Background info doc Sharks and Rays

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1. The protection of the ocean is vital, also for Switzerland

Around 71% of the Earth's surface is covered by the ocean. It is the source of life, an oxygen producer, a heat reservoir and a CO_2 sink.[1]

During summer, the ocean stores solar energy in the form of heat and releases it back into the atmosphere in winter. In addition, ocean currents transport heat from the tropics to the high latitudes, distributing it across the globe. These two effects also moderate the climate far from the coasts in landlocked countries. Since the 1970s, the ocean has absorbed more than 90% of the excess heat generated by humans. This makes the ocean the most effective heat reservoir in the Earth's climate system.

Around 30 % of the carbon dioxide produced by humans worldwide is stored in the ocean.[2] Around 93 % of the world's carbon dioxide passes through the marine carbon cycle. It is therefore the largest carbon sink worldwide. Just like forests on land, plants in the sea – phytoplankton, algae or sea grass – build up biomass from carbon dioxide by means of photosynthesis and produce 50 % of our oxygen.

2. Sharks and rays play a key role for healthy ecosystems in the ocean

A total of 1,213 shark and ray species are currently described.[3] There are over 546 different species of shark and 667 species of ray and together with the chimaeras they form the group of chondrichthyan fishes. Sharks and rays have roamed the ocean for over 450 million years. They can be found in all marine habitats such as coral reefs, the deep sea, on the seabed, in open water, on the coast, in the high seas, in tropical and polar waters. Shark and ray species range in size from a few centimetres to several meters. Some shark species are apex predators, many are mesopredators like the rays, but there are also some that feed by filter-feeding. These include, for example, the giant manta ray and the whale shark.

Due to their diversity and high degree of adaptability, they play a key role in the marine ecosystem, as they control the number of other species and keep their populations healthy by eating old and sick animals in particular. With their feeding behaviour, they maintain the balance in the ecosystem and with their excretions they contribute to the distribution of nutrients in the sea. The decline in shark and ray populations has a negative effect on the vitality of marine ecosystems and communities. This has been shown in coral reefs, for example: If many sharks are caught on a reef, the number of herbivorous fish there decreases, which in turn has a negative effect on the recovery of those coral reefs.[4]

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[1] https://worldoceanreview.com/en/wor-7/

[2] https://worldoceanreview.com/en/wor-1/ocean-chemistry/co2-reservoir/

[3] Jabado, R.W., Morata, A.Z.A., Bennett, R.H., Finucci, B., Ellis, J.R., Fowler, S.L., Grant, M.I., Barbosa Martins, A.P., & Sinclair, S.L. (eds.) (2024). The global status of sharks, rays, and chimaeras. Gland, Switzerland - IUCN

[4] Ruppert JLW, Travers MJ, Smith LL, Fortin MJ, Meekan MG (2013) Caught in the Middle: Combined Impacts of Shark Removal and Coral Loss on the Fish Communities of Coral Reefs. PLOS ONE 8(9): e74648.

3. Status of sharks and rays

- 37.5% (= 391 species) of shark and ray species are threatened with extinction.[5]
- Around 59 % of reef shark and reef ray species are considered threatened with extinction.[6]
- The global population of oceanic sharks and rays has declined by 71 % since 1970 due to an 18-fold increase in relative fishing pressure.[7]
- Some shark populations have declined by 95 % in certain regions.[8]
- Over 100 million sharks are killed every year – through bycatch or deliberate capture.[9]

Overfishing poses the most important threat besides habitat loss and degradation, climate change and pollution. Species in the tropics and subtropics are particularly threatened.

Sharks, like many species of rays, are long-lived animals, they grow slowly and only reproduce after several years. This makes them very susceptible to overfishing. The global trade in ray and shark meat and products is a billion-dollar business, with Europe being an important hub in this trade (see chapter 4).[10] Shark meat is often mislabelled (e.g. Cação)[11] and shark components are contained in cosmetics or food supplements without correct labelling.

Main threat: Industrial fishing

Overfishing, IUU (illegal, unregulated and unreported fishing), unselective, harmful fishing methods and the demand for shark products, such as shark fins, cartilage or squalene (liver oil), exert immense pressure on sharks and therefore pose a major threat to the health of the ocean ecosystem.

Industrial fishing involves the large-scale capture of fish and other marine animals for economic use. It uses various fishing methods such as trawl nets, longlines and purse seines. Trawl nets dragged across the seabed destroy habitats and often catch unwanted bycatches such as turtles, dolphins, seabirds and sharks. Longlines, which are several kilometres long, have thousands of hooks, resulting in very high bycatch, mainly sharks. Industrial fishing is the world's greatest threat to shark stocks.

- Trawls
  Trawl nets are tapered bag-like nets that can be up to 120 m wide and 70 m high. They are towed through open water or across the seabed. Any living creature that can't literally slip through the cracks

[5] Dulvy, N.K., Pacoureau, N., Rigby, C.L., Pollom, R.A., Jabado, R.W., Ebert, D.A., Finucci, B., Pollock, C.M., Cheok, J., Derrick, D.H., Herman, K.B., Sherman, C.S., VanderWright, W.J., Lawson, J.M., Walls, R.H.L., Carlson, J.K., Charvet, P., Bineesh, K.K., Fernando, D., Ralph, G.M., Matsushiba, J.H., Hilton-Taylor, C., Fordham, S.V. and Simpfendorfer, C.A. 2021. Overfishing drives over one-third of all sharks and rays toward a global extinction crisis. *Current Biology* 31: 1-15 https://doi.org/10.1016/j.cub.2021.08.06.

[6] Sherman, C.S., Simpfendorfer, C.A., Pacoureau, N. *et al.* Half a century of rising extinction risk of coral reef sharks and rays. *Nat Commun* **14**, 15 (2023). https://doi.org/10.1038/s41467-022-35091-x

[7] Pacoureau, N., Rigby, C.L., Kyne, P.M. *et al.* Half a century of global decline in oceanic sharks and rays. *Nature* **589**, 567–571 (2021). https://doi.org/10.1038/s41586-020-03173-9.

[8] Examples: Whitetip shark in the western and central Pacific Ocean or angelshark in Ireland.

[9] Boris Worm u. a., „Global shark fishing mortality still rising despite widespread regulatory change“, *Science* 383, Nr. 6679 (2024): 225–30, https://doi.org/10.1126/science.adf8984.

[10] „US$ 2.6 billion global trade in shark and ray meat revealed. Better rules and transparency needed to fight overexploitation“, WWF, 2021.

[11] Cristina Bernardo, Aisni Mayumi Corrêa de Lima Adachi, Vanessa Paes da Cruz, Fausto Foresti, Robin H. Loose, Hugo Bornatowski. The label “Cação” is a shark or a ray and can be a threatened species! Elasmobranch trade in Southern Brazil unveiled by DNA barcoding, Marine Policy, Volume 116, 2020, 103920, ISSN 0308-597X, https://doi.org/10.1016/j.marpol.2020.103920.

will be caught. Therefore, up to 90% of the catch consists of bycatch. A large number of animals are crushed to death by the weight of the quantity, so that the unwanted catch can no longer be thrown back into the sea alive. Bottom trawls also completely destroy the seabed.

- Longlines
  In longline fishing, long lines with many hooks are deployed. The target is big fish. Fishing takes place in the upper layers of the water, but also in the deep sea. Longliners can be up to 60 m long and stay at sea for up to three years without having to call at port. Their lines are up to 150 km long and equipped with up to 30,000 hooks. Approximately 20% of the catch is bycatch, but the sharks caught can account for up to more than 50% of the catches. In addition to sharks and rays, seabirds, mammals and sea turtles, among others, get caught in the hooks.

- Purse seines
  Purse seine nets are up to 2,000 m long and are laid out in a ring around a school of fish. When used correctly, it is currently the most selective fishing method in industrial fisheries with a below-average bycatch rate.

Today, a shark is almost completely processed and marketed. The meat can be found in refrigerated shelves or fish counters, while the cartilage is used to make controversial drugs against cancer and other diseases. The liver is also used, the oil of which is processed in pharmaceuticals and cosmetics.

- Finning
  The practice of "finning" is particularly cruel. In this process, sharks' fins are cut off, often while they are still alive. The mutilated animals are then thrown back into the water, where they die in agony. This method is considered one of the most brutal forms of animal cruelty. Shark fins are considered a status symbol, especially in Asian markets. Finning is therefore a lucrative method of making a profit from bycatch or even fishing sharks with longlines. Global shark fin sales are difficult to quantify, but they range from hundreds of millions to billions of dollars annually. The market value alone is estimated to be about USD 550 million to USD 1.5 billion per year. Prices for shark fins vary greatly depending on the quality and can reach peak prices of up to USD 650 per kilogram.

- Shark meat
  The trade in shark meat has long since overtaken that of shark fins. It is estimated that around USD 2.6 billion is generated annually from the trade in shark meat, while the trade in shark fins brings in about USD 1.5 billion.[12] However, a considerable grey area is suspected in both markets.

  In some cases, shark meat is also used in animal feed production (e.g. feed for livestock or in aquaculture or pet food)[13]. It can serve as a cheap source of protein, with the quality of the meat often not meeting the high standards for human consumption.

[12] José C. Báez, Andrés Domingo, Davinia Torreblanca, Ignacio Doadrio. Initiative to stop trade of shark fins within the EU: Is it a good thing for sharks? Marine Policy, Volume 178, 2025, https://doi.org/10.1016/j.marpol.2025.106716.
[13] Cardeñosa, D. Genetic identification of threatened shark species in pet food and beauty care products. *Conserv Genet* 20, 1383–1387 (2019). https://doi.org/10.1007/s10592-019-01221-0 and https://www.humaneworld.org/europe/en/news/sharks-shelf-shark-products

Shark meat and fins are known to contain high concentrations of methylmercury.[14] As apex predators, sharks eat smaller fish that have ingested methylmercury themselves. This "rise" in the food chain leads to the accumulation of methylmercury in sharks in higher concentrations. Methylmercury is a neurotoxic element that can cause serious health damage in animals and humans. The main dangers are neurological damage and damage to the immune system.

- Ray meat and fins
  Ray meat is also traded internationally in large quantities (see chapter 4). In addition, shark fin soup is sometimes made from the fins of shark-like rays such as sawfish.

- Ray gill plates
  Manta and devil rays are among the most endangered ray species and are increasingly threatened by trade despite international protection measures.[15] They are mainly fished because their gill plates are considered as dried seafood and are used in Chinese medicine.[16] Stingrays are also hunted for their gill plates, and their populations are also declining.

4. Trade in shark and ray meat and products

The majority of shark and ray products traded worldwide are meat, fins, squalene (for cosmetics, food supplements and the pharmaceutical industry), shark cartilage, also as a food supplement, as well as oils and jewellery.

Although shark fins are significantly more expensive on the market than shark and ray meat, the global meat market is significantly larger in both volume and value. The total value of shark and ray products exceeded USD 4.1 billion in the period 2012-2019. The value of shark and ray meat (USD 2.6 billion) exceeds the value of shark fins (USD 1.5 billion). Prices vary greatly. Around USD 0.1/kg for meat and over USD 100/kg for shark fins. Italy pays the highest average price for meat, USD 4/kg, and Hong Kong pays the highest average price for shark fins, USD 30/kg.[17]

Trade in shark products

Spain led the complex global shark meat trade in fresh and frozen meat between 2009 and 2019 (see table 1). Spain is among the top three largest traders of shark products in terms of value (approx. USD 536 million), volume (approx. 184,000 tonnes) and number of trading partners (85 export partners and 65 import partners). Spain is the world's largest exporter of shark meat and plays a major role as an import country.

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[14] Guuske P. Tiktak, Demi Butcher, Peter J. Lawrence, John Norrey, Lee Bradley, Kirsty Shaw, Richard Preziosi, David Megson, Are concentrations of pollutants in sharks, rays and skates (Elasmobranchii) a cause for concern? A systematic review,, Marine Pollution Bulletin, Volume 160, 2020, 111701, ISSN 0025-326X and Sang-Jo Kim, Hyun-Kyung Lee, Abimbola C. Badejo, Won-Chan Lee, Hyo-Bang Moon. Species-specific accumulation of methyl and total mercury in sharks from offshore and coastal waters of Korea. Marine Pollution Bulletin, Volume 102, Issue 1, 2016.

[15] Palacios, M.D., Weiand, L., Laglbauer, B.J. *et al.* Global assessment of manta and devil ray gill plate and meat trade: conservation implications and opportunities. *Environ Biol Fish* (2024). https://doi.org/10.1007/s10641-024-01636-w

[16] O'Malley, M., Townsend, K. A., Hilton, P., Heinrichs, S., and Stewart, J. D. (2017) Characterization of the trade in manta and devil ray gill plates in China and South-east Asia through trader surveys. *Aquatic Conserv: Mar. Freshw. Ecosyst.*, 27: 394–413. doi: 10.1002/aqc.2670.

[17] Simona, Niedermüller & Ainsworth, Gillian & Juan, Silvia & Garcia, Raul & Ospina-Alvarez, Andrés & Pita, Pablo & Villasante, Sebastian. (2021). The shark and ray meat network: a deep dive into a global affair. 10.13140/RG.2.2.13195.67365.

In the same decade, China's role as an importer decreased significantly. China was replaced by Singapore and Hong Kong. The EU has become the main supplier of shark meat for Southeast and East Asia. Its trade value for export and import amounts to approx. 22 % of the total global shark meat trade. The EU therefore plays a key role as a shark meat trader.

Exports	Volume (t)
Spain	183,884
Portugal	104,758
Uruguay	72,839
Japan	59,117
USA	49,422
Namibia	37,492

Exports	Value (USD)
Spain	536,339,368
Portugal	232,967,950
USA	192,719,619
Uruguay	177,983,226
China	165,072,476
Singapore	128,347,782

Imports	Volume (t)
Brazil	149,484
Spain	136,144
Italy	88,876
Portugal	60,316
Uruguay	56,963
China	34,809

Table 1: The six largest export and import countries of shark products by volume and value 2012-2019 (Source: Niedermüller et al., 2021)

Trade in ray products

The global trade in ray meat is not quite as diverse as the trade in shark meat. Argentina as an exporter and South Korea as an importer are the largest trading partners here. The USA and Brazil are also important import countries for South Korea. Argentina is the world's largest exporter of ray products in terms of quantity and value. In Europe, Spain is among the top 5 exporting countries (see tables 1 and 2).

Exports	Volume [t]
Argentina	81,601
Sierra Leone	55,818
USA	41,524
Indonesia	18,049
Spain	16,188

Exports	Value (USD)
Argentina	221,230,213
USA	144,779,396
Spain	53,640,864
Japan	43,234,144
China	41,428,758

Imports	Volume (t)
South Korea	141,655
Ghana	55,788
France	26,131
Malaysia	18,231
China	15,600

Table 2: The five largest export and import countries of ray products by volume and value 2012-2019. (Source: Niedermüller et al., 2021)

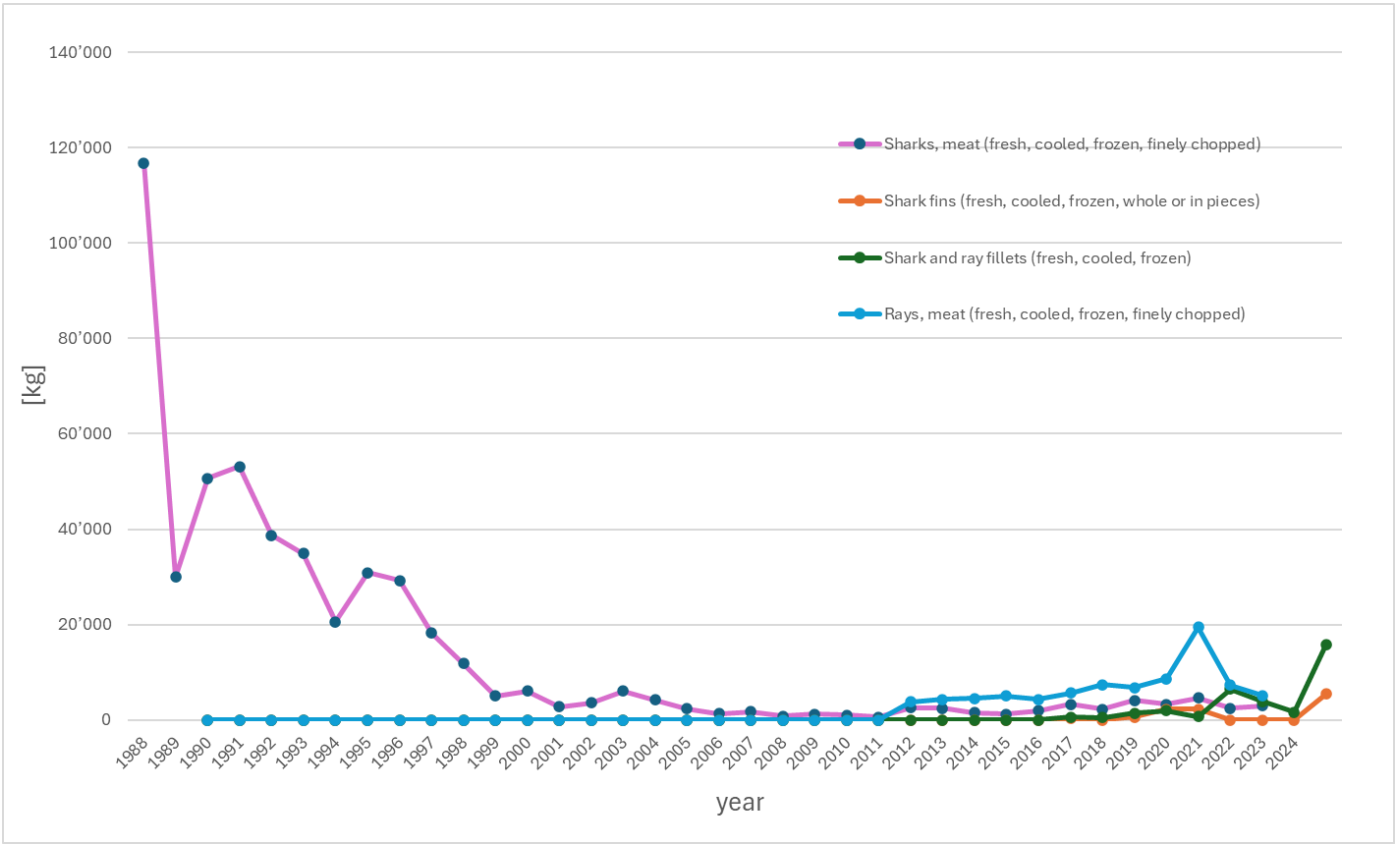
Import of shark and ray products into Switzerland

In Switzerland, mainly shark meat and fillets of sharks and rays are imported (see fig. 1).[18]

According to Swiss trade statistics, 505.2 tonnes of shark meat have been imported in the last 35 years (65.1 tonnes since 2000), 5.4 tonnes of shark fins and 17.4 tonnes of shark and ray fillets since 2017, and 87.4 tonnes of ray meat since 2012.

[18] Swiss-Impex database, Federal Office for Customs and Border Security FOCBS, https://www.gate.ezv.admin.ch/swissimpex/

a)

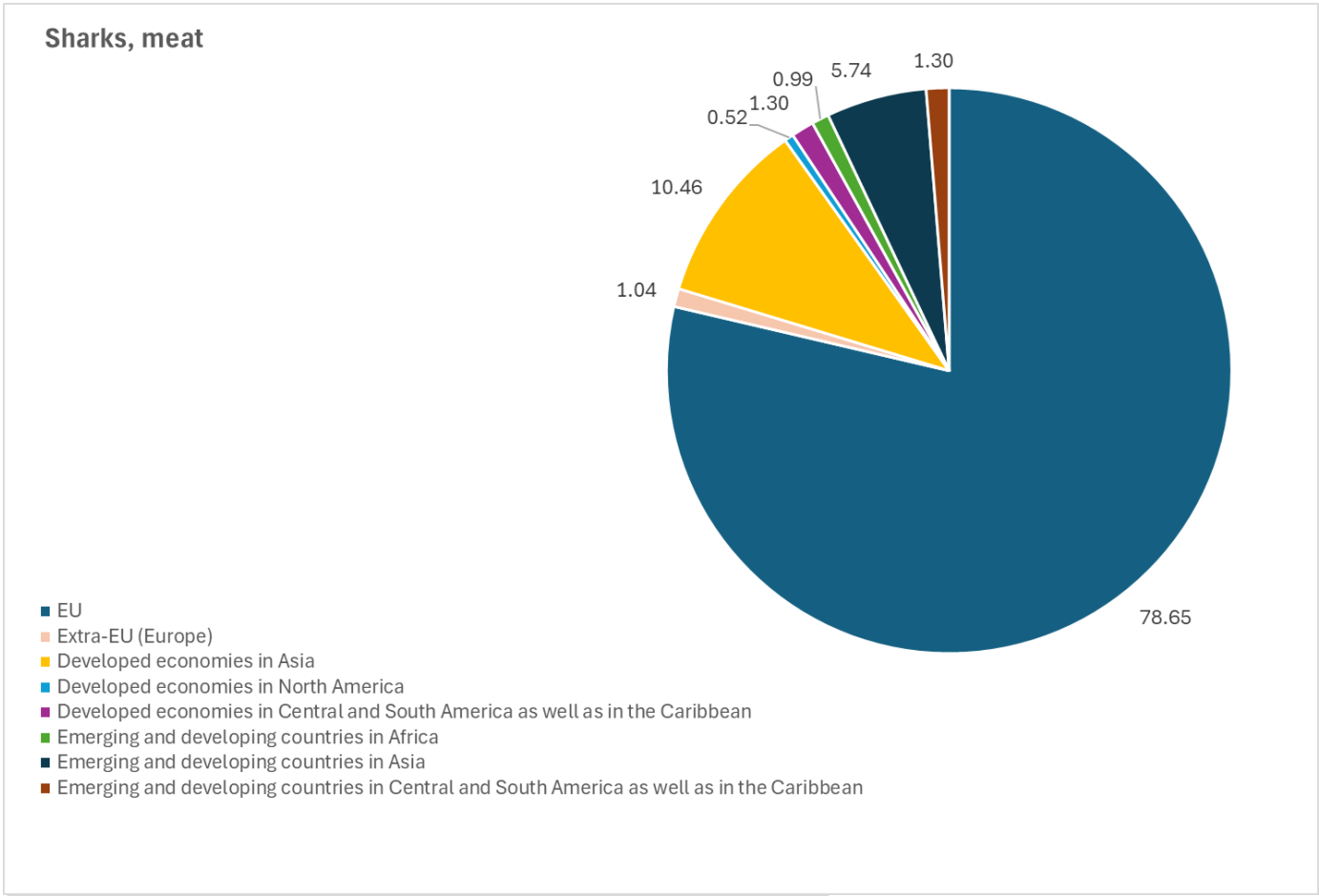


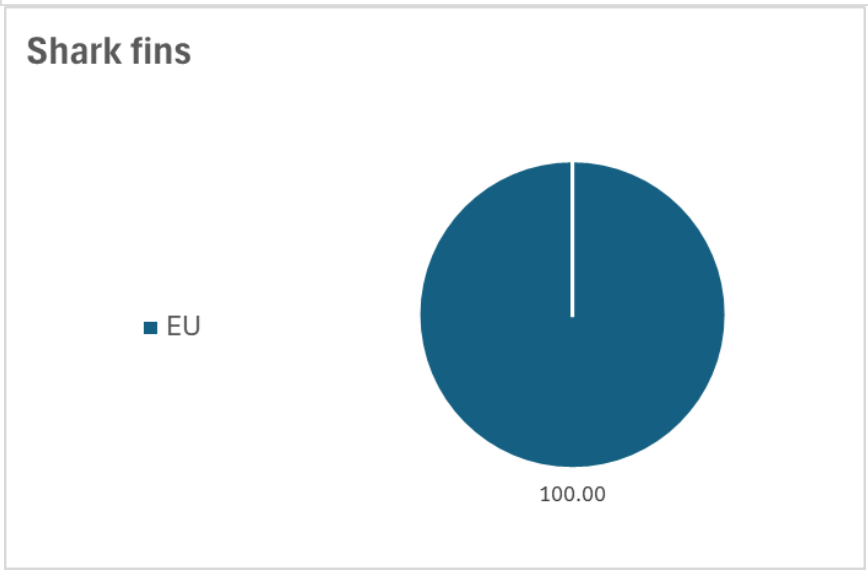
b)

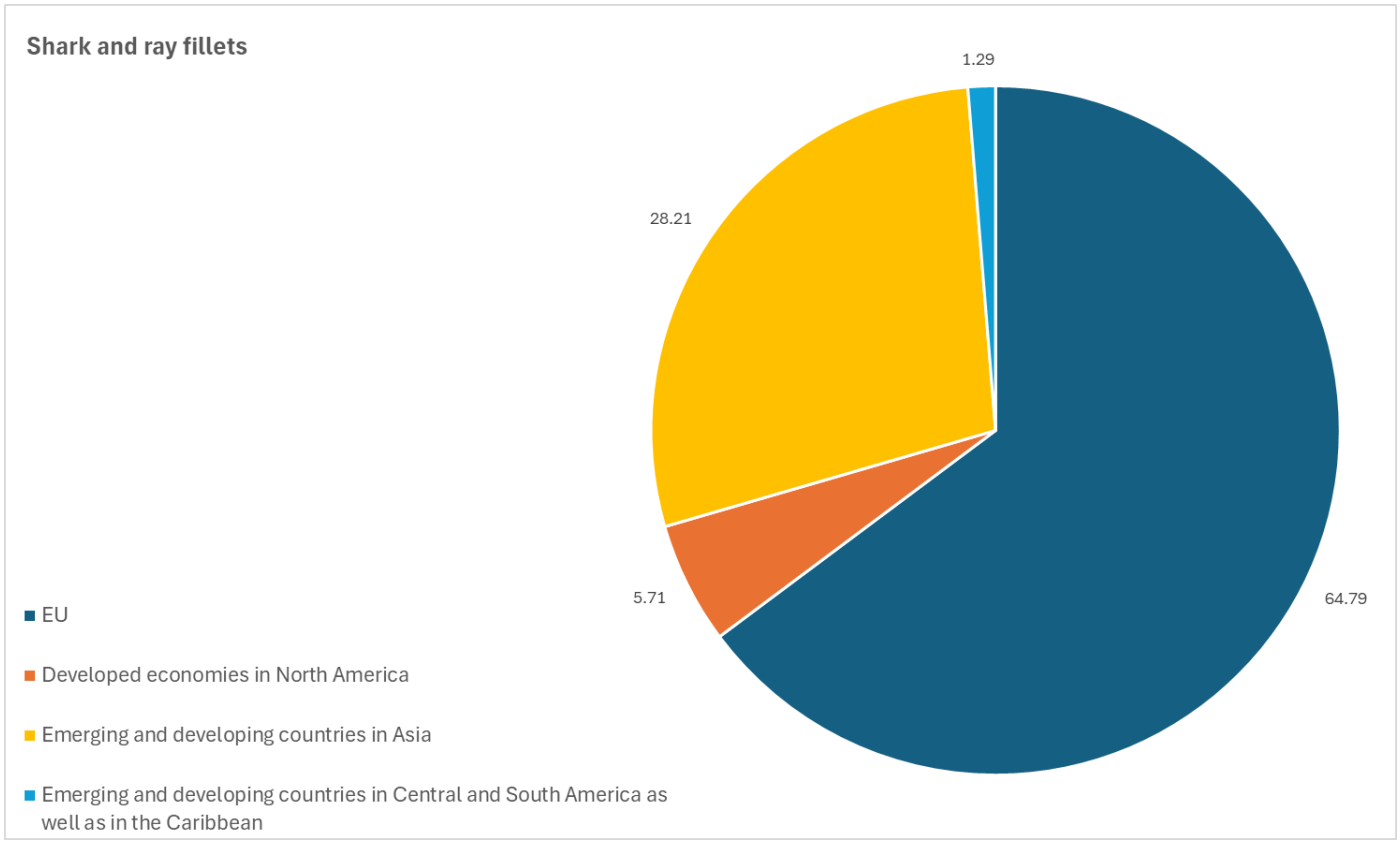
Figure 1: Imports of shark and ray products into Switzerland a) 1988-2024 and b) 2000-2024.[19]

[19] Swiss-Impex https://www.gate.ezv.admin.ch/swissimpex/

The statistics show that Switzerland has mainly imported meat from rays and sharks in the last decade. The quantity of shark fins was highest in the years 2021-2022. It should be noted that it is doubtful whether the statistics reflect the actual amount of shark fins and shark meat effectively imported. In 2024 for example, the import volume appears to be 0, which cannot be correct in view of what is available in stores in Switzerland. It is also important to note that the statistics cannot be used to determine how much shark and ray products are imported in the form of ingredients, e.g. in food supplements as well as mislabelled shark products. However, in a global comparison, imports of shark and ray products into Switzerland are low and originate mainly from the EU (see fig. 2). Depending on the product, 10-30% are imported from Asia.







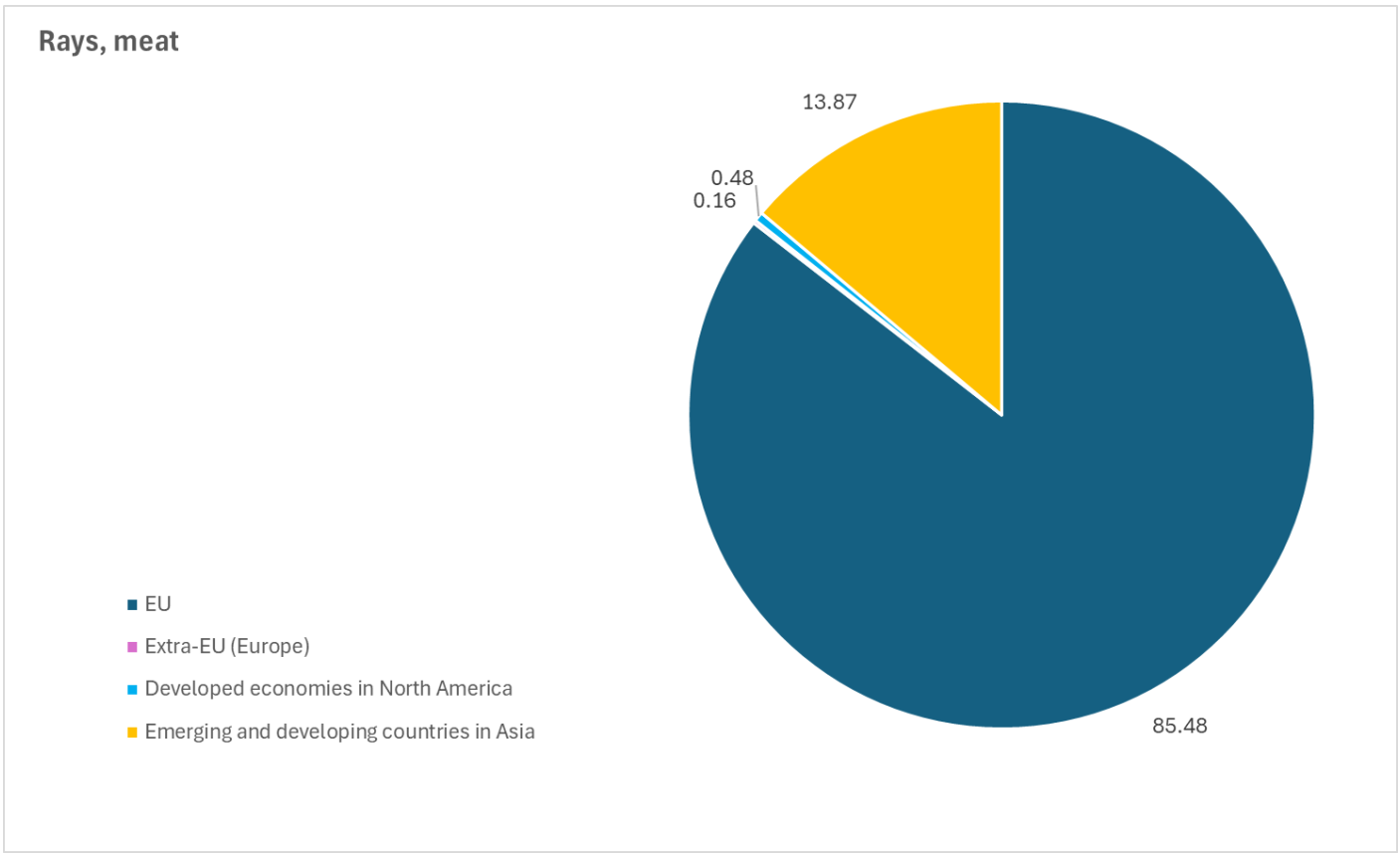


Figure 2: Origin of imports of shark and ray products into Switzerland by economic area (Source: Swiss-Impex).

Existing regulations, restrictions and bans on the trade in shark and ray products

CITES[20]: The Convention on International Trade in Endangered Species of Wild Fauna and Flora aims to conserve and sustainably manage animal and plant species. Endangered species are listed in CITES Appendices I-III according to their level of protection. Appendix I corresponds to the highest level of protection, as trade in the listed species is either severely restricted or not permitted at all.

Over 130 shark and ray species are currently listed in CITES Appendix II, which means that their trade must be better controlled to reduce overfishing.[21] The family of sawfishes (i.e. a family of rays) is listed on CITES Appendix I.[22]

Switzerland is a party to CITES and is therefore subject to the rules of this trade agreement. For instance, if a species of CITES Appendix II is to be imported to Switzerland, a CITES export permit from the country of origin is required, as well as an import permit and inspection upon entry into Switzerland.

«Fins naturally attached» (FNA): This "best practice", which has been adopted by several countries and organisations worldwide (e.g. EU, USA**,** General Fisheries Commission for the Mediterranean GFCM) to prevent finning, is considered one of the few measures that has had a positive effect in reducing this cruel practice.[23] The FNA has been in place since 2013 and prohibits fishers from cutting off the sharks' fins and then throwing them back into the sea, often alive, where they are left to die an agonising death. While the positive effect of the FNA in terms of curbing finning has been confirmed, the requirement that sharks must be landed whole has probably fuelled the demand for shark meat.[24] In any case, the trade figures indicate that the markets for shark meat have grown since the tightening of regulations on the removal of shark fins.[25]

EU: The EU plays an important role in the current trade in shark and ray products. EU member states are not only the largest and most important direct traders in terms of volume and value, they also play an important role as intermediaries (see chapter 4). Imports from EU countries account for around 22 % of total global trade. The EU also plays an important role in established market regulation systems, such as EU Regulation 1224/2009[26] on control systems in fisheries and the EU Regulation 1005/2008[27] to prevent IUU fishing. These regulations are intended to help provide more transparent traceability of shark and ray catches. Despite these regulations, there are no comprehensive management systems at EU level, let alone at national level, which fully record the data from fisheries.

[20] https://cites.org/eng
[21] https://cites.org/eng/disc/how.php and https://www.blv.admin.ch/blv/en/home/das-blv/kooperationen/internationale-institutionen/cites.html
[22] https://cites.org/eng/prog/shark/history.php
[23] Ziegler, Iris. (2024). Fins Naturally Attached, the globally acknowledged best practice to prevent finning REV 1 IOTC WPEB 2023.
[24] Boris Worm u. a., „Global shark fishing mortality still rising despite widespread regulatory change“, *Science* 383, Nr. 6679 (2024): 225–30, https://doi.org/10.1126/science.adf8984.
[25] Simona, Niedermüller & Ainsworth, Gillian & Juan, Silvia & Garcia, Raul & Ospina-Alvarez, Andrés & Pita, Pablo & Villasante, Sebastian. (2021). The shark and ray meat network: a deep dive into a global affair. 10.13140/RG.2.2.13195.67365.
[26] https://eur-lex.europa.eu/legal-content/DE/ALL/?uri=celex%3A32009R1224
[27] https://eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX:32008R1005

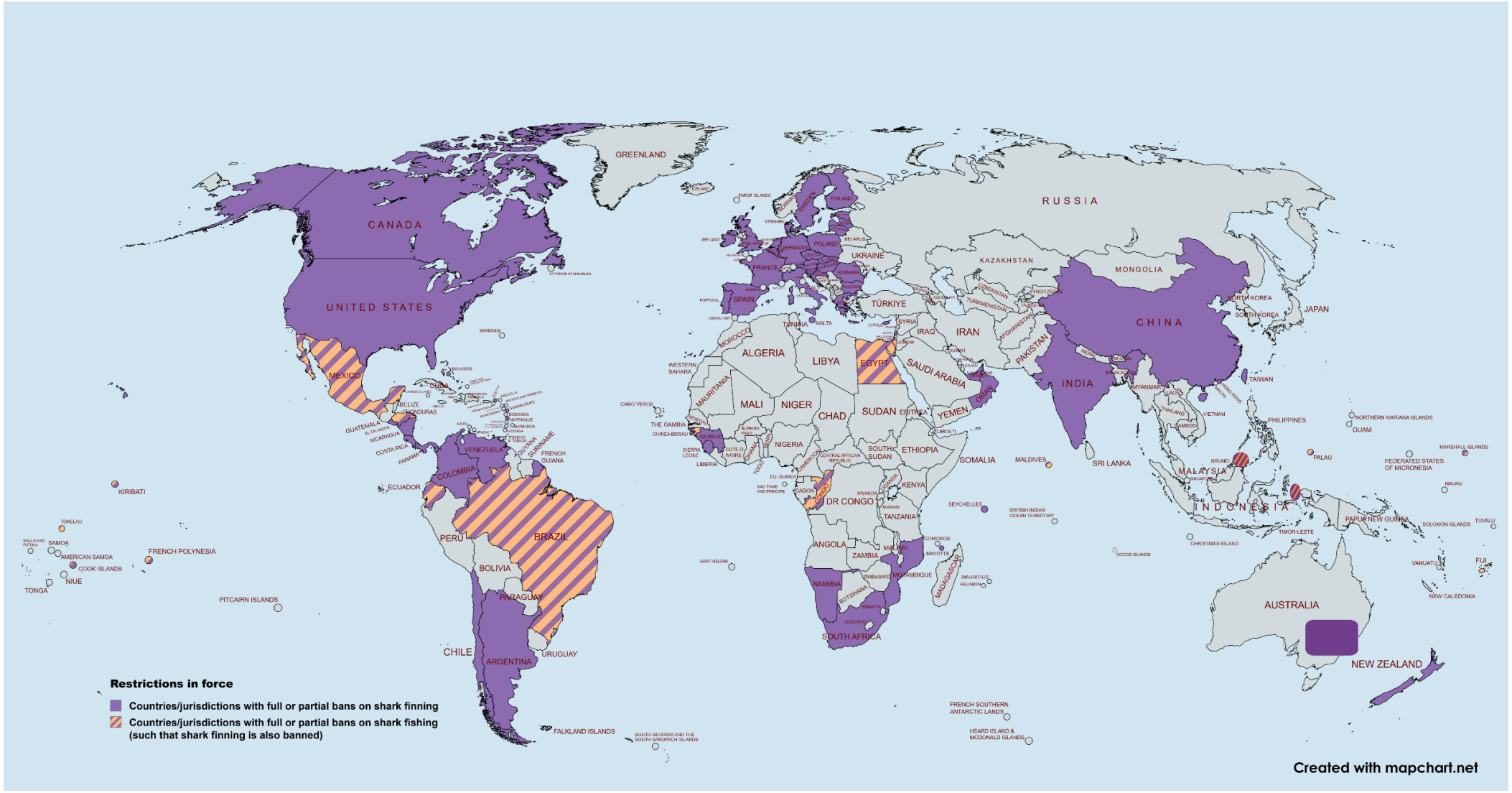


Figure 3: Countries/jurisdictions with full or partial bans on shark finning or/and fishing. There are currently 34 countries worldwide where a ban on shark finning is in place and in 22 countries shark fishing is fully or partially banned.[28] ***See KYMA's letter of protest to the government of Maldives regarding the partial resumption of shark fishing.***

[28] List from https://awionline.org/content/international-shark-protection-measures

Countries/jurisdictions with full or partial bans on shark finning[29]:

- **United Kingdom** (2023) no import/export of detached shark fins, including all products containing shark fins, such as tinned shark fin soup. Builds upon 2003 ban achieved via the Shark Finning Regulation and a 2009 'Fins Naturally Attached' policy applicable in UK waters and by UK vessels worldwide.
- **United States** (2022) no sale, possession, transport, or purchase of shark fins and shark fin products.
- **Canada/British Columbia** (2019) ban enacted on import and export of shark fins not naturally attached to the shark to/from Canada and British Columbia.
- **New Zealand** (2014) no finning in territorial waters.
- **British Virgin Islands** (2014) no sale, possession, or distribution of shark fin products.
- **China** (2013) no shark fin dishes at official government functions.
- **India** (2013) sharks must be landed with fins attached to their bodies.
- **Hong Kong** (2013) no shark fin soup at government functions.
- **European Union** (2013) no finning by any vessel in EU waters or by any EU-registered vessel worldwide.
- **Malta** (2012) sharks must be landed whole.
- **Venezuela** (2012) sharks be landed with fins naturally attached to their bodies.
- **Brazil** (2012) sharks be landed with fins naturally attached to their bodies.
- **Taiwan** (2012) all sharks be landed with fins naturally attached.
- **Chile** (2011) sharks must be landed with fins naturally attached to their bodies.
- **Honduras** (2010) no finning.
- **United Kingdom** (2009) no removal of shark fins at sea by any UK vessel worldwide.
- **Guinea** (2009) no finning in territorial waters.
- **Argentina** (2009) may not retain fins and discard carcasses.
- **Sierra Leone** (2008) no finning.
- **Colombia** (2007) sharks must be landed with fins naturally attached to their bodies.
- **Panama** (2006) no finning in territorial waters.
- **El Salvador** (2009) no finning in territorial waters.
- **Seychelles** (2006) no removal of fins on board vessel unless granted authorization.

[29] List from https://awionline.org/content/international-shark-protection-measures

- Costa Rica (2006) former "fins attached" requirement reinstated (cancelling a 2003 policy that allowed sharks to be landed without their fins).
- **Nicaragua** (2004) no fin exports without proof that the meat was sold.
- **Gambia** (2004) no finning in territorial waters.
- **Namibia** (2003) no finning.
- **Spain** (2002) no fins on board without the corresponding carcasses.
- United States (2000) unlawful to possess a shark fin in US waters without a corresponding carcass; amended in 2010 to require sharks be brought ashore with fins naturally attached.
- **United Arab Emirates** (1999) sharks must be landed whole.
- **New South Wales, Australia** (1999) no finning in NSW coastal waters; sharks may not be taken on board any vessel without fins naturally attached.
- **South Africa** (1998) sharks must be landed, transported, sold or disposed of whole.
- **Oman** (1998) sharks must be landed, transported, sold or disposed of whole.

Countries/jurisdictions with full or partial bans on shark fishing (such that shark finning is also banned) and ray fishing:[30]

- **Mozambique** (2021) no commercial fishing of whale sharks, manta rays, or any mobula species.
- **Kiribati** (2015) no commercial fishing in the Phoenix Islands Protected Area and Southern Line Islands.
- **United Arab Emirates** (2014) no shark fishing from February 1 to June 30 and banned all imports and exports of shark products.
- **British Virgin Islands** (2014) no commercial fishing of sharks or rays.
- **Fiji** (2013) no shark fishing.
- **Brunei** (2013) no harvest and importation of shark products.
- **Sabah, Malaysia** (2011) no shark fishing, no possession and sale of fins.
- **Tokelau Islands** (2011) no shark fishing in territorial waters.
- **Marshall Islands** (2011) no commercial shark fishing or sale of shark products.
- **The Bahamas** (2011) no commercial fishing, sale, or trade of shark products.
- **Cook Islands** (2012) no commercial shark fishing, sale, or trade of shark products.
- **Indonesia** (2010) no shark fishing in Raja Ampat.

[30] List from https://awionline.org/content/international-shark-protection-measures

- **Marshall Islands** (2010) no commercial shark fishing or sale of shark products.
- **Maldives** (2010) no shark fishing. ***Since November 1, 2025, the capture of gulper sharks has been permitted under a management plan.***
- **Honduras** (2010) no shark fishing.
- **Palau** (2009) no shark fishing.
- **Guinea-Bissau** (2008) no shark fishing in marine protected areas.
- **Mexico** (2007) no finning; (2011) no shark fishing from May to August.
- **French Polynesia** (2006) no shark fishing, with exception of mako sharks.
- **Egypt** (2005) no shark fishing and commercial sale of sharks.
- **Ecuador** (2004) no direct shark fishing in Ecuadorian waters, but sharks caught elsewhere may be landed in Ecuador.
- **Republic of the Congo** (2001) no shark fishing.
- **Israel** (1980) no shark fishing.

Countries with import bans on shark and ray products:

- Austria (2024): Ban on the import and export of shark meat, shark fins and other products containing shark components (e.g. squalene).[31]
- Panama (2024): Ban on the import and export of shark meat, ray meat, shark and ray fins and other products containing shark or ray components.

Catch quotas and why they are not effective

Chondrichthyans (cartilaginous fish) are a particularly vulnerable group of fish due to their slow growth, late maturity, and low fecundity. These biological traits make them especially susceptible to overfishing and environmental pressures. Many shark species, which belong to this class, are directly targeted in commercial and artisanal fisheries, such as shortfin mako shark (*Isurus oxyrinchus*), blue shark (*Prionace glauca*), and gulper sharks (*Centrophoridae spp*.). However, for numerous shark species, baseline information on population structure and demography remains insufficient, complicating conservation efforts and making sustainable catching of sharks impossible.

Some commercially important shark species, such as the blue shark, are considered more resilient due to their higher fecundity compared to other sharks. Nevertheless, even these species are experiencing worrying population declines under current fishing pressures. For many shark species, a lack of adequate baseline data has led to their classification as "data deficient" by the IUCN, underscoring the need for more research to support sustainable management. [32]

Catch quotas may be more effective for non-migratory species or those with small, localised ranges, as their populations are easier to monitor and manage. However, most commercially exploited shark species

[31] https://www.ris.bka.gv.at/eli/bgbl/II/2024/107
[32] https://shark.swiss/database/red-list/rl-species?cat=DD&p=3

are highly migratory, traveling vast distances and often crossing international boundaries. While this makes it difficult to manage them as discrete populations, research has shown that some migratory sharks exhibit regional population structuring. Understanding these dynamics is critical for implementing conservation measures, which require international collaboration and management frameworks, such as those provided by Regional Fisheries Management Organizations (RFMOs). [33]

Despite their potential, RFMOs often struggle to manage migratory shark species effectively. Many RFMOs prioritise commercially valuable species, such as tuna and billfish, leaving sharks as a secondary concern. Additionally, there is inconsistent enforcement of RFMO regulations across member states, leading to illegal, unregulated, and unreported (IUU) fishing. Sharks are frequently caught as bycatch in tuna and swordfish fisheries leading to a higher mortality rate than the actual quotas allow. And although RFMOs have introduced some measures—such as bans on shark finning and requirements for live release—they are not always enforced or sufficient to halt population declines.

Moreover, the highly migratory nature of sharks means they traverse the jurisdictions of multiple RFMOs. This creates gaps in coverage, where no single RFMO is responsible for managing a species' entire range. As a result, efforts are fragmented, and critical data on population trends, fishing pressure, and trade are often lacking.

In conclusion, sustainable shark fisheries depend on robust data and coordinated global efforts. Until life history parameters and population structures of are better understood, sustainable management of many shark species remains out of reach.

5. Human health and the consumption of shark and ray products

Many shark and ray species are top predators or mesopredators and are long-lived, which makes them very susceptible to the accumulation of pollutants in their bodies. If humans in turn use sharks and rays as food, the pollutants can be transferred to them and be harmful to human health.

High concentrations of toxic pollutants such as polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDT) and heavy metals (e.g. mercury, methylmercury) are found in sharks and rays, which seriously threaten the animals. However, the methylmercury and PCB concentrations in sharks may also exceed the limits for human consumption. A systematic review on the human health risks of the consumption of shark and ray meat found that eating shark meat once a week leads to an intake of methylmercury three times higher than the maximum recommended by the US Environmental Protection Agency (EPA).[34] A study in Switzerland in 2004 showed that 20% of the fish tested exceeded the legal limit value of 1,000 micrograms per kilogram.[35] A 2025 European study[36] showed that nearly two-thirds of shark meat analysed had alarming (0,72 mg/kg to 0,92 mg/kg) or above safe level rates (1 mg/kg to 4,40 mg/kg), one-third for the latter case. The intake of mercury is associated with damage to the nervous system, kidney damage and impaired fertility. Mercury can also affect

[33] https://www.iucnssg.org/rfmos.html
[34] Guuske P. Tiktak, Demi Butcher, Peter J. Lawrence, John Norrey, Lee Bradley, Kirsty Shaw, Richard Preziosi, David Megson, Are concentrations of pollutants in sharks, rays and skates (Elasmobranchii) a cause for concern? A systematic review,, Marine Pollution Bulletin, Volume 160, 2020, 111701, ISSN 0025-326X.
[35] https://www.srf.ch/sendungen/kassensturz-espresso/umwelt-und-verkehr-viel-quecksilber-in-meeres-speisefischen
[36] Report available at https://gallifrey.foundation/sharks-apex-preditors-and-ocean-guardians/.

foetuses via the placenta. The widespread global practice of falsely labelling shark and ray products[37] or not to be labelled transparently[38], exposes people to an additional risk of ingesting harmful substances through the consumption of shark and ray products.

6. Why an import ban on shark and ray products in Switzerland is both sensible and necessary

Sharks and rays are indispensable for the ecological balance of the ocean and therefore also for the basis of life on land and for us humans. However, many shark and ray species are threatened with extinction due to overfishing. The consumption of shark and ray products can also be harmful to human health, as a high level of contamination with harmful substances has been proven.

CITES cannot completely prevent endangered shark and ray species from entering Switzerland. Processed products from illegal fishing, incorrect labelling of products and the processing of shark and ray products in food supplements and animal feed make it almost impossible to determine whether endangered shark and ray species are being imported. This is because the respective shark or ray species can only be identified in processed form with costly DNA analyses. These analyses have shown, for example, that fins from juvenile individuals of large shark species and highly endangered small shark species are sold on markets in Hong Kong.[39] In addition, a recent CITES study found that many countries are alarmingly underreporting trade in shark and ray species listed on the CITES Appendices.[40]

A ban on the import of all shark and ray products into Switzerland is necessary so that Swiss consumers can be sure that they are not consuming products contaminated with methylmercury that originate from sharks and rays. Even though the import of shark and ray products into Switzerland is low by global standards, the health risks that the consumption of shark and ray products can cause cannot be ignored. Besides, a relatively low import volume also means that there are no economic arguments against an import ban. Ultimately, an import ban also makes sense, as it is an important signal from Switzerland in favour of protecting endangered shark and ray populations. Switzerland introduced a similar ban on seal products in 2017. [41] A look at our neighbouring country Austria shows that an import ban on shark products is possible and compatible with international agreements (e.g. WTO). In Switzerland, however, following the example of Panama, an import ban should be introduced for the entire group of elasmobranchs, i.e. sharks and rays, as rays are just as endangered by fishing and trade as sharks. This step would add value to the commitment of Switzerland to improve biodiversity and reduce marine overexploitation as mentioned in the Swiss Maritime Strategy.[42]

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[37] Pazartzi, T., Siaperopoulou, S., Gubili, C., Maradidou, S., Loukovitis, D., Chatzispyrou, A., Griffiths, A. M., Minos, G. and Imsiridou, A. (2019) 'High levels of mislabeling in shark meat – Investigating patterns of species utilization with DNA barcoding in Greek retailers.' Food Control. Elsevier, 98(September 2018) pp. 179–186.

[38] Hobbs, C. A. D., Potts, R. W. A., Bjerregaard Walsh, M., Usher, J. and Griffiths, A. M. (2019) 'Using DNA Barcoding to Investigate Patterns of Species Utilisation in UK Shark Products Reveals Threatened Species on Sale.' Sci. Rep., 9(1) pp. 1–10. und Almerón-Souza, F., Sperb, C., Castilho, C. L., Figueiredo, P. I. C. C., Gonçalves, L. T., Machado, R., Oliveira, L. R., Valiati, V. H. and Fagundes, N. J. R. (2018) 'Molecular identification of shark meat from local markets in Southern Brazil based on DNA barcoding: Evidence for mislabeling and trade of endangered species.' Front. Genet., 9(APR) pp. 1–12

[39] Diego Cardeñosa *et al.,* Small sharks, big problems: DNA analysis of small fins reveals trade regulation gaps and burgeoning trade in juvenile sharks. *Sci. Adv.*10, eadq 6214 (2024)

[40] CITES Secretariat (2024), Deep diving into shark catch and trade mismatches.

[41] https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-65877.html

[42] https://www.eda.admin.ch/eda/en/fdfa/fdfa/publikationen.html/content/publikationen/en/eda/schweizer-aussenpolitik/maritime-strategie-2023-2027