

PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

A. PROPOSAL: Inclusion of the following species of *Acipenser schrenckii* in **Appendix II** of the Convention on the Conservation of Migratory Species of Wild Animals:

B. PROPONENT: Federal Republic of Germany

C. SUPPORTING STATEMENT

1. Taxon

1.1_	Classis:	Actinopterygii
1.2	Ordo:	Acipenseriformes
1.3	Familia:	Acipenseridae
1.4	Species:	<i>Acipenser schrenckii</i> Brandt, 1869
1.5	Common names:	Chinese: Qi Li Fu Zi English: Amur sturgeon French: German: Japanese: Amûru-chôzame Polish: Jesiotr amurski Russian: Amurskiî osetr Spanish:

2. Biological data

2.1 Distribution

Acipenser schrenckii is endemic to the Amur River system where it occurs from the delta to the upper reaches including the large tributaries Argun and Shilka (Berg, 1948; Nikol'skii, 1956).

In the Amur River basin, *Acipenser schrenckii* is represented by two ecological forms which - according to their colour - are called grey sturgeon and brown sturgeon (Krykhtin and Svirskii, 1997a). Brown adult and young individuals occur in the middle and lower parts of the Amur and their movements do not exceed 100 km either upstream or downstream.

The distribution range of the predominating grey form of *Acipenser schrenckii* within the Amur is fragmented:

- one population lives in the estuary, but does not move to the Sea;
- one population is concentrated in the middle Amur;
- one population lives in the upper Amur and
- one population inhabits the Zeya-Bureya lowlands (Krykhtin and Svirskii, 1997a and 1997b).

2.2 Population

The so-called brown sturgeon is less abundant than the grey form, its proportion in catches being 4 to 8 times less. It seems that there are only a few low-abundant local groups of the brown sturgeon in the Amur. However, there is no information about the total size of the population of this rare morph.

The grey morph of the Amur sturgeon lives in fragmented populations (see 2.1) and is most abundant. Krykhtin and Svirskii (1997a) give an estimate of the size of the different populations using data of mass marking carried out at the end of the 1980s and calculated data (area method) based on irregular catches in the lower and middle Amur:

- at present, the size of the estuary population is relatively small with about 3,000 fish older than two years living in the estuary and brackish waters,
- the lower Amur population currently comprises about 95,000 individuals older than two years and
- the Zeya-Bureya population is very small and is believed to be on the verge of extinction (Krykhtin and Svirskii, 1997a and 1997b).

The whole population of *Acipenser schrenckii* is listed as Endangered by IUCN (1996).

The size of all Amur sturgeon populations in the Amur basin considerably decreased since the turn of the century (Krykhtin and Svirskii, 1997a). At the end of the 19th century, when the highest catches were recorded (607 metric tons per annum), the largest population was that of the middle Amur which constituted 89% of the total annual catch on the Russian side in the stretch between the village of Ekaterino-Nikol'skaya to the village of Tambovskaya. Only 3% of the whole annual catch were from the lower reaches and estuary and the remaining 8% were caught in the upper reaches upstream the village of Ekaterino-Nikol'skaya. These differences in yield in the different sections of the Amur reflect the differences in the abundance of the Amur sturgeon populations. The catch by fisherman was ten times less in the lower Amur and estuary than in the middle Amur lowland.

Even if the fishing force has not been reduced, the catch of *Acipenser schrenckii* decreased by a factor of 5 in 1909 and by a factor of about 145 in 1948 (total catch: 4.2 metric tons of Amur sturgeon) as compared with the catch at the turn of the century (Krykhtin and Svirskii, 1997b). As a result of increasing fishery concentrating mainly in the middle Amur on both the Russian and Chinese side the stocks of *Acipenser schrenckii* further declined since the 1960s, the middle Amur population being the most effected (Wei et al., 1997; Krykhtin and Svirskii, 1997a and 1997b).

The tendency towards a decrease of all populations of *Acipenser schrenckii* revealed already at the end of the 1960s is at present retained and a further reduction of the population size is expected by experts, especially in the middle Amur (Krykhtin and Svirskii, 1997a). The extremely small Zeya-Bureya population is believed to be on the verge of disappearance (Krykhtin and Svirskii, 1997a and 1997b).

2.3 Habitat

The Amur River is formed by a confluence of the Argun and Shilka rivers and flows into the Amur delta in the Tatar Strait. The Amur delta is an estuary 48 km long and 16 km wide. Taking the longest of its branches, the River Shilka, as its source, the Amur is 4,092

km long and its basin has a total size of 1,856,000 km². For much of its length, the Amur forms the border between Russia and China.

According to the structure of its valley, bed and flow characteristics, the Amur River can be divided into three parts: the upper reach of the river extends down to the city of Blagoveshchensk (upper Amur, 883 km); the middle reach continues down to the mouth of the Ussuri River, opposite the city of Khabarovsk (middle Amur, 975 km); and the lower reach continues down to the estuary (lower Amur, 966 km). The hydrology of the river is characterised by spring floods. The difference between the highest and lowest (winter) water levels varies within the different parts of the river: it is about 10 m in the upper Amur, 11 m in the middle Amur, 7-8 m in the lower Amur, and up to 3 m near the estuary. The current velocity ranges from 0.5 to 2.0 m / sec.

There is no recent information about the detailed habitat requirements of the species. The different populations of *Acipenser schrenckii* use different spawning grounds in the corresponding river sections (see 2.4) but the structure of these spawning grounds is not described.

2.4 Migrations

Acipenser schrenckii is a freshwater fish with a certain salt-tolerance which enables a part of the population to live in the estuary of the Amur River, but the fish do not enter the Sea (Krykhtin and Svirskii, 1997b). Thus, the Amur sturgeon is not anadromous (definition see on p. 12: 2.4) like many other sturgeon species.

According to Krykhtin and Svirskii (1997b) the spawning migration of the estuary population of the Amur sturgeon begins in autumn (winter race) and during winter, the gonads of the future spawners have not yet reached full maturity. They hibernate in the river section until the next spring.

A few sexually immature fish migrate from the estuary into the Amur River, where they live until the completion of sexual maturation. They return to the estuary only after spawning, one or even two years later.

Amur sturgeons migrate to the spawning grounds in small groups of 3-5 fish. Spawning takes place in the spring within 25-30 days at all spawning grounds in the lower Amur (Krykhtin and Svirskii, 1997b). The dominating grey morph of *Acipenser schrenckii* spawns at the same spawning grounds as the sympatric kaluga *Huso dauricus* (Krykhtin and Svirskii, 1997b):

- the major proportion of **the population in the estuary and the lower Amur** is spawning at sites located at 50-150 km upstream from the town of Nikolayevsk-na-Amure, while only some mature individuals are migrating to sites located less than 500 km upstream from the mouth of the river and a small part of this population migrates as far as Khabarovsk, nearly 1,000 km from the mouth.
- the major spawning grounds of **the middle Amur population** are located in the lower part of the middle Amur; some individuals also migrate to site located in the Sungari and Ussuri Rivers.
- **the Zeya-Bureya population** migrates to spawning grounds in the upper Amur and in a region 250 km downstream from the city of Blagoveshchensk.

The middle and upper reaches of the Amur River form the boundary between the Russian

Federation and China. The detailed description of the spawning grounds (see above) shows that individuals of all populations of the Amur sturgeon migrate into these parts of the Amur, thus cyclically crossing the national boundaries of the Russian Federation and China.

3. Threat data

3.1 Direct threat of the population

According to Russian and Chinese experts (Krykhtin and Svirskii, 1997a and 1997b; Wei et al., 1997) the illegal fishery for the Amur sturgeon, which increased since the permission of free trade and because of the very high prices for caviar, is the main threat for the survival of the species. Mainly spawners at a pre-spawning state are illegally caught and hence the breeding stock is drastically reduced which means an enormous impact on the size of the total population of these fish with very low reproduction rate.

Within the last years the water pollution of the Amur with heavy metals, oil products, phenol, mineral fertilisers and other pollutants from gold-mining operations as well as from agriculture increased gradually on both the Russian and Chinese banks of the river, usually downstream the towns (Matthiesen, 1993; Krykhtin and Svirskii, 1997a and 1997b). However, a direct impact of this contamination on the ichthyofauna and especially on the health of the Amur sturgeon populations has not been studied.

Furthermore, the revival of the Khinganski Dam project, a large hydroelectric dam, planned by the Chinese authorities, threatens to wipe out all spawning sites of the Amur sturgeon and block the migration routes (Birstein, 1993b).

3.2 Habitat destruction

In contrast to most large rivers, the Amur is not dammed by hydroelectric dams yet. Information on habitat loss or degradation is not available.

3.3 Indirect threat

The pollution of the Amur River has increased during the last year (see 3.1) (Matthiesen, 1993; Krykhtin and Svirskii, 1997a and 1997b). However, the effects on the natural reproduction of the Amur sturgeon have not been studied. According to Svirskii (1984) some females of *Acipenser schrenckii* have been infected by the coelenterate parasite *Polypodium hydriforme* which caused a decrease in individual fecundity by 19 %. However, the total number of infected females is unknown.

3.4 Threat connected especially with migrations

Since the Amur sturgeon inhabits a river which forms the national boundary between the Russian Federation and China (see also 2.4) it cyclically migrates between both countries. The main threat to the survival of the species is the poaching and overexploitation on both the Russian and Chinese side of the Amur River. Actually, there is no agreement between the two range states on the sustainable use for the species. Only a concerted international action including the setting of quotas for sustainable harvest and management in both range states may stop the precipitous decline of the populations of *Acipenser schrenckii* which is caused by overexploitation.

3.5 National and international utilization

Acipenser schrenckii is a commercial species and is caught on both the Chinese and Russian side of the Amur River. The meat is consumed domestically and caviar is processed of the roe. In the 1950s, the sturgeons were caught by pull nets and row hooks which afterwards were replaced by three-layer gill nets (Wei et al., 1997).

Fishery. At the end of the 19th century, the highest catches of *Acipenser schrenckii* peaked in more than 607 metric tons per annum on the Russian side, especially caught in the middle Amur. Since the beginning 20th century the catches of the Amur sturgeon decreased gradually, only 4.2 metric tons being officially recorded in 1948 (Krykhtin and Svirskii, 1997a and 1997b). Further reduction of the sturgeon stocks led to an annual closure of the fishery introduced by the USSR in 1958 and effective until now. The catching of *Acipenser schrenckii* is only allowed from June 15 till July 15 within the quota of 60 metric tons, the fish being 50-100 kg in weight and 185-220 in length (Birstein, 1993b). Despite this harvest regulations, intensive fishery in the lower Amur section started in 1991, and, in general, catches recently increased everywhere (Krykhtin and Svirskii, 1997a). The official Russian records indicate 64.4 metric tons in 1991, 62.6 metric tons in 1992 and 47.8 metric tons in 1993 for both *Acipenser schrenckii* and *Huso dauricus*. However, experts report that within the last years illegal fishery drastically increased with the permission of free trade and estimate that at least 200 metric tons of kaluga and Amur sturgeon have been caught annually from 1991 till 1993.

On the Chinese side, the catches of the Amur sturgeon have been low before the 1970s due to the rare occurrence of the fish (Wei et al., 1997). The catch statistics of China give no separate data for the Amur sturgeon and the sympatric *Huso dauricus*. From 1952 to 1956 the annual yield of both sturgeon species from the entire middle Amur on the Chinese banks ranged between 70 to 80 metric tons, in 1981 a total of 141 metric tons has been caught and in 1987 a yield of 200 metric tons has been reached (Wei et al., 1997).

Caviar. There are virtually no published data about the amount of caviar produced on the Russian side of the Amur. Moreover, it is not clear whether the Russian caviar is only domestically consumed or exported.

China started the export of osietra and kaluga caviar (the former produced of the roe of *Acipenser schrenckii*) both often sold under the name of "Amur sturgeon caviar" in the 1970s with an amount of 3 metric tons (Wei et al., 1997). Since 1990, an annual amount of 12-15 metric tons of Kaluga/osietra caviar are exported, the main importers being Japan (ca 50%) and USA (ca 50 %) (Taylor, 1997). The export price for Chinese caviar was about \$ 195.00 per kg net weight CIF at the receiving end in 1995 (Taylor, 1997).

In 1995, DeSalle and Birstein (1996) found that caviar of *Acipenser schrenckii* was sold under the false declared name of "Eastern beluga" in New York City stores.

The export quotas of sturgeon caviar of China for the year 1999 amount to 5.65 metric tons, 2.51 metric tons originating from *Acipenser schrenckii* (Fan, Zhiyong – pers. communication).

Illegal trade. Illegal fishery is indicated by both Chinese and Russian experts who estimate the illegal catches at about 410 metric tons of *Acipenser schrenckii* and *Huso dauricus* in 1989 and 170 metric tons in 1993. However, no reliable data about the real amount of illegal fishery for both sturgeon species are available. Illegal market channels are insufficiently known.

Artificial propagation. Artificial propagation of *Acipenser schrenckii* is only reported from the Chinese side within the period from 1988 till 1991: a propagation station for the Amur sturgeon was set up at Qingdeli in 1988 and a total of about 900,000 of fry (0.2 - 0.4 g) and of 168,000 of fingerlings (1.0 - 1.5 g or 20 - 30 g) have been stocked into the Amur during that period (Chen et al., 1993; Chen and Zhou, 1993; Wei et al., 1997). Wei et al. (1997) indicate that it is difficult to perform the regular work in the propagation station since no specific funds are available.

No data about artificial propagation of *Acipenser schrenckii* on the Russian side are available. However, Krykhtin and Svirskii (1996 and 1997a) report about sturgeon hatcheries being constructed at the Russian banks of the Amur. Artificial propagation of *Acipenser schrenckii* is conducted by Dr. Svirskii as part of his scientific programme and he succeeded to create a broodstock in captivity (Svirskii et al., 1993).

4. Protection status and needs

4.1 National protection status

Acipenser schrenckii is not totally protected by law neither on the Russian nor on the Chinese side, but there are some rules to regulate and control the harvest in each country.

The Chinese Heilongjiang Government issued specific regulations of protection and management for sturgeons in 1950 and renewed them in 1982. The current regulations include gear restrictions, minimum harvest size, i.e. total length (TL) of 100 cm for *Acipenser schrenckii*, a closed area at Luobei, seasonal closed areas and a closed period for fishery as well as appropriate punishment measures (Wei et al., 1996). Chinese scientists (Wei et al., 1996) put forward that these regulations were not fully implemented due to the insufficient strength of fisheries management departments.

The USSR introduced an annual close of the Amur sturgeon fishery in 1958 which is formally effective until now (Krykhtin and Svirskii, 1997 and 1997a). However, it is allowed to catch *Acipenser schrenckii* 50-100 kg in weight and 185-220 cm in length from June 15 till July 15 within the quota of 60 metric tons (according to Point 22.3 of "The Fishing Rules in Far Eastern Water Bodies of the USSR", 1981 cited in Birstein, 1993b). However, these regulations do not seem to be very effective, because legal and illegal fishery for sturgeons increased within the last years.

For instance, there is no agreement between Russia and China concerning regulations of sturgeon fishery in the frontier waters.

4.2 International protection status

Acipenser schrenckii is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

4.3 Additional protection needs

Although the species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the international trade is controlled under CITES regulations since April 1998, the Amur sturgeon needs further protection. An agreement between the range states, China and Russian Federation, concerning a sustainable harvest and a corresponding management programme for *Acipenser schrenckii* is strongly needed in order to guarantee the survival of this unique species which is already listed as endangered by IUCN (1996).

Furthermore, Krykhtin and Svirskii (1997b) point to the need to build hatcheries for artificial breeding and restocking the Amur sturgeon, since the natural reproduction rate of the species is very low.

Detailed recommendations for the conservation of the Eurasian sturgeon species - worked out during the 1st Meeting of Representatives of the Range States on Developing Measures for the Conservation of Sturgeon Species under CITES Provisions (Moscow, Russia, 19-23 January 1998) - are attached in the Appendix at the end of the document.

5. Range States

The range states of *Acipenser schrenckii* are China and the Russian Federation.

6. Comments from Range States

The Range States of the species have been provided with a copy of a draft proposal (Inclusion of 18 species of Acipenseriformes in Appendix II of CMS) and were asked for their comments. The appreciated scientific comments and corrections are integrated in the text. The position of each Range state on the proposal are as follows:

- **China** states that it is not a Party to CMS and has therefore difficulties in making any comments on the proposal.
- The **Russian Federation** wishes to discuss its comments on the proposal with Germany in a German-Russian working group „Nature Conservation and Biodiversity“ in Munich, Germany, in September 1999.

7. Additional Remarks

Acipenser schrenckii is sympatric with the kaluga, *Huso dauricus* and spawning of both species takes place on the same spawning grounds. During spawning a small number of hybrids may come into life (2-5% of all larvae) which are predominantly males (up to 79%) and can reach a total length (TL) of 1.9 m and 70 kg in weight.

8. References

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