

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 *Pseudoscaphirhynchus hermanni* 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:	<i>Pseudoscaphirhynchus hermanni</i> (Kessler, 1877)
1.5	Common names	English: Small Amu-Dar shovelnose French: Petit nez-pelle de l'Amou daria German: Russian: Malyi Amudarinskii lzhelopatonos Spanish:

2. Biological data

2.1 Distribution

Pseudoscaphirhynchus hermanni is endemic to the Amu Darya River where it occurs in the middle course of the river from Termez to the mouths (Berg, 1948; Reshetnikov and Shakirova, 1993).

2.2 Population

Nikol'skii (1938) and Berg (1948) already mention *P. hermanni* as rare within its distribution range. Ever since, no population estimates have been made and the species has not been further investigated because of its low abundance and commercial value. There was no finding of *P. hermanni* reported after 1982 and it was believed that this species has disappeared. However, in April 1996, three specimens of *P. hermanni* have been caught in the Amu Darya, the first record of the species since the last fifteen years (Salnikov et al., 1996). The species is thus not extinct but should be considered extremely rare.

IUCN (1996) classified the status of the population of *P. hermanni* as Critically Endangered.

2.3 Habitat

Like the other representatives of the genus *Pseudoscaphirhynchus*, *P. hermanni* has been rather extensively studied. There is little information about the biology and ecology of

the species (Tleuov and Sagitov, 1973).

Like the other species of the genus, *P. hermanni* is not anadromous (definition see on p. 12: 2.4) and spends its whole life cycle in freshwater. Shovel-noses, including *P. hermanni*, occur only in turbid waters. Their known habitats are represented by shallow water rivers with sandy or stony-pebble ground (Nikol'skii, 1938).

The location and structure of the spawning grounds of the species have not been investigated so far.

2.4 Migrations

P. hermanni is not anadromous (definition see on p. 123: para 2.4 Migrations) like other sturgeons but spends its whole life in freshwater. The migration pattern as well as the distances that the species usually travels through the river system of the Amu Darya are insufficiently known. It can only be presumed that during the cyclical migration to the spawning grounds the national boundaries of Turkmenistan and Uzbekistan are crossed.

3. **Threat data**

3.1 Direct threat of the population

The main threat for the survival of *P. hermanni* is the destruction of its typical habitat in the middle and upper course of the Amu Darya through using the waters of the river for an enormous irrigation system for the cotton industry (see 3.2).

Distinct water deficiency was especially produced in the lower river flow and led not only to its drying but also to salination because the natural sediments in this region are saline. Initially, the mean many-year total content of ions in the Amu Darya water was 540 mg/l (Rogov, 1957 in Zholdasova, 1997). Now the mean annual water mineralization in the middle river flow varied during the last decade within 600 to 1,500 mg/l (Zholdasova, 1997). Naturally, the lower river flows are regions where the increased mineralization is most pronounced: in Nukus (215 km from the mouth) the mean annual mineralization was 1,525.5 mg/l in 1989 and 946.8 in 1990 (Yearbook of Surface Waters Quality, 1991 in Zholdasova, 1997). The effects of this high salination on the Small Amu-Dar shovel-nose have not been studied. However, it is evident that the environmental conditions have worsened and became very unfavourable for the species due to the salination.

Accompanying the large-scale cotton growing, a chemicalization of the agriculture began in the 1960s which involved wide application of mineral fertilizers and pesticides contaminating the environment. Additionally, a contamination of the surface waters (rivers and lakes) due to the disposal of drainage waste from the zone of irrigated land cultivation took place. The volume of this disposal sharply increased by the end of the 1980s with a total volume of 32 km³/year in Central Asia out of which 21.1 km³ were deposited in the Amu Darya basin (Zholdasova, 1997).

Increased mineralization, contamination of the waters with mineral fertilizers and pesticides and a general pollution with oil products, heavy metals and organic substances, completely changed the hydrochemical regime of the Amu Darya basin (Zholdasova,

1997) and affected the local ichthyofauna in many aspects of their biology (growth rate, fecundity, survival, etc.). However, the particular impact on the populations of *P. hermanni* has not been investigated.

3.2 Habitat destruction

The Amu Darya is one of the two rivers that feed the Aral Sea. With a total extension of 1,257 km it represents the largest and full-water river of Central Asia. The entire flow is formed in the mountain regions of Pamir and Hindu Kush and has no tributaries for the space of the last 1,257 km to the Aral Sea (Salikhov and Kamilov, 1995).

Like the waters of the Syr Darya, those of the Amu Darya had been used for centuries for irrigation. However, irrigation systems were local and their impact on the composition of the ichthyofauna was slight (Salikhov and Kamilov, 1995).

In the 1950s, large-scale hydroconstruction was started using the waters for a vast irrigation and drainage network for cotton industry (Ellis, 1990; Feshbach and Friendly, 1993; Smith, 1994). During the last 15-20 years, great changes have occurred in the Amu Darya ecosystem under the influence of regulated flow and flow depletion: the river is regulated by two dams (Takhiatash and Tuya-muyun) and in its basin 17 reservoirs with a total area of 1,463 km² were constructed (Pavlovskaya and Zholdasova, 1991). Hydrological conditions changed drastically because of increased water diversion through numerous irrigation canals, the largest being the Karakum Canal which originates in the upper plains section of the Amu Darya and leads the waters to the fields of southern Turkmenistan. The total length of the presently functioning channel of the canal is 1,100 km and another 272 km are still under construction.

Fluctuations in the volume of the Amu Darya flow have always occurred and before the complete regulation of the river were mostly due to variations of the glacier-snow supply. A spring-summer peak and a dry-season fall were quite distinct (Zholdasova, 1997). From the middle of the 1970s until the end of the 1980s the annual flow decreased drastically because of the massive hydroconstruction. Direct connections of the river with the Aral Sea were interrupted in the middle of the 1970s, when the volume of the river water flow to the Takhiatash hydrocomplex was decreased to such an extent that it was fully withdrawn for irrigation and no downstream flow took place. In 1982 the Amu Darya flow did not reach the Aral Sea at all. The river bed in the region of the Takhiatash hydrocomplex downstream from the dam dried and became drainless. Many side channels of the river dried, natural floods ceased and the appearance of the delta markedly changed (Zholdasova, 1997).

The complete regulation of the flow of the Amu Darya led to a total destruction of the original water regime and, consequently, to the loss of the typical habitat for *P. hermanni*.

The entire Aral Sea ecosystem and that of the Amu Darya and Syr Darya, which discharge into it, are under extreme stress because of the massive anthropogenic impact on the water regimes, and in the foreseeable future no change in the situation for the better appears likely (Smith, 1994; Zholdasova, 1997).

3.3 Indirect threat

Proposal II / 29

There is no information about an indirect threat of *Pseudoscaphirhynchus hermanni*. However, the high level of pollution (see 3.1) may certainly affect the breeding success of the species.

3.4 Threat connected especially with migrations

The migration routes of the Small Amu-Dar shovelnose are not described in the literature. It might be concluded that the fish travelled probably throughout its entire range within the Amu Darya from the mouth to the middle reaches. The destruction of this migration routes certainly threatens the survival of this critically endangered species.

3.5 National and international utilization

Because of its low abundance *Pseudoscaphirhynchus hermanni* was not caught and had no commercial value (Nikol'skii, 1938; Berg, 1948).

4. Protection status and needs

4.1 National protection status

P. hermanni is listed as Endangered in the USSR Red Data Book (1984), in the Uzbek SSR Red Data Book (1993) and in the Turkmen SSR Red Data Book (1984).

4.2 International protection status

Pseudoscaphirhynchus hermanni 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

A conservation plan and a concerted international programme (including the range states) for the survival of *Pseudoscaphirhynchus hermanni* is strongly needed in order to save the last specimens of this unique species before the total collapse of the Aral Sea ecosystem.

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 *Pseudoscaphirhynchus hermanni* are Turkmenistan and Uzbekistan.

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:

— **Turkmenistan** has not submitted any comments until the end of May 1999.

- **Uzbekistan** supports the proposal (verbal communication to the German Embassy in Tashkent).

7. Additional Remarks

P. hermanni is sympatric with the large Amu-Dar shovelnose *P kaufmanni* and closely related with the third representative of the genus, *P. fedtschenkoi* which lives in the Syr Darya and is also believed to be Extinct (Pavlov et al., 1994). All three species are victims of the Aral Sea ecological catastrophe.

8. References

- Berg, L.S. 1948. [The Freshwater Fishes of the USSR and Adjacent Countries.]. Moscow and Leningrad, Nauka Publication, Vol. I, pp. 57-109. (Engl. translation published by National Science Foundation, Washington D.C., 1962).
- Birstein, V.J. 1993. Sturgeons and Paddlefishes: Threatened Fishes in Need of Conservation. *Conservation Biology* 7 (4):773-787.

- Birstein, V.J. 1997. Threatened fishes of the world: *Pseudoscaphirhynchus* spp. (Acipenseridae). In: V. Birstein, J. R. Waldman, and W. E. Bemis (eds.). Sturgeon Biodiversity and Conservation. Kluwer Academic Publishers, Dordrecht. pp. 381-383.
- Ellis, W.S. 1990. The Aral: A Soviet Sea Lies Dying. National Geographic 177 (2): 71-92.
- Feshbach, M. and A. Friendly, Jr. 1991. Ecocide in the USSR. Health and Nature Under Siege. New York, Basic Books, 376 pp.
- IUCN. 1996. IUCN Red List of Threatened Animals. IUCN, Gland, Switzerland.
- Nikol'skii, G. V. 1938. Fishes of Tadzhikistan. Mosow and Leningrad, Izdatelstvo Akad. Nauk USSR, pp. 55-74.
- Pavlov, D. S., K. A. Savvaitova, L. I. Sokolov, and S. S. Alekseev. 1994. Rare and endangered animals. Fishes. Vysshaya Shkola, Moscow. 334 pp. (in Russian).
- Pavlovskaya, L.P. and I.M. Zholdasova. 1991. Antropogenic Changes in the Fish Fauna of the Amu Darya River (based on data from sampling drift of eggs and larvae). Journal of Ichthyology 31 (8): 106-117.
- Reshetnikov, Yu.S. and F.M. Shakirova. 1993. A Zoogeographical Analysis of the Ichthyofauna of Central Asia Including a List of Freshwater Fishes. Journal of Ichthyology 33 (4): 99-111.
- Salikhov, T.V. and B.G. Kamilov. 1995. Ichthyofauna of the Mid-Syr Darya Basin. Journal of Ichthyology 35 (6): 61-71.
- Salnikov, V.B. and Yu.S. Reshetnikov. 1991. Formation of Fish Populations in Artificial Waters in Turkmenistan. Journal of Ichthyology 31 (8). 82-95.
- Salnikov, V. B., V. J. Birstein, and R. L. Mayden. 1996. The contemporary status of the two Am Darya River shovelnose sturgeons, *Pseudoscaphirhynchus kaufmanni* and *P. hermanni*. Sturgeon Quarterly, 4 (3) : 8-10.
- Smith, D. R. 1994. Change and Variability in Climate and ecosystem Decline in Aral Sea Basin Deltas. Post-Soviet Geography, 35 (3) :142-165.
- Tleuov, R. T., and N. I Sagitov. 1973. Acipenserid Fishes of the Aral Sea. FAN Press, Tashkent. 155 pp. (in Russian).
- Zholdasova, I. 1997. Sturgeons and the Aral Sea ecological catastrophe. In: V. Birstein, J. R. Waldman, and W. E. Bemis (eds.). Sturgeon Biodiversity and Conservation. Kluwer Academic Publishers, Dordrecht. pp. 373-380.