or 14 percent of the world total. Italy is the second-largest importer of sharks by value in the world and the third-largest by volume, although it should be noted the top importer, the Republic of Korea, reports imports mainly of skates and rays rather than true sharks. Imports constitute the bulk of Italy's supply of shark meat; domestic production of shark species is very low, having declined significantly since the late 1990s. From 2000 to 2011, annual capture production of chondrichthyan fishes averaged 1 491 tonnes, with about half consisting of rays or skates. Italy does not export any notable quantities of shark meat or fins.

Imports

Italy's total shark meat import volumes remained relatively stable from the early 1990s to 2007, but fell following the financial crisis in 2008. The average annual import volume from 2008 to 2012 of 9 418 tonnes is an 18.7 percent decrease compared with the average for 2000–07. Indeed, the 2012 figure of 8 828 tonnes is the lowest since 1987. As a result of an upward unit value trend, however, total value actually increased slightly if the same comparison is made, with a 2012 value of USD33 million. Of the three generalized product categories (frozen, frozen fillets and "fresh or chilled"), the decline in volumes is driven entirely by falling imports of frozen shark. To an extent, this volume is being replaced by imports of "fresh or chilled" product. In terms of species groups, import volumes of both dogfish and other species (assumed to be primarily blue shark) fell from 2000 to 2012, dogfish by 70 percent year-on-year and other sharks by 22 percent. Imports of dogfish were down to 832 tonnes in 2012, while imports of other sharks were 8 286 tonnes, meaning that dogfish species now make up a mere 9 percent of Italy's total shark imports. Dogfish are the consistently more-expensive species, at a 2000 to 2012 average of USD7.1/kg for "fresh or chilled" meat, while the average "fresh or chilled" unit value for other shark species was USD5.9/kg. As a consequence, dogfish species accounted for, on average, 29 percent (USD9.5 million) of the value of Italy's annual shark meat imports over the same period, down to 25 percent in 2012. For frozen products, the difference was significantly less, with the unit values for dogfish and other sharks averaging USD2.7 and USD2.3/kg, respectively. Unit values for both species groups and all product forms followed a distinct upward trend over this period, with the average unit value of all shark imports up by 47 percent in 2012, to USD3.7/kg.

Partners

Spain supplied a 49 percent share (5 485 tonnes), in terms of average yearly volume, of Italy's shark meat imports from 2000 to 2012, making it the leading country in terms of import origin. These imports were worth, on average, USD12.5 million per year, representing 37 percent of total value. Import volumes of Spanish origin remained relatively stable over this period, although rising unit values meant a 30 percent increase in value from 2000 to 2012. These imports consisted mainly of frozen shark meat, which represented on average 94 percent (5 160 tonnes) of yearly volume and 89 percent (USD8.9 million) of value. Non-dogfish species, probably primarily blue shark as this species makes up the bulk of Spanish shark catches, made up about 90 percent of yearly volume on average. After Spain, France was the second-largest supplier of shark meat to Italy in the same period, accounting for an average 9 percent share (1 022 tonnes) of total volume and 19 percent (USD6.4 million) of total value. Both volume and value rose from 2000 to 2012, the former by 27 percent to 1 342 tonnes and the latter by 72 percent to USD8.5 million. In contrast to Spain, France supplies Italy almost entirely with "fresh or chilled" shark meat, with this product form making up 96 percent (977 tonnes) of average yearly volume and 98 percent (USD6.2 million) of value. Import volume consisted of 45 percent dogfish species and 49 percent other species on average. Viet Nam is another important source of shark meat for Italy, having seen exports to Italy increase from zero in 2000 to a peak of 1 921 tonnes (USD4.1 million) in 2006 before falling to 701 tonnes (USD2.2 million) in 2012. With the exception of very minor volumes of frozen dogfish fillets, these imports are all frozen non-dogfish species. Denmark and the Netherlands were the main suppliers of higher-valued "fresh or chilled" dogfish species to Italy, respectively averaging 264 tonnes at USD2.1 million and 217 tonnes at 1.5 million per year from 2000 to 2012. However, volumes from Denmark fell steadily over the same period, and the 2012 figure was only 84 tonnes. Singapore, previously an important supplier of frozen non-dogfish species to Italy, has seen an even steeper decline, from

a peak of 1 309 tonnes (USD3.1 million) in 2004 to zero in 2012. Import figures in 2012 also show significant declines from other large suppliers: South Africa (averaging 504 tonnes at USD1.3 million), the United Kingdom of Great Britain and Northern Ireland (453 tonnes at USD1.6 million), Argentina (389 tonnes at USD986 000) and Taiwan Province of China (310 tonnes at USD562 000). Italy itself exports minor volumes of shark meat, mainly to Greece.

Domestic trade and markets

Italy has historically been the largest consumer of shark meat in Europe, and species such as blue, porbeagle and to a lesser extent dogfish sharks are widely marketed, particularly in the north of the country. Shark meat is mainly sold as frozen steaks in supermarkets. In recent years, cheaper blue shark meat has steadily replaced that from the smaller dogfish and catshark species. This has been due to a combination of widespread overfishing of the latter species in European waters and an increasing trend of full utilization of blue shark carcasses, probably as a result of antifinning regulations. There are anecdotal reports that blue shark meat is sometimes still marketed as palombo (smooth-hound) and even occasionally vice versa.

Sources in Italy suggest that consumer demand for shark meat is growing again. Despite the rising unit value trends described above, this increase in demand is attributed to the fact that shark meat still provides an inexpensive form of protein for sectors of society struggling under the country's poor economy (M. Bottaro, personal communication, December 2013). As in Spain, there are many regional variations in Italy for preparing skate and ray wings in traditional dishes.

FIGURE 37
Italy shark meat trade, 2000–2012

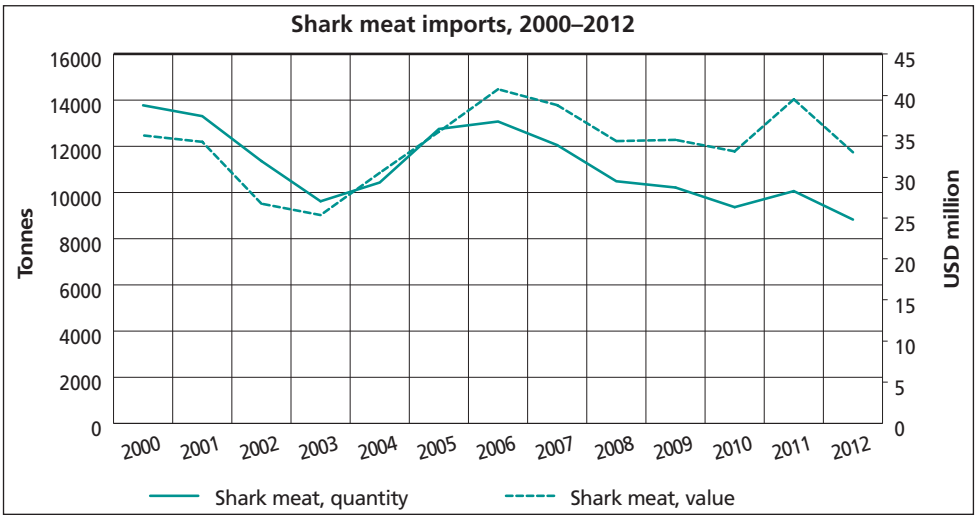
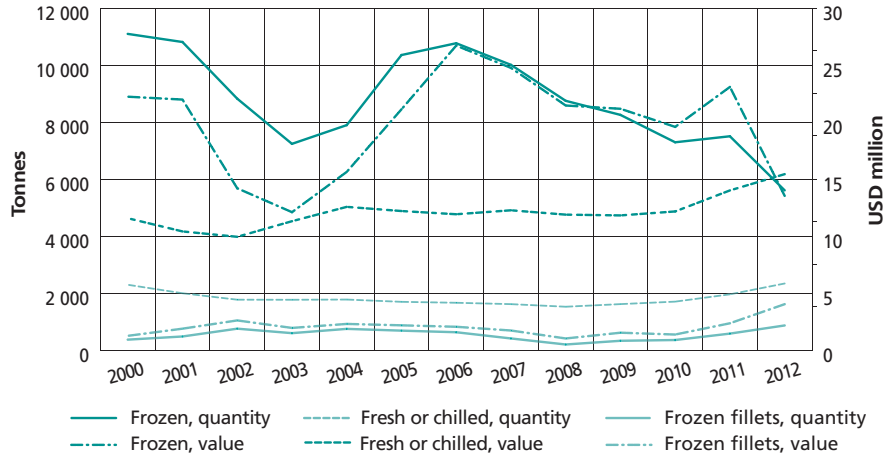
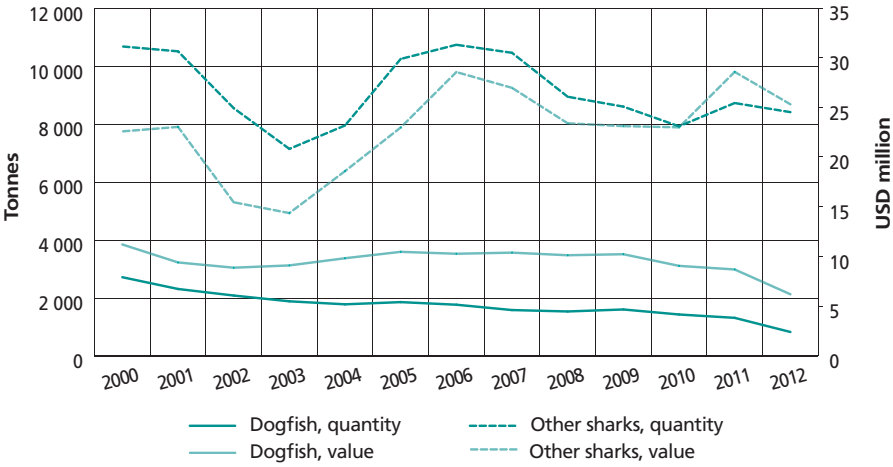


FIGURE 37 (continued)

Shark meat imports by type (form), 2000–2012



Shark meat imports by type (species), 2000–2012



Unit value of shark meat imports by type (form), 2000–2012

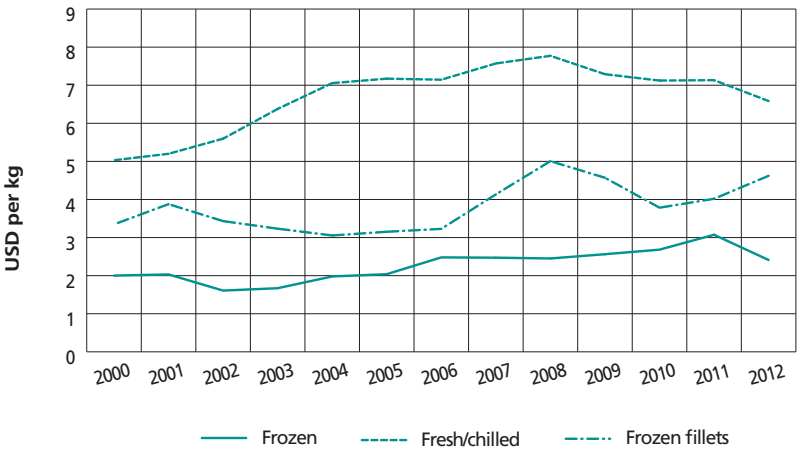
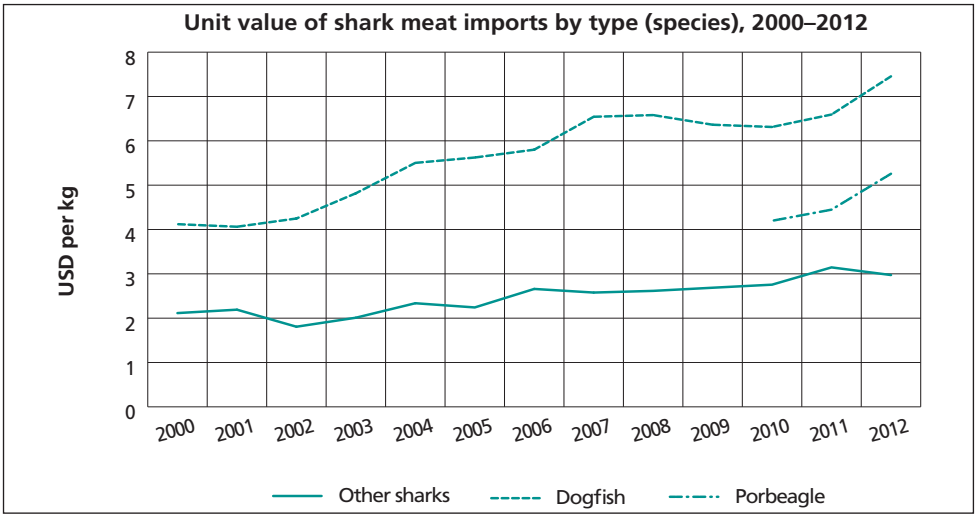


FIGURE 37 (continued)



Source: Italy Customs (National Institute of Statistics) (2013).

Uruguay

Snapshot

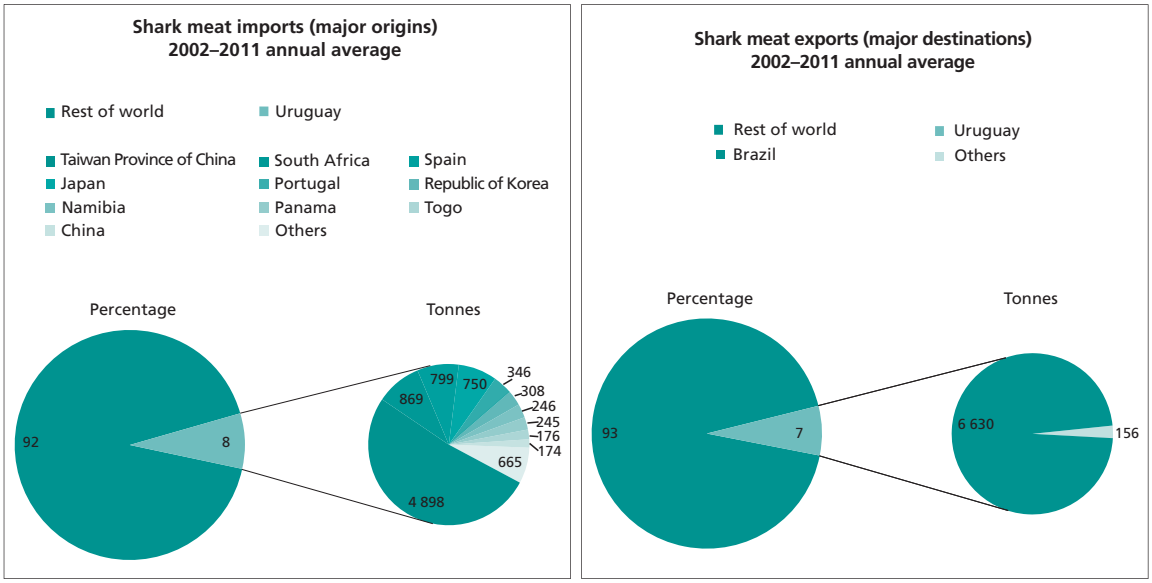
- Uruguay has become a major importer, processor and re-exporter of shark meat in the last decade.
- Imports into Uruguay are mainly landings by foreign fleets fishing the surrounding waters.
- Uruguay produces steaks from headed, gutted and finned carcasses that are then exported to Brazil.
- It saw rapid growth in shark meat imports and exports from 2005 to a peak in 2009 when it imported 21 717 tonnes, worth USD21 million, and exported 17 223 tonnes, worth USD33.9 million (Figure 39).
- Since 2009, trade volumes have declined by almost 50 percent.
- Uruguay's domestic market for shark meat is small, and domestic production of sharks is relatively low.

Overview

Uruguay has only recently become a major player in the international market for shark meat. After previously posting consistently modest figures for both imports and exports, from 2005 onwards Uruguay's trade in shark meat expanded rapidly, and in 2009 Uruguay was the world's top importer of shark meat in volume terms, importing 21 717 tonnes, and the world's fifth-largest by value (USD21 million). In the same year, Uruguay was the second-largest exporter of shark meat by both volume and value with 17 223 tonnes at USD33.9 million. However, trade has declined since 2009, and the 2012 import and export figures were 12 750 tonnes (USD12.3 million) and 9 412 tonnes (USD20.9 million), respectively. Average unit values from 2000 to 2012 were USD2.2/kg for exports and USD1.1 for imports, reflecting Uruguay's role as a value-adding re-exporter of shark meat products and a supplier of processed shark meat destined for the South American market, mainly Brazil. The boom in the shark meat trade is reported to have taken place as a result of geographic and logistical advantages that allowed shark fishing vessels from Taiwan Province of China, the major supplier, easier access to Uruguayan ports than to Brazilian ones, while Uruguayan exporters enjoyed

reduced tariffs by exporting the shark meat in processed form. The value addition is achieved by importing mainly frozen headed, gutted and finned shark carcasses and processing these to produce skinned shark meat steaks ("trozos sin piel") that are then exported, primarily in frozen form. The vast majority of imports are destined for re-export, with the post-processing export volume corresponding to about 72 percent of the pre-processing import volume. Uruguay's own shark fisheries are another supply source for both domestic and regional markets, although Uruguay is a relatively minor producer, with a 2000–2011 average yearly chondrichthyan capture production figure of 4 077 tonnes (representing less than 1 percent of the world total).

FIGURE 38
Uruguay shark meat trade profile



Source: Central Bank of Uruguay (2013).

Imports and exports

Taiwan Province of China is Uruguay's main supplier of shark meat, supplying an average of 4 893 tonnes per year from 2002 to 2012, 50 percent of total import volume. These imports consist mainly of low-valued "headed, gutted and finned" shark carcasses and were worth USD5.2 million per year on average, 49 percent of the total. Following the overall trend, import volumes from Taiwan Province of China peaked in 2009 at 12 754 tonnes (USD11.8 million) before falling back steeply over the next 3 years to 4 852 tonnes (USD4.6 million) in 2012. The longline fleets of major shark-producing countries Japan and Spain also supply a large proportion of raw material for Uruguay's processors. Japan accounted for a 9 percent share of yearly volume on average from 2002 to 2012 (874 tonnes at USD957 000), with volumes stabilizing at 1 524 tonnes (USD1.7 million) per year from 2007 to 2012. Imports from Spain followed a similar pattern, averaging 852 tonnes per year for 2002–2012 and 1 544 tonnes for 2007–2012. Imports from South Africa averaged 822 tonnes (worth USD902 000) from 2002 to 2012, mostly accounted for by high volumes in 2006–09. Also in the latter half of the period, significant quantities of unprocessed shark meat were imported from Portugal and the Republic of Korea, which posted 2002–2012 averages of 393 tonnes (USD461 000) and 328 tonnes (USD391 000), respectively.

Brazil constitutes essentially the entirety of Uruguay's shark meat export market, accounting for an average of 98 percent (6 883 tonnes) of yearly volume and 99 percent (USD15.1 million) of yearly value from 2002 to 2012. These exports consist almost entirely of skinless steaks ("en trozos, sin piel"). As the majority of Uruguay's imports are re-exported after processing, exports to Brazil follow roughly the same trend, increasing rapidly from 2005 to a peak in 2009 of 16 474 tonnes (USD32.3 million) before falling back to lower levels in the three subsequent years. In 2012, Uruguay exported 9 412 tonnes (USD20.9 million), all but 2 tonnes to Brazil. However, the unit-value differential between imports and re-exports steadily widened from 2002 onwards. Shark meat exports to Brazil were worth USD2.2/kg in 2012, a 282 percent increase compared with 2002, while the unit value of Uruguay's imports was USD0.97/kg, corresponding to an 85 percent increase in the same period. From 2006 onwards, annual re-export values stabilized at about 170 percent of annual import values as Brazilian demand adjusted to the higher unit values.

Domestic trade and markets

As described above, Uruguay has recently created a role for itself as a processor of shark meat for its main export market, Brazil. These processing operations reportedly rely heavily on blue sharks, and this supports a large trade in this species through South Africa, Namibia, Peru and Spain. Despite the development of this industry, its products are reported to be exclusively for export; sources within the country state that there is no market for shark meat in Uruguay itself (A. Domingo, personal communication, March 2013).

FIGURE 39
Uruguay shark meat trade, 2002–2012

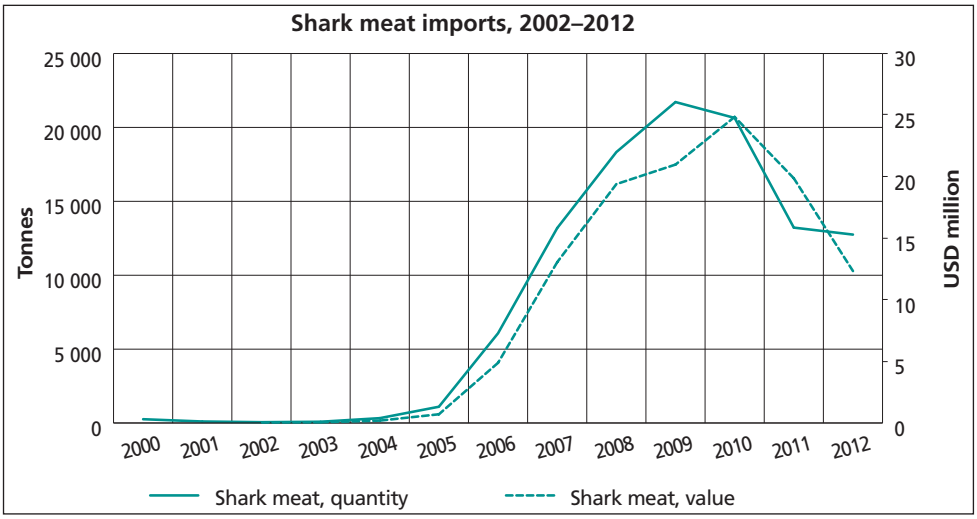
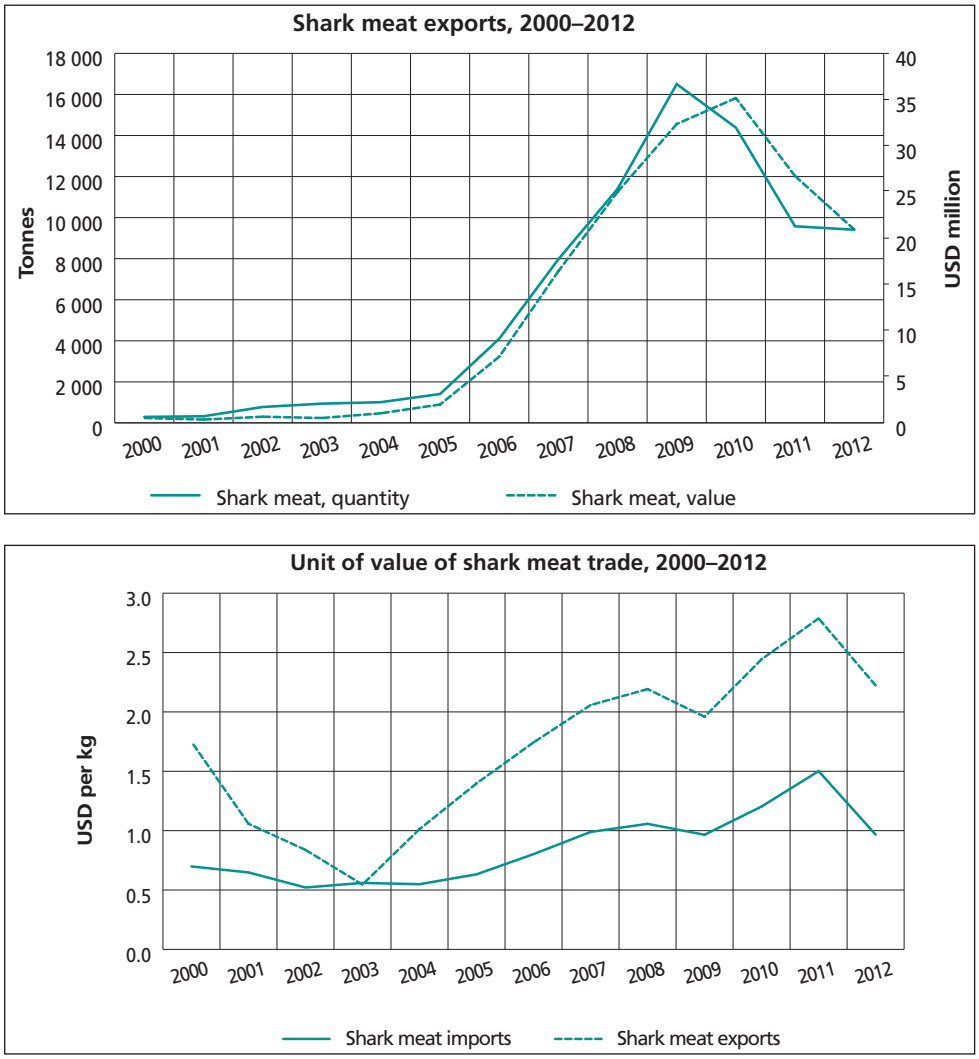


FIGURE 39 (continued)



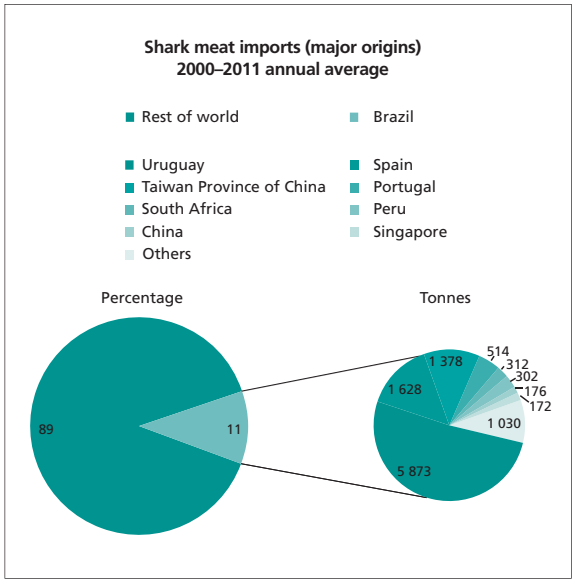
Source: Central Bank of Uruguay (2013).

Brazil

Snapshot

- In the past decade or so, Brazil has rapidly grown into one of the world's main markets for shark meat.
- From 2009 to 2012, its imports of shark meat exceeded those of any other country at an average of 20 131 tonnes, worth USD39.9 million (Figure 41).
- Its large and growing market for shark meat is supplied by a combination of domestic production and imports of processed and non-processed meat.
- Brazil produces significant volumes of sharks in its domestic fisheries, ranking as the eleventh-largest producer in the world
- Uruguay is a major supplier to the Brazilian market, re-exporting shark meat that is landed directly in Uruguayan ports, although its dominant position as a supplier has been diminishing in recent years.

FIGURE 40
Brazil shark meat trade profile



Source: SECEX – Foreign Trade Secretariat (2013).

Overview

In the past decade or so, Brazil has quickly grown into one of the world's foremost markets for shark meat. This development is possibly related to the introduction of antifinning legislation in Brazil in 1998, which stipulates that the weight of landed fins should not exceed 5 percent of the weight of landed carcasses. Another important factor has been the overall increase in demand for seafood in the country, resulting from sustained income growth and expansion of the urbanized middle class, combined with a lack of cheap marine seafood alternatives. Although the average annual import volume of 11 036 tonnes (USD18 million) from 2000 to 2011 is the fourth-highest after the Republic of Korea, Spain and Italy, this average figure masks a strong upward trend, which saw the world's highest imports, by volume, of 21 067 tonnes (USD49.3 million) in 2011, versus 2 621 tonnes (USD2.5 million) in 2000. Recognizing that the world's fourth-largest importer in 2011, Uruguay, actually re-exports the vast majority of its shark meat imports to Brazil after processing, further illustrates Brazil's increasingly

prominent role as the leading consumer of shark meat. The Brazilian market now absorbs not only large import volumes supplied by some 17 countries (2012 import partners), but also significant domestic production. From 2000 to 2011, Brazil posted average annual shark, skates and rays captures of 20 992 tonnes, making it the eleventh-largest producer. These captures, which remained relatively stable over the 12-year period, consisted of about 68 percent shark species (not skates or rays). Brazil's exports of shark meat are effectively zero.

Imports

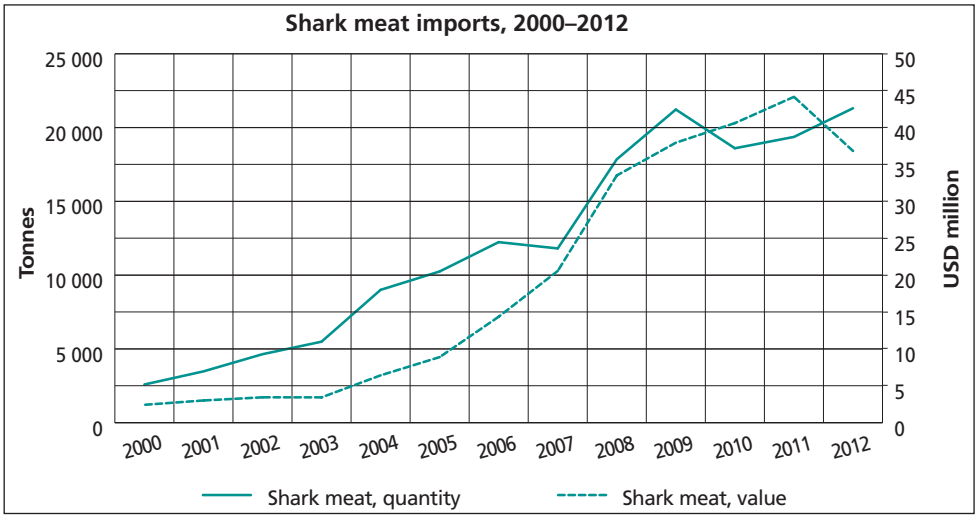
The speed and magnitude of the increase in Brazilian demand for shark meat is reflected in the observation that total cumulative imports in the 4 years from 2009 to 2012 (80 525 tonnes) exceeded those in the previous 9 years from 2000 to 2008 (77 414 tonnes). From 2009 to 2012, import volumes remained stable at an average of 20 131 tonnes (USD39.9 million) per year, far exceeding any other country during this period. With shark meat unit values increasing globally, the unit value of Brazilian imports rose from USD0.93/kg in 2000 to USD2.2/kg in 2010, before falling again to USD1.7/kg in 2012. This trend saw total import values increasing even more rapidly than volumes, with 66 percent more shark meat imported in value terms from 2009 to 2012 than in the preceding 9 years combined. Based on commodity code groups within which Brazilian shark meat trade is recorded, these imports fall into two main categories: "blue shark, frozen, headed, finned and gutted" carcasses ("Tubarao-Azul, Eviscerado, S/ Cabeca E S/ Barbatana") and "blue shark, frozen, skinless" meat pieces ("Tuabarao-Azul Em Pedacos, Sem Pele, Congelado"). From 2008 (when the distinction between the two product forms was first introduced) to 2012, "headed and gutted" carcasses constituted 38.2 percent of import volume and 27.1 percent of import value, with "skinless meat pieces" making up the remainder.

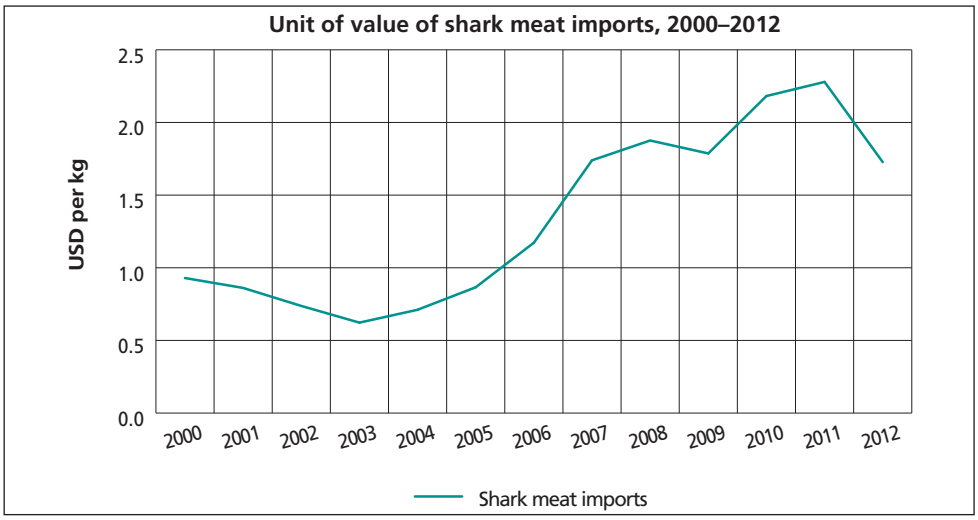
Partners

From 2000 to 2012, Uruguay was the most important supplier of shark meat to the Brazilian market, mostly by importing large quantities raw material in the form of "headed, gutted and finned" carcasses and re-exporting processed meat. In this period, Uruguay supplied 49 percent (5 900 tonnes) of the annual volume on average and 59 percent of the annual value (USD11.5 million). Uruguay-origin imports led the steep upward trend from 2000 to 2009, with the volume imported from Uruguay in 2009 (16 402 tonnes at USD37.9 million) more than 12 times that of 2000. Import unit value rose considerably over the full period, from USD0.84 in 2000 to USD2.3/kg in 2012. The relatively higher unit value of these imports is the result of Uruguay supplying almost entirely value-added shark meat steaks rather than unprocessed carcasses originating from other partners. Imports of processed Uruguayan product fell significantly after 2009, however, and in 2012 Brazil's imports from Uruguay were down to 6 222 tonnes (USD14.3 million). This decline was compensated for by increased imports from other sources, particularly Spain and Taiwan Province of China. Spain-origin imports made up 16 percent (1 914 tonnes) of yearly volume on average over the full period and 13 percent of the value (USD2.5 million). After steeply increasing from 2000 onwards, the 2012 figure of 5 362 tonnes (USD7.8 million) represented a 1 410 percent increase (1 928 percent by value) compared with 2000. Taiwan Province of China supplied 14 percent (1 914 tonnes) of average annual volume and 11 percent of value (USD2.2 million) over this period. Imports from Taiwan Province of China saw an even greater increase over the 13 year period. The figures of 4 893 tonnes at USD7.7 million in 2012 were 23 and 40 times the 2000 figures, respectively. Spain and Taiwan Province of China both supply primarily "frozen, headed and gutted" carcasses, but after 2009 posted increasing volumes of "frozen shark meat in pieces", presumably to replace decreasing processed imports from

Uruguay. Other countries exporting varying but generally increasing quantities to Brazil over the full period were: Portugal (543 tonnes at USD720 000 yearly average), Peru (352 tonnes at USD475 000), South Africa (307 tonnes at USD281 000) and Singapore (249 tonnes at USD300 000).

FIGURE 41
Brazil shark meat trade, 2000–2012





Source: SECEX – Foreign Trade Secretariat (2013).

Domestic trade and markets

Brazil's strong demand for shark meat products is illustrated by its trading relationship with Uruguay. However, as Brazil is the world's eleventh-largest capture producer of chondrichthyans and reports almost no exports, the domestic market is considerably larger than would be indicated by imports alone. This suggests that Brazil's consumption is probably higher than Italy's (which has little domestic production) and possibly rivals that of Spain and the Republic of Korea. It is also noted that because countries of the European Union (Member Organization) appear to have stricter requirements for heavy-metal levels in shark meat, Brazil may be a more attractive market for receiving, as imports, larger sharks caught in Atlantic fisheries. Brazil's fisheries land sharks primarily at Itajai, which replaced Santos as the main landings port several years ago. Such landed sharks, including blue sharks, are marketed throughout

the country (S. Montealegre, personal communication, May 2013). Early in 2013, sharks were reportedly landed in gutted form with fins removed. However, a planned strengthening of Brazil's 1998 finning regulations by moving from a fins-to-carcass ratio to a "fins naturally attached" policy may have changed this (P. Charvet, personal communication, March 2013). One source has suggested that sharks landed from South Atlantic fisheries for the Brazilian market are processed to a particular standard, and thus are not typical of sharks retained as "bycatch" in most fisheries (A. MacFarlane, personal communication, April 2013).

It appears that in parallel with the culinary tastes of Southern Europe, skate and ray wings are popular ingredients in stewed dishes in at least some parts of Brazil.[51] However, the extent to which the domestic market for shark meat in Brazil reflects the demand for ray or skate wings is unknown.

Taiwan Province of China

Note: FAO statistics for exports of shark meat from Taiwan Province of China differ significantly from those recorded by customs authorities in Taiwan Province of China. This is primarily because FAO statistics include foreign port landings (shark carcasses landed directly in foreign ports by fishing vessels) whereas customs records do not. These landings accounted for some 35 percent of total shark meat exports Taiwan Province of China as recorded in FAO databases from 2000 to 2011, although this proportion appears to have increased significantly in recent years. However, as destination-specific figures are not available for overseas landings, all figures referred in the section "Exports and imports" are those reported by Taiwanese customs.

Snapshot

- China is historically the world's foremost consumer market for shark fins and is also a major producer, processing centre and re-exporter.
- It is the world's second-largest importer by quantity and third-largest by value.
- From 2000 to 2011, it recorded average annual shark fin imports of 2 634 tonnes, worth USD14.8 million (Figure 7).
- From 2000 to 2011, it recorded average annual shark fin exports of 1 196 tonnes, worth USD23.7 million (Figure 7).
- China's imports and exports of shark fins have declined dramatically since the early 2000s owing to decreased demand, increased domestic production, a change in trading dynamics or reporting practices, or probably a combination of the above.
- China has reported frozen shark fins as frozen shark meat since May 2000, and currently records trade in dried shark fins only.

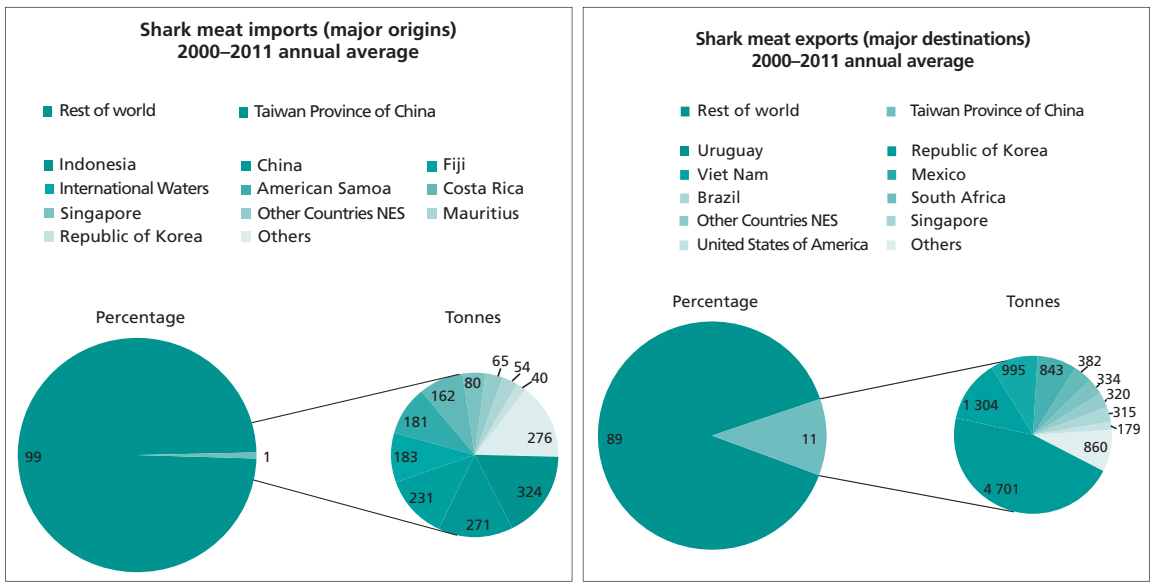
Overview

As the world's fourth-largest shark producer, Taiwan Province of China supplies the global market with large quantities of shark meat as well as shark fins. From 2000 to 2011, it posted average capture production of sharks, skates and rays of 43 869 tonnes per year. Species are largely aggregated, but increased species-specific reporting since 2007 suggests blue sharks, shortfin makos and silky sharks make up a sizeable proportion of the captures. Its major export partners include most of the major markets outside the European Union (Member Organization). From 2000 to 2011, including overseas landings, Taiwan Province of China exported an average of 15 785 tonnes per year, at a value of USD18 million. Exports trended strongly upwards

[51] http://flavorsofbrazil.blogspot.jp/2012/04/fish-of-brazil-ray-or-skate-arraia.html

in this period, and the figure of 26 392 tonnes (USD40.9 million) as recorded by FAO was about 6 times the volume and 8 times the value recorded in 2000. This rise in shark meat exports continued even while shark fin exports and capture production volumes remained relatively stable, suggesting that fishers from Taiwan Province of China are responding to the growing international market for meat and/or the implementation of antifinning regulations by increasingly utilizing entire shark carcasses rather than finning. Exports from Taiwan Province of China consist mainly of low-valued frozen shark, destined both for domestic consumption in areas nearest the fishing grounds (e.g. Mexico) and for further processing and re-export to regional markets (e.g. through Uruguay to Brazil). The average unit value of exports from 2000 to 2011 was USD1.2/kg. Taiwan Province of China also imports relatively minor quantities of very low-valued shark meat (average unit value of USD0.37), mainly "frozen, non-fillet", posting average annual imports of 1 866 tonnes, worth USD693 000, from 2000 to 2012. After dropping to very low levels for the 6-year period from 2002 to 2007, volumes rose again, and the average volume imported per year from 2008 to 2012 was 3 456 tonnes, at USD1.5 million.

FIGURE 42
Taiwan Province of China shark meat trade profile



Source: Taiwan Directorate General of Customs (2013).

Exports and imports

The most important destination for shark meat exports from Taiwan Province of China from 2000 to 2012 was Uruguay. In this period, Uruguay accounted for an average of 38 percent (4 706 tonnes) of the total annual volume and 28 percent (USD3.9 million) of value. These exports followed a steeply increasing trend to a peak in 2008 of 12 405 tonnes (USD11.3 million), but dropped back to 3 413 tonnes (USD3 million) in 2012. Taiwan Province of China supplies Uruguay primarily with low-valued "frozen, headed, gutted and finned" shark carcasses, which Uruguay then processes and re-exports to Brazil. The average unit value of Uruguay-destined exports in this period was USD0.81/kg. Exports to Mexico, the second-largest importer from 2000 to 2012, followed a similar up-and-down trend, peaking in 2007 at 3 680 tonnes (USD4.9 million) before falling to 1 877 tonnes (USD2.5 million) by 2012. Average annual volume over the full period was 1 848 tonnes (USD2.6 million). The higher unit

value of Mexico-destined exports is the result of a higher proportion of processed shark meat such as fillets and steaks. The Republic of Korea imported an annual average of 1 226 tonnes (USD1.3 million) from Taiwan Province of China over the period, seeing a decline of 80 percent in quantity terms and 73 percent in value terms from 2009 to the 2012 figure of 292 tonnes at USD398 000. Australia was an important importer of higher-valued meat from Taiwan Province of China over the period, importing 470 tonnes per year on average, at USD1.4 million. Meanwhile, Viet Nam was another growth market, importing 1 596 tonnes per year from 2005 to 2012 compared with virtually zero in the previous years. Over the latter eight-year period, the average annual value of imports by Viet Nam was USD951 000, equating to a relatively low unit value.

The main three import partners for Taiwan Province of China from 2000 to 2012, by volume, were Indonesia (324 tonnes annually or USD134 000), China (271 tonnes or USD141 000) and Fiji (231 tonnes or USD102 000). With the exception of imports from China, which appear to include a high proportion of processed shark meat, the majority of imports into Taiwan Province of China consisted of low-valued "frozen, non-fillet" shark meat from known shark-fishing nations.

Domestic trade and markets

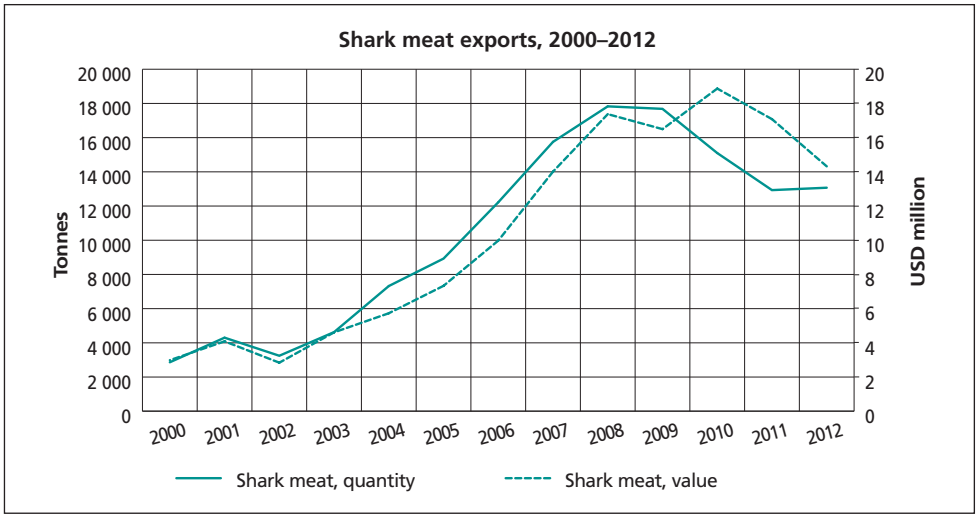
As described in the section on the domestic market for shark fins in Taiwan Province of China, its ports at Su'Ao and Donggang have for many years utilized shark meat produced by small coastal longliners storing their catches on ice. Sharks that are valuable for their meat are processed into fillets, whereas low-value shark meat such as that from blue shark may be smoked or minced and used for fish balls. In addition to supplies of shark meat from the coastal longline fleet, the offshore and distant-water fleets of Taiwan Province of China may, if they land their catches in Taiwan Province of China, also provide shark meat for domestic consumption. This is particularly true as they are now required to land sharks with their fins attached rather than landing fins only (see section on Taiwan Province of China shark fins for details).

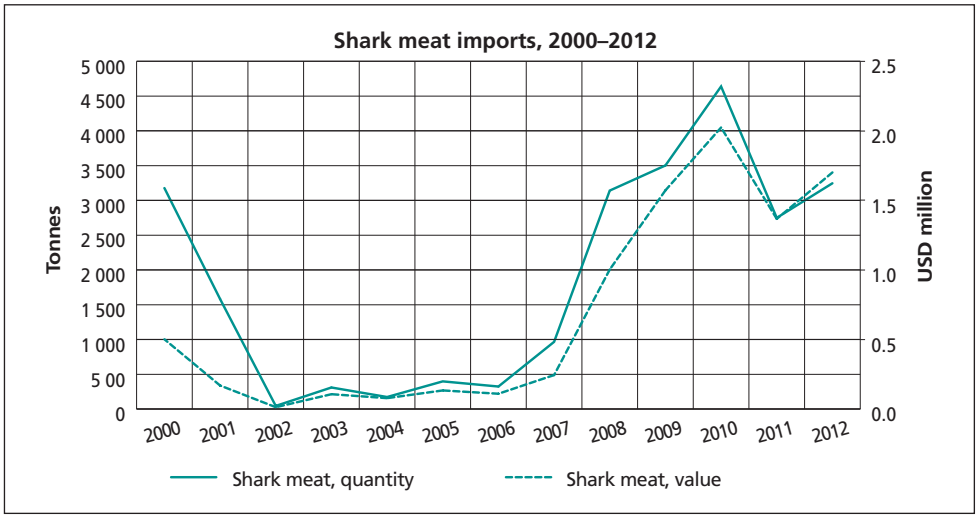
Statistics compiled by the landing ports of Donggang, Su'Ao and Kaohsiung indicate that in 2013 these ports handled an average of 214, 125 and 119 tonnes per month, respectively, of blue shark meat alone. Data since 2010 show that trade in blue shark meat in each port declined after January 2012, when domestic regulations on finning began to be enforced.[52] Although this is counter to the expectation that finning regulations would cause more blue shark carcasses to be landed, it should also be noted that at the same time fishers were complaining of a downturn in the market for both shark meat and fins. The reason given for the downturn was China's restrictions on government officials eating shark fin. The implication is that, without a vibrant trade in blue shark fins, the blue shark meat market becomes unprofitable. According to these sources, in 2012, one blue shark could sell for USD66 at auction but in 2013 each shark would only sell for USD36.[53] It therefore appears that market forces in China relating to shark fin are determining the overall trend of decrease in the amount of sales of blue shark meat in Taiwan Province of China.

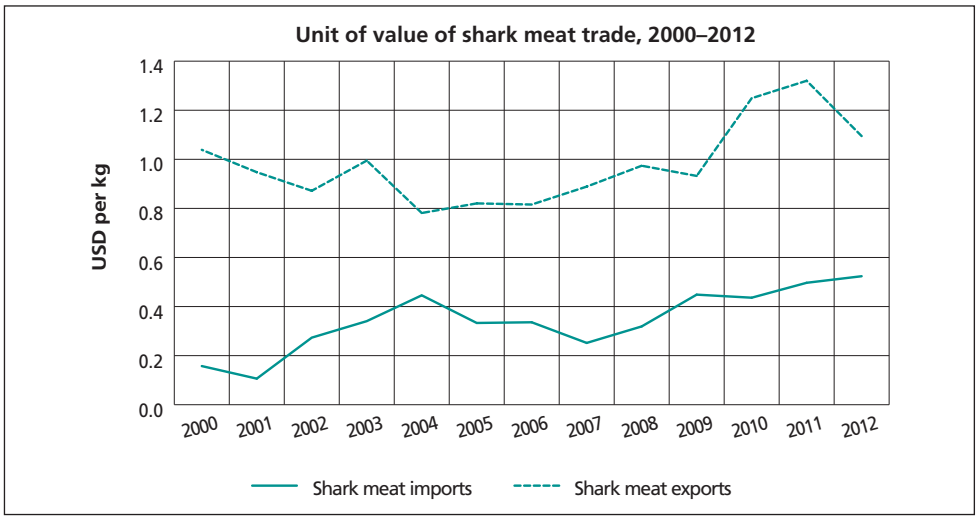
[52] Taiwan Province of China Ministry of Agriculture Statistics, accessed at http://m.coa.gov.tw/outside/AquaticTrans/Search.aspx

[53] www.libertytimes.com.tw/2013/new/mar/22/today-south6.htm#

FIGURE 43
Taiwan Province of China shark meat trade, 2000–2012







Source: Taiwan Directorate General of Customs (2013).

While it is known that at least a portion of the domestically landed catches are domestically consumed, it is also possible that some of them may be processed and exported to countries with a high demand for shark meat. For example, Internet searches in 2013 identified a company registered in Taichung (just north of Kaohsiung) that was offering to buy shark meat without skin from sharks weighing at least 10 kg in unlimited quantities for an indefinite period. The listing suggested that this company is shipping their processed shark products to South American markets (Clarke, Francis and Griggs, 2013).

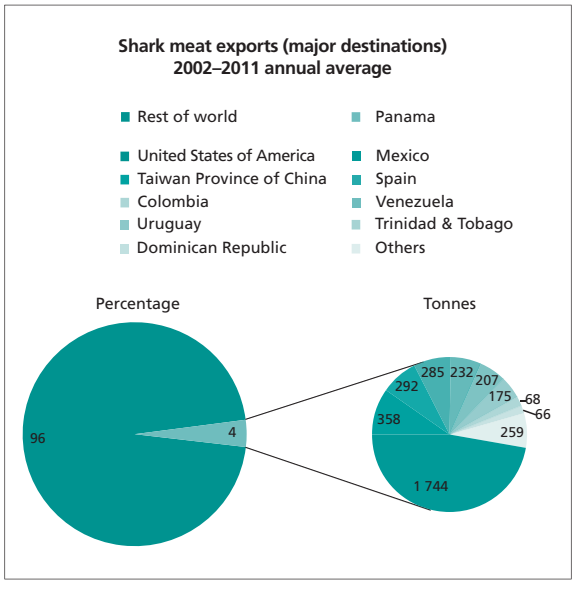
Media reports in Taiwan Province of China suggest that, while rays are consumed, this mainly occurs in restaurants owned by fishers, i.e. a very limited market[54]. Sources in Taiwan Province of China confirmed that skate and ray wings are not a commonplace dish (J. Chang, personal communication, January 2014).

Panama

Snapshot

- Until recently, Panama was a relatively large producer and exporter of shark meat and fins, but trade and capture volumes have declined significantly in recent years.
- It ranks as the world's seventh-largest shark meat exporter from 2000 to 2011, but posted total exports of only 346 tonnes in 2011.
- It exports mainly to American markets, primarily the United States of America.
- From 2000 to 2011, it recorded average annual shark meat exports of 4 064 tonnes, worth USD6.2 million (Figure 45).

FIGURE 44
Panama shark meat trade profile



Source: The Republic of Panama General Comptroller Office (2013).

[54] http://tw.news.yahoo.com/%E9%AD%9F%E9%AD%9A%E5%85%A8%E9%A4%90-%E5%B9%B3%E5%83%B9%E5%BF%AB%E7%82%92%E5%BA%97%E7%8D%A8%E7%89%B9%E6%96%99%E7%90%86-111704741.html

Overview

Until recently, Panama was a relatively large producer and exporter of shark meat and fins, as well as an active domestic market for shark meat. In the case of exports, from 2000 to 2011, Panama accounted for 4 percent of global shark-meat exports, at an average of 3 954 tonnes per year. This was the third highest in the world in terms of volume after Spain and Taiwan Province of China. These exports consisted of relatively low-valued "frozen, non-fillet" shark meat, representing a 3 percent share of global value at USD5.8 million per year. In the same period, Panama's exports of shark fins averaged 80 tonnes annually, at USD3 million per year, according to official statistics. Panama was the world's thirty-fifth-largest shark producer from 2000 to 2011, posting an average capture volume of 4 389 tonnes per year (sharks, skates and rays). These sharks were taken by a variety of fishing vessels, from local artisanal boats to industrial longline fleets, with the major proportion being caught on the Pacific side of the country. In 2010 and 2011, however, capture production volumes were considerably lower than previously at 744 and 411 tonnes respectively. This drop was also reflected in shark meat export volumes after 2009, which decreased from 5 375 to 562 tonnes from 2009 to 2010, and then further to 222 tonnes in 2012. The reason for this drop is unclear, although it should be noted that similar declines were seen for seafood exports as a whole. It has been suggested that the decline was due to the cancellation of tax incentives that amounted to subsidized exports of agricultural produce, seafood included.[55] This, or some other change in trading conditions or reporting practices, might account for the observed decline in exports, but would not necessarily account for decreased capture production (unless fishing effort was cut back as the export market diminished).

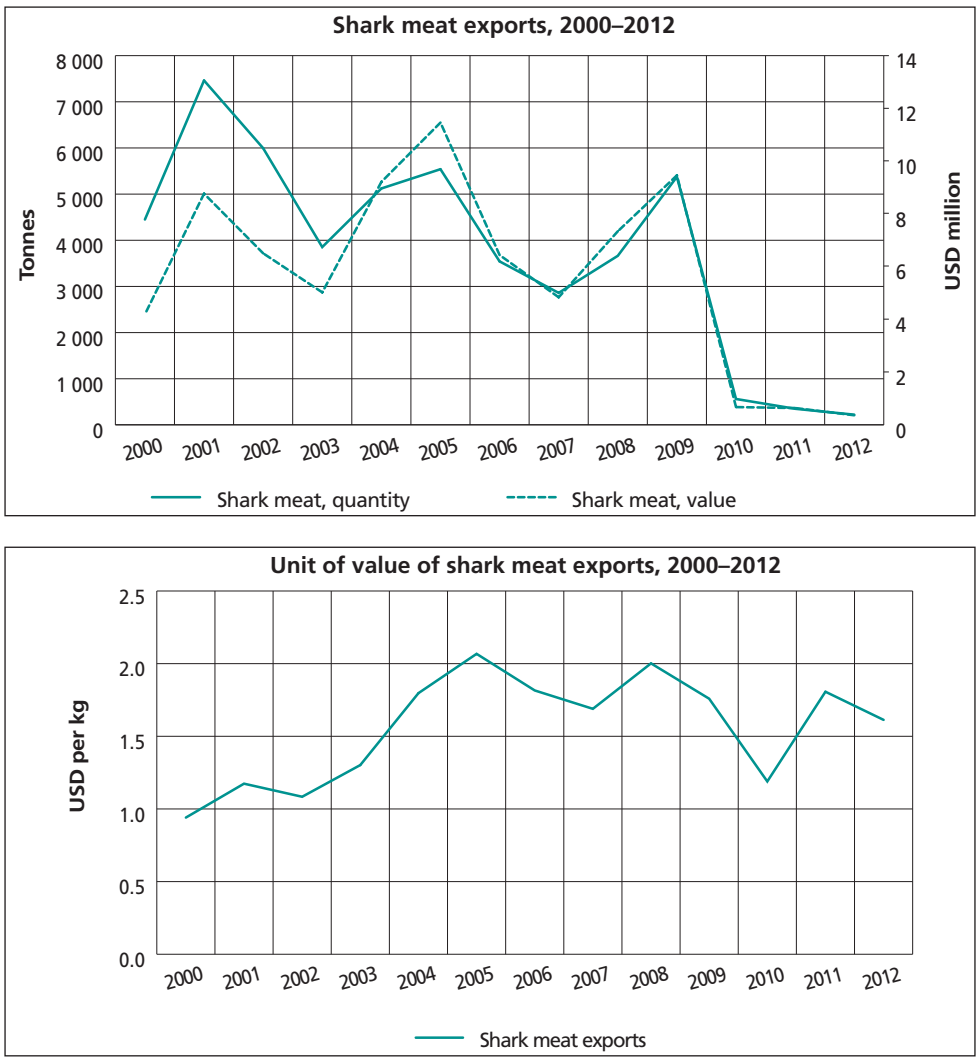
Exports

As proportions of Panama's total exports of shark meat from 2002 to 2012, "frozen, non-fillet" shark meat accounted for 90 percent of the volume and 87 percent of the value. "Fresh or chilled, non-fillet" meat made up the remainder. As in most other cases, the extent of vessel-to-vessel transfer and fishing of Panama's exclusive economic zone by foreign fleets is unknown, as is whether these activities are reflected in export figures. The majority of Panama's main export destinations ceased importing shark meat from Panama entirely or saw volumes drop to effectively zero at some point from 2008 to 2012. The United States of America imported an average of 2 180 tonnes of shark meat per year from Panama from 2002 to 2009, at USD4.8 million. By both value and volume, these imports were about 80 percent "frozen, non-fillet" meat and 20 percent "fresh or chilled, non-fillet". In 2010, according to official statistics, Panama stopped exporting shark meat to the United States of America. Over the full period for which data are available (2002–2012), exports to the United States of America made up 47 percent of the total volume. Mexico was in second place, with 10 percent of the total quantity from 2002 to 2012. From 2008 to 2012, however, Mexico did not import any shark meat from Panama, with the exception of 61 tonnes in 2012. Up to this point, from 2002 to 2007, exports of shark meat to Mexico averaged 596 tonnes per year, worth USD398 000. This is significantly lower-valued than the average, consisting almost entirely of "frozen, non-fillet". Exports to Taiwan Province of China, the third-placed country by volume over the full period, followed a similar pattern, dropping to zero in 2008 after registering an average of 487 tonnes per year (USD444 000) previously. All these exports were "frozen, non-fillet" shark meat. Exports to Spain and Colombia comprised somewhat higher-valued shark meat from Panama over this period, although (effectively) zero imports were recorded from Spain from 2008 onwards. From 2002 to 2007, however, the average annual quantity of Spain-destined exports was 474 tonnes,

[55] http://ahabsjournal.typepad.com/ahabs_journal/2010/07/panamas-seafood-exports-plummeting-.html

worth USD823 000. Moderate export volumes to Colombia were recorded throughout the full period, with a spike in 2009 to 1 037 tonnes. From 2002 to 2012 the average quantity exported to Colombia per year was 218 tonnes, at USD347 000.

FIGURE 45
Panama shark meat trade, 2000–2012



Source: The Republic of Panama General Comptroller Office (2013).

Domestic trade and markets

Shark meat is consumed in Panama as both fillets and cerviche, and salt-dried skate and ray fillets can also be found in local markets (S. Siu, personal communication, January 2013). However, the size of Panama's domestic market for chondrichthyan meat is unclear and difficult to estimate. It is not possible to simply subtract exports from capture production figures. This is because up until 2009 reported exports exceeded reported capture production quantities. This situation could suggest an under-reporting of capture production, with some of the under-reported catches consumed domestically.

Panama's artisanal sector (small longliners and net fisheries), using ice for preservation, reportedly catch juvenile and neonate sharks for domestic consumption. In contrast, Panama's industrial longliners, which catch mature sharks and use a freezer system to preserve the product, usually export these sharks to Mexican markets (S. Siu,

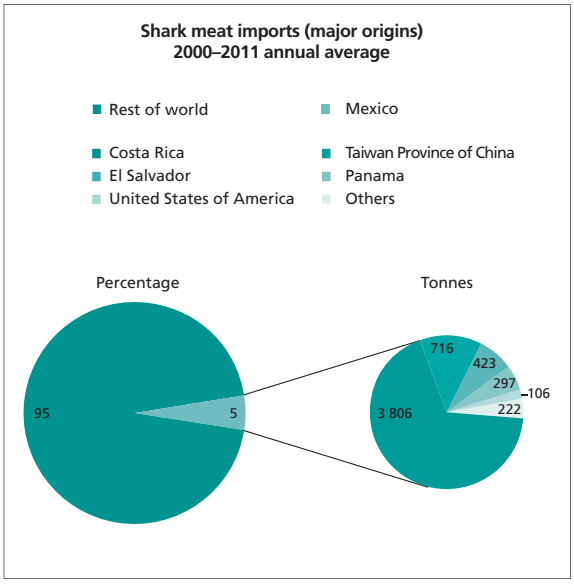
personal communication, January 2014). Given that species-specific catch records for sharks are available only for very recent years, if at all, for many of the longline fleets operating in the region (IATTC, 2011), it would not be surprising if the actual supply of shark meat to the domestic market is under-represented by Panama's capture production statistics.

Mexico

Snapshot

- Mexico is a major producer of sharks and an important market for shark meat.
- It supplies its consumer base through a combination of imports and domestic production.
- A large proportion of imports probably consists of foreign distant-water fleet catches landed directly in Mexican ports or in Costa Rican ports before exportation to Mexico.
- Mexico ranks as the world's sixth-largest shark producer and sixth-largest importer in volume terms.
- From 2000 to 2011, it recorded average annual shark fin imports of 5 650 tonnes, worth USD8.3 million (Figure 47).
- Its shark meat import volumes peaked in 2003, and have been falling steeply since.

FIGURE 46
Mexico shark meat trade profile



Source: Secretary of Economy (for data prior to 2006) and INEGI (2006–present) (2013).

Overview

Mexico itself is a major chondrichthyan producer, posting an average annual capture volume of 33 815 tonnes from 2000 to 2011, representing 6 percent of the global total and making Mexico the world's sixth-largest producer. From 2000 to 2011, about 75 percent came from the Pacific side of the country, with the remaining 25 percent caught in the Atlantic. About 29 percent of these captures are identified at some level of disaggregation, with the majority of the identified proportion being requiem sharks or blue sharks. Domestic captures are also supplemented by imports, and Mexico was

the sixth-largest importer of shark meat by volume from 2000 to 2011. In this period, imports averaged 5 650 tonnes per year, at USD8.3 million. Annual import volumes peaked in 2003 at 10 825 tonnes (USD11.9 million), but then dropped to stabilize at about 3 500 tonnes (USD6.4 million) from 2009 to 2012. "Frozen, non-fillet" shark meat constituted 93 percent of total imports (volume and value) over the full period, while the remaining proportion was made up of "fresh or chilled, non-fillet" shark meat. Importers pay similar unit values for these two product types in terms of unit value, with "fresh or chilled, non-fillet" meat worth an average of USD1.4/kg from 2000 to 2012, and "frozen, non-fillet" meat worth USD1.5/kg. These unit values increased somewhat from 2000 to 2005 in line with the global market, but remained relatively stable from 2005 to 2012.

Imports

Mexico imports shark meat primarily from States in its geographic proximity, at least some of which is probably landed directly in Mexican ports by the fishing fleets of these countries. In the case of Taiwan Province of China, it is known that distant-water fleets operate extensively on the Pacific side of Central America. The majority of Mexican shark-meat imports come from Costa Rica. From 2000 to 2012, imports from Costa Rica constituted the bulk of the total volume with a share of 63 percent, all "frozen, non-fillet", while the corresponding share of value was 67 percent. Average annual imports from Costa Rica in this period were 3 647 tonnes, worth USD5.7 million. Volumes peaked in 2003 at 7 799 tonnes (USD9.3 million) and then declined steeply to 1 666 tonnes (USD3.4 million) in 2012. Taiwan Province of China was the second-most important supplier of shark meat to Mexico in the same period, accounting for 13 percent of total volume and 13 percent of value. Imports from Taiwan Province of China averaged 753 tonnes per year, at USD1.1 million. Taiwan Province of China exports only "frozen, non-fillet" shark meat to Mexico. The United States of America also exports shark meat to Mexico, accounting for 8 percent of total volume in the period, but quantities decreased notably in the second half of the period. Overall, from 2000 to 2012, the annual average volume was 486 tonnes, worth USD679 000. This consisted mainly of "fresh or chilled, non-fillet" product. Import unit values for shark meat from the United States of America increased by almost 100 percent from 2000 to 2012. El Salvador and Panama accounted for 7 percent (390 tonnes annually) and 5 percent shares (289 tonnes annually), respectively, of Mexico's supplied volume from 2000 to 2012. The respective average annual values of these imports were USD654 000 and USD125 000. In the case of El Salvador, imports for the period 2003–06 averaged 1 263 tonnes, but were effectively zero in the years before and after this time frame.

Mexico's exports of shark meat are minimal, with an average of 61 tonnes, worth USD57 000, exported per year from 2000 to 2012.

Domestic trade and markets

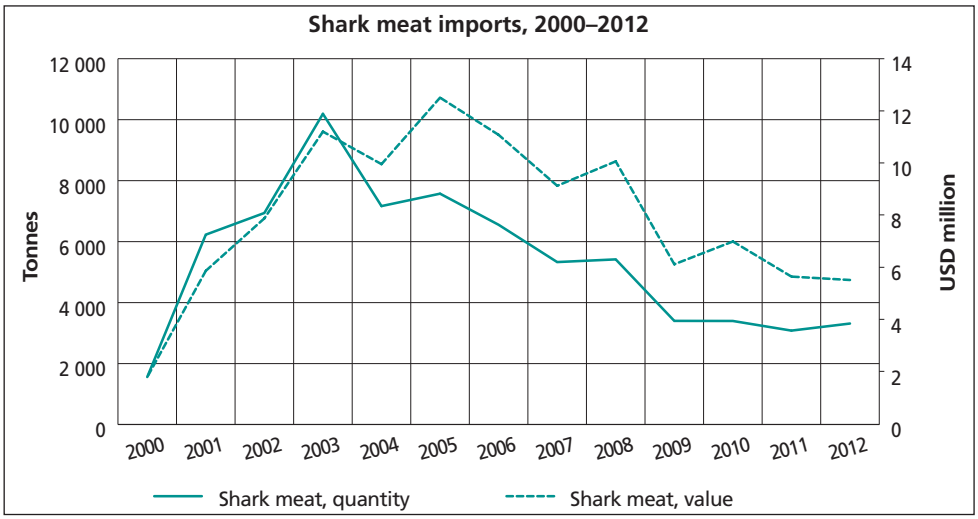
Mexico is a major regional market for shark meat, receiving large amounts of frozen shark meat from Costa Rica, El Salvador, Panama and other Central American countries, as well as being supplied by its own fisheries. Recent media reports suggest that Mexico consumes about 90 percent of its domestic capture production, shipping meat for sale to markets in Mexico City at wholesale unit values as low as USD1.5/kg (Eilperin, 2011).[56] Historically, sharks in Mexico have been sold as either "cazón", which refers to sharks less than 1.5 m in length and less than 5 kg in weight (as juveniles or adults), or as "tiburón", which refers to larger sharks (Rose, 1998). Shark and ray meat is consumed

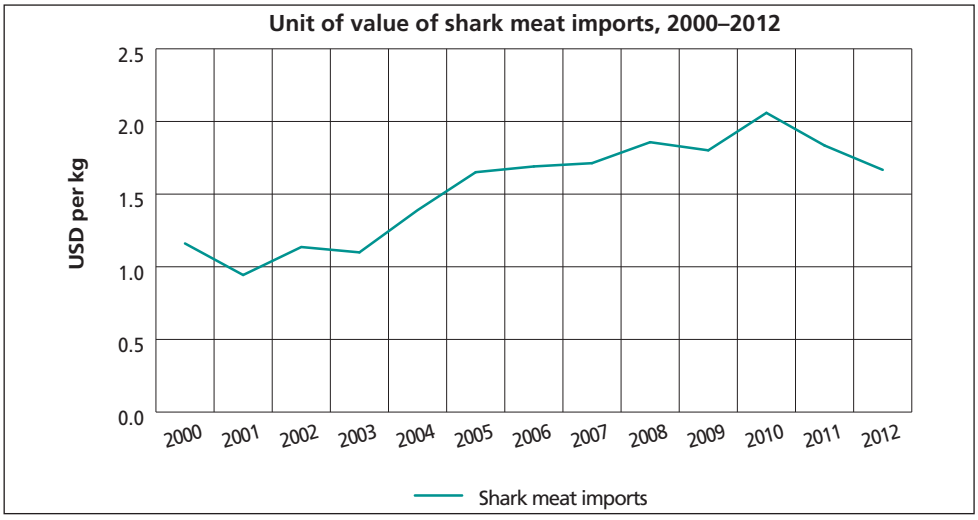
[56] www.washingtonpost.com/world/quest-for-shark-fins-brings-mexican-fishermen-to-american-waters/2011/03/02/ABhwmAf_story.html

fresh, frozen or, more commonly, salt-dried (Sosa-Nishizaki, Márquez-Farias and Villavicencio-Garayzar, 2008). According to one expert source consulted for this study, Mexico's trade in shark meat, especially blue shark, is increasing (O. Sosa-Nishizaki, personal communication, December 2013).

In addition to Mexico being a net importer of shark meat, historical sources suggest that sharks captured by fleets off the Yucatan Peninsular supply an export market (Rose, 1998). Sources in Belize confirm a similar situation in which shark meat is exported to Guatemala and Honduras, especially when demand rises during the Catholic Lenten season (D. Chapman, personal communication, December 2013). Given that a domestic market reportedly exists in Belize, it is likely that it also exists in eastern Mexico.

FIGURE 47
Mexico shark meat trade, 2000–2012





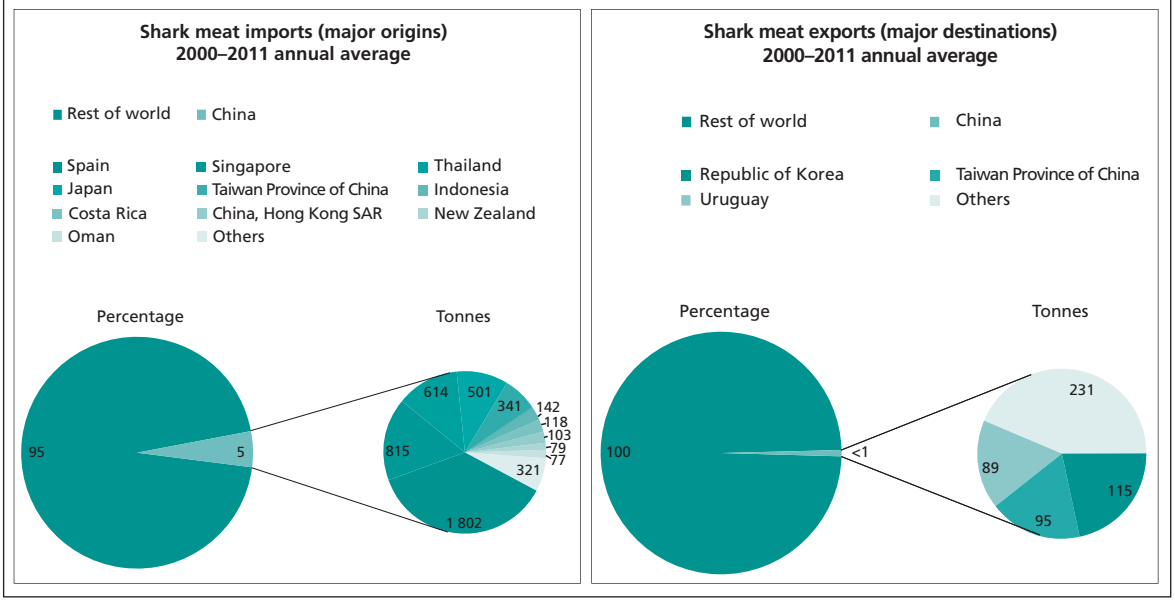
Source: Secretary of Economy (for data prior to 2006) and INEGI (for 2006–present) (2013).

China

Snapshot

- China is a major shark producer, and a relatively large importer of shark meat, although a lack of reliable data means it is difficult to estimate the true size of the domestic market.
- The size of its shark production is also unknown, as a large proportion of captures being reported within aggregated categories, although the level of detail in China's capture statistics has increased in recent years.
- Since 2000, China has recorded frozen shark fins as frozen shark meat, making it difficult to estimate what proportion of shark imports consists of meat rather than fins.
- From 2000 to 2011, it recorded average annual shark meat imports of 4 622 tonnes, worth USD11 million (Figure 49).
- Its exports of shark meat, previously minimal, have risen significantly in recent years, to 1 920 tonnes, worth USD20 million, in 2012, but again it is unknown what proportion of these exports is made up of shark fins.

FIGURE 48
China shark meat trade profile



Source: China Customs (2013).

Overview

In addition to being the world's largest consumer market for shark fins, China also imports relatively large quantities of shark meat. Processing generally takes place post-import, and Chinese imports of shark meat mainly consist of "frozen, non-fillet" shark meat. However, the average unit value of USD2.5/kg is higher than what is usually seen for non-dogfish shark traded in this form, and there is a high possibility that at least a proportion of what is being imported and reported as frozen shark meat is shark fins and/or carcasses with fins attached for post-import removal. In terms of volume, China was the world's seventh-largest importer of shark meat from 2000 to 2011, posting average annual volumes of 4 622 tonnes, representing 4 percent of the global total. Ranking by value, China is the eighth-largest importer, with an average

yearly import value of USD11 million, 5 percent of the global total. In this period, imports have fluctuated between a low of 2 801 tonnes (USD8 million) in 2001 and a high of 6 725 tonnes (USD15 million) in 2008, but have been decreasing in recent years. The real size of China's shark meat market is difficult to estimate, however, as it is likely that, despite an improvement in species-specific reporting in recent years, a proportion of domestic captures of sharks is reported only within the aggregated category, "marine fish nei". The estimation is further complicated by the fact that China also exports shark meat, increasingly so in recent years. From 2000 to 2011, China exported 525 tonnes per year, at USD3.7 million, making it the sixteenth-largest exporter in the world by value. In 2011 and 2012, however, these volumes were up considerably, to 1 844 tonnes (USD17.2 million) and 1 920 tonnes (USD20 million), respectively. Export unit values fluctuated considerably during the 13 year period, but the average unit value of USD8/kg suggests that these are processed value-added products, in line with China's major role in the world seafood market as a processing centre. However, it is again necessary to acknowledge the possibility that these exports include a proportion of shark fins.

In 2012, with the introduction of the new dedicated HS code by the WCO,[57] China began recording imports of rays and skates explicitly as such, posting 2012 imports of 1 079 tonnes, worth USD1 million. All of these imports were in frozen form.

Imports and exports

From 2000 to 2012, Spain accounted for 37 percent of the total volume China's reported shark meat imports and 47 percent of the value. Annual averages for volume and value were 1 769 tonnes, worth USD5.3 million. Spanish-origin imports peaked at 2 558 tonnes (USD7 million) in 2007 before declining following a unit-value increase and stabilizing at about 1 350 tonnes (USD5.7 million) from 2010 to 2012. In the same period, 16 percent of China's shark meat import volume came from Singapore. In terms of annual averages, the volume figure was 793 tonnes while the value was USD2.3 million. The average unit value was USD2.8/kg. Similarly to Spain's case, imports from Singapore fell to low levels after 2009, averaging 538 tonnes per year, at USD1.8 million, from 2010 to 2012. In the case of Spain and Singapore in particular, the possibility that shark fins constitute a significant proportion of imports reported by China as shark meat must be acknowledged. Thailand (13 percent of total import volume) began exporting large volumes of low-valued shark meat to China from 2005 onwards, averaging 970 tonnes, at USD864 000, from 2005 to 2012. Japan (10 percent of total import volume) followed the opposite trend, with its exports of shark meat to China steadily declining from 1 305 tonnes (USD2.4 million) in 2000 to zero in 2012. Taiwan Province of China and Indonesia provided 7 and 3 percent shares of China's supply, respectively, with Taiwan Province of China averaging 345 tonnes per year, at USD690 000, and Indonesia 146 tonnes, at USD207 000.

The major markets for China's rapidly growing shark meat export industry are Taiwan Province of China, Uruguay and Viet Nam. From about 2006 onwards, and especially in the three years from 2010 to 2012, exports to these countries followed a steep upward trend. In 2012, China exported 701 tonnes to Taiwan Province of China, 682 tonnes to Uruguay, and 238 tonnes to Viet Nam. These exports were relatively high-value, at USD14.5, 7.5 and 12.1/kg, respectively. In the case of Taiwan Province of China and Viet Nam in particular, these were probably processed products ready for consumption and/or include a proportion of fins.

China's imports of rays and skates in 2012 originated in 13 different countries. The main 4 origins were the United States of America (409 tonnes or USD392 000),

[57] Note that rays and skates were not recorded as sharks before 2012, but were included within more aggregated categories.

the Russian Federation (160 tonnes or USD138 000), Argentina (144 tonnes or USD119 000) and Mexico (129 tonnes or USD130 000).

Domestic trade and markets

Owing to the coding issues described above, it is difficult to understand how much of China's reported shark meat imports is actually meat rather than fins. In addition, capture production statistics for sharks by China's fishing fleets are uncertain, and the proportion of captured sharks landed in China is unknown. As a result, is it not possible to obtain a reliable estimate of China's domestic consumption of shark meat based on existing data. Nevertheless, a variety of information on China's consumption and processing of shark meat was obtained for this study from a number of sources.

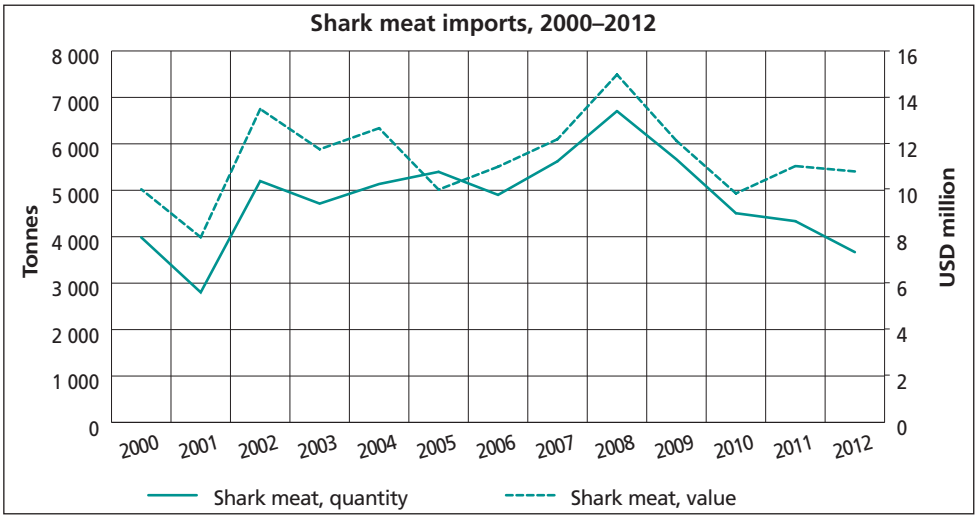
Anecdotal information suggests that domestic processing of shark meat has long been centred in the town of Puqi, near Wenzhou in Zhejiang Province. Puqi's 20 factories reputedly process 4 000 tonnes of sharks each year, representing 90 percent of the total shark processing in China[58] (Li, Wang and Norman, 2012). These factories reportedly process meat as well as fins, oil, cartilage and other products.[59] Sources in the China Fisheries Administration stated that China processes about 20 000 tonnes of shark meat per year, half of which derives from domestic fisheries; one-third of this amount is reportedly consumed in Zhejiang Province where there is a special appetite for shark products. According to this source, there is neither a strong nor growing demand for shark meat in other parts of the country (X.B. Liu, personal communication, December 2013).

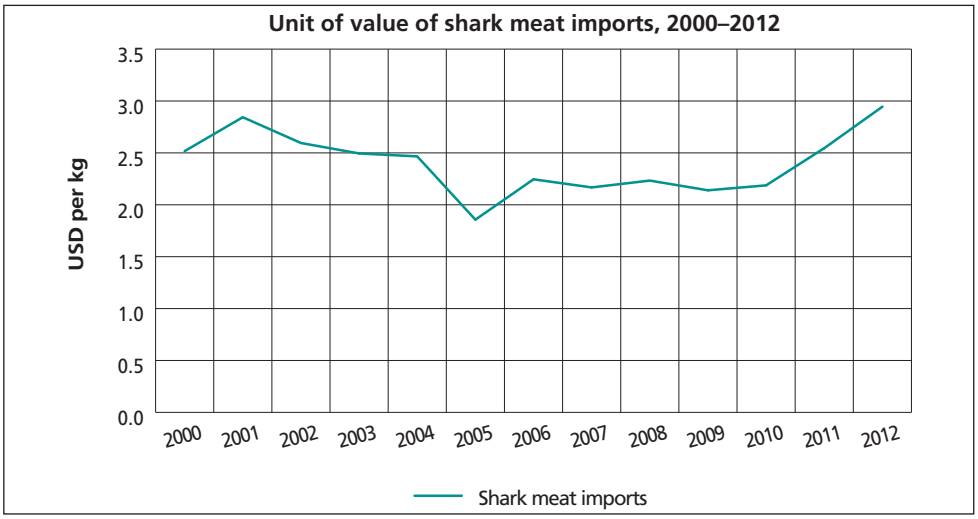
In contrast, other expert sources in China consider that the market for shark meat is a national one and that it is expanding (Y.M. Wang, personal communication, November 2013). Based on Internet searches conducted in early 2013, it was apparent that shark processing had expanded beyond its historical base in Puqi. This search identified 25 Chinese companies seeking to purchase shark meat in locations ranging from Heilongjiang and Liaoning to Fujian and Guangdong (Clarke, Francis and Griggs, 2013). One of the companies based in Shenzhen (Guangdong Province) was offering processed shark meat in frozen form originating from catches in the South Pacific for export to Japan or Europe, and while the other companies may be similarly export-oriented, they may also produce some products for the domestic market. China Fisheries Administration sources stated that China's processed shark meat is often exported, in descending order of value, to Australia, Sri Lanka, the Philippines and Singapore (X.B. Liu, personal communication, December 2013). As this list of countries does not align well with China's export data for shark meat, it is possible that shark meat processed in China is recorded under generic trade codes when exported, or that China's landings in distant-water ports are recorded as exports (thereby swamping quantities of processed shark meat exports). In overview, the China processing industry was characterized as purchasing shark meat for less than USD0.50/kg and exporting it to mid-range markets such as Sri Lanka for about USD3.80/kg (X.B. Liu, personal communication, December 2013).

[58] http://invisiblephotographer.asia/2011/06/19/photoessay-sharkvillage-lamyikfei/

[59] www.theguardian.com/world/2013/feb/12/shark-fishing-china-puqi-conservation

FIGURE 49
China shark meat trade, 2000–2012





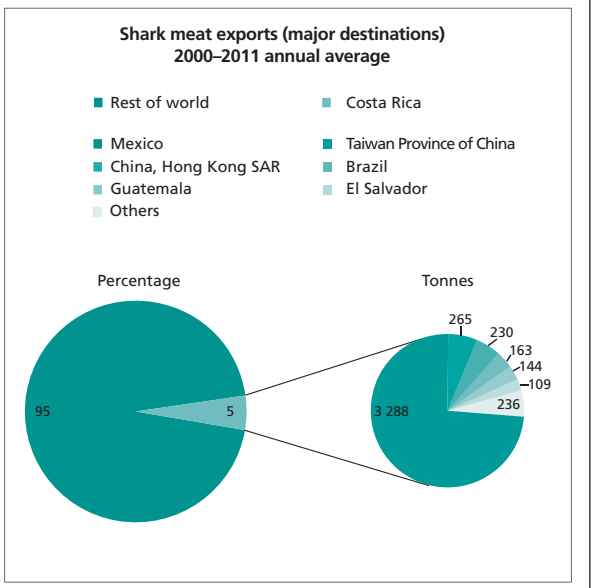
Source: China Customs (2013).

Costa Rica

Snapshot

- Costa Rica's status as a large-scale producer and exporter of shark meat has been diminishing in recent years, although imports have been increasing.
- Costa Rica is known to a have a domestic market for shark meat, supplied primarily by the artisanal sector, but the true size of these market is not known.
- It ranks as the world's twenty-eighth-largest shark producer and the sixth-largest exporter of shark meat.
- It is the main supplier to the large Mexican market.
- From 2000 to 2011, Costa Rica recorded average annual shark fin exports of 4 034 tonnes, worth USD5 million (Figure 51).
- Its capture and export volumes have been decreasing since the early 2000s, whereas import volumes have been climbing steeply since 2011.

FIGURE 50
Costa Rica shark meat trade profile



Source: INEC – National Institute of Statistics and Census (2013).

Overview

Costa Rica's previous importance as a producer and exporter in the world market for shark meat has been diminishing for some time. In 2011, its exports made up only about 1.4 percent (1 600 tonnes) of the world total volume. The equivalent proportion for the full period from 2000 to 2011 was 2 percent, at an annual average of 4 034 tonnes. This makes Costa Rica the world's sixth-largest exporter over this time frame. Its shark meat exports are quite low-valued, and ranking by value puts Costa Rica in fifteenth place, with an annual average of USD5 million, equating to a unit value of USD1.2/kg for this period. All these exports are recorded only as frozen or "fresh or chilled" dogfish and other sharks ("cazones y demás escualos"). Capture production volumes followed roughly the same downward trend, with the 2011 figure of 3 635 tonnes representing a 72 percent decrease compared with 2000 after 12 years of steady decline. Shortfin mako and silky sharks are the only sharks reported at the species-specific level, with the latter the only one of two making up a significant proportion of the catch (18 percent).

Costa Rica is also an importer of low-valued shark meat, almost entirely in frozen form, accounting for about 1 percent of the global total import volume from 2000 to 2011 (world's fifteenth-largest), with an average of 1 452 tonnes imported per year, at USD720 000 (less than 1 percent of the global total). However, despite varying considerably from year to year, imports volumes have been following a clear upward trend, and in 2012 Costa Rica imported 3 316 tonnes, worth USD3.9 million. The relatively higher value is the result of a rise in import unit values, with 2012 imports of USD1.2/kg versus an average of USD0.59 for the full 2000–2012 period.

Exports

Mexico is by far the most important destination for shark meat exports from Costa Rica, accounting for 75 percent of the total volume exported from 2000 to 2012, and 57 percent of the total value. Average annual exports were 3 167 tonnes, worth USD3 million. Exports to Mexico peaked in 2003 at 6 481 tonnes but then declined rapidly in line with the general trend and levelled out at 1 408 tonnes (USD1.5 million) per year from 2009 to 2012. The export unit value on the Mexican market followed an upward trend until 2008 before falling back considerably, possibly because of the economic after-effects of the financial crisis. The average unit value over the full period was USD0.9/kg, a relatively low figure compared with unit values on other global markets. After Mexico, the only other significant markets from 2000 to 2012 were China, Hong Kong SAR and Taiwan Province of China. Exports to China, Hong Kong SAR jumped from zero to 506 tonnes (USD4.8 million) in 2001, but steadily decreased thereafter to 45 tonnes (USD156 000) in 2012. These exports were worth considerably more than other frozen shark meat products on the world market, at USD4.4/kg, although the reason for this is not clear. In the case of Taiwan Province of China, volumes dropped from 1 962 tonnes (USD2.5 million) in 2000 to 199 tonnes (USD533 000) in 2001, and remained at low levels for the remainder of the period. Average annual volumes from 2009 to 2012 were 46 tonnes (USD43 000).

Imports

Belize is the major origin of Costa Rica's shark meat imports, accounting for 51 percent of the total volume from 2000 to 2012 (an average of 856 tonnes per year) and 44 percent of the value (USD438 000). Taiwan Province of China was the second-most important supplier, with 18 percent of the volume (306 tonnes) and 16 percent of the value (USD154 000). Panama has also recently become an important supplier of shark meat to Costa Rica, exporting minor volumes to the country up until 2011, when volumes increased to 675 tonnes (USD898 000), followed by 1 598 tonnes (USD2.1 million) in 2012. However, this figure is more than 36 times the Costa Rica-destined shark meat exports recorded by Panamanian customs authorities in the same year.

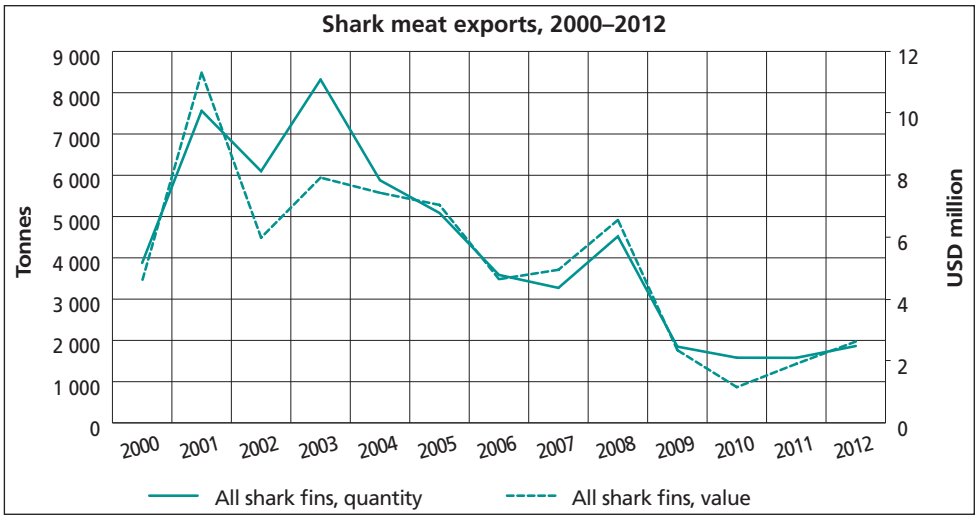
Domestic trade and markets

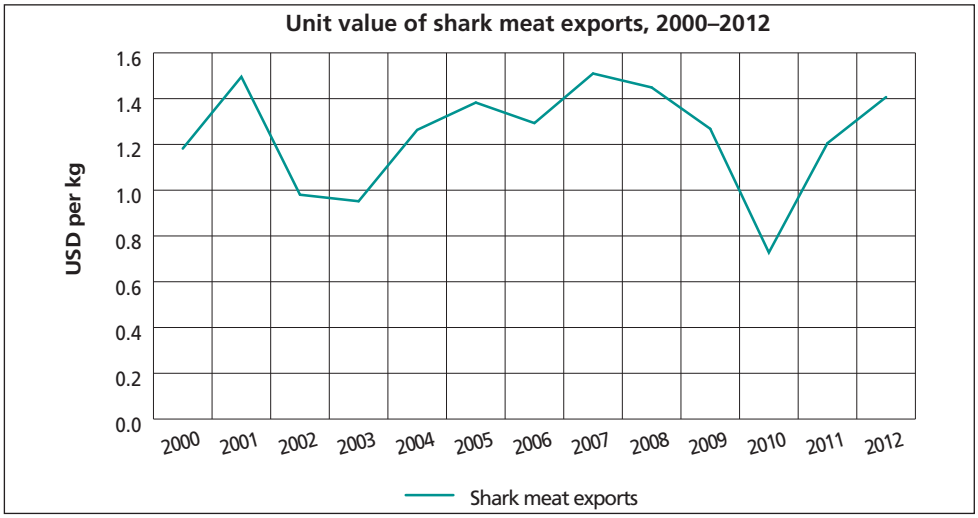
Costa Rica's shark meat market is similar to Panama's in that shark products are known to be consumed as both fillets and cerviche. However, salt-dried skate and ray meat is rarely observed. Most consumed shark meat is produced by the artisanal sector, which is unlikely to be able to supply export-grade shark meat because it uses ice for catch preservation. Exported shark meat is thus likely to derive exclusively from industrial longliners with freezer capacity (S. Siu, personal communication, January 2014).

As Panama, its neighbour to the south, Costa Rica's reported annual exports in recent years have exceeded its capture production figures for sharks and rays. This situation indicates either under-reporting of catches or export of landed sharks that are not considered Costa Rican capture production (e.g. by distant-water fleets). These factors severely hamper estimation of domestic consumption. Additional complications in estimating production and consumption quantities arise from Costa Rica's recent

changes in shark regulations. According to media reports, prior to implementation of Costa Rica's shark finning regulations in 2001, hundreds of foreign fishing vessels offloaded their catches at the Costa Rican port of Puntarenas. Although the number of these landings decreased thereafter, many foreign vessels continued to land there using private docks, and thereby avoided inspections and catch recording. Costa Rica closed these private docks to foreign vessels but subsequently re-opened them in 2004 and 2007, and then closed them again in December 2010.[60] It is not clear what effect these changes may have had on the reporting of shark landings or exports. Costa Rica amended its shark regulations in October 2012.[61] However, as these changes primarily concerned finning and the import of shark fins, changes to shark meat markets would be expected only if these regulations prompted shifts in finning practices that resulted in more shark carcasses being landed.

FIGURE 51
Costa Rica shark meat trade, 2000–2012





Source: INEC – National Institute of Statistics & Census (2013).

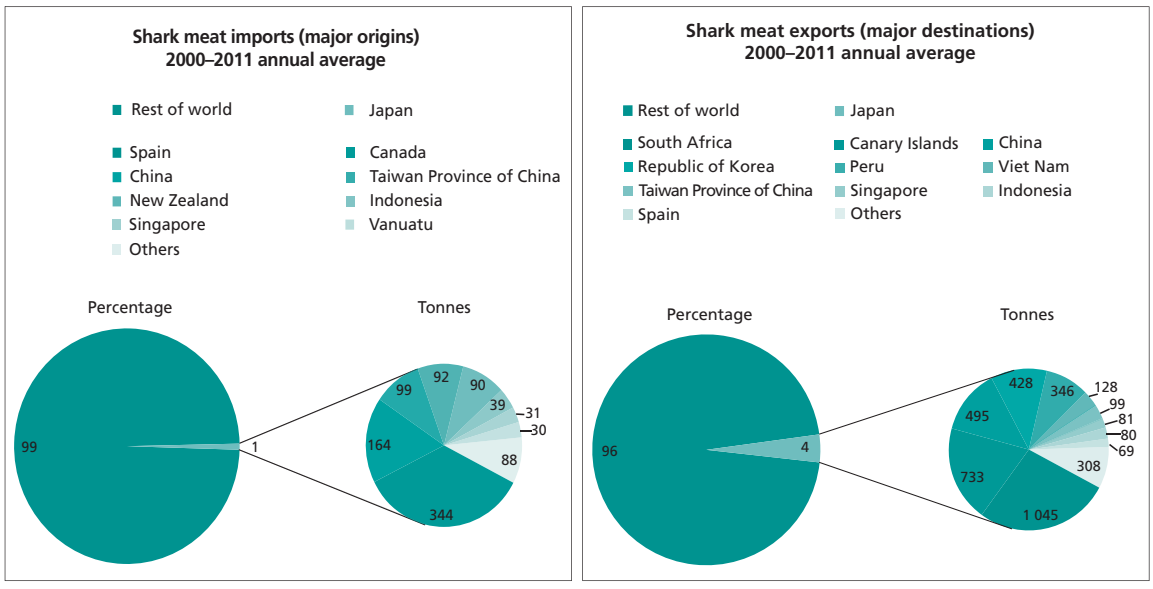
[60] www.ticotimes.net/2010/11/30/new-costa-rican-rule-cracks-down-on-illegal-shark-finning
[61] www.reuters.com/article/2012/10/11/uk-costarica-sharks-ban-idUSLNE89A00820121011

Japan

Snapshot

- Although Japan's shark capture volumes have declined by about 90 percent in the past 60 years, Japan is still an important producer and exporter of shark meat.
- Surveys suggest that shark meat is consumed domestically in a variety of different forms, but a lack of data means the true size of the market is unknown.
- Japan reports imports of relatively small quantities of very high-valued shark meat, of which at least a proportion is probably shark fins.
- It ranks as the world's eighteenth-largest shark producer and fifth-largest exporter in volume terms.
- From 2000 to 2011, it recorded average annual shark meat exports of 4 434 tonnes, worth USD7.4 million (Figure 53).
- From 2000 to 2011, it recorded average annual shark meat imports of 998 tonnes, worth USD16.2 million (Figure 53).
- Its reported shark meat imports have been declining since the early 2000s, with exports stable.

FIGURE 52
Japan shark meat trade profile



Source: Japan Ministry of Finance (2013).

Overview

Japan has traditionally been one of the world's main shark-fishing nations, as well as an important exporter and domestic consumer of shark meat. However, over the past 60 years or so, Japan has witnessed a sustained decline in shark capture production volumes to about 10 percent of the levels achieved in the 1950s, to an annual total of 10 238 tonnes in 2011, making Japan the eighteenth-largest producer of chondrichthyans in global terms in that year. Despite this trend, export volumes have not fallen, and have in fact increased slightly in recent years. One explanation for these trends, which is supported by the export data, could be lower catches but increased landings of whole sharks in ports in South Africa, Spain and Peru frequented by Japan's distant-water fleets (Gilman *et al.*, 2007). It is also possible that increased targeting of sharks in the Northwest Pacific since the mid–2000s (Clarke *et al.*, 2011), although

small in terms of Japan's global shark catches, has increased Japan's export production of domestically processed shark meat. The result is that from 2000 to 2011, Japan exported some 4 434 tonnes per year on average, a 5 percent share of global export volume, putting Japan in fifth place in terms of average export volume over this period. The average yearly value of USD7.4 million amounted to 3 percent of the global total. From 2007 onwards, all Japanese shark meat exports consisted of "frozen, non-fillet" product, although from 2000 to 2006, a substantial proportion (25 percent of volume and 40 percent of value) was recorded as "frozen, fillets".

Import volumes have been declining since the early 1990s, and from 2000 to 2011 dropped from 1 443 tonnes (USD17.7 million) to 447 tonnes (USD17.3 million), although it t the unit value of imports rose substantially over the same period. Average annual import volume from 2000 to 2011 was 998 tonnes, only 1 percent of the global total, but the high value of these imports meant an average annual value of USD16.2 million, or 7 percent of the total. Japanese import unit values of shark meat were significantly higher than those recorded elsewhere on the global market at USD17.6/kg from 2000 to 2012, and dramatically so for some origins such as China. Given that these unit values far exceed any unit value for shark meat of any species seen on any other market, it is highly probable that shark fins are included within this commodity category.

In 2012, Japan reported imports of rays and skates under the new dedicated HS commodity code introduced by the WCO.[62] The total import volume posted was 1 662 tonnes, worth USD6.4 million. All imports were in frozen form.

Exports

After a decade of rapid growth from 2000 onwards, South Africa is now the major market for Japanese shark meat exports in terms of volume. From 2000 to 2012, exports to South Africa increased from 124 tonnes (USD76 000) to 1 433 tonnes (USD638 000), a more than 13-fold increase. Volumes have been stable at about 1 400 tonnes since 2004, and an annual average volume of 1 088 tonnes amounts to 24 percent of the total. However, these exports consist of extremely low-valued shark meat, worth about USD0.65/kg on average. In terms of value, the Republic of Korea was the most important export destination in this period, averaging 771 tonnes per year, worth USD1.3 million. However, the average figures mask a steep decline from a peak of 1 084 tonnes (USD2.4 million) in 2006 to 110 tonnes (USD130 000) in 2012. Exports to China followed a similar trend, peaking at 1 048 tonnes (USD2.5 millions) in 2004 and falling to zero by 2011. Average annual figures over the full period were 464 tonnes, worth USD1 million. The Canary Islands (Spain)[63], in contrast, is a growth market, with the 2012 volume (1 199 tonnes at USD997 000) double that of 2000. Peru has also seen a large rise in imports of shark meat from Japan, posting figures of 739 tonnes, worth USD770 000. Meanwhile, Viet Nam has become a major new market for medium-valued shark meat since 2005, importing an average volume of 239 tonnes, worth USD982 000, from Japan per year from 2005 to 2012, after effectively zero Japan-origin imports previously.

Imports

Before looking at trends in Japan's imports of shark meat, it is important to recognize that the wide variation in unit values and the exceptionally high figures for some origin countries suggests that the trends considered relate to fin imports as well as those for shark meat, especially considering that Japan does not use a separate, specific code

[62] Rays and skates were not recorded as sharks before 2012, but were included within more aggregated categories.

[63] Japanese customs authorities identify the Canary Islands as a distinct territory in their trade databases.

for shark fin imports as it does for (dried) exports. In terms of volume, Spain was the major supplier in the period 2000–2012, with 36 percent of the total at 335 tonnes per year. These imports were worth an average of USD5.4 million, putting the unit value at USD16/kg, much higher than Spain's other shark meat exports but roughly equivalent to the average unit value of its shark fin exports. In the case of China, the 95 tonnes of imports per year were worth USD6.4 million, equating to an extremely high unit value of USD67/kg, strongly suggesting that these imports were in fact shark fins. For Indonesia and Singapore, the corresponding annual averages were 38 tonnes at USD1.6 million (USD42/kg) and 43 tonnes at USD868 000 (USD20/kg). Imports from Canada accounted for 16 percent of the total volume, at 152 tonnes per year, but only 3 percent of the total value, at USD416 000 (USD3/kg).

Japan imported rays and skates from four countries in 2012. The major origin was China, accounting for 80 percent of volume and 8 percent of value. In second place, by volume, was the United States of America (162 tonnes, or USD334 000), followed by Viet Nam (159 tonnes, or USD580 000) and New Zealand (17 tonnes, or USD67 000).

Domestic trade and markets

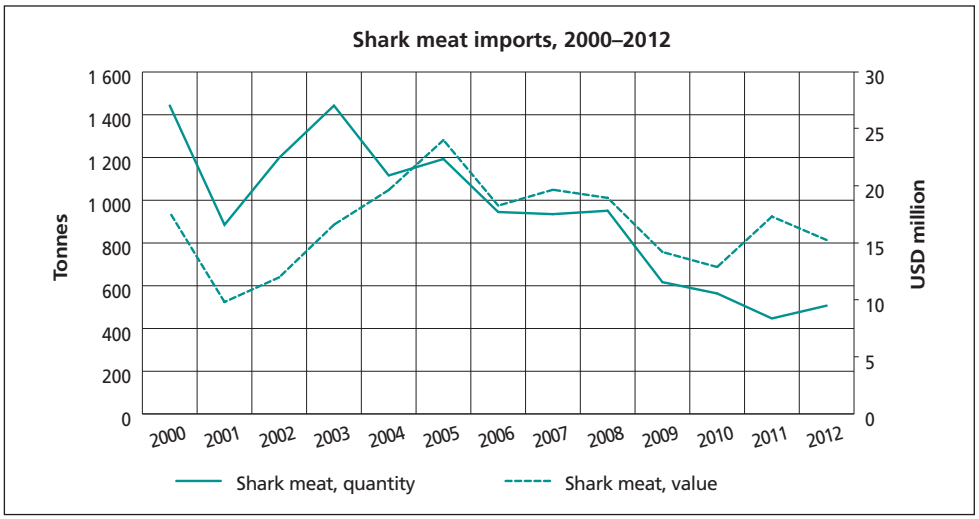
A 2004 survey of shark utilization in Japan reported a number of different products made from sharks in various regions of Japan. Use of shark meat for domestic consumption included dogfish fillets in northern Japan, blue and thresher shark meat marinated and dried as snacks along the central coast, and thresher and mako shark meat used as sashimi in Hiroshima Prefecture. Shark meat is also widely used in fish cake products such as surimi or hampen, with some sources suggesting that hampen made of 100 percent shark (blue or shortfin mako) is a premium product. There were also reports of companies processing 40 kg frozen mako fillets for export to Italy and Spain, where they are consumed as steaks or carpaccio; these operations were reportedly producing 240 tonnes of shark fillets per year. Other products made from sharks included boiled dogfish heads and egg yolks, flavouring made from blue shark meat (utilizing 100 tonnes of blue shark per year), and shark cartilage for the production of medical chondroitin (Nakamura, 2004).

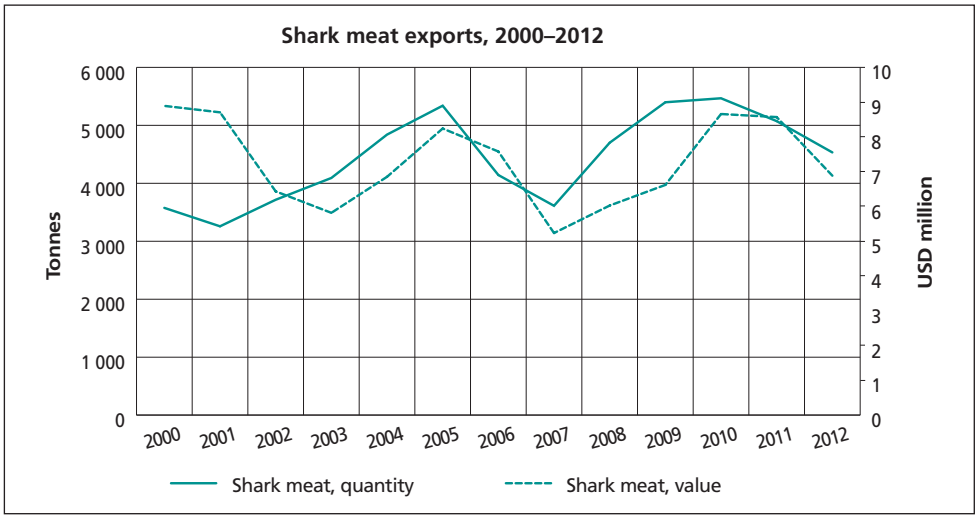
The best known regional markets for shark meat are Kesennuma (on the northeast coast of Honshu) and Kii-Katsuura (on the south-central coast of Honshu) (Gilman *et al*., 2007). Interviews in both ports conducted in 2006 suggested that unit values were USD1.70–2.10/kg for blue shark meat, USD250 per fish for threshers, and USD50 per fish for shortfin mako. Many of the onshore processing plants in the Kesennuma area were reportedly destroyed by the March 2011 tsunami, and the extent to which they have re-opened is unknown. Prior to the tsunami, Kesennuma was thought to handle 90 percent of Japan's domestically landed shark catches.[64]

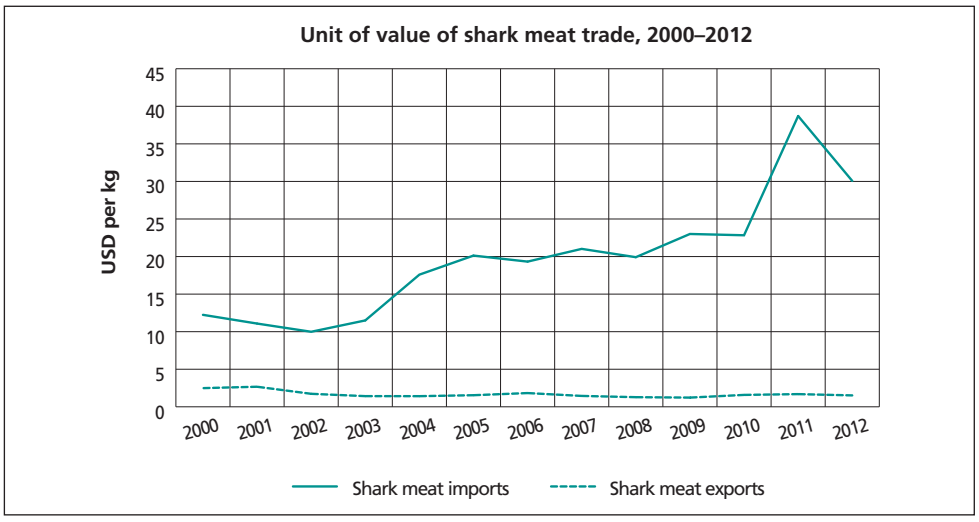
Recent unit values for shark meat (species not specified) calculated from nationwide government statistics indicate that the average unit value of shark meat was USD1.55/kg in 2011. In the same time frame, figures from the Kesennuma area, where shark meat is commonly consumed, indicated a unit value for chilled shark meat of USD4.90/kg (Clarke, Francis and Griggs, 2013). Despite recent targeting of sharks by the Kesennuma-based longline fleet (Clarke *et al*., 2011), and the lack of statistics on shark consumption *per se*, it is expected that shark consumption in Japan is decreasing as part of a wider national trend towards a preference for meat over seafood (Gadda and Gasparatos, 2010).

[64] www.japantimes.co.jp/life/2013/03/14/environment/deal-to-protect-sharks-worries-tsunami-hit-town/#.UuN2QLSmrIU

FIGURE 53
Japan shark meat trade, 2000–2012







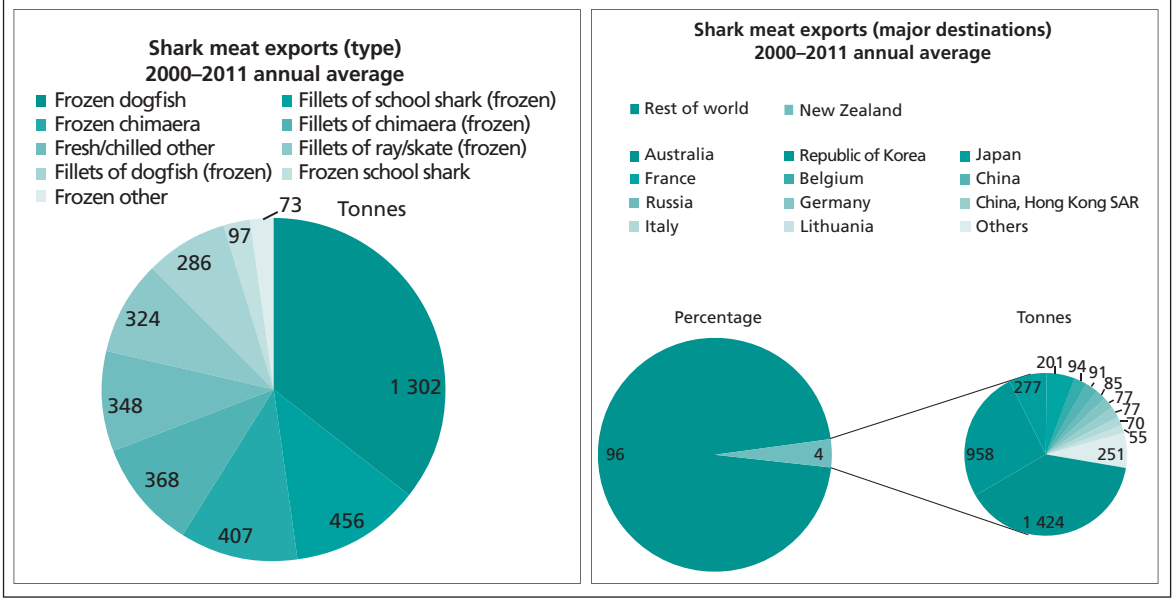
Source: Japan Ministry of Finance (2013)..

New Zealand

Snapshot

- New Zealand is a major producer of both oceanic and bottom-dwelling shark species, and an important exporter of high-valued shark meat.
- It ranks as the fourteenth-largest shark producer and the ninth-largest exporter.
- It exports frozen and fresh shark meat, in whole and fillet form, mainly to Australia and the Republic of Korea.
- New Zealand's domestic consumption of shark meat is estimated at 4 500–5 500 tonnes per year.
- From 2000 to 2011, it recorded average annual shark meat exports of 3 697 tonnes, worth USD13.4 million (Figure 55).
- The unit value of New Zealand's shark meat exports has been increasing steadily, for all product types since the early 2000s, while volumes have remained stable.

FIGURE 54
New Zealand shark meat trade profile



Source: China Customs (2013).

Overview

New Zealand is an important producer and exporter of both oceanic and bottom-dwelling shark species, with the latter making up the larger proportion. Its average annual export volume of shark meat from 2000 to 2011 was 3 697 tonnes, putting New Zealand in ninth place considering volume only. However, New Zealand's exports are high-value, and the yearly average value of USD13.4 million is the world's third largest. The relatively higher unit value of New Zealand's exports is the result of a higher proportion of more expensive species, such as spotted and spiny dogfish, ghost shark, elephant fish and tope shark (tope), as well as the sizeable share of exports taken by value-added fillets. Looking at full 2000–2012 figures, the annual volume exported was stable at an average of 3 650 tonnes (USD14.6 million) with topeshark meat taking a 15 percent share (28 percent of value), chimaeras (ghost sharks and elephant fish) a 22 percent share (19 percent of value), skates and rays a 10 percent share (6 percent of value), dogfish species (mainly spotted dogfish and spiny dogfish) a 42 percent share (29 percent of value), and other sharks the remaining 12 percent (17 percent of value).

"Frozen, non-fillet" shark meat made up 51 percent of the total volume (32 percent of value), "fresh or chilled, non-fillet" 10 percent (15 percent of value), "frozen, fillets" 38 percent (52 percent of value) and "fresh or chilled, fillets" 1 percent (1 percent of value). Unit values for all product forms and species rose considerably over the 13 year period, with the overall unit value in 2012 of USD6.4/kg representing a 180 percent increase compared with 2000. As a result, despite stable export volumes, the value of shark meat exports rose by 183 percent over the same period to USD23 million in 2012. At the same time, New Zealand's capture production from 2000 to 2011 remained stable at an average of 17 749 tonnes per year. The majority of New Zealand's most important shark fisheries are subject to a quota management system, and capture volumes for all major species remained more or less constant over the same period. New Zealand's chondrichthyan capture production data are also some of the most detailed in the world, allowing the identification of the most important species targeted by chondrichthyan fisheries: spiny dogfish, topeshark, New Zealand rough and smooth skate, spotted estuary smooth-hound, ghost sharks and ratfishes.

Before 2012, New Zealand reported shark meat exports only, although estimation using the trade statistics of major importers (Canada, China, China, Hong Kong SAR, Indonesia, Malaysia, Singapore and Taiwan Province of China) [65] suggests than New Zealand also exported shark fins at an average of about 108 tonnes (USD2.2 million) per year from 2000 to 2011. It is unclear whether New Zealand authorities recorded trade in these shark fins under shark meat codes or within more aggregated categories. In 2012, with the introduction of the new HS code for shark fins, New Zealand recorded 60 tonnes (USD1.4 million) of shark fin exports to China, Hong Kong SAR and Singapore.

Exports

Australia is the most important market for New Zealand's shark meat exports, importing a more or less constant volume of 1 445 tonnes per year from 2000 to 2012, equating to 40 percent of the total volume exported. The average annual value of these exports to Australia was USD9.3 million, or 64 percent of the total. The relatively higher unit value of these exports is mainly due to a high proportion of more expensive "frozen, fillets" (67 percent of the total volume) and "fresh or chilled, non-fillet" meat (25 percent). In terms of species proportions by volume, Australia-destined exports consisted of 35 percent topeshark , 18 percent chimaeras, 21 percent dogfish species, and 25 percent other sharks. The declared value of all shark species and product forms to the Australian market rose steadily from 2000 to 2012, and the overall unit value of USD9.3/kg in 2012 is 123 percent higher than in 2000. Exports to the Republic of Korea made up 26 percent of the total volume from 2000 to 2012, at an annual average of 949 tonnes (USD774 000), with the quantity generally remaining stable. In contrast to Australia, the Republic of Korea imports primarily "frozen, non-fillet" product (89 percent of the total volume) together with some "frozen, fillets" (11 percent). Dogfish species accounted for an 86 percent share of the total volume, with rays and skates making up the remainder, although the proportions shifted somewhat more towards the latter towards the end of the period. These exports are on average considerably lower-valued than those directed to the Australian market, but have followed an even steeper upward trend, increasing almost fivefold in unit value from 2000 to 2012. Japan accounted for a 7 percent share of export volume at an average 270 tonnes per year (USD534 000), exhibiting a strong downward trend in volume over the period to 182 tonnes (USD570 000) in 2012. France and the Russian Federation accounted for 5 percent (187 tonnes per year) and 3 percent (111 tonnes), respectively, posting corresponding values of USD439 000 and USD317 000, respectively. Singapore

[65] See Appendix 1.

and China, Hong Kong SAR are notable for particularly high unit values of shark meat imported from New Zealand, with average annual figures of 74 tonnes (USD940 000) and 28 tonnes (USD560 000), respectively. These are recorded under species-specific non-fillet categories, and probably include, or wholly consist of, fin exports.

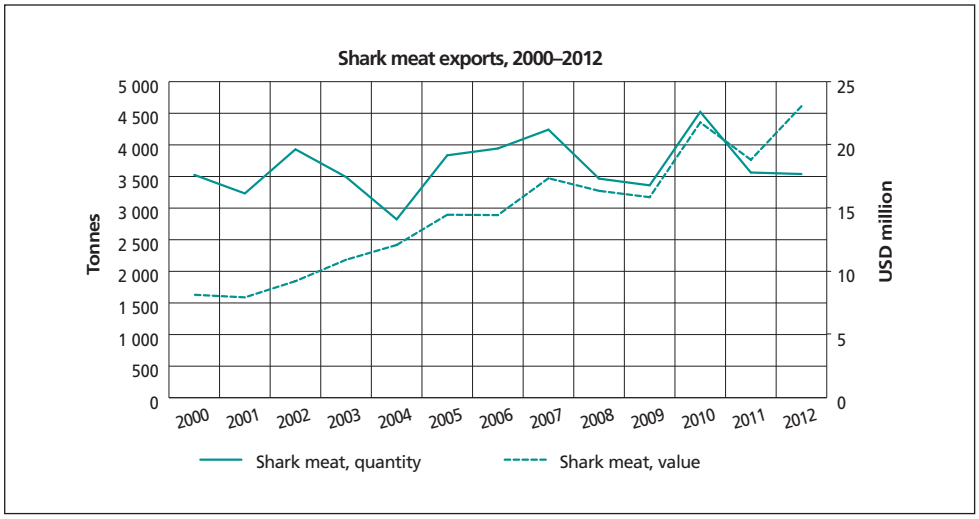
Domestic trade and markets

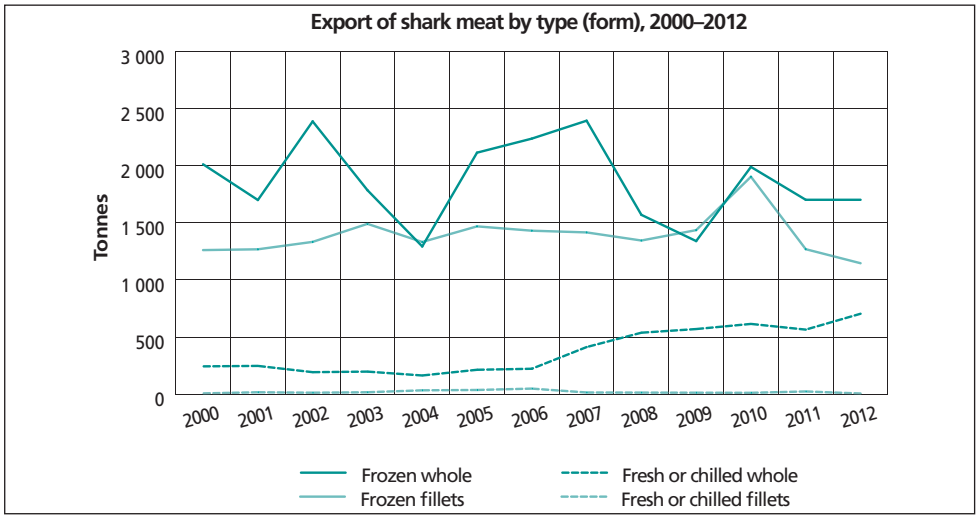
New Zealand's domestic consumption of elasmobranch meat is estimated at 4 500–5 500 tonnes per year, of which 80–85 percent consists of sharks. This domestic consumption estimate is based on a comparison of landed and exported weights for elephant fish, ghost shark, topeshark , spotted estuary smooth-hound, and skates and rays, as these are the main species for which domestic meat markets are believed to exist. One important source of uncertainty relates to domestic consumption of spiny dogfish. Reporting requirements under New Zealand's quota management system for spiny dogfish require the recording of total mortality (i.e. discards plus landings) rather than landings *per se*. Therefore, while the quantity exported is known, the actual quantity landed and available for export is difficult to estimate. However, spiny dogfish are not included in the domestic consumption estimate, and the contribution of this species is expected to be small. Other species not included in the estimate, owing to their very small expected quantities in the market, are mako and porbeagle sharks. As of January 2014, shark meat in the New Zealand market commanded wholesale unit values of USD1.20–5.00/kg (A. MacFarlane, personal communication, January 2014).

The Government of New Zealand recently released a new version of its NPOA-Sharks, which states an objective of eliminating shark finning for all species except blue shark by 1 October 2015, and eliminating finning for blue shark by 1 October 2016. Implementation details have yet to be announced (Ministry for Primary Industries, 2014). A New Zealand ban on finning could result in either a considerably larger number of blue and porbeagle sharks, and to a lesser extent mako sharks, landed and available for domestic consumption, or a considerably larger number of these sharks discarded whole, and potentially alive, at sea. Fishers would be free, within the limits of the quota management system, to land the whole carcass, but they might struggle to find buyers for the meat. A recent study concluded that there is no current market for this meat in New Zealand, and overseas sales would need to generate sufficient revenue to cover transport costs and tariffs (Clarke, Francis and Griggs, 2013).

Future increases in landings of whole sharks may assist in greater utilization of shark livers. One New Zealand-based fish oil processor produces squalene, diacylglycerol ether and omega-3 fatty acids from shark liver oil, but claims local supplies are insufficient to meet demand. Therefore, the company reports that it must import raw material from Senegal, India and Indonesia. The NPOA reports that 1 percent of New Zealand's shark capture production is used for liver and/or liver-oil products (Carson, 2013).

FIGURE 55
New Zealand shark meat trade, 2000–2012





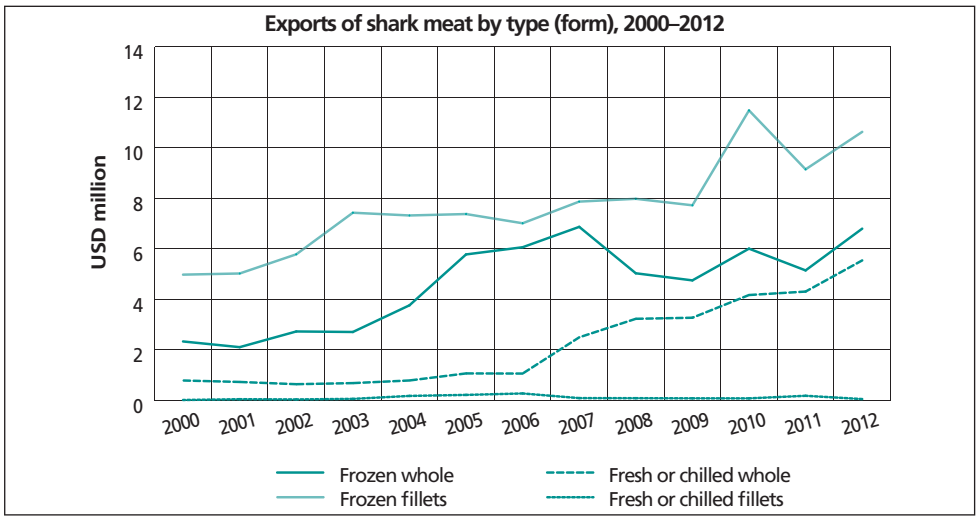
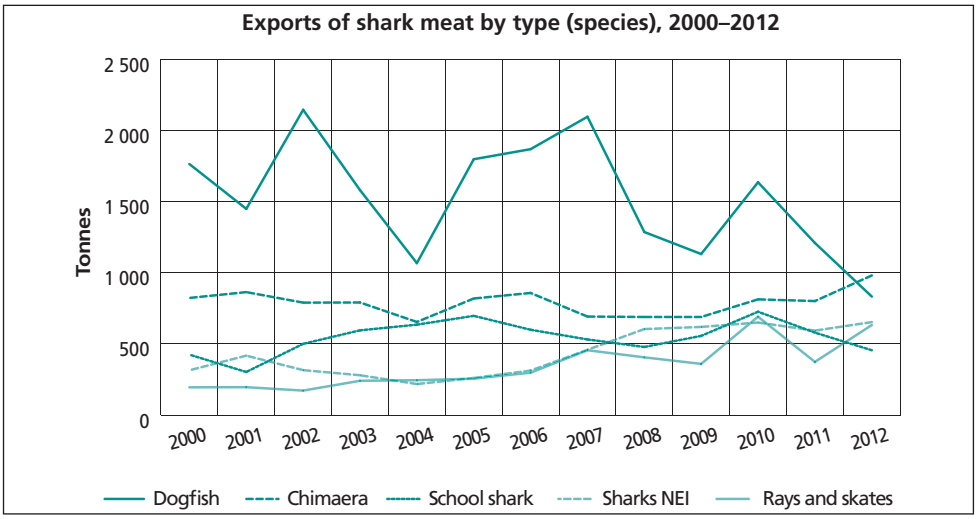
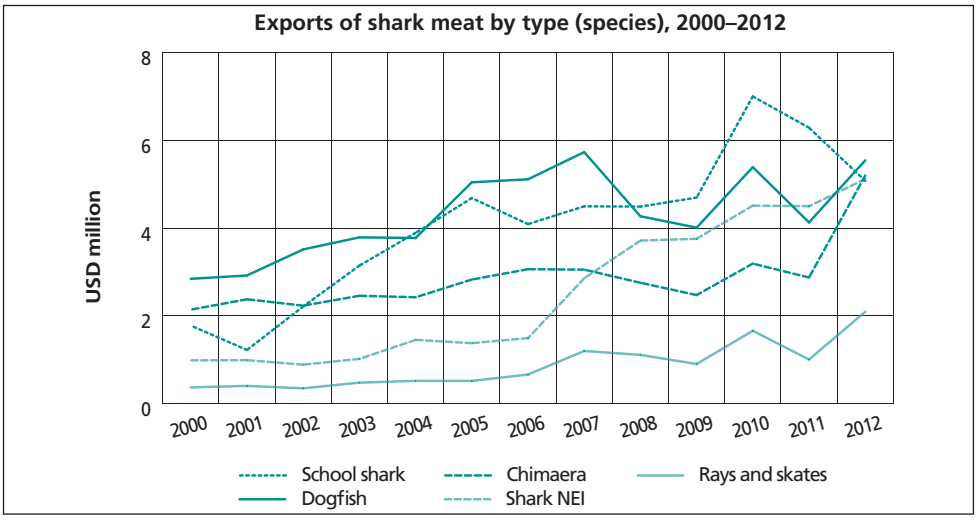
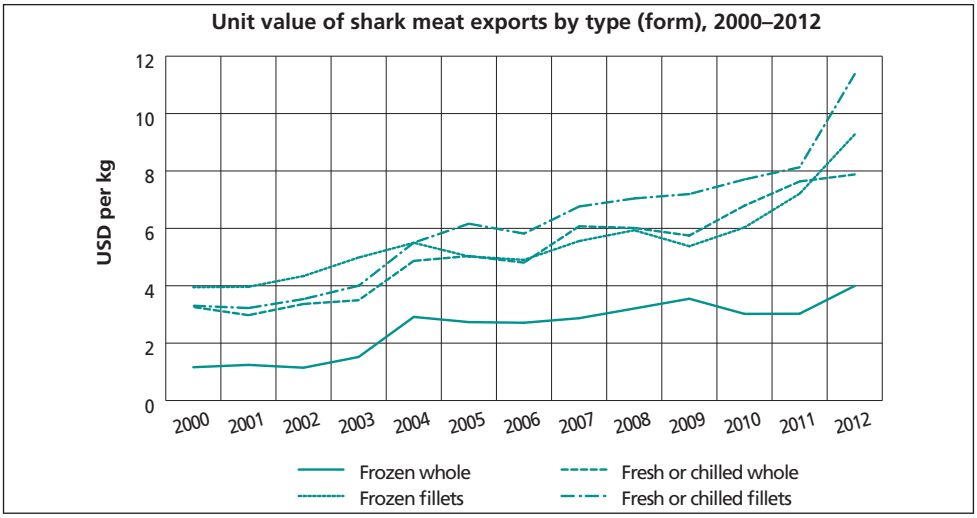


FIGURE 55 (continued)







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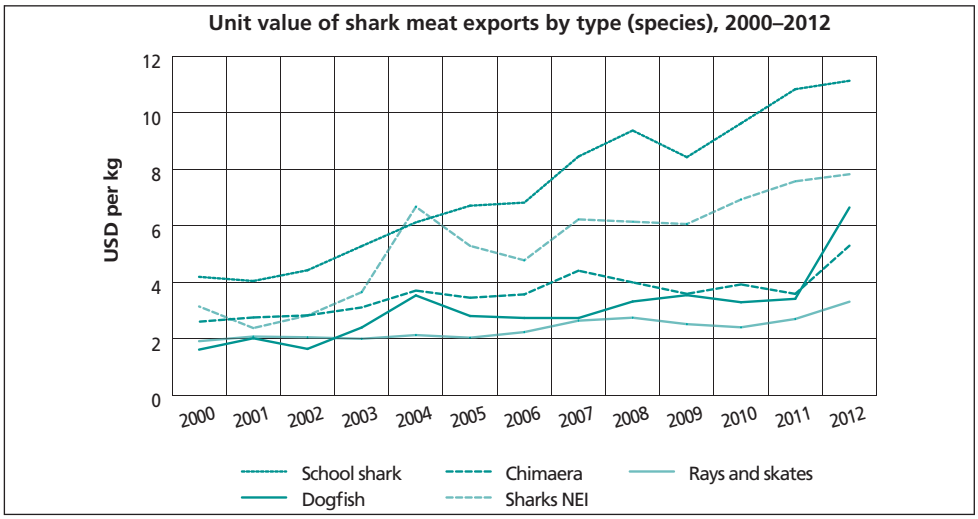


Source: Statistics New Zealand (2013).

United States of America

Snapshot

- The United States of America is a major producer and exporter of shark meat.
- It ranks as the world's seventh-largest shark producer and eighth-largest exporter in volume terms.
- The major proportion of its exports consists of dogfish species, mainly destined for consumer markets in the European Union (Member Organization) such as France and Germany.
- From 2000 to 2011, the United States of America recorded average annual shark meat exports of 3 861 tonnes, worth USD11.8 million (Figure 57).
- Its dogfish export volumes have mirrored dogfish captures, which dipped substantially in the mid-2000s as a result of overfishing but have now recovered to about 2000 levels.

Overview

The United States of America is a major chondrichthyan fishing nation, ranking seventh in the world in terms of average capture production from 2000 to 2011 (32 483 tonnes per year). About 75 percent of this capture production consisted of skates and rays, 16 percent were dogfish species and the remainder were coastal and oceanic sharks. Captures of the latter group identified at the species level fell steadily throughout the period. With regard to Atlantic spiny dogfish, these stocks were declared overfished in 1998, and the fishery operated under a quota-based rebuilding plan until 2008 when the stock was declared rebuilt (Kulka, Rivard and Scott, 2012). Landing quotas increased by an order of magnitude (1.8 million to 18 million kilograms) from 2008 to 2013, but, owing to a weakening market, catches have been below these limits.[66] This regulatory scheme helps to explain why dogfish capture production dropped steeply by 78 percent between 2000 and 2006 before recovering to about 2000 levels by 2011.

According to 2000–2011 figures, the United States of America was also the world's eighth-largest exporter by volume with 3 861 tonnes per year on average, 4 percent

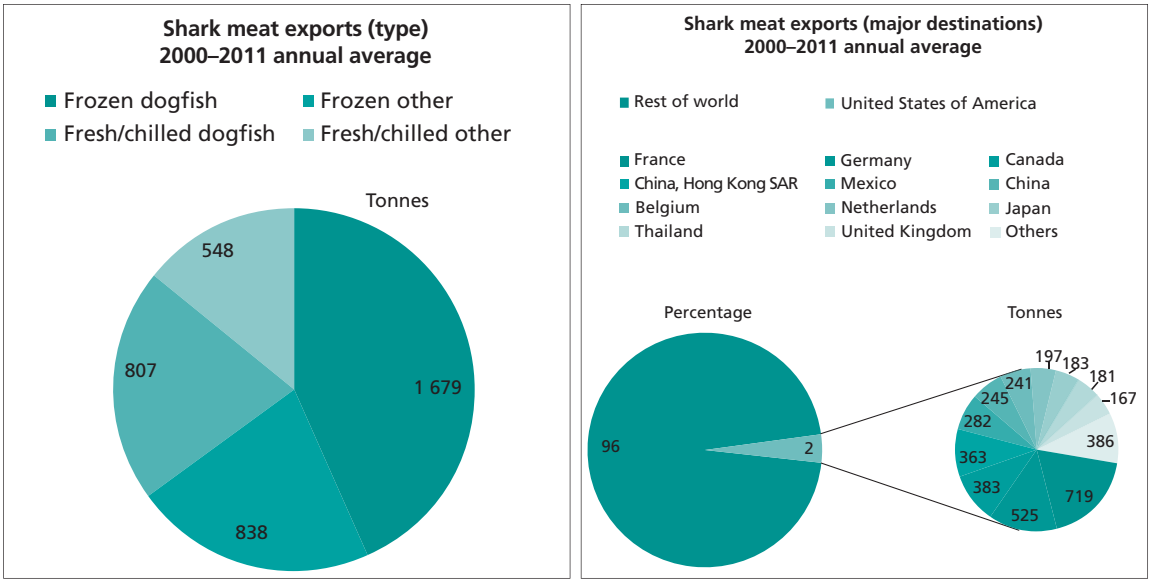
[66] www.nero.noaa.gov/ro/fso/reports/reports_frame.htm

of the global total. The relatively high value of these exports puts the country in sixth place in value terms, exporting USD11.8 million per year, or 4 percent of the global total. From 2000 to 2012, dogfish species accounted for 64 percent of the total volume and 72 percent of the value, while unidentified sharks made up the remainder. About two-thirds of the quantity (65 percent) and value (62 percent) consisted of "frozen, non-fillet" products, and "fresh or chilled, non-fillet" products accounted for the remaining one-third.

Under the new 2012 coding system, when the WCO stipulated that rays and skates be recorded under a distinct "rays and skates" code rather than in other aggregated categories,[67] the United States of America posted a total volume exported in 2012 of 5 240 tonnes, worth USD18 million, with 77 percent of the volume (66 percent of value) consisting of "frozen, non-fillet" rays or skates and the remainder of "fresh or chilled, non-fillet" ray or skate products. These exports will be included in future statistics on exports of sharks, skates and rays, with the result that the United States of America will move up in global rankings to be the world's third-largest chondrichthyan exporter by volume and the second-largest by value, if 2011 figures are taken as a baseline.

Its imports of shark meat from 2000 to 2011 averaged 1 290 tonnes, worth USD3.2 million. These imports were roughly a fifty-fifty mix of dogfish and other species, primarily in "fresh or chilled, non-fillet" form. However, import volumes have dropped substantially since 2000, and in 2012 the United States of America posted shark meat imports of 156 tonnes, worth USD509 000.

FIGURE 56
United States of America shark meat trade profile



Source: U.S. Department of Commerce, Bureau of Census (2013).

Exports

The European Union (Member Organization) is the most important single market for shark meat exports from the United States of America, with France and Germany the top two destinations. On average, from 2000 to 2012, France imported 734 tonnes per year from the United States of America at USD2.6 million. These exports were almost

[67] Rays and skates were not recorded as sharks before 2012, but were included within more aggregated categories.

entirely frozen and "fresh or chilled" dogfish, on average 42 percent "fresh and chilled" and 58 percent frozen. Export unit values to the French market rose by 44 percent from 2000 to 2012. In the case of Germany, non-fillet meat from dogfish species made up 95 percent of the average 511 tonnes per year from the United States of America, with other shark species, also in non-fillet form, accounting for the remainder. Of this, an average of 89 percent was frozen while the rest was "fresh or chilled". The relative proportions of the average USD1.4 million per year total value are similar. However, Germany is a declining market for shark products from the United States of America, and both volumes and values were down considerably in 2012 at 335 tonnes, worth USD993 000. The Netherlands is another important market for higher-valued dogfish exports from the United States of America, posting average annual figures of 204 tonnes at USD929 000. While European markets import mainly dogfish species from the United States of America, Canada imports primarily other shark species. From 2000 to 2012, 98 percent of the annual average volume of Canada's import (365 tonnes) and the same proportion of the annual value of USD889 000 was made up of other unknown shark species. Exports destined for the China, Hong Kong SAR, despite fluctuating significantly from year to year, are generally a mix of both categories, with the average yearly volume of 360 tonnes made up of 64 percent other species and 36 percent dogfish species, or 55 and 45 percent, respectively, of USD1.1 million in value terms. Given that China, Hong Kong SAR recorded no imports of frozen shark meat from 2007 to 2011, it seems likely that these exports were in fact fins. Other major destinations for dogfish species include Belgium (246 tonnes, at USD698 000), the United Kingdom of Great Britain and Northern Ireland (180 tonnes, at USD644 000) and Thailand (196 tonnes, at USD497 000), while Mexico imports relatively large quantities of other species (287 tonnes, at USD471 000).

In 2012, the most important export destination for exports of rays and skates from the United States of America was the Republic of Korea. The United States of America exported 1 786 tonnes, worth USD6.3 million, to the Republic of Korea, accounting for 34 percent of the total volume and 35 percent of the total value. All these exports were in "frozen, non-fillet" form. The second-most important destination was France, with 32 percent of the volume and 33 percent of the value. By volume, France-destined exports were made up of 68 percent "frozen, non-fillet" meat (55 percent by value), with "fresh or chilled, non-fillet" product making up the remainder. The United Kingdom of Great Britain and Northern Ireland ranked third, accounting for an 8 percent share of the volume and a 12 percent share of the value. About 85 percent of the quantity (89 percent of the value) of rays and skates exported to the United Kingdom of Great Britain and Northern Ireland was "fresh or chilled, non-fillet". Ranking by volume, the United Kingdom of Great Britain and Northern Ireland was followed by China (400 tonnes, or USD469 000), Belgium (240 tonnes, or USD631 000) Canada (161 tonnes, or USD564 000) and the Netherlands (159 tonnes, or USD889 000).

Domestic trade and markets

Although chondrichthyan imports by the United States of America are relatively low, the gap between its capture production and export quantities is high (i.e. at least several thousand tonnes), suggesting that a significant amount of chondrichthyan meat is domestically consumed. In the case of spiny dogfish, which comprises the majority of the country's shark capture production, industry sources have argued that with a recent decline in the European market, domestic demand is insufficient to support the fishery. This has sparked various efforts to persuade consumers in the United States of America to try dogfish meat.[68] In addition, the United States Departure of Agriculture has been asked by industry and some legislators to include dogfish in its large-scale

[68] http://nhpr.org/post/learning-love-spiny-dogfish

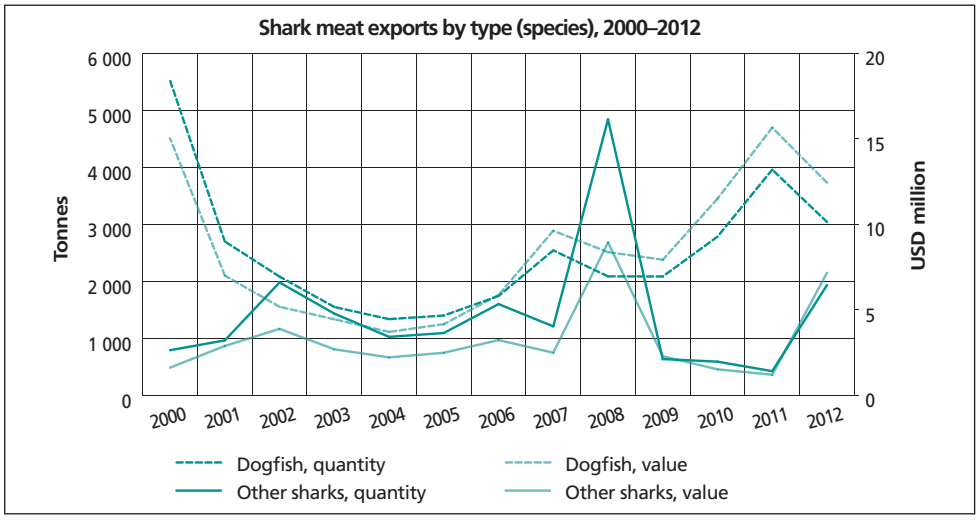
commodities purchase programme, thereby stimulating the domestic market. It is reportedly considering whether to do so. Industry sources in the United States of America have recently cited unit values as low as USD0.22/kg,[69] which suggests that the export of spiny dogfish fins[70] is currently contributing significantly to the economic viability of the fishery.

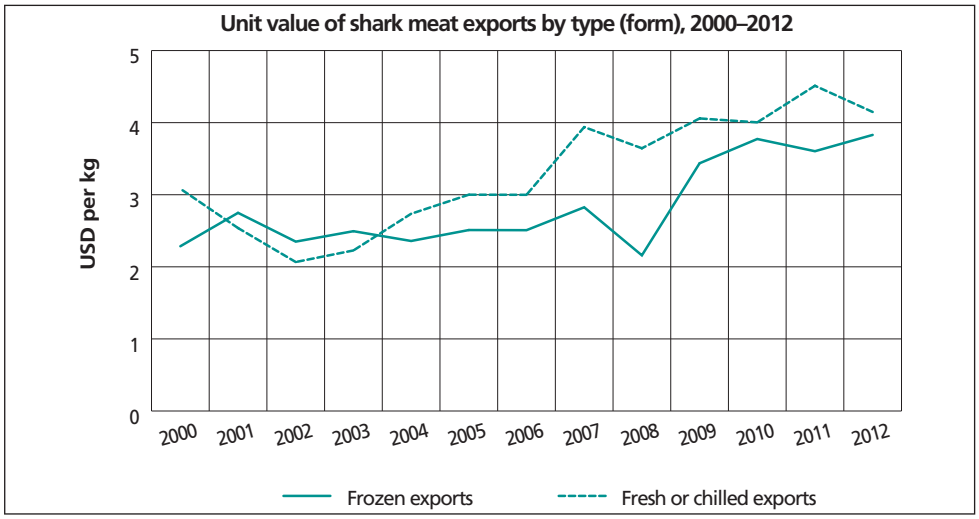
FIGURE 57
United States of America shark meat trade, 2000–2012

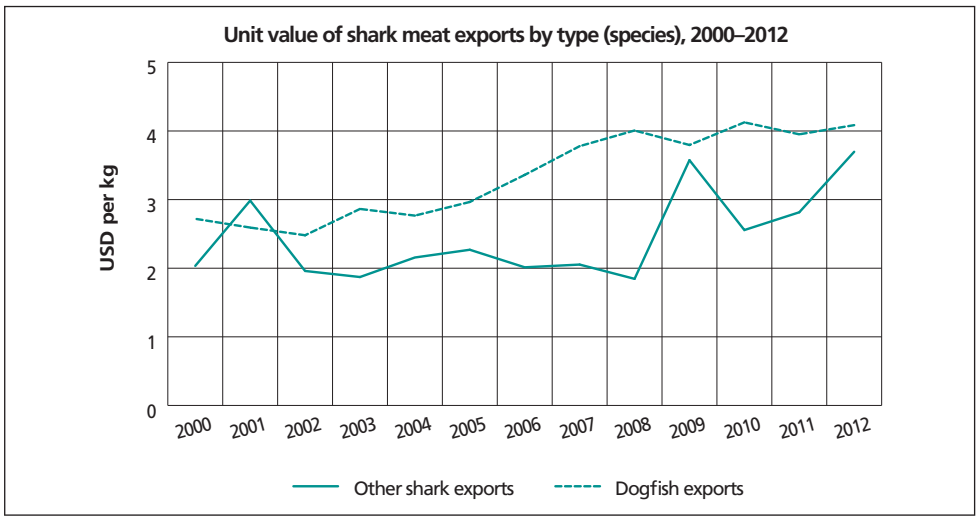
[69] http://fish-news.com/cfn/editorial-efforts-to-build-us-dogfish-market-could-pay-off/

[70] See www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-west-atlantic/us-atlantic-spiny-dogfish/assessment-downloads-1/20120829_PCR_DOG215.pdf

FIGURE 57 (continued)







Source: U.S. Department of Commerce, Bureau of Census (2013).

While demand for other chondrichthyan species is difficult to assess, unit values are considerably higher than those quoted for spiny dogfish. The National Oceanic and Atmospheric Administration quotes 2013 ex-vessel unit values for a range of sharks caught in the Atlantic commercial shark fisheries at USD0.60–3.96/kg.[71] At the retail counter, mako or thresher species are reportedly selling for USD22–44/kg, and skate wings for USD22–33/kg, on the west coast of the United States of America (J. Bigman, personal communication, December 2013). On the east coast of the country, catches of skate and ray currently exceed those of sharks (including spiny dogfish).[72] Although much of this catch is used for lobster bait, and most skate wings are exported, skate wings can sell in domestic markets for as much as USD22/kg, and cownose ray meat can fetch USD17.6/kg (S. Fordham, personal communication, November 2013). Smooth-hound sharks (smooth dogfish) are the subject of targeted fisheries from New York to North Carolina, but data on their utilization are scant.

Consumers in the United States of America have received mixed messages about the desirability of chondrichthyan seafood. An increasing number of shark conservation campaigns are calling for consumers to boycott shark meat along with shark fin products. At the same time, the Atlantic spiny dogfish fishery has been certified to the MSC's sustainable seafood standard, and as noted above there are ongoing efforts to expand the domestic market for this species. In addition, consumers in the Chesapeake Bay area are encouraged to eat cownose rays to combat what has been portrayed as a population explosion of this species. There appear to be no objective ways of judging the effects of these campaigns and consumer labels on domestic consumption rates in the United States of America.

Canada

Snapshot

- Canada's previous importance as a producer and exporter of shark meat has been falling steadily since the early 2000s and is now much reduced.
- Its domestic market for shark meat is small.
- Canada ranks as the world's twenty-second-largest shark producer, and the eleventh-largest exporter in volume terms.
- Canada does not record shark meat exports at the species level, but the capture statistics and range of destination countries suggest the majority of exports are dogfish species.
- From 2000 to 2011, it recorded average annual shark meat exports of 2 918 tonnes, worth USD8.4 million (Figure 59.
- A decline in spiny dogfish captures was the major factor behind the steep downward trend in export volumes in the 2000s.

Overview

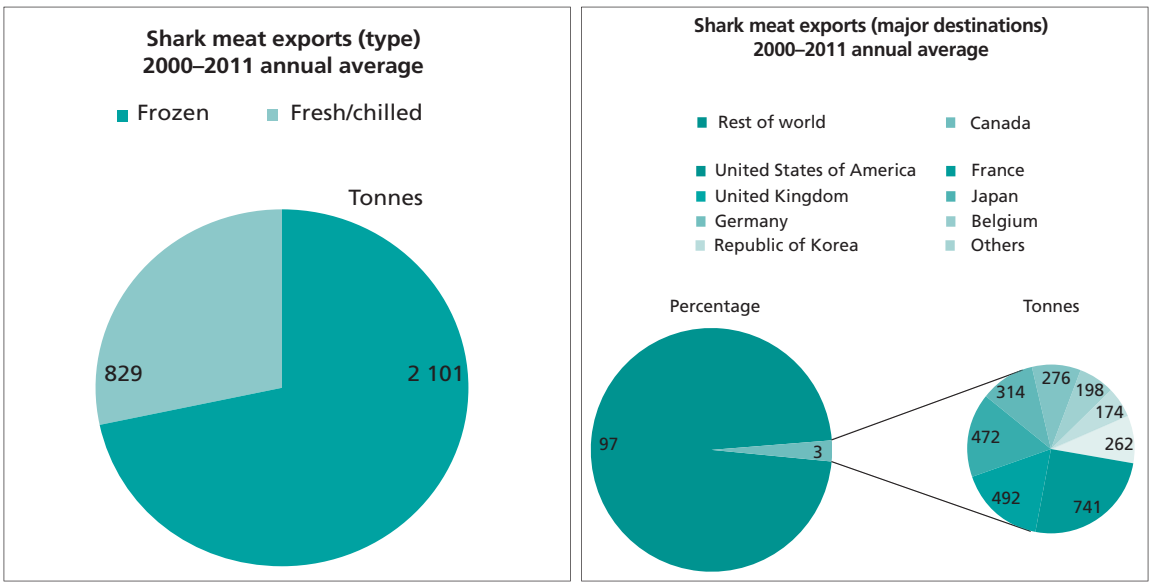
Canada's shark capture production volumes have been falling steadily since the early 2000s, and as a result its importance as a shark meat (and fin) exporter is now much reduced. However, from 2000 to 2011, Canada was the world's eleventh-largest exporter of shark meat in quantity terms, with an annual export volume of 2 918 (3 percent of the global total), and the world's fifth largest exporter by value with an average of USD8.4 million annually (4 percent). From 2000 to 2012, the averages dropped to 2 730 tonnes (USD8.3 million), with 336 tonnes (USD1.5 million)

[71] www.federalregister.gov/articles/2013/08/23/2013–20519/atlantic-highly-migratory-species–2014-atlantic-shark-commercial-fishing-season#t-1

[72] FAO FishStatJ capture production data for 2011.

exported in 2012, 89 percent less than in 2000. Average annual capture production of sharks, skates and rays from 2000 to 2011 was 9 732 tonnes, also with a strong downward trend that saw volumes decrease by 75 percent from 2000 to 2011. An important component of this decline was a major fall in spiny dogfish capture production, which accounted for 59 percent of the total quantity over this period and fell by 86 percent from 7 524 tonnes in 2000 to 1 086 tonnes in 2011. As a result of the decline in the spiny dogfish fisheries, the species composition of Canadian capture production shifted and in 2011 it was rays, stingrays and mantas that made up the majority of the catch (64 percent of 3 235 tonnes). Canada's trade statistics for shark meat are not differentiated by species, and all exports are recorded under the aggregated "dogfish and other sharks" category. Given that most of the most important destinations are in Europe, it is likely that it is primarily spiny dogfish being exported. The statistics distinguish between frozen and "fresh or chilled" shark meat: 72 percent of the export volume was "frozen, non-fillet" shark and 28 percent was "fresh or chilled, non-fillet" product, whereas in value the percentages were 89 and 11 percent, respectively.

FIGURE 58
Canada shark meat trade profile



Source: Statistics Canada (2013).

Exports

In terms of average export quantity from 2000 to 2012, the United States of America was Canada's most important single country market. Of the average annual export volume of 688 tonnes, 94 percent was "fresh or chilled, non-fillet" shark. At USD1.2/kg, this product was quite low-valued relative to other Canadian shark meat exports, with a total average value of USD833 000 per year. However, export volumes decreased to almost zero in this period, and the 2012 figure of 56 tonnes represents a 96 percent decrease compared with 2000. In terms of value, the top export markets were primarily European states, including Germany, the United Kingdom of Great Britain and Northern Ireland, and France. Canada exported an average of 259 tonnes per year to Germany at USD1.5 million, almost entirely "frozen, non-fillet" shark. Export volumes to Germany peaked in 2004 at 552 tonnes (USD3.3 million), but have declined substantially since, to 2 and 60 tonnes in 2011 and 2012, respectively. Exports to France and the United Kingdom of Great Britain and Northern Ireland averaged 458 tonnes (USD1.3 million) and 441 tonnes (USD1.5 million), respectively. Both

followed more or less the same pattern, peaking in 2003 and 2004 before dropping to very low levels by 2012. Japan was another relatively important export destination for "frozen, non-fillet" shark meat, averaging 291 tonnes, worth USD979 000, per year over the full period. However, following the general trend, exports had declined to virtually zero by 2008.

Canadian skate and ray exports, first recorded under the WCO's newly-introduced HS code in 2012, totalled 446 tonnes, worth USD1.5 million, for that year. Almost all of these exports were in frozen form, and the vast majority were destined for the Republic of Korea.

Domestic trade and markets

Similarly to that of the United States of America, Canada's capture production was previously dominated by spiny dogfish but in recent years has been composed primarily of skates and rays. Canada's historical porbeagle fishery has also been severely reduced as a result of management measures.[73] Historical information suggests that some of the shark meat trade between Canada and the United States of America may be for the purpose of processing spiny dogfish, porbeagle, mako or blue shark in the United States of America. It is then either consumed in the United States of America, shipped back to Canada for domestic consumption or, in the case of the high-value porbeagle, exported to Europe. Previously, at least one company was producing dried salted blue shark meat for export to the West Indies and Africa (Rose, 1998).

Shark specialists consulted in Canada considered that the trade in shark meat is declining while the trade in ray and skate wings is stable, with neither product having a strong domestic market. One specialist considered that the European market for Canada's exported sharks had weakened because of a lack of MSC sustainable seafood certification (S. Campana, personal communication, December 2013). Canada's British Columbia spiny dogfish fishery attained MSC certification in September 2011 but self-suspended this certification in October 2013. There are thus currently no Canadian shark fisheries certified to the MSC standard.

[73] www.thestar.com/news/canada/2011/11/26/canadas_shark_hunters_get_to_keep_their_jobs.html#

FIGURE 59
Canada shark meat trade, 2000–2012

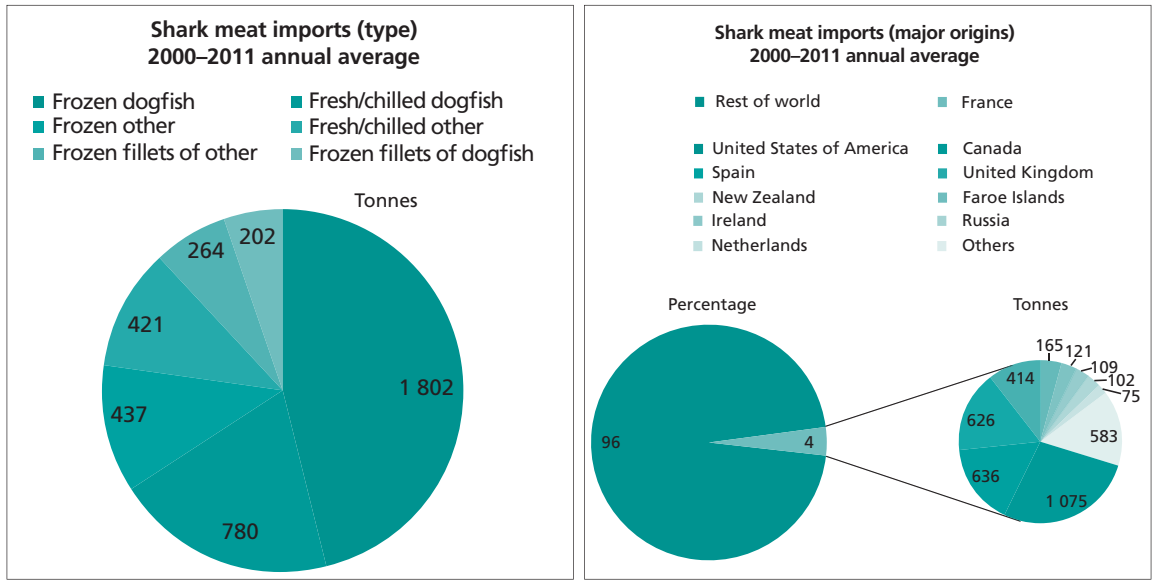
Source: Statistics Canada (2013).

France

Snapshot

- France is a major consumer market for shark meat supplied by imports in addition to domestic capture volumes.
- It ranks as the world's twelfth-largest shark producer and the eighth-largest importer in volume terms.
- Its imports consist mainly of dogfish species, of which a major proportion has historically come from the fisheries of the United States of America and Canada.
- France also exports relatively low volumes of high value shark meat, a mix of dogfish and other species, mainly to Italy.
- From 2000 to 2011, France recorded average annual shark meat imports of 3 996 tonnes, worth USD12.5 million (Figure 61).
- From 2000 to 2011, it recorded average annual shark meat exports of 1 344 tonnes, worth USD7.3 million.
- Its trade in shark meat has remained relatively stable for more than a decade, but unit values have been increasing steadily.

FIGURE 60
France shark meat trade profile



Source: Direction Nationale des Statistiques du Commerce Extérieur – DNSCE (2013).

Overview

Based on average annual capture production from 2000 to 2011, France was the world's twelfth-largest shark producer, with 20 891 tonnes per year. About 51 percent of these captures consisted of dogfish species (including smooth-hounds and catsharks) while rays constituted about 40 percent of the total. France's captures of sharks, skates and rays have decreased steadily since 2000, and the 2011 figure of 16 363 tonnes is the lowest since records began.

France is the world's eighth-largest importer of shark meat by volume, and the world's seventh-largest by value, ranked according to data from 2000 to 2011. Annual average figures for the same period were 3 996 tonnes, representing 4 percent of the world total, worth USD12.5 million (5 percent), with yearly imports falling

after 2003 but then remaining stable thereafter. Of all imports recorded specifically as "sharks", dogfish species accounted for 71 percent of the volume (67 percent of value) imported from 2000 to 2012, porbeagle 1 percent (1 percent) and other shark species 28 percent (32 percent). Of these imports, 88 percent by weight (86 percent by value) were in non-fillet form and the remainder consisted of fillets. Frozen shark meat accounted for 69 percent by weight (63 percent by value) of the total quantity, while "fresh or chilled" made up the remainder. The average unit value of all imports increased by 57 percent from 2000 to USD3.7/kg in 2012, roughly in line with the global rise in shark meat unit values in this period (59 percent from 2000 to 2011).

France also exports shark meat, with an average yearly export volumes of 1 344 tonnes (USD7.4 million) from 2000 to 2011, making it the world's seventeenth-largest and tenth-largest exporter by volume and value, respectively, with 1 percent of total global export volume and 3 percent of value. According to French customs data from 2000 to 2012, by volume, these exports consist of 63 percent other shark species (61 percent of value), 36 percent dogfish species (37 percent) and 1 percent porbeagle (2 percent). About 85 percent of the quantity (92 percent of value) of shark meat is exported in "fresh or chilled" form and the remainder in frozen form. Almost all exports are non-fillet rather than fillets. The average unit value of France's shark meat exports in this period was USD5.6/kg, reflecting the high proportion of more expensive "fresh or chilled" product.

In 2012, rays and skates began to be recorded under dedicated commodity categories according to 2012 WCO changes to the HS codes.[74] France reported chondrichthyan imports of 3 985 tonnes, worth USD15.4 million, of which 70 percent by volume (69 percent of value) consisted of frozen rays and skates, while the remainder consisted of "fresh or chilled" product. French exports of rays and skates were minimal.

Imports

Imports from the United States of America accounted for 29 percent (1 110 tonnes average annual volume) of the total volume, and 30 percent (USD3.7 million) of the total value, of France's shark meat imports from 2000 to 2012. These imports consisted almost entirely of dogfish, primarily in "frozen, non-fillet" form. As such, quantities have closely mirrored the decline and subsequent recovery of the spiny dogfish fisheries of the United States of America, i.e. dropping to a low of 321 tonnes in 2004 before increasing to previous levels in the second half of the period. The average unit value of imports from the United States of America in this period was USD3.3/kg. In contrast to the United States of America, Spain supplies the French market mainly with shark meat from non-dogfish species. The average annual volume of Spanish-origin imports in the same period was 606 tonnes, or 16 percent of the total, while the average annual value was USD2.3 million, or 19 percent of the total, with imports from Spain rising during the mid-2000s to compensate for decreased volumes from the United States of America. About 69 percent of the quantity (73 percent of value) consisted of shark meat classified as "other sharks" while 27 percent was dogfish species. It is not clear what specific species fall within the former category, although the Spanish fleet catches mainly blue shark. About 85 percent of the imports by volume (84 percent) were in whole form, and 71 percent were frozen (63 percent). The third-most important source of shark meat in the period 2000–2011, in terms of average yearly quantity, was Canada. France posted average annual figures of 591 tonnes (15 percent) worth USD1.6 million (13 percent of the total) imported from Canada. These imports were almost entirely "frozen, non-fillet" dogfish, with the steep downward trend approximately following that of dogfish capture production in Canada. In 2012, France imported 50 tonnes of

[74] Rays and skates were not recorded as sharks before 2012, but were included within more aggregated categories.

shark meat from Canada, compared with 694 tonnes in 2000. Ranking by value, the United Kingdom of Great Britain and Northern Ireland was the third-most important origin over the period, with 13 percent of the total at USD1.6 million per year on average and 10 percent of the volume at 401 tonnes. About 65 percent of the quantity (62 percent of the value) was dogfish species, while 34 percent (38 percent by value) was accounted for by other sharks. Almost all shark meat imports from the United Kingdom of Great Britain and Northern Ireland were "fresh or chilled, non-fillet" product. New Zealand exported relatively large quantities shark meat to France for a number of years during this period, posting an average volume of 152 tonnes, worth USD382 000, for the full 13 years, but volumes fell steadily from 2002 onwards and declined to zero by 2012. Exporters increasing their exports of shark meat to France in recent years include the Netherlands and, to a lesser extent, Viet Nam.

The major origin of France's ray and skate imports in 2012 was the United States of America, which accounted for 1 691 tonnes, worth USD7.1 million, or 42 percent of import volume and 46 percent of import value. By volume, 66 percent of these imports were in frozen form, accounting for 66 percent of value, while the remainder were "fresh or chilled". Argentina was the second-most important origin, accounting for 23 percent of the volume and 21 percent of the value, all frozen. In third place was the United Kingdom of Great Britain and Northern Ireland with 9 percent of the volume and 8 percent of the value, mainly "fresh or chilled", followed by Portugal with 6 percent of the volume and 7 percent of the value, all frozen.

Exports

Italy is France's major export destination, accounting for 73 percent (1 024 tonnes per year) of total export volume and 81 percent (USD6.4 million) of total export value from 2000 to 2012. By volume, Italy-destined exports consist of 36 percent (37 percent by value) dogfish and 63 percent (60 percent) other shark species, mainly in "fresh or chilled" form. Spain is in second place, with 11 percent (159 tonnes) and 7 percent (USD525 000) over the same period. However, France's exports to Spain have fallen considerably since the beginning of the period, to 41 tonnes (USD230 000) in 2012.

Domestic trade and markets

France is a major consumer market for shark meat, in particular for spiny and spotted dogfish, smooth-hounds, topeshark and porbeagle (Vannuccini, 1999). Analysis of annual capture production and trade figures suggests that the majority of France's domestic consumption of shark and skate/ray meat is supplied by its own fisheries. Imports supplement these quantities, more substantially in the case of skates and rays.

Chondrichthyan meat is widely marketed in shops, supermarkets and hypermarkets as a cheap boneless seafood option. The names used for marketing purposes, according to anecdotal reports, include "chien de mer", "aiguillat commun" or "saumonette d'aiguillat" (spiny dogfish), "veau de mer" (porbeagle and mako) and "saumonette" (spotted dogfish and smooth-hound). Some sources report that spotted dogfish and nursehound are also sometimes sold as "petite rousette" and "grande rousette", respectively. Although there are anecdotal reports of organizations advocating that French supermarkets cease selling shark meat, it is not known whether these efforts are affecting sales volumes in France.

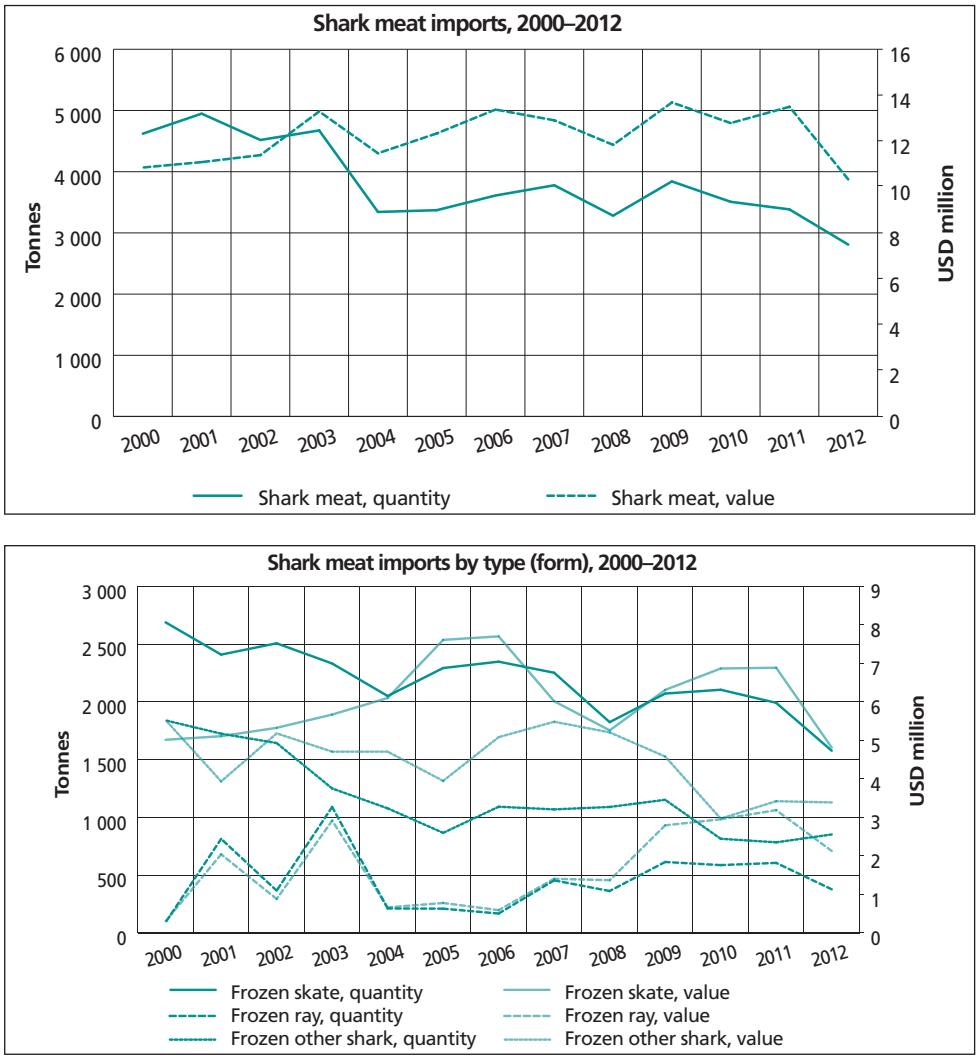
In 2010, the unit value of spiny dogfish meat in France was reported as EUR10/kg.[75] Cartilage and livers of spiny dogfish are also reportedly exported from the United States of America to France for medicinal purposes.[76] Although there

[75] Proposal for listing of Squalus acanthias on Appendix II of CITES, CoP 15, Proposal 18. Accessed online at www.cites.org/eng/cop/15/prop/E-15-Prop-18.pdf

[76] Ibid.

is known to be a market in France for porbeagle meat, the scope of demand is not known and the bulk of trade in this commodity occurs in Spain and Italy.[77] In early 2013, import values for porbeagle meat into markets of the European Union (Member Organization) were USD1.8–5.0/kg, suggesting that unit values had fallen considerably from levels observed in previous years.[78]

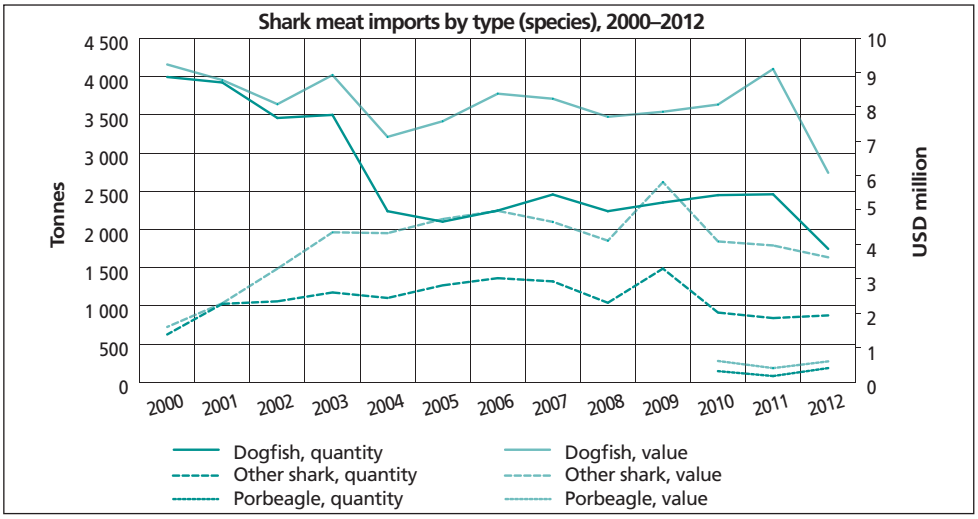
FIGURE 61
France shark meat trade, 2000–2012

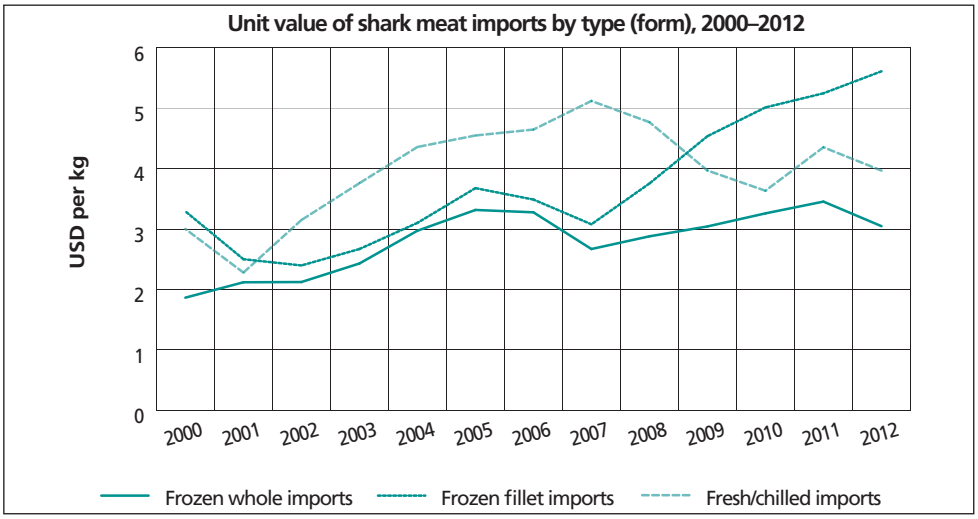


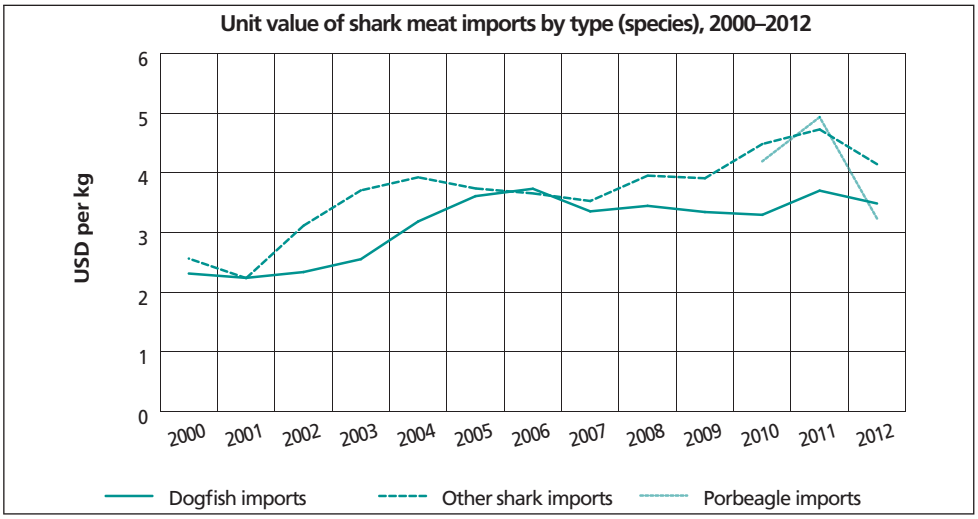
[77] Proposal for listing of *Lamna nasus* on Appendix II of CITES, CoP 16, Proposal 44. Accessed online at www.cites.org/eng/cop/16/prop/E-CoP16-Prop-44.pdf

[78] Ibid.

FIGURE 61 (continued)







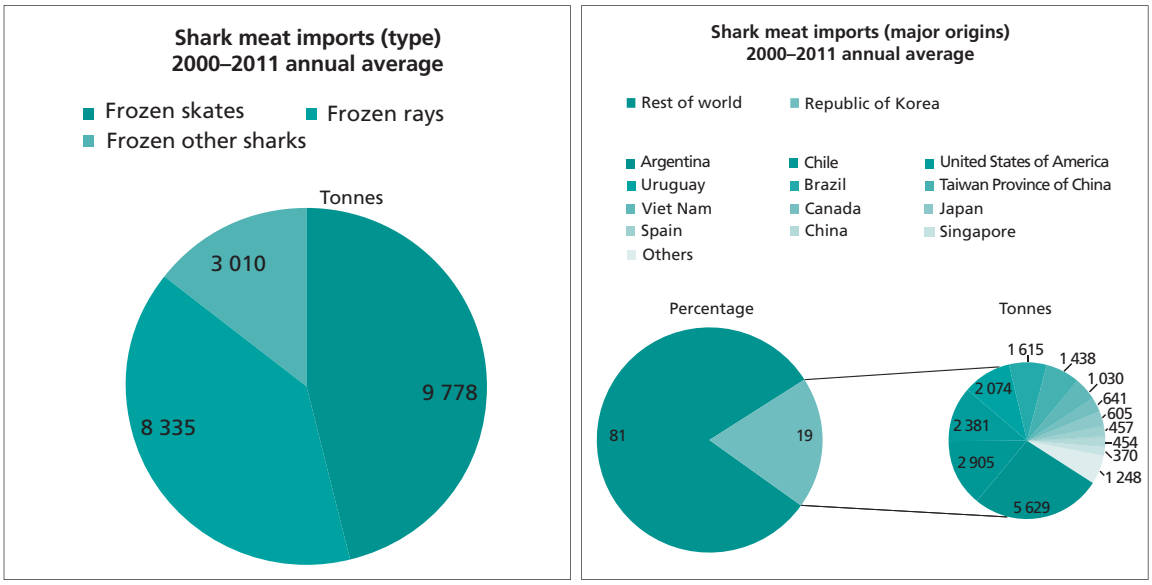
Source: Direction Nationale des Statistiques du Commerce Extérieur – DNSCE (2013).

Republic of Korea (skates and rays)

Snapshot

- The Republic of Korea is the world's top market for skate and ray meat, and is supplied by imports as well as domestic captures.
- It ranks as the world's eleventh-largest shark producer, and the world's top importer in volume terms.
- It imports shark, skate and ray meat from a wide range of countries, with the major proportion of skates and rays coming from South America, particularly Argentina and Chile.
- From 2000 to 2011, it recorded average annual shark meat imports of 20 656 tonnes, worth USD43.9 million (Figure 63).
- It has reported approximately stable import volumes since the early 2000s, but the unit values of imports of sharks, skates and rays have all been trending steadily upwards.

FIGURE 62
Republic of Korea shark meat trade profile



Source: Korea Customs and Trade Development Institution (2013).

Overview

Excluding shark fins, the Republic of Korea is the largest importer of chondrichthyan products in the world based on average annual values for 2000–2011. However, it is set apart from other chondrichthyan markets presented here in that the majority of its imports consist of skate and ray meat rather than true shark meat. This is an important consideration, and may result in the overestimation of the relative importance of the Republic of Korea, which used separate codes for skate and ray meat throughout the period under analysis even while the majority of countries reviewed either have never reported trade in skate and ray meat as such (although they may have included it within aggregated commodity categories), or only introduced codes to do so in 2012.

From 2000 to 2011, the Republic of Korea posted average annual import figures of 20 656 tonnes, worth USD43.9 million, representing 19 percent of global chondrichthyan imports by value and 18 percent by value. Import volumes

remained relatively stable throughout the period, but steeply rising unit values saw a 181 percent increase in total value from 2000 to 2012, to USD73.5 million in 2012. Customs authorities in the Republic of Korea do not distinguish between species of skate or ray, although there are two separate commodity codes for "frozen skates" and "frozen rays". The portion of total import volume taken by these two groups from 2000 to 2012 was 46 percent frozen skate (52 percent by value) and 39 percent frozen ray (34 percent by value). The remainder consisted almost entirely of "frozen, non-fillet" shark meat and a minor quantity of shark oil. Relative proportions taken by the different product groups remained approximately stable, but from 2005 onwards the import unit value of "frozen skate" imports began to diverge upwards from that of "frozen ray" imports, pushing up total value figures. Overall, "frozen skate" is the more expensive product, posting an average unit value from 2000 to 2012 of USD2.7/kg compared with USD2/kg for "frozen ray". The Republic of Korea was the world's nineteenth-largest producer of chondrichthyans from 2000 to 2011 with 12 399 tonnes produced per year. About 84 percent of this production is identified as "rays, stingrays, mantas nei" with the remainder recorded within the aggregated group "Sharks, rays, skates, etc. nei". The country exports only minor quantities of shark meat, with average annual volumes exported of 802 tonnes (USD1.1 million) from 2000 to 2012, although volumes increased rapidly towards the end of the period and in 2012 reached 2 624 tonnes, worth 2.7 million. Effectively, the entirety of these exports consist of true sharks rather than skates and rays, under the description "dogfish and other sharks, frozen".

Imports

Argentina is the largest supplier of chondrichthyan meat to the Republic of Korea, exporting an average of 5 720 tonnes, worth USD13.6 million, to the country from 2000 to 2012. This consisted of half "frozen skate" and half "frozen ray" products by volume. By value, the respective proportions were 54 percent and 46 percent. Since peaking in 2007, import volumes have been reasonably stable, with the 2012 figure of 6 814 tonnes equating to a 124 percent increase compared with 2000. Import unit values of both products exhibited a steep upward trend from 2005 onwards, and the 2012 value of USD24.1 million is more than over 5 times the 2000 figure. After Argentina, Chile is the next-most important origin, with an average annual volume of 2 826 tonnes (USD7.6 million). Except for very minor quantities, Chilean-origin imports are composed entirely of "frozen skate". Yearly volumes imported from Chile decreased steadily over the period, however, and the 2012 figure of 1 870 tonnes reflected a 54 percent decline compared with 2000, while the upward unit value trend saw a 16 percent increase in value over the same period, to USD8.4 million in 2012. Sources in Chile report that more than 98 percent of the national production of skates and rays (wings and meat) is exported to the Republic of Korea (C. Bustamante, personal communication, January 2014). The United States of America accounted for 11 percent of the total quantity and 16 percent of the total value of imports, equal to 2 391 tonnes per year, costing USD6.6 million. About 54 percent of the import volume was made up of "frozen skate" and 46 percent were "frozen ray". In terms of value, 66 percent was "frozen skate" and 34 percent "frozen ray". While volumes stayed more or less stable year to year, unit values of imports from the United States of America, similarly to those from Argentina and Chile, trended steeply upwards over the 13 year period. The 2012 unit value of USD4.7/kg represented a 220 percent increase compared with the 2000 unit value. Brazil and Uruguay follow the United States of America in importance, with average annual volumes (values) of 1 625 tonnes (USD3.4 million) and 2000 tonnes (USD3.1 million), respectively. Brazilian-origin imports were all "frozen ray", whereas imports from Uruguay were 77 percent "frozen skate" by volume (84 percent by value) and the remainder were "frozen ray". Another

key component of imports by the Republic of Korea is "frozen, non-fillet" shark meat from Taiwan Province of China. The average annual volume was 1 362 tonnes, worth USD2.3 million, with a rapid drop in volumes from 2009 onwards to 449 tonnes in 2012. Viet Nam is another important source of "frozen ray". About 96 percent of an average of 1 016 tonnes (95 percent of USD2 million) imported from Viet Nam per year was made up of this product, with import unit values following the same upward trend as those of the other major partners of the Republic of Korea.

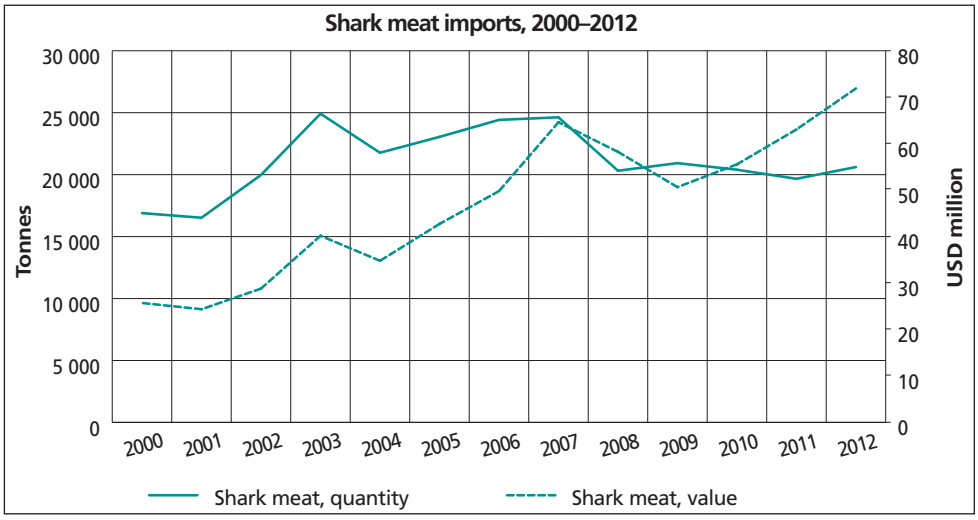
From 2000 to 2012, the major destinations for exports of frozen shark meat ("dogfish and other sharks, frozen") from the Republic of Korea included New Zealand (122 tonnes, or USD199 000), China (117 tonnes, or 113 000), Japan (36 tonnes, or USD124 000) and Italy (44 tonnes, or USD113 000).

Domestic trade and markets

The meat of skates and rays is a traditional food and remains very popular with seafood consumers in the Republic of Korea. The country's domestic market is supplied with 8 000–10 000 tonnes per year each of skates and rays and in addition absorbs significant domestic production (more than 12 000 tonnes per year, of which at least 84 percent is skates or rays). Some sources suggest that skate and ray products are particularly popular in winter.

Fermented skate is reportedly a traditional, expensive and popular dish in the southern part of the country and is eaten as sashimi or in a stew.[79] Skate meat is also steamed, and some sources suggest that the cartilage is not removed before the meat is consumed,[80] in part because it is considered to have a palliative effect for those suffering from arthritis and other joint conditions (Mitchell, 1999). The wings of small skates are dried, and sometimes flavoured, and served as snacks in bars or sold in convenience stores in both the Republic of Korea and Japan (Mitchell, 1999). It is not clear whether any distinction is made between skate products and ray products in the market in the Republic of Korea.

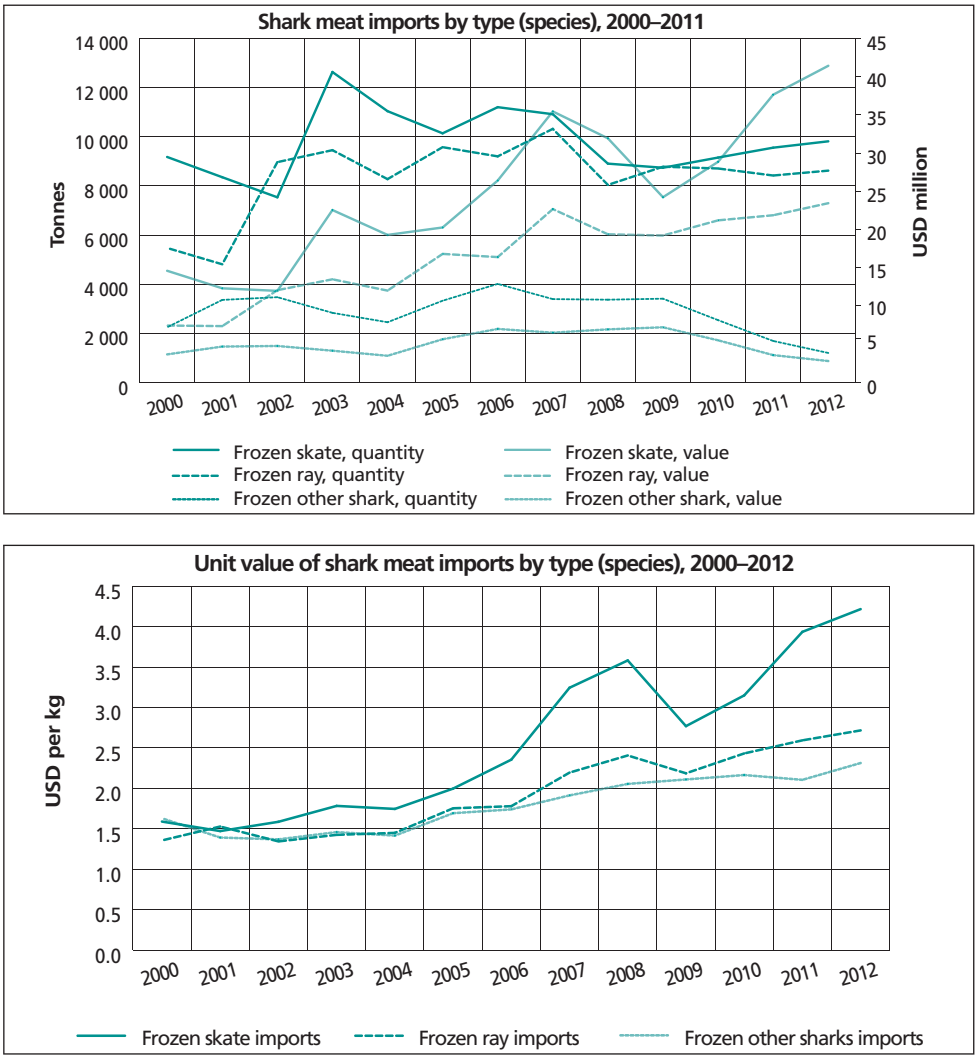
FIGURE 63
Republic of Korea shark meat trade, 2000–2012



[79] http://seoulfoodyy.wordpress.com/2012/03/27/fermented-skate/

[80] http://koreanfood.about.com/od/fishandseafoodrecipes/r/Steamed-Skate-Fish-Recipe-Hong-Uh-Jim.htm

FIGURE 63 (continued)



Source: Korea Customs and Trade Development Institution (2013).

Argentina and Chile (skates and rays)

Argentina has historically been an important producer of skates and rays, with these species representing an average of 58 percent of Argentina's annual chondrichthyan capture volume of 37 991 tonnes from 2000 to 2011. Although these capture statistics are specific at the species level for 25 chondrichthyan species, the majority of skates and ray captures are still recorded with the aggregate category "rays, stingrays, mantas nei". In Chile, skate and ray captures, all recorded within the latter aggregated category in national databases, constituted, on average, 62 percent of the country's chondrichthyan capture production of 4 681 tonnes annually from 2000 to 2011.

The importance of Argentina and Chile as suppliers to the world market for rays and skates only became fully apparent in 2012, when two new HS codes were introduced by the WCO that explicitly identify trade in these species, in both frozen and "fresh or chilled" form. Under the new commodity categories, Argentina posted total exports of 9 939 tonnes, worth USD20.1 million. These exports consist almost entirely of "frozen, non-fillet" rays and skates. Chile reported exports of 1 914 tonnes of skate and ray meat in 2012, worth USD8.2 million, all in "frozen, non-fillet" form.

Partners

The majority of Argentinian exports are destined for the Republic of Korea. In 2012, these accounted for 68 percent of total export volume and 71 percent of value. China took the next largest share of exports in 2012, with 20 percent of volume and 14 percent of total value. France and Japan ranked third and fourth, with 9 and 1 percent of volume and 9 and 3 percent of value, respectively. Chile exports only to the Republic of Korea.

4. Indications of trade in other shark products

As stated above, quantitative information on the production and trade of other elasmobranch products such as livers or liver oil, shark or ray skin, cartilage, jaws or rostra, or manta or mobula gill rakers is extremely limited. However, in order to gather as much qualitative data on these products as possible, members of the IUCN Shark Specialist Group were consulted by means of an online survey in November–December 2013. In total, 70 responses were obtained for surveys covering the trade situation in 40 countries including: Australia (n=8), Bahrain, Belize, Canada (n=4), Chile, China, Croatia, France (n=3), French Polynesia, Germany (n=2), Guinea-Bissau, India, Indonesia (n=2), Iran (Islamic Republic of), Ireland, Italy (n=2), Japan (n=2), Kenya, Kuwait, Lebanon, Malaysia, Mauritania (n=3), Mauritius, Mexico, Mozambique (n=2), New Zealand, Portugal (n=2), Qatar, Réunion, the Russian Federation (n=2), Sierra Leone, South Africa (n=2), Sri Lanka, Sudan (n=2), Sweden, the Syrian Arab Republic, Taiwan Province of China, Tunisia, the United Kingdom of Great Britain and Northern Ireland, and the United States of America (n=8).[81] Although the information varies in its level of detail depending upon each specialist's knowledge of trade issues *per se*, the Table 7 provides an indication of the diversity of trade in some of the lesser-known elasmobranch products.

[81] One survey covered three countries; two surveys could not be assigned to a specific country.

TABLE 7
Trends in liver/liver oil, shark/ray skin, cartilage, jaws/rostra and ray gill rakers in 40 countries surveyed by the IUCN Shark Specialist Group

Country	Livers or liver oil	Shark or ray skin	Cartilage	Jaws or rostra	Manta or mobula gill rakers	Notes
Australia (n=8)	X		X	X (decreasing)		No trade in manta or mobula gill rakers in Australia (A. Chin, pers. comm., Dec. 2013)
Belize	X	X	X	X		Liver oil is sold within Belize and used for medicinal purposes (D. Chapman, pers. comm., Dec. 2013)
Canada (n=4)	X		X (stable)	X (stable)		British Columbia's spiny dogfish fishery produces dried shark cartilage for the nutraceutical industry; process waste is used for liquid hydrolyzed fertilizer for the agriculture and horticulture markets (www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/british-columbia-spiny-dogfish)
Chile	X	X (stable)	X	X		
China	X (decreasing)	X (increasing)	X (stable)	X (stable)	X (stable)	
Croatia						Shark fins, liver, liver oil, cartilage, jaws or rostra and gill rakers have never been a subject of trade in Croatia nor in Slovenia, Bosnia and Herzegovina, Montenegro or Albania (eastern Adriatic Sea) (A. Soldo, pers. comm., Dec. 2013)
France (n=3)	X (stable)	X (stable)	X (increasing)	X (stable)		Liver oil of chimaeras appears to be a new product (B. Séret & F. Poisson, pers. comm. Dec. 2013). A raw ray skin can sell for EUR300 (B. Séret, pers. comm., Dec. 2013)
French Polynesia				X		Sales of shark products derived from the territory are prohibited; however, shark products of foreign origin may still be sold (J. Mourier, pers. comm., Dec. 2013)
Germany (n=2)	X	X	X	X		Shark oil imported and used by cosmetics and pharmaceutical industries (M. Stehmann, pers. comm., Dec. 2013)
Guinea-Bissau				X		Sawfish rostra are less available now owing to large decreases in sawfish catches; sold mainly to tourists (R. Leeney, pers. comm., Dec. 2013)
India	X	X	X	X	X	Livers or liver oil – usually exported but also used as local medicine for wounds and other skin ailments. A few pharmaceutical companies process deep-sea shark liver oil. In 2006, the export value of squalene was double that of shark meat and one-third that of shark fins. Shark skin was also exported with an export value one-tenth that of squalene. Ray skins are used for leather in purses/wallets. Local traders buy gill rakers for export (K.V. Akhilesh, pers. comm., Dec. 2013)
Indonesia (n=2)	X (increasing)	X (increasing)	X (increasing)	X	X (increasing)	Shark skin is mainly utilized for local consumption, but for large sharks, at some places it is dried and exported. Liver oil is mainly utilized traditionally and sold locally or to industry, but for good-quality products, it is sometimes exported. Gill rakers are mainly exported to markets such as China and China, Hong Kong SAR (Fahmi, pers. comm., Dec. 2013)
Iran (Islamic Republic of)						There is no trade in these products and the fishing of sharks has been banned in the Persian Gulf and Oman Sea (T. Valinassab, pers. comm., Dec. 2013)

TABLE 7 (continued)

Country	Livers or liver oil	Shark or ray skin	Cartilage	Jaws or rostra	Manta or mobula gill rakers	Notes
Ireland						Unaware of any official trading of cartilage, jaws, etc. in Ireland (E. Farrell, pers. comm., Dec. 2013)
Italy (n=2)	X		X			
Japan (n=2)	X	X	X	X		
Kenya	X			X		Jaws may be sold to tourists. Liver oil is used for dhow boat building and repair (M. Samoilys, pers. comm., Jan. 2013)
Kuwait Bahrain Qatar						Liver, skin, cartilage and jaws are discarded (A. Moore, pers. comm., Dec. 2013)
Lebanon				X		
Malaysia		X (decreasing)				No domestic production of liver oil but fresh livers may be sold. Ray skins exported to Thailand. Jaws sold in souvenir shops. No information on trade in cartilage or gill rakers but may be sold as medicine (A. Ali, pers. comm., Dec. 2013)
Mauritania (n=3)		X (decreasing)	X			
Mauritius		X (stable)	X (stable)	X (stable)		Very few shark products are sold locally, except to Chinese restaurants. Jaws sell for USD20 per unit (V. Kauppaymuthoo, pers. comm., Dec. 2013)
Mexico		X	X	X	X	
Mozambique (n=2)				X	X	Jaws occasionally offered for sale to tourists, but demand/supply is not likely to be significant (S. Pierce, pers. comm., Dec. 2013). Livers and skins are not used. Rays are primarily caught for their meat, but their gill rakers are also exported (A. Marshall, pers. comm., Dec. 2013)
New Zealand	X (stable)					No trade in jaws/rostra or gill rakers (M. Francis, pers. comm., Dec. 2013)
Portugal (n=2)	X					Shark skin, cartilage, jaws and gill rakers have little commercial value and are thus unlikely to be sold or exported (R. Coelho, pers. comm., Dec. 2013)
Réunion	X	X	X	X (stable)	X	Gill rakers are not traded. Unit value of jaws depends on species and size (E. Romanov, pers. comm., Dec. 2013)
Russian Federation (n=2)	X (stable)	X (stable)	X (stable)	X (stable)		Demand for and availability of shark products is low (A. Dolgov & A. Orlov, pers. comm., Dec. 2013).
Sierra Leone						
South Africa (n=2)	X (decreasing)	X		X (increasing)		There was limited trade of livers for use as lures in the white shark diving industry but this has decreased. Limited and periodic market for shark/ray skin (sword handles) and cartilage. Jaws/teeth still marketed to tourists. Majority of shark products are exported (S. Winter & C. da Silva, pers. comm., Dec. 2013)

TABLE 7 (continued)

Country	Livers or liver oil	Shark or ray skin	Cartilage	Jaws or rostra	Manta or mobula gill rakers	Notes
Sri Lanka				X (stable)	X (stable)	Demand appears stable although catches have declined. Ray, but not shark, skin is exported to India. Jaws are exported to Maldives for the tourist trade. Gill rakers are bought and exported in conjunction with shark fins. Unit values are USD50–110/kg for dried mobula gill plates, and USD90–190/kg for dried manta gill plates (D. Fernando, pers. comm., Dec. 2013)
Sudan (n=2)		X	X	X		Jaws of mako and tiger shark are sold to tourists. Skin and cartilage sold informally to in-country Chinese traders (not exported). Liver oil is used by some fishers (I. Elhassan, pers. comm., Dec. 2013)
Sweden						None of these products is traded (M. Cardinale, pers. comm., Dec. 2013)
Syrian Arab Republic		X (stable)				
Taiwan Province of China						
Tunisia						A small directed fishery exists in the south of the country. Ray catch is 40 percent of the total chondrichthyan catch (M. Bradai, pers. comm., Dec. 2013)
United Kingdom						Trade in chondrichthyan fishes is stable overall but there have been increases/decreases in various species. Not aware of any trade in fins/cartilage/skin/jaws. Liver utilization curtailed by catch limits on deep-water sharks (J. Ellis, pers. comm., Dec. 2013)
United States of America (n=8)	X	X	X	X		On the west coast, jaws/rostrum are sold for USD100–1 000 per set depending upon species of shark (J. Bigman, pers. comm., Dec. 2013). Oil from spiny dogfish livers can be used in the nutraceutical industry as a source of omega-3 fatty acids; offal is converted into dried meal or liquid fertilizer (Kulka, Rivard & Scott, 2012)

Notes: Each row represents an integrated response from all participants from that country. However, notes are attributable to specific respondents only. The number of respondents (n) is shown in parenthesis in the first column for all countries for which n>1. An X signifies that the product is traded; any information on trends in the trade is shown in parentheses.

References

Camhi, M.D., Valenti, S.V., Fordham, S.V., Fowler, S.L. & Gibson, C. 2009. *The Conservation Status of Pelagic Sharks and Rays: Report of the IUCN Shark Specialist Group Pelagic Shark Red List Workshop*. Newbury, UK, IUCN Species Survival Commission Shark Specialist Group. x + 78 pp.

Carson, D. 2013. The shark fin agenda. *Seafood New Zealand*, 21(6): 6–11.

Clarke, S. 2004. *Understanding pressure on fisheries resources through trade statistics: a pilot study of four products in the Chinese dried seafood market*. *Fish and Fisheries*, 5: 53–74.

Clarke, S. 2005. *Trade in shark products in Singapore, Malaysia and Thailand*. Singapore, Southeast Asian Development Center and ASEAN.

Clarke, S. 2009. *An alternative estimate of catches of five species of sharks in the Western and Central Pacific Ocean based on shark fin trade data*. Western and Central Pacific Fisheries Commission. Scientific Committee Fifth Regular Session, 10–21 August 2009.

Clarke, S., Milner-Gulland, E.J. & Bjørndal, T. 2007. Social, economic, and regulatory drivers of the shark fin trade. *Marine Resource Economics*, 22: 305–327.

Clarke, S., Yokawa, K., Matsunaga, H. & Nakano, H. 2011. *Analysis of North Pacific shark data from Japanese commercial longline and research/training vessel records*. SC7-EB-WP-02. Nouméa, Secretariat of the Pacific Community.

Clarke, S.C., Francis, M.P. & Griggs, L.H. 2013. *Review of shark meat markets, discard mortality and pelagic shark data availability, and a proposal for a shark indicator analysis*. New Zealand Fisheries Assessment Report 2013/65 .

Dulvy, N.K., Fowler, S.L., Musick, J.A., Cavanagh, R.D., Kyne, P.M., Harrison, L.R., Carlson, J.K., Davidson, L.N.K., Fordham, S.V., Francis, M.P., Pollock, C.M., Colin, A.S., Burgess, G.H., Carpenter, K.E., Compagno, L.J.V., Ebert, D.A., Gibson, C., Heupel, M.R., Livingstone, S.R., Sanciangco, J.C., Stevens, J.D., Valenti, S. & White, W.T. 2014. Extinction risk and conservation of the world's sharks and rays. *eLIFE*, 2014;3:e00590 [online]. [Cited 8 September 2014]. http://elife.elifesciences.org/content/3/e00590

Eilperin, J. 2011. *Demon fish: travels through the hidden world of sharks*. Random House. 304 pp.

Eriksson, H. & Clarke, S. 2015. Chinese market responses to overexploitation of sharks and sea cucumbers. *Biological Conservation,* 184:163–173.

European Commission. 2006. *Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.* (also available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:364:0005:0024:EN:PDF).

Fabinyi, M. 2012. Historical, cultural and social perspectives on luxury seafood consumption in China. *Environmental Conservation*, 39(1): 83–92.

Fabinyi, M. & Liu, N. 2014. Seafood banquets in Beijing: consumer perspectives and implications for environmental sustainability. *Conservation and Society*, 12(2): xx–xx.

FAO. 2011–2014. Fisheries and aquaculture software. FishStatJ – software for fishery statistical time series. In: *FAO Fisheries and Aquaculture Department* [online]. Rome. Updated 22 July 2014. [Cited 8 September 2014]. www.fao.org/fishery/statistics/software/fishstatj/en

Gadda, T. & Gasparatos, A. 2010. *Tokyo drifts from seafood to meat eating*. United Nations University. (available at http://ourworld.unu.edu/en/tokyo-drifts-from-seafood-to-meat-eating).

Gillett, R. 2011. *Bycatch in small-scale tuna fisheries: a global study*. FAO Fisheries and Aquaculture Technical Paper No. 560. Rome, FAO. 116 pp. (also available at http://www.fao.org/docrep/014/i2175e/i2175e00.pdf).

Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto, J., Mandelman, J., Mangel, J., Piovano, S., Peterson, S., Watling, D. & Dalzell, P. 2007. *Strategies to reduce shark depredation and unwanted bycatch in pelagic longline fisheries: industry practices and attitudes, and shark avoidance strategies*. Honolulu, USA, Western Pacific Regional Fishery Management Council.

Hausfather, Z. 2004. India's shark fin trade: an analysis of Indian shark landings based on shark fin exports. *Marine Studies*, 3(1). (also available at http://www.marecentre.nl/mast/documents/ArtikelZekeHausfather.pdf).

Inter-American Tropical Tuna Commission (IATTC). 2011. *Report of the Third Technical Meeting on Sharks. Stock Assessment of Silky Shark in the Eastern Pacific Ocean, La Jolla, California, United States of America, 7–9 December 2011*. (available at www.iattc.org/Meetings/Meetings2011/Dec/PDFs/Shark-workshop-Meeting-report-Dec–2011ENG.pdf).

Kulka, D., Rivard, D. & Scott, I. 2012. *MSC certification: the United States of America Atlantic fishery for spiny dogfish (*Squalus acanthias*)*. Version 5. Public Certification Report. Dartmouth, Canada, Intertek Moody Marine.

Lam, V.Y. & Sadovy de Mitcheson, Y. 2011. The sharks of South East Asia–unknown, unmonitored and unmanaged. *Fish and Fisheries*, 12(1): 51–74.

Li, W., Wang, Y. & Norman, B. 2012. A preliminary survey of whale shark *Rhincodon typus* catch and trade in China: an emerging crisis. *Journal of Fish Biology*, 80(5): 1608–1618.

McCoy, M.A. 2006. *Addressing shark finning in FFA member countries: issues and considerations*. Gillett, Preston and Associates Inc.

McDavitt, M.T. 2005. Summary of trade in sawfishes and sawfish parts. Unpublished Report. 25 pp.

Ministry for Primary Industries. 2014. *National Plan of Action for the Conservation and Management of Sharks*. Wellington. 32 pp. (also available at www.mpi.govt.nz/Default.aspx?TabId=126&id=2126).

Mitchell, D.W. 1999. *Asian dried seafood market analysis* [online]. Anchorage, USA, NOAA. [Cited 8 September 2014]. www.nmfs.noaa.gov/mb/sk/saltonstallken/driedanalysis.pdf.

Mohanraj, S., Rajapackiam, S., Mohan, S., Batcha, H. & Gomathy, S. 2009. Status of elasmobranchs fishery in Chennai, India. *Asian Fisheries Science*, 22: 607–615.

Moore, A.B. 2012. Elasmobranchs of the Persian (Arabian) Gulf: ecology, human aspects and research priorities for their improved management. *Reviews in Fish Biology and Fisheries*, 22(1): 35–61.

Nakamura, Y. 2004. Memoranda in search of sharks marketing across Japan. *Japanese Society for Elasmobranch Studies*, 40: 59–68. (also available online at http://jses.ac.affrc.go.jp/report/report_31-40.html)

National Oceanic and Atmospheric Administration (NOAA). 2013. *2012 Shark Finning Report to Congress* [online]. [Cited 8 September 2014]. www.nmfs.noaa.gov/sfa/domes_fish/ReportsToCongress/SharkFinningReport12.pdf

Okamoto, H. 2004. Search for the Japanese tuna fishing data before and just after World War II. *Bulletin of the [Japan] Fisheries Research Agency*, 13: 15–34. (in Japanese)

Rose, D.A. 1998. *Shark fisheries and trade in the Americas, Volume I: North America*. Washington, DC, TRAFFIC North America. 142 pp.

Sosa-Nishizaki, O., Márquez-Farias, J.F. & Villavicencio-Garayzar, C.J. 2008. Case study: pelagic shark fisheries along the west coast of Mexico. *In* M. Camhi, E. Pikitch & E.A. Babcock, eds. *Sharks of the open ocean*, pp. 128–139. Oxford, UK, Blackwell Publishing. 536 pp.

Southeast Asian Fisheries Development Center (SEAFDEC). 2006. *Report on the study on shark production, utilization and management in the ASEAN region, 2003–2004*. Bangkok.

Vannuccini , S. 1999. *Shark utilization, marketing and trade*. FAO Fisheries Technical Paper No. 389. Rome, FAO. (also available at www.fao.org/docrep/005/x3690e/x3690e00.htm).

Verlecar, X.N., Snigdha, S.R., Desai, S.R. & Dhargalkar, V.K. 2007. Shark hunting—an indiscriminate trade endangering elasmobranchs to extinction. *Current Science*, 92(8): 1078–1082.

Vivekanandan, V. 2001. An ill thought ban. *Samudra*, 30: 3–10. (also available at www.icsf.net/images/samudra/pdf/english/issue_30/30_sam30.pdf).

Wang, Y. 2013. China's gourmet seafood sales sink—casualty of frugality campaign. *Time Magazine*, 12 May 2013. (also available at http://newsfeed.time.com/2013/05/12/chinas-gourmet-seafood-sales-sink-casualty-of-frugality-campaign/)

Wang, Z.Q. 2013. Seafood businesses flounder amid cut in luxury spending. *China Daily*, 14 June 2013. (also available at www.chinadaily.com.cn/cndy/2013-06/14/content_16618588.htm)

Data Sources

Food and Agriculture Organization of the United Nations. 2013. FishStatJ. Global Production by production source 1950-2012 (Dataset). www.fao.org/fishery/topic/166235/en

Food and Agriculture Organization of the United Nations. 2013. FishStatJ. Fisheries Commodities Production and Trade 1976-2011 (Dataset). www.fao.org/fishery/topic/166235/en

For trade statistics reporting bodies please see Appendix 3

APPENDIX 1

Estimation of shark fin export volumes for selected countries from 2000 to 2011

Export volumes estimated by summation of import volumes reported by the national statistics or customs authorities of Canada, China, China, Hong Kong SAR, Indonesia, Malaysia, Singapore, Taiwan Province of China and the United States of America. Volumes are as reported, and no adjustment has been made for water content of frozen shark fins.

Sources by importer (reporting country):

Canada	Statistics Canada
China	China Customs
China, Hong Kong SAR	Hong Kong Census and Statistics Department
Indonesia	Statistics Indonesia
Malaysia	Department of Statistics Malaysia
Singapore	International Enterprise Singapore
Taiwan Province of China	Taiwan Directorate General of Customs
United States of America	U.S. Department of Commerce, Bureau of Census

TABLE A1.1
Estimated exports by exporter and reporter, tonnes, 2000–2011

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Argentina	China	0	0	0	5	0	44	39	5	25	19	0	0	11
	China, Hong Kong SAR	41	25	28	69	56	96	153	136	185	170	191	122	106
	Indonesia	10	23	27	65	71	55	22	9	37	24	0	31	31
	Malaysia	0	0	0	0	0	0	1	0	2	0	0	0	0
	Singapore	0	0	0	0	10	22	35	38	30	15	22	9	15
	Taiwan Province of China	0	0	0	0	19	7	0	0	0	0	0	1	2
	United States of America	25	8	0	0	0	0	0	0	0	0	0	0	3
Argentina total		76	56	55	139	156	224	250	188	279	228	213	163	169
Australia	Canada	0	0	0	0	0	0	1	2	5	6	8	17	3
	China	23	47	6	0	0	0	0	0	0	0	0	0	6
	China, Hong Kong SAR	98	70	84	85	128	104	62	81	94	59	66	57	82
	Indonesia	0	0	3	1	1	1	0	5	0	0	0	0	1
	Malaysia	1	0	0	0	0	0	0	0	0	0	1	0	0
	Singapore	18	10	15	14	16	7	4	26	7	1	3	2	10
	Taiwan Province of China	5	4	2	2	0	0	0	0	0	0	0	0	1
	United States of America	1	0	1	0	0	0	0	1	0	0	0	7	1
Australia total		146	131	111	102	145	112	67	115	106	66	78	83	105
Brazil	China	17	41	318	277	16	34	19	33	5	0	0	0	63
	China, Hong Kong SAR	194	334	324	330	302	291	184	173	201	130	133	181	231
	Taiwan Province of China	0	0	0	0	1	1	0	0	0	0	4	4	1
	United States of America	1	2	0	0	0	2	0	0	0	0	0	0	0
Brazil total		212	377	642	607	319	328	203	206	206	130	137	185	296

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Canada	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	4	95	52	24	31	16	4	25	0	0	0	0	21
	China, Hong Kong SAR	135	51	139	114	141	159	81	101	58	83	42	61	97
	Indonesia	8	0	0	0	0	0	0	0	0	0	0	0	1
	Singapore	0	0	0	0	2	0	0	0	0	0	0	0	0
	Taiwan Province of China	14	1	1	2	0	0	0	0	0	0	0	0	2
	United States of America	7	7	1	0	0	0	0	2	0	1	0	0	2
Canada total		168	154	193	140	174	175	85	128	58	84	42	61	122
China	Canada	0	0	17	11	11	6	26	3	19	21	15	5	11
	China, Hong Kong SAR	378	363	367	745	810	413	58	3	13	30	161	12	279
	Malaysia	0	24	2	1	8	10	22	5	1	0	0	0	6
	Singapore	29	42	59	46	29	45	50	90	49	61	29	33	47
	Taiwan Province of China	0	0	22	62	27	29	23	92	127	179	155	313	86
	United States of America	2	1	21	0	2	0	4	5	1	6	21	12	6
China total		409	430	488	865	887	503	183	198	210	297	381	375	436
Costa Rica	China, Hong Kong SAR	186	545	358	957	543	402	357	286	327	306	342	252	405
	Taiwan Province of China	308	172	178	307	225	145	215	53	13	19	58	76	147
	China	10	4	0	8	363	203	154	176	185	35	0	0	95
	Singapore	137	42	25	36	0	0	0	0	0	0	0	0	20
	United States of America	1	1	0	0	0	0	0	0	0	0	0	0	0
	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
Costa Rica total		642	764	561	1 308	1 131	750	726	515	525	360	400	328	668

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Ecuador	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	21	36	42	34	28	14	0	0	0	0	0	0	15
	China, Hong Kong SAR	140	130	125	112	94	64	48	35	134	162	207	185	120
	Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
	Taiwan Province of China	1	0	0	0	0	0	0	0	0	0	0	0	0
	United States of America	2	3	0	0	0	0	0	0	0	0	0	0	0
Ecuador total		164	169	167	146	122	78	48	35	134	162	207	185	135
China, Hong Kong SAR	Canada	0	0	40	38	52	79	56	50	66	111	65	39	50
	China	55	47	188	124	71	197	147	79	22	32	7	53	85
	China, Hong Kong SAR	1	0	0	0	0	0	1	0	0	0	0	0	0
	Indonesia	20	13	0	0	4	3	0	0	6	0	0	0	4
	Malaysia	16	5	0	0	1	1	4	6	8	13	10	80	12
	Singapore	123	90	106	86	102	61	45	73	64	56	66	64	78
	Taiwan Province of China	82	37	31	37	51	31	2	0	0	5	1	21	25
	United States of America	4	2	3	1	5	7	16	20	23	11	11	15	10
China, Hong Kong SAR total		301	194	368	286	286	379	271	228	189	228	160	272	264
India	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	214	126	230	129	151	2	4	7	0	0	6	0	72
	China, Hong Kong SAR	432	386	351	299	302	147	107	84	117	187	151	165	227
	Indonesia	0	0	0	5	46	39	14	0	1	0	0	0	9
	Malaysia	0	0	0	1	7	4	9	11	10	4	8	3	5
	Singapore	89	56	59	59	96	48	43	56	34	18	22	25	50
	Taiwan Province of China	0	1	3	9	9	9	0	11	37	21	46	38	15
	United States of America	4	7	4	6	3	0	0	0	0	0	0	1	2
India total		739	576	647	508	614	249	177	169	199	230	233	232	381

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Indonesia	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	65	357	416	594	658	468	327	106	6	2	0	0	250
	China, Hong Kong SAR	860	794	929	848	717	620	439	747	681	776	806	602	735
	Indonesia	0	0	0	0	0	0	0	0	0	0	11	0	1
	Malaysia	16	18	16	10	13	9	8	21	53	198	7	14	32
	Singapore	0	0	0	66	80	55	106	60	57	47	84	51	51
	Taiwan Province of China	5	3	6	8	16	43	43	80	126	159	138	102	61
	United States of America	3	0	0	0	0	1	0	0	0	0	0	0	0
Indonesia total		949	1 172	1 367	1 526	1 484	1 196	923	1 014	923	1 182	1 046	769	1 129
Japan	Canada	0	0	1	2	1	2	3	1	0	1	0	0	1
	China	1 847	463	20	25	18	26	2	9	4	11	3	0	202
	China, Hong Kong SAR	579	348	266	282	278	300	242	260	162	171	209	192	274
	Indonesia	17	3	10	27	3	113	39	0	49	1	43	10	26
	Malaysia	0	0	0	0	0	0	1	0	0	0	0	0	0
	Singapore	50	65	36	41	49	62	69	70	102	47	30	25	54
	Taiwan Province of China	22	41	2	2	1	1	1	62	4	1	0	0	11
	United States of America	6	6	1	0	0	0	0	0	2	0	0	0	1
Japan total		2 521	926	336	379	350	504	357	402	323	232	285	227	570
Mexico	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	0	0	0	0	0	0	6	0	0	0	0	0	1
	China, Hong Kong SAR	296	428	332	226	178	201	181	203	217	163	319	301	254
	Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
	Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
	Taiwan Province of China	0	0	0	0	0	1	3	0	0	0	0	0	0
	United States of America	7	7	3	0	0	0	0	0	0	0	0	0	1
Mexico total		303	435	335	226	178	202	190	203	217	163	319	301	256

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
New Zealand	Canada	0	0	1	0	0	1	1	0	0	0	0	0	0
	China	0	0	3	0	0	0	0	0	0	0	0	0	0
	China, Hong Kong SAR	27	22	55	58	79	101	82	65	80	174	153	72	81
	Indonesia	0	2	0	0	0	0	0	0	10	0	0	11	2
	Malaysia	0	0	0	0	0	1	0	2	0	6	3	2	1
	Singapore	20	23	20	14	41	40	33	43	1	4	3	2	20
	Taiwan Province of China	0	0	1	0	1	1	1	0	1	0	0	0	0
	United States of America	0	0	0	0	0	0	1	0	1	3	1	24	3
New Zealand total		47	47	80	72	121	144	118	110	93	187	160	111	108
Oman	China	19	137	105	0	0	0	0	0	0	0	0	0	22
	China, Hong Kong SAR	165	144	75	26	43	130	91	59	56	59	12	30	74
	Singapore	2	3	5	1	0	0	0	1	0	2	14	0	2
	Taiwan Province of China	1	0	0	5	3	0	1	5	0	0	0	1	1
Oman total		187	284	185	32	46	130	92	65	56	61	26	31	100
Pakistan	China	21	0	0	0	3	5	199	299	165	51	0	6	62
	China, Hong Kong SAR	56	47	36	38	54	33	40	66	40	71	52	35	47
	Malaysia	0	0	0	0	0	0	5	1	0	0	0	0	1
	Singapore	57	40	36	29	19	9	13	14	1	0	1	0	18
	Taiwan Province of China	0	0	0	0	0	0	0	1	2	0	0	0	0
Pakistan total		134	87	72	67	76	47	257	381	208	122	53	41	129
Panama	Canada	0	0	1	1	0	0	0	0	1	7	5	18	3
	China	0	20	54	18	0	0	0	0	0	0	0	0	8
	China, Hong Kong SAR	125	108	71	71	103	114	76	70	85	47	37	26	78
	Indonesia	0	0	0	0	0	0	0	0	8	0	0	0	1
	Singapore	0	6	18	89	72	59	75	42	68	11	44	0	40
	Taiwan Province of China	0	0	0	0	31	10	0	53	203	237	26	5	47
	United States of America	0	4	0	0	4	1	7	0	0	0	0	0	1
Panama total		125	138	144	179	210	184	158	165	365	302	112	49	178

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Peru	Canada	0	0	1	0	0	0	0	0	0	0	0	0	0
	China	1	24	33	22	11	0	0	0	0	0	0	0	8
	China, Hong Kong SAR	103	122	114	110	92	147	175	203	122	144	199	211	145
	Indonesia	2	0	0	0	0	0	0	0	0	0	0	0	0
	Singapore	0	0	0	0	0	0	1	7	1	1	1	1	1
	Taiwan Province of China	0	0	0	0	0	0	0	0	0	0	0	0	0
	United States of America	0	0	0	0	0	0	0	2	0	0	0	0	0
Peru total		106	146	148	132	103	147	176	212	123	145	200	212	154
Philippines	Canada	0	0	0	0	0	1	5	5	2	4	3	2	2
	China	0	2	116	547	907	648	3	1	513	167	0	0	242
	China, Hong Kong SAR	47	49	90	184	327	249	61	79	73	68	35	27	107
	Indonesia	0	0	1	0	0	0	0	0	0	0	0	0	0
	Malaysia	0	0	9	14	11	9	14	13	7	10	7	14	9
	Singapore	1	1	23	19	23	22	28	27	23	30	28	27	21
	Taiwan Province of China	0	1	0	1	0	0	1	0	0	1	0	0	0
	United States of America	0	0	0	1	0	16	0	0	0	0	0	0	1
Philippines total		48	53	239	766	1 268	945	112	125	618	280	73	70	383
Senegal	Canada	0	0	0	0	0	0	0	5	0	1	1	1	1
	China	5	0	0	0	0	45	10	0	0	100	95	100	30
	China, Hong Kong SAR	130	155	152	92	82	116	61	157	71	54	42	173	107
	Singapore	0	0	0	0	0	0	0	0	0	0	0	3	0
	Taiwan Province of China	8	5	3	6	8	4	1	33	1	4	0	5	7
Senegal total		143	160	155	98	90	165	72	195	72	159	138	282	144

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Singapore	Canada	0	0	4	3	0	0	0	0	0	0	0	0	1
	China	631	769	1 323	1 452	1 632	857	523	237	23	40	25	0	626
	China, Hong Kong SAR	614	326	646	841	876	1 138	818	677	1 201	938	1 201	1 495	898
	Indonesia	3	0	1	39	45	120	130	23	46	49	23	16	41
	Malaysia	14	8	5	4	2	2	14	3	3	17	33	2	9
	Taiwan Province of China	1	0	1	0	0	2	21	0	95	40	22	114	25
	United States of America	0	2	5	0	0	0	0	0	0	0	0	0	1
Singapore total		1 263	1 105	1 985	2 339	2 555	2 119	1 506	940	1 368	1 084	1 304	1 627	1 600
South Africa	Canada	0	0	1	0	0	0	0	0	0	0	0	5	1
	China	10	58	124	140	138	2	0	0	0	0	0	0	39
	China, Hong Kong SAR	204	114	212	168	96	106	136	75	183	173	110	83	138
	Malaysia	0	0	0	0	0	0	0	2	0	0	0	0	0
	Singapore	5	3	1	0	0	0	6	0	0	0	5	0	2
	Taiwan Province of China	1	0	0	0	0	0	0	5	3	1	0	1	1
	United States of America	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa total		220	175	338	308	234	108	142	82	186	174	115	89	181
Spain	Canada	0	0	0	0	0	8	7	5	8	7	6	9	4
	China	1 469	779	382	37	87	139	8	194	472	150	0	0	310
	China, Hong Kong SAR	3 159	3 136	3 353	3 454	2 579	2 676	2 909	3 188	2 647	2 536	2 054	2 460	2 846
	Indonesia	49	0	0	0	0	0	0	0	26	26	0	28	11
	Malaysia	0	0	25	0	0	0	0	0	0	0	0	0	2
	Singapore	4	69	253	178	106	599	694	1 107	4	9	2	48	256
	Taiwan Province of China	5	23	41	0	21	72	155	84	37	47	94	166	62
	United States of America	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain total		4 686	4 007	4 054	3 669	2 793	3 494	3 773	4 578	3 194	2 775	2 156	2 711	3 491

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Taiwan Province of China	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	37	0	78	376	637	679	1 127	1 156	273	117	1	1	374
	China, Hong Kong SAR	1 054	1 108	1 053	1 326	1 150	772	1 254	1 330	991	716	922	1 006	1 057
	Malaysia	1	0	0	0	0	0	0	0	0	0	0	1	0
	Singapore	51	35	75	290	311	214	174	152	148	90	94	113	146
	United States of America	0	0	0	0	0	0	18	0	0	0	0	0	2
Taiwan Province of China total		1 143	1 143	1 206	1 992	2 098	1 665	2 573	2 638	1 412	923	1 017	1 121	1 578
Thailand	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0	0
	China, Hong Kong SAR	42	33	27	39	14	26	13	8	19	25	33	92	31
	Indonesia	0	0	0	0	4	0	72	38	24	0	96	0	20
	Malaysia	0	1	0	2	708	762	872	1 045	1 065	1 050	1 200	1 237	662
	Singapore	16	35	59	76	63	55	35	47	43	29	29	51	45
	Taiwan Province of China	13	3	0	0	0	0	0	0	14	17	31	72	13
Thailand total		71	72	86	117	789	843	992	1 138	1 165	1 121	1 389	1 452	770
Trinidad and Tobago	Canada	0	0	1	0	0	0	1	3	5	19	2	4	3
	China, Hong Kong SAR	24	5	1	7	0	7	22	7	103	182	127	333	68
	Taiwan Province of China	0	0	0	0	16	0	15	70	91	91	124	27	36
	United States of America	0	0	0	0	0	0	0	0	0	0	0	0	0
Trinidad and Tobago total		24	5	2	7	16	7	38	80	199	292	253	364	107

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
United Arab Emirates	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0
	China	0	2	0	0	0	8	0	0	0	0	0	0	1
	China, Hong Kong SAR	536	378	554	510	407	509	408	477	511	459	499	441	474
	Indonesia	0	0	0	0	14	0	0	0	0	0	0	0	1
	Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
	Singapore	9	23	2	6	2	5	1	2	0	0	1	1	4
	Taiwan Province of China	0	0	0	0	0	0	0	8	0	0	0	0	1
United Arab Emirates total		545	403	556	516	423	522	409	487	511	459	500	442	481
United States of America	Canada	0	0	11	8	2	14	12	16	10	7	1	3	7
	China	2	0	0	0	0	0	0	0	0	0	47	0	4
	China, Hong Kong SAR	506	169	315	289	281	235	176	175	251	186	251	291	260
	Indonesia	0	0	0	0	0	1	0	0	0	0	0	0	0
	Malaysia	4	1	3	3	1	1	0	1	0	0	0	0	1
	Singapore	50	0	12	3	8	0	0	2	0	0	0	1	6
	Taiwan Province of China	21	0	0	1	0	0	0	0	4	0	0	0	2
United States total		583	170	341	304	292	251	188	194	265	193	299	295	281
Uruguay	China	0	0	0	0	0	0	0	0	3	4	0	0	1
	China, Hong Kong SAR	118	61	111	69	109	47	51	44	39	48	30	33	63
	Singapore	0	17	26	16	182	328	328	104	10	0	0	1	84
	Taiwan Province of China	6	0	15	0	61	1	0	0	0	0	0	11	8
Uruguay total		124	78	152	85	352	376	379	148	52	52	30	45	156
Yemen	China	0	0	0	0	0	8	34	185	278	0	0	0	42
	China, Hong Kong SAR	350	225	118	107	56	83	219	278	228	216	422	333	220
	Indonesia	0	0	1	4	2	1	0	0	0	0	0	0	1
	Singapore	23	43	133	112	98	89	89	94	123	44	9	14	73
	Taiwan Province of China	0	0	0	1	0	0	9	3	10	0	0	0	2
Yemen total		373	268	252	224	156	181	351	560	639	260	431	347	337

TABLE A1.1 (continued)

Exporter (origin)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
World	Canada	0	0	91	66	68	112	112	94	118	184	107	103	88
	China	4 613	3 129	3 555	3 818	4 770	3 416	2 662	2 546	2 019	732	182	161	2 634
	China, Hong Kong SAR	11 475	10 472	10 964	12 458	11 088	10 395	9 365	10 192	9 950	9 356	9 873	10 293	10 490
	Indonesia	127	41	46	144	193	332	293	84	220	151	249	101	165
	Malaysia	57	66	65	36	849	843	1 036	1 197	1 197	1 331	1 345	1 433	788
	Singapore	1 170	912	1 416	1 431	1 593	1 933	2 044	2 162	848	574	591	595	1 272
	Taiwan Province of China	498	398	310	480	525	434	711	573	796	978	1 157	1 260	677
	United States of America	66	51	39	11	14	27	47	29	29	21	34	58	36
World total		18 006	15 069	16 486	18 444	19 100	17 492	16 270	16 877	15 177	13 327	13 538	14 004	16 149

APPENDIX 2

Estimation of shark fin import volumes for selected countries from 2000 to 2011

Import volumes estimated by summation of export volumes reported by the national statistics or customs authorities of China, China, Hong Kong SAR, India, Indonesia, Malaysia, Singapore, Thailand, Taiwan Province of China and the United States of America. Volumes are as reported and no adjustment has been made for water content of frozen shark fins.

Sources by exporter (reporting country):

China	China Customs
China, Hong Kong SAR	Hong Kong Census and Statistics Department
India	Ministry of Commerce
Indonesia	Statistics Indonesia
Malaysia	Department of Statistics Malaysia
Singapore	International Enterprise Singapore
Taiwan Province of China	Taiwan Directorate General of Customs
Thailand	Thai Customs Department
United States of America	U.S. Department of Commerce, Bureau of Census

TABLE A2.1
Estimated imports by importer and reporter, tonnes, 2000–2011

Importer (destination)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Australia	China, Hong Kong SAR	7	6	4	3	4	3	2	3	3	2	3	3	4
	India	0	0	0	0	0	0	0	0	0	2	0	0	0
	Indonesia	0	2	0	0	0	7	7	0	0	0	0	2	2
	Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0
	Singapore	0	0	3	1	1	0	1	3	0	1	1	2	1
	Taiwan Province of China	0	0	1	0	0	1	0	1	0	0	6	0	1
	Thailand	0	0	0	0	0	2	0	1 099	242	281	266	284	181
	United States of America	0	0	0	0	0	0	0	0	1	0	0	0	0
Australia total		7	8	8	4	5	13	10	1 106	246	286	276	291	188
China	China, Hong Kong SAR	7 270	6 044	8 452	8 633	7 952	6 274	5 096	4 790	4 307	2 984	1 031	1 257	5 341
	India	1	1	10	0	1	0	9	0	0	4	0	0	2
	Indonesia	1	0	9	27	0	4	48	67	1	95	82	5	28
	Malaysia	0	0	2	0	1	0	0	0	0	0	0	0	0
	Singapore	53	42	48	2	1	0	247	186	39	2	5	4	52
	Taiwan Province of China	0	0	7	4	18	213	168	184	149	242	84	114	99
	Thailand	0	0	0	0	0	0	0	59	138	123	143	105	47
	United States of America	131	0	0	0	16	2	0	0	1	3	2	5	13
China total		7 456	6 087	8 528	8 666	7 989	6 493	5 568	5 286	4 635	3 453	1 347	1 490	5 583
China, Hong Kong SAR	China	1 907	1 611	1 708	2 076	2 351	1 179	419	416	268	231	194	232	1 049
	India	204	142	168	147	45	64	66	64	56	70	77	45	96
	Indonesia	297	299	332	390	428	404	373	463	332	455	441	356	381
	Malaysia	11	1	10	1	3	1	4	4	21	8	20	0	7
	Singapore	666	267	530	509	718	1 025	1 003	826	439	211	294	161	554
	Taiwan Province of China	1 020	1 027	874	1 177	1 242	927	809	666	569	504	757	752	860
	Thailand	55	40	18	17	17	31	7	1 322	198	235	108	115	180
	United States of America	204	307	362	38	61	57	42	32	30	71	39	29	106
China, Hong Kong SAR total		4 364	3 694	4 002	4 355	4 865	3 688	2 723	3 793	1 913	1 785	1 930	1 690	3 234
Indonesia	China, Hong Kong SAR	2	9	0	6	4	4	0	0	6	0	0	0	3
	India	0	0	0	26	14	8	0	0	0	0	0	0	4
	Malaysia	0	0	0	1	11	3	92	129	84	53	110	222	59
	Singapore	0	0	0	110	125	145	133	140	40	9	15	19	61
	Taiwan Province of China	0	3	0	1	1	0	0	0	0	0	0	0	0
	Thailand	0	0	0	0	0	0	0	2	426	24	1	0	38
	United States of America	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia total		2	12	0	144	155	160	225	271	556	86	126	241	165

TABLE A2.1 (continued)

Importer (destination)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Japan	China	108	55	84	91	85	155	85	86	102	108	77	92	94
	China, Hong Kong SAR	414	108	108	98	126	141	315	247	225	186	214	214	200
	India	78	93	8	0	8	0	0	0	0	0	0	0	16
	Indonesia	87	20	100	226	277	822	485	146	880	281	88	92	292
	Singapore	1	8	1	81	18	79	19	126	1	2	0	1	28
	Taiwan Province of China	68	37	92	1	2	13	4	3	91	45	42	33	36
	Thailand	0	0	0	0	0	0	1	3 841	2 375	2 516	3 231	3 802	1 314
	United States of America	0	1	2	2	0	0	2	0	4	0	0	0	1
Japan total		756	322	395	499	516	1 210	911	4 449	3 678	3 138	3 652	4 234	1 980
Malaysia	China	0	5	1	0	0	0	0	0	0	0	1	0	1
	China, Hong Kong SAR	52	15	6	15	22	13	16	17	16	14	12	14	18
	India	0	0	0	3	2	1	0	4	1	0	1	1	1
	Indonesia	182	17	54	377	26	30	18	28	25	136	101	111	92
	Singapore	124	80	95	72	75	87	54	84	42	38	32	31	68
	Taiwan Province of China	9	0	17	1	1	0	0	0	0	0	6	2	3
	Thailand	1	1	2	2	1	0	0	156	6	3	61	88	27
	United States of America	0	2	0	0	0	0	0	0	0	0	0	0	0
Malaysia total		368	120	175	470	127	131	88	289	90	191	214	247	209
Mexico	China, Hong Kong SAR	0	0	0	0	0	0	0	9	5	0	0	0	1
	India	0	0	0	0	0	0	0	0	6	0	0	0	1
	Thailand	0	0	0	0	0	0	0	1 331	0	0	0	0	111
	United States of America	0	3	8	1	2	1	0	0	0	0	0	0	1
Mexico total		0	3	8	1	2	1	0	1 340	11	0	0	0	114
Myanmar	China, Hong Kong SAR	0	0	0	0	0	0	0	0	0	0	0	0	0
	Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0
	Thailand	0	0	0	0	0	0	0	41	2	119	813	598	131
Myanmar total		0	0	0	0	0	0	0	41	2	119	813	598	131
Republic of Korea	China	1	2	0	0	0	8	3	1	0	14	17	6	4
	China, Hong Kong SAR	56	50	48	35	35	42	53	66	63	37	46	54	49
	Indonesia	0	1	17	37	11	11	0	6	6	10	10	9	10
	Malaysia	0	0	0	2	7	6	2	8	3	0	1	1	3
	Singapore	0	2	0	1	0	0	1	3	0	0	0	0	1
	Taiwan Province of China	0	0	0	0	1	0	0	0	0	0	2	2	0
	Thailand	0	0	0	0	0	0	0	200	38	109	244	179	64
	United States of America	0	0	13	1	0	0	0	0	0	0	0	0	1
Republic of Korea total		57	55	78	76	54	67	59	284	110	170	320	251	132

TABLE A2.1 (continued)

Importer (destination)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
Russian Federation	China	0	0	0	0	0	0	0	0	0	0	0	0	0
	China, Hong Kong SAR	0	0	0	0	0	0	0	0	0	0	0	0	0
	Thailand	0	0	0	0	0	0	0	1 543	74	185	967	1 209	332
Russian Federation total		0	0	0	0	0	0	0	1 543	74	185	967	1 209	332
Singapore	China	30	18	20	27	30	35	48	27	18	27	25	22	27
	China, Hong Kong SAR	72	98	105	75	52	219	61	84	70	155	116	120	102
	India	115	91	61	66	42	36	22	17	25	13	16	10	43
	Indonesia	172	73	164	89	116	111	122	82	61	184	108	273	130
	Malaysia	9	2	5	2	65	5	7	87	312	258	32	39	69
	Taiwan Province of China	5	12	65	92	44	81	59	108	66	163	236	147	90
	Thailand	7	9	13	9	9	10	6	455	255	237	234	273	126
	United States of America	14	0	0	0	0	0	0	0	0	0	0	0	1
Singapore total		424	303	433	360	358	497	325	860	807	1 037	767	884	588
Taiwan Province of China	China	2	0	0	1	0	21	14	16	5	0	0	21	7
	China, Hong Kong SAR	116	46	79	82	183	152	51	118	154	180	221	328	143
	Indonesia	407	7	13	25	8	36	7	5	5	79	279	11	74
	Malaysia	0	0	0	0	0	0	0	1	2	1	0	0	0
	Singapore	75	141	162	99	122	79	229	251	75	18	28	7	107
	Thailand	3	6	0	0	1	0	0	343	347	330	190	118	112
	United States of America	0	9	4	1	1	0	0	0	0	0	0	0	1
Taiwan Province of China total		603	209	258	208	315	288	301	734	588	608	718	485	443
Thailand	China	0	0	0	0	0	0	0	0	2	2	0	2	1
	China, Hong Kong SAR	62	48	22	66	83	79	71	54	55	21	41	58	55
	India	0	0	8	0	8	0	0	0	1	1	0	0	2
	Indonesia	0	0	11	2	0	0	0	4	9	10	3	20	5
	Malaysia	0	6	3	2	2	0	4	2	9	12	10	10	5
	Singapore	23	10	17	14	7	13	9	10	7	9	10	8	11
	Taiwan Province of China	0	2	0	0	0	0	0	0	0	0	0	0	0
	United States of America	17	0	0	0	9	0	0	0	0	0	0	0	2
Thailand total		102	66	61	84	109	92	84	70	83	55	64	98	81

TABLE A2.1 (continued)

Importer (destination)	Reporter	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.
United States of America	China	4	0	0	0	0	0	0	0	0	0	0	0	0
	China, Hong Kong SAR	41	37	43	49	34	53	70	45	50	30	29	36	43
	India	39	16	5	3	0	0	20	4	2	1	0	0	8
	Indonesia	0	0	17	0	0	7	0	0	0	1	0	0	2
	Malaysia	0	0	0	0	0	0	1	0	0	0	0	0	0
	Singapore	7	4	6	2	1	0	0	0	0	0	0	0	2
	Taiwan Province of China	3	3	10	11	13	5	6	12	12	3	10	8	8
	Thailand	0	0	0	0	0	0	0	951	169	466	294	522	200
United States total		94	60	81	65	48	65	97	1 012	233	501	333	566	263
Viet Nam	China, Hong Kong SAR	0	7	0	0	7	58	93	152	227	1 136	3 218	1 176	506
	India	0	0	0	0	0	1	0	0	0	0	0	0	0
	Indonesia	1	0	0	0	0	0	0	0	0	235	1 240	572	171
	Malaysia	0	0	0	0	0	0	0	0	1	0	0	0	0
	Singapore	4	9	0	2	0	18	56	36	13	0	2	0	12
	Taiwan Province of China	3	0	0	0	0	0	0	0	0	0	0	0	0
	Thailand	2	4	0	0	0	0	0	5	1	1	0	0	1
Viet Nam total		10	20	0	2	7	77	149	193	242	1 372	4 460	1 748	690
World	China	2 065	1 691	1 814	2 198	2 473	1 398	571	552	394	382	314	489	1 195
	China, Hong Kong SAR	8 167	6 548	8 934	9 120	8 560	7 132	5 963	5 670	5 300	4 875	5 043	3 354	6 556
	India	481	345	271	253	207	135	140	91	113	91	113	76	193
	Indonesia	1 166	479	771	1 288	943	1 554	1 073	801	1 320	1 641	2 591	1 795	1 285
	Malaysia	20	10	20	9	163	17	120	365	459	347	200	298	169
	Singapore	967	628	990	940	1 126	1 538	1 862	1 690	677	297	390	239	945
	Taiwan Province of China	1 123	1 084	1 068	1 287	1 323	1 241	1 048	1 015	916	975	1 145	1 065	1 108
	Thailand	70	61	34	29	29	44	18	13 188	4 742	5 005	7 142	7 723	3 174
	United States of America	366	335	441	49	93	65	49	36	37	77	42	38	136
World total		14 425	11 181	14 343	15 173	14 917	13 124	10 844	23 408	13 958	13 690	16 980	15 077	14 760

APPENDIX 3

List of country or territory trade data sources

Country/territory	Data source	Valuation	
		Export	Import
Argentina	INDEC – National Institute of Statistics & Census	FOB	CIF
Brazil	SECEX – Foreign Trade Secretariat	FOB	FOB
Canada	Statistics Canada	FOB	FOB
Chile	Chile Customs – Servicio Nacional de Aduana	FOB	CIF
China	China Customs	FOB	CIF
China, Hong Kong SAR	Hong Kong Census & Statistics Department	FOB	CIF
Costa Rica	INEC – National Institute of Statistics & Census	FOB	CIF
France	Direction Nationale des Statistiques du Commerce Extérieur – DNSCE	FOB	CIF
India	Ministry of Commerce	FOB	CIF
Indonesia	Statistics Indonesia	FOB	CIF
Italy	Italy Customs (National Institute of Statistics)	FOB	CIF
Japan	Japan Ministry of Finance	FOB	CIF
Malaysia	Department of Statistics Malaysia	FOB	CIF
Mexico	INEGI [2006 – present]	FOB	FOB
New Zealand	Statistics New Zealand	FOB	VFD
Panama	The Republic of Panama General Comptroller Office	FOB	CIF
Singapore	International Enterprise Singapore	FOB	CIF
Republic of Korea	Korea Customs and Trade Development Institution	FOB	CIF
Spain	Agencia Tributaria	FOB	CIF
Taiwan Province of China	Taiwan Directorate General of Customs	FOB	CIF
Thailand	Thai Customs Department	FOB	CIF
United States of America	U.S. Department of Commerce, Bureau of Census	FAS	CV
Uruguay	Central Bank of Uruguay	FOB	CIF

This publication is intended to complement and inform the International Plan of Action for the Conservation and Management of Sharks, developed in 1998 to address concerns over possible negative effects of increased shark catches on vulnerable shark populations. It is also intended as a part complement to, and part continuation of, Shark Utilization, Marketing and Trade (FAO Fisheries Technical Paper No. 389), published in 1999. Much of that paper remains valid, e.g. the information on product utilization and processing, as well as that on the biological characteristics of shark species. Consequently, the present publication focuses primarily on providing an updated picture of the world market for shark products using data that in many cases have only become available in recent years, such as origin and destination data. Where data are still lacking, an effort has been made to estimate the relevant figures through examination of the trade databases of the world's major traders of shark products. This increased availability of data is believed to have allowed a more accurate – and up-to-date – initial evaluation of the relative importance of each country or territory, thus providing a more solid basis on which to target investigative efforts. The country-by-country assessments of shark fin trade recording practices also constitute another important area of focus that had not previously been addressed. However, given the primary objective of this study (above), those details that are necessarily not captured in such a broad-scale review will need to be identified and elucidated in regional or country-specific studies.

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