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From head to tail

How European nations commercialise shark products

Contents

Blue shark meat for sale at a supermarket in Boulogne sur Mer, France 2007

Executive Summary 1

1. Introduction 2

2. Supply and demand of shark fins 3

3. Use of shark liver oil 6

4. Consumption of shark meat 8

5. Marketing of cartilage, skin and other shark products 12

6. Conclusions 14

References 15

Recommendations 18

Executive Summary

Shark fins drying on rooftop in Callao, Lima, Peru 2007

- Shark fins are widely used for the expensive Asian dish of shark fin soup, the reason why most sharks today are hunted for their fins. Three European countries, the Netherlands, France and Spain, were found to be involved in the shark fin trade in 2005. After China, Spain is the second largest exporter of shark fins to the Hong Kong market, one of the largest in the world.

- EU countries play a major role in the international trade of shark meat. Even if they only produced about 12% of shark meat worldwide in 2005, they were responsible for 56% of worldwide shark meat imports and 32% of worldwide exports. In 2006, the EU imported more than 40,000 tons of shark meat.

- Italy is the largest European consumer of shark meat, accounting for more than 30% of all EU imports. Italy is also the fourth biggest importer of shark products in general worldwide, after Spain, Korea and Hong Kong.

- Germany is within the top five European importers of shark products in general, with more than 1,000 tons coming into the country in 2006. This same year France imported more than 3,600 tons of shark products.

- In many countries where shark meat is sold, it has been necessary to camouflage the name *shark* under a number of euphemisms to overcome consumer resistance to buying shark products.

- Shark liver oil, shark cartilage and shark leather are also products derived from sharks that are used for various purposes in Europe. Prominent examples are facial cream and football boots.

1 Introduction

Fileting of blue shark for consumption at auction hall in Valetta, Malta 2006

Interview with a fisherman at an auction in Valetta, Malta 2006

What is that meat you're preparing?

This is blue shark steak.

It actually looks like steak. I haven't seen blue shark being prepared like that.

It's very common here in Malta- and in Italy they also prepare blue shark like steak. You can make filets really easily

It looks like swordfish.

Yes and it tastes as good as swordfish as well.

Are you selling it as swordfish?

No, but if you buy swordfish off the menus in restaurants around here - and also in Italy for that matter - you won't be able to tell if you've been served shark or swordfish.

So how do I tell the difference?

That's the hard part. From taste alone you cannot tell. You need to see it when it's bought. That's why in markets you can see the head next to the swordfish meat.

But shark meat is much cheaper than swordfish. How can I be sure I am not paying too much for my dinner?

You can't. But either way, you will enjoy your dinner.

Sharks have been fished for hundreds of years, some records even date back to ancient Roman times.[1] But it has only been in the last few decades when the volume of shark catches increased exponentially. Sharks are now targeted by both highly industrialised fishing fleets and artisanal fisheries.

Sharks are mainly hunted for their fins to make the traditional Chinese shark fin soup. Until the mid 1980s during the Mao Zedong and early Deng Xiaoping eras, shark fins were considered an imperial delicacy banned from Chinese dining tables or priced beyond the reach of all but the wealthiest consumers.

But as China's tiger economy roared, so did demand for the desired shark fin soup. Classified as a "Pu" (strengthening) food, shark fin is considered to have medicinal qualities. It is the Chinese equivalent to the West's chicken soup: good for curing the flu and strengthening general health and the immune system. Due to the fact that shark fins are much more valuable than the rest of the shark body, sharks are often "finned". This is when a shark is hauled on deck, its fins are sliced off, and the animal - sometimes still alive - is thrown back to sea for an inevitable death. This practice is cruel and incredibly wasteful.

Oceana researchers carried out a year-long investigation into the shark fin trade, visiting harbours, shark fin traders and shark fin factories around the world. In the harbours, the shark species found to be the most important for the fin market include blue (*Prionace glauca*), mako (*Isurus* spp.), hammerheads (*Sphyrna* spp.) and thresher (*Alopias* spp.) sharks. Makos, hammerhead and threshers, which are targeted by the Spanish and Portuguese longliner fleets, are considered "threatened" according to the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.

While fins are the main reason behind the increasing worldwide hunt for sharks, there are many other shark parts used and consumed. In conjunction with the raising worldwide market for shark fins, markets for shark meat have also opened up, such as in some South American countries, like Brazil. Markets have also opened up in eastern European countries as a solution for increasing European shark catches.[2] White-coloured shark meat is highly appreciated by European consumers and often used as a replacement for other overexploited higher-value fish. For example, in Italy, frozen blue shark steaks are sold side by side with frozen swordfish steaks. The shark steaks are cheaper and are sometimes offered as a replacement for the similar-looking overfished swordfish.[3] Recently, Poland has also began to acquire a taste for shark steaks, thanks to growing imports of shark meat coming directly from Spain.[4]

Markets for shark liver oil have been in existence throughout the past century. Historically, shark liver oil was used as high-quality machine oil, but this was later replaced by synthetic products. However, shark liver oil is now used for the production of squalene, an expensive ingredient in certain cosmetic creams and lotions.[5] Squalene is touted for increasing absorption of skin creams and lotions and preventing moisture loss. Targeted fisheries for the liver oil of deep-sea sharks have depleted several species, including Portuguese dogfish (*Centroscymnus coelolepis*) and leafscale gulper sharks (*Centrophorus squamosus*).[6]

The demand for shark fins, meat and liver oil, and the resulting fishing pressure, has driven numerous shark species to the brink of extinction. In particular, exploiting sharks to only commercialise certain parts and not taking advantage of the entire animal is not a sustainable fishery practice. As a result, according to the IUCN Red List, about one-third of European shark and ray populations assessed are considered "threatened".[7]

2 Supply and demand of shark fins

Shark fins can be extremely expensive. They are sold in Asia for up to 1,000 Euro per fin. These expensive fins, usually from the larger shark species like whale sharks (*Cethorhinus maximus*), are used as displays in shark fin shops and shark fin soup restaurants.[8]

In restaurants, shark fin soup can cost up to 80 Euro per bowl. The main clientele for this dish are Chinese businessmen, ready to make an important deal with their trade partners and clients that demand to be treated like VIP's. Businessmen who don't serve shark fin soup risk loosing credibility, as it is said that serving this dish shows respect and honour for business partners. In addition to business situations, shark fin soup is also a traditional component in wedding banquets and other celebratory events.

The soup, consisting of gelatinous and mostly tasteless cartilage and flavoured with chicken or pork broth, was established as a component of formal banquets during the Ming dynasty (1368-1644 AD). The soup was once only known to a handful of small regions around Canton, China, and Southeast Asia, and used in ceremonies and celebrations, but not as an everyday meal since the shark fins, even only 30 years ago, were difficult to obtain.

Until the mid-1980s during the Mao Zedong and early Deng Xiaoping eras, shark fins were considered an imperial delicacy banned from the tables of the communist country or priced beyond the reach of all but the wealthiest consumers.[9]

But as the Chinese tiger economy roared, so did the demand for shark fin soup. As a result of China's resurgent economy, more relaxed social norms and the country's current population growth of approximately 10 million people per year, a large number of consumers are now tasting shark fin for the first time. Classed as a "Pu" (strengthening) food, shark fin is considered to have medicinal qualities. It is the Chinese equivalent to the West's chicken soup: good for curing the flu and additionally softening ladies' skin and serving as a health tonic or even as an aphrodisiac like rhinoceros horn. Consumers judge both the prestige and tonic properties of the soup by the length, thickness and texture of the ceratotrichia, or fin needles.

Frozen shark fins unloaded from a Spanish longliner in Las Palmas, Gran Canaria, Spain 2008

Frozen shark fins unloaded from a Spanish longliner in Las Palmas, Gran Canaria, Spain 2008

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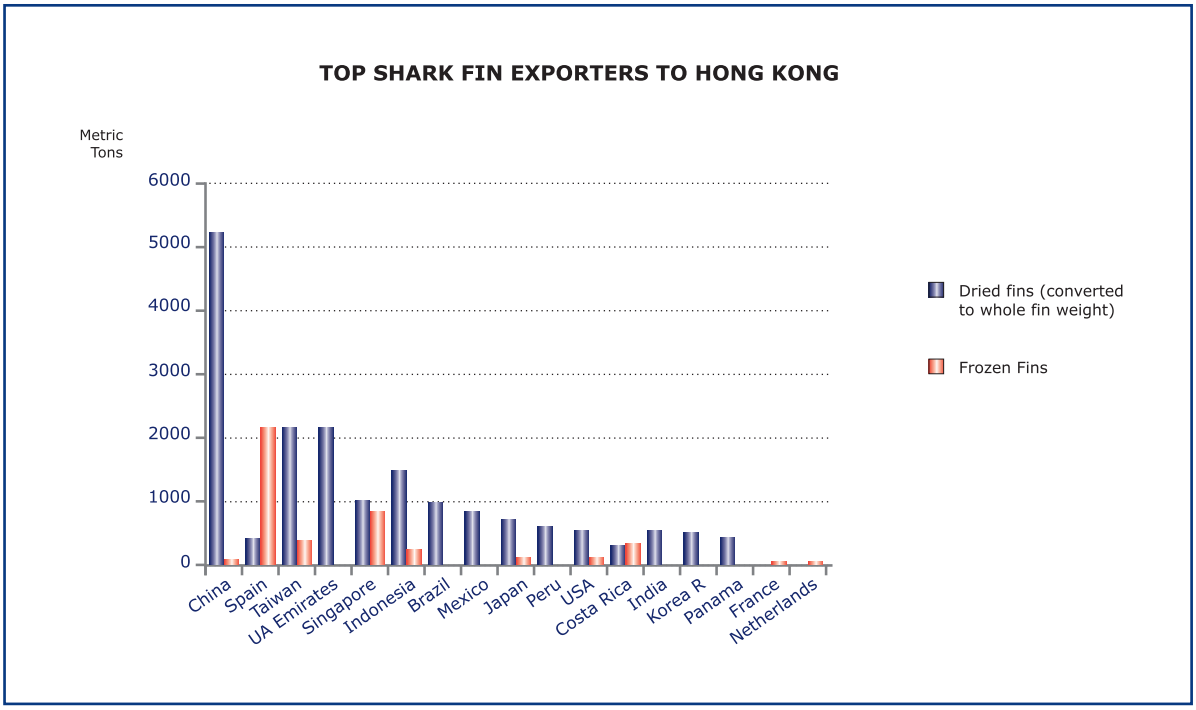

Dried shark fins -with their charactaristic fin needles- for sale at dealer in Callao, Lima, Peru 2007

The Hong Kong market has historically been the largest market for shark fins in the world, even though during the last few years many fins have been sent for processing directly to China. Scientists estimate that the Hong Kong market represents 50% of the worldwide shark fin trade.[10] In 2005, 80 different countries delivered almost 6,000 tons of dried and more than 4,500 tons of frozen shark fins to Hong Kong. Converted into the weight of natural whole fins, that means more than 27,000 tons of shark fins, representing an annual shark catch of more than 500,000 tons[11]. Keeping in mind that the Hong Kong market represents only 50% of the world fin market, one can assume that far more than a million tons of sharks are caught per year. This number is more than double the officially reported catches.

Oceana researchers carried out a year-long investigation into the shark fin trade, visiting harbours, shark fin traders and shark fin factories around the world. Three European countries, the Netherlands, France and Spain, were found to be involved in the shark fin trade in 2005. After China, Spain is the second largest exporter of shark fins to the Hong Kong market and is responsible for around 10% of the shark fins traded there[12]. The Galician port of Vigo and the port of Las Palmas in the Canary Islands are the European centres for the shark fin trade. In Las Palmas, both Spanish vessels and the Japanese Atlantic longliners land shark fins.

Japanese longliners in the harbour of Las Palmas, Gran Canaria, Spain 2008

One way to end fisheries for endangered sharks and their valuable fins, and to end the wasteful practice of shark finning, is to get shark fins off Chinese menus. Several conservation organisations, including WildAid, are already driving powerful and successful consumer campaigns in Asia to end the consumption of shark fins and shark fin soup.

2

Frozen shark fins unloaded from a Japanese longliner in Las Palmas, Gran Canaria, Spain 2008

The most famous celebrity representatives of the anti-shark fin movement in China are actor Jackie Chan and NBA basketball player Yao Ming. "Endangered species are our friends", Yao declared while denouncing the practice of shark finning.[13] Shark fin soup is now off the menu at Hong Kong's oldest university after protests[14]. Hong Kong Disneyland dropped the dish from its wedding banquet menu after international pressure from environmental groups.[15] Xu Zhihong, president of the prestigious Beijing University, said that "serving shark fin to foreign guests during the Olympic Games could greatly hurt China's national image, and officials should start to remove the dish from the dining table right now"[16].

The campaign to stop the consumption of shark fin soup has been successful in other Asian countries as well. The Malaysian government stopped providing shark fin soup to guests[17] and Taiwanese President Chen Shui-bian announced that shark fins would be excluded from the menu at his daughter´s wedding.[18]

Frozen shark trunks and dried shark fins from a Japanese longliner in Las Palmas, Gran Canaria, Spain 2008

3 Use of shark liver oil

During the early to mid-20th century, shark liver oil was produced mainly by Japan, with an average of 3,800 tons per year up to 1940. Before 1986, liver oil was used as high quality machine oil in high-tech products, but it has since been replaced by synthetic oils. Shark liver oil has even been used in space shuttles[19]. Later, another main worldwide use was in the production of vitamin A, prior to the availability of synthetic substitutes.[20]

Today, shark liver oil is mostly found in beauty products in the form of squalene, an organic compound also found in some plant sources. The squalene is used as an emollient, marketed for increasing the spreadability and skin absorption of creams and lotions, preventing moisture loss and restoring suppleness and flexibility to the skin.[21] Typically, the higher the price, the greater the chance that one's facial cream, anti-aging treatment or cosmetic lotion will contain this ingredient. Today squalene is also used as a bactericide and in the manufacture of pharmaceuticals such as haemorrhoidal creams in the U.S.[22]

Deep-sea 'siki' sharks at the harbour of Lorient, France 2007

Squalene is mainly harvested from the livers of sharks, where it is found in great quantities. Unlike bony fishes, sharks have no swim bladder to provide them with neutral buoyancy and prevent sinking, but they still manage to be almost neutrally buoyant in seawater. While their relatively light cartilaginous skeleton helps, they owe their buoyancy to the low density oils stored in their livers.

Deep-sea sharks (those living in ocean depths of 300 to 1,500 metres) have especially large reserves of squalene. Their livers may represent up to 25% of the weight of the entire animal, compared with around 5% in mammals. Consequently, deep-sea sharks are often cas)

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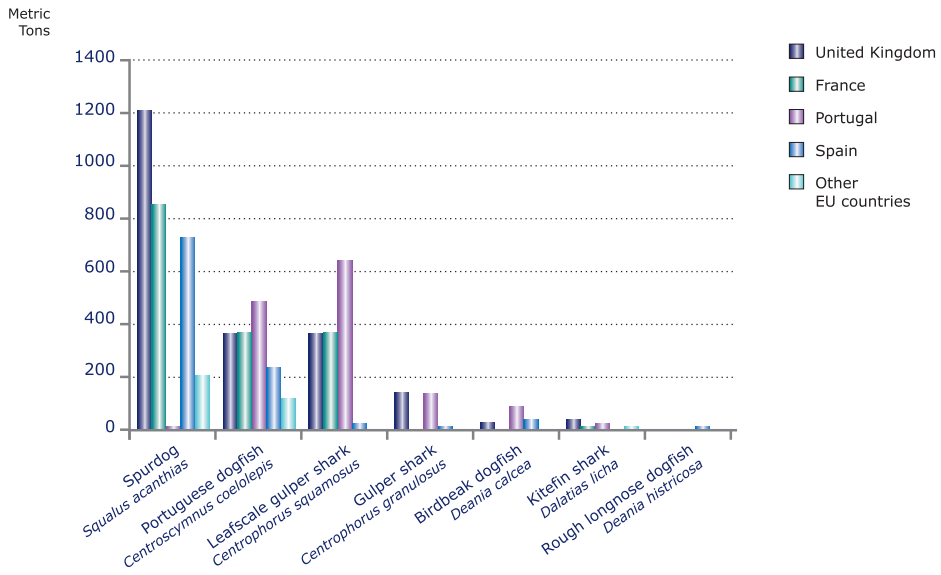
As Europe is a major force in the production and trade of squalene from deep-sea sharks, Oceana's campaign to ensure sustainable fisheries for these species has included investigative visits to fishing ports and cosmetics shops, and discussions with cosmetic companies and squalene manufacturers to gather information about uses, trade and markets for this product and the sharks it comes from.

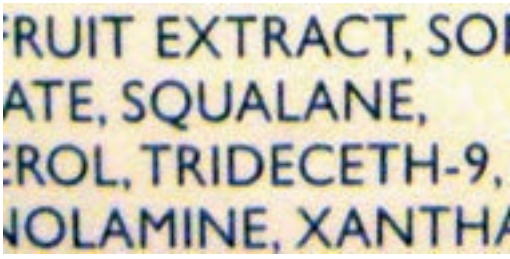
CATCHES OF DEEP-SEA SHARKS BY EUROPEAN UNION COUNTRIES, 2006



Shark-based squalene has a readily available substitute on the market that comes from a purely vegetable origin. It can be obtained from olives (a component of olive oil) and it has the same qualities of animal-based squalene and is less expensive than the animal version.[26] According to the EU directive regarding ingredient listing for cosmetics, only "squalene" is specified on the product. Consumers thus cannot distinguish between creams with shark-based squalene or plant-based alternatives as shown in the picture on this page.

According to Oceana's research, many European cosmetic companies are already aware of the environmental problems associated with shark-based squalene. Unilever, the multinational company famous for many brands of food, personal care and household products, has decided to remove shark squalene from its cosmetic brands, including Pond's and Dove, and will replace it with a plant-based version. Like Unilever, as of early 2008 L'Oreal was also completing phase-out of production with shark-based squalene and its substitution with the plant-basted ingredient. Beiersdorf, LVMH, Henkel, Boots, Clarins, Sisley and La Mer (an Estée Lauder brand) have either made the decision to stop using animal-based squalene or had a policy to never use it in the first place, according to the information these companies provided to Oceana. According to industry sources, shark based squalene is still used in most high-quality Japanese cosmetic brands.[27]

Example of Squalane listed as an ingredient of a cosmetics product, Spain 2008



4 Consumption of shark meat

Frozen blue shark filets sold as "Caella" in a supermarket in Madrid, Spain 2007

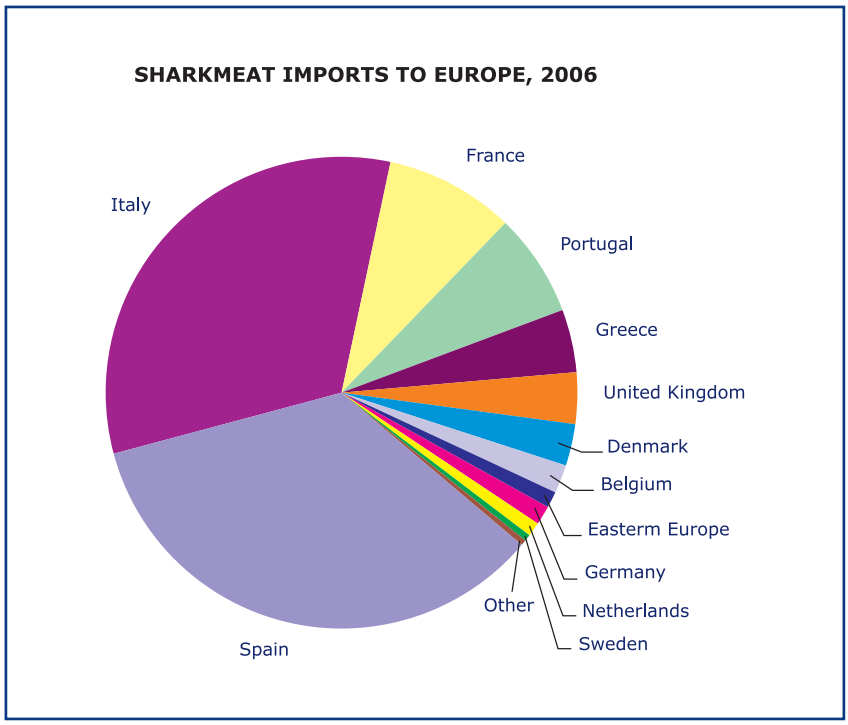
European Union countries play a major role in the international trade of sharks and shark meat. Even if they produced only about 12% of shark meat worldwide in 2005, they were responsible for 56% of global shark meat imports and 32% of worldwide exports. In 2006, the EU imported 40,421.6 tons of shark meat.[28]

Spain, Portugal, France and Germany, highlighted below, are the biggest European shark meat consumers, coinciding with their own high catches. Spain is the largest market for shark meat in Europe, importing and exporting most of the sharks from other EU countries. In 2006, Spain was responsible for 42% of EU imports of sharks and shark meat. The second largest importer of shark meat this same year was Italy, responsible for 25% of EU total imports. Italy is indeed the largest consumer of imported shark meat in the European Union, and one of the largest worldwide. France, Portugal, the United Kingdom, Greece, Denmark, Belgium and Germany are other EU importers of shark meat and are among the top 20 importers worldwide.

In the last few years, the shark meat imports of Eastern Europe have been growing as well. Even though their overall share is still small, Bulgaria, the Czech Republic, Slovenia, Romania, Poland, Slovakia, Lithuania, Hungary, Latvia and Estonia are now importing frozen sharks and dogfishes for local consumption.[29]

Frozen blue shark filets sold as 'Tintorera' in supermarket, Madrid, Spain 2007

Tope shark on the menu as Cazón at restaurant in Valencia, Spain 2008



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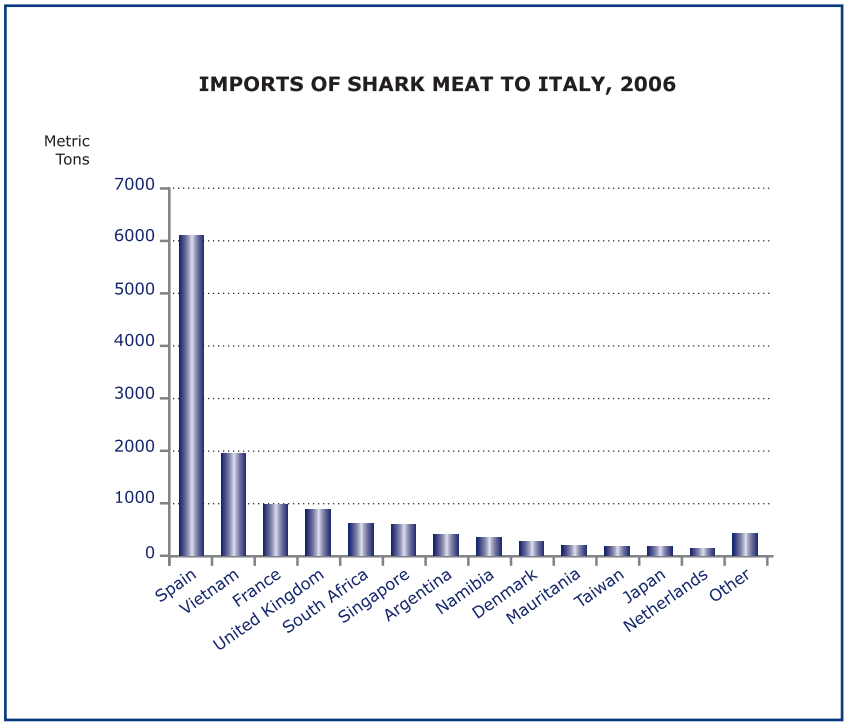
Spain

Besides trading a lot of shark meat, the Spanish, knowingly or not, also eat a lot of it. According to the Ministry of Agriculture, Fisheries and Food, Spanish shark catches totalled more than 70,000 tons in 2005[30], making shark the second most caught species by Spanish fishing vessels after tuna. As Spanish shark imports and exports were nearly equal in 2005, and the country maintains that it does not produce fishmeal out of its caught sharks, shark meat consumption must have also been around 70,000 tons. This makes sharks one of the top five species consumed in Spain, on par with that of cod.

Frozen and fresh shark fillets lay next to tuna and swordfish steaks in supermarkets and fish shops all over Spain, especially blue and mako shark, the two species most commonly caught. Blue shark is called tintorera or caella in Spanish, and mako shark is called marrajo. Tope shark, known as cazón, is commonly eaten as a steak or fried in the south of Spain in Andalucía. However, depending on the region, producers and supermarkets may give other names to the shark meat.[31]

Italy

Traditionally, the sharks eaten in Italy were caught in the Mediterranean, but since shark populations there have been dwindling due to overfishing, most of the shark meat eaten today is imported. In 2006, Italy imported more than 13,000 tons of shark products, including more than 10,000 tons of frozen shark meat, from all over the world, as seen below.[32]



Frozen Tope shark filets from Argentina sold as 'Trance di Palombo' in a supermarket, Italy 2007

Interview with Italian fish dealer, European Seafood Exhibition, Brussels 2007

Do you have shark meat?

Of course! We don't get shark meat daily, but we have enough.

Where does the shark meat come from?

We import it from Pakistan and India.

So you buy it frozen?

No, It's fresh shark meat - vacuum packed.

Is that common practice?

Yes, for us it is. The shark meat is shipped to Italy in three days.

The Italian people eat a lot of shark. Can you explain why?

Yes, that's easy. Italians like to eat fish, but they want to have it as cheap as possible. That's why they buy shark. They prepare it as fillets, just as swordfish.

Frozen blue shark filets from the Pacific sold as 'Trance di Verdesca' in a supermarket, Italy 2007

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Shark meat is consumed all over France, but demand is lower in the centre and south of the country. Normandy and Brittany, which are responsible for the bulk of French shark, skate and ray catches, are also the major consumers. Shark meat is widely available in shops, supermarkets and hypermarkets. Its relatively low price and an absence of bones make it a favourite for caterers of large groups such as schools, cafeterias and hospitals

Sharks are marketed in France under various, somewhat misleading names, such as chien de mer ("seadog") for spiny dogfish and veau de mer ("seacalf") for porbeagle. Spiny dogfish, smoothhounds, small-spotted catshark and nursehound are marketed as saumonette (similar to salmon) because of the pale pink colour of the flesh. Small-spotted catshark and nursehound are also marketed as petite roussette and grande roussette, respectively.[34]

Fresh cat shark sold as "Rousette" in a supermarket in Lorient, France 2007

Germany

Germany is within the top five European importers of shark products, with more than 1,000 tons coming into the country annually. Over the last ten years, Germany has been the single largest recipient of frozen dogfish exports from North America, receiving 25% of Canada's and nearly 20% of the U.S.' exports.[35]

In 2006, Germany imported 537 tons of fresh and frozen shark and dogfish meat according to data from the Food and Agriculture Organization of the United Nations (FAO), mainly from Canada, the U.S. and Spain, although Canadian and U.S. export statistics alone reveal much higher levels of trade with Germany.

Shark steaks, usually frozen, are sold in German supermarkets and can also be found grilled or fried in many Spanish and Portuguese restaurants around the country. Spiny dogfish, sold as Seeaal and Schillerlocken in Germany, is a popular species. Seeaal is the spiny dogfish meat served fresh or smoked, while Schillerlocken is made from smoked belly flaps. These belly flaps curl during the smoking process and are thought by some to resemble the locks of hair of the writer and poet Friedrich Schiller, who gives the dish its name.[36]

Sandwich of spiny dogfish sold as "Schillerlocken Broetchen" in the harbour of Sassnitz, Germany 2007

5 Marketing of cartilage, skin and other shark products

Advertising of shark cartilage pills, shopwindow in Madrid, Spain 2008

Cartilage

The recent interest in shark cartilage in western cultures stems from its use as a health supplement and cure for certain ailments. For example, shark cartilage contains chondroitin, a material often combined with other ingredients and used for the treatment of rheumatism. While not approved as a medical treatment in the United States, processed shark cartilage can be purchased as a "health supplement" in powdered or tablet form, either on its own or fortified with additional "health enhancers".[37]

Shark cartilage has even been touted as a treatment for cancer, consequently creating a large market for this product. However, according to the National Cancer Institute of the U.S., studies to date have not proven it to be an effective cancer treatment in people, and the U.S. Food and Drug Administration has not approved shark cartilage as a cancer treatment.[38]

Skin

The greatest use for shark skin is as a leather product. Shark leather can be used to make a variety of products including furniture, book binding, shoes and handbags. Shark skin is tanned much in the same way as that of other animals. Historically, the major markets for shark leather products have been in the U.S., Germany, France and Japan, with tanneries located in several other countries. Today, because of environmental restrictions on the tanning industry and problems with a steady supply of raw skin, most tanned leather is produced in Mexico. Shark leather is said to be between seven and 11 times stronger than conventional leather.[39]

Top quality skins usually come from the larger sharks species, such as tiger (*Galeocerdo cuvier*), lemon (*Negaprion brevirostris*), dusky (*Carcharhinus obscurus*) and nurse (*Ginglymostoma cirratum*), which must be carefully skinned soon after capture. Skin from frozen or chilled shark carcasses caught for their meat is usually so damaged that it is unsuitable for producing leather.

Shark cartilage pills for sale, shopwindow in Madrid, Spain 2008

One luxury product made from shark skin is a football boot. Kelme, a Spanish sportswear company, has produced a high-end boot called "The One Limited Edition" manufactured from 90% shark leather. The boot is considered the most expensive one on the market, costing 500 Euro and is marketed to have technological and design features that make it unique, including greater ball grip and resistance.[40]

Shark skin can also be consumed as food. Skin from dusky, thresher and whale sharks (*Rhincodon typus*), and from the giant guitarfish (*Rhynchobatus djiddensis*), is eaten in Taiwan. Shark skin is also processed into a gelatinous food product called nikigori in Japan. In Singapore and Malaysia, processed and cooked shark skin is marketed as "shark lips" or "fish lips".

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Another use of shark skin is as a polishing textile. Historically, untanned skins from sharks were called shagreen, which was used for polishing purposes in the arts and armour and even as a striking surface for matches. Later, shark skins were primarily employed for rasping and polishing wooden objects. For example, artisanal fishermen used shark skins for polishing wooden boats.[41]

Other products

In addition to these more prominent examples, the use for shark products is seemingly endless. Shark stomachs are eaten in Asia, shark brain and bones are used in experiments for medications for Alzheimer and other illnesses, and shark eyes are used in the cosmetic and pharmaceutical industry to extract Hyaluronan, a molecule widely used in skin care products or eye surgery.[42] Shark teeth and jaws are traded worldwide for use as traditional weapons, trinkets and jewellery and decoration. Teeth of prehistoric sharks are a collectors item and if the tooth is in a good condition, it can be sold for up to a thousand USD.

Nevertheless, despite the commercialisation of these numerous other shark products, it is clearly the growing fin market that is driving the hunt for these vulnerable animals, and driving some species to the brink of extinction. While some shark species can be sustainably harvested if done in a responsible way, pursuing these animals to commercialise only certain body parts is not sustainable for the sharks' future.

Shark teeth for sale at a beach stand in Conil, Spain 2008

Fossil shark teeth for sale in Las Palmas, Gran Canaria, Spain 2008

6 Conclusions

Shark jaws being sold as souvenirs next to harbour entrance of Pucusana, Peru 2007

Shark fisheries must be controlled wherever the EU fleet operates - in European waters and worldwide.

Shark catches, targeted or as by-catch, are often underreported, misreported or not controlled at all. Oceana recommends that the European Union take immediate efforts to bring shark fisheries to the front ranks. This means implementing efficient management measures, establishing a species-specific reporting system for all catches, and strengthening control measures for EU vessels in EU waters, on the high seas, in Third-country waters and for EU-chartered vessels worldwide. All measures must be taken to avoid illegal activities in European Union harbours and facilities connected to shark catches and trade around the world. In addition, Member states must take appropriate measures to guarantee that all shark catches, including by-catch, are landed.

Distinct trade statistics for shark species, shark meat, shark fins and shark liver oil are necessary.

Trade statistics for shark meat, shark liver oil and shark fins can be a useful instrument to estimate real shark catches. Unfortunately, trade statistics for these products are often mixed in with those for other fish products. Oceana recommends that countries separate shark trade statistics by species for frozen and dried shark fins and for frozen and fresh shark meat. Shark livers and shark liver oil must also be separated from other fish livers and liver oil. The European Union and Member states must implement eight-digit or ten-digit detailed tariff nomenclature codes for all shark products, especially shark fins and shark liver oil, in order to compile more specific trade-flow information.

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Oceana's Recommendations for Effective Shark Management in the European Union

1 · Sharks must be landed with their fins attached.

2 · The capture of commercially exploited shark species by EU vessels must be regulated under the Common Fisheries Policy, with fishing limits and quotas.

3 · Shark fisheries must be controlled wherever the EU fleet operates – in European waters and worldwide.

4 · Migratory shark species exploited on the high seas must be regulated with catch limits and quotas by the relevant Regional Fisheries Management Organisations.

5 · Effective management measures for by-catch reduction must be introduced.

6 · Shark discards must be eliminated.

7 · Vessels taking sharks must have independent observer coverage on board.

8 · Distinct trade statistics for shark species (meat, fins and shark liver oil), differentiated by species, should be developed.

9 · Endangered shark species must be added to international conventions and national legislation that limit or prevent catches and trade.

10 · A European Plan of Action for Sharks must be implemented.

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