

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 kaufmanni* 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 kaufmanni</i> (Bogdanov, 1874)
1.5	Common names	English: Large Amu-Dar shovelnose, False shovelnose sturgeon, Shovelfish
		French: Grand nez-pelle de l'Amou daria
		German:
		Karakalpakian: Sumrai, Beltkumys
		Polish: Wielki lopatonos
		Russian: Bolshoi Amudarinskii Izhelopatonos
		Spanish:
		Uzbek/Turkmen: Elan Luiryk, Tuchkan Kuiryk

2. Biological data

2.1 Distribution

Pseudoscaphirhynchus kaufmanni is endemic to the Amu Darya (Turkmenistan and Uzbekistan, Central Asia), and occurs from the Pyandzh (near Faizabad-kala) to the mouth (Nikol'skii, 1938; Berg, 1948; Reshetnikov and Shakirova, 1993; Birstein, 1997).

In former times, the major part of the population of *P. kaufmanni* was constantly located in the foothill and valley zones of the river. It was largely concentrated at Kerki-Chardzhou-Il'dzhik in the upper and middle valley flow but its abundance in the lower river flow was significant, too (Zholdasova, 1997). Specimens of *P. kaufmanni* were sometimes encountered in the brackish water of Taldyk bay in the Delta of the Amu Darya (Berg, 1948).

Now, the species is preserved only in the middle Amu Darya flow. Studies carried out in 1989 and 1990 (Zholdasova, 1997) and in 1996 (Salnikov et al., 1996) showed a concentration of *P. kaufmanni* in its traditional habitats in the middle flow in a region from Kerki to Chardzhou.

Salnikov (1997) reports that local fishermen in Turkmenistan have discovered the species only recently in the Karakum Canal, where it is caught now from time to time along the Canal up to the Kopetdag Reservoir located at 840 km from the Amu Darya River.

2.2 Population

At the end of the 1960s, *P. kaufmanni* was still so abundant that young-of-the-year made up 26% of all young fishes descending the Amu Darya, while at the end of the 1970s and during the 1980s, Pavlovskaya and Zholdasova (1991) found no young-of-the-year at all. During their investigations (Pavlovskaya and Zholdasova, 1991) in 1989, only a single late prolarva was caught in the region of Denau.

Zholdasova (1997) describes the present abundance and population density of *P. kaufmanni* as low in the plain regions of the upper and middle flow but gives no estimate of the total number of individuals. However, it is pointed out that *P. kaufmanni* still reproduces under modern river conditions even if the rate of population replenishment is very low.

According to Zholdasova (1997), the modern age series of the still existing population of *P. kaufmanni* is shortened by eight groups as compared with the age series in the 1960s when the age of the fish population varied from 1-14 years with a predominance of a 3-6-year old group. The present collections are represented mostly by young fish, 1-6 years old, with a predominance of 3-year (36.8%) and 4-year old (41.6%) individuals.

Distinct subpopulations of *P. kaufmanni* are not described. However, the species was represented by two forms: the "normal" with an average length of adults of about 0.4 m and weight about 0.8 kg and the "dwarf" with an average length of adults of about 0.3 m and 0.4 kg in weight (Tleuov and Sagitov, 1973).

P. kaufmanni is listed as Endangered by IUCN (1996).

2.3 Habitat

Like the other representatives of the genus *Pseudoscaphirhynchus*, *P. kaufmanni* has been rather extensively studied (Tleuov and Sagitov, 1973; Salnikov et al., 1996). There is little information about the biology of the species

Like its relatives of the same genus, *P. kaufmanni* is a typical freshwater fish which occurs exclusively in the flow-type of turbid waters with a high sediment out wash. It never occurs in the lakes of the Amu Darya basin and Nikol'skii (1938) believed that in the stagnant water it rapidly died. Thus the typical habitat is represented by turbid and muddy shallow-water rivers with sandy or stony-pebbled ground (Nicol'skii, 1938).

2.4 Migrations

P. kaufmanni is not anadromous (definition see on p. 12: 2.4) 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 threats for the survival of *P. kaufmanni* are multifactoral, the main being the

destruction of its typical habitat in the Amu Darya through using the waters of the river for an enormous irrigation system for the cotton industry (see 3.2). This includes the complete regulation of the flow and a subsequent decrease of the water level.

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). However, in contrast to the small Amu-Dar shovelnose which also occurred in former times in the brackish water in the Delta of the Amu Darya, *P. kaufmanni* is supposed to be salt-tolerant to a certain degree. Zholdasova (1997) suggests that this salt-tolerance enhanced the survival of the species even under the present high mineralization level.

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 fertilisers 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. kaufmanni* has not been investigated.

An additional potential threat to the species and its ecosystem may be the finishing of the Karakum Canal and thus the direct connection between the Amu Darya River and the Caspian Sea. Salnikov (1995) makes a prediction about the impact on the ichthyofauna resulting from this direct connection but considers the migration of fishes from the Caspian Sea through the Karakum Canal to the Amu Darya as unlikely.

3.2 Habitat destruction

The Amu Darya is one of the two rivers that feed the Aral Sea and represents with a total extension of 1,257 km 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 (Salnikov, 1995).

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). However, from the middle of the 1970s until the end of the 1980s the total 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).

Since in 1960 the massive hydroconstruction on the Amu Darya started the range area of *P. kaufmanni* decreased drastically because of the complete regulation of the river flow and a resulting low water level (Zholdasova, 1997). Mainly the upper course of the river was affected by this massive human impact and thus, the distribution area of *P. kaufmanni* was restricted to a small territory between Kerki and Chardzhou in the middle Amu Darya course. Zholdasova (1997) suggests that in the low-water period from the middle of the 1970s until the end of the 1980s the fall of the current rate, the clearing of the water and the decrease in the area of river beds prevented a migration of *P. kaufmanni* from the middle course of the Amu Darya to the upper course where it has not been recorded since 1989. However, there is little information available about the direct impact on the populations of *P. kaufmanni* because the species was not monitored during the 1970s and 1980s.

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. On the contrary, the irrigation network in the Aral Sea basin is still expanding. In Turkmenistan, the south-west branch of the largest irrigation canal, the Karakum Canal, will be completed in the near future and will then establish a direct connection between the Amu Darya River and the Caspian Sea.

3.3 Indirect threat

There is no information about an indirect threat of *Pseudoscaphirhynchus kaufmanni*. 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 Large 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 endangered species.

3.5 National and international utilization

The native Moslem population of Central Asia did not use these fishes for food and did not catch them. A commercial fishing began only after the appearance of the Russian population in this region at the end of the 19th century and continued until the 1930s (Birstein, 1993).

Now, *P. kaufmanni* is considered to have no commercial value and due to its small size and rare occurrence within the large range area it is not caught (Zholdasova, 1997).

However, Birstein (1993b) indicates an illegal trade of life specimens at the aquarium market - a possible new international utilization of the species.

4. **Protection status and needs**

4.1 National protection status

Pseudoscaphirhynchus kaufmanni is listed as Endangered in the Red Books of the Uzbek SSR (1983), Turkmen USSR (1985) and USSR (1984) with category I status.

4.2 International protection status

Pseudoscaphirhynchus kaufmanni 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

The Sturgeon Specialist Group of the IUCN/SSC included in their Action Plan (1994) a status survey and an international breeding programme for *Pseudoscaphirhynchus kaufmanni* in Turkmenistan and Uzbekistan, being undertaken by its group members. Results have not been published yet.

According to Goncharov et al. (1991) the few attempts to raise *P. kaufmanni* in captivity have not been successful.

Birstein (1997) states that as a conservation action for *Pseudoscaphirhynchus kaufmanni* an international recovery project is planned by scientists of Karakalpakstan (a part of Uzbekistan), Turkmenistan, the United States, and, possibly, the Russian Federation. There is no further information about this very important project which is strongly needed to protect the endangered Large Amu-Dar shovelnose.

5. **Range States**

The Range States of *Pseudoscaphirhynchus kaufmanni* are

- Tajikistan
- Turkmenistan and

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– 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:

- **Tajikistan** has not submitted any comments until the end of May 1999.
- **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. kaufmanni is sympatric with the small Amu-Dar shovelnose whose population is on the verge of disappearance. It is also closely related to the third representative of the genus *Pseudoscaphirhynchus*, *P. fedtschenkoi* which lived in the Syr Darya and is believed to be Extinct. All three species are victims of the Aral Sea ecological catastrophe.

8. References

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