Sturgeon catch and trade in the Russian part of the Caspian Sea

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The present report summarises information that was collected by TRAFFIC Europe -Russia from many different sources, including those that have to remain anonymous, and includes the results of its monitoring of the Moscow market for sturgeon products.

Front: In Moscow markets, although prohibited, stalls display caviar and meat from Sturgeon (May 1997).

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INTRODUCTION

The former USSR and - since 1992 - the Russian Federation and other Caspian states of the CIS were the major producers of sturgeon products. In Russia, these species inhabit the basins of the Caspian Sea, the Black Sea, the Sea of Azov, as well as large rivers in Siberia and in the Russian Far East. The Caspian Sea and the Sea of Azov contain more than 90% of the world stock of sturgeon.

Commercial fishery of sturgeons in the Volga-Caspian basin has a very old history in Russia. During the last quarter of the 19th century, 480 tonnes (equivalent to 30,000 "puds", old Russian weight unit, 1 pud = 16 kg) of Beluga *Huso huso* were sold every year by F.I. Bazilevsky only, one of the biggest owners of Volga fishery grounds (the so called Sinemorskiye fisheries). Beluga was always considered the rarest of the sturgeon species occurring in the Volga basin. Until the 1860s, the sturgeon production (especially caviar) was almost exclusively delivered to the Russian domestic market. Caviar, even salted, cannot be stored for long. In the absence of railways, transportation over the huge territory of Russian Empire was extremely slow and therefore, export of caviar from the Volga to Western Europe was simply impossible. Russian-produced black caviar started to appear on the European market since the 1860s, after having been exhibited at the Russian pavilion of the World Exhibition in Paris. Until then, Europe consumed caviar imported from North America and in small amounts from the Lower Danube River.

Declines of sturgeon stocks in the Volga River and the Caspian Sea were mentioned by experts already at the end of last century, highlighting unregulated industrial fishing, poaching and fishing in the open sea, combined with massive incidental catch of young fish. Since then, on the fishing grounds in the lower Volga, State police and boarder guards - hired by fisheries owners - fought against poachers, and have not stopped since.

PROTECTION AND LEGAL FISHING OF STURGEONS IN RUSSIA

In the Russian Federation, numerous legal provisions are in place for the protection and use of sturgeons. Federal Laws "On environmental protection" and "On the animal world" apply, as well as Decrees of the Russian Government regulating the protection of valuable fish species, including sturgeons. In January 1993, the President of Russia adopted measures for the implementation of a decree to protect sturgeon stocks in the Caspian. This decree involves means and funding of many Federal Agencies in the Russian Federation. Special divisions of the militia (OMON), special groups of internal security forces and border guards protect sturgeons during the spawning season.

Sturgeon conservation problems in the Caspian Sea and in other basins and rivers in Russia formally receive great attention from federal authorities and from national scientific and fishery organisations. The protection and the fishery of sturgeons in Russia is regulated at federal level. This is the responsibility of the State Committee for Fishery of the Russian Federation, which works in co-ordination with other responsible Federal Government bodies. Within the State Committee for Fishery, the implementation of the decrees and regulations is mainly entrusted on the Department for Protection and Restoration of Fish Stocks and Fishery Regulation (Glavrybvod) via its administrations organised per basin (e.g. Lower Volga basin managing department) and local fishing inspections.

Fishing guards are given the power to fight poachers. They conduct inspections and investigations, penalise infringements, and have the right to use special means and fire-arms in order to stop poaching activities in case of resistance.

The public fishing inspectors, as well as non-governmental organisations (such as the "All-Russian Society for Environmental Protection", and the Russian Society of Hunters and Fishermen) are widely engaged in sturgeon protection in the Caspian Sea basin.

Illegal sturgeon catch can be penalised with fines of 200 to 300 times a minimal monthly wage (83,900 roubles or US$14.6 in May 1997), or of two to five times the monthly wage of the convict, or with imprisonment for 3 to 6 months (Clause 256 of the Criminal Code of the Russian Federation). If a high official used his power and social status to carry-out illegal fishing, or if a group of persons made a preliminary agreement, then this action is punished by the penalty of 500 to 700 times a minimal monthly wage, or by the sum of the convict's incomes during 5 to 7 months, or by imprisonment for a period of up to 2 years combined with deprivation of the right of holding certain positions and carrying-out certain kinds of activity during up to three years. Decree No.515 of the Russian Federation of 25 May 1994 "On fixing tariffs for calculating the financial compensation for the damage made by destruction, illegal fishing or catch of aquatic biological resources" established the following fines for the illegal catch of one single sturgeon individual:

Table 1. Fines for illegal fishing per species (Decree No.515, the Russian Federation, 1994)

Species	Times the minimal monthly wage (total fine in US$)
H. huso, H. dauricus	x 35 (US$ 511)
A. baerii baicalensis, A.sturio, A.medirostris	x 25 (US$ 365)
A.gueldenstaedtii, A.nudiventris	x 14 (US$ 204.4)
A. stellatus and hybrids of sturgeons	x 12 (US$ 175.2)
A.ruthenus	x 3 (US$ 43.8)

Glavrybvod (the Head Department for Protection and Restoration of Fish Stocks and Fishery Regulation) also manages the sturgeon reproduction and restocking programmes in the Caspian Sea basin. Its activities are regulated by rules and provisions that have to be approved by the State Committee for Fishery of the Russian Federation (Roskomrybolovstvo).

In the Russian Federation, trade of food products, including those of sturgeon, is regulated by Rules on Sale of Different food types and Manufactured Goods approved by the Russian Government in October, 1993. Trade in sturgeons and caviar by private individuals is prohibited under the Regulations

for the Protection of Fish Stocks approved by the Government. On this basis, appropriate local decrees were adopted in Astrakhan and Volgograd regions, and the Mayor of Moscow issued a specific Order to that effect as well.

According to Russian legislation, persons found guilty of breaking trade regulations are accountable administratively, materially, and financially.

Export of caviar and other sturgeon products from the Russian Federation is only possible on the basis of Certificates issued by the Russian Ministry of External Economic Relations in compliance with the company's registered export licences, fulfilling customs and sanitary requirements. Live sturgeons are also exported according to this Ministerial Decision, and should be based on the appropriate licenses.

In order to reach a fair division of the sturgeon catch quotas amongst the Caspian Sea States (except for Iran), the distribution of wild populations of sturgeon species in the Caspian Sea basin has been scientifically established. The participation of each State in the Caspian sturgeons restocking programme (artificial reproduction and release of sturgeon fingerlings) is also taken into account. In 1996, the sturgeon catch quotas for Russia makes up 70%, for Kazakhstan 17,6%, for Turkmenistan 6,3%, and for Azerbaijan 6,1%. Azerbaijan and Turkmenistan quotas are not fished in their territorial waters. In the absence of river deltas along their coasts and since sturgeon fishery is forbidden in the open sea, these two countries are only allowed to catch sturgeons in the Volga and the Ural Rivers on the basis of an agreement with the fish management organisations of Russia and Kazakhstan.

Proposals with volumes of allowable sturgeon catch are annually worked out at KaspNIRH (the Caspian Scientific Fishery Institute), and include catch for scientific and fish-breeding or restocking purposes. Table 2 presents this information for the years 1994 to 1997.

Table 2. Annual allowable sturgeon catch 1994-1997 (KaspNIRH)

Year	General allowable catch for the Caspian sea basin (Tonnes)	General allowable catch for the Russian Federation (Tonnes)	Part of allowable catch destined for scientific purposes (Tonnes)	Part of allowable catch for artificial reproduction (Tonnes)
1994	4 462	?	?	?
1995	3 115	1 575.0	160	280
1996	1 791	1 165.4	137	248
1997	1 791	1 165.4	135	250

The established quotas for commercial catch of sturgeons are fully exhausted. Meanwhile, for the past two years hatcheries have not been able to release the numbers of fingerlings planned, essentially because of scarcity of wild mature sturgeon needed for breeding purposes.

LEGAL EXPORT OF SRURGEON AND ITS DERIVATIVES

Data of the State Customs Committee of the Russian Federation indicates that there are 10 major legal caviar exporting companies in Russia, and 5 companies that export sturgeon meat.

Table 3 shows the amount of meat and caviar that were legally exported from Russia in 1995 and 1996, based on figures from to the State Customs Committee of the Russian Federation.

Table 3. Russian exports of caviar and sturgeon meat in 1995 and 1996 (State Customs Committee)

	1995	1996
Caviar	**49 142.9 kg**	**36 075.0 kg**
Sturgeon meat	**42 871.0 kg**	**12 000.0 kg**

Legal export volumes declined by 26,6% for caviar and by 72% for meat during these two years. According to recent data collected by TRAFFIC Europe-Russia in August and September 1997, the volume of caviar exported legally in 1995 was 106,758kg, and 91,346kg in 1996. It should also be noted that 91,346kg of caviar can be produced from some 1,305 tonnes of sturgeon, and that the Russian catch quota for 1996 totalled only 1,094 tonnes (see Table 5).

Main destinations for sturgeon meat from the Russian Federation are Germany, Ukraine, Moldova, and Kazakhstan. Caviar is mostly exported to Germany, Japan, Belgium, Ireland, Turkey, Austria, Finland, USA, Canada, and smaller quantities to several other countries. Export of live sturgeons also takes place. Live sturgeons are mainly purchased at fingerlings stage by European countries where aquarium hobby and sturgeon aquaculture activities are in full development. The USA, Argentina, Uruguay, and several other countries are minor destinations of sturgeon eggs and live sturgeon for aquaculture farms in the world. One of the companies involved in this business is the Russian-Hungarian joint-venture "Propa-Gen". Roskomrybolovstvo (the State Committee for Fishery of the Russian Federation) represents the Russian side of this enterprise.

THREATS TO STURGEON POPULATIONS

In the 1950s, hydroelectric dams not only cut off sturgeons from their main spawning sites, but also change the water level downstream, which reduces the accessibility of remaining spawning grounds to migrating adults (Veshchev 1995). Also, the altered river flow affects the migration of naturally hatched juveniles and juveniles released from hatcheries to the sea (Raspopov *et al.* 1995).

From the early 1970s till the collapse of the Soviet Union in 1991, water pollution increased drastically in the main rivers interring the Caspian Sea, the main sources were oil and other industrial sewage (Dumont 1995; Khodorevskaya *et al* 1997). Particularly in the mid-1980s when a large chemical industry complex released toxic waste in the Volga River. In 1988, the concentration of organo-chlorines was 1gr/L, and high concentration of mercury in were found in sturgeon organes (Luk'yanenko *et al* 1994). Simultaneously, high rates of individuals with "muscle dystrophy" were observed, but the later dropped in the early 1990s (Altuf'iev 1997). Impact of pollution have been observed in other river basins in the Russian Federation. In 1990, following a discharge of toxic substances into the Sea of Azov approximately 55,000 sturgeons died in the area (Volovik *et al.* 1993). High levels of pollution caused numerous anatomical and hsitological abnormalitites in the gonads of Siberian Sturgeon (*A. baerii*) inhabiting most Siberian rivers (Alkimova and Ruban 1995).
In the early-1990s the water level of the Caspian Sea rose by 2.15m (Rodionov 1994). If this rise continues, it will result in covering oil and coastal waste lakes in Azerbaijan. The later are located on land, near the sea shore (Dumont 1995). The coastal waters of Azerbaijan are important feeding grounds of sturgeons during the winter. The central part of the Caspian Sea are threatened by potential contamination from the Gur'evskaya nuclear reactor near Akatai (Kazakhstan) (Dumont 1995).

Since the appearance of new States in the Caspian Sea basin, the major threat to the survival of sturgeon stocks is the legal and especially the illegal fishing stimulated by the demand for "black caviar" on the international market. Some fisheries started to catch sturgeon in the open sea, which was prohibited by Soviet law. Mostly immature fish, inapt to produce roe (caviar), are caught by open sea fisheries, and are therefore particularly armful to sturgeon stocks (Luk'yanenko *et al* 1994). The situation is so critical that Russian experts are discussing the need to completely prohibit the legal commercial catch of sturgeons in the Caspian Sea for 1-2 years (Ivanov et al 1995a).
According to the opinion of expert, the size of illegal catch by poachers equal to or higher than the size of legal catch (Birstein 1996; Khodorevskaya *et al* 1997). Poaching is common in all countries is the region: the Russian Federation (particularly the two Republics of Dagestan and Kalmykia), Azerbaijan, Kazakhstan, and even Iran (there is no data on the situation in Turkmenistan).

In the Black Sea and Sea of Azov basins, the situation is almost the same. Damming in the upper and middle part of the Danube River caused an important drop of the Stellate Sturgeon population (Hensel and Holcik 1997). In the Danube and Dniester rivers, and in the Black Sea, pollution, eutrophication of coastal waters which causes the appearance of temporary hypoxic areas on the sea shelf, and the introduction in the sea of a ctenophore *Mnemiopsis leidyi*, that caused changes of the sturgeon feeding grounds fauna, are the main threats of sturgeon populations (Bacalbasa-Dobrovici 1997). Illegal catch in the north-western part of the Black Sea (Ukranian waters), especially trawling, caused a considerable decrease in population size of Russian and Stellate Sturgeon, and in 1993-1994 as compared to 1991-1992 (Zolotarev *et al* 1996). Poaching also affects Danubian sturgeon populations of both species (Birstein 1996).

In most rivers, lakes and seas around the world, declining natural spawning grounds, environmental pollution, intensive commercial fishery, catch of immature fish, increased poaching, not only in summer time during up-river migration, but especially in the winter season poaching, are the list of threats that brought most sturgeon populations to their present status of depletion. At the end of 1997, the legal commercial catch of Russian Sturgeon totalled some 1,100 tonnes annually, and according to most experts numbers will continue to decline.

STATUS OF STURGEON COMMERCIAL POPULATIONS IN THE VOLGA-CASPIAN REGION

Eleven species of sturgeons inhabit the waters of the Russian Federation. They belong to the genera *Acipenser* spp. and *Huso* spp. Many are subject to commercial catch, and all of them are included in the Red List of Threatened Animals (IUCN 1996). The following species and subspecies are protected and listed in the Red Data Book of the Russian Federation, and their catch must thus be considered illegal: Green Sturgeon (*Acipenser medirostris*), Common (Atlantic) Sturgeon (*A. sturio*) and Baikal Sturgeon (*A. baerii baicalensis*), according to recent scientific work the Sturgeon population of the Baikal has been classified as Siberian Sturgeon and is not a subspecies (Ruban 1997 and 1998). Experts consider that the Caspian Sea and the Sea of Azov basins contain more than 90% of the worlds sturgeon stocks. In the Caspian Sea basin, Russian Sturgeon (*A. gueldenstaedtii*), Persian Sturgeon (*A. persicus*), Stellate - or Starred - Sturgeon (*A. stellatus*), Great Sturgeon - or Beluga - (*Huso huso*) and Sterlet (*A. ruthenus*) are commercially exploited. In the Azov Sea basin commercial catches target Beluga, Stellate Sturgeon, and Russian Sturgeon.

The three main commercial species of sturgeon are Giant (beluga), Russian and Stellate Sturgeon. The According to some scientists Persian Sturgeon (*Acipenser persicus*) is the fourth species caught for commercial purposes, mainly caviar production, but the taxonomic status of this species is still under revision (Birstein and Bemis 1997). Ship Sturgeon (*A. nudiventris*) is also targeted for its roe. The later is processed into one of the varieties of "*osetrova*" (or "*oscietra*", while the roe of Stellate Sturgeon is processed into "*sevruga*", and the one of Giant Sturgeon into "*beluga*") caviar (Susanne Taylor, Dieckman and Hansen Caviar, *pers. com.* November 1997), as are other species occurring in Russian waters, namely Siberian Sturgeon (*A. baerii*), Amur Sturgeon (*A. schrenckii*), and Kaluga (*Huso dauricus*) caught in Siberian rivers and in the Russian far east.

Russian Sturgeon (*Acipenser gueldenstaedtii*)

In 1994, the Russian Sturgeon catch represented 77% of the entire sturgeon harvest (Ivanov et al 1995b). Natural reproduction of the population occurs in the Volga river, where its natural breeding grounds were estimated to be around 1000 hectares before dams were constructed on the river and blocked fish migration, in particular the Volzhskaya Dam. Since then, the natural spawning area declined by 80%. The highest legal harvest of Russian Sturgeon in the region were recorded from 1975 to 1985, with an annual average of 10 to 13 thousand tonnes, while the numbers of migrating breeders recorded annually fluctuated from 1 to 3.8 million fish. According to estimations of experts of fish management research organisations, the Russian Sturgeon spawning population did not exceed 510 thousand individuals in 1996.

The decrease in Russian Sturgeon catch has been mainly caused by inadequate regulation of the catch (Artyukhin 1997). During the last decade, sturgeon were caught in summer, when fish from the summer spawning population (85% of the entire population of the Volga basin) migrated into the Volga river. Most were harvested, and very few adults could reach the spawning grounds. As a result, natural reproduction of Russian Sturgeon dropped drastically, while the caviar market was flooded with oscietra caviar of very poor quality made of the roe of immature females.

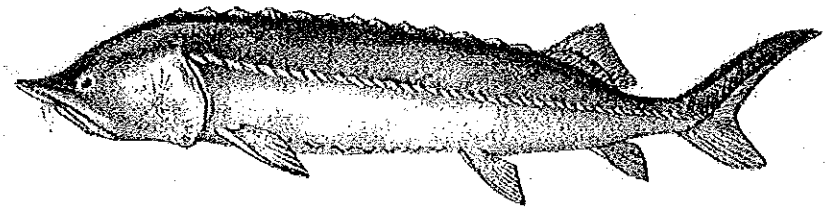
In the early 1990s, the natural reproduction of *Acipenser gueldenstaedtii* decreased to 830 tonnes because of the low number of sturgeons reaching the spawning grounds (Khodorevskaya *et al* 1997). All authors conclude that spawning populations in the other rivers of the Caspian Sea basin became minimal (Vlasenko *et al* 1989; Levin 1995; Khodorevskaya *et al* 1997).

Since 1992, the main cause of the decline of Russian Sturgeon stocks in the Caspian and Black seas was the enormously high level of unregulated fishery in the sea by bordering states, combined with considerable poaching (Artyukhin 1997; Birstein 1996; Zolotarev *et al* 1996; Khodorevskaya *et al* 1997). Practically all spawing fish are caught by poachers before they reach spawning grounds in the Volga River below the Volgograd Dam (Artyukhin 1997).

Persian Sturgeon (*Acipenser persicus*)

The taxonomic status of *Acipenser persicus* is not clear (Birstein and Bemis 1997). Some Russian authors name the Caspian Sea population as *A. persicus persicus* Borodin 1987, and the population inhabiting the Black Sea as *A. persicus colchicus* Marti 1940 (Artuykhin and Zarkua 1986; Pavlov *et al* 1994)

Beluga (*Huso huso*)



The natural distribution of Giant Sturgeon (Beluga, *Huso huso*) is not limited to the Caspian Sea. The fish used to be common in the Black Sea, the Sea of Azov, the eastern part of the Mediterranean Sea and their tributaries. However, since 1972 there were no reports on this species in the Po River (Rossi *et al* 1993), because of the damming of the River Beluga does no longer occur in the upper Danube (Hensel and Holcik 1997), and only small individuals were reported in 1995 in the lower Danube (Birstein 1996). As for the Russian Sturgeon, decrease in numbers of Beluga is linked to open sea fishing operations by Caspian Range States, intensive commercial fishing, environmental pollution and considerable poaching.

Because of its high individual weight, Beluga has the highest commercial value for caviar. Official statistics show that maximal catches in the Soviet period (2,200 tonnes) were registered in 1949. Gradual declines are recorded since 1970. In 1995, the maximal allowable catch in waters of the Russian Federation was 940kg.

At present, the spawning population of Beluga in the Volga River consists mainly of fishes that hatched after the artificial regulation of the water flow in the Volga River had started (Khodorevskaya *et al* 1997). The structure of this population has changed drastically. For instance, Beluga breeders seem to be smaller: between 1971 and 1973 the average weight was 110kg, while between 1989 and 1992 it was 63kg (Khodorevskaya *et al* 1995). The rate of mature female entering the Volga River decreased from 50% in 1980 to 17.6% in 1990, to the point that hatcheries and restocking facilities experience enormous difficulties to find mature females nowadays. The conservation status of the species is now considered critical, as shown by the sharp drop in numbers of mature breeders migrating upstream.

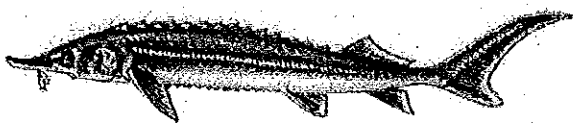
The scarcity of sturgeon breeders caused most hatcheries on the Volga River to close. In 1995, only 80 beluga females were caught in the northern part of the Caspian Sea, and of those, 35 females were used for artificial breeding (Birstein 1996). This number is not sufficient raising of juveniles. For the same reason, in the Sea of Azov basin, hatcheries located on the Don River stopped to release of beluga juveniles in 1992, but a hatchery located on the Kuban River, successfully raised and released 116 thousand of beluga juveniles in 1994 (Savel'eva and Chebanov 1995).

Stellate (Starred) Sturgeon (*Acipenser stellatus*)

In the northern Caspian Sea, this species has two distinct populations, each associated with the two major breeding rivers, the Volga and the Terek.
The maximal catch of Stellate Sturgeon in the Volga river (5,200 tonnes) was registered in 1986. Since 1993, particularly sharp declines in catch and numbers of Stellate Sturgeon have been recorded. The main reasons are open sea fishery (Stellate Sturgeon migrate all over the Caspian Sea), and similar factors that cause problems for Beluga and the Russian Sturgeon.
The Stellate Sturgeon population of the Terek River is small, during recent years, the legal annual catch did not exceed 150 to 300 tonnes.

Due to the over-regulation (dam construction and pumping of water for agriculture) of the Dagestan rivers, natural reproduction of Stellate Sturgeon almost completely ceased. Alterations of the Volga River flow allow fewer Stellate Sturgeon to reach the spawning grounds (Veshchev 1995). Only restocking hatcheries in Dagestan maintain the populations, but the activities of the Sulaksky fish-breeding farm are now minimal, and the hatchery in Tersky stopped operating because of the civil unrest in Chechenia. The Terek population of Stellate Sturgeon is under massive illegal poaching pressures, and its numbers are decreasing quickly.
In 1993, 9.7 million and in 1994 12.3 million juvenile Stellate Sturgeon were released from these hatcheries in the Volga River. In 1994 and 1995, scarcity of Stellate Sturgeon breeders, source of seeds for the artificial rearing, prevented the work of hatcheries located near the Volgograd Dam (Artyukhin 1997). In 1996, only 2 to 4 hatcheries were still operating in the Volga River delta.

Sterlet (*Acipenser ruthenus*)



Sterlet occurs in the Caspian and Black Sea basins, and the Siberian river systems of the Ob, Irtysh, and Yenisei which enter the Kara Sea. The Danubian population declined drastically since the construction of the Iron Gate II Dam in 1984, and currently *Acipenser ruthenus* practically disappeared in the lower Danube. The species is extinct in the German section of the Danube River, it is endangered in the Austrian section, greatly diminished in the Slovakian section, and has practically disappeared from the lower Danube River (Jankovic 1995; Birstein 1996; Bacalbasa-Dobrovici 1997; Hensel and Holcik 1997). On-going construction of the Gabcikovo hydropower station further threaten Sterlet in the uppermost part of the middle Danube and the lower course of the Morawa River (Hensel and Holcik 1997).
Because its roe can not be processed into "black caviar", this species has always been of secondary importance in the Caspian sturgeon fisheries. In recent years, its numbers remained stable, and have even increased in several parts of the Volga basin. The legal catch totals 250 tonnes annually. As all sturgeons, Sterlet is also targeted by illegal fisheries.

STURGEON RESTOCKING PROGRAMME

At present, the populations of all sturgeon species in the Caspian Sea rely on both fish from wild origins, and fish that were artificially reproduced. The analysis of long-term data shows that since the construction the dam near the city of Volgograd and the associated normalisation of the Volga River run, a constant decline in effective natural sturgeon reproduction has been observed. From 1991 to 1995, sturgeon breeding stocks that naturally reproduce decreased from 12,400 tonnes to 1,500 tonnes, and the current population is only slightly larger than the Russian annual fishing quota for this species in the Volga River basin.
In addition to the loss of spawning grounds, the major reasons for decreasing natural reproduction rates are:

- massive illegal catch of breeders during their migration to spawning grounds;.
- water pollution, with pathological effects on the development of the gonads of adults and, accordingly, during gametogenesis;
- some experts claim (while others disagree) that disturbances of the homing instinct of adults (possibly more significant with animals originating from hatcheries) may prevent breeders from migrating up-river, and consequently ripe eggs and the sperm would be resorbed.

The 10 restocking facilities in the northern part of the Caspian (8 on the Volga River, one on the Terek River - not operating now - , and one on the Sulak river) are not able to compensate the depletion of natural breeding populations. Hatcheries report the release of 50 to 60 million individuals of less than 4cm length whereas, according to hatcheries managers, sustaining the Caspian population level of all sturgeon species would require the release of at least 150 million young sturgeon at that premature age.

According to KaspNIRH estimations from the 1960s till the 1980s, of the amount of sturgeon caught by the Volga-Caspian fishery the portion of fish coming from artificial breeding operations ranges from 25% to 90%, depending on the species.

Table 4. KaspNIRH 1960s-1980s

Species	% captive bred in total catch
Russian Sturgeon	25-27%
Stellate Sturgeon	25-30%
Great Sturgeon	more than 90%

The efficiency of the sturgeon restocking programme deteriorated during recent years. Technicians and experts working in the hatcheries point-out different reasons:

- lack of up-to-date methodology for the reproduction process such as unnecessary sacrifice of the breeders instead of applying abdominal pressure for extraction of oocytes and sperm;
- release of juvenile at premature age, too small and deprived of natural protection (e.g. scutes) which make them extremely vulnerable to numerous predators (e.g. Caspian perch);
- decreasing discipline and technical precision in the work, causing high stress both for breeders and juveniles;
- stealing of breeders and caviar at the hatcheries;
- use of polluted water for incubation of eggs and raising young (pollution levels are sometimes worse than in the Volga River itself);
- almost 100% of the juveniles show abnormalities (usually 2 or 3 at the same time) that appeared during embryonic development. A total of 23 morphological deformities have been observed, for instance absence of the abdominal cavity, nostrils, eyes, accretion of the gill lids. Many do not permit normal development of the juveniles. Causes maybe diverse, from water quality (e.g. presence of heavy metals and other pollutants), to nutritional deficiency (e.g. lack of fatty acids);

The collapse of sturgeon populations in the Volga-Caspian basin can best be illustrated by showing the trends in sturgeon catches. These figures are the result of surveys by scientific-fishery organisations in the region, and reflect the estimated numbers of sturgeons in the wild. As table 5 indicates, catch volumes and, accordingly, sturgeon numbers, decreased fifteen fold over the last fifteen years. Most experts, scientists and technicians agree that in a couple of years sturgeon numbers will have declined to the point that the commercial fisheries will close.

Table 5. Catch of sturgeons in the Russian part of the Volga-Caspian basin (tonnes) (Roskomrybolovsto, 1997)

Year	*A. gueldenstaedtii*	*H. huso*	*A. stellatus*	Total
1981	13 310	560	2 980	16 850
1991	5 020	360	2 710	8 090
1992	3 790	300	2 410	6 502
1993	2 260	290	1 340	3 890
1994	1 490	147	1 470	3 110
1995	1 130	94	966	2 176
1996				1 094

The state of affairs is no secret to the Roskomrybolovstvo. But also for this department, exportation of sturgeon caviar guarantees a significant income. One of the members of the Committee commented "Yes, the sturgeons stock in the Volga will only last for another few years. So lets quietly continue catching for another two years, and lets than have all sturgeons listed in the Red Data Book".

ILLEGAL CATCH OF STURGEONS IN THE VOLGA-CASPIAN BASIN

Poaching and illegal fishing are amongst the main factors that affect sturgeon populations in the Caspian Sea. According to estimates from independent experts and KaspNIRH researchers, its proportion maybe up to 100%, and even 600% in the Lower Volga delta region. Poachers are usually aware of the migration routes of sturgeons. For many of them, this fishery is a permanent occupation.
It is extremely difficult to estimate illegal catch volumes. Experts assume that the volume of sturgeons poached in the region is roughly equivalent to official fishing quotas fixed for the legal fishery. It is even more difficult to estimate catches in the open sea, which are highly illegal, but indirect data (as indicated below) suggests that they are significantly high.
Illegal fishing is conducted by private citizens, and by fishermen using private as well as state-owned vessels and fishing gear on the Volga River, in the Astrakhan and Volgograd regions, and in the Caspian Sea bordering the Republics of Kalmykia and Dagestan.

River poaching is done by individuals with boats, self-catching hook-on-line gear, and large-mesh fish-nets (so-called "akhans" and "rezhaks") which are placed on migration routes of sturgeons. Lines with hooks are set for long periods of time, and usually checked once a day (at night or early in the morning). The catch is usually sold to one single trader who buys up. In the lower Volga, there are also other ways to "catch" sturgeons, such as collecting "dues" (up to one third of the total catch) or looting fish from legal fishing brigades by armed robbers, or stealing breeders from the hatcheries.

The catch of sturgeons in the open sea was completely prohibited by Soviet legislation in 1962. During recent years, it has however become a widespread activity in the new Caspian states (former republics of the USSR) and in Russia. In Russia, sea fishing for sturgeons has reached unprecedented levels in the Republic of Dagestan, where practically the entire coastal community is involved in illegal fishing and processing of sturgeons and sturgeon products. Very high level government officials have interests in the business, as well as fishing inspectors, police forces and other agencies. The Republic's militia patronises the poachers and gives protection in case of conflicts with the Federal authorities.

In coastal waters, individual poachers catch fish from motorboats and small boats. Unconfirmed sources claim that early 1997, they paid some 4 million roubles (US$ 800) monthly to local fishing guard and river militia for each motorboat. These boats fish illegally all year round, except for the period of storms (December - early January). Large-mesh nets are used in this type of fishery, that are set star-like, covering a wide space in all directions. The fish is given to the "host" who controls the catches of the relevant portion of the sea coast. In the season 1996-1997, "hosts" would buy sturgeons from their poachers for 16,000 roubles (US$ 3) per kilogram of "live" weight. Since caviar represents some 7 % of the fish weight, fishermen receive 1,120 roubles (US$ 0.2) per 70gr of caviar. The "host" arranges the processing of the fish. The caviar is separated and either given to a second dealer, or packed in the "company's" glass jars (per 113gr and 56.8gr) or tins (90gr) in a very primitive manner. The fish meat is frozen. These poachers usually process and cut up the fish under very sloppy and unhygienic conditions, and the caviar is dirty, sometimes sand can be found.

In Dagestan, most of the sturgeon open sea fishery is conducted by regular trawlers. All these vessels have licenses to catch common fish species, but most are actively engaged in catching sturgeons. According to some informants, several high officials in Dagestan have "their" own trawler: the Procurator of the Republic, the Minister of Internal Affairs and the Chief of the Water Police have two trawlers each, the Chief of the Fish Inspection one, and so on. The number of trawlers and the tonnage usually correspond to the position of the official in the local hierarchy. Fish caught by trawlers is accurately and competently processed, although the quality differs considerably from the Federal State Standards (GOST).

At present, the struggle with sturgeon poachers and illegal caviar traders can not be conducted in a very active way. At the same time, it is necessary to clearly understand that notwithstanding the wide powers given to the staff members of the fisheries guards, this battle is hardly effective. The inspectors are technically not well equipped and earn low salaries. On the other hand, the financial powers of the local caviar Mafia penetrate governmental levels, and there is massive corruption amongst fisheries guards and the river police (militia) in the lower Volga and the Caspian Sea. These agents apprehend individuals that try their luck, or that failed to pay the necessary bribes. Table 6 shows that in the

period from 1991 to 1995, during which sturgeon poaching on the Volga and the Caspian reached unprecedented industrial levels, the number of registered offences remained almost stable.

Table 6. Offences of sturgeon fisheries laws in the Volga-Caspian basin in 1991-1995 (Russia)

Year	Number of offences	Sturgeons confiscated, tonnes (1 000 kg)	Caviar confiscated, tonnes (1 000 kg)	Number of arrests/offenders
1991	5 300	42.70	6.10	500
1992	5 100	53.10	12.00	499
1993	4 600	72.00	12.60	420
1994	5 200	173.10	9.40	535
1995	5 400	288.00	12.20	797

The efficiency of the fisheries guards probably decreased.
Since 1994, in the lower Volga and northern Caspian the "Poutina" ("Fishing Season") operations are being carried out during the period of sturgeons spawning, with participation of the special subdivisions from the other regions of the country: militia special detachments (OMON) and special groups of the internal forces allowed to keep pressure on the poachers to the previous level, and even to increase it in 1995. In 1994, during these military operations, more than 5 tonnes of caviar and 150 tonnes of sturgeon flesh were confiscated from people engaged in poaching and illegal trade of fish products, 5 underground shops for caviar processing were closed, 142 units of illegal fire-arms were confiscated. In 1995, the same military operations confiscated 11 tonnes of caviar, closed 19 shops and 365 units of fire-arms; in 1996, 8.3 tonnes of caviar were confiscated, 34 shops and 944 units of illegal fire-arms closed. These data testify the growing criminality in illegal sturgeon fishery. According to the information published in the Russian press, as the result of carrying out the "Poutina" operation in 1996, the total amount collected for penalty from poachers, and from people engaged in illegal processing and trade, has made US$ 20 million, while the value of legal exports did not exceed US$15 million.

The marine boarder guards on the Caspian proved to be less corrupt and able to put significant pressure on poachers. This can be explained by the fact that the frontier guards officers, as a rule, are not natives from those regions where they serve in the armed forces, they live isolated enough from the local population and are not personally connected. At the same time, the staff of the militia and the fish guards are recruited completely from the local dwellers. In 1995, the border-guards arrested 15 trawlers engaged in illegal sturgeon catch in Russian territorial waters of the Caspian Sea. In accordance to the juridical procedure in force, the vessels, poachers and materials of the cases were brought to the legal bodies of the Republic of Dagestan, therefore poachers were not punished. Anti-poaching activities of the boarder guards created conflicts with the local militia defending the interests of the local caviar Mafia. The following incident was described in the "Izvestia" newspaper.

The industrial trawler "Kamilia" was arrested by the custom group of the boarder guards not far from the mouth of the Sulak River in Dagestan. The vessel was caught during trans-shipping of the illegal sturgeon catch to the two "KamAZ" heavy-duty lorries. While attempt was made to stop the operation, the corrupted official "water militia" (controlling navigation on rivers and coasts) armed with sub-machine guns, threatened to open fire to the boarder guards detachment. As a result, the lorries with illegal catch guarded by the private militia safely disappeared. It should be added that the trawler "Kamilia" has been arrested by the boarder guards many times because of illegal sturgeons fishing in the open sea, but no measures were taken against the poachers by the legal bodies of Dagestan.
In November 1996, anger of the caviar Mafia raised by the actions of the boarder guards resulted in the explosion of the dwelling house in the city of Kaspiysk where the families of the boarder guards officers lived. End of April 1997, the Russian mass media reported that a powerful explosive device was found in one of the houses in the city of Kaspiysk. Fortunately the prime was removed from the bomb before explosion.

During the last period, caused by growing resistance of the border guards forces and their blocking of several channels of illegal caviar trade, the Dagestan caviar Mafia started to export through Azerbaijan (where own "caviar smart dealers" are active) to Turkey and further into Europe.

ILLEGAL TRADE IN STURGEON PRODUCTS IN MOSCOW

The fish and caviar business brings considerable profits, covering the cost of its organisation and bribes for officials' "assistance". Traditionally, there is a significant demand for sturgeon products on the Russian and on other CIS markets, as well as in Western Europe. The ultimate goal of both legal and illegal caviar traders is to sell their commodities to the West. Apparently, many traders are successful in this matter. DNA analysis of caviar samples purchased in New York has shown that caviar can come from protected species, or be of a different type than the caviar mentioned on the label. Such caviar may be smuggled out of Russia, or exported with forged documents, i.e. lack of efficient custom control.

Official data from the State Customs Committee of the Russian Federation for 1995 and 1996 contain only one record of an attempt to illegally export caviar, involving the seizure of 130kg of caviar at the border. Prosecutions were initiated.

Few companies have the possibility to ensure the proper quality of their products, even with regard to health (organoleptical). Therefore most of sturgeon products manufactured in the Caspian region are sold on the domestic market.

Sturgeons caught illegally, their meat and caviar, are partially sold in the cities and villages of the Caspian region, including Astrakhan, Makhachkala, Volgograd, Elista, Derbent, and Caspiysk. Large shipments of processed fish are sent to larger cities, mainly in the Moscow region, and sold through retail and wholesale networks with false documents.

Through a Decree of the Mayor of Moscow of 13 June 1993, it is prohibited for a private citizen to trade caviar. But on Moscow markets, there are always people illegally selling sturgeon products (meat, balyk - smoked sturgeon fillets, caviar) processed in factories or at home (in glass jars). Late in March 1997, Moscow fish inspectors raided four markets in Moscow (in Novogireevo, Zhulebino, and two in Novo-Kosino), and confiscated some 1,500 cans of caviar (113gr and 56.8gr each) and more than 700 jars of balyk.

In the Moscow region, the largest amount (up to 80%) of poached sturgeon meat and caviar comes from Dagestan. Other source are the Astrakhan and Volgograd regions, the Sea of Azov (particularly people from the town of Slavyansk-on-Kuban), Kalmykia and Ukraine.

Transportation

Most of the fish is transported overland by sheltered lorries.

Fish that was poached by individuals needs to be moved in a secretive manner. For this purpose, special crates are mounted on the bottom of the lorries, where the frozen fish can be stored and covered by other cargo. In 1998, a guaranteed safe transit of such a lorry filled with fish from the coast to the Dagestan border is said to costs 15 million roubles (US$ 3,000). Some money is then paid at the control point in Volgograd, but some lorries avoid it, and cross the Kalmyk steppe directly to the city of Voronezh.

Recent information suggests that some buses are now also equipped in such a way.

The transport of fish caught by trawlers is carried out with the necessary documents, but with forged seals of Astrakhan fishery factories. These documents (way-bills, certificates of quality) quite often contain characteristic mistakes indicating that a non-native Russian established them. Moreover, some large companies are used to launder sturgeon products, for instance an important transit point for sturgeon flesh is in one of the large cold storage in Voronezh. There, the goods come out with the documents of this group of enterprises.

Some fish is also flown into Moscow, mostly from the military airports of Dagestan, while some is also smuggled in the freight wagons of the train Kizlyar-Moscow.

Caviar trade

The caviar is sold in Moscow in "factory" jars of 113gr, 56.8gr or 28.4gr. Recently, 100 gram glass jars have also appeared (the caviar is apparently of illegal origin). Caviar is also available in tins per 90 gram, in big tins of 550 gram, and by weight in small glass jars on markets and as a dish in restaurants and cafés.

Illegally produced caviar goes to Moscow in "factory" cans or in simple package (usually in 3-litres glass jars), and is packed in smaller jars in Moscow often in the retail shop itself. Then it is sold to customers as well as via cafe, restaurants, etc. Caviar is sometimes retailed by weight on markets, but sellers are cautious and do not easily reveal the origin of the product.
Tins usually come from Dagestan, although small underground factories operate in Astrakhan as well. In addition, caviar sold directly by weight may come from Kalmykia and sometimes from the Azov region. With the exception of the most exclusive places, most - if not all - supermarkets, shops, restaurants and cafés in Moscow have illegal caviar for sale. During a control of the "Unicor" supermarket in Krylatskoye, one of the most prestigious districts of Moscow where the President of Russia and many other high officials live, ten 3-litres jars of caviar were discovered in the cold store, together with the packaging and marking equipment hidden in the cellar.

The quality of illegal caviar ranges from quite good to inedible and even dangerous for the health, depending on the transport conditions and the origin. Caviar that is made domestically by small producers in Dagestan villages may actually be inedible. The caviar in the can may be covered with oil, or may be rank. It comes from catch of individual poachers (using boats) with gross violation of the GOST standards and of elementary sanitary and hygienic requirements. The caviar may be trodden down to the jars while packing. Some cans contained hair and sand.

There is also a lot of good caviar of poached origin. This caviar is apparently processed on trawlers with industrial equipment.

Small underground factories for packing caviar were also found in Moscow. Marking machines that put dates on jars have been confiscated, as well as machines for automatically sealing and dating caviar lids. Almost all this illegal caviar was produced in December, January, February, March when the fishing season was closed, and when there could be neither fish caught nor caviar produced legally.

The same situation exists also in commercial stalls and in most shops. Out of fear of confiscation, salesmen only keep a few (6-10) jars of caviar. The rest is stored in another place.

Retailers of illegal caviar also manage to manufacture imitation of official lids for jars. According to the inscriptions on the lids, the caviar was made for the export and all the inscriptions are made in English. Grammatical and factual errors betray its domestic origin.

With a few exceptions, the price for caviar in Moscow is lower than the retail prices practised by caviar factories. The survey of caviar trade in Moscow shops (November-December 1996) also indicated that for 80% of the sites explored, the "quality certificates" and the copy of the certificate of origin that should accompany each cargo of caviar tins and jars, were probably forged. Both the low price and the fake documents suggest that this caviar was from poached sources.

End 1996 and early 1997, the prices for caviar in Moscow per 113gr jar ranged from 50,000 roubles (US$ 8.5) for caviar of dubious origin in small wholesale markets, to 280,000 roubles (US$ 48.6) for legally produced caviar in larger shops.

Trade in sturgeon meat

Fish on sale in Moscow comes mostly from Dagestan, and to a lesser extent from Kalmykia, from the Volgograd and Astrakhan regions, and from the Sea of Azov. Fish caught in the Black Sea in the Krim (which is strictly prohibited by Ukrainian legislation) is also observed, but quite seldom.

The large cold storage facilities in Moscow (10 in total in the Moscow region) lease their premises to different companies, which may be engaged in the sale of illegal sturgeon products. From 3 to 50 tonnes of illegally caught sturgeons can be found in each factory, depending on the season and the case. The stocks are quickly purchased by cafes, restaurants, small traders in small shipments (100, 200, 300 kg) and retailed on Moscow markets. So in 1996, on one big Moscow market only, Cheremushkinsky, about 20 tonnes (and more) of frozen sturgeon flesh of different species were sold monthly. On this market, meat and caviar of sturgeons from the Sea of Azov is often available. The price of sturgeon meat on markets in the Moscow region fluctuates from 30,000 roubles (US$ 5.2) to 120,000 roubles (US$ 20.8) per kilo. The stocks that are kept in cold storage are actively processed by numerous companies. Salting and smoking of the fish is done with industrial equipment. The commercial value of these products thereby increases at low investment costs, while the sometimes poor quality of the fish can be effectively hidden. In the Moscow region, 30 to 50 processing factories are operating. After smoking, the production is packed. Cold smoked sturgeon meat is called "narezka" (fish cut in small pieces and vacuum packed). Based on a survey made in the Moscow region by official Russian inspectors and TRAFFIC consultants in 1996-1997, mainly through examination of certificates in shops it is estimated that 100% of fresh sturgeon meat, packed and sold by weight in Moscow shops, is of illegal origin, and perhaps 90 to 95% of the "narezka".

In the course of 1996 and 1997, "Goods and prices", a weekly advertisement magazine, constantly offered processed and chilled sturgeon. Advertisement of devices for sturgeon meat processing (automatic cutting and canning machines; salting and smoking installations) are frequent.

Sturgeons that come to the Moscow region (usually from Dagestan) can be not only refrigerated, but may already be processed. These are usually either smoked half carcasses of the sturgeons, or canned smoked fish. These smoked half carcasses of sturgeons made in Dagestan are generally of very low quality, and are therefore rarely found on sale in Moscow itself, but rather in the vicinity of the capital for 40,000 to 80,000 roubles (US$ 7 to 14) per kilo. Canned sturgeon can be found everywhere for 22,000 to 38,000 roubles (US$ 3.8 to 6.6) per 180gr can.
In 1996, the origin of the production used to be marked on the tins as "Makhachkala" (the capital of Dagestan), but it was changed into the inscription "Astrakhan, the Kirovsky factory". However, the contents of the tins leave no doubt that it was not produced in Astrakhan, but in Dagestan. Indeed, pieces of cold-smoked beluga, cut crudely into pieces by knife, sometimes stale, are found in the tins. It is possible that the underground factories in Dagestan have used up the old stock of tins, and that new ones were purchased in Astrakhan. According to estimations of TRAFFIC observers in 1996 and 1997, 90% of the tins with balyk for sale in Moscow shops, and 100% of the tins sold on markets, are of illegal origin.

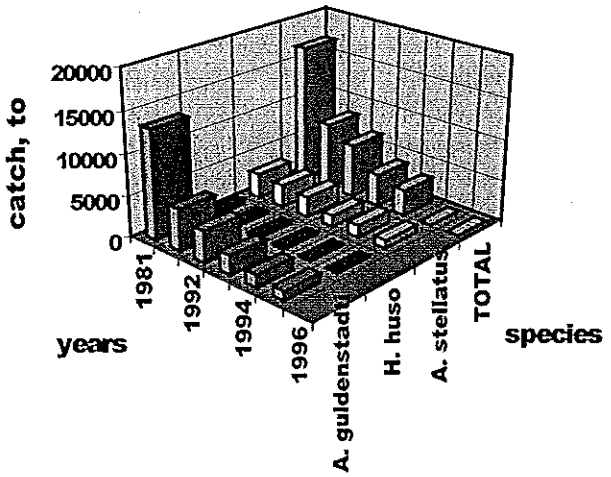
According to the most cautious calculations, in 1996 and 1997 about 10 tonnes of illegally caught sturgeons were brought to Moscow everyday, or 3,650 tonnes per year, i.e. about 3.5 times the total annual quota for sturgeon catch in the Russian Volga-Caspian region. Some observers consider this estimation at least 2 times understated.

According to estimations of specialists of the Moscow Basin Fish Guard Department, at present (1997) about 50 independent permanent transporters of illegal sturgeon products are operating in and around Moscow. They work hand in hand with about 10 big cold storage. There are indications that the trade is getting more centralised and harmonised. Prices for the different products are equalised. Stable "tariffs" were fixed for paying the allegiance of government agencies. A system to guarantee safety during transportation has been set-up to reduce the risk of robbery to the minimum. There are indications that this particular part of the sturgeon business it in the hands of Chechenian criminal groups.

CONCLUSIONS

1. Commercial sturgeon fishery in Russia has a long tradition. The export trade started since the last one third of the XIXth century.

2. For many years, a constant decline in sturgeon numbers has been recorded in the Volga-Caspian basin. The decrease became very significant in recent years, particularly since 1992. This is illustrated by the following chart showing the legal sturgeon catch in the Volga River:



According to experts, the major reasons for the decline are:

   a. Disturbance of the natural reproduction of the population as a result of dam construction;
   b. Highly profitable and uncontrolled trade with sturgeon products, which in turn caused poaching to escalate to an unprecedented commercial scale;
   c. Environmental pollution causing anomalies in the gametogenesis and the development of sturgeon juveniles;
   d. Obsolete technology for breeding, stock enhancement and artificial reproduction.

3. Notwithstanding the former high level of legal protection, the sturgeons in Russia are subject to intensive illegal catch, which is not a new phenomenon, but existed in the past as well.

4. The illegal catch of the Volga-Caspian sturgeons is taking place both in rivers and in the sea. The river fishery is conducted by individual poachers. Buying, processing and transportation of the production is well co-ordinated. The catch in the sea is mostly carried out in the Republic of Dagestan, where a great number of people is involved in this business. The highly organised sturgeon fishery, including processing, transport and sale of the production, the active participation of staff of governmental agencies, police forces and the ruling elite of the Republic to ensure safety and continuity of this activity indicates that the so-called "caviar Mafia" in Dagestan is successful.

5. The volume of the illegal catch of sturgeons in the Volga-Caspian basin is difficult to estimate, but indirect data suggests it exceeds the legal catch by 4 times and probably more.

6. Trade in the illegal sturgeon production is a highly profitable business allowing to pay for the allegiance of fisheries guards, and of the staff in other enforcement agencies. There is no real control over the export of caviar.

7. Caviar is partially exported, and partially consumed on the domestic market (principally in the Moscow region). Elaborated networks exist in Moscow for the final processing of the illegal fishery products and for further selling through wholesale and retail circuits, as well as a network of public catering services (restaurants, cafeterias). An estimated 90 to 95% of the sturgeon products that are

sold in Moscow, and which can be seen everywhere in the city, are of illegal origins. According to prudent estimations, the volume of illegal sturgeon meat sold annually in Moscow equals 3.5 times the legal annual catch quota for sturgeons in the Russian Federation. At the moment there is no single Mafia control over the Moscow sturgeon market, but all the preconditions for forming such a centralised structure in the nearby future already exist.

8. If the current trends are maintained, most specialists agree that the populations of Caspian sturgeons will be reduced in a few years time to levels that will no longer allow commercial fisheries.

9. The practise of recent years (1994-1996) has shown that large-scale police interventions and even military operation against poachers are not effective without permanent and efficient controls over the trade of sturgeon products and severe sanctions against illegal trade. The inclusion of all sturgeons in CITES appendices allows to create a good system for international control over the sturgeon trade and for decreasing the quantity of products of illegal origin on the international market.

RECOMMENDATIONS

The process of depletion of commercial sturgeon species in the Volga-Caspian basin is rapidly drawing to its catastrophic end. The following measures must be taken to prevent it:

1. Development and adoption of a state program for natural sturgeon populations restoration. The program must include the following items:

    - measures aimed at restoration of the sturgeon spawning grounds located downstream of the hydroelectric dams;

    - investigating the possibility of creating new artificial spawning grounds and development of fish populations homing on them;

    - reconstruction of hatcheries and introduction of modern technologies for sturgeon reproduction on the following aspects:

        a) repeated usage of breeders and establishment of permanent broodstocks for each species;
        b) selective work aimed at elimination of the breeders producing invalid offspring and prevention of releasing young fish with genetic abnormalities into the wild;
        c) decrease and further elimination of the negative impact of pollutants on breeders and young fish through the construction of independent water supply or effective water treatment for pesticides, oil products, heavy metals, etc.;
        d) elaboration and practical application of the protocol of introduction in the wild of grown-up fingerlings adapted to natural food sources. This would greatly increase the efficiency of the sturgeon restocking programme by preventing the heavy loss of juveniles due to stress and predation before they reach the open sea;

    - research of factors affecting gametogenesis in the broodstock and early ontogenesis in embryonic development. Pending results of the research, develop strategies for improvement of situation, for instance more appropriate artificial feed.

2. Strict control over all means of utilization of sturgeons.

    - control over export, import, and re-export of sturgeons and their derivatives according to CITES provisions must be performed. A harmonised State labelling system of sturgeon specimens for export must be developed, adopted and put into practice. It can be done only with financial and managment support by the other CITES Parties concerned, both range States and importing Parties in accordance with Resolution Conf. 10.12.

    - tighten national legislation regulating trade in sturgeons products. High profitability of the illegal trade in the sturgeon products must be taken into consideration, it is necessary to strengthen the application of penalties with obligatory confiscation of the products in all cases of violations.

    - tighten national legislation regulating sturgeon fisheries and increase penalties for sturgeon poaching in order for illegal activities to be less profitable.

    - the establishment of special legal bodies responsible for sturgeon protection must be considered on the federal level. The following facts are to be considered:

        a) these legal bodies will be confronted with Mafia type groups;
        b) existing fish protection agencies and water police are greatly corrupted;
        c) the highest pressure of poaching is confined in the Caspian Sea and the Sea of Azov (located near the state borders of the Russian Federation).

    It seems urgent to create such bodies within the Federal Border Service and provide for their constant cooperation with Departments struggling against organized crime.

- a special financial structure is needed to cover the expenses of efficient law enforcement. The financial benefit generated by arrests and condamnations (all incomes from penalties and confiscations) of poachers and illegal traders in sturgeons and sturgeon products should be accumulated in a fund, and serve the field of sturgeon protection activities focussing on enforcement of sturgeon fisheries management and trade control.

- the employees of all nature protection agencies and legal bodies, as well as members of public inspections must be motivated to actively prevent and eliminate poaching and illegal trade in sturgeons. Such activities may put them together with their families in great danger. That is why, the persons/groups participating in suppression of the cases connected with poaching and/or illegal trade in sturgeons must be legally provided with bonuses at the rate of 25% of the sum of penalty and claim.

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ANNEX

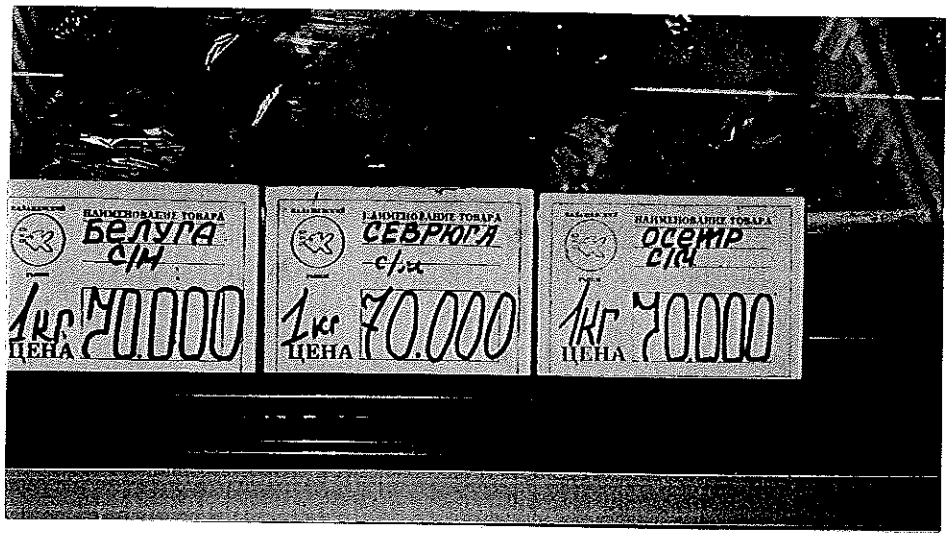
Trade in sturgeons and caviar in Moscow markets:
staff members know that this trade is not legal; therefore they hide their face from the camera.

Торговля осетриной и икрой на московских рынках. Продавцы сознают, что эта торговля незаконна. Они сразу отворачиваются при виде фотоаппарата.

Trade in live specimens: live sturgeon hybrids (e.g. A. ruthenus X Huso huso) are for sale in the Russian Federation, and come from artificial breeding facilities.

Продажа бестера (A. ruthenus X H. huso), искусственное разведение.

Trade in Sturgeon meat in shops: it is illegal, by law, to trade Sturgeon meat in the Russian Federation.
Торговля осетриной в магазинах. Весь товар - нелегальный.



Sturgeon products for sale in shops: price is a good indicator to detect caviar from dubious sources. (I = probably legal; II = possibly of illegal origin).

Торговля икрой в магазинах. По ценам можно определить легальность происхождения товара. I - икра легального происхождения, II - нелегальный товар.

I

II