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

PROPOSAL: Inclusion of the following species of *Huso dauricus* in **Appendix II** of the Convention on the Conservation of Migratory Species of Wild Animals (CMS):

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:	*Huso dauricus* (Georgi, 1775)	
1.5	Common names	English:	Kaluga sturgeon, Kaluga
		Finnish:	Amurinkitasampi
		French:	
		German:	
		Japanese:	dauria-chôzame
		Russian:	Kaluga
		Spanish:	
		Name of caviar:	Kaluga, Keluga, Amur sturgeon caviar

2. Biological data

2.1 Distribution

Huso dauricus is endemic to the Amur River system where it occurs from the delta to the upper reaches including the large tributaries and lakes (Berg, 1948; Nikol´skii,1956).

Young individuals are reported to enter the Sea of Okhotsk and the Sea of Japan during the summer months reaching the north-eastern part of the Sakhalin Island, the northern part of the Tatar Strait, the coastal waters of Hokkaido Island and Honshu Island off Niigata (Kostarev and Tyurnin, 1970; Gritsenko and Kostyunin, 1979; Amaoka and Nakaya, 1975; Honma and Itano, 1994).

The distribution range of the kaluga in the Amur is fragmented: a population living in the estuary and coastal zones can be distinguished from local populations in the lower Amur, middle Amur and Zeya-Bureya river system (Svirskii, 1971; Krykhtin and Svirskii, 1997a and 1997b).

2.2 Population

Krykhtin and Svirskii (1997a and 1997b) 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:

- the estuary population is relatively most abundant and contained almost 70,000 individuals older than one year at the end of the 1980s, of which approximately 5,000 (14%) with a weight exceeding 100 kg were potentially sexually mature. In 1993, a decrease of 30-35% of the potentially sexually mature fish has been recorded due to illegal catches in the lower Amur region.

According to calculated data, the individual kaluga populations in the Amur proper are smaller and consist predominantly of young fish, with mature fish accounting only for 2-3%:

- the lower Amur population is estimated to consist of approximately 40,000 individuals older than two years;
- the middle Amur population is believed to have approximately 30,000 specimens aged two years and older;
- the abundance of the Zeya-Bureya population is very low, judging by the very low catches in the boundaries of the Amur district accounting for only 0.09-1.03 metric tons.

The status of all populations of *Huso dauricus* is classified as Endangered by IUCN (1996).

The size of all kaluga 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 (more than 595 metric tons per annum), the largest population was that of the middle Amur which constituted 87% of the total annual kaluga catch on the Russian side, while the estuary and lower Amur populations accounted for no more than 2% and the Zeya-Bureya population around 11%.

Even if the fishing force has not been reduced, the catch of kaluga decreased by a factor of 3.5 in 1909 and by a factor of about 10 in 1948 (total catch: 61 metric tons of kaluga) 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 kaluga stocks further declined since the 1960s, the middle Amur population being the most effected (Wei et al., 1996; Krykhtin and Svirskii, 1997a and 1997b).

In 1976, Russia introduced a strict limit on catches to reduce the overfishing of mature fish which resulted in an 35% increase of the total size of the estuary population with the amount of larger and thus mature fish (> 100 kg in weight) increasing by a factor of 2.5, as compared with the level of the early 1970s (Krykhtin and Svirskii, 1997a). It was hoped that the estuary population would gradually increase if the stocks were carefully monitored and exploited. In 1993, however, illegal fishery in the lower Amur during the spawning migration led to a 30-35% reduction of the potentially sexually mature individuals of the estuary population.

Currently, in the Amur proper, the kaluga populations consist predominantly of young

fish with mature individuals accounting only for 2-3% (Krykhtin and Svirskii, 1997a). Because of its very slow rate of natural reproduction due to late maturity (on an average at an age of 14-23 years) and slow breeding rhythm, the tendency towards a decrease of the kaluga population revealed already at the end of the 1960s is at present retained and a further reduction of the population size is expected, especially in the middle Amur (Krykhtin and Svirskii, 1997b). The extremely small Zeya-Bureya population is believed to be on the verge of disappearance (Krykhtin and Svirskii, 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 km^2. 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 long), the middle reach continues down to the mouth of the Ussuri River, opposite the city of Khabarovsk (middle Amur, 975 km long), and the lower reach continues down to the estuary (lower Amur, 966 km long). 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 *Huso dauricus* 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

The different populations of the kaluga perform different migrations for spawning and feeding:

The **estuary population** is represented by a predominating (75-80%) freshwater and a saltwater form. While the freshwater form feeds in the freshwater zone of the estuary only, the saltwater form winters in the freshwater zone and migrates to the brackish water of the delta and further to the northern part of the Tatar Strait and south-western part of the Sakhalin Gulf for feeding in the second half of June to the beginning of July. In autumn, when the salinity in the estuary increases, it moves back to the freshwater zone.

The major part of the estuary population migrates to the spawning grounds at 50-150 km upstream from Nikolajevsk-on-Amur and only a small part migrates to sites located less than 500 km upstream from the mouth of the river. Some individuals even migrate up to the city of Khabarovsk at the middle Amur for spawning. The major spawning migration from the estuary to the Amur River starts in autumn and beginning of winter (winter seasonal form). The spawners winter in the river and spawning takes place during the next year. A small amount of spawners (about 5%) migrate in the Amur in spring and

spawn soon after having reached the spawning sites (spring seasonal form).

The **lower Amur population** feeds mainly in the region of the lower section of the Amur from the Ussuri confluence to the delta. Mature individuals migrate to the same spawning grounds and spawn at the same time as individuals of the estuary population.

The **middle Amur population** inhabits an area approximately 900 km distant from the mouth of the river including the upper part of the lower Amur and the lower part of the middle Amur. Distinct spawning migration of this population takes place in May to the first half of June. The major spawning grounds are located in the lower region of the middle Amur, predominantly in the frontier waters of the river. Some minor spawning grounds can be found in the rivers Sungari and Ussuri.

The **Zeya-Bureya population** is now represented by single specimens in the upper region of the middle Amur, in the upper Amur and in the lower regions of the rivers Zeya, Shilka and Argun. They migrate to spawning grounds located in the upper Amur and in a region extending about 250 km downstream the city of Blagoveshchensk in the second half of May to June.

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 kaluga 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) overexploitation is the main reason of the observed and expected reduction of the kaluga populations. The legal and illegal fishery in the Amur on both the Russian and Chinese side have sharply increased within the last years due to the permission of free trade and the high prices for caviar. Illegal fishery is carried out by organised groups who catch the kaluga mainly during the spawning migration and on the spawning grounds in a pre-spawning state (Krykhtin and Svirskii, 1997a and 1997b). Hence, the amount of potentially sexually mature fish is declining drastically 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 increases gradually on both the Russian and Chinese banks of the river, usually downstream the towns (Matthiesen, 1993; Krykhtin and Svirskii, 1997a). However, a direct impact of this contamination on the ichthyofauna and especially on the health of the kaluga 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 kaluga 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 kaluga have not been studied.

Investigations of the ovaries of some females (Svirskii, 1984) revealed a parasite, *Polypodium hydriforme* (Coelenterata), which is effecting the fecundity and leading to a mean decrease of 19%. However, the total number of infected females is unknown.

3.4 Threat connected especially with migrations

Since the kaluga 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 *Huso dauricus* which is caused by overexploitation.

3.5 National and international utilization

Huso dauricus is a commercial species and is caught on both the Chinese and Russian side. The meat is consumed domestically and caviar mainly named "kaluga" like the fish itself 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 *Huso dauricus* peaked in more than 595 metric tons per annum on the Russian side, especially caught in the middle Amur. Since the beginning 20th century the catches of kaluga decreased gradually, 61 metric tons being officially recorded in 1948 (Krykhtin and Svirskii, 1997a). Further reduction of the sturgeon stocks led to an annual closure of the kaluga fishery introduced by the USSR in 1958 and effective until now. The catching of kaluga 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 of kaluga in the lower Amur section started in 1991, and, in general, catches recently increased everywhere (Krykhtin and Svirskii, 1997a and 1997b). 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 *Huso dauricus* and *Acipenser schrenckii*. 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 kaluga have been low before the 1970s due to the rare occurrence of the fish (Wei et al., 1996). The catch statistics of China give no separate

data for *Huso dauricus* and the sympatric Amur sturgeon, *Acipenser schrenckii*. 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., 1996).

Caviar. There are virtually no published data about the amount of kaluga caviar produced on the Russian side of the Amur. It is not clear whether the Russian kaluga caviar is only domestically consumed or exported. China started the export of kaluga and osietra caviar (the latter 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/Amur sturgeon 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). The export quotas of sturgeon caviar of China for the year 1999 amount to 5.65 metric tons, 2.51 metric tons originating from *Huso dauricus* (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 kaluga and *Acipenser schrenckii* in 1989 and 170 metric tons in 1993. However, no reliable data about the real amount of illegal fishery for *Huso dauricus* are available. Illegal market channels are insufficiently known.

Artificial propagation. So far, artificial propagation of *Huso dauricus* is not reported but both Russia and China have constructed and are still constructing sturgeon hatcheries on the Amur (Krykhtin and Svirskii, 1997b; Wei et al., 1997).

4. Protection status and needs

4.1 National protection status

Huso dauricus 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 200 cm for kaluga, a closed area at Luobei, seasonal closed areas and a closed period for fishery as well as appropriate punishment measures (Wei et al., 1997). Chinese scientists (Wei et al., 1997) 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 kaluga fishery in 1958 which is effective until now (Krykhtin and Svirskii, 1997a). However, it is allowed to catch *Huso dauricus* 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). It is not clear, whether these regulations are effective, but it seems unlikely because legal and illegal fishery for kaluga 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

Huso dauricus 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 kaluga needs further protection. An agreement between the range states, China and Russian Federation, concerning a sustainable harvest and a corresponding management programme for *Huso dauricus* 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 kaluga, 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 *Huso dauricus* are

- China
- Russian Federation

and probably

- ? Japan and
- ? Korea.

According to FAO-data the major fishing countries in the Northwest Pacific (reporting over 100,000 metric tons in 1996) and thus potential Range States are the countries bordering the area, e.g. China including the Province of Taiwan, Hong Kong, Japan, the Russian Federation, North and South Korean Republics, as well as Poland as only country not bordering the area.

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.

- **Japan** gives no comments on the proposal because it is not a Party to CMS and no sturgeons live within the Japanese territory.
- **Korea** states that it has no objections to 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

Huso dauricus is sympatric with the Amur sturgeon, *Acipenser schrenckii* and spawning of both species takes place on the same spawning grounds.

The only closely related species belonging to the same genus is the beluga, *Huso huso*, which is also highly commercially exploited because of its famous caviar and threatened by overexploitation. The caviar of both species of the genus *Huso* is almost of the same quality and can hardly be distinguished.

8. References

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