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 baerii baicalensis* 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:	*Acipenser baerii* Brandt, 1869	
	Subspecies:	*Acipenser baerii baicalensis* Nikol´skiî, 1896	
1.5	Common names:	English:	Baikal sturgeon
		French:	
		German:	Baikal-Stör
		Russian:	
		Spanish:	

2. Biological data

2.1 Distribution

The subspecies *Acipenser baerii baicalensis* represents a unique freshwater, lacustrine-riverine form which occurs only in the Lake Baikal (Russian Federation) and its larger tributaries: the Selenga River System (Russian Federation and Xinjiang, China), the Tula and Delger-Muren rivers, the Barguzin River and the Verkhnaya Angara and Kichera Rivers (Russian Federation) (Sokolov and Vasil´ev, 1989; Ruban, 1997).

Historically, the abundance of the subspecies in the Lake Baikal proper was highest near the delta of the Selenga River system in the Southeast as well as in the Barguzinskii and Chivyrkuuskii bays, while it was rarely encountered in the northern part of the lake at the issue of the Verkhnaya Angara and Kichera Rivers (Ruban, 1997). The fish migrated for spawning mainly into the Selenga River and its tributaries Chikoy and Orhon (Sokolov and Vasil´ev, 1989).

At present, *Acipenser baerii baicalensis* is most abundant in the rivers Selenga and Barguzine including the river deltas in the Lake Baikal (Pronin and Afanasyeva, 1988). The species is also found in small quantites in the northern part of the Lake Baikal (rivers Upper Angara and Kichera) the river Turka and the southern part of Lake Baikal.

2.2 Population

Acipenser baerii baicalensis was once so numerous that it was subject to a larger sturgeon fishery in the Lake Baikal. In the second half of the 19th century the annual catch all over Lake Baikal and ist tributaries was as high as 200-300 metric tons. Destructive catching in the spawning period seriously damaged the stocks of this valuable fish, and in 1924 the marketable catch of the Baikal sturgeon decreased to 3.8 metric tons.In 1945, a prohibition on the catch of the Baikal sturgeon was set up which is in force until today (Pronin and Afanasyeva, 1988).

The estimation of the population in 1985-1988 showed that about 10,000 to 18,000 specimens were present in the river mouth of the Selenga and about 3,000 to 4,000 specimens were living in the Barguzinkii bay (Afanasyeva and Afanasyev, 1997). During the period from 1986 to 1988, the spawning population in the Selenga River (main spawning river) was estimated to consist of 70-140 mature Baikal sturgeon individuals only. There is no published information on a recent population estimate of the species in Lake Baikal.

The abundance of the Lake Baikal subspecies, *Acipenser baerii baicalensis* is extremely rare within its original range. The species has been classified as endangered (IUCN, 1996) and is listed as Endangered in the Red Data Books of the Russian Federation and the Republic of Buryatia.

Actually, experts fear that the trend for the Baikal sturgeon population might be a further decline. The natural reproduction rate of all subspecies - which is already known to be very low - decreased drastically within the last years due to defects and degeneration of oocytes, a phenomenon evidently caused by the high water pollution and investigated for the subspecies living in the Siberian Rivers (Akimova and Ruban, 1993 and 1995).

2.3 Habitat

The preferred habitat of the Baikal sturgeon is the shallow-water zone near the delta of the larger tributaries in the southern part of the Lake Baikal where the subspecies is most abundant (Ruban, 1997). Sokolov and Vasil´ev (1989) indicate that the fish prefer a depth between 20 and 50 m, but may descend as deep as 100 to 150 m.

The spawning grounds are located in the turbid waters of the larger tributaries in the southern part of the lake. However, the locations and structure of the spawning sites are not described in recent reports.

2.4 Migrations

From its main habitats within the Lake Baikal (Russian Federation) *Acipenser baerii baicalensis* migrates along the coastal shallow-water zone into the large tributaries of the lake for spawning. The main spawning grounds of the Baikal sturgeon were located in the Selenga River system with its tributaries Chikoy and Orhon (Sokolov and Vasil´ev, 1989) entering the lake in the south-eastern region. The Selenga River and its tributaries originate in the mountains of the Mongolian Republic (Xinjiang, China) and their flow crosses the national boundary between China and the Russian Federation. The Baikal sturgeon was reported to migrate as far as 1,000 km upstream in the Selenga River (Ruban, 1997), migrating evidently across this boundary. However, these are historical data. The recent abundance of the species is not given in the literature and it can only be presumed that still some mature individuals of this actually very rare and endangered fish are migrating into the Selenga River system for spawning.

A smaller proportion of the spawning population of *Acipenser baerii baicalensis* was reported to migrate into the rivers located in the region of the Russian Federation: the Tula and Delger-Muren rivers, the Barguzin River (more than 300 km upstream), and the Verkhnaya Angara River (up to 100-150 km upstream) (Ruban, 1997).
After successful spawning, the adult fish migrate back from the upper parts of the river down to the Lake Baikal where the main feeding grounds are located. The young sturgeons, after spending a short while in the rivers, also migrate downstream to Lake Baikal where they spend their lives until maturity.

3. Threat data

3.1 Direct threat of the population

The formerly rich population of *Acipenser baerii baicalensis* has been reduced to a critical minimum by overexploitation before the 1960s and did not recover since then. Nowadays, the harvest of sturgeon is prohibited in the region of the Russian Federation (Lake Baikal proper and larger tributaries including the lower region of the Selenga River) and the fish is included in the Red Data Book (Ruban, 1997)

According to Dr. A. Imekov (pers. communication) the critical condition of the sturgeon stock has been worsening during the last years due to large-scale poaching.

Another major threat to the survival of the endangered Baikal sturgeon is the high pollution level of Lake Baikal caused by direct dumping of wastes from industrial plants, including Russia's largest paper plant Baikal Pulp and Paper Combine built in 1966, which was going on during the last thirty years on an enormous scale (Feshbach and Friendly, 1991; Peterson, 1993). The direct effect are contamination of the fish itself, loss of food resources and degradation of the feeding grounds located in the lake.

3.2 Habitat destruction

There are no reports that indicate a direct habitat destruction for *Acipenser baerii baicalensis* in the Lake Baikal and its larger tributaries where the spawning grounds are located.

3.3 Indirect threat

The high pollution level of Lake Baikal (already mentioned above 3.1) also represents an indirect threat to the species: water contaminants cause a decline of the natural reproduction rate and subsequently a decline of the population.

The increasing environmental contamination of practically all Siberian water bodies evidently affects all populations of the Siberian sturgeon *Acipenser baerii*. The phenomenon of anomalies in the development and efficiency of the reproductive system has been investigated for Siberian sturgeon populations from East Siberia (Akimova and Ruban, 1993 and 1995; Akimova et al., 1995) but similar findings are probable for the subspecies *Acipenser baerii baicalensis*. The studies revealed an increasing rate of anomalies since the last decades. The percentage of females with degenerated oocytes in the Indigirka River for example increased from 77% in 1984 to 100% in 1987. Additionally, further defects have been observed, such as the amitotic division of sex cells, the degeneration of oocytes and of the nuclear membranes in oocytes during vitellogenesis, defects in the oocyte membrane, degeneration of germ cells, extensive deformation of oocytes, the appearance of cavities with foreign body inclusions in the oocyte membrane and a mass resorption of mature eggs. Different populations of *Acipenser baerii* are in different stages of this pathological development of the reproductive system which is caused by environmental pollution. However, these changes in the biology of reproduction are believed to cause a further sharp decrease in the population size of the Siberian sturgeon whose reproduction potential is already considered as very low under normal circumstances (Ruban, 1997).

3.4 Threat connected especially with migrations

The survival of *Acipenser baerii baicalensis* is strongly dependant on the success of the spawning migration of the mature individuals and the subsequent spawning success. Hence, the Baikal sturgeon is extremely vulnerable to changes in the natural environment of the spawning rivers. A block of the passage either upstream (adults) and/or downstream (adults and young fish) as it might be represented by dam constructions would threaten the survival of the whole population. Human impact on the natural spawning sites which are not

sufficiently investigated until now would cause a major decline or even a total collapse of the population of the Baikal sturgeon.

Moreover, the migrating adult sturgeons could easily be taken by poachers during their passage to the spawning grounds - which represents a further threat connected with migration.

Although all these factors are not recorded in the recent literature referring to *Acipenser baerii baicalensis*, they are evident from the knowledge of the life history of the subspecies. Further investigation of the spawning sites in the rivers (in the Russian Federation and Mongolia) as well as of the spawning migration is important for the survival of this unique subspecies.

3.5 National and international utilization

Acipenser baerii baicalensis has been subject to a larger sturgeon fishery in Lake Baikal until the 1945 when the harvest of the fish was completely prohibited (Birstein, 1993b). Since then, there are no official records of the national utilization of either meat and roe of the subspecies *Acipenser baerii baicalensis*.

On the international market, there is only a small amount of caviar produced from the eggs of the Siberian sturgeon *Acipenser baerii*, but the subspecies the roe is processed of is not furhter classified.

4. Protection status and needs

4.1 National protection status

Acipenser baerii baicalensis was listed in the Red Data Books of the Russian Federation and the Republic of Buryatia in 1983 (Ruban, 1997; Pronin and Afanasyeva, 1988).

4.2 International protection status

Acipenser baerii baicalensis 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

Urgent measures for the conservation of the species are needed, including the monitoring of the stock conditions, the investigation of the ecological needs and pecularities, the determination and protection of the spawning grounds and an artificial breeding programme.

According to Birstein (1993b) the only chance for the survival of *Acipenser baerii baicalensis* is a restocking programme of artificially propagated fish which is supported by the Russian Federation and carried out at the Selenginsk Experimental Hatchery (Afanasyeva and Afanasyev, 1997). the limiting factor is the fact that mature spawners can hardly be caught.Since 1987, there are efforts to create a reproductive brood stock of the Baikal sturgeon at the hatchery heated by the Gusinoozersk Termal Power Station. Since 1996, similar biotechnologies are carried out at the Selenginsk Experimental Hatchery. However, the effectiveness of the breeding technology still has to be improved (Dr. A. Imekov, pers. communication).

5. Range States

Range States of the subspecies *Acipenser baerii baicalensis* 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

8. References

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