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UNDERSTANDING THE GLOBAL CAVIAR MARKET

Results of a rapid assessment on trade in sturgeon caviar

Lindsey Harris and Hiromi Shiraishi

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the wildlife trade monitoring network

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ABBREVIATIONS AND ACRONYMS

BArtSchV - Federal Regulation for the Protection of Species, Germany

BfN - Federal Agency for Nature Conservation, Germany

BNatSchG – Federal Nature Conservation Act, Germany

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

EEU – Eurasian Economic Union

ESA – Endangered Species Act, USA

EU – European Union

EU-TWIX – European Union–Trade in Wildlife Information eXchange

METI – Ministry of Economy, Trade and Industry, Japan

NOAA – U.S. National Oceanic and Atmospheric Administration Fisheries Service

RDBRF – Red Data Book of the Russian Federation

UK – United Kingdom

USA – United States of America

USFWS – U.S. Fish & Wildlife Service

USSR – Union of Soviet Socialist Republics

WCO – World Customs Organization

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EXECUTIVE SUMMARY

Sturgeon and paddlefish populations have been declining globally due to, among other factors, habitat degradation and overexploitation, including illegal fishing. Of the 27 species of sturgeon and paddlefish, 85% are now on the brink of extinction (WWF, 2017). In response to this and to ensure trade is sustainable, since 1998, all species of sturgeon and paddlefish have been listed on Appendix I or II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) whereby international commercial trade is prohibited or only authorised with the relevant CITES documents granted by the CITES authorities[1].

Despite the introduction of CITES regulations and the rapid growth of aquaculture production, the high price and rarity of certain sturgeon and paddlefish species as well as a long-term investment to produce caviar from farmed sturgeons makes illegal trade of caviar and poaching of sturgeons and paddlefish attractive. There are several types of illegal trade of caviar and sturgeon products identified through the study, which include:

- Caviar and sturgeon meat taken from allegedly poached wild stocks are on sale at open air markets, "under the counter", or through individual contacts or online offers;
- Caviar labelling is not in compliance with the relevant CITES Resolution (e.g. labelling not containing all required information);
- Wild sourced caviar from sturgeon species can be deliberately mislabelled as aquaculture derived species to allow laundering through the legal trade;
- Aquaculture derived products are deliberately declared as wild sourced or different species to sell at a higher price.
- Falsified or forged CITES documents, or genuine CITES documents issued corruptly, are used to permit exports.

The aim of this study was to obtain a better understanding of global caviar markets, specifically:

- To look for any evidence of illegal trade in caviar and to identify the type of illegality, e.g. non-compliance with labelling, laundering/mis-labelling, *modus operandi*;
- To identify geographical hotspots for trade in caviar;
- To obtain an initial understanding of consumer attitudes towards consumption of caviar to explore what factors drive demand.

This study was intended to provide a rapid assessment of caviar trade globally. Therefore, physical market surveys were limited to only one city in each country in order to obtain a snapshot of the situation. Furthermore, it was not possible to collect detailed information concerning fishing regulations and production of each species in the countries reviewed in the scope of this project.

The international trade in caviar was reviewed through analysis of CITES trade data for 2010–2015 and analysis of caviar seizure data based on CITES trade data for US seizures between 2010 and 2015 (source code "I": confiscated or seized specimens) and EU-TWIX[2] data between 2010 and 2016,

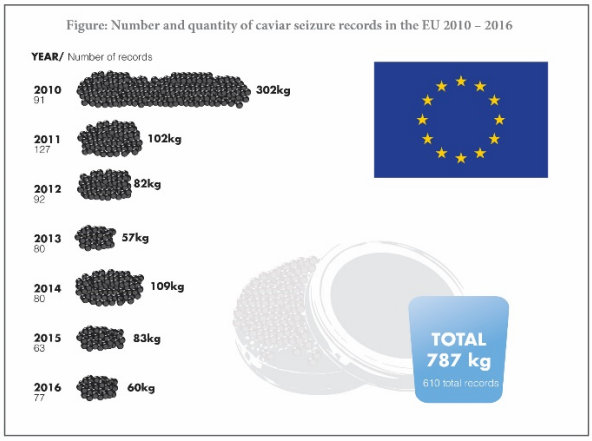
[1] For species listed on Appendix II, CITES documents should only be granted if trade is not detrimental to the survival of species in the wild.

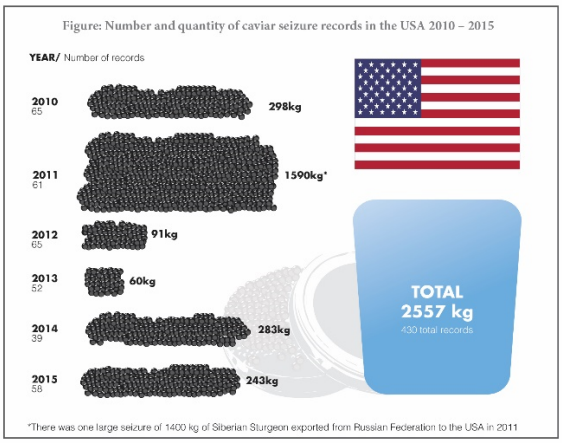
[2] European Union–Trade in Wildlife Information eXchange – the system includes a database of CITES seizures in the EU (http://eu-twix.org/). TRAFFIC received authorisation from EU Member States to use EU-TWIX data for this project.

available literature and interviews. Domestic trade was not analysed. The findings from the analysis were used to identify six locations as potential hotspots for caviar trade (legal and illegal). These were China, France, Germany, Japan, Russia and the USA. Rapid assessments were conducted in each of these countries between December 2017 and February 2018, which involved online surveys of products for sale, physical market surveys in one city per country and a review of available information on the relevant domestic legislation.

The analysis of CITES trade data showed that reported caviar (re-)exports (both sourced from the wild and aquaculture) globally totalled 1599 t between 2000 and 2015, according to importers' reports, and exhibited a general declining trend during this period from 229 t in 2000 to 108 t in 2015. Exports from aquaculture sources increased during the same period and totalled 102 t in 2015 and made up 95% of all trade by weight. At the time of writing, countries with the highest number of registered licensed facilities for caviar export, processing and repackaging were Switzerland (73), China (52), Iran (29), France (25) and Germany (25). For global caviar trade during the period 2010–2015, the top three countries of origin and direct export were China, the USA and Italy. The top three individual (re-) exporting countries were Germany, France and the United Arab Emirates during the same period, and the top three importing countries were the USA, Japan and France. However, CITES trade data indicate that the EU as a whole (28 EU Member States) was the largest importing market for caviar between 2010 and 2015 according to importer reported quantity. **Focusing on global caviar trade from wild sources during the period 2010–2015, the main exporting countries were the USA and Germany. American Paddlefish, Russian Sturgeon and Shovelnose Sturgeon were the top three species of wild sourced caviar** whereas Siberian Sturgeon, hybrid *Huso dauricus x Acipenser schrenckii* and Russian Sturgeon were the top sturgeon species/types found in caviar derived from aquaculture according to importer reported quantity between 2010 and 2015.

EU-TWIX data were analysed between 2010 and 2016 for EU seizure records. CITES trade data for US imports were analysed, under source code "I" between 2010 and 2015. Caviar seizure records peaked in 2010 in the EU with a total mass of 302 kg reported and, in the USA, in 2011 with a total mass of 1590 kg. Most of the seizure records reported had unknown purpose and source code and were seized on import (reason not stated). **The most frequently reported countries of origin in both EU and US seizure records were Ukraine, Russia and Iran. However, for most of the reports the country of origin was reported as unknown.** The most frequently reported country of departure in both EU and US seizure records was Russia. Of the seizure records where taxonomic information was available, **the most frequently seized caviar was derived from Siberian Sturgeon in both the EU and USA** which is the most common species in aquaculture. **Shortnose Sturgeon and Beluga were prominent in the EU seizure data and Russian Sturgeon, White Sturgeon and hybrid species in the US CITES seizure data.**





In line with the findings of the CITES trade data analysis, Russian Sturgeon, Siberian Sturgeon and hybrid *Huso dauricus x Acipenser schrenckii* were the most frequently available sturgeon species/types found for sale online and in the physical market surveys across all the six markets. Beluga was the next most frequently available species found for sale online (not in the physical market surveys) despite being the tenth most frequently reported species in caviar trade derived from aquaculture according to the CITES importer reported data between 2010 and 2015[3]. In Russia, Sterlet was also frequently found online and Amur Sturgeon in the physical market surveys. In line with the findings of the CITES trade data analysis, China, France, Italy, the USA, Germany and Bulgaria were frequently found as countries of production, however in Japan, caviar from Latvia and Russia was also found. Caviar from Iran and Israel, which were commonly reported as countries of origin in the seizure data, was also found in Germany, France, the USA and Japan.

All the countries where the rapid assessments were conducted are Parties to CITES and therefore should implement *CITES Resolution Conf. 12.7 (Rev. CoP17) Conservation of and trade in sturgeons and paddlefish* regarding the import, (re-)export and labelling requirements for domestic and international trade in sturgeon and paddlefish caviar. However, it was found that of the six countries included within the rapid assessments, only Germany and France have implemented the CITES Resolution for domestic trade, undermining the original purpose of the CITES caviar labelling system to ensure legal and traceable trade. Although CITES caviar labels were found during the rapid physical market surveys in Germany and France**, they did not always fulfil the CITES labelling requirements**; in France there were four instances where the containers appeared to have no seals or packaging to show visual evidence of opening and the lot identification number was missing in one case. In addition, there was **no consistency in the placement, design, positioning of the CITES code and quality across the labels** used, which makes it **difficult for** enforcement authorities, producers and consumers **to obtain reliable information on traceability and to detect invalid CITES labels. The implementation of the CITES caviar labelling system is lacking in key range and consumer States and even where it is implemented, several anomalies were found as part of the rapid assessment presented in this report. The implementation and enforcement of the CITES caviar labelling and related registration requirements require further and more thorough examination.**

While *CITES Resolution Conf. 12.7 (Rev.CoP17)* recommends relevant range States to set export quotas for caviar and meat of Acipenseriformes spp. from shared stocks every year, as of 31st December 2017 no export quotas no relevant export quotas had been communicated to the CITES

[3] Only one city in each country was visited within the rapid assessment therefore the sample size may be too small to show the same patterns as the country-level CITES trade data

Secretariat by range States of shared wild stocks of Acipenseriformes spp. since 2010[4], signifying that no international trade in wild sourced caviar or meat of Acipenseriformes spp. from shared stocks is permitted. **There have been no nationally established export quotas** (*CITES Resolution Conf. 14.7 (Rev.CoP15))* **reported to the CITES Secretariat** for wild-taken Acipenseriformes spp. from non-shared stocks. since 2011 as of March 2018 except for Uzbekistan, which reported a quota of 20 specimens of live, wild sourced Amu Darya Sturgeon *Pseudoscaphirhynchus kaufmanni* in 2017, while sturgeon fishing from the wild is still allowed in some range States**. There is therefore a lack of clarity from where and under what circumstances caviar from the wild can still enter international trade legally.**

Caviar claimed to be sourced from the wild was found for sale online and in all countries where caviar was found for sale in physical markets, including:

- **Siberian Sturgeon in Russia;**
- **Beluga originating from Russia or Kazakhstan in Russia, Germany and Japan;**
- **American Paddlefish in Germany, USA and Japan; and**
- **Shovelnose Sturgeon in the USA.**

It was not possible to determine conclusively whether the wild sourced caviar found during the surveys were in fact legal or illegal due to various reasons, including the lack of the CITES caviar labelling in the domestic market in most of these key range and consumer States, the lack of clarity on the extent of legal exports in caviar from the wild in some range States and the lack of detail regarding the species, source and origin of caviar found for sale online.

Anecdotal evidence of poaching was found in Russia through the additional interviews and review of media articles published about the Amur River which borders Russia and China, although it is unclear from the information gathered in this study if the poaching and trade is occurring from Russia to China to provide stock to aquaculture operations, or vice versa. Information from Operation Roadhouse in the USA suggests poaching from wild stocks is occurring there for national and international trafficking which could be a potential concern for the conservation and survival of the US species.

In Russia, Germany and France caviar that was claimed as sourced from the wild was sold "under the counter" or on the black market, not openly. Some vendors confirmed wild sourced caviar was available after expressed willingness to purchase even though it was not on display, suggesting trade in wild sourced caviar is still persistent. Some vendors also used "wild sourced" as a sales argument. This seems to be particularly common in Russia where caviar considered to have been derived from Chinese aquaculture was mislabelled or sold as Russian.

From the rapid assessments and literature review it was determined that caviar consumers tend to have high income. Key purchasing times tend to be around festive periods such as Christmas, New Year, Valentine's Day and celebrations such as weddings. In Russia, tourists often purchase caviar from the markets. **It was acknowledged in all countries that wild sourced caviar is still requested by consumers (although this has declined) and is seen as superior to that from aquaculture. Country of origin is an important driver for consumers with Russian or Iranian caviar the most sought after and Oscietra the most popular product.**

[4] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-17-01.pdf

The report concludes with the following recommendations, with the priority recommendations provided in bold font:

CITES Management Authorities

- **CITES Management Authorities in countries not yet implementing the CITES caviar labelling provisions for domestic trade (including China, Japan, Russia and the USA) should revise relevant national legislation to implement *CITES Resolution Conf. 12.7 (Rev.CoP17)* fully, in particular the universal caviar labelling system for the domestic trade.**
- **CITES Management Authorities should put in place stricter requirements for the quality and design of the CITES caviar labels to ensure that the labels provide visual evidence of any opening, are non-reusable and the CITES code is readable and easy to locate. Universal security features could be used to ensure labels are more difficult to be fraudulently produced. A clear definition of lot identification number should be agreed to help further improve traceability and to ensure consistency across producers and re-packagers.**
- **The CITES Management Authorities of the Parties which export wild sourced caviar (e.g. the USA) should set and publish national export quotas for the export of wild sourced caviar every year to assist in regulating and monitoring international wild caviar trade.**

CITES Secretariat and CITES Parties

- **Parties to CITES should propose changes to the universal caviar labelling system by revising *CITES Resolution Conf. 12.7 (Rev.CoP17)* at the next CoP (CoP18) to ensure consistency of quality of the labels and to minimise a risk of fraud. Any proposed changes should aim to help make enforcement easier.**
- To ensure *CITES Resolution Conf. 12. 7 (Rev. CoP17)* is fully implemented by Parties, the CITES Secretariat, in consultation with range and consumer States, and in co-operation with partner organisations and, as appropriate, other experts and organisations, should conduct a review of the implementation of *CITES Resolution Conf. 12. 7 (Rev. CoP17)*.
- The CITES Secretariat should report to the Standing Committee on progress and gaps with regard to implementation of *CITES Resolution Conf. 12. 7 (Rev. CoP17)*, with recommendations for consideration by the Standing Committee.

Enforcement authorities

- **Enforcement authorities of consumer and transit countries/territories should pay a close attention to caviar that is claimed to be wild sourced and, as appropriate, get in contact with exporting countries to check if export permits are issued properly.**
- Relevant enforcement authorities especially of the range States and countries that have been reported being on illegal trade routes should check that the species, source (e.g. wild, captive-bred) and the geographic origin of the caviar match those provided on the label/packaging also using laboratory techniques to minimise the risk of fraud and illegal trade.
- Relevant enforcement authorities are recommended to review the findings of this report relevant to their country and where there is discrepancy between what is legally reported as imported and what is found on the market for sale, this information should be used to inform their border control targeting and risk assessments.
- Enforcement authorities in the EU should target larger amounts of caviar being moved across EU borders overland from sturgeon and paddlefish range States such as Russia, Ukraine,

Azerbaijan, Kazakhstan and Iran to prevent illegally sourced wild caviar from entering the EU market.

Aquaculture Operations

- Aquaculture operations should help relevant authorities to strengthen the implementation of CITES legislation and labelling (e.g. registration of the facilities, meeting requirements for the quality and design of CITES labels) and ensure better traceability of caviar products within the trade.
- CITES Management Authorities, in co-operation with relevant fisheries authorities, are encouraged to register all the sturgeon aquaculture operations in the country including the ones which are not currently required to be registered under *CITES Resolution Conf. 12. 7 (Rev. CoP17)* to minimise the risk of fraud.

Retailers

- **Retailers of caviar should ensure they are up to date on the CITES labelling requirements, do not promote caviar harvest from the wild where it is illegal and provide consumers with information to ensure they act legally.**
- Online retailers of caviar should provide the details of the species, source and origin as well as on the regulations regarding export (i.e. CITES document requirements) to ensure they are compliant with *CITES Resolution Conf. 12.7 (Rev.CoP17*) and domestic legislation.

Non-governmental organisations, in collaboration with CITES Management or enforcement authorities, are encouraged to:

- **Conduct further assessments in other markets (e.g. Azerbaijan, Iran, Italy, United Arab Emirates) identified in the first phase of this project as hotspots for caviar trade.**
- **Carry out further research to understand the poaching situation especially in the Amur region between the Russian Federation and China.**
- **Collect information about the status of the wild populations of American Paddlefish and Shovelnose Sturgeon and the impact of legal/illegal fishing in the USA to consider if additional conservation measures are needed.**
- **Revisit markets surveyed (expanding survey time and locations) to monitor the situation and carry out DNA/isotope analysis to ascertain whether information provided on the caviar labels match actual source and origin.**
- Conduct further research to understand and explore what the pricing of caviar indicates.
- Conduct a consumer survey to understand better consumer demand, to identify the target audience for any consumer behaviour change interventions, and to explore the receptiveness for responsible consumption alternatives including business to business consumers and suppliers such as cruise liners, restaurants, hotels, airlines etc. where caviar is most frequently found on sale or is offered for consumption.
- Conduct further research to understand the scale and to assess the impact of trade in other sturgeon products e.g. meat, cosmetics.
- Educate consumers and raise awareness of sturgeon conservation issues with the aim to change the perception that wild sourced caviar is better than that derived from aquaculture to reduce the demand from consumers.
- Explore social and behaviour change communication initiatives that can be delivered to divert demand to responsible consumption alternatives.

INTRODUCTION

The aim of this study was to obtain a better understanding of global caviar markets, specifically:

- To look for any evidence of illegal trade in caviar and to identify type of illegality, e.g. non-compliance with labelling, laundering/mis-labelling, *modus operandi*;
- To identify geographical hotspots for trade in caviar;
- To obtain an initial understanding of consumer attitudes towards consumption of caviar to explore what factors are driving demand;

The study was conducted in two phases:

- Phase I – Available trade data, literature and anecdotal information based on interviews with select stakeholders and experts was used to identify key caviar producing, transit and consumer countries in legal and illegal trade.
- Phase II – Based on the findings of phases one, rapid assessments of the caviar market in six key global locations were conducted to look for evidence of illegal trade in caviar (e.g. non-compliance with labelling, laundering, mis-labelling) and to get an initial understanding of consumer attitudes towards consumption of caviar.

This study was intended to be a quick first look at the situation and therefore it was only possible to conduct research within the limits of the study. This report summarises the findings of the study and provides recommendations for policy makers and future research. Further in-depth research is needed to understand the situation fully.

BACKGROUND ON INTERNATIONAL COMMERCIAL STURGEON TRADE

Sturgeon and paddlefish are a very ancient group of fish that can be found in coastal and inland waters across the northern hemisphere. For people around the world, caviar, i.e. unfertilised sturgeon and paddlefish roe, is a gourmet delicacy and is one of the most expensive wildlife products. For the range states, sturgeons are a major source of income and employment, as well as an important element of the local food supply. Sturgeon of the Caspian Sea produce what is claimed to be the highest quality caviar and have been the source of most of the caviar in global trade from wild stocks historically.

Sturgeon populations have been declining due to, among other factors, habitat degradation and overexploitation, including illegal fishing. Of the 27 species of sturgeon and paddlefish, 85% are now on the brink of extinction (WWF, 2017). In response to this and to ensure trade is sustainable, since 1998 all species of sturgeon and paddlefish have been listed in Appendix I or II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), whereby international trade is prohibited or only authorised with a relevant CITES documents granted by the CITES authorities[5].

Aquaculture production of sturgeon products started to rise in the early 2000s. By 2016, production had reached 127 780 t of sturgeon meat and caviar globally with 86% produced in the People's Republic of China (hereafter referred to as "China"). Caviar production was estimated to reach 340 t

[5] For species listed on Appendix II, CITES documents should only be granted if trade is not detrimental to the survival of species in the wild.

in 2016 and is forecast to reach approximately 550 t by 2020, raising concerns that there will be more production than demand which means prices and profitability will decrease (Bronzi et al., 2017). In 2016, it was estimated that approximately 48 countries and approximately 1986 sturgeon and paddlefish farms were producing both meat and caviar globally. The Russian Federation (hereafter referred to as "Russia"), the Islamic Republic of Iran (hereafter referred to as "Iran"), the European Union (EU, mainly France, Italy and Germany), China and the United States of America (hereafter referred as "USA") were the first producers of caviar derived from aquaculture. From a survey conducted among companies that produce caviar it was found that producers are focusing on quality, price, image, information and traceability whilst sustainability is a lower priority. The main difficulties within the caviar trade faced by aquaculture operations are the lack of quality control, the need to grow enough consumer demand for caviar in line with the growth in production, poaching and illegal markets and the administrative difficulties of complying with the current legislation (Bronzi, 2017).

Despite the introduction of CITES regulations and the rapid growth of aquaculture production, the high price and rarity of certain sturgeon and paddlefish species as well as a long-term investment to produce caviar from farmed sturgeons make illegal trade in caviar and poaching of sturgeons and paddlefish attractive. Globally, caviar is seen as a luxury, high-end product most often found on sale in restaurants, hotels, department stores and specialist shops, served on cruise ships and on airplanes in first class. The word "caviar" is often used as a trademark to symbolise inaccessible luxury or high-quality products/services showing that there are associated emotional connotations beyond its use as a food product (Bronzi & Rosenthal, 2014). Due to its luxury status it has been suggested that there does not appear to be a large underground market as those willing to spend want prestige and guaranteed quality associated with a brand name or trusted retail outlet (UNODC, 2016). However, some research has shown that people prefer wild sourced caviar thought to be "rare" despite not being able to tell the difference between samples derived from aquaculture or wild sources in blind taste tests (Gault, Meinard, & Courchamp, 2008). This preference for rarity continues to drive the luxury status. Some have the perception that the quality of caviar derived from aquaculture is not as good as that sourced from the wild and wild sourced caviar is "pure and natural" in comparison.

There are several types of illegal trade of caviar and sturgeon products identified through this study, which include:

- Poaching from wild stocks for sale of meat and caviar at open air markets, "under the counter", or through individual contacts or online offers.
- Caviar sold without mandatory CITES labelling, labelling not in compliance with CITES requirements or labelling not containing all required information.
- Wild sourced caviar from endangered sturgeon species can be deliberately mislabelled as aquaculture derived species to allow laundering through the legal trade.
- Aquaculture derived products are deliberately declared as wild sourced or different species to sell at a higher price.
- Falsified or forged CITES documents, or genuine CITES documents issued corruptly, are used to permit export.

Caviar is compact, easy to conceal and extremely valuable making it easy to be traded illegally (Engler and Parry-Jones, 2007). According to some sources, illegal caviar trade is estimated to exceed legal production by ten times (Nelleman *et al.*, 2014). The sturgeon Caspian Sea population has continued to decrease dramatically despite the CITES listing and was thought to be 85% threatened in 2014 compared to 44% threatened in 1996 (Bronzi and Rosenthal, 2014; van Uhm and Siegel, 2016). Although some smugglers are opportunists such as tourists without knowledge of the legislation, organised crime groups are also believed to be involved in the trafficking of caviar. High demand and

restricted legal supplies of wild sourced caviar provide the opportunity for illegal traders to reap substantial profits. The black market in caviar has also bred violence, officials attempting to halt caviar smuggling have been killed—in the 1990s, two dozen members of a Russian anti-poaching unit were murdered, and in 1996, fifty-four Russian border guards assigned to disrupt the illegal caviar trade were killed in a bombing incident (Liddick, 2014).

Whenever the term "caviar" is used throughout the report it refers to sturgeon caviar and not caviar substitutes unless otherwise stated.

METHODS

The international trade in caviar was reviewed through:

- Analysis of CITES trade data for 2010–2015;
- Caviar seizure data based on CITES trade data for US seizures between 2010 and 2015 (source code "I");
- Caviar seizure data based on EU-TWIX[6] data between 2010 and 2016;
- Available literature;
- Interviews.

The findings from the review outlined above were used to identify six locations as potential hotspots for caviar trade (legal and illegal). These were China, France, Germany, Japan, Russia and the USA. Rapid assessments were conducted in each of these countries between December 2017 and February 2018 which involved:

- Online surveys of products for sale to help inform physical market surveys;
- Physical market surveys in one city per country;
- Review of available information on relevant legislation for each country.

Additional interviews took place in Moscow and two locations identified for poaching in Russia (Astrakhan and Khabarovsk) in February 2018.

CITES Trade Data

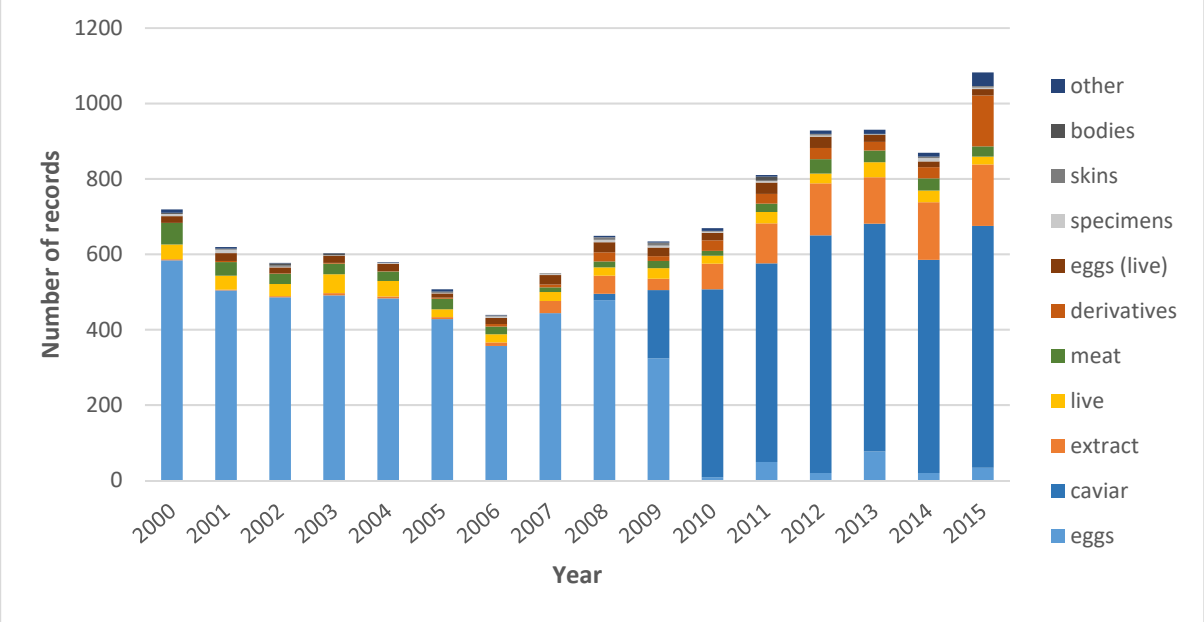
CITES trade data were used to analyse the reported international trade in caviar between 2000 and 2015 (2015 was the last year with comprehensive data available at the time of writing) downloaded from the CITES Trade database on 31st July 2017. Note CITES trade data do not include domestic trade. The analysis focuses on more recent years from 2010 to 2015 to highlight emerging trends not analysed in other available literature, but longer-term trends are observed where relevant. Trade within the EU will not appear in this international trade data analysis because of the absence of internal border controls. In this analysis as trade was not reported by some of the key export countries, it should be assumed that quantities being referred to are those reported by importers, unless specifically stated otherwise.

The analysis looked at data on Acipenseriformes spp. focusing on key commodity terms "caviar"[7] and "eggs" (unless stated otherwise) and excludes "eggs (live)" as generally these specimens are used for

[6] European Union–Trade in Wildlife Information eXchange – the system includes a database of CITES seizures in the EU (http://eu-twix.org/). TRAFFIC received authorisation from EU Member States to use EU-TWIX data for this project.

aquaculture purposes (Figure 1). All references to caviar within this report refer to sturgeon or paddlefish only. Analysis focuses on trade reported for commercial purposes ("T", representing 94% of total records) and source codes for wild sourced ("W", "U" or "blank") and aquaculture derived ("C", "R" and "F")[8] caviar. Only units of kilograms, grams, milligrams and micrograms were included (following conversion to kilograms) although it is possible that milligrams and micrograms were cases of extracts or derivatives misreported as caviar. There were four records for bottles (importer reported quantity of 1031), one for boxes (exporter reported quantity of two), 11 for cans (importer reported quantity of 438, exporter reported quantity of 1373), one for flasks (importer reported quantity of two) and three for items (importer reported quantity of 15) and one exporter reported a quantity of 120 cm^2 of caviar (likely to be a reporting error). All of these were excluded from the analysis.

Figure 1: Number of records for each term within CITES trade database for Acipenseriformes spp. *between 2000 and 2015, all source codes and purposes, importer reported quantity. Other includes terms cosmetics (24), fingerlings (12), unspecified (11), oil (11), leather products (10), swim bladders (10), skin pieces (7), medicine (6), carvings (5), wax (1), bone pieces (1), bones (1), fins (1), powder (1), soup (1) and trophies (1). Number of records is not equal to the number of permits as data are aggregated. Therefore, these are only used here as a proxy to compare across items with different units and give an overview of key commodities in sturgeon trade.*



Source: CITES Trade database

Seizure Data

Data were taken from two databases. Trends in seizure records derived from data are only indicative of patterns of illegal trade because countries/territories differ in their enforcement effort, their reporting and recording of information. It was not mandatory to report illegal trade for the period that

[7] The trade term "caviar" was first used for a record in the CITES Trade Database in 2005, prior to this "eggs" was used to record caviar therefore these terms should be considered together when analysing caviar trade.

[8] In the CITES Trade database, code W = specimens taken from the wild, C = Animals bred in captivity in accordance with Resolution Conf. 10.16 (Rev.), as well as parts and derivates thereof, exported under the provisions of Article VII, paragraph 5, of the Convention, R = Ranched specimens, F = Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts or derivates thereof, U = source unknown, T = commercial purposes. Source code I (confiscated or seized specimens) was not included as it was not mandatory to report illegal trade to CITES prior to 2016 and Parties did not report consistently.

was examined, and an unknown fraction of illegal trade is detected. Reasons for seizures were not known for both databases.

EU-TWIX data were analysed for the period 2010–2016 (data as available on 11th August 2017) for EU seizure records. Note that some EU Member State Customs report to EU-TWIX via the World Customs Organization (WCO) for which Member States were not required, only encouraged, to report seizures, with a suggestion to report only those exceeding 500 g. Therefore EU-TWIX potentially does not provide full coverage of all seizures. It is important to note that seizures are split by species and/or type of commodity within the database therefore the number of records is potentially higher than the number of seizures and is only used here as a proxy to give an overview of sturgeon trade. There were 671 seizure records for sturgeon. The majority were for commodity terms "caviar" but there were 11 seizure records for derivatives, 12 for medicine, nine for extracts, three for eggs and 11 for other products including bodies, live, small leather products, meat, scales and skeletons, all of which were excluded from the analysis. All results were filtered to those reported as caviar and that included a reported quantity in kilograms. This excluded 75 records which did not include a reported quantity in kilograms. Seven records for caviar had a reported quantity in litres (reported quantity of 1.28 l) and 68 records did not include any unit of measurement (reported count of 5848).

CITES trade data were analysed as reported by the USA as imports, under source code "I" between 2000 and 2015 (2015 was the last year with comprehensive data available at the time of writing) downloaded on 31 July 2017. Although it was not mandatory to report illegal trade to CITES until 2016, the USA has reported all their seizures under source code "I" in their CITES annual reports. However, it is important to note that data were aggregated within the database therefore number of records is not equal to the number of seizures and is only used here as a proxy for the number of seizures. There were 452 seizure records for Acipenseriformes spp. The majority were for caviar but there were 66 seizure records for extracts, ten for meat, and 17 for other products including derivatives, small leather products, live, medicine, skin pieces, specimens, swim bladders and three unspecified. All results presented in this report focus on commodity terms "caviar" and "eggs" and excludes "eggs (live)" as generally these specimens are used for aquaculture purposes. Only units of kilograms, grams, milligrams and micrograms were included and there were insignificant quantities reported in other units. Data reported in grams, milligrams or micrograms were converted to kilograms for consistency.

Literature Review & Interviews

To complement the data analysis, a review of available literature from academia and media was carried out and 13 interviews were conducted with stakeholders or experts who had some involvement with sturgeon trade globally or some knowledge of illegal activity. The interviewees came from various sectors including enforcement agencies, academia, caviar producers and non-governmental organisations. Interviewees took part in a confidential interview either face to face or on the telephone.

Table 1 summarises the key countries mentioned within the interviews where illegal activities were allegedly taking place. Information gathered for each country involved in the rapid assessments is summarised within each country section.

Table 1: Countries mentioned as source (wild or aquaculture derived), transit or consumer markets for illegal sturgeon trade by interviewees

#	Interviewee occupation	Source (wild sourced)	Source (aquaculture derived)	Transit	Consumer
1	NGO	AZ, BG, GE, IR, RO, RU, TM, UA	CN, DE, FR		DE, RU
2	Enforcement	AZ, KZ, RU	CN	AE	CH, TM, US
3	Academia	RU			CH, DE, FR,
4	NGO	AM, AZ, BG	CN	TR	AZ, IR, RU
5	Academia	IR, GE, RU, TM			AZ, IL, IR, RU, TM
6	Academia	RU	CN, VN		BE, DE, IT, RU, US
7	Academia	AZ, IR, KZ, RU, TM	IR	BY, DE, PL, TR	DE, FR, NL, UK
8	Producer	RU			AE, BE, JP, KR, RU, US
9	NGO	RU	CN		RU
10	Producer		CN		BE, CN, ES, ID, JP, TH
11	NGO	AM		GE	ID, RU
12	Enforcement	RU, US	US		CA, RU, US
13	NGO	US	FR, CN, RU		JP

Note: AE = United Arab Emirates, AM = Armenia, AZ = Azerbaijan, BE = Belgium, BG = Bulgaria, BY = Belarus, CA = Canada, CH = Switzerland, CN = China, DE = Germany, ES = Spain, FR = France, GE = Georgia, ID = Indonesia, IL = Israel, IR = Iran, IT = Italy, JP = Japan, KR = Republic of Korea, KZ = Kazakhstan, NL = Netherlands, PL = Poland, RO = Romania, RU = Russian Federation, TH = Thailand, TM = Turkmenistan, TR = Turkey, UA = Ukraine, UK = United Kingdom, US = USA, VN = Vietnam

Rapid Assessments

Rapid assessments of the caviar market were carried out in one city in each of the six countries identified as hotspots for caviar trade (Beijing, Berlin, Chicago, Moscow, Paris and Tokyo) between December 2017 and February 2018 to include the peak caviar selling times of the year (such as Christmas and New Year). The methodology for carrying out the rapid assessment was developed with support of experts from TRAFFIC and WWF Russia. The assessments focused on caviar for consumption only and excluded caviar substitutes, meat and cosmetics containing caviar. All surveyors were provided with background information already gathered on caviar trade in their country, a guide to identifying sturgeon species and caviar products and guidance on the CITES legislation and labelling requirements.

Where stated, country of production refers to any information gathered either from the vendor, product label, website on the country of origin, (re-)export or repackaging. Weights in the USA were recorded in Imperial units and converted to Metric units for comparison with other markets.

Online surveys

The survey team in each location conducted a snapshot survey of offers for sale on various websites over one day prior to conducting the physical market survey to identify which city to conduct the physical market survey in, identify retailers to visit in that city and to collate information on prices and types of caviar products on sale in each location. Surveyors recorded information on the species, source, country of origin of caviar products and any anecdotal information. Search terms (e.g. caviar for sale, wild caviar for sale) were entered into the largest internet search engine provider in each country to identify retailer websites[9]. The number of search terms varied by country depending on the

[9] E-commerce websites e.g. eBay & Amazon were not included due to the resource needed to do a full assessment of these sites and the objective of identifying retailers to visit during the physical market surveys.

number of search results each term produced. Any retailers identified to visit in the physical market survey were not included in the online survey data recorded to avoid duplication. This was not intended to be an exhaustive survey of online caviar sales and was to inform the physical market surveys.

Physical market surveys

The focus of the surveys was on caviar; however, all sturgeon products being offered for sale were recorded and observations and questions concerning the demand for sturgeon products were made. The survey team spent two days in each location to record information on the species, source, country of origin of caviar products, and anecdotal information on consumer demand, wild caviar availability and compliance with relevant national or international regulations.

Surveyors were encouraged to identify and visit a range of stores including Russian/Middle Eastern delicatessens, food stores or department stores, caviar specialist shops, fish and seafood shops and food markets.

A survey method like that used by TRAFFIC in other wildlife product markets around the world was replicated—the surveying team posed as potential and interested buyers, notes being taken using a mobile phone and photos taken wherever possible. This covert survey method, however, limits the number and range of questions the survey team can ask, and any information collated from traders during the current survey was opportunistic. Due to the scale and set up of the project, the current survey did not involve further in-depth investigation into traders or items for sale.

No caviar was purchased as part of the survey, except in Russia where additional funding was provided to purchase and test 10 samples using DNA analysis (molecular-genetic analysis) to determine species and collect other relevant information (e.g. morphology of the eggs, ripeness of caviar to distinguish wild caviar from farmed caviar). Testing was conducted by the Molecular Genetic Laboratory of the Russian Federal Research Institute of Fisheries and Oceanography.

Additional interviews in Russia

Additional interviews took place in Moscow and two locations identified for poaching in Russia, Astrakhan, Caspian region, and Khabarovsk, Amur region, in February 2018. A total of 31 interviews took place with vendors, fishermen, scientists, aquaculture producers and enforcement officials.

National legislation

Surveyors provided a written summary of any national legislation regarding the control of caviar trade in their country.

THE REGULATION OF INTERNATIONAL STURGEON TRADE

CITES Resolution Conf. 12.7 (Rev. CoP17) *Conservation of and trade in sturgeons and paddlefish*[10]

In response to reported declines in sturgeon populations globally and with the aim of ensuring that trade in sturgeon products is sustainable, all 27 species of sturgeon and paddlefish (Table 2) have

[10] https://www.cites.org/sites/default/files/document/E-Res-12-07-R17.pdf

been listed in Appendix II of CITES since 1998 whereby international trade is only authorised with a relevant CITES documents granted by the CITES authorities[11]. Two species, European Sturgeon *Acipenser sturio* and Shortnose Sturgeon *Acipenser brevirostrum* are listed in Appendix I prohibiting all international commercial trade.

*Table 2: All sturgeon and paddlefish species with common name and name most commonly used for trade. All species are listed on Appendix II of CITES except European Sturgeon and Shortnose Sturgeon (bold) which are listed in Appendix I. *Standard Species Code should be used for caviar labelling.*

Species name	Common name	Standard Species Code	Commonly traded as
Acipenser baerii	Siberian Sturgeon	BAE	Siberian, Baerii
Acipenser brevirostrum	**Shortnose Sturgeon**	BVI	
Acipenser dabryanus	Yangtze Sturgeon	DAB	
Acipenser fulvescens	Lake Sturgeon	FUL	
Acipenser gueldenstaedtii	Russian Sturgeon	GUE	Oscietra/ Ossetra/ Osetra/ Asetra
Acipenser medirostris	Green Sturgeon	MED	
Acipenser mikadoi	Sakhalin Sturgeon	MIK	
Acipenser naccarii	Adriatic Sturgeon	NAC	
Acipenser nudiventris	Ship Sturgeon	NUD	
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	OXY	
Acipenser oxyrinchus desotoi	Gulf Sturgeon	DES	
Acipenser persicus	Persian Sturgeon	PER	Oscietra/ Ossetra/ Osetra/ Asetra
Acipenser ruthenus	Sterlet	RUT	Imperial, Almas
Acipenser schrenckii	Amur Sturgeon	SCH	Amur, Schrenkii
Acipenser sinensis	Chinese Sturgeon	SIN	
Acipenser stellatus	Stellate Sturgeon	STE	Sevruga
Acipenser sturio	**European Sturgeon**	STU	
Acipenser transmontanus	White Sturgeon	TRA	White
Huso dauricus	Kaluga	DAU	Kaluga
Huso huso	Beluga	HUS	Beluga
Pseudoscaphirhynchus fedtschenkoi	Syr Darya Sturgeon	FED	
Pseudoscaphirhynchus hermanni	Dwarf Sturgeon	HER	
Pseudoscaphirhynchus kaufmanni	Amu Darya Sturgeon	KAU	
Scaphirhynchus albus	Pallid Sturgeon	ALB	
Scaphirhynchus platorynchus	Shovelnose Sturgeon	PLA	Hackelback
Scaphirhynchus suttkusi	Alabama Sturgeon	SUS	
Polyodon spathula	Paddlefish	SPA	American Paddlefish
Psephurus gladius	Chinese Paddlefish	GLA	

CITES Resolution Conf. 12.7 (Rev. CoP17) Conservation of and trade in sturgeons and paddlefish recommends that all range states of shared stocks[12] should establish scientifically-based annual catch and export quotas for each sturgeon or paddlefish species and communicate these to the Secretariat.

[11] Permits should only be granted if trade is not detrimental to the survival of species in the wild.

[12] Azerbaijan, Bulgaria, Canada, China, Islamic Republic of Iran, Kazakhstan, Romania, Russian Federation, Serbia, Turkmenistan, Ukraine, USA

This does not apply to aquaculture derived sturgeon. No international trade in wild sourced caviar or meat is permitted where no quota has been published for a CITES-listed sturgeon species of a shared stock. *CITES Resolution Conf. 12.7 (Rev. CoP17)* also recommends that Parties not accept imports of caviar and meat of Acipenseriformes spp. from shared stocks unless export quotas have been set. Export quotas are published on the CITES website[13] but as of 31st December export quotas for caviar and meat of Acipenseriformes spp. from shared stocks have not been communicated to the CITES Secretariat since 2010 and the Secretariat subsequently published yearly zero export quotas[14].

CITES Resolution Conf. 12.7 (Rev.CoP17) recommends that, as of 2000, all importing, exporting and re-exporting Parties should establish a registration system for facilities producing caviar (including aquaculture operations that process and package caviar, or facilities that re-package caviar) and provide a list of these facilities and their registration codes to the Secretariat.

In 2000 a universal labelling system for all caviar was introduced to allow identification of the source of the caviar. *CITES Resolution Conf. 12.7 (Rev.CoP17*) recommends that Parties implement universal labelling system for all caviar (wild sourced and derived from aquaculture) for domestic and international trade. Labels must be non-reusable, i.e. they cannot be removed undamaged or transferred to another container. The label may seal the container, or if not, the packaging should permit visual evidence of any opening.

In the country of origin, the non-reusable label should be affixed to the primary container. This label must include a standard species code (Table 2); the source code[15] of the caviar; the ISO two-letter code for the country of origin; the year of harvest; the official registration code of the processing plant (e.g. xxxx); and the lot identification number [16] for the caviar (e.g. yyyy), for instance: HUS/W/RU/2000/xxxx/yyyy. If caviar is repackaged, a non-reusable label should be affixed to the primary container. This label must include a standard species code (Table 2); the source code of the specimen; the ISO two-letter code of the country of origin; the year of repackaging; the official registration code of the repackaging plant, which incorporates the ISO two-letter code of the country of repackaging if different from the country of origin (e.g. ITwwww); and the lot identification number, or CITES export permit or re-export certificate number (e.g. zzzz), for instance: PER/W/IR/2001/IT-wwww/zzzz. When caviar is exported or re-exported, the exact quantity of caviar must be indicated on any secondary container in addition to the description of the content in accordance with international Customs regulations. The same information that is on the label affixed to the container must be given on the export permit or re-export certificate, or in an annex attached to the CITES permit or certificate.

Figure 2: Image showing label containing CITES code on caviar container

[13] https://www.cites.org/eng/resources/quotas/index.php
[14] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-17-01.pdf
[15] Letter corresponding to the source of the caviar (e.g. W = wild sourced, C = aquaculture derived)
[16] A number that corresponds to information related to the caviar tracking system used by the processing or repackaging plant

Caviar from different Acipenseriformes spp. should not be mixed in a primary container, except in the case of pressed caviar. Shipments should only be accepted if they have the correct CITES documents with matching information, except up to a maximum of 125 g per person for personal consumption (personal effects exemption). All containers must be labelled in accordance with the Resolution requirements. If containers are not labelled, enforcement authorities can seize them.

RESULTS

CITES trade in sturgeon

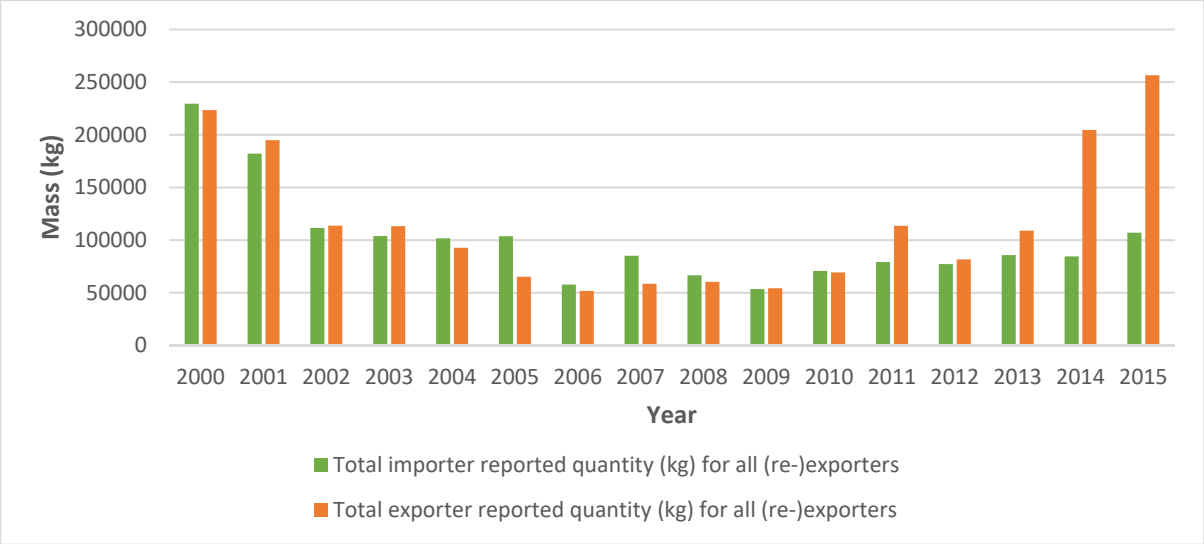
Discrepancies in global trade according to importer and exporter data

When total mass of caviar (kg) reported by exporters, versus those reported by importers are compared, there are some discrepancies in the amounts declared in trade (see Figure 3). Although the trade records should be reported identically by the importer and exporter, in practice these often differ due to differences in reporting between the importing and exporting country. It is unclear what is driving the discrepancies. When reported exports exceed imports this can be caused by the fact that often reporting is based on the export permits issued rather than the export permits used, therefore focus was put on the years where imports exceed exports in

Table 3. Iran submitted annual reports[17] between 2006 and 2012 however in their trade data no exports were reported. Kazakhstan submitted annual reports but did not report any exports between 2005 and 2006. Russia submitted annual reports except for 2006 but have not reported any caviar exports since 2001.

[17]Article VIII, paragraph 7, of the CITES Convention, requires each Party to submit an annual report on CITES trade, containing a summary of information on, inter alia, the number and type of permits and certificates granted, the countries with which such trade occurred, the quantities and types of specimens, and the names of species as included in Appendices I, II and III. These reports are called the CITES Annual reports.

Figure 3: Total mass (kg) of caviar (aquaculture derived and wild sourced, commercial purpose) by year (re-)exported as reported by exporters and importers between 2000 and 2015.



Source: CITES Trade database

*Table 3: Main (re-)exporting countries where caviar (aquaculture derived and wild sourced, commercial purpose) quantities reported by importers exceeded those reported by exporters (kg), *No export reports submitted by (re-)exporter for that year.*

Year	Difference between importer reported quantity and exporter reported quantity of caviar (kg)	(Re-)exporting countries with largest discrepancies
2000	21 833	France, China, Iran, United Arab Emirates, Switzerland
2004	32 093	Iran, Russia*
2005	43 460	Kazakhstan*, Iran, France, Azerbaijan, USA
2006	12 401	Iran*, Italy
2007	37 576	Germany, Iran*
2008	11 947	Germany, USA, Italy, Iran*
2010	10 772	Iran*, Germany, Azerbaijan, Belgium

Source: CITES Trade database

Taxon in global trade of caviar

Siberian Sturgeon *Acipenser baerii* (98 976 kg), hybrid *Huso dauricus x Acipenser schrenckii* (76 278 kg) and Russian Sturgeon *Acipenser gueldenstaedtii* (74 785 kg) were the top three sturgeon types found in the caviar trade derived from aquaculture by importer reported quantity between 2010 and 2015 (Table 4). American Paddlefish *Polyodon spathula* (48 011 kg), Russian Sturgeon (6030 kg) and Shovelnose Sturgeon *Scaphirynchus platorynchus* (5416 kg) were the top three species of wild sourced caviar in trade by importer reported quantity between 2010 and 2015.

*Table 4: Acipenseriformes taxa reported in trade by importer reported quantity (kg) between 2010 and 2015 for aquaculture derived and wild sourced caviar, purpose code "T" * hybrid species, ** unlikely to be wild sourced as not naturally found therefore possible reporting error. *** wild sourced caviar not in line with CITES export quotas and/or exported after 2011 which could reflect illegal activity*

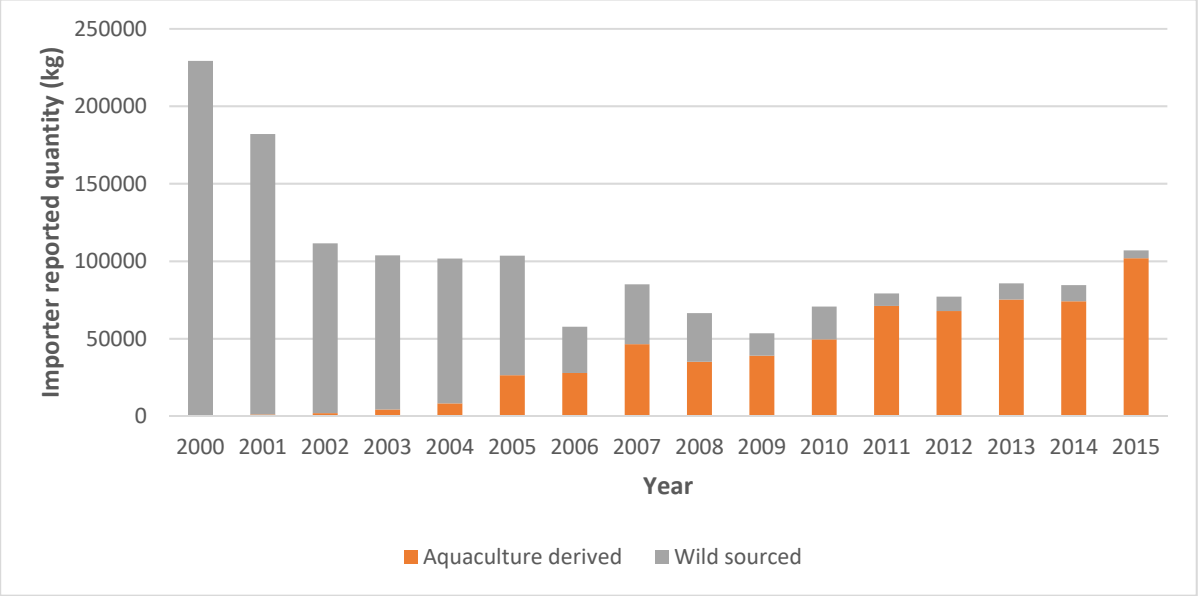
Taxon	Common Name	Aquaculture derived caviar - importer reported quantity (kg)	Wild sourced caviar - importer reported quantity (kg)	Country of origin for wild sourced caviar
Acipenser baerii	Siberian Sturgeon	98 976	323	France**, Iran
*Huso dauricus x acipenser schrenckii**		76 278	273**	-
Acipenser gueldenstaedtii	Russian Sturgeon	74 785	6030	Azerbaijan, **Bulgaria*****,** Italy**, Kazakhstan
Acipenser transmontanus	White Sturgeon	67 080	21	Canada (2013, 2014), USA (2012)
*Acipenser hybrid**		32 526		-
Acipenser schrenckii	Amur Sturgeon	30 839	66	China
*Acipenser gueldenstaedtii x baerii**		19 668		-
*Acipenser baerii x naccarii**		6723		-
Huso dauricus	Kaluga	6489	16	-
Huso huso	Beluga	6354	1127	Azerbaijan, **Bulgaria*****,** Iran, Kazakhstan
Acipenser naccarii	Adriatic Sturgeon	2411		-
Acipenser ruthenus	Sterlet	2087		-
*Acipenser baerii x gueldenstaedtii**		1187		-
Polyodon spathula	American Paddlefish	691	48 011	USA
*Huso huso x acipenser baerii**		550	1**	Italy**
*Acipenser baerii x schrenckii**		550		-
Acipenser stellatus	Stellate Sturgeon	218	702	Azerbaijan, Iran, Kazakhstan
Acipenser persicus	Persian Sturgeon	137	2469	Iran
*Acipenser gueldenstaedtii x stellatus**		90		-
*Huso huso x acipenser naccarii**		30		-
Acipenser fulvescens	Lake Sturgeon	27		-
*Huso hybrid**		21		-
Acipenser nudiventris	Ship Sturgeon	7		-
Acipenser sinensis	Chinese Sturgeon	6		-
Acipenser brevirostrum	Shortnose Sturgeon	4		-
Scaphirhynchus platorynchus	Shovelnose Sturgeon		5416	USA
Acipenseriformes spp.	Unknown	12 132	28	Azerbaijan, Kazakhstan, Russian Federation
Grand Total		**49 7844**	**64 482**	

Source: CITES Trade database.

Global export of caviar

Reported caviar (re-)exports globally totalled 1 599 173 kg between 2000 and 2015, according to importers' reports (1 735 359 kg according to exporters' reports) and exhibited a general declining trend during this period from 229 t in 2000 to 108 t in 2015. Exports from aquaculture derived caviar totalled 101 892 kg in 2015 and made up 95% of all trade by weight (see Figure 4).

Figure 4: Annual global caviar trade by importer reported quantity (kg) between 2000 and 2015 from aquaculture or wild sources, commercial purpose.

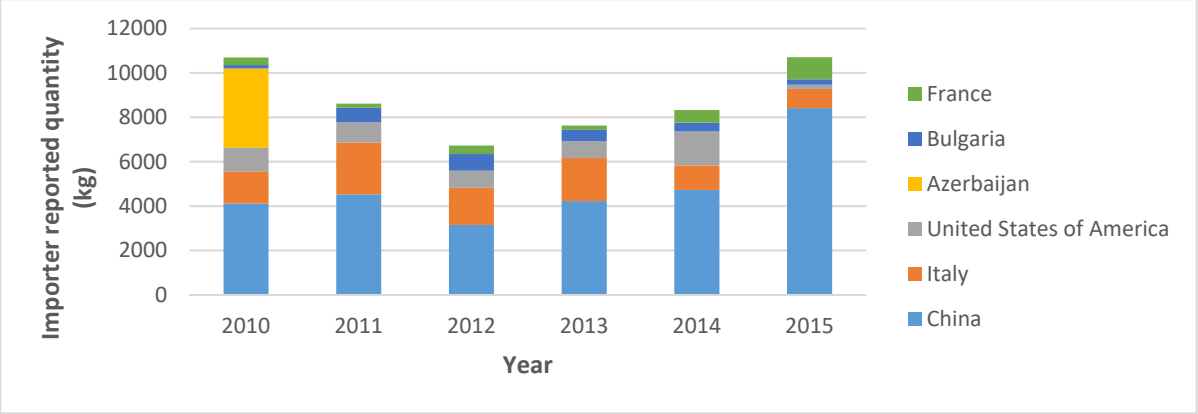


Source: CITES Trade database

Origin of caviar globally

China (29 137 kg), Italy (9 379 kg), the USA (5 195 kg), Azerbaijan (3 594 kg), Bulgaria (2 719 kg) and France (2 658 kg) were reported as the countries of origin for the largest volume of re-exports of caviar between 2010 and 2015 (according to importers' reported quantity) (see Figure 5). China doubled the quantity exported since 2010 and makes up 75% of importer reported quantity in 2015 whilst the quantities that Italy and USA exported decreased over the same period. 58% (3 013 kg) of the caviar originating in the USA was wild sourced (Paddlefish and Shovelnose Sturgeon). All caviar from Azerbaijan was wild sourced Russian Sturgeon (in line with the CITES export quotas) and no trade was reported from Azerbaijan as a country of origin after 2011. Germany re-exported 24 407 kg or 70% of the total amount of caviar originated from the top six countries of origin. The USA imported 14 853 kg or 28% of the total amount of caviar originated from the top six countries of origin.

Figure 5: Top six countries of origin for caviar (aquaculture derived and wild sourced, commercial purpose) between 2010 and 2015 according to importer reported quantity (kg).

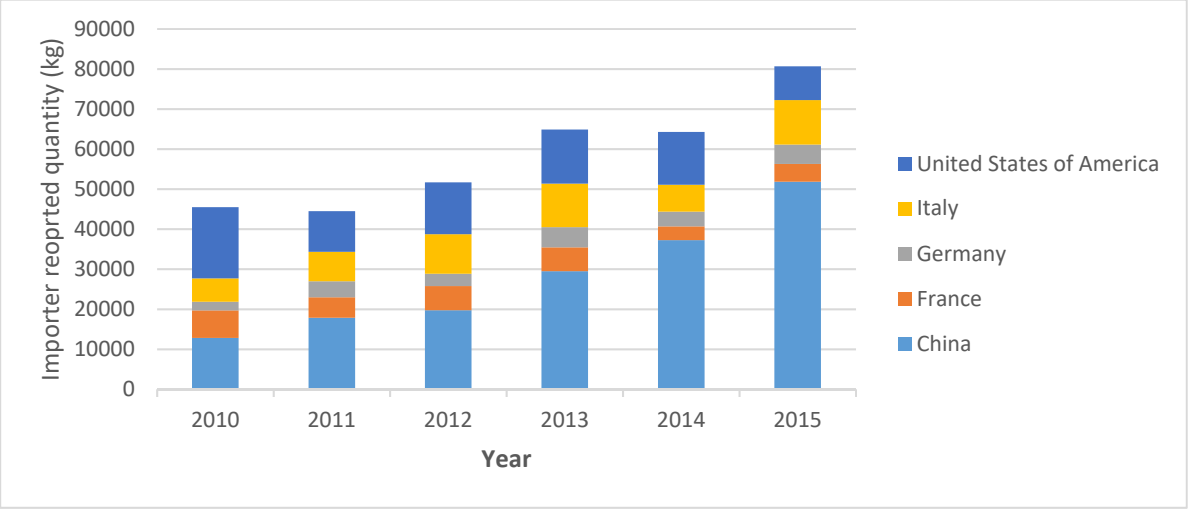


Source: CITES Trade database

Direct exports of caviar globally

The main direct exporters between 2010 and 2015 were China (168 038 kg), the USA (76 043 kg), Italy (51 799 kg), France (31 850 kg) and Germany (22 752 kg) (see Figure 6). During this period most of the direct exports were aquaculture derived caviar, except 66% of direct exports from USA which were wild sourced caviar (Paddlefish and Shovelnose Sturgeon), according to the importer reported quantity.

Figure 6: Top five countries of direct export for caviar (aquaculture derived and wild sourced, commercial purpose) between 2010 and 2015 according to importer reported quantity (kg).



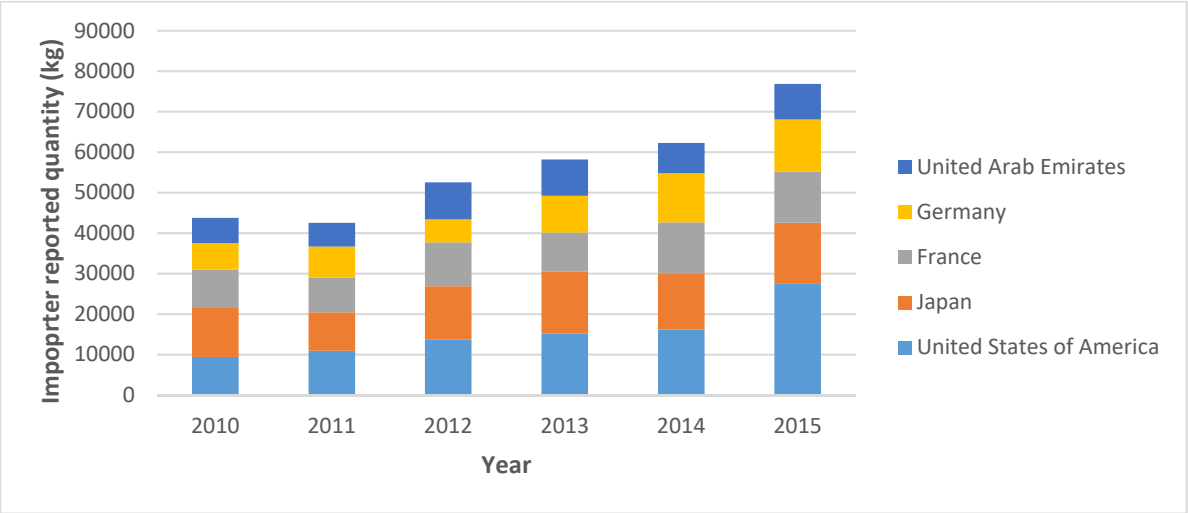
Source: CITES Trade database

Import of caviar globally

The EU as a whole (28 EU Member States) (182 677 kg) was the largest importer of caviar between 2010 and 2015 according to importer reported quantity. Main individual countries of import for caviar were the USA (92 946 kg), Japan (79 075 kg), France (63 630 kg), Germany (54 018 kg) and United Arab Emirates (46 492 kg) (see Figure 7). All imported quantities by the main importers have increased over this period. During this period most of the imports were aquaculture derived caviar,

except 54% of imports to Japan which were wild sourced caviar exported from the USA (Paddlefish and Shovelnose Sturgeon), according to the importer reported quantity.

Figure 7: Top five importers of caviar between 2010 and 2015 by importer reported quantity (kg).

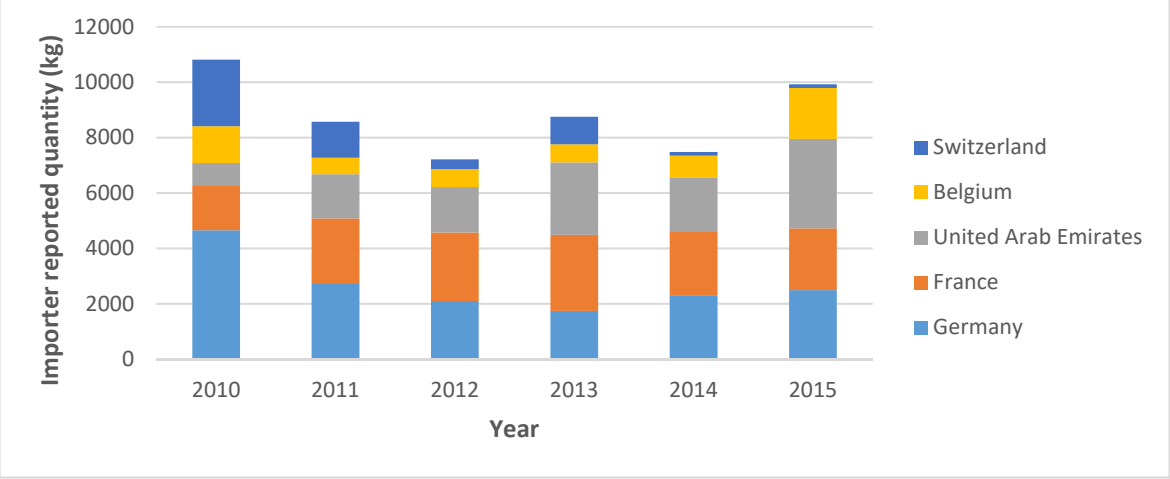


Source: CITES Trade database

Re-export of caviar globally

The main re-exporters between 2010 and 2015 of all caviar re-exported globally were Germany (16 033 kg), France (13 688 kg), United Arab Emirates (11 842 kg), Belgium (5 859 kg) and Switzerland (5 319 kg) (see Figure 8). During this period most of the re-exports were aquaculture derived caviar, except 36% of re-exports from Germany which was wild sourced caviar originating mainly from Azerbaijan (in 2010) and the USA, according to the importer reported quantity.

Figure 8: Top five countries of re-export for caviar (aquaculture derived and wild sourced, commercial purpose) between 2010 and 2015 according to importer reported quantity (kg).



Source: CITES Trade database

Global CITES trade of derivatives and extracts

CITES Trade data was analysed focusing on the terms "derivatives" and "extract". A total of 57 257 kg of sturgeon derivatives and extracts were reported as imported during the period 2010-2015. The main species was Siberian Sturgeon (42 930 kg) and half of this amount was reported as wild sourced with an unknown exporter or origin. It is possible that this is a reporting error or indicates illegal activity. Republic of Korea (13 357 kg), France (8 042 kg) and Italy (6 710) kg) were the main exporters, responsible for 58% of these imports. Exports from the Republic of Korea were primarily destined for Japan (13 389 kg) and it is likely these are mainly for cosmetics.

Global CITES trade of sturgeon meat

CITES Trade data was analysed focusing on the term "meat". A total of 659 056 kg of sturgeon meat was reported as imported during the period 2010-2015. The main species were Russian Sturgeon (232 023 kg) and Siberian Sturgeon (182 248 kg). China (242 424 kg), Italy (181 384 kg), Republic of Moldova (89 400 kg), Armenia (47 500 kg) and Uruguay (38 028 kg) were the main exporters, responsible for 91% of these imports. Exports from China were primarily destined for Georgia (88 000 kg), Ukraine (84 359 kg) and the USA (68 958 kg) whilst exports from Italy were primarily destined for Ukraine (91 324 kg), Georgia (65 118 kg) and Switzerland (19 483 kg). 21% (37 805 kg) of the Siberian Sturgeon exported from Uruguay to Latvia was reported as wild sourced 6% (14 220 kg) of the Russian Sturgeon exported from China to Georgia (14 000 kg) and Bulgaria to the USA (220 kg) was reported as wild sourced. As China and Uruguay are not range states for these species it is possible that these are reporting errors or indicates illegal activity.

CITES export quotas

In addition to export quotas for caviar and meat of Acipenseriformes spp. from shared stocks which have been set to zero since 2010, there have been no nationally established export quotas (CITES Resolution Conf. 14.7 (Rev.CoP15)) reported to the CITES Secretariat for wild-taken Acipenseriformes spp. since 2011 except for Uzbekistan, which reported a quota of 20 specimens of live, wild sourced Amu Darya Sturgeon *Pseudoscaphirhynchus kaufmanni* in 2017.

Although there were only a few instances of wild sourced caviar reported to the global CITES Trade database since 2011 according to importer reported quantities, wild sourced caviar trade from countries which do not set a nationally established quota was recorded. The outstanding trade records include:

- The USA exported 40 tonnes of wild sourced caviar in this period (most species in the USA are not in shared stocks therefore CITES export quotas are not applicable under *CITES Resolution 12.7 (Rev CoP17)*).
- Bulgaria exported 85 kg of caviar from Russian Sturgeon between 2011 and 2012 and 4 kg from Beluga *Huso huso* in 2015 to the USA. As Bulgaria has implemented a catch and trade ban for wild sourced sturgeon since 2011[18], this is either a reporting mistake or indicates illegal activity;
- Uruguay exported 200 kg of caviar from Siberian Sturgeon in 2014 to Latvia (potentially a reporting mistake as Uruguay is not a range state for sturgeon but has aquaculture operations).

18 http://wwf.panda.org/wwf_news/?261670/Bulgaria%2Dextends%2Dthe%2Dsturgeon%2Dfishing%2Dban%2Dfor%2Danother%2Dfive%2Dyears

Registration of licensed facilities for caviar export, processing and repackaging

Resolution Conf. 12.7 (Rev. CoP17) recommends that to regulate the trade in sturgeon products, as of 2000, range states should license legal exporters of specimens of sturgeon and paddlefish species, maintain a register of these licensed facilities which should be assigned official registration codes, and provide this information to the Secretariat. Table 5 provides a summary of all facilities registered. At the time of writing, countries with the highest number of registered licensed facilities for caviar export, processing and repackaging were Switzerland (73), China (52), Iran (29), France (25) and Germany (25).

Table 5: Summary of licensed exporters and processing and repackaging plants for caviar, sorted by total number of facilities. Most exporter facilities are also repackaging/processing.

	Exporter	Processing/repackaging	
Country	**Number of facilities**	**Number of facilities**	**Total**
Switzerland	3	72	73
China	33	23	52
Iran	19	12	29
France	25	25	25
Germany	24	25	25
USA	20	22	22
Japan	1	11	11
Poland	8	9	10
Russian Federation	1	10	10
Spain	7	10	10
UK	2	10	10
Bulgaria	6	7	8
Italy	8	8	8
Canada	7	3	7
Austria	6	6	6
Belarus	6	6	6
Hungary	1	6	6
Kazakhstan	5	0	6
Latvia	5	5	5
Romania	5	5	5
United Arab Emirates	5	5	5
Azerbaijan	4	0	4
Armenia	1	3	3
Greece	3	2	3
Netherlands	1	3	3
Republic of Korea	3	3	3
Belgium	2	2	2
Czech Republic	2	2	2
Estonia	1	2	2
Georgia	2	2	2
Luxembourg	0	2	2
Madagascar	2	2	2

Uruguay	2	2	2
Argentina	1	1	1
Denmark	0	1	1
Finland	1	1	1
Israel	1	0	1
Republic of Moldova	1	1	1
Saudi Arabia	1	1	1
South Africa	0	1	1
Turkey	1	1	1
Ukraine	1	1	1

Source: CITES register of licensed exporters and of processing and repackaging plants for specimens of sturgeon and paddlefish species, at https://www.cites.org/eng/common/reg/ce/AR, consulted on 16 August 2017.

Global Caviar Seizures

Caviar seizure records peaked in 2010 in the EU with a total mass of 302 kg reported and, in the USA, in 2011 with a total mass of 1590 kg (see Table 6). However, it should be noted that in 2011 there was one large seizure of 1400 kg of Siberian Sturgeon exported from the Russian Federation to the USA, which is the cause of the peak in 2011 in the USA. An average seizure record weighed 1.3 kg in the EU and 7.5 kg in the USA for the periods examined (2010-2016 and 2010-2015, respectively). Most of seizure records reported had unknown purpose, source and were seized on import. The reasons for seizures were not stated. There has been a slight decline in the number of seizure records reported during this period. Based on EU-TWIX data, caviar was most frequently seized at airports in individuals' personal baggage (this type of information was not reported for the USA). The Member States with the highest total number of seizure records were Germany (222 records), France (135 records) and Austria (68 records).

*Table 6: Number and quantity of caviar seizure records in the EU 2010 – 2016, and USA, 2010 – 2015. *There was one large seizure of 1400 kg of Siberian Sturgeon exported from Russian Federation to the USA in 2011.*

Year	EU-TWIX Number of records	EU-TWIX Mass (kg)	USA Number of records	USA Mass (kg)
2010	91	302	65	298
2011	127	102	61	1590*
2012	92	82	65	91
2013	80	57	52	60
2014	80	109	39	283
2015	63	73	58	243
2016	77	60	-	-
Grand Total	**610**	**787**	**340**	**2557**

Source: EU-TWIX; CITES Trade database. Data for 2016 is not available for the USA.

Taxon

Most seizure records do not have available information about the species the caviar is derived from (71% for the EU and 39% for the USA). Of the records where taxonomic information was available,

the most frequently seized caviar products were derived from Siberian Sturgeon in both the EU and USA (see Table 7). Siberian Sturgeon is the most common species used in aquaculture operations and the most frequently traded species for caviar derived from aquaculture, according to the CITES importer reported data between 2010 and 2015. Shortnose Sturgeon and Beluga were prominent in the EU and Russian Sturgeon (also one of the most frequently traded species for caviar derived from aquaculture, according to the CITES importer reported data between 2010 and 2015), White Sturgeon *Acipenser transmontanus* and hybrid species in the USA.

*Table 7: Species involved in EU and USA seizures of caviar 2010 - 2016 by quantity. *Hybrid species **Data recorded in EU-TWIX as caviar from* A. sturio *is likely to be result of a reporting error as this species is not known to be harvested for caviar.*

Species	Common Name	EU Total (kg)	USA Total (kg)
Unknown	-	569	100
Acipenser brevirostrum	Shortnose Sturgeon	78	-
Huso huso	Beluga	69	43
Acipenser baerii	Siberian Sturgeon	43	1973
Acipenser gueldenstaedtii	Russian Sturgeon	8	186
Acipenser x *	-	7	90
Huso dauricus	Kaluga	7	-
Acipenser sturio **	European Sturgeon	4	-
Acipenser stellatus	Stellate Sturgeon	1	21
Acipenser naccarii	Adriatic Sturgeon	1	17
Acipenser transmontanus	White Sturgeon	-	65
Acipenser schrenckii	Amur Sturgeon	-	35
Acipenser ruthenus	Sterlet	-	24
Acipenser persicus	Persian Sturgeon	-	5
Grand Total		**787**	**2557**

Source: EU-TWIX; CITES Trade database

Origin

For EU seizure records, 81% of records listed the country of origin as “unknown”. Where the country of origin was provided, the main country of origin for caviar seizure records in the EU between 2010 and 2016 was Hungary with 137 kg, followed by Ukraine (105 kg, 50 records) and Russia (36 kg, 46 records) and most of the seizure records were reported by Italy and France.

For US seizure records, 95% of records listed the country of origin as “unknown”. Where the country of origin was provided, the main country of origin for caviar seizure records in the USA between 2010 and 2015 was Israel (one record of 60 kg), China (44 kg, five records) and France (11 kg, seven records) although the highest number of records originated from Russia (18 records, 7.3 kg) and Iran (12 records, 3 kg). There were three records between 2010 and 2012 where caviar was seized on import into the USA (re-)exported from France and Saudi Arabia where the country of origin was reported as USA. The main (re-)exporting country for USA seizure records was France (110 kg, eight records).

Country of departure

For EU seizure records between 2010 and 2016, seven percent of records of the country of departure was "unknown". The main country of departure was Russia (150 kg, 154 records) followed by Ukraine (120 kg, 186 records), Turkey (16 kg, 8 records) and Iran (15 kg, 25 records).

The main country of departure for caviar seizure records in the USA between 2010 and 2015 were Russia (1439 kg, 56 records), France (238 kg, 21 records), and China (153 kg, 10 records) by weight. By number of seizure records, Iran (38 records, 44 kg) was the second highest after France.

Country of destination

For EU seizure records between 2010 and 2016, 78% listed the country of destination. The main country of destination reported was France (367 kg, 132 records), Germany (67 kg, 148 records) and the UK (66 kg, 55 records).

Rapid Assessments

Rapid assessments of the caviar market were carried out in one city in each of the six countries identified through the data analysis, literature review and interviews as hotspots for caviar trade (Beijing, Berlin, Chicago, Moscow, Paris and Tokyo) between December 2017 and February 2018. The other markets identified as potential hotspots were Azerbaijan, Iran, Italy and the United Arab Emirates. They were not included within the rapid assessments as part of this project but require future investigation.

Russia

There are 11 species of sturgeons in Russia found in shared stocks between Iran, Kazakhstan, Azerbaijan and Turkmenistan in the Caspian Sea, China in the Amur River, Ukraine in the Azov Sea, Mongolia in the Selenga River, Japan in the Okhotsk river and Sea of Japan and Europe in the Baltic Sea. There are also non-shared stocks in Siberian rivers. Caviar is a national symbol and used to be a traditional food in Russia. Today it is a premium product and can be found for sale in supermarkets and open-air markets, in addition to being served in nightclubs, restaurants and hotels.

After a complete ban on commercial fishing of wild sourced sturgeon in 2007, Russia became an importer to meet domestic market demand. Based on exporter reported CITES trade data, Russia is the ninth largest importer of caviar globally, importing 31 t during the period 2010 to 2015. Historically Russia used to supply 90% of caviar traded internationally producing up to 2000 t of caviar annually during the time of the Union of Soviet Socialist Republics (USSR, 1922 - 1991). In 2016, Russia was believed to be the second largest producer of caviar (approximately 45 t, 14% of the total global production) behind China, with 410 known aquaculture operations representing 20% of the global total (Bronzi et al., 2017). Another source suggests that 78 aquaculture companies specializing in sturgeon (at least 80% of their production are sturgeon) were registered by Russian Federal Fisheries Agency in April 2018[19] while the number of registered companies on the CITES website is limited

[19] https://fishnews.ru/news/33619

(10 processing and packaging plants and one exporter)[20]. At the All-Russian aquaculture meeting held on 30 June 2017, the head of the Federal Fishery Agency of Russia said that by 2030 production should increase to reach 180 t of caviar per year[21].

The volume of illegal caviar on the domestic market is estimated to exceed the legal production between four and ten times (Nelleman *et al.*, 2014; van Uhm and Siegel, 2016). In 2016, Russian experts reported a large discrepancy between the total market volume of caviar and the amount imported derived from aquaculture or produced domestically, suggesting approximately 140 t per year came from illegal sources (J. Geßner, pers comms). According to the expert assessment of the Russian Union of Sturgeon Farmers, the situation slightly improved from when poached caviar accounted for 90% of the total market volume; currently caviar derived from Russian aquaculture makes up about 25% of the total domestic turnover[22]. There has been evidence that illegal trade is conducted by organised crime groups who bribe officials and use violence (Sellar, 2014; van Uhm and Siegel, 2016). There is a lack of enforcement and monitoring of illegal trade by the relevant authorities due to low wages for staff, insufficient staffing and low levels of inspections as contributing factors (Nelleman *et al.*, 2014). Officials did not respond or gave conflicting information on illegal activities when asked (Sellar, 2014). Poaching of sturgeon is attractive to local fishers due to socio-political changes after the collapse of the Soviet Union and high unemployment in fishing regions (van Uhm and Siegel, 2016). One illegal catch can earn RUB170 000 in profit (USD5000) (Nelleman *et al.*, 2014) equal to a year's salary in some rural regions. One interviewee stated that during the last three years, much of the illegal caviar is from China due to depleted stocks in the Caspian Sea.

A review of recent media articles found that between June 2015 and February 2018 there were at least 38 articles reporting unique incidents taking place in Dagestan, Moscow, the Amur region and at the border with Kazakhstan equating to approximately 1500 sturgeons, 28 t of caviar and 24 t of sturgeon meat being seized. Many of these involved vehicles being stopped and searched by police or targeted operations on poachers in the Amur region or markets in Moscow. Poached sturgeon and mislabelled caviar (labelled as Russian when deriving from Chinese aquaculture) were found. Several cases involved groups of people working in collaboration, one case involved the State Traffic Police, in two cases the seizures were made in airports and in another the sturgeon was hidden inside a coffin in a funeral car (see Annex II).

There is evidence of both illegal domestic trade and exports. One trade route mentioned was from the Caspian Sea overland to Moscow, or via Belarus, Poland, Georgia and/or Turkey into the EU (van Uhm and Siegel, 2016). Russian businessmen or immigrants were mentioned by several interviewees to be involved in the sale of illegal caviar in Europe and North America.

Key areas for poaching: Dagestan and Kalmykia coastal zones (North West Caspian Sea), Volga River (stream below Astrakhan dam and estuary), Amur River (its tributaries and estuary).

Key areas for consumption: Moscow, St. Petersburg.

Legislation

Protection of species

Harvesting, commercial trade or habitat destruction of species listed in any category of the Red Data Book of the Russian Federation (RDBRF) is prohibited. The current list of sturgeon and paddlefish species (see Table 8) included in RDBRF was approved in 1997 by the State Committee of the

[20] https://cites.org/eng/common/reg/ce/RU (accessed 21 June 2018)

[21] http://fish.gov.ru/press-tsentr/obzor-smi/18657-rosrybolovstvo-rossii-k-2030-g-neobkhodimo-vyjti-na-proizvodstvo-180-tonn-chernoj-ikry

[22] http://fish.gov.ru/press-tsentr/novosti/18656-rossii-neobkhodimo-vernut-status-ikornoj-derzhavy

Russian Federation for Environmental Protection. The Ministry of Natural Resources and Ecology of the Russian Federation have approved a new version of the RDBRF on 27 December 2017, however, at the time of writing this was waiting for approval from the Ministry of Justice before entering into force. It is expected that the list of rare sturgeon and paddlefish species in the new version of the Red Book will be expanded.

Table 8: Sturgeon and paddlefish species currently listed in the Red Data Book of the Russian Federation (1997). New version waiting for approval.

Category	Species
0 – Probably Extinct	European Sturgeon (*A. sturio*)
1 – Endangered	Azov subspecies of Beluga (*Huso huso*) Ship Sturgeon (*A. nudiventris*) Zeya-Bureya populations of Kaluga (*H. dauricus*) and Amur Sturgeon (*A. schrenckii*) Sakhalin Sturgeon (*A. medirostris mikadoi*) Populations of Sterlet (*A. ruthenus*) in the Dnieper, Don, Kuban, Ural, Sura, upper and middle Kama rivers
2 - Declining	Subspecies of Siberian Sturgeon (*A. baerii*) in the West Siberian (Ob River) and Baikal Lake
3 – Rare	-
4 – Uncertain	-
5 – Rehabilitating	-

Fishing regulations

Commercial sturgeon fishing in Russia was banned in August 2007 for ten years and extended in 2017 for an undetermined period. The Lena River is the exception and an annual quota for commercial fishing of up to 18-21 t was set during 2016-2018. In addition to commercial fishing, traditional fisheries of the indigenous local population, fishing for research science, sport fishing continues to operate in the Lena River with an annual quota of up to 4 t, 0.3 t and 9 t respectively for 2018[23]. Fishing for research, science and conservation restocking is still permitted, however the amount has been gradually decreasing. For example, the total allowable catch[24] in the Amur river for Kaluga *Huso dauricus* decreased from 30 t to 2 t between 2006 and 2015 (WWF Russia, 2015a) and for Amur Sturgeon *Acipenser schrenckii* the amount decreased from 15 t to 1.3 t (WWF Russia, 2015b). As the annual export quota for wild sturgeon is set as zero in Russia[25], caviar taken from wild sturgeons caught either in commercial or non-commercial fishing cannot be exported from Russia.

To combat poaching and illegal trade of sturgeon and paddlefish in Russia, a new Article (258.1) was introduced in the *Criminal Code of Russia* on 2 July 2013. This Article implies criminal liability not only for illegal fishing, but also for the maintenance, acquisition, storage and transportation of the species, their parts and derivatives, listed in the RDBRF and/or protected by international treaties to which Russia is a Party to[26]. The maximum penalty is imprisonment up to three years and a fine of up to one million rubles (USD16 310).

23

http://92.50.230.187/soft_na/bpa/searchrun.phtml?idb=4&tipdocu=&ogu1=&og%5B%5D=9&sbu1=&dd1=&dd2=&nmu=&nm=&nmi=&nstr=&tx=%F0%E0%F1%EF%F0%E5%E4%E5%EB%E8%F2%FC&klu1=&klu2=0&kl=%CA%C2%CE%D2%C0&klid=209&rubu1=&rubu2=0&rub=&txt=&vs=&cpage=1&sort=2

[24] Total allowable catch is the scientifically based annual amount of permitted catch, determined separately for each species.

[25] http://www.vniro.ru/ru/sites

[26] Resolution of the Government of Russia No. 978 dated 31 October 2013 for the purposes of Articles 226 and 258 of the Criminal Code of the Russian Federation

Trade regulations

The universal CITES labelling requirements are not implemented for domestic trade in Russia. New requirements for the labelling and packaging of all seafood products (including sturgeon and paddlefish caviar) for trade within the Eurasian Economic Union (EEU) which includes Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia entered into force on 1 September 2017[27]. In accordance with the requirements of the regulations, the label of packaged seafood products must contain the type of product, the name of the original producer and re-packager (if applicable) and the species name. The species name of a product derived from aquaculture should correspond to those specified in the List approved by the *Order of the Ministry of Agriculture of Russia of 15.06.2015 N 247 On the approval of the directory in the field of aquaculture (fish farming)*.[28] The list includes the following sturgeon and paddlefish species:

- Beluga *Huso huso*
- Kaluga *Huso dauricus*
- Russian Sturgeon *A. gueldenstaedtii*
- Siberian Sturgeon *A. baerii*
- Amur Sturgeon *A. schrenckii*
- Sakhalin Sturgeon *A. mikadoi*
- Stellate Sturgeon *A. stellatus*
- Sterlet *A. ruthenus*
- Paddlefish *Polyodon spathula*
- Breeds[29] (Lena-1, Ster-1, Aksayskaya, Burtsevskya, Vnirovskaya)
- Hybrids (Bester, Ship x Stellate, LS-11 (Siberian of Lena River x Sterlet), LB-11 (Siberian of Lena River x Beluga), Ruslen (Siberian of Lena River x Russian), Kaster (Kaluga x Sterlet))

The manufacturer (or vendor) of any seafood products must have certain documents to help the consumer determine the legality, health & safety and the quality of the product. Consumers have the right to ask for these documents before purchasing. These documents are:

- Declaration of Quality Certificate which specifies the expiration date of the product and the release date of that batch.
- Veterinary certificate

The Ministry of Internal Affairs is responsible for controlling the caviar market, but local fishery enforcement officials are not obliged to monitor the market. It was announced by the Ministry of Industry and Trade in March 2017 that marking methods for caviar and other sturgeon products will be introduced in Russia by 2020[30].

Online survey results

Surveys of the online caviar market in Russia focused on entering the search term ‘buy black caviar’ (in Russian) into the search engine, yandex.ru. Eight websites were analysed and details of 58 caviar products were recorded.

[27] *Technical Regulations of the Eurasian Economic Union on the Safety of Fish and Fishery Products (TR EAES 040/2016).*
[28] http://rulaws.ru/acts/Prikaz-Minselhoza-Rossii-ot-15.06.2015-N-247/
[29] Breeds created for the purposes of aquaculture
[30] https://www.eg-online.ru/news/357553/

The most frequently found products were traded as Oscietra. Russian Sturgeon and Sterlet Acipenser ruthenus were the most frequently found species but, in most cases, the species was not specified (see Table 17). Caviar could be bought in a range of sizes from 30 g to 1 kg. Most of the caviar on sale encountered during the survey was listed as derived from aquaculture and all was listed as produced in Russia. Six of the eight websites surveyed mentioned domestic regulations (but not CITES regulations) and some provided scans of the quality and veterinary certificates required for trade of food products. Delivery time was between two hours (in Moscow) and three days.

There were three instances of caviar that may have been sourced from the wild found for sale:

Website RU-B sold Beluga claimed to be sourced from the wild from Russia available in 125 g and costing RUB10 500 (USD168) for 50 g (Figure 9)

- Two instances were found on website RU-E and on website RU- B of Oscietra containing Russian Sturgeon labelled as wild sourced caviar, but the source/other information claimed it was derived from aquaculture (Figure 10).

Figure 9: Beluga claimed to be sourced from the wild from Russia on website RU-B 125 g,

Figure 10: 'Wild sourced' Oscietra caviar containing Russian Sturgeon derived from Russian aquaculture sold on Website RU-E and on website RU- B.

Physical market survey results

Species, source, supplier

Between 27 and 29 December 2017, surveyors visited 11 markets in Moscow identified online as thought to sell caviar.

Oscietra derived from Russian aquaculture was the most frequently found product on sale however in all but one case the species was not specified. DNA testing found the most frequent species was Amur Sturgeon and hybrid *Huso dauricus x Acipenser schrenkii* (see Table 9). Caviar products in containers ranged from 30 g to 100 g.

Table 9: Results from physical market survey in Moscow, Russian Federation, January 2017. Origin, source and species from DNA test results. Vendors did not specify the species and claimed all originated from Russian Federation except for those claimed to be wild (in bold).

Supplier	Product trade name	Species (claimed by vendor)	Species (confirmed by DNA testing)	Country of production (claimed by vendor)	Country of production (assumed by DNA testing)	Source (claimed by vendor)	Source (assumed by DNA testing)
RU-1	Oscietra	N/A	*Huso dauricus x Acipenser schrenkii*	Russian Federation	China	C	C
RU-2	Oscietra	N/A	*Huso dauricus x Acipenser schrenkii*	Russian Federation	China	C	C
RU-3	Oscietra	N/A	*Acipenser baerii*	Russian Federation	Russian Federation	C	C
RU-4	Oscietra	N/A	*Acipenser ruthenus x Acipenser baerii,*	Russian Federation	Russian Federation	C	C
RU-5	Oscietra	N/A	*Huso dauricus x Acipenser schrenkii*	Russian Federation	China	C	C
RU-6	Oscietra	N/A	*Acipenser schrenkii*	Russian Federation	China	N/A	C
RU-7	**Siberian**	***Acipenser baerii***	***Acipenser baerii***	**Russian Federation**	**Russian Federation**	**W**	**W**
RU-8	**Beluga**	***Huso huso***	***Acipenser schrenkii***	**"Caspian region" (not specified further)**	**China**	**W**	**C**
RU-9	**Beluga**	***Huso huso***	***Acipenser schrenkii***	**Russian Federation**	**China**	**W**	**C**

N/A = Not specified, C = derived from aquaculture, W = wild sourced

Availability of wild sourced caviar

In three instances, the vendors verbally claimed that the caviar on sale was wild sourced; in one case, Siberian Sturgeon from the Enisey river, and in the other two cases, Russian Beluga from the Caspian (Figure 11). All of these could be purchased in any weight at EUR60 (USD73) for 50 g and the vendors seemed unaware of the relevant national regulations. The analysis conducted by the Molecular Genetic Laboratory of Russian Federal Research Institute of Fisheries and Oceanography found that only one of the samples, as stated by the vendor, was assumed to be wild sourced Siberian Sturgeon. The two products labelled/stated as Russian Beluga were Amur Sturgeon allegedly derived from Chinese aquaculture.

The testing also revealed that many of the other products claimed by vendors to be derived from Russian aquaculture contained hybrid species *Huso dauricus x Acipenser schrenkii* or Amur Sturgeon allegedly derived from Chinese aquaculture (Figure 12). Only the Oscietra products from two suppliers was assumed to be derived from Russian aquaculture containing Siberian Sturgeon and hybrid *Acipenser ruthenus x Acipenser baerii* respectively. Anecdotal information gathered suggested that not including the information about the origin and repackager on the label required by EEU seafood labelling requirements is done deliberately to conceal products as Russian caviar that are from a different origin (mainly China).

Figure 11: Images of caviar purchased sold as wild sourced from Moscow, January 2018

Figure 12: Examples of caviar marketed as derived from Russian aquaculture, but the detailed analysis revealed they are allegedly derived from Chinese aquaculture.

Knowledge of legislation

Caviar sold in glass jars and tin containers had labels on the bottom but, in most cases, these did not meet the seafood labelling requirements of the EEU regulations[31] or CITES requirements (which are not required under domestic legislation) (Figure 13). Caviar was also sold in plastic containers with no labels or seals (see Figure 11).

Figure 13: Example of caviar labels on sale in Russia where labels do not include the species name as required by the EEU seafood labelling requirements. Note, CITES labelling requirements not complied with however these are not implemented in Russia for domestic trade.

Consumer demand

Vendors in the food markets in Moscow described regular purchasers as people with a high income, those working in hotels, restaurants or cafes and foreign tourists. In Astrakhan, vendors described consumers as mostly domestic and foreign tourists. Caviar is a traditional product served at weddings,

[31] Technical Regulations of the Eurasian Economic Union "On the Safety of Fish and Fishery Products" (TR EAES 040/2016).

events and on holidays. The period preceding the Russian New Year in January is a key time for purchasing caviar with some consumers buying kilos of caviar.

Vendors in Moscow reported that the number of people asking for wild sourced caviar has declined as people have become less accustom to the taste and availability of black caviar and newer buyers are unable to distinguish between different origin or species of caviar. Consumers are more aware about the restrictions on fishing and aquaculture operations, as well as that the sale of wild sourced caviar is illegal therefore the demand has reduced considerably in Moscow. However, consumers still ask for wild sourced caviar as it is seen as superior in taste and nutritious value over caviar deriving from aquaculture. Vendors in Astrakhan reported that consumers were asking for wild sourced Russian Sturgeon or Beluga caviar. Consumers are not interested in purchasing Chinese caviar as it is thought that food products from China may be of lower quality and potentially dangerous for health reasons.

Additional interviews in Russia

Moscow

Additional interviews conducted in Moscow between 27 and 29 January 2018 found that vendors in the food markets were well informed about the regulations regarding sturgeon and paddlefish products. All vendors interviewed could provide quality and veterinary certificates to prove the legality of their products, although often a scanned copy rather than the original document. Vendors reported regular inspections from the veterinary service to check these certificates.

Vendors were aware of targeted police operations and the potential punishments if caught trading caviar illegally therefore they did not sell these products openly but if they were sure a consumer was not from enforcement, they would telephone someone who could bring them the illegal caviar in minutes. Some vendors stated that they sold wild sourced Beluga caviar from the Caspian Sea, although this appeared in some cases to be a sales argument knowing that the consumer would not be able to check this. There is a higher possibility of poaching sturgeon in Siberian rivers than from the Caspian Sea and Volga River in recent years due to the population declines. Some vendors had no knowledge about the species or origin of caviar and it was mentioned that food markets have changed over the last few years and now sell a wide range of caviar derived from branded national aquaculture operations.

Aquaculture operators interviewed mentioned they were aware of many cases where different species (e.g. Sterlet) were sold as Beluga to make more profit as this is the most expensive type of caviar. Seafood labelling requirements brought in in September 2017 reportedly have helped to reduce this problem.

Astrakhan, Caspian region

Additional interviews conducted in Astrakhan between 12 and 15 February 2018 found that vendors claimed all their products were legally derived from aquaculture and that wild sourced sturgeon had depleted in the region. This was supported by officials stating that illegal fishing and trafficking of sturgeon and paddlefish products had also declined. As seen in Moscow, many legal national aquaculture operation brands have emerged over the last few years including specialist caviar retailers and a branded retail chain (e.g. Russian Caviar House, Gorkunov Caviar House).

When asked about the availability of wild sourced caviar, vendors advised the surveyor to ask other people at the markets but refused to provide further information. However, it was mentioned it is easier to find illicit trade during the spawning season between April and July. When questioned about exporting caviar outside of Russia, vendors stated that consumers can take caviar abroad if under the 125 g personal effects exemption limit, although this is not true as the caviar would not comply with CITES labelling requirements and should be confiscated by enforcement officials.

Khabarovsk, Amur region

Additional interviews were conducted with vendors in Khabarovsk between 20 and 24 February 2018. No sturgeon or paddlefish products were found on sale at the two food markets visited and there are no commercial sturgeon aquaculture operations in the region (however aquaculture operations do operate for conservation re-stocking purposes). Regular inspections[32] were reported to take place. Despite this, local people interviewed mentioned it was always possible to buy sturgeon and paddlefish products if you ask around or have the right acquaintances suggesting the presence of an illegal market.

Additional interviews conducted with local fishermen in the region revealed that poaching of Kaluga and Amur Sturgeon takes place and catch is bought by traders along the Amur River to sell in Moscow. However, they were reluctant to provide further information due to the new penalties for poaching introduced in 2013[33]. Many of those interviewed mentioned that in the past villages along the Amur river used to construct illegal ponds and produce fertilized eggs from poached Kaluga and Amur Sturgeon. This was illegally transported to China by boats on a large scale to provide stock to rapidly growing Chinese aquaculture operations. Today, fishermen still hope to catch sturgeon as the sale of caviar from one sturgeon can provide more income than it is possible to earn working all year.

Germany & France

France and Germany are considered major consumer locations for caviar as shown through the trade data analysis. They are also important transit points, (re-)exporting over half of the caviar imported (UNODC, 2016). The interviews and literature review also suggest that the laundering of illegal caviar may be occurring in/reaching these countries (van Uhm and Siegel, 2016). A recent operation in France and French Guyana from December 2017 to January 2018 seized 329 containers, 9.75 kg of caviar at a value of EUR15 000 (USD18 261) that did not comply with the CITES labelling requirements and obligations[34]. This caviar came from China, Bulgaria, Israel and France. Anecdotal information suggests Russian immigrants in Germany and France are involved in illegal trade of caviar. Individuals reportedly transport wild sourced caviar into the EU via airplanes or cars with refrigerated units which is then sold in delicatessens or to individuals risking capture or bribing officials if caught. Fines have been described as not proportional to the potential profit that could be made from sales (J. Geßner, pers. comm.; van Uhm and Siegel, 2016).

Germany has the third highest population of Russian immigrants outside of Russia (Ukraine and Kazakhstan are first and second). One investigation by German authorities found caviar from the Caspian Sea being labelled as derived from Bulgarian aquaculture (Kecse-Nagy, 2011) and anecdotal information has suggested pilots from German airlines are known to be involved with smuggling from specific countries such as Iran and that there is possibly smuggling from Germany to Switzerland.

There was previously an indigenous population of European Sturgeon in the Gironde estuary, France, which is now overfished. Caviar derived from aquaculture in France is often referred to as Caviar d'Aquitaine and is thought to be high quality produced in an environment well suited to raising sturgeon and ever-improving aquaculture techniques. Petrossian and Prunier have both been

[32] http://www.fsvps.ru/fsvps/main.html?_language=en
[33] Resolution of the Government of Russia No. 978 dated 31 October 2013 for the purposes of Articles 226 and 258 of the Criminal Code of the Russian Federation
[34] http://www.oncfs.gouv.fr/IMG/file/publications/ONCFS-Rapport-activites-2017-Int-web.pdf

established caviar brands in France since the 1920s taking advantage of French stocks until the ban on fishing in the 1980s and after that trading French trout with Russian aquaculture operations for Siberian Sturgeon. Research has shown French consumers have a preference for caviar they believe to have come from rare wild sourced species (Gault, Meinard and Courchamp, 2008).

Key consumer locations: Berlin, Hamburg, Dusseldorf, Paris

Legislation

Protection of species

CITES is implemented in the EU through a set of Regulations known as the *EU Wildlife Trade Regulations*[35] which provide a uniform framework for all EU Member States. All 27 species of sturgeon and paddlefish that have been listed on Appendix II of CITES are listed in Annex B of the EU Wildlife Trade Regulations and European Sturgeon and Shortnose Sturgeon are listed on Annex A.

Fishing regulations

France has a local population of European Sturgeon which is protected under the *Arrêté du 20 décembre 2004 relatif à la protection de l'espèce Acipenser sturio (esturgeon)*. This regulation prohibits:

- destruction, alteration or degradation of the environment of the species;
- destruction or removal of eggs;
- destruction, mutilation, capture, removal, intentional disturbance or domestication of individuals of these species, whether live or dead, as well as their transport, use, offer for sale, their sale or purchase.

According to the *Loi no 2016-1087 du 8 août 2016 pour la reconquête de la biodiversité, de la nature et des paysages* illegal fishing and sale, offer for sale, storage, display, transport, peddle or purchase of European Sturgeon is punishable by six months imprisonment and a maximum fine of EUR50 000 (USD60 871).

Trade regulations

The *EU Wildlife Trade Regulations* recommend that all containers of sturgeon and paddlefish caviar should follow the obligatory universal caviar labelling set by CITES. In France, *Arrêté du 23 février 2007*[36] sets out the detailed rules for implementing the EU regulations. In Germany, this falls under the *Federal Nature Conservation Act* (BNatSchG) or *the Federal Regulation for the Protection of Species* (BArtSchV)[37]. No additional measures have been adopted at a national level.

As the designated CITES Management authority in Germany, the Federal Agency for Nature Conservation (BfN) issue licences for facilities and inspect facilities producing caviar once per annum. At the time of writing, the licensing fee for caviar facilities was EUR600 (USD730). Facilities must send labels for approval to the CITES Management authority before use.

[35] *Council Regulation (EC) No 338/97, Commission Regulation (EC) No 865/2006 (as amended)*
[36] *Arrêté du 23 février 2007 fixant les conditions d'autorisation d'introduction d'esturgeons et la procédure d'autorisation des établissements procédant au conditionnement ou au reconditionnement du caviar à des fins d'exportation, de réexportation ou de commerce intracommunautaire (JORF du 6 mai 2007).*
[37] https://www.bfn.de/en/activities/cites/regulationslegalbases/regulations.html

Online survey results

Germany

Surveys of online caviar retailers in Germany focused on entering the following search terms into Google.de in German:

- "caviar for sale Germany";
- "wild caviar for sale Germany";
- "Russian caviar for sale Germany";
- "Iranian caviar for sale Germany";
- "Oscietra caviar for sale"; and
- "Beluga caviar for sale".

Ten websites selling caviar were analysed and the details of 52 caviar products were recorded.

The most frequently found products were traded as Oscietra followed by Imperial, Beluga, Sevruga, Siberian and Almas. A wide range of species were included within the products; however Russian Sturgeon and Siberian Sturgeon were the most common (see Table 17). Caviar could be bought in a range of sizes from 30 g to 1 kg. Most of the caviar found for sale was listed as derived from aquaculture in Bulgaria, China, Germany, Finland, France, Iran, Israel, Italy, Uruguay, and the USA. Three of the 10 websites surveyed mentioned CITES or the EU regulations and all shipped within Europe only. Delivery time varied between one and 10 days.

There were two instances of caviar that were claimed to be sourced from the wild found for sale:

- Website DE-E sold Paddlefish caviar claimed to be sourced from the wild from the Mississippi, USA available in 30 g or 50 g for EUR89.95 (USD110) (Figure 14). Wild sourced American Paddlefish is legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has been issued the correct fishing permit and exported meeting the CITES requirements for export permits and labelling as approved by USFWS.
- Website DE-J sold wild sourced Beluga with an unspecified origin available in 30 g, 50 g, 125 g, 250 g and 500 g for EUR290 (USD353) for 50 g although this website did state they complied with CITES regulations (Figure 15).

Figure 14: American Paddlefish caviar claimed to be sourced from the wild for sale online from Website DE-E, Germany

Figure 15: Beluga caviar claimed to be sourced from the wild on sale online from Website DE-J, Germany

France

Surveys of the online caviar market in France focused on entering search terms 'buy caviar in France' (in French) into google.fr. Twelve websites selling caviar were analysed and details of 79 caviar products were recorded.

The most frequently found products were traded as Beluga and Oscietra but there was a wide range including Imperial, Kaluga, Sevruga, Siberian, Sterlet, White, and d'Aquitaine. Siberian Sturgeon was the most common species found when this information was provided (see Table 17). Caviar could be bought in a range of sizes from 10 g to 1 kg. Nearly half of the caviar encountered during the survey was listed as derived from aquaculture in France, but Russia, China, and Italy were frequently found as countries of origin (although the source was not often specified) as well as Finland, Germany, Iran, Uruguay, and the USA. Most websites shipped within France or the EU but four also shipped worldwide. Delivery time was between one and three days. Other sturgeon products found for sale online include pâté, tapas, soup, smoked meat, salt, dried caviar, butter cream, and ravioli.

No instances of caviar claimed to be from a wild source were found, however only two of the 12 websites surveyed mentioned CITES or the EU regulations and most websites did not provide details on species, source and origin. One website mentioned in the FAQ section that they offer wild sourced caviar from the Caspian Sea or Iran.

Physical market survey results

Germany

Species, source, supplier

Between 4 and 7 December 2017, surveyors visited 14 stores in Berlin thought to sell caviar identified through the preceding online survey. These included seven Russian delicatessens, three supermarkets, three food or department stores and one specialist caviar shop.

Oscietra was the most frequently found product trade name followed by Imperial, Siberian and Beluga caviar. Siberian Sturgeon, Russian Sturgeon and hybrid species were the most frequently found species and originated from Bulgaria, China, France, Germany, Italy, Iran and Uruguay (see Table 18). Caviar products ranged from 20 g to 250 g. All caviar products seen on sale had a CITES label, sealed tin and were stated as derived from aquaculture.

Availability of wild sourced caviar

Although no wild sourced caviar was found on sale at the retailers visited, several vendors in the Russian delicatessens mentioned that wild sourced caviar was available. In some cases, it appeared to be used as a sales argument stating the caviar was wild sourced (even if it was declared as derived from aquaculture on the label) to help convince the customer to purchase the product. One vendor claimed all caviar they sold as Russian was wild sourced however the CITES labels suggested these products were derived from aquaculture. In one Russian delicatessen, the vendor said that wild sourced caviar was available for sale, however due to its inflated price, it was only available by special order. When the surveyor enquired about purchasing some of their stock, the vendor called someone on the telephone (speaking in Russian) before confirming that wild sourced caviar was available. In the stores that offered wild sourced caviar the cost must be paid upfront before seeing the product. Other vendors stated they did not stock wild sourced caviar as it was too expensive or because it was illegal.

Knowledge of legislation

Although all products seen on sale had a CITES label and sealed tin, most vendors had little knowledge of the CITES regulations. Only five vendors showed knowledge that sturgeon and paddlefish are protected, and wild sourced caviar is illegal to sell. When questioned about exporting caviar outside the EU, most vendors did not explain the personal effects limit or permit requirements and stated it would be fine to export any amount. Most vendors were able to provide large quantities in short notice. One vendor advised it would be fine to put it in personal baggage for export without being caught. One vendor mentioned that Russian nationals regularly transport caviar from Russia to Germany in their hand luggage in quantities ranging from 50 g to 500 g for personal consumption. This caviar is usually purchased from market stalls in Russia and then transported in plastic containers.

Consumer demand

Vendors in Germany explained that consumer demand was driven by personal preference and the amount of salt within the caviar although, Oscietra, Imperial and Beluga were stated as the most popular products. Caviar is often bought as a present around Christmas, New Year or for weddings. In the Russian delicatessens, any Russian brand or sourced product was said to be in high demand and that consumers prefer 'real' caviar and are put off by the idea of aquaculture derived caviar (referred to by one vendor, as 'fake'). 'Real' caviar was described as Russian or sourced from the wild. Conversely, most food/department stores explained that caviar derived from aquaculture is just as good quality and tastes the same as wild sourced caviar. One vendor in a food/department store mentioned that as Russian caviar is harder to find, people are turning to Iranian caviar and it is thought these two countries produce the best quality caviar.

France

Species, source, supplier

Between 11 and 13 December, surveyors visited 27 stores in Paris thought to sell caviar identified through the preceding online survey. These included six delicatessens, seven Russian delicatessens or restaurants, four restaurants that sold caviar, four caviar specialists (retailers and/or repackagers), two Iranian delicatessens, one seafood shop, one supermarket, and one food or department store.

Caviar was widely available in Paris and Oscietra was the most frequently found product trade name followed by Baerii, Beluga, Amur/Schrenkii, d'Aquitaine and White Sturgeon caviar. Siberian Sturgeon and Russian Sturgeon were the most frequently found species (see Table 18) and mainly from France, China, Bulgaria, Italy and Iran. Caviar products ranged from 10 g to 10 kg.

Availability of wild sourced caviar

When asked, most vendors stated that wild sourced caviar was not available any more due to overfishing, prohibited for sale or is difficult to find. One vendor mentioned it is available on the black market. One vendor mentioned it was 40% more expensive to purchase wild sourced caviar. Two vendors offered the surveyor "wild sourced" caviar but in both cases, it was used as a sales argument where the vendor had little knowledge, or the vendor said it was wild sourced Siberian Oscietra from Russia but the CITES label stated it was derived from Chinese aquaculture containing Siberian Sturgeon. One vendor said that he saw smaller caviar producers re-open tins and mix different types of caviar to extend the validity date of the product.

Knowledge of legislation

Most of the caviar seen on sale had a CITES label on the bottom of the container and was sealed with a label around the side. However, in four instances the containers appeared to have no seals or packaging to show any visual evidence of opening (Figure 16). In one instance, there was no lot identification number in the CITES label. Additionally, the composition of the lot identification number showed variation (e.g. sometimes composed of just numbers, sometimes a combination of numbers and letters).

More than half of the vendors surveyed appeared to know that sturgeons and paddlefish were protected, and that wild sourced caviar was either not available or illegal to sell. Two vendors provided information on CITES regulations within their sales pamphlets. The remaining vendors had no knowledge. When questioned about exporting caviar, only one seller mentioned the personal effects exemption of 125 g but withdrew this statement when the surveyor seemed interested in buying a larger amount. All other vendors stated it was not a problem to transport any amount within or from the EU if it was kept cool and/or with an invoice. Two vendors mentioned additional documentation or CITES permits would be needed to transport outside the EU. One vendor mentioned Customs would not check as they focus on counterfeit cigarettes and alcohol.

Figure 16: Images from the market survey in Paris, France showing containers without seals or packaging that can show visual evidence of opening.

Consumer demand

Vendors in Paris seemed to discourage the purchase of Beluga, and Oscietra was the most popular product, followed by Baerii. One vendor stated that a hybrid of Beluga x Siberian Sturgeon tasted most like wild sourced caviar. One vendor stated that women prefer caviar with a milder flavour. In France, caviar is often bought, sometimes weekly by some individuals but peak times are around Christmas and Valentine's Day. One vendor stated that not many people ask for wild sourced caviar these days as they have become used to the availability of caviar deriving from French aquaculture although one vendor commented that the taste of caviar derived from aquaculture was not the same as wild sourced caviar. It was stated the quality of caviar derived from aquaculture depends on the producer not the country of origin and that caviar derived from aquaculture in lakes is better than that produced in pools as it is closer in resemblance to the conditions in the wild.

China

China has become the world's largest producer of sturgeon (meat, caviar and skin products) derived from aquaculture and accounts for 85% of production from aquaculture worldwide (Zabyelina, 2014). Kaluga Queen is the largest producer. The main species used in Chinese aquaculture operations are Amur Sturgeon hybrids, Kaluga, Chinese Sturgeon *Acipenser sinensis* and Siberian Sturgeon. Caviar and sturgeon meat was first exported by Qiandaohu from the Zhejiang Province in 2006 followed by Tianxia Company from the Hubei Province in 2008.

In 2016, China was estimated to be producing approximately 75 t or 23% of the global production of legal caviar (Bronzi et al., 2017) and 80% of this is produced in Zhejiang Province. Domestic consumption of caviar is very low with only 5–10 t thought to be consumed within China whilst the rest is exported internationally. However, it has been discussed as a potential growth market for future consumers.

There is no evidence of illegal activity, but aquaculture production has few regulations and questionable brood stock involving multiple species. Some of the interviewees mentioned that some have the perception that Chinese produced caviar is cheaper and of lower quality compared to Russian and European products. Petrossian, one of the oldest well-known French caviar producers, does not advertise its caviar as derived from Chinese aquaculture for this reason (Krader, 2017).

Before CITES restrictions were put in place, all the caviar exported from China was wild sourced species, mainly Amur Sturgeon and Kaluga. In the interviews for this study, there was contradictory information given regarding the situation in the Amur River region today with mentions of no poaching due to a dramatically reduced population, mentions of poaching taking place on the Chinese side and mentions of poaching taking place on the Russian side.

Key aquaculture locations: Hubei, Shandong, Sichuan, Beijing

Legislation

Protection of species

There are eight native sturgeon and paddlefish species (see Table 10) in China, which are distributed in the Yangtze River, Pearl River, Amur River and Xinjiang River. All these species are protected under the *Wild Animal Protection Law* which protects rare and threatened species. This law came into force in 1988 and was recently revised on 2 July 2016, taking effect 1 January 2017. Species under

protection are categorised as first-class protection where approval for use must be granted by the State Council or second-class protection where approval for use must be granted by the by the relevant department under the government of a province, autonomous region or municipality under the State Government.

Table 10: Native sturgeon and paddlefish species in China and their protected species class under the Wild Animal Protection Law.

Native species	Protection Class
Chinese Sturgeon *(A. sinensis)*	Class-I
Yangtze Sturgeon *(A. dabryanus)*	Class-I
Chinese Paddlefish *(Psephurus gladius)*	Class-I
Amur Sturgeon *(A. schrenckii)*	Class-II
Kaluga *(Huso dauricus)*	Class-II
Siberian Sturgeon *(A. baerii)*	Class-II
Sterlet *(A. ruthenus)*	Class-II
Ship Sturgeon *(A. nudiventris)*	Class-II

Fishing regulations

Under Article 20, fishing of sturgeon and paddlefish species from wild sources, nature reserves and within migratory routes is prohibited. A special licence can be issued for scientific research, population control, epidemiology and disease monitoring or other special purposes. This should be issued by the wildlife department under the State Council for first-class species and by the relevant department under the government of a province, autonomous region or municipality under the State Government for second-class species. Licences may specify quotas, methods and time periods during which fishing is allowed. The fine for fishing without a licence or in violation of the conditions of a licence is between two and ten times of the amount of the species' value or from CNY10 000 to CNY50 000 (USD1580 to USD7904). The catch and fishing equipment can also be confiscated.

Under Article 27, the sale, purchase or use of native protected wild sourced sturgeon and paddlefish species and their products is prohibited unless for the purposes of scientific research, artificial breeding, public exhibition, conservation or other special purposes. In these circumstances approval must be obtained from the State Council or the relevant department under the government of a province or municipality under the Central Government. Species must be traceable using a marking system to prove the legal origin for domestic use.

Trade regulations

Under Article 25, breeding of sturgeon and paddlefish species is only allowed with a licence issued by the provincial wildlife management authorities. Caviar aquaculture operations require an Aquatic Wild Animal Domesticated and Breeding Permit, and processing or repackaging facilities require an Aquatic Animals Operation and Use Permit. In violations of this law, agencies shall confiscate species, their products, and can impose a fine from one to five times of the value of the species. All facilities should use at least F2 generation breeding stock and record data on breeding and individuals. Artificial breeding should be beneficial to the protection of the species, scientific research and must not destroy wild populations. Facilities should ensure that the necessary conditions for welfare of the species are met and the appropriate technology and facilities are suitable for breeding. Facilities undertaking scientific research are supported by the government. Facilities, by presenting their domestication and breeding licences, can sell sturgeon and paddlefish under protection or the products thereof, in accordance with the relevant regulations, to purchasing units designated by the government. The administrative authority for industry and commerce shall exercise supervision and control over wildlife or the products thereof that are placed on the market.

According to Article 7 and 35, the trade of sturgeon and paddlefish products derived from aquaculture is jointly managed by the Ministry of Agriculture for domestic trade and the CITES Management authority for international trade in accordance with CITES regulations. CITES caviar labelling requirements are implemented for all exported caviar. There are no labelling requirements for the domestic trade of caviar within China.

Online survey results

Surveys of online caviar retailers in China used the search term "sturgeon caviar" into e-commerce site Jingdong (www.jd.com) in Mandarin and details of 28 caviar products were recorded.

Beluga, Oscietra and Siberian caviar were the most frequent product trade names found but in most cases the caviar container did not provide a product trade name. Russian Sturgeon and Siberian Sturgeon were the most frequently found species (see Table 17). Caviar could be bought in a range of sizes from 10 g to 240 g. All caviar encountered during the survey was listed as derived from Russian or Chinese aquaculture.

No instances of caviar claimed to be from a wild source were found. There was no mention of CITES or images of CITES labels on any of the products. Information on product and species was taken from the description or images. Delivery time was between one and two days.

Physical market survey results

Between 30 and 31 January 2018, surveyors visited 12 stores in Beijing thought to sell caviar identified through the preceding online survey. These included six food or department stores, five seafood markets (with over 100 stalls in each), and one supermarket. No caviar was found on sale in any of these retailers. Only one retailer was identified to sell caviar however it was not open during the survey period. Vendors stated they had not heard about or sold sturgeon caviar but were aware of red caviar (salmon roe). Online retailers identified in the online survey were contacted however most had no physical retail location.

USA

The USA is a producer of caviar from sturgeon and paddlefish taken from the wild and from aquaculture at the same time it is also a traditional consumer of caviar (Bronzi and Rosenthal, 2014).

In the early 2000s, imports of illegal caviar were a huge problem in the USA which led to the implementation of stricter regulations on trade. The U.S. Fish & Wildlife Service (USFWS) investigations into the US caviar trade revealed that seven of the ten major importers on the East Coast had been illegally importing millions of USD' worth of caviar annually (Wyler and Sheikh, 2013; Zabyelina, 2014). Following the implementation of the *CITES Resolution Conf. 12.7 (Rev. CoP17*) and according to interviews conducted with USFWS during this study, at the time of writing, only a few small seizures were reported to be made on import, consisting of small amounts for personal consumption, and no wild sourced caviar is seized. A study in 2012 found that, although there has been a decrease in mislabelled caviar on sale since 1996, 10% of the caviar samples bought from New York were mislabelled with respect to species identification (Doukakis *et al.*, 2012).

Operation Roadhouse[38] in 2017 revealed that the annual spawning season in Missouri was attracting people from all over the country to take part in Paddlefish fishing and over 100 suspects were thought to be involved in illegal trafficking (Knight, 2017). Eight individuals were indicted for illegally trafficking Paddlefish and their eggs across State borders to national and international markets. Anecdotal information suggested that US wild sourced sturgeon meat is imported by Italy, Germany, and Russia (but there is little evidence of these exports taking place) and US wild sourced caviar is sold domestically by people of Eastern European decent to friends/relatives or kept for personal consumption. Although there is little evidence of illegal activity in aquaculture operations, the interviews for this study suggested that some people have been known to order empty tins from producers which is thought to be for packaging wild sourced caviar.

Key poaching locations: Great Lakes Michigan, Missouri (Lake of the Ozarks), Mississippi

Key consumer locations: New York, Chicago, Missouri, Portland, Seattle, Miami, San Francisco

Legislation

Protection of species

The landmark environmental law in the USA is the *Endangered Species Act (ESA)*, which is enforced by USFWS and U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. Additionally, under the ESA, USFWS has been designated to carry out provisions of CITES.

The ESA was enacted in 1973 with the purpose of protecting and recovering imperilled species and their habitats. Under the ESA, species are listed as either "endangered" where they are in danger of extinction, or "threatened," meaning they are likely to become endangered in the foreseeable future. Both native and foreign species can be protected under the ESA. Once listed, a species is legally protected from unnecessary "take" which includes hunting, collecting, selling, etc.[39],[40] Fourteen species of both native and foreign sturgeon and paddlefish species are protected under the ESA (see Table 11). Protection under the ESA allows commercial trade of sturgeon and paddlefish species listed if correct permits for fishing and export/import have been issued and CITES requirements met.

The *Lacey Act* is also applicable to wildlife trafficking in the USA and prohibits trade in wildlife, fish, and plants that have been illegally taken, possessed, transported, or sold from their state of origin.

Table 11: Species of sturgeon and paddlefish protected, and year listed under Endangered Species Act in the USA. Source: U.S. Fish & Wildlife Service https://ecos.fws.gov/ecp/

Native sturgeon/paddlefish species	**Year listed**
White Sturgeon (*A. transmontanus)* (for the Kootenai River population only)	1994
Shortnose Sturgeon (*A. brevirostrum)*	1967
Atlantic Sturgeon (Gulf subspecies) (*A. oxyrinchus desotoi)**	1991
Shovelnose Sturgeon (*Scaphirhynchus platorynchus)***	2010
Atlantic Sturgeon (*A. oxyrinchus oxyrinchus)**	2012
Alabama Sturgeon (*Scaphirhynchus suttkusi)*	2000
Pallid Sturgeon (*Scaphirhynchus albus)*	1990
Green Sturgeon (*A. medirostris)* (for the Southern Distinct Population only)	2006
Non-native sturgeon/paddlefish species[41]	
Kaluga (*Huso dauricus)*	2014

[38] https://mdc.mo.gov/newsroom/mdc-and-federal-agents-snag-major-paddlefish-poaching-operation
[39] The Endangered Species Act of 1973. www.fws.gov/international/pdf/esa.pdf . Accessed 20 February 2018
[40] USFWS. Foreign Species and the U.S. Endangered Species Act. www.fws.gov/international/pdf/factsheet-endangered-species-act-foreign-species.pdf . Accessed 20 February 2018
[41] Yangtze sturgeon *Acipenser dabryanus* was proposed for listing in 2017 but was not accepted.

Beluga *(Huso huso)*	2004
Adriatic Sturgeon (*A. naccarii)*	2014
Chinese Sturgeon (*A. sinensis)*	2014
European Sturgeon (*A. sturio)*	2014
Sakhalin Sturgeon (*A. mikadoi)*	2014

* *A. oxyrinchus* from Saint John River/Bay of Fundy is listed as shared stocks (with Canada) under *CITES Resolution Conf. 12.7 (Rev. CoP17).*

**Shovelnose Sturgeon is listed under Endangered Species Act due to similarity of appearance to Pallid Sturgeon *Scaphirhynchus albus*; commercial fishing is prohibited where they commonly exist with Pallid Sturgeon.

Fishing regulations

The USA has several native sturgeon/paddlefish species, most of which are protected under the ESA. The exceptions include American Paddlefish (not listed on the ESA) and Shovelnose Sturgeon as well as some populations of White sturgeon and Green Sturgeon (Table 11).

Historically found throughout the Mississippi River Basin, populations of American Paddlefish have been in decline since the 1900s due to the construction of dams, habitat destruction and over-harvest. Although American Paddlefish is not listed on the ESA, it is classified as endangered, threatened, or species of concern in some range states. Commercial fishing is prohibited in most states or only allowed under strict rules for sports fishing. As European species have declined, the USA have seen more poaching pressure on American species[42]. Some states (e.g. Pennsylvania) are making a concerted effort by re-stocking[43].

Shovelnose Sturgeon are also found within the Mississippi River Basin and have experienced population declines due to dams and habitat alteration. Over-harvest has not yet been identified as a major problem to the population, which may be due to their small size (Surprenant, 2004). Commercial fishing of Shovelnose Sturgeon is prohibited where they commonly exist with the federally protected Pallid Sturgeon[44]. There is a minimum size limit in most states which allow for commercial fishing of this species. In Illinois, although commercial harvest is allowed, fishermen need to have a commercial roe harvest permit[45].

Trade Regulations

Native US sturgeon and paddlefish species for domestic retail sale are not subject to CITES universal caviar labelling requirements.

Caviar (wild sourced or derived from aquaculture) from native species can be exported from the USA if it meets CITES requirements (export permits and labelling requirements) and is declared to a USFWS Wildlife Inspector. It also must meet requirements from the Animal and Plant Health Inspection Service of the U.S. Department of Agriculture to ensure that it is disease- and pest-free. Wild sourced, derived from aquaculture and re-exports of caviar require different application forms when applying for permits for export[46]. The application form for caviar sourced from the wild requires details on harvest.

At the time of writing, only one company, L'Osage Caviar Company in Missouri, was permitted by USFWS to produce and export American Paddlefish derived from aquaculture to international markets.

[42] https://www.fws.gov/fisheries/freshwater-fish-of-america/paddlefish.html
[43] http://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Documents/chap6_paddle_restore.pdf
[44] https://www.fws.gov/mountain-prairie/missouririver/shovelnose/SOA_Q&A_09012010.pdf
[45] https://www.dnr.illinois.gov/fishing/Documents/CommFishInfo.pdf
[46] https://www.fws.gov/international/permits/by-species/sturgeon-and-paddlefish.html

In 2005, USFWS banned international, foreign and interstate commerce of Beluga meat and caviar[47]. As of 20 March 2017, there was one approved operation that has been granted an exemption for the commercial sale of viable, sustainable Beluga derived from aquaculture, Sturgeon AquaFarms in Bascom, Florida. Under this exemption, take of Beluga derived from aquaculture is allowed for interstate trade and export.

Online survey results

Surveys of online caviar retailers in the USA focused on entering the following search terms into Google.com:

- "wild caviar for sale US";
- "Russian caviar for sale US".

Twenty-one websites selling caviar were analysed and the details of 35 caviar products were recorded.

The most frequently found products were traded as Oscietra followed by Beluga, American Hackleback, American Paddlefish and Kaluga. Russian Sturgeon and hybrid Huso dauricus x Acipenser schrenckii were the most common species/types found for sale (see Table 17). Caviar could be bought in a range of sizes from 14 g to 1.8 kg. Most of the caviar encountered during the survey was listed as derived from aquaculture in the USA but also from Belgium, Italy, Israel, Iran, the Netherlands, Peru, Russia and Turkey. Five of the 21 websites surveyed mentioned the US and/or CITES regulations. One website provided CITES (re-)export documents without further explanation. The majority only shipped within the USA however six shipped internationally, of which only one explicitly mentioned the need for a CITES permit, and six did not provide information on shipping. Delivery time varied between one and five days.

There were seven instances of caviar claimed to be sourced from the wild found for sale. These were all for native American species, Paddlefish and Shovelnose Sturgeon, therefore legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has issued the correct fishing permit. It is also legal for export if it meets CITES requirements for export permits and labelling and is approved by USFWS:

- Website US-F sold Paddlefish caviar claimed to be wild sourced from the Mississippi and White River system in the USA available in 28 g, 57 g, 113 g, 199 g, 454 g for USD35.71 for 50 g (Figure 17). This site shipped internationally and mentioned the need for CITES permits.
- Website US-I sold Paddlefish caviar claimed to be wild sourced from the northern Mississippi, USA available in 57 g for USD55 (Figure 18). No information on shipping or CITES regulations was available.
- Website US-G sold Paddlefish and Shovelnose Sturgeon (Figure 19) claimed to be wild sourced from the USA in a range of sizes from 14 g to 1.8 kg in tins or glass jars. International shipping was possible and CITES (re-)export documents were shown on the website but not explained.
- Website US-M sold Paddlefish caviar claimed to be wild sourced from the Mississippi River, Tennessee and Illinois, USA available in 57 g to 907 g and Shovelnose Sturgeon caviar from Missouri, Ohio and Mississippi River systems, USA available from 85 g to 907 g. This website only sold within the USA and purchased directly from fishermen who are committed to sustainability and licensed by their state. The roe is processed in their facility from October to May (Figure 20).

[47] Endangered and Threatened Wildlife and Plants; Special Rule to Control the Trade of Threatened Beluga *Huso huso*. USFWS, 70 Fed. Reg. 10493 (March 4, 2005) (50 CFR Part 17)

- Website US-P sold Shovelnose Sturgeon caviar claimed to be sourced from the wild from the USA as sturgeon (black) caviar available in 57 g or 100 g jars for USD34 for 57 g. It was described as comparable to "Caspian Sea Sevruga". No information on shipping or CITES regulations was available (Figure 21).

Figure 17: American Paddlefish caviar claimed to be sourced from the wild from Website US-F

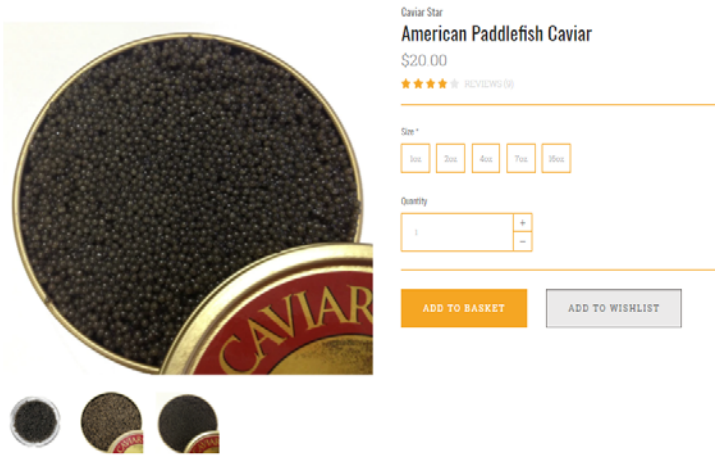


Figure 18: American Paddlefish caviar claimed to be sourced from the wild from Website US- I

Figure 19: American Paddlefish and Shovelnose Sturgeon caviar claimed to be sourced from the wild from Website US-G

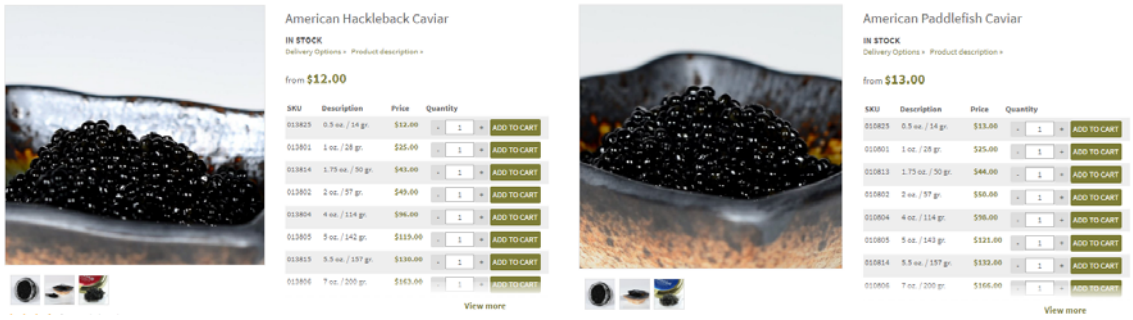


Figure 20: American Paddlefish and Shovelnose Sturgeon caviar claimed to be sourced from the wild from website US-M

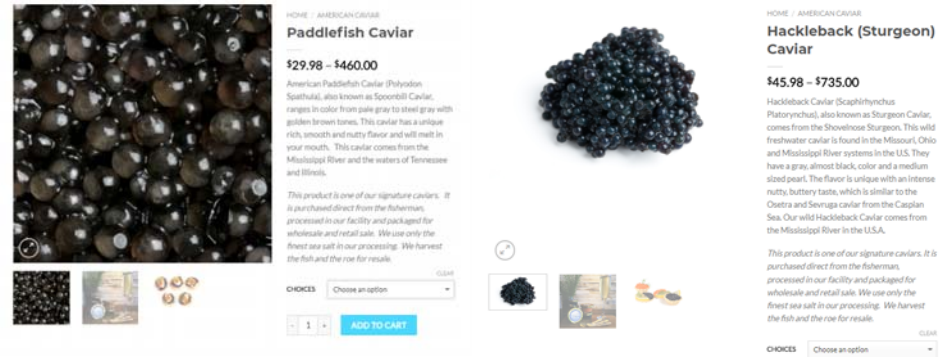


Figure 21: American Shovelnose Sturgeon caviar claimed to be sourced from the wild from website US-P

Physical market survey results

Species, source, supplier

On 2 February 2018, surveyors visited nine stores in Chicago thought to sell caviar identified through the preceding online survey. These included two fish/seafood shops, three Russian delicatessens, and one caviar specialist store.

There was a wide range of trade names used for caviar products on sale. In most cases, the species, origin and source were not provided however where it was possible to identify, American Paddlefish, Shovelnose Sturgeon, Siberian Sturgeon and Russian Sturgeon were found on sale (see Table 18).

The USA was the most frequently found producer, but caviar was found from Bulgaria, Canada, Israel, Netherlands, France, Russia and Uruguay. Caviar products ranged from 28 g to 454 g. Other sturgeon products seen on sale included Beluga and Russian Sturgeon meat. Caviar was sold in glass jars, plastic tubs and sealed metal tins.

Availability of wild sourced caviar

Caviar taken from certain native wild American species are legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has issued the correct fishing permit.

In most cases the source was not specified on the product except for one case of Shovelnose Sturgeon (named Hackleback) on sale in a Russian delicatessen in plastic tubs kept in a locked freezer (see

Figure 22). There was also American Paddlefish caviar on sale in plastic tubs, but it did not state it was wild sourced on the product. One vendor stated they sold wild sourced American caviar as a substitute to Russian caviar as this was prohibited to sell. Another vendor also mentioned it was illegal to sell wild sourced Russian or Iranian caviar.

Figure 22: Image showing Paddlefish and Shovelnose Sturgeon claimed to be sourced from the wild on sale in one vendor in Chicago, USA

Knowledge of legislation

Surveyors could not confirm the presence or absence of CITES labels on imported caviar during the survey and CITES regulations did not come up in discussion with vendors. American sourced caviar did not have a CITES label as this is not required for domestic trade. Two retailers sold caviar sealed with rubber bands (Figure 23).

Figure 23: Examples of caviar containers on sale in Chicago, USA. Right hand picture shows containers sealed with rubber bands. Left hand shows glass jars with no seals and no CITES information on the label.

Consumer demand

The vendor in one fish/seafood shop stated that the Bulgarian caviar was the most popular that they sold whilst another recommended Persian caviar. One Russian delicatessen which claimed to be the main supplier of wild sourced American Paddlefish in the area said most of their customers were Russian. One vendor claimed that the best Iranian caviar is imported to the USA from the Netherlands.

Japan

Japan used to have a wild population of Green Sturgeon *Acipenser medirostris* but the species is now believed to be extinct in Japan (St. Pierre and Campbell, 2006; Ministry of Environment, 2015) although several sturgeons are caught every year as by-catch in Hokkaido, the northern part of Japan.

Japan is one of the largest importers of caviar and sturgeon products (Ishihara *et al.*, 2010). Japan is a major importer of aquaculture derived caviar from France and of wild sourced caviar from the USA. The first export of caviar derived from aquaculture in Japan took place in March 2017 to Hong Kong SAR (Anon, 2017).

According to Japan Customs[48], 483 pieces of sturgeon products (15 cases) were confiscated upon import in 2016. All of them were the species listed in Appendix II. Of these, more than 80% (12 cases, 476 items) were cosmetics and the rest (three cases, seven items) were consumable products. South Korea was the main exporter of cosmetics, followed by Hong Kong SAR and France. Sturgeon products were exported from Russia, China and France. These products were detained due to lack of export permits except for one case (difference in quantities).

Key consumer locations: Tokyo

Legislation

Trade Regulations

The CITES registration system for caviar processing facilities and universal labelling requirements were introduced in September 2015[49], however it is not fully accordance with the *CITES Resolution Conf. 12.7 (Rev. CoP17)* as these only applied for international caviar exports and not for caviar traded within Japan.

The Fisheries Agency of Japan developed the 'Guidelines for Facilities (Aquaculture Operations, Processing Plants, and Repacking Plants) Registration for the Export/(Re-)export of Caviar' and introduced a registration system for facilities complying and using non-reusable labels. The Ministry of Economy, Trade and Industry (METI) issues export permits after confirming (1) non-reusable labels are applied to primary containers for caviar at the registered facilities and (2) the information on the non-reusable labels matches that given on the export permit (METI, 2015). At the time of writing, 16 facilities (13 aquaculture operations and four processing facilities) were registered[50]. Table 12 shows the list of species used at registered facilities. White Sturgeon and Siberian Sturgeon are the most common species used in aquaculture operations and processing facilities, followed by Bester hybrid *Huso huso* x *Acipenser ruthenus*. All the sturgeon stock originated from Japan or Germany and the first exports from Japan took place in 2017 mainly to Hong Kong SAR.

Table 12: List of sturgeon species used at registered caviar facilities in Japan, last updated 11 April 2018. Note: As most facilities use more than one species, the total exceeds 16.

Species	Country of origin	No. of facilities using the species
White Sturgeon (*A. transmontanus)*	Japan	12
Siberian Sturgeon *(A. baerii)*	Germany	11
	Japan	9
Russian Sturgeon *(A. gueldenstaedtii)*	Germany	7
	Japan	1
Bester hybrid (*Huso huso* x *A. ruthenus*)	Japan	10
	Germany	1
Sterlet *(A. ruthenus)*	Japan	1
	Germany	1
Amur Sturgeon *(A. schrenckii)*	Japan	1

Source: Fisheries Agency of Japan (2018)[50]

[48] http://www.customs.go.jp/mizugiwa/washington/washington2016.pdf
[49] http://www.meti.go.jp/english/press/2015/0918_02.html
[50] https://web.archive.org/web/20180510055221/http://www.jfa.maff.go.jp/j/sigen/attach/pdf/caviar-17.pdf

Domestic food labelling is generally regulated by the *Food Labelling Act* in Japan and the *Food Labelling Standards* requests businesses to display information on processed food which includes the name of the product, ingredients, weight, expiration date, producer name and country of origin if the product is imported (*Article 3 of the Food Labelling Standards*[51]).

Online survey results

Surveys of online caviar retailers in Japan focused on entering the following search terms into Google.co.jp in Japanese:

- "wild caviar"
- "caviar Russia"
- "caviar Iran"
- "caviar Bulgaria"
- "caviar Romania"

Thirteen websites selling caviar were analysed and the details of 33 caviar products were recorded.

The most frequently found products were traded as Oscietra. Siberian Sturgeon was the most common species, followed by Russian Sturgeon and Beluga (see Table 17). Caviar could be bought in a range of sizes from 12 g to 500 g. Most of the caviar encountered during the survey was listed as derived from aquaculture in Italy, Germany, China, USA but also Bulgaria, Finland, France, Israel, Kazakhstan, Latvia, Russia and South Korea. Three of the 13 websites surveyed mentioned the CITES regulations and three mentioned that shipping overseas was not possible, the others provided no information. Delivery time indicated varied between one and five days.

Caviar cosmetic products were also found in the search results for sale in Japan. Products included cream, serum, essence, eye repair cream and face masks. In all but two cases the species was not specified. Where this information was provided, it was described as Sevruga. The source was not specified. All were made in South Korea except one from Japan.

There were six instances of caviar claimed to be sourced from the wild found for sale:

- Website JP-A sold 50 g of Paddlefish claimed to be sourced from the wild from the Mississippi River, USA for between JPY7700 (USD70) and JPY8000 (USD73) for 50 g. (Figure 24). The supplier was unknown therefore it was not possible to confirm if the company was permitted to export wild sourced American Paddlefish in line with US regulations however wild sourced Paddlefish is legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has been issued the correct fishing permit. It is also legal for export if meets CITES requirements for export permits and labelling and approved by USFWS;
- Websites JP-G & JP-I sold Paddlefish claimed to be sourced from the wild from the Mississippi River, USA in 18 g containers for between JPY6300 (USD58) and JPY6694 (USD61) for 50 g. Website JP-G described this as very rare caviar as it is caught by recreational fishing once a year and sold at auction because commercial fishing of Paddlefish is not allowed (in line with US regulations). From the information available, it was not possible to identify if the supplier was permitted to export wild sourced American Paddlefish in line with US regulations however wild sourced Paddlefish is legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has been issued the correct fishing permit. It is also legal for export if meets CITES requirements for export permits and labelling and approved by USFWS (Figure 25);

[51] http://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=427M60000002010&openerCode=1

- Websites JP-B & JP-H sold Caspian Beluga claimed to be sourced from the wild from the Ural River, Kazakhstan in sizes ranging from 12 g to 150 g. Price ranged between JPY31194 (USD285) and JPY34434 (USD315) for 50 g. Website JP-H only sold 50 g containers and could deliver within 24 hours (Figure 26);
- Website JP-G sold Russian Beluga claimed to be sourced from the wild from the Ural basin, Kazakhstan in 30 g or 250 g at JPY54 000 (USD494) for 50 g. The website noted that "the species is protected by CITES and the catch amount is strictly regulated. Permission for fishing is sometimes given suddenly and therefore, stable supply is difficult and obtaining large amounts is impossible due to export regulations" (Figure 27).

Figure 24: Website JP-A sold 50 g containers of American Paddlefish claimed to be sourced from the wild.

Figure 25: Websites JP-G & JP-I sold 18 g containers of American Paddlefish claimed to be sourced from the wild

Figure 26: Websites JP-B & JP-H sold Beluga from Kazakhstan claimed to be sourced from the wild

Figure 27: Website JP-G sold Beluga from Kazakhstan claimed to be sourced from the wild

Physical market survey results

Species, source, supplier

Between 14 and 15 February 2018, surveyors visited 17 stores in Tokyo thought to sell caviar as identified through the preceding online survey. These included 13 food or department stores, three supermarkets, and one specialist caviar shop.

Oscietra was the most frequently found product trade name followed by Baerii, Beluga, Miyazaki, Paddlefish, Siberian and Sterlet. Siberian Sturgeon was the most frequently found species followed by White Sturgeon and American Paddlefish (see Table 18). Products mainly were derived from aquaculture in France, Germany and Latvia, followed by Japan, Italy and the USA. Caviar products ranged from 15 g to 250 g.

Availability of wild sourced caviar

Only one instance of caviar claimed to be sourced from the wild was found on sale; American Paddlefish (see Figure 28). Wild sourced American Paddlefish is legal for commercial trade if sourced from a State that allows fishing for commercial purposes and has been issued the correct fishing permit and exported meeting the CITES requirements for export permits and labelling as approved by USFWS. Most vendors said wild sourced caviar was not or rarely available. Only one vendor claimed the caviar they sold was wild sourced, but this seemed to be a sales argument and the caviar was labelled as derived from aquaculture.

Figure 28: American Paddlefish claimed to be sourced from the wild on sale in Tokyo, label shows required Food Labelling Standards information; name of the product, ingredients, weight, expiration date, producer name and country of origin if the product is imported.

Knowledge of legislation

In most cases, caviar products seen on sale did not have a CITES label despite being imported except for one product. Most products did have a label containing the domestic *Food Labelling Standards* information (Figure 29). Caviar was displayed in boxes and glass jars with labels sealing them. Only four vendors showed knowledge of the CITES regulations and that sturgeon and paddlefish were protected.

Figure 29: Example of caviar sold in box in Tokyo with required Food Labelling Standards information (name of the product, ingredients, weight, expiration date, producer name and country of origin if the product is imported).

Consumer demand

Affluent Japanese consumers are buying caviar from restaurants, hotels, department stores and high-end supermarkets. Caviar cosmetics are said to be a growing trend in Japan (and the Republic of Korea) but caviar as a food product is usually bought as a gift during Christmas and New Year, or to a lesser extent for Valentine's Day. Caviar is also increasingly used for 'new style' sushi dishes. One vendor mentioned that sales of caviar were not good at an event in Osaka and the caviar specialist store (Prunier) said one of their branches had closed in January 2018 which could potentially indicate a decline in demand for caviar in Japan.

Beluga was mentioned to be the most popular product by some vendors. One online vendor stated that White Sturgeon caviar will become more popular as the wild harvest of American Paddlefish has decreased considerably causing a surge in the price. One vendor said that people choose French caviar if they want 'genuine' caviar and another stated that Miyazaki caviar (White Sturgeon) was their most sold product. One vendor stated Arcane was the biggest supplier in Japan.

Prices for Caviar

Prices for caviar vary a lot. A very low price could be an indicator that the caviar is fake or of low quality. A high price could be driven by the brand name or status as a luxury item. Wild sourced caviar could potentially be sold for a high price on import markets due to its illegality and rarity or, within a range state, a low price as it is poached directly from the wild without the need for aquaculture processing. Table 13 shows a comparison of the prices found in the rapid assessments.

Table 13: Price ranges and products for all countries included in the rapid assessment. All prices rounded to zero decimal places and converted from local currency to USD, exchange rate calculated using oanda.com, April 2018. No caviar was found on sale in the physical market survey in Beijing, China.

Country	Online price range for 50 g (USD)	Physical price range for 50 g (USD)	Most expensive product	Least expensive product
Russian Federation	31 - 305	34 - 68	Almas/Beluga	Oscietra
Germany	46 - 353	24 - 484	Beluga	Oscietra
France	43 - 548	29 - 779	Beluga	Kaluga/Oscietra
China	71 - 315	-	Kaluga	Chinese
USA	26 - 824	27 - 230	Kaluga/Shovelnose	Paddlefish
Japan	50 - 494	68 - 724	Beluga	Hybrid

Russian Federation

Online, prices ranged from RUB1950 (USD31) to RUB19 000 (USD305) (average RUB3841 or USD62) for 50 g of caviar with the least expensive product found being Oscietra (species not specified) derived from Russian aquaculture and the most expensive product found being Imperial Almas containing Sterlet derived caviar from Russian aquaculture.

In the shops, prices ranged from RUB2125 (USD34) to RUB4251 (USD68) (average RUB3260 or USD52) for 50 g of caviar. The least expensive product found was Oscietra (species not specified) derived from Russian aquaculture and the most expensive products found were wild sourced Siberian Sturgeon from the Enisey River and allegedly wild sourced Beluga from the Caspian (species not specified) (DNA testing revealed this was actually Amur Sturgeon allegedly from Chinese aquaculture).

Germany

Online, prices ranged from EUR38 (USD46) to EUR290 (USD353) (average EUR97 or USD 118) for 50 g of caviar with the least expensive product found being an Oscietra containing hybrid species *Acipenser baerii x Acipenser naccarii* derived from Italian aquaculture and the most expensive product found being Beluga allegedly sourced from the wild.

In the shops, prices ranged from EUR20 (USD24) to EUR398 (USD484) (average EUR118 or USD144) for 50 g of caviar. The least expensive product found was Oscietra containing hybrid species *Acipenser baerii x Acipenser naccarii* derived from German aquaculture and the most expensive product found was Beluga (species unknown) derived from Iranian aquaculture.

France

Online, prices ranged from EUR35 (USD43) to EUR450 (USD548) (average EUR118 or USD144) for 50 g of caviar with the least expensive product found being Kaluga from Russia and the most expensive product found being French Beluga.

In the shops, prices ranged from EUR24 (USD29) to EUR640 (USD779) (average EUR190 or USD231) for 50 g of caviar. The least expensive product found was Oscietra (species not specified) from Poland (source not specified) on sale in a supermarket and the most expensive product found was Beluga derived from Bulgarian aquaculture. One vendor mentioned the price of caviar had fallen in 2016 and remained at that level and another that caviar had been downgraded from a luxury product reducing value added tax from 30% to 20%.

China

Online, prices ranged from CNY447 (USD71) to CNY1990 (USD315) (average CNY799 or USD126) for 50 g of caviar with the least expensive product found being Chinese Sturgeon caviar derived from Chinese aquaculture and the most expensive product found being Kaluga (species not specified) described as derived from Russian aquaculture.

USA

Online, prices ranged from USD26 to USD824 (average USD184) for 50 g of caviar with the least expensive product found being wild sourced American Paddlefish and the most expensive product found being Kaluga containing hybrid species *Huso dauricus x Acipenser schrenckii* derived from aquaculture (country not specified).

In the shops, prices ranged from USD27 to USD230 (average USD120) for 50 g of caviar. The least expensive product was found in a Russian delicatessen, American Paddlefish (source unknown) and the most expensive product found was wild sourced Shovelnose Sturgeon from the USA.

Japan

Online, prices ranged from JPY5500 (USD50) to JPY54 000 (USD494) (average JPY16 165 or USD148) for 50g of caviar with the least expensive product found being Amur containing a hybrid *Huso dauricus x Acipenser schrenkii* derived from Chinese aquaculture and the most expensive product found described as Beluga allegedly sourced from the wild from Kazakhstan which would be illegal if proved to be what it is claimed to be. The high price could be an indication of this.

In the shops, prices ranged from JPY7488 (USD68) to JPY79 200 (USD724) (average JPY22 954 or USD210) for 50g of caviar. The least expensive product found was a hybrid *Acipenser baerii x Acipenser naccarii* from Germany (source unknown) and the most expensive product found was Beluga (species unknown) derived from German aquaculture. The vendor selling this Beluga caviar said that stocks were limited and supply unreliable. It is the most expensive as it has the largest eggs.

DISCUSSION AND CONCLUSIONS

Implementation of CITES Res. Conf. 12.7 (Rev. CoP17)

All the countries where the rapid assessments were conducted are Parties to CITES and therefore should implement *CITES Resolution Conf. 12.7 (Rev.CoP17)* regarding the import, (re-)export and labelling requirements for international and domestic trade in sturgeon and paddlefish caviar. It was found that of the six countries where the rapid assessments took place, only Germany and France fully implemented the CITES Resolution for domestic trade. There were no CITES or domestic trade regulations in China, Japan and USA apart from food health safety regulations. New requirements for the labelling and packaging for domestic trade (not CITES labelling requirements) entered in force in Russia in 2017, which requires manufacturers and vendors to provide certain information for consumers. However, the market surveys found that some suppliers withheld species or origin information to mislead customers (i.e. sell as Russian caviar when from Chinese aquaculture). Table 14 provides an overview of the relevant CITES provisions in these countries.

Table 14: Summary of regulations across all six countries where rapid assessments were conducted.

Market	Range State for sturgeon and paddlefish	Fishing prohibited	CITES labelling requirements implemented for domestic trade	Alternative domestic labelling requirements
Germany	Yes*	NR*	Yes	-
France	Yes*	Yes	Yes	-
Russia	Yes	Yes	No	Yes
USA	Yes**	Restricted in certain States for Shovelnose Sturgeon and Paddlefish	No	No
Japan	No	NR	No	Yes
China	Yes	Yes	No	No

*European Sturgeon *Acipenser sturio*: considered extinct in Germany but re-stocking efforts are taking place **Species in the USA are not in shared stocks apart from those found in Saint John River/ Bay of Fundy which are shared with Canada, therefore CITES export quotas are not applicable allowing trade in wild sourced US species; NR – Not relevant

Most of the websites surveyed did not mention the regulations for trade, either domestic or international, including requirements for shipping internationally. Websites did not consistently provide information on the origin/re-packager, species or source of the caviar making it difficult for consumers to know what they are purchasing and that it is legally sourced. Images of products and

written descriptions did not show or provide CITES labelling information or show how the product was sealed or packaged clearly.

In Germany and France where the CITES labelling system is applied for domestic trade, although CITES caviar labels was found in the physical market surveys, they did not always fulfil the CITES labelling requirements required by *CITES Resolution Conf. 12. 7 (Rev. CoP17)*; in France there were four instances where the containers appeared to have no seals or packing to show visual evidence of opening and the lot identification number was missing in one case. In addition, there was no consistency in the placement, design, positioning of CITES code, and quality across the labels used, which makes it difficult for enforcement authorities, producers and consumers to obtain reliable information on traceability and to detect invalid CITES labels. As the composition of the lot identification number varied even in one country, France (sometimes made up of numbers only, sometimes of numbers and letters), it was difficult to determine if the number written on the CITES label was in fact a lot identification number.

In Japan, caviar was found without CITES labels but in packaging that would permit visual evidence of opening (cellophane wrapping). In the USA and Russia, caviar on sale did not have CITES labels but complied with domestic regulations on trade and food health safety except where wild sourced caviar was found on sale in plastic tubs with no labels or visual evidence of opening.

In all markets vendors did not demonstrate strong knowledge of the regulations and did not inform surveyors of the personal effects exemption or export requirements when enquiring about sending amounts larger than 125 g to people abroad.

The implementation of the CITES caviar labelling system is lacking in key range and consumer states and even where it is implemented, several anomalies were found as part of the rapid assessment presented in this report. Although some of these issues have been discussed (Mundy and Sant, 2015), the implementation and enforcement of the CITES caviar labelling and related registration requirements require further and more thorough examination.

Analysis of trade and seizure data

CITES trade data

Reported caviar (re-)exports globally totalled 1599 t between 2000 and 2015, according to importers' reports and exhibited a general declining trend during this period from 229 tonnes in 2000 to 108 t in 2015. Exports from aquaculture derived caviar totalled 102 t in 2015 and made up 95% of all trade by weight. At the time of writing, countries with the highest number of registered licensed facilities for caviar export, processing and repackaging were Switzerland (73), China (52), Iran (29), France (25) and Germany (25).

For global caviar trade during the period 2010 - 2015, the top three countries of origin and direct export were China, the USA and Italy. The top three (re-)exporters were Germany, France and the United Arab Emirates during the same period. The EU was the largest importer of caviar between 2010 and 2015 according to importer reported quantity. The top three importing countries were the USA, Japan and France. Focusing on global caviar trade from wild sources during the period 2010–2015, the top three countries of origin and direct export were the USA, United Arab Emirates and Germany.

Siberian Sturgeon, hybrid *Huso dauricus x Acipenser schrenckii* and Russian Sturgeon were the top three species/types found in caviar derived from aquaculture by importer reported quantity between 2010 and 2015.

Seizure data

EU-TWIX data were analysed between 2010 and 2016 for EU seizure records. CITES trade data were analysed as reported by the USA as imports, under source code "I" between 2010 and 2015. Caviar seizure records peaked in 2010 in the EU with a total mass of 302 kg reported and, in the USA, in 2011 with a total mass of 1 590 kg. An average seizure record weighed 1.3 kg in the EU and 7.5 kg in the USA for the periods examined (2010-2016 and 2010-2015, respectively). Most of the seizure records reported had unknown purpose, unknown source and were seized on import (reason not stated). There has been a slight decline in the number of seizure records reported during this period. Based on EU-TWIX data, caviar was most frequently seized at airports in individuals' personal baggage (this type of information was not reported for the USA).

The most frequently reported countries of origin in both EU and US seizure records were Ukraine, Russia and Iran. However, 81% and 95% of records respectively for the EU and the USA stated the country of origin as unknown. The most frequently reported country of departure in both EU and US seizure records was Russia. The most frequently reported countries of destination for EU seizure records were France, Germany and the United Kingdom (UK), with 22% of records stating the country of destination as unknown.

Most seizure records do not have available information about the species the caviar is derived from (71% for the EU and 39% for the USA). Of the records where taxonomic information was available, the most frequently seized caviar species was derived from Siberian Sturgeon in both the EU and USA, which is the most common species in aquaculture. Shortnose Sturgeon and Beluga were prominent in the EU seizure data and Russian Sturgeon, White Sturgeon and hybrid species in the US CITES seizure data. From the global CITES trade data analysis, Paddlefish (48 011 kg), Russian Sturgeon (6 030 kg) and Shovelnose Sturgeon (5 416 kg) were the top three species of wild sourced caviar by importer reported quantity between 2010 and 2015.

Rapid Assessments

In line with the findings of the CITES trade data analysis, Russian Sturgeon, Siberian Sturgeon and hybrid *Huso dauricus x Acipenser schrenckii* were the most frequently found species/types found for sale online (see Table 17) and in the physical market surveys (Table 18) across all the six markets. Beluga was the next most frequently available species found for sale online (not in the physical market surveys) despite being the tenth most frequently reported species in caviar trade derived from aquaculture according to the CITES importer reported data between 2010 and 2015[52]. In Russia, Sterlet was also frequently found online and Amur Sturgeon in the physical market surveys.

[52] Only one city in each country was visited within the rapid assessment therefore the sample size may be too small to show the same patterns as the country-level CITES trade data

Table 15: Comparison of the main caviar products, species and country of production recorded in the online market surveys across all six markets.

Market	Main caviar product(s) trade name	Main species	Main country of production	Claimed availability of wild sourced caviar	% websites surveyed that mentioned CITES
Russian Federation	Oscietra	Russian Sturgeon (*A. gueldenstaedtii)*, Sterlet (*A. ruthenus)*	Russian Federation	Yes (3)	0%
Germany	Oscietra, Imperial, Beluga	Russian Sturgeon (*A. gueldenstaedtii)*, Siberian Sturgeon (*A. baerii)*	Germany	Yes (2)	30%
France	Oscietra, Beluga	Siberian Sturgeon (*A. baerii)*	France	No (0)	17%
USA	Oscietra	Russian Sturgeon (*A. gueldenstaedtii)*	USA	Yes (7)	24%
Japan	Oscietra	Siberian Sturgeon (*A. baerii)*	Italy/Germany	Yes (6)	23%
China	Not specified	Russian Sturgeon (*A. gueldenstaedtii)*, Sterlet (*A. ruthenus)*	Russian Federation	No (0)	0%

Table 16: Comparison of the main caviar products, species and country of production recorded in the physical market surveys across all six markets.

Market	Main caviar product trade name	Main species	Main country of production	Claimed availability of wild sourced caviar	CITES label present	Knowledge of regulations
Russian Federation	Oscietra	Amur Sturgeon (*A. schrenkii)*, Hybrid *(Huso dauricus x A. schrenkii)*	China	1 proven by laboratory test, Anecdotal	No	56% of vendors
Germany	Oscietra	Siberian Sturgeon (*A. baerii)*	China	Anecdotal	Yes	36% of vendors
France	Oscietra	Siberian Sturgeon (*A. baerii)*	France	Anecdotal	Yes	56% of vendors
USA	Paddlefish	Paddlefish (*Polyodon spathula)*, Shovelnose Sturgeon *(Scaphirhynchus platorynchus)*	USA	1 case (Shovelnose)	No	0% of vendors
Japan	Oscietra	Siberian Sturgeon (*A. baerii)*	France	1 case	No	24% of vendors

Table 17: Species found in online surveys across all six markets, in descending order of total frequency

Species	RU	DE	FR	CN	US	JP	Total
Russian Sturgeon (*A. gueldenstaedtii)*	6	8	5	3	8	4	34
Siberian Sturgeon *(A. baerii)*	1	9	11	3	2	8	34
Beluga (*Huso huso)*	3	4	6	1	-	4	18
Hybrid *(A. schrenckii x Huso dauricus)*	-	2	3	1	7	1	14
Sterlet (*A. ruthenus)*	5	5	2	-	-	1	13
White Sturgeon (*A. transmontanus)*	-	2	4	-	1	3	10
Paddlefish *(Polyodon spathula)*	-	1	-	-	4	3	8
Amur Sturgeon (*A. schrenckii)*	-	2	2	1	-	1	6
Hybrid (*A. baerii x A. naccarii)*	-	1	2	-	-	3	6
Kaluga *(Huso dauricus)*	-	-	2	1	-	-	3
Shovelnose Sturgeon *(Scaphirhynchus platorynchus)*	-	-	-	-	3	-	3
Adriatic Sturgeon (*A. naccarii)*	-	1	1	-	-	-	2
Chinese Sturgeon (*A. sinensis)*	-	-	-	2	-	-	2
Hybrid *(A. baerii x Huso huso)*	-	-	1	-	1	-	2
Hybrid (*A. gueldenstaedtii x A. baerii)*	-	1	-	-	1	-	2
Hybrid (Not specified)	-	-	-	2	-	-	2
Stellate Sturgeon (*A. stellatus)*	1	-	-	-	1	-	2
Hybrid (*Huso huso x A. naccarii)*	-	-	-	-	1	-	1
Hybrid (*Huso huso x A. ruthenus)*	-	-	-	-	1	-	1
Not specified	18	1	-	2	1	5	27
Total	**34**	**37**	**39**	**16**	**31**	**33**	**190**

RU = Russian Federation, DE = Germany, FR = France, US = United States of America, JP = Japan, CN = China

Table 18: Species found in physical surveys across all six markets, in descending order of total frequency

Species	RU	DE	FR	US	JP	Total
Siberian Sturgeon (*A. baerii*)	2	9	18	1	5	35
Russian Sturgeon (*A. gueldenstaedtii)*	-	6	16	1	1	24
Hybrid (*A. schrenckii x Huso dauricus)*	3	3	7	-	-	13
Beluga (*Huso huso)*	-	3	8	-	1	12
Amur Sturgeon (*A. schrenckii)*	3	2	2	-	-	7
White Sturgeon (*A. transmontanus)*	-	2	3	-	2	7
Paddlefish (*Polyodon spathula)*	-	-	-	2	2	4
Hybrid (*A. baerii x A. naccarii)*	-	1	1	-	1	3
Adriatic Sturgeon (*A. naccarii)*	-	1	-	-	1	2
Hybrid (*A. baerii x A. gueldenstaedtii)*	-	1	-	-	1	2
Hybrid (*Huso huso x A. baerii)*	-	1	1	-	-	2
Shovelnose Sturgeon (*Scaphirhynchus platorynchus)*	-	-	-	2	-	2
Stellate Sturgeon (*A. stellatus)*	-	-	2	-	-	2
Hybrid (*A. ruthenus x A. baerii*)	1	-	-	-	-	1
Hybrid (*A. schrenckii x A. baerii)*	-	1	-	-	-	1
Hybrid (*Huso huso x A. ruthenus)*	-	-	-	-	1	1
Sterlet (*A. ruthenus)*	-	-	-	-	1	1
Not specified	-	6	16	18	7	47
Total	**9**	**36**	**74**	**24**	**23**	**166**

RU = Russian Federation, DE = Germany, FR = France, US = United States of America, JP = Japan

Oscietra was the most frequently found trade name used (except in the USA where Paddlefish was the most common). In several cases the species was not Russian Sturgeon, highlighting the difficulty for consumers to know what they are purchasing and the need for consistency in labelling as set out in the *CITES Resolution Conf. 12.7 (Rev. CoP17).*

In line with the findings of the CITES trade data analysis, China, France, Italy, the USA, Germany and Bulgaria were the most frequently found as countries of production (Table 19) although in Japan, caviar from Latvia and Russia was also found. Caviar from Iran and Israel, which were commonly reported as countries of origin in the seizure data, was also found in Germany, France, the USA and Japan.

Table 19: Country of production for caviar found in rapid assessments (online and physical market surveys) across all six markets, in descending order of total frequency.

Country of production	DE	FR	US	JP	RU	CN	Total
Russian Federation	-	11	3	4	37	11	66
China	23	28	-	4	6	2	63
France	5	37	1	6	-	-	49
Italy	10	21	3	5	-	-	39
USA	4	3	21	6	-	-	34
Germany	18	4	-	9	-	-	31
Bulgaria	5	10	1	4	-	-	20
Iran	6	5	2	1	-	-	14
Israel	1	2	3	4	-	-	10
Uruguay	4	4	1	-	-	-	9
Latvia	-	-	-	6	-	-	6
Finland	1	3	-	1	-	-	5
Belgium	-	2	2	-	-	-	4
'Product of the EU'	-	3	1	-	-	-	4
Poland	-	3	-	-	-	-	3
Kazakhstan	-	-	-	3	-	-	3
Japan	-	-	-	3	-	-	3
Netherlands	-	-	2	-	-	-	2
Canada	-	-	1	-	-	-	1
Peru	-	-	1	-	-	-	1
Turkey	-	-	1	-	-	-	1
Spain	-	-	-	1	-	-	1
South Korea	-	-	-	1	-	-	1
Not specified	8	13	17	-	-	2	40
Total	**85**	**149**	**60**	**58**	**43**	**15**	**410**

RU = Russian Federation, DE = Germany, FR = France, US = United States of America, JP = Japan, CN = China

WILD CAVIAR TRADE

Since 1998 all species of sturgeon and paddlefish have been listed on CITES Appendix I or whereby international trade is prohibited or only authorised with relevant documents granted by the CITES authorities[53]. While *CITES Resolution Conf. 12.7 (Rev.CoP17)* recommends relevant range states to set export quotas for caviar and meat of Acipenseriformes spp. from shared stocks every year, there had been no export quotas concerning shared stocks reported to the CITES Secretariat for sturgeons since 2010[54], meaning that no international trade in wild sourced caviar or meat of Acipenseriformes spp. from shared stocks should be allowed. There have been no nationally established export quotas (*CITES Resolution Conf. 14.7 (Rev.CoP15))* reported to the CITES Secretariat for wild-taken Acipenseriformes spp. from non-shared stocks since 2011 except for Uzbekistan, which reported a quota of 20 specimens of live, wild sourced Amu Darya Sturgeon *Pseudoscaphirhynchus kaufmanni* in 2017, while sturgeon fishing from the wild is still allowed in some range States. There is therefore

[53] Permits should only be granted if trade is not detrimental to the survival of species in the wild.
[54] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-17-01.pdf

a lack of clarity from where and under what circumstances caviar from the wild can still enter international trade legally.

Focusing on global caviar trade from wild sources during the period 2010–2015, the main exporting countries were the USA and Germany. American Paddlefish, Russian Sturgeon and Shovelnose Sturgeon were the top three species of wild sourced caviar.

Rapid Assessments

Caviar claimed to be sourced from the wild was found for sale online in all countries except China and France (although one website in France mentioned they sold wild sourced caviar from Iran or the Caspian Sea in the frequently asked questions section, none was found on sale at the time of the survey) and in all physical market surveys except China where no caviar at all was found for sale (which however may have been due to the timeframe of the survey being inadequately short for the size of the Chinese market).

Caviar claimed to be sourced from the wild found for sale in the market surveys (physical and online) were from Siberian Sturgeon in Russia, Beluga originating from Russia or Kazakhstan in Russia, Germany and Japan, American Paddlefish in Germany, USA and Japan and Shovelnose Sturgeon in the USA. It was not possible to determine conclusively whether the wild sourced caviar found during the surveys were in fact legal or illegal due to various reasons, including the lack of the CITES caviar labelling in the domestic market in most of these key range and consumer States, the lack of clarity on the extent of legal exports in caviar from the wild in some range States and the lack of detail regarding the species, source and origin of caviar found for sale online. In the physical market surveys in the USA and Russia, wild sourced caviar was found in plastic containers without labels and seals or packaging that showed visual evidence of opening. In Japan it came in sealed glass jars or sealed cardboard boxes.

In Russia, Germany and France caviar claimed to be sourced from the wild was sold “under the counter” or on the black market and not openly. Some vendors confirmed wild sourced caviar was available after expressed willingness to purchase even though it was not on display, suggesting trade in wild sourced caviar is still persistent. Some vendors also used ‘wild sourced’ as a sales argument but DNA testing in Russia, or the CITES labels or other information online suggested it was derived from aquaculture. This seems to be particularly common in Russia where caviar allegedly derived from Chinese aquaculture was mislabelled or sold as Russian.

Anecdotal evidence of poaching was found in Russia through the additional interviews and review of media articles published about the Amur River which borders Russia and China although it is unclear from the information gathered in this study if the poaching and trade is occurring from Russia to China to provide stock to aquaculture operations, or vice versa. Information from Operation Roadhouse in the USA suggests poaching from wild stocks is occurring there for national and international trafficking which could be a potential concern for the conservation and survival of the US species.

Consumer Demand

From the rapid assessments and literature review it was determined that caviar consumers tend to have high income. Key purchasing times tend to be around festive periods such as Christmas, New Year, Valentine’s Day and celebrations such as weddings. In Russia, tourists often purchase caviar from the markets. It was acknowledged in all countries that wild sourced caviar is still requested by consumers (although this has declined) and is seen as superior to that deriving from aquaculture. Country of origin is an important driver for consumers with Russian or Iranian caviar the most sought after and Oscietra the most popular product. In Japan, caviar cosmetics are a growing trend.

RECOMMENDATIONS

The report concludes with the following recommendations.

CITES Management Authorities

- CITES Management Authorities in countries not yet implementing the CITES caviar labelling provisions for domestic trade (including China, Japan, Russia and the USA) should revise relevant national legislation to implement *CITES Resolution Conf. 12.7 (Rev.CoP17)* fully, in particular the universal caviar labelling system for the domestic trade.
- CITES Management Authorities should put in place stricter requirements for the quality and design of the CITES caviar labels to ensure that the labels provide visual evidence of any opening, are non-reusable and the CITES code is readable and easy to locate. Universal security features could be used to ensure labels are more difficult to be fraudulently produced. A clear definition of lot identification number should be agreed to help further improve traceability and to ensure consistency across producers and re-packagers.
- The CITES Management Authorities of the Parties which export wild sourced caviar (e.g. the USA) should set and publish national export quotas for the export of wild sourced caviar every year to assist in regulating and monitoring international wild caviar trade.

CITES Secretariat and CITES Parties

- Parties to CITES should propose changes to the universal caviar labelling system by revising *CITES Resolution Conf. 12.7 (Rev.CoP17)* at the next CoP (CoP18) to ensure consistency of quality of the labels and to minimise a risk of fraud. Any proposed changes should aim to help make enforcement easier.
- To ensure *CITES Resolution Conf. 12. 7 (Rev. CoP17)* is fully implemented by Parties, the CITES Secretariat, in consultation with range and consumer states, and in co-operation with partner organisations and, as appropriate, other experts and organisations, should conduct a review of the implementation of *CITES Resolution Conf. 12. 7 (Rev. CoP17)*.
- The CITES Secretariat should report to the Standing Committee on progress and gaps with regard to implementation of *CITES Resolution Conf. 12. 7 (Rev. CoP17)*, with recommendations for consideration by the Standing Committee.

Enforcement authorities

- Enforcement authorities of consumer and transit countries/territories should pay a close attention to caviar that is claimed to be wild sourced and, as appropriate, get in contact with exporting countries to check if export permits are issued properly.
- Relevant enforcement authorities especially of the range states and countries that have been reported being on illegal trade routes should check that the species, source (e.g. wild, captive-bred) and the geographic origin of the caviar match those provided on the label/packaging also using laboratory techniques to minimise the risk of fraud and illegal trade.
- Relevant enforcement authorities are recommended to review the findings of this report relevant to their country and where there is discrepancy between what is legally reported as imported and what is found on the market for sale, this information should be used to inform their border control targeting and risk assessments.

- Enforcement authorities in the EU should target larger amounts of caviar being moved across EU borders overland from sturgeon and paddlefish range states such as Russia, Ukraine, Azerbaijan, Kazakhstan and Iran to prevent illegally sourced wild caviar from entering the EU market.

Aquaculture Operations

- Aquaculture operations should help relevant authorities to strengthen the implementation of CITES legislation and labelling (e.g. registration of the facilities, meeting requirements for the quality and design of CITES labels) and ensure better traceability of caviar products within the trade.
- CITES Management Authorities, in co-operation with relevant fisheries authorities, are encouraged to register all the sturgeon aquaculture operations in the country including the ones which are not currently required to be registered under *CITES Resolution Conf. 12. 7 (Rev. CoP17)* to minimise the risk of fraud.

Retailers

- Retailers of caviar should ensure they are up to date on the CITES labelling requirements, do not promote caviar harvest from the wild where it is illegal and provide consumers with information to ensure they act legally.
- Online retailers of caviar should provide the details of the species, source and origin as well as on the regulations regarding export (i.e. CITES document requirements) to ensure they are compliant with *CITES Resolution Conf. 12.7 (Rev.CoP17*) and domestic legislation.

Non-governmental organisations, in collaboration with CITES Management or enforcement authorities, are encouraged to:

- Conduct further assessments in other markets (e.g. Azerbaijan, Iran, Italy, United Arab Emirates) identified in the first phase of this project as hotspots for caviar trade.
- Carry out further research to understand the poaching situation especially in the Amur region between the Russian Federation and China.
- Collect information about the status of the wild populations of American Paddlefish and Shovelnose Sturgeon and the impact of legal/illegal fishing in the USA to consider if additional conservation measures are needed.
- Revisit markets surveyed (expanding survey time and locations) to monitor the situation and carry out DNA/isotope analysis to ascertain whether information provided on the caviar labels match actual source and origin.
- Conduct further research to understand and explore what the pricing of caviar indicates.
- Conduct a consumer survey to understand better consumer demand, to identify the target audience for any consumer behaviour change interventions, and to explore the receptiveness for responsible consumption alternatives including business to business consumers and suppliers such as cruise liners, restaurants, hotels, airlines etc. where caviar is most frequently found on sale or is offered for consumption.
- Conduct further research to understand the scale and to assess the impact of trade in other sturgeon products e.g. meat, cosmetics.

- Educate consumers and raise awareness of sturgeon conservation issues with the aim to change the perception that wild sourced caviar is better than that derived from aquaculture to reduce the demand from consumers.
- Explore social and behaviour change communication initiatives that can be delivered to divert demand to responsible consumption alternatives.

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ANNEX I: Table & Figures

Table 20: CITES export quotas for wild sourced caviar, 2001 – 2010, in weight (kg) Blank = Not published. There have been no export quotas reported to the CITES Secretariat for sturgeons since 2011 except for Uzbekistan, which reported a quota of 20 specimens of live, wild sourced Amu Darya Sturgeon in 2017.

Exporter	Taxon	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Azerbaijan	*Acipenser gueldenstaedtii*	3450	2770	4200	3780	3780		3360	3360		3360
	Acipenser stellatus	2840	2470	4500	2700	2700		3000	3000		3000
	Huso huso	520	530	400	250	250		300	300		0
Bulgaria	*Acipenser gueldenstaedtii*	50	20	20		0					
	Huso huso	2450	1720	1720	1720	1460	1000				
Canada	*Acipensenser fulvescens*	500	50								
	Acipenser oxyrhynchus	500	50								
China	*Acipenser schrenckii*	2510	2510	2510				1337	1337		
	Huso dauricus	3430	3430	3430				1672	1595		
Iran	*Acipenser gueldenstaedtii*	3460	2100	1950	1755	1600		1000	1000		1000
	Acipenser nudiventris	1000	0	0	0			0	0		0
	Acipenser persicus	51000	55980	63000	56700	51000	44370	38000	37000		34000
	Acipenser stellatus	23400	2950	11700	7020	6300		3200	3200		2944
	Huso huso	3950		2130	1065	1065		1000	1000		800
Kazakhstan	*Acipenser gueldenstaedtii*	3200	4880	4620.34	3204	3100		3270	3070		3270
	Acipenser nudiventris	2500	409	0	0	0		0	0		0
	Acipenser stellatus	20900	19770	26233.72	11010	10490		10637	8500		10637
	Huso huso	4200	5956	8531.78	2360	2600		1761	1700		1561
Romania	*Acipenser gueldenstaedtii*	1750	1200	900	160	160					
	Acipenser stellatus	2050	1470	1100	900	900					
	Huso huso	3100	2180	2250	2250	2000					
Russian Federation	*Acipenser baerii*		500	500		0					
	Acipenser gueldenstaedtii	28300	28070	17200	14580	14000		20000	20000		22119
	Acipenser schrenkii	2140	350	350				1900	350		
	Acipenser stellatus	27500	16850	13800	8280	8000		3500	3500		2640
	Huso dauricus	7000	2300	1000				2560	1280		
	Huso huso	3800	1800	1600	800	600	393	700	700		700
Serbia	*Huso huso*			700	700	595					

Ukraine	*Acipenser gueldenstaedtii*	0	0	500	0	0	0	0	0	0	0
	Acipenser stellatus	0	0	200	0	0	0	0	0	0	0

Source: CITES website

Table 21: Online survey results for the Russian Federation

Website	Caviar Product	Species	Country of production	Source
RU-A	Oscietra (Granular)	*Acipenser gueldenstaedtii*	Russian Federation	N/A
RU-B	Oscietra	*Acipenser baerii*	Russian Federation	C
	Oscietra	*Acipenser ruthenus*	Russian Federation	C
	Oscietra	*N/A*	Russian Federation	C
	Oscietra	*Acipenser ruthenus*	Russian Federation	C
	Beluga	*Huso huso*	Russian Federation	W
	Oscietra (Wild)	*Acipenser gueldenstaedtii*	Russian Federation	C
	Oscietra	*Acipenser gueldenstaedtii*	Russian Federation	C
	Oscietra	*N/A*	Russian Federation	C
	Oscietra	*N/A*	Russian Federation	C
	Oscietra	*Acipenser gueldenstaedtii*	Russian Federation	C
	Oscietra	*N/A*	Russian Federation	C
	Beluga	*Huso huso*	Russian Federation	C
	Imperial (Almas)	*Acipenser ruthenus*	Russian Federation	C
	Oscietra	*Acipenser gueldenstaedtii*	Russian Federation	C
RU-C	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
RU-D	Oscietra	*N/A*	Russian Federation	C
	Oscietra	*Acipenser ruthenus*	Russian Federation	C
	Oscietra	*Acipenser stellatus*	Russian Federation	C
	Oscietra	*N/A*	Russian Federation	C
	Oscietra	*Acipenser ruthenus*	Russian Federation	C
RU-E	Caspian Beluga	*Huso huso*	Russian Federation	C
	Oscietra (Classic/Premium)	*N/A*	Russian Federation	C
	Oscietra (Wild)	*Acipenser gueldenstaedtii*	Russian Federation	C
RU-F	Oscietra (Astrakhan/Premium)	*N/A*	Russian Federation	N/A
RU-G	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A
RU-H	Oscietra	*N/A*	Russian Federation	N/A
	Oscietra	*N/A*	Russian Federation	N/A

N/A = Not specified, C = derived from aquaculture, W = wild sourced

Table 22: Online survey results for Germany

Website	Product trade name	Species	Country of production	Source
DE-A	Beluga	*Huso huso*	China, Iran	C
	Imperial (Chinese Albino)	*Acipenser schrenckii*	China	N/A
	Oscietra	*Acipenser baerii x Acipenser naccarii*	Italy	C
	Oscietra	*Acipenser baerii*	Finland	N/A
DE-B	Imperial	N/A	N/A	N/A
	N/A	*Acipenser baerii*	N/A	C
DE-C	Beluga	*Huso huso*	Bulgaria, Germany	C
	Oscietra	*Acipenser gueldenstaedtii*	Bulgaria, Germany	C
	Siberian	*Acipenser baerii*	Germany	C
DE-D	Wild	*Polyodon spathula*	USA	W
	Siberian	*Acipenser baerii*	N/A	C
	Oscietra	*Acipenser gueldenstaedtii*	N/A	C
	Black Label	*Acipenser transmontanus*	N/A	C
DE-E	Caviar d'Aquitaine	*Acipenser baerii*	France	C
	Oscietra	*Acipenser gueldenstaedtii*	Israel	C
DE-F	Oscietra	*Acipenser gueldenstaedtii*	N/A	N/A
DE-G*	Almas	*Acipenser ruthenus*	Germany	C
	Beluga	*Huso huso*	Germany	C
	Beluga (Amur)	*Acipenser schrenckii x Huso dauricus*	China	C
	Beluga (Russian style)	*Acipenser ruthenus*	Germany	C
	Imperial (Crystal Grand Cru/Amur)	*Acipenser schrenckii*	China	C
	Imperial (Gold)	*Acipenser gueldenstaedtii*	Germany	C
	Imperial	*Acipenser gueldenstaedtii*	Uruguay	C
	Imperial	*Acipenser transmontanus*	Germany	C
	Oscietra	*Acipenser gueldenstaedtii*	Bulgaria, China, Germany, Italy, Uruguay	C
	Oscietra (Russian style)	*Acipenser gueldenstaedtii x Acipenser baerii*	Germany	C
	Oscietra	*Acipenser baerii*	Germany	C
	Sevruga	*Acipenser baerii*	China, Germany, Italy, Uruguay	C
	Sevruga (Sterlet)	*Acipenser ruthenus*	Bulgaria, Germany	C
DE-H	Imperial	*Acipenser baerii*	Germany	C
	Imperial	*Acipenser ruthenus*	Germany	C
	Imperial	*Acipenser schrenckii x Huso dauricu/Acipenser ruthenus*	China	C
DE-I	Beluga	*Huso huso*	N/A	W
DE-J	Oscietra (Deluxe)	*Acipenser naccarii*	USA	C
	Oscietra (Classic)	*Acipenser baerii*	USA	C
	Oscietra (Russian)	*Acipenser gueldenstaedtii*	USA	N/A

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*Website also advertised they sell Oscietra from *Acipenser persicus* and Sevruga from *Acipenser stellatus* and their preference is to sell Beluga sourced from Iran, Italy or China but no products were recorded.

Table 23: Online survey results for France

Website	Product trade name	Species	Country of production	Source
FR-A	Oscietra (Royal)	*N/A*	Russian Federation	N/A
	Sevruga	*N/A*	Russian Federation	N/A
FR-B	Beluga	*Huso huso*	N/A	C
	Ars Italica Da Vinci	*Acipenser naccarii*	Italy	C
	Art Basel (Special Edition)	*Acipenser transmontanus*	N/A	C
	Oscietra (Royal/Classic)	*Acipenser gueldenstaedtii*	Italy	C
	Siberian (Royal/Classic)	*Acipenser baerii*	N/A	C
	Tradition Royal	*Acipenser transmontanus*	N/A	C
FR-C	Caviar d'Aquitaine	*Acipenser baerii*	France	C
FR-D	Beluga	*Huso huso*	China	C
	Imperial	*Acipenser schrenckii x Huso dauricus*	China	C
	Caviar d'Aquitaine	*Acipenser baerii*	France	C
	Oscietra (Gold)	*Acipenser gueldenstaedtii*	China	C
	Kaluga (Premium)/Diamant Noir*	*Acipenser schrenckii* and *Huso dauricus*	China	C
	Baeri/Naccarii Ultra	*Acipenser baerii x Acipenser naccarii*	Italy	N/A
	Schrenkii Grey	*Acipenser schrenckii*	China	C
	Baeri (Royal/Black)	*Acipenser baerii*	China, Finland, France, Germany, Italy Uruguay	C
	Blanc Selection	*Acipenser transmontanus*	Italy, USA	C
FR-E	Caviar d'Aquitaine	*Acipenser baerii*	France	C
FR-F	Beluga (Imperial)	*Huso huso*	Iran	C
	Imperial	*Acipenser baerii*	France	C
	Amour	*Acipenser schrenckii x Huso dauricus*	China	N/A
	Royal	*Acipenser baerii*	Finland	C
FR-G	Beluga	*Huso huso*	France	N/A
	Imperial (Aquitaine/ Europe)	*Acipenser baerii*	France, EU	N/A
	Oscietra (Imperial)	*Acipenser gueldenstaedtii*	France	N/A
	Amursky	*Acipenser schrenckii x Huso dauricus*	China	N/A
	White (Royal)	*Acipenser transmontanus*	France	N/A
FR-H	Beluga di Venezia (AKI)	*Acipenser baerii x Huso huso*	Italy	N/A
	Selection (AKI)	*Acipenser baerii x Acipenser naccarii*	N/A	N/A
	Sterlatka (AKI)	*Acipenser ruthenus*	N/A	N/A
	Beluga (Russian Caviar)	*N/A*	"Product of EU" (not specified further)	N/A
	Sturgeon (Russian Caviar)	*N/A*	"Product of EU" (not specified further)	N/A
	Oscietra	*N/A*	Russian Federation	N/A
	Siberian	*Acipenser baerii*	N/A, Russian Federation	N/A
	N/A	*Acipenser baerii*	Germany	N/A
FR-I	Oscietra	*Acipenser gueldenstaedtii*	Uruguay	C
FR-J	Beluga	*Huso huso*	Russian Federation	N/A
	Oscietra (Royal)	*N/A*	Russian Federation	N/A
	Sterlet	*Acipenser ruthenus*	Russian Federation	N/A
	Kaluga	*Huso dauricus*	Russian Federation	N/A
	Sevruga (Royal)	*N/A*	Russian Federation	N/A

	Beluga	*Huso huso*	France	C
	Classic/Primeur/Prestige/ Vintage/Origin/Grand Chef/Limited Editions	*Acipenser baerii*	France	C
	Oscietra (Grand Cru)	*Acipenser gueldenstaedtii*	France	C
FR-K	Beluga	*Huso huso*	France	C
	Classic/Primeur/Prestige/ Vintage/Origin/Grand Chef/Limited Editions	*Acipenser baerii*	France	C
	Oscietra (Grand Cru)	*Acipenser gueldenstaedtii*	France	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*Mix of two species, not hybrid

Table 24: Online survey results for China

Supplier	Product trade name	Species	Country of production	Source
CN-A	Beluga	*Huso huso*	Russian Federation	C
	N/A	*Acipenser schrenckii*	Russian Federation	C
	N/A	*Acipenser gueldenstaedtii*	Russian Federation	C
	Oscietra	*Acipenser gueldenstaedtii*	Russian Federation	C
	N/A	*Acipenser sinensis*	China, Russian Federation	C
	N/A	*Huso dauricus*	Russian Federation	C
	Russian + Siberian + Hybrid*	*Acipenser baerii, Acipenser guldenstaedtii, Hybrid*	Russian Federation	C
	N/A	*Acipenser baerii*	Russian Federation	C
CN-B	N/A	Hybrid	Russian Federation	C
CN-C	Hybrid	*Acipenser schrenkii x Huso dauricus*	Russian Federation	C
CN-D	N/A	*N/A*	N/A	C
CN-E	Siberian	*Acipenser baerii*	Russian Federation	C
CN-F	N/A	*Acipenser sinensis*	China	C
CN-G	N/A	*N/A*	N/A	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*= Three types of caviar in one tin with divides between each type (i.e. not mixed).

Table 25: Online survey results for USA

Website	Product trade name	Species	Country of production	Source
US-A	Golden Black	*Acipenser baerii*	Turkey	C
	Kaluga	*Huso dauricus x Acipencer schrenckii*	Peru, Iran	C
US-B	Kaluga Hybrid	*Huso dauricus x Acipencer schrenckii*	N/A	C
US-C	Oscietra	*Acipenser gueldenstaedtii*	Russian Federation, Iran	N/A
US-D	Beluga	*Huso huso x Acipenser naccarii*	Belgium, Netherlands, USA	N/A
US-E	Oscietra (Caspian Sea)	*Acipenser gueldenstaedtii*	N/A	N/A
US-F	American Paddlefish	*Polyodon spathula*	USA	W
US-G	Beluga**	*Huso huso x Acipenser baerii*	USA	C
	American Hackleback	*Scaphirhynchus platorynchus*	USA	W
	American Paddlefish	*Polyodon spathula*	USA	W
	Oscietra	*Acipenser gueldenstaedtii*	Israel, USA	N/A
	Sevruga	*Acipenser stellatus*	Italy, USA	N/A, C
US-H	Beluga Gold/Kaluga	*Huso dauricus x Acipencer schrenckii*	East Asia, produced in USA or imported from Russian Federation	C
US-I	Oscietra	*Acipenser gueldenstaedtii*	Italy	C
	American Paddlefish	*Polyodon spathula*	USA	W
	White	*Acipenser transmontanus*	Italy	C
US-J	Imperial Oscietra	*Acipenser baerii*	N/A	N/A
US-K	Oscietra	*Acipenser gueldenstaedtii x Acipenser baerii*	Belgium	C
US-L	Oscietra	*Acipenser gueldenstaedtii*	USA	C
US-M	American Hackleback*	*Scaphirhynchus platorynchus*	USA	W
	American Paddlefish	*Polyodon spathula*	USA	W
US-N	Beluga Hybrid	*Huso huso x Acipenser ruthenus*	N/A	N/A
	Oscietra	*Acipenser gueldenstaedtii*	Israel	C
US-O	Oscietra	*Acipenser gueldenstaedtii*	N/A	C
	Kaluga	*Huso dauricus x Acipenser schrenckii*	N/A	C
US-P	Black	*Scaphirhynchus platorynchus*	USA	W
US-Q	Black Royal	*N/A*	N/A	N/A
US-R	Kaluga	*Huso dauricus x Acipenser schrenckii*	Russian Federation, Europe	C
US-S	Imperial Oscietra	*Acipenser gueldenstaedtii*	N/A	N/A
	Oscietra (Caviar & Caviar)	*Acipenser gueldenstaedtii*	Iran	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*Also known as spoonbill caviar, **Only approved US aquaculture operation that produces Beluga. Also produce Sevruga, Sterlet and Russian Oscietra.

Table 26: Online survey results for Japan

Website	Product trade name	Species	Country of production	Source
JP-A	Oscietra	*Acipenser transmontanus*	USA	C
	USA	*Polyodon spathula*	USA	W
	Black Opal	*Acipenser baerii*	Finland	C
	Oscietra (Russian)	*Acipenser gueldenstaedtii*	Israel	N/A
	Kristal	*Acipenser schrenckii*	China	C
	Oscietra (Prestige)	*Acipenser gueldenstaedtii*	Bulgaria, Italy	C
	Baeri Fermier	*Acipenser baerii*	France	C
	D'Argento	*Acipenser baerii x Acipenser naccarii*	Italy	C
	Black Opal	*Acipenser transmontanus*	Italy	N/A
JP-B	Oscietra (Royal Imperial/Premium)	*Acipenser baerii*	Russian Federation	N/A
	Oscietra (Russian)	*N/A*	South Korea	C
	Caspian	*Huso huso*	Kazakhstan	W
	Oscietra (Russian)	*Acipenser gueldenstaedtii*	Israel	C
JP-C	Selection	*Acipenser baerii x Acipenser naccarii*	Germany, Italy	C
	Hybrid	*Huso dauricus x Acipenser schrenkii*	China	C
	Siberian	*Acipenser baerii*	China	C
JP-D	Oscietra	*Acipenser baerii*	Russian Federation	N/A
JP-E	Oscietra	*N/A*	Latvia	C
	Sterlet	*Acipenser ruthenus*	Latvia	C
JP-F	D'Oro	*Acipenser transmontanus*	Italy	C
	Oscietra (Prestige)	*N/A*	Bulgaria	C
JP-G	Yellow Stone/North Star	*Polyodon spathula*	USA	W
	Oscietra	*N/A*	France	C
	Russian	*Huso huso*	Kazakhstan	W
JP-H	N/A	*Acipenser baerii*	Germany	C
JP-I	N/A	*Polyodon spathula*	USA	W
JP-J	Beluga	*Huso huso*	China	C
	Hybrid	*Acipenser baerii x Acipenser naccarii*	Germany	C
	Oscietra	*N/A*	Germany	C
	Siberian	*Acipenser baerii*	Germany	C
JP-K	Oscietra	*Acipenser gueldenstaedtii*	Bulgaria	C
JP-L	Premium	*Acipenser baerii*	Russian Federation	C
JP-M	Beluga (Caspian)	*Huso huso*	Kazakhstan	W

N/A = Not specified, C = derived from aquaculture, W = wild sourced

Table 27: Results from physical market survey in Berlin, Germany, December 2017

Supplier	Product trade name	Species	Country of production	Source
DE-1	Beluga	*Huso huso x Acipenser baerii*	Italy	C
	Beluga (Pearlossol)	N/A	Iran	C
	Caviar D'Aquitaine	*Acipenser baerii*	France	C
	Imperial	*Acipenser schrenckii x Huso dauricus*	China	C
	Imperial (Gold Queen)	N/A	China, Germany	C
	Oscietra	*Acipenser gueldenstaedtii*	Germany	C
	Oscietra	N/A	Italy	C
	Oscietra/Imperial (Pearlossol)	*Acipenser baerii*	N/A	C
	Prunier	N/A	France	C
	Selection - Black Label Italy	*Acipenser transmontanus*	Germany	C
	Selection - Italy	N/A	Germany	C
	Siberian (Pearlossol)	*Acipenser baerii*	Italy, Germany	C
DE-2	Oscietra	*Acipenser gueldenstaedtii*	France	C
	Siberian	*Acipenser baerii*	France	C
DE-3	Beluga	*Huso huso*	China, Iran	C
	Imperial	*Acipenser schrenckii*	China, Iran	C
	Oscietra	*Acipenser gueldenstaedtii*	China, Iran	C
	Royal Baerii	*Acipenser baerii*	China, Iran	C
DE-4	Beluga	*Huso huso*	China	C
	Gubernia	*Acipenser baerii x Acipenser gueldenstaedtii*	China	C
	Oscietra	*Acipenser schrenckii*	China	C
	Oscietra	*Acipenser gueldenstaedtii*	China	C
	Oscietra	*Acipenser baerii*	Germany	C
	Oscietra	*Acipenser baerii x Acipenser naccarii*	Germany	C
	Oscietra (Amur Royal)	*Acipenser schrenckii x Huso dauricus*	China	C
DE-5	Select/Premium (Oscietra/Beluga)	*Acipenser schrenckii x Huso dauricus*	China	C
DE-6	Beluga	*Acipenser schrenckii x Acipenser baerii*	China	C
	Beluga	*Huso huso*	Bulgaria	C
	Imperial (Amur)	*Acipenser transmontanus*	China	C
	Oscietra	N/A	China	C
	Siberian	*Acipenser baerii*	Germany	C
DE-7	Oscietra	*Acipenser naccarii*	Italy	C
	Oscietra	*Acipenser gueldenstaedtii*	Italy	C
DE-8	Beluga	*Acipenser baerii*	Italy	C
	Oscietra	*Acipenser gueldenstaedtii*	Italy	C
	Premier/Classic	*Acipenser baerii*	Uruguay	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

Table 28: Results from physical market survey in Paris, France, December 2017

Supplier	Product trade name	Species	Country of production	Source
FR-1	Beluga Royal	*Huso huso*	Iran	C
	Beluga x Baerii	*Huso huso x Acipenser baerii*	Italy	C
	Baerii Imperial	*Acipenser baerii*	France	C
	Baerii Selection	*Acipenser baerii*	Italy	C
	Oscietra (Selection)	*Acipenser gueldenstaedtii*	Italy	C
	Platinum	*Huso dauricus x Acipenser schrenkii*	China	C
	White	*Acipenser transmontanus*	Italy or USA	C
FR-2	Schrenkii	*Huso dauricus x Acipenser schrenkii*	China	C
	Oscietra	*Acipenser gueldenstaedtii*	France	C
	Baerii	*Acipenser baerii*	France	C
FR-3	Baerii Imperial	*Acipenser baerii*	France	C
	Oscietra	*Acipenser gueldenstaedtii*	France	C
FR-4	Beluga	*N/A*	China	C
	Oscietra	*N/A*	China	C
	Tradition/Saint-James/Paris/Heritage	*Acipenser baerii*	France	C
FR-5**	Beluga	*Huso huso*	Bulgaria	C
	Baerii	*Acipenser baerii*	France	C
	Oscietra	*Acipenser gueldenstaedtii*	Bulgaria, France, Uruguay	C
	Sevruga	*Acipenser stellatus*	Bulgaria	C
FR-6	Beluga*	*N/A*	Russian Federation	C
	Oscietra	*Acipenser gueldenstaedtii*	France	C
	Baerii	*Acipenser baerii*	France	C
FR-7	Baerii Imperial	*Acipenser baerii*	Italy, France, Bulgaria	C
	Beluga (Royal, Reserve)	*Huso huso*	Bulgaria	C
	Oscietra (Royal, Selection, Reserve, Gold)	*Acipenser gueldenstaedtii*	Bulgaria, Italy	C
	White (Royal)	*Acipenser transmontanus*	Italy	C
FR-8	Beluga (Prestige)*	*Huso huso/Huso dauricus*	Iran	C
	Oscietra (Classic Royal)	*Acipenser gueldenstaedtii*	Uruguay	C
	Schrenkii Imperial	*Acipenser schrenkii*	China	C
	Baerii (Classic)	*Acipenser baerii*	Poland, China, Finland, Italy	C
	Baerii (Imperial)	*Acipenser baerii*	France	C
FR-9	Oscietra	*Acipenser gueldenstaedtii*	France, Poland	C
	Baerii	*Acipenser baerii*	N/A	C
	Schrenki	*Acipenser schrenkii*	China or Russian Federation (Amur River)	C
	Sibiriada	*Acipenser baerii x Acipenser naccarii*	N/A	C
	Kaluga/Amur Royal	*Huso dauricus x Acipenser schrenkii*	China	C
FR-10	V.I.P	*N/A*	China	C
	Oscietra (TOP)	*N/A*	China	C
FR-11	Amur Royal	*Huso dauricus x Acipenser schrenkii*	China	C
	Siberian	*N/A*	N/A	N/A
	Russian	*N/A*	N/A	N/A
FR-12	Oscietra Selection	*Acipenser gueldenstaedtii*	Italy	C

	Baerii Imperial	*Acipenser stellatus*	France	C
FR-13	Beluga	*Huso huso*	Iran (repackaged in Belgium)	C
FR-14	N/A	*Huso dauricus x Acipenser schrenkii*	China (repackaged in Belgium)	C
FR-15	Beluga	*N/A*	Bulgaria	C
	Baeri d'Aquitaine	*N/A*	France	C
	Oscietra	*N/A*	Uruguay	C
FR-16	Beluga	*Huso huso*	Bulgaria, China, Iran	C
	Oscietra (Prestige)	*Acipenser gueldenstaedtii*	Bulgaria, China, Italy	C
	Kristal	*Huso dauricus x Acipenser schrenkii*	China	C
	Baerii (Fermier)	*Acipenser baerii*	France, Italy	C
	White	*Acipenser transmontanus*	Italy	C
FR-17	de Sologne	*Acipenser baerii*	France	C
	Beluga	*Huso huso*	Iran	C
	Oscietra Royal	*Acipenser gueldenstaedtii*	China	C
	Shadi	*Acipenser baerii*	China	C
	Baerii	*N/A*	China	C
FR-18	Oscietra	*Acipenser gueldenstaedtii*	France	C
	Caviar d'Aquitaine	*Acipenser baerii*	France	C
FR-19	Baerii	*N/A*	France	N/A
	Oscietra	*N/A*	N/A	N/A
FR-20	Oscietra	*N/A*	Poland	N/A
FR-21	Baerii	*Acipenser baerii*	France	C
FR-22	Baerii	*N/A*	France	C
FR-23	Oscietra	*Acipenser gueldenstaedtii*	France	C
FR-24	N/A	*N/A*	France	N/A
FR-25	Beluga	*Huso huso*	Bulgaria	C
	Oscietra	*Acipenser gueldenstaedtii*	Italy, Israel	C
	Alverta	*Acipenser gueldenstaedtii*	USA	C
	Daurenki	*Huso dauricus x Acipenser schrenkii*	Italy	C
	Baïka	*Acipenser baerii*	Italy, France	C
FR-26	Oscietra	*Acipenser gueldenstaedtii*	China (repackaged in Germany)	C
	Oscietra (Siberian)	*Acipenser baerii*	China (repackaged in Germany)	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*= available on demand, ** = larger sizes (500 kg+) available on demand

Table 29: Results from physical market survey in Chicago, USA, February 2018

Supplier	Product trade name	Species	Country of production	Source
US-1	Black Pearl	*N/A*	USA	N/A
US-2	Hackleback	*Scaphirhynchus platorynchus*	USA	W
US-3	Oscietra (Russian)	*Acipenser gueldenstaedtii*	USA	N/A
	Premium	*N/A*	USA	N/A
	Kaluga (Imperial)	*N/A*	USA	N/A
US-4	Oscietra (Royal)	*N/A*	Bulgaria	N/A
	Illinois Shovelnose	*Scaphirhynchus platorynchus*	USA	N/A
US-5	Paddlefish	*Polyodon spathula*	USA	N/A
US-6	Kaluga (Amur/Gold)	*N/A*	N/A	N/A
	Siberian	*N/A*	Uruguay	N/A
	Sakhalin Black Pearl	*N/A*	USA	N/A
	Caspian	*N/A*	Israel	N/A
	Persian	*N/A*	N/A	N/A
	Oscietra	*Acipenser baerii*	France	N/A
	Beluga	*N/A*	Russian Federation	N/A
	Royal	*N/A*	Netherlands	N/A
	Paddlefish	*N/A*	N/A	N/A
	American/ Spoonbill	*N/A*	USA	N/A
	Canadian	*N/A*	Canada	N/A
	Sterlet	*N/A*	N/A	N/A
	Russian	*N/A*	Russian Federation	N/A
	Sevruga	*N/A*	N/A	N/A
	White	*N/A*	N/A	N/A

N/A = Not specified, C = derived from aquaculture, W = wild sourced

Table 30: Results from physical market survey in Tokyo, Japan, February 2018

Supplier	Product trade name	Species	Country of production	Source
JP-1	N/A	*Acipenser baerii x Acipenser naccarii*	Germany	N/A
JP-2	Red	*Polyodon spathula*	USA	W
	Blue	*Acipenser baerii*	France	C
	Baerii (Sturia)	*Acipenser baerii*	France	C
JP-3	Niimi French	*Huso huso x Acipenser ruthenus*	Japan*	C
JP-4	Beluga	*N/A*	Germany	C
	Oscietra	*N/A*	Germany	C
	Sibirskye/Siberian	*Acipenser baerii*	Germany	C
JP-5	Miyazaki 1983 Premium	*Acipenser transmontanus*	Japan*	C
	Miyazaki 1983	*N/A*	Japan*	C
JP-6	Baerii Fermier	*N/A*	France	N/A
JP-7	Oscietra	*Acipenser baerii*	Latvia	C
	Sterlet	*Acipenser ruthenus*	Latvia	C
	Oscietra (Siberian)	*N/A*	Latvia	N/A
JP-8	N/A	*Acipenser gueldenstaedtii x Acipenser baerii*	Bulgaria	C
	Paddlefish	*Polyodon spathula*	USA	N/A
	Oscietra (Caspian)	*Acipenser gueldenstaedtii*	Russian Federation	C
JP-9	Beluga	*Huso huso*	Italy	C
	Saint James/Paris/Tradition	*Acipenser baerii*	France	C
	Oscietra	*N/A*	Iran	C
JP-10	Organic	*Acipenser naccarii*	Spain	N/A
JP-11	Tradition	*Acipenser transmontanus*	Italy	N/A
JP-12	Oscietra	*N/A*	Latvia	C

N/A = Not specified, C = derived from aquaculture, W = wild sourced

*Sold as frozen

ANNEX II: Summary of media article review in Russia

Table 31: Main headlines from media articles collated during a review from the Russian Federation between November 2014 and February 2018.

Date	News headline	Source
November 12 2014	More than 1000 sturgeon carcasses found in a truck in Republic of Dagestan	http://провэд.рф/custom-house/20232-tpi-tonny-kontpabandnogo-osetpa-zadepzhali-v-dagestane.html
June 9 2015	Since beginning of 2015, nine police operations have seized more than 10 t of illegal sturgeon meat and 200 kg of illegal caviar	http://www.moktu.ru/news/moscow/2015-06-15-114554/
June 26 2015	Employees of State traffic police caught with 105 kg of black caviar and 126 kg of sturgeon meat poached in Komsomolsk-on-Amur	https://vostokmedia.com/news/incident/26-06-2017/politseyskie-poymali-komsomolskogo-gaishnika-s-chyornoy-ikroy-v-bagazhnike
September 3 2015	Operation to target illicit trafficking in Dorogomilovsky market, Moscow seized 300 kg of sturgeon meat from two citizens	http://www.moktu.ru/news/moscow/2015-09-09-100623/
September 10 2015	Resident of Tobolsk district stopped by road police and found to have three sturgeons, 32 Sterlets, 1 nelma, and 1.5 *l* of Sterlet caviar from poachers.	http://news.megatyumen.ru/news/crime/159825/
October 27 2015	Police stopped a speeding funeral car in Khabarovsk territory and found 500 kg of caviar hidden in the coffin The group were sentenced in June 2017 to three years each.	http://tass.ru/proisshestviya/2380874 http://116chelny.ru/event/2448986-v-habarovske-perevozchiki-ikri-v-katafalke-poluchili-realnie-sroki
November 26 2015	Police operation seized 700 kg of sturgeon meat and 10 kg of caviar from a market in Moscow	http://www.moktu.ru/news/moscow/2015-12-02-152144/
December 3 2015	About 1300 kg of sturgeon meat (presumably from Russian Sturgeon, Beluga, Stellate Sturgeon of the Caspian population) were seized from a shop in Moscow. Vendor could not provide documents confirming the legality of the production (catch) and compliance with quality and safety.	http://www.moktu.ru/news/moscow/2015-12-11-125505/
December 10 2015	About 500 kg of sturgeon meat and 2 kg of caviar confiscated in Moscow	http://www.moktu.ru/news/moscow/2015-12-16-143805/
December 22 2015	About 1100 kg of sturgeon meat confiscated from Solnechnogorsk district, Moscow due to lack of documentation.	http://www.moktu.ru/news/moscow/2015-12-29-154717/
March 24 2016	Approximately 1200 kg of sturgeon meat (presumably Russian Sturgeon, Beluga, Stellate Sturgeon of the Caspian population) confiscated from processing facility, IP Aliyev, in Moscow	http://www.moktu.ru/news/moscow/2016-03-29-112744/
April 15 2016	114 kg of caviar in plastic containers seized from a car in Moscow	http://www.moktu.ru/news/moscow/2016-04-22-114428/
April 19 2016	Approximately 1.6 t of sturgeon meat seized in Moscow. Thought to have been poached from Amur River.	http://www.moktu.ru/news/moscow/2016-04-25-153025/
November 25 2016	About 130 kg of poached sturgeon meat seized from Domodedovo market, Moscow.	http://www.moktu.ru/news/moscow/2016-11-25-210322/
December 2 2016	40 kg of sturgeon meat and 2 kg of caviar seized from Butyrsky shopping center, Moscow	http://www.moktu.ru/news/moscow/2016-12-02-095016/
December 29 2016	Two Russian citizens detained at Kazakhstan border and found with 20 plastic containers of caviar of 500 g each (total 10 kg)	https://ria.ru/world/20161229/1484869283.html?inj=1
March 11 2017	Police seized 1 t of caviar being repackaged as from the Caspian despite deriving from Chinese aquaculture (Amur x Kaluga hybrid)	https://www.youtube.com/watch?v=T335rDnvsyo

May 11 2017	Three violations of the sturgeon fishing regulations on the Amur river. In the first, seven sturgeons were re-released weighing 33 kg each and fishing gear of the poachers was seized. In the second, a car was stopped with 2.5 t of sturgeon meat and parts. In the third, a man was detained carrying about 60 kg of sturgeon. Temporary fish protection posts and mobile groups in the region have been put in place.	http://atu-fishcom.ru/news/1302/
May 29 2017	Seven Russian citizens detained for trying to import 91 kg of caviar (Amur Sturgeon) for commercial purposes without any documentation into the Russian Federation from China at the Ussuri border. According to Federal Customs service, illegal imports from China increased three-fold and exceeded 550 kg. Inspections on outlets in Vladvivostok have taken place once in three years and it is prohibited to check small businesses between 2016 and 2018.	http://konkurent.ru/index.php?cont=article&ida=15204
June 8 2017	A citizen in Khabarovsk was caught with more than 150 kg of sturgeon he bought from a fisherman on the Amur river.	https://vostokmedia.com/news/society/08-06-2017/zhitel-habarovskogo-kraya-kupil-u-rybaka-152-kilogramma-osetra
August 25 2017	10 kg of black caviar and 1300 kg of sturgeon (Stellate, Beluga & Sterlet) seized from Astrakhan as either imported illegally from abroad or may contain dangerous substances.	http://fishnews.ru/news/31937
August 27 2017	Car found in Khabarovsk containing 21 052 kg of caviar in 39 plastic containers.	http://atu-fishcom.ru/news/1485/
September 7 2017	A group of 12 citizens in Khabarovsk region engaged in illegal poaching, production, acquisition, storage and transportation of sturgeon between April and October 2016. About 200 kg of caviar and 16 kg of sturgeon was also “gifted” from other illegal poachers to the group.	https://vostokmedia.com/news/incident/07-09-2017/zhitel-nikolaevska-na-amure-sozdal-prestupnuyu-gruppu-dlya-lovli-osyotra
September 11 2017	Participants of an organized criminal group from the Khabarovsk region were sent to court for illegal fish production. Members of the criminal group procured 22 kg of caviar and 6.5 kg of caviar of Amur Sturgeon. The court sentenced each of them to three years' imprisonment. They were also given a trial period of three years and must pay compensation for the damage caused.	https://vostokmedia.com/news/society/11-09-2017/v-nikolaevskom-rayone-brakonierov-osudili-za-dobychu-chyornoy-ikry
September 17 2017	An overnight operation was conducted in Khabarovsk region to catch poachers. Kaluga, Amur Sturgeon were seized along with fishing gear and boats.	http://atu-fishcom.ru/news/1526/
October 1 2017	Statistics released on the combatting of illegal trade of sturgeon species in Moscow in 2017. Four operations seized 210 kg of sturgeon meat and 315 kg of caviar.	http://www.moktu.ru/news/2017-10-26-210839/
October 16 2017	In the Khabarovsk region websites selling black caviar were closed by the decision of the prosecutor's office	https://vostokmedia.com/news/society/16-10-2017/v-habarovskom-krae-zakryli-sayty-po-prodazhe-chyornoy-ikry-i-svidetelstv-ege
October 20 2017	160 plastic containers of poached caviar weighing about 80 kg were found in the cargo of a flight from Vladivostok to Moscow.	http://www.moktu.ru/news/moscow/2017-12-11-171415/
October 23 2017	15 specimens of sturgeon and over 17 kg of black caviar seized from two citizens in Amur region	https://vostokmedia.com/news/society/23-10-2017/u-dvoih-brakonierov-iz-komsomolska-otobrali-17-kilogrammov-chyornoy-ikry
October 25 2017	Operation in Khabarovsk, Nanai, Komsomol, Ulch, Mykolayiv, and Polina Osipenko	https://vostokmedia.com/news/society/25-10-2017/mvd-na-putine-v-habarovskom-krae-mozhno-

	districts seized 4.5 t of caviar and over 100 kg of sturgeon.	vstretit-lyudey-so-vsey-strany
November 7 2017	In Khabarovsk region, police seized 170 kg of black caviar and 17 sturgeon specimens.	http://fishnews.ru/news/32468
November 18 2017	In a search at Sheremetyevo airport, two citizens of the Russian Federation who arrived by flight from Kazakhstan to Moscow were detained for carrying 100 plastic containers with illegal caviar of about 50 kg in their luggage	http://www.moktu.ru/news/moscow/2017-12-11-171415/
November 26 2017	In Dagestan, a car was stopped carrying 321 sturgeons poached from the Caspian (1000 kg)	http://www.moktu.ru/news/moscow/2017-12-11-171415/
November 28 2017	106 kg of sturgeon found in a garage in Astrakhan without any legal documents.	http://vktu.ru/v-garazhe-obnaruzheno-105-kg-osetrovyh-vidov-ryb/
December 12 2017	150 kg of sturgeon found in cars	http://vktu.ru/zaderzhany-mashiny-so-150-kg-ryby-osetrovogo-vida/
December 20 2017	Operation in Amur region seized 3 Kaluga, 31 Amur Sturgeons, 9 kg of caviar, fishing gear and snowmobiles.	http://atu-fishcom.ru/news/1598/
January 15 2018	58 kg of caviar and 125 kg of sturgeon seized from a car in Khabarovsk	https://vostokmedia.com/news/society/15-01-2018/lyubiteley-chyornoy-ikry-ostanovili-na-trasse-habarovsk-komsomolsk
February 13 2018	800 kg of sturgeon and 8 kg of caviar seized during inspection of a truck in Khabarovsk region	https://vostokmedia.com/news/society/13-02-2018/zhitel-habarovskogo-kraya-dobyl-dlya-prodazhi-okolo-tonny-osetra
February 19 2018	32 sturgeons and 9 kg of caviar seized from poachers in the Khabarovsk region	https://vostokmedia.com/news/society/19-02-2018/zhiteli-habarovskogo-kraya-popalis-s-osetrinoy-i-devyatyu-kilogrammami-ikry

ANNEX III: Summary of open source information on caviar seizures from TRAFFIC's global seizure database

Table 32: Main headlines from open source information on caviar seizures available from TRAFFIC's global seizure database

Country	Date of Report	Description of the Incident	Primary Source
Estonia	12/06/2015	1 kg of sturgeon caviar was seized by Customs officials at the Narva land border crossing point on 03/07/14. The caviar had been imported to **Estonia** from **Russian Federation**. The suspect was fined €280.	CITES Biennial Country Report Estonia 2013-14 Seizures
Russian Federation	27/10/2015	A speeding hearse stopped by traffic police in **Khabarovsk** was found to be packed with 500 kg of caviar. When officers searched inside they instead found dozens of cans of caviar. The caviar was stashed inside a coffin and concealed underneath funeral wreaths. The seized shipment is reported to be worth upwards of RUB 10 million (USD156,000). Another car used as a decoy to distract the traffic police. Police arrested the driver and another funeral parlour employee who was also travelling in the hearse - both of whom denied any knowledge of the caviar.	http://www.bbc.co.uk/news/blogs-news-from-elsewhere-34648603
Russian Federation	29/04/2014	In February 2014 police seized 50 kg of caviar in **Khabarovsk** Krai. The 27 years old driver was transporting the caviar in his SUV. According to him, it was an artisanal preparation.	Robin des Bois. 2014. On the Trail: information and analysis bulletin on animal poaching and smuggling. No. 4
Russian Federation	29/04/2014	In February 2014 police officers seized 44 kg of caviar in **Khabarovsk** Krai. Police intercepted an SUV driven by a resident of 33 years old.	Robin des Bois. 2014. On the Trail: information and analysis bulletin on animal poaching and smuggling. No. 4
Russian Federation	16/10/2017	In **Komsomolsk-on-Amur**, 937 kg of sturgeon caviar were confiscated, worth RUB 50 million, which was packed in plastic containers of 0.5 l. As the operatives found out, the criminals had established a channel for the delivery of illegally extracted black caviar from Khabarovsk to the western regions of Russian Federation. Three Russians detained.	http://www.tvc.ru/news/show/id/125735/?utm_source=news.yandex.ru&utm_content=RSS&utm_campaign=yandex
Russian Federation	23/10/2017	Law enforcement agencies detained a 45-year-old local resident in the **Krasnoyarsk** for illegally catching 2 t of sturgeon meat, 60 kg of black caviar and 7 kg of red caviar found in a house search.	https://iz.ru/662021/2017-10-23/pod-krasnoiarskom-zaderzhali-muzhchinu-za-nezakonnyi-vylov-2-t-osetrovykh
Russian Federation	07/11/2017	In **Khabarovsk** transport police seized 170 kg of black caviar (worth RUB2.5 million) packed in plastic and metal containers from 0.25 to 0.5 l. The accused told the transport police officers that he had been asked to transport fish and caviar from Takhta village to the city of Yunost for a reward.	https://www.dvnovosti.ru/incidents/2017/11/07/74224/
Slovenia	26/10/2015	8.5 kg of caviar from Beluga was seized in Murska Sobota on 18/10/13. The caviar was found in the suspect's personal vehicle and was being transported from the **Ukraine** to **Italy**. The suspect was Ukrainian. The caviar was seized as it was in unlabelled packaging and the suspect was fined EUR300.	CITES Biennial Country Report Slovenia 2013-14 Seizures

Slovenia	26/10/2015	6.8 kg of caviar from Beluga was seized in Ljubljana on 24/12/13. The caviar was found in a postal parcel and was seized due to unlabelled packaging. The caviar was being transported from the **Ukraine** to **Slovenia**. The suspect was Slovenian.	CITES Biennial Country Report Slovenia 2013-14 Seizures
Slovenia	26/10/2015	4.3 kg of caviar from Beluga was seized in Murska Sobota on 16/04/14. The caviar was found in the suspect's personal vehicle and was seized as unlabelled. It was being transported from **Ukraine** to **Italy**. The suspect was Ukrainian.	CITES Biennial Country Report Slovenia 2013-14 Seizures
Sweden	09/12/2015	3.4 kg of Stellate Sturgeon caviar was seized by Customs officials in Stockholm Arlanda Airport on 04/09/13. The caviar had been imported from the **Ukraine to Sweden**.	CITES Biennial Country Report Sweden 2013-14 Seizures
Sweden	09/12/2015	2.3 kg of caviar was seized in by Customs officials in Stockholm Arlanda Airport on 31/07/14. The caviar had been imported to **Sweden** from **Ukraine**.	CITES Biennial Country Report Sweden 2013-14 Seizures
Turkey	29/04/2014	Seizure of 2 kg of caviar at Antalya International Airport on 12/02/14. The passenger, coming from **Russian Federation,** was carrying the caviar in 13 boxes in his luggage.	Robin des Bois. On the Trail No. 4
Turkey	29/04/2014	12.8 kg of caviar in 24 boxes seized by Customs officials at Antalya International Airport in November 2013.	Robin des Bois. On the Trail No. 4

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

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