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

A PROPOSAL: Inclusion of the species *Acipenser sturio* on **Appendix I** of the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

B. AUTHOR OF THE PROPOSAL: The French Republic.

C. JUSTIFICATION FOR THE PROPOSAL

1. Taxon

1.1	**Class**:	Actinopterygii	
1.2	**Order**:	Acipenseriformes	
1.3	**Family**:	Acipenseridae	
1.4	**Species**:	*Acipenser sturio* Linnaeus 1758	
1.5	**Vernacular names**:	French:	Esturgeon européen, Esturgeon commun
		English:	Atlantic sturgeon, Common sturgeon, Baltic sturgeon, German sturgeon, European sturgeon
		German:	Gemeiner Stör
		Danish:	Størk
		Spanish:	Esturíon común, Esturión atlántico
		Italian:	Storione comune
		Dutch:	Atlantische steur
		Portuguese:	Esturjão, Solho, Solho-Rei
		Russian:	Atlanticheskiî osëtr, Baltiîskiî osëtr
		Swedish:	Europeisk stoer

N.B.: "Atlantic sturgeon" and "Baltic sturgeon" are also names used for *Acipenser oxyrinchus*.

2. Biological information

2.1 Range (past and present)

Acipenser sturio used to be abundant along the European coastline and in most of its major rivers and was also one of the various species of sturgeons with the greatest range. It was present in most of the European coastal waters in the North-East Atlantic, in particular the shallow waters of the North and Baltic Seas, as well as in certain coastal waters of the Black Sea and the Mediterranean, specifically the Ligurian Sea, the Tyrrhenian Sea, the Adriatic, the Ionian, the north Aegean and the Sea of Marmara (Magnin, 1962; Holcik *et al.*, 1989). The species were occasionally also spotted in the coastal waters of Iceland and in the White Sea in the north-west of Russia, as well as along the Atlantic and Mediterranean coasts of North Africa around Casablanca, Oued Bou Regreg and Fedalla (Magnin, 1962; Holcik et al., 1989).

However, breeding of *Acipenser sturio* remained confined to European waters with mature adults migrating towards fresh water in order to spawn. In the past, *A. sturio* used to swim up the major European rivers in order to reproduce. Holcik *et al.* (1989) collected all the information on the former range of the species, This spread across more than 30 catchment basins throughout Europe, until its decline, which began at the end of the 19th century.

Acipenser sturio was being heavily fished in almost all the countries where it was present. This was heavily linked to the development of the use of the trawl (Holcik *et al.*, 1989). *Acipenser sturio* was in

fact one of the most sought after fish for its refined taste. The eggs of the mature females were used in caviar production and its gelatine in the food industry (Holcik *et al.*, 1989). The collagen in the swim bladder has been used in the optical industry and in the restoration of porcelain and earthenware (fish glue).

Holcik *et al.* (1989) estimated that between 150 and 200 tonnes of the species were caught at the start of the 20th century. This amount corresponds to approximately between 14,000 and 16,000 fish. Over the next 50 years, the catches in the North Sea and particularly in the Baltic had dwindled dramatically, and *Acipenser sturio* had become a very rare species everywhere. Since the 20s, this fish has lost its commercial importance in nearly all the countries where it had previously existed. A little after the second world war, the only commercially significant population, providing an average annual catch (at the end of the 40s and beginning of the 50s) of approximately 50 tonnes of fish and 3 tonnes of caviar, was in the Gironde (Castelnaud *et al.*, 1991). While in 1947 an approximate figure of 4000 fish were still being fished in the Gironde, this figure dropped to 195 specimens in 1963 and was down to nothing in 1980.

A recent survey has shown that pollution, the artificial environments being created in all rivers, the destruction of spawning bed areas, the construction of dams and the extraction of aggregates have also been one of the major causes of the decline of the species in the catchment basins (Williot *et al.*, 2002c).

Nowadays, even though the fishing of *Acipenser sturio* has been banned in France since 1982 (by an interministerial decree of 25 January 1982) **and the species is legally protected in all the relevant countries in Europe**, *Acipenser sturio* has become a species that is in serious danger of becoming extinct (UICN CR-A2d). Two reproducing populations still existed in the mid-70s, in the Gironde estuary in France and in the Rioni in Georgia (Ninua, 1976; Holcik *et al.*, 1989; Castelnaud *et al.*, 1991; Debus, 1997). The most recent data on the distribution of the species were compiled recently (Williot *et al.*, 2002a). It is very uncertain whether the species is still present in the River Rioni. Research on its existence and on the size of the relict population ceased at the beginning of the 90s, in spite of some recent work that showed a decline in the ecological conditions required for breeding (Kolman and Zarkua, 2002). Consequently, the Gironde-Garonne-Dordogne river system in France is undoubtedly the last European basin where one can still talk about a "population", possibly the last basin where the species continues to live.

2.2 Population (estimates and trends)

The size of the current population in the North-East Atlantic and that of a possible relictual node in the Black Sea remain unknown. However, due to the spectacular decline of these populations, the number of fish to be found in nature is now undoubtedly very small, probably between several hundreds and several thousands. The survival levels of several thousands of young fish from the more recent cohorts (1998, 1994, 1995) are difficult to ascertain at sea and can only partially be carried out when they return to the rivers to breed (2 returns of males were noted in 2005 in the Gironde for the 1994-1995 cohorts, no return noted for the cohort (1988)).

It is estimated that the population of *Acipenser sturio* in the Black Sea that swims into the River Rioni in order to spawn was no more than approximately 300 specimens in the first half of the 90s (Pavlov *et al.*, 1994). Efforts at capturing the reproducing fish under a German reintroduction programme failed: no fish had been caught by the end of 1998 when this attempt was brought to an end.

In France the last two reproductions that took place in a natural environment were noted in 1988 and 1994 (Lochet *et al.*, 2004). The number of young fish born in 1988 was estimated to be somewhere between several hundred and several thousand (Castelnaud *et al.*, 1991; Lepage and Rochard, 1995). Genetic research strongly suggests that the 1994 cohort came from a single pair of breeders (Ludwig *et al.*, 2004). This is proof of the very low number of active breeders in nature, confirmed in a striking way by the decreasing number of accidental captures of breeders during their reproductive migration, approximately 0 to 1 a year over the last few years, compared to 2 to 6 in the mid-80s (Williot *et al.*,

2002c). The same goes for any fish captured at sea, approximately 3 to 4 a year over the last few years, compared to 12 to 15 a year in 1995, even if this level is highly dependent upon efforts at raising awareness in the fishing industry and the active involvement of the fishermen themselves. Deliberate illegal fishing of young sturgeons, which took place in the Gironde estuarine plume amongst winter populations where young fish were concentrated, amounting to dozens of catches a year, were also reduced after 15 years due to the rarity of new cohorts.

The fish that should actually be of the right age to reproduce in the rivers, born by very rare natural breeding recorded over the last two decades, do not swim upriver. These are essentially fish born before 1988. If these fish that left the estuary in their several thousands in the 1990s have already completely disappeared, the future of the wild population rests exclusively with the two sole cohorts born in France after this date: naturally in 1994 and through artificial reproduction carried out in France by Cemagref in Bordeaux (*Agricultural and environmental engineering research institute*) in 1995.

Despite the international protection that *Acipenser sturio* enjoys and its position as a protected species in France, in particular, and despite significant efforts undertaken in France since the end of the 70s as well as in other countries, its population has continued to decline.

2.3 Habitat (short description and trends)

During the course of its life cycle, *Acipenser sturio* population lives successively in fresh, brackish and sea water. The sole exception might be a population group in Lake Ladoga that has no access to the sea (Barannikova and Holcik, 2000).

Since breeding is so rare, we still know very little about this species use of spawning beds in fresh water and the whereabouts of the young fish in their first year. In France, a study was carried out in order to ascertain the optimum conditions for breeding in the Rivers Garonne and Dordogne and to identify the spawning bed areas (Jego *et al.*, 2002). The young sturgeons in that year appear to spend several months in a river from their first summer (Magnin, 1962; Kinzelbach, 1987; Hocik *et al.*, 1989; Rochard *et al.*, 2001). At the end of their first year, all the young fish meet in the brackish estuary area of the Gironde, which has a salinity range of between 5% to 25%, with a preference for two areas (Rochard *et al.*, 2001).

These young fish go and spend 3 to 7 years in the Gironde estuary, with seasonal migrations downstream in autumn-winter and upstream in spring-summer. The oldest individuals may also make short migrations towards the coastal area close to the estuarine plume, in habitats where they concentrate in winter and whose characteristics are not well known, before returning to the estuary in spring. Part of these 3 to 7 year old fish will leave in the autumn and migrate far towards the North Atlantic seas, along the French coasts (fish marked in the estuary have been captured more than 600 km north a few weeks later).

Research carried out on the biology of *Acipenser sturio* when it is at sea have shown that it is a coastal species and that most of the specimens are fished at depths of less than 93 metres and in 67% of cases even at depths of under 40 metres (Rochard *et al.*, 1997).

In its estuarine phase, the *A. sturio* stays essentially at the mouths of rivers that have muddy (Holcik *et al.*, 1989) or sandy-muddy bottoms, at an average depth of between 4 and 8 metres (Brosse, 2003). Once at sea, the sturgeons make seasonal migrations that can take them more than 1000 to 2000 km from their estuary. Some fish from Gironde, who were marked in the last twenty years, have been captured in the Irish Sea, the North Sea to the north of Denmark and at the entrance to the Baltic Sea (Ninua, 1976; Elie coord., 1997). The presence of large fish was noted in the past at depths of between 100 and 200 metres in the Adriatic (Holcik *et al.* 1989).

2.4 Migrations

Acipenser sturio is an anadramous species characterised by the migration of mature adults from the sea to the shallow areas of the rivers where they spawn (Holcik *et al.* 1989). The development cycle shows the existence of several migrations in volumes that vary between the adults and the young fish. The migration of immature (or young) fish to the estuary is particular to this migratory species.

The first phase in the cycle of the species takes place in fresh water. After breeding, the eggs are incubated for 80 to 104 hours, the young fish hatch out and live in the river area downstream from the spawning sites and progressively rush down to the estuary from summer to the end of autumn. The feeding and behaviour of the young fish in fresh water during the first year is still very unknown: their diet is still essentially based on macro-inverterbrates such as Oligochetes and Chironimidae larvae.

The young fish then live in the estuary for a further 3 to 7 years, making short autumn migrations along the coast close to the estuary, where they spend the winter and swim back up into the estuary in spring (Magnin, 1962; Castelnaud *et al.*, 1991; Rochard, 1992). In Gironde, this specific migration of the species is called the "St John's School". It is linked to the temperature difference between the estuary and the sea depending on the season and dynamics of the trophic resources. In the estuary, the sturgeons can be found throughout the brackish area, at depths of more than 5 metres, with sandy to sandy-muddy bottoms. They are, however, much more abundant in 2 major preferred habitat zones, both downstream and upstream in the brackish estuary, where there is a heavy density of polychaetes (Annelidae), which form the essential part of the sturgeon's diet in the Gironde estuary (Brosse, 2003).

After living in the estuary and the nearby coast, young fish aged between 3 and 7 will leave for their long migration across the vast marine range of the species and will be found along the coasts of the Bay of Biscay, the English Channel, the North Sea and the Irish Sea. Nothing is known about the determinism of this migration, nor about its food requirements or determining factors. It is during the course of this marine phase that the young fish reach sexual maturity, the gametogenic cycles (estimated to be annual for males and tri-annual for females) cause the fish to migrate back to the basin where they originated (a level of homing which is deemed to be high amongst European sturgeons) in order to breed.

The breeding migratory period varies depending on the rivers and temperature. The adults breed at the age of 10-12 for males and 13-16 for females. The sturgeons enter the rivers from January to October, mainly from the beginning of April to the end of May during high water periods. There is also some historical data (Kinzelbach, 1987) on sturgeons swimming up the Rhine in autumn (August, September, October). These fish have probably remained in the river during the winter in order to spawn in spring of the following year.

In the Gironde-Garonne-Dordogne basin, the spawning period is concentrated in spring with a maximum in May and the first ten days of June (Magnin, 1962, Williot *et al.*, 2002c), arriving at the estuary a month earlier (Magnin, 1962). The sturgeon breeds on pebbles and gravel in deep waters (more than 5 metres) that have strong currents. The eggs drift and attach themselves to the substrate. The circumstances of the spawning and the behaviour of the parents have not, until now, been directly observed.

After possible breeding, the adults rush back to the sea and leave once again on a coastal migration until the next gametogenic cycle.

3. Threats

3.1 Direct threats

- *Directed illegal fishing*

Directed illegal fishing is, following the legal protection of the species in 1982, a major cause of the disappearance of the species. The sturgeon is mainly captured to be eaten. This illegal fishing has affected several hundred animals a year during the breeding period, as this still takes place in Gironde, even though it is difficult to carry out a precise estimate. Over the last few years it was still, very irregularly, approximately 10 to 20 fish a year.

The difficulty in estimating this threat owes to the difficulty in controlling this illegal activity and the size of the area to be monitored, encompassing both fresh and seawater. There are several, small discharge points in the estuary and it is difficult to monitor them, even if the knowledge of the regulations and awareness is higher due to the proximity of technical and scientific teams. In the maritime area, the discharge points are more concentrated, but despite catches being rare due to the severe reduction in the numbers of the species, illegal sales of the fish still takes place.

- *Accidental fishing*

In the mid-90s, accidental fishing only happened for a maximum of approximately twenty fish of all ages each year. It is becoming more and more rare due to the small numbers of the species. It happens because of net fishing, which takes place along the whole coast, with a decreasing intensity as the result of the distancing of the migratory corridors along the Atlantic coast from the Gironde basin. Nevertheless, although the figures are low, these accidental catches, in conjunction with the directed illegal fishing primarily affect the young fish leaving the estuary, forming a direct threat that is all the more significant as the species are targeted intentionally. The simulations therefore show that the cumulative result of the catches can affect almost all sub-adults before they reach the age of maturity, as demonstrated by multiple catches of marked fish (Castelnaud *et al.*, 1991; Rochard *et al.*, 1997; Williot *et al.*, 2002c).

Professional fishermen have been involved in saving *Acipenser sturio* since the 70s. The river-estuary fishermen of Gironde have therefore taken part in several fish catches marking the young fish with Cemagref. Thankfully for the species, this fish is easily identifiable, even if the untimely presence of the breeding sturgeon (*Acipenser baerii*), having escaped fish-farming (see above) has complicated the task in the river and estuary areas (this species is tolerant to sea water). *Acipenser sturio* is, on the other hand, a robust animal which can easily be returned to the water while it is alive. Even when it is dead, a declaration by a fisherman provides useful information regarding the monitoring of the species and knowledge about its range.

Information campaigns at the fisheries, with direct involvement of the fishermen, professionals and amateurs, and in the marketing structures, has in the past provided very significant results in reducing the impact of accidental fishing and returning any captured fish to the water. Today, furthermore, the voluntary participation of the fishermen allows animals to be saved and to obtain important information on the species, which is held centrally in France by Cemagref. But the message must be relayed and regular reminders must be sent out by the technical and regulatory environment of the river-estuary and maritime fishing. It is therefore necessary to re-launch this campaign for everybody to be informed or reminded on the specific status of the species. There are, in fact, regrets about some instances of auctioning that took place over the last two years, with catches in the Netherlands, France and the United Kingdom.

3.2 Changes in habitat

Acipenser sturio is no longer present in any of the natural spawning areas of the rivers where the fish had previously been common. Agricultural development in all the range states in the 20th century has been accompanied by deforestation in the alluvial zones, the modification of the river discharge patterns and the destruction of spawning areas.

The extraction of sand, gravel and other materials from the spawning areas had a particularly devastating effect in the Danube, the Guadalquivir and the Garonne (Rochard *et al.*, 1990; Debus, 1997; Williot *et al.* 2002a). This activity has also reduced the benthic biomass that is the main food source for the sturgeon.

Modifications of the estuary nurseries also form a substantial threat. Work carried out in France within the framework of the last Life Nature programme sets the areas where the young fish were concentrated in Gironde. These areas correspond to the presence of polychaetes, which form the basis for the diet of *Acipenser sturio* in the first few years of its life. The extraction of aggregates and certain estuary or water current management operations that are unsuitable for the species, as well as projects located on and immediately next to these preferred habitats have caused their decline (see 4.1.).

With the beginning of industrialisation, almost all the river networks in Europe were modified by dams and other hydraulic structures that prevented the anadromous fish from reaching their spawning areas. The extent of the loss of this critical habitat has been so significant that the populations of *Acipenser sturio* have clearly droppped since the start of the 20th century.

The dams are not adapted and also prevent the sturgeons from migrating downstream. Furthermore, the regulations regarding run-offs into rivers where spawning beds were present has caused considerable fluctuations in the level of the water. Spawning beds have therefore dried up and the success in breeding the species has been further reduced.

3.3 Indirect threats

The existence of indirect threats to *Acipenser sturio* is rarely described in recent studies. It is very likely that the decline in the quality of the fresh water tied in with high levels of pollution in most of the basins where the sturgeon may be present also affects its reproduction as has occurred with several other species of sturgeons. Such a hypothesis has been put forward to explain the deterioration in the quality of sperm noted by the absence in the mobility of the sperm observed amongst reproductive males accidentally captured in the Garonne and the Dordogne (Williot *et al.*, 2002c). The impact on *Acipenser sturio* has not, however, been studied and the extent of this degenerative phenomena is unknown. Pollution by hydrocarbons, water inlets and thermal pollution (electricity stations) are also potential indirect threats.

There are also possibilities of hybridisation (discovered by experimentation) between *Acipenser sturio* and the *Acipenser baerii* and other doubts relating to the future of hybrids and their fertility. Work in a natural environment shows that there is a risk of competition for the trophic resource between these two species. Several *Acipenser baerii* males that escaped from fish-farming in 1999 have been captured as spermiants in the Garonne and Dordogne during periods in the year that correspond to *Acipenser sturio* breeding periods. In addition to the risks of the species breeding or of crossbreeding that have not yet affected the last current wild species' breeding basin and resulting risks of competition, there is a considerable risk of the two species being confused in fresh and brackish water.

Risks of accidental introduction of parasites or pathogenic organisms in the natural environment cannot be excluded.

3.4 Threats particularly affecting the migrations (also see 3.1)

During the course of its life, *Acipenser sturio* carries out various migrations in the Gironde estuary, providing it can circulate freely. During the breeding period, the estuary is very vulnerable to illegal

fishing, therefore at a particularly vulnerable period in the migratory cycle. The silting up in the lower parts of the rivers and estuaries may cause complications in the recolonisation of these areas between two migratory movements and consequently in the restoration of a viable population of sturgeons.

From the point of view of reintroducing the *Acipenser sturio* population in various countries, and in particular in the North-East Atlantic, all the dams in the catchment basins of the species' range will provide an obstacle to this recolonisation. Various dams built in the 20th century and particularly in the second half of the century, up to the 1980s in France, formed insurmountable barriers to the adults and deadly traps for the downstream migration of the young fish when the structures became equipped with turbines. Some of these dams, which were monumental in size, prevented any access by fish migrating upstream to those in the basins.

Ambitious adaptation programmes were carried out, in particular in France, in order to equip them with corridors where the fish could pass and restore their free circulation along channels of migration. Since 1985, adaptations were carried out in the Dordogne basin, in particular providing corridors for the fish. Problems encountered by the fish during their downstream migration to hydroelectric production sites have long remained unresolved due to the absence of any technical alternatives. The adaptation of surface outlets allows us today to limit the numbers of fish in the turbines and to reduce the number of deaths. Finally, the removal of certain dams, such as on the Loire, has become a possibility.

3.5 National and international farming

The European sturgeon is no longer allowed to be farmed, either nationally or internationally.

4. Status and requirements for protection

4.1 National protection

The species is protected in nearly all countries where it is currently found. In France, the fishing and sale of *Acipenser sturio* was banned by an interministerial decree of 20 December 2004. This decree extends the protection to specific habitats of the species by banning their destruction, alteration or damage.

4.2 Community and international protection

At community level, it appears in Appendix IV of the "Fauna-flora Habitats" Directive of the European Communities Council EEC/92/43 as well as in Appendix II of this same directive setting out the designation of Special Conservation Zones within the Natura 2000 European ecological network.

Acipenser sturio is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora or CITES (Appendix I), the Convention on Migratory Species (Appendix II) and the Bern Convention (Appendix III) relating to the preservation of wildlife and the European environment. The Bern Convention provides an extremely useful framework for reflection with a view to drawing up a plan of action and has demonstrated its effectiveness in this area (*Large Carnivore Initiative for Europe, Large Herbivore Initiative for Europe, Birdlife* action plans, etc).

The *A. sturio* is also included in the 2004 list of species that are threatened and/or in decline in the OSPAR convention for the protection of the marine environment in the North-East Atlantic.

Finally, *Acipenser sturio* is assessed as "Critically Endangered" in the IUCN Red List of Threatened Species.

4.3 Additional requirements in terms of protection

Acipenser sturio is one of the most threatened fish in the world and almost the only way of reintroducing its population is through *ex situ* conservation projects. Since the sturgeon is almost extinct throughout its range, in addition to measures aimed at reducing current threats, only the conservation of specimens in captivity and the monitoring of its artificial reproduction to strengthen its position in its natural environment will allow us to save this species from extinction over time, since the likelihood of it reproducing in its natural environment is extremely low (one natural reproduction since 1988).

In France, 3 groups of animals are at an *ex situ* conservation site at Cemagref in Bordeaux, both in brackish and salt water: 2 groups are of wild origin (23 fish born between 1984 and 1994 and originating from accidental catches + 19 fish born in 1994 in a natural environment and sampled as young fish, probably brothers-sisters) + 1 group of 43 individuals born via artificial breeding in 1995 from a pair of sturgeons from a natural environment, bringing to 85 the total number of animals.
The researchers at Cemagref know how to breed wild fish caught in good conditions, even though oogenesis does not take place every year and the technique has already successfully led to an experimental programme to strengthen the species in the Gironde basin (Williot *et al.*, 1997; Williot *et al.*, 2002b); Lochet *et al.*, 2004; Williot *et al.*, in press). On the other hand, we still do not know for sure what the optimum breeding conditions for these fish are in order that they may develop a normal sexual cycle and provide good quality products. 3 to 5 years will still be required in order to obtain stock held by Cemagref for a first maturation series and 3 to 4 additional years to be certain of a second maturation. The difficulties in obtaining wild male and female fish simultaneously at the right stage of maturity has to date been the main obstacle to improving artificial reproduction and larval breeding techniques.

In Germany, 18 fish from Cemagref in Bordeaux are kept at IGB (*Leibnitz Institute of Freshwater Ecology and Inland Fisheries*) where their work is aimed mainly at improving conditions for breeding in fresh water, a study of the effects of temperature variation and an exchange of biological material with Cemagref for genetic, histological and ecotoxicological studies. This work must lead to a future increase in numbers in the Elbe and the Rhine. In fact, there seems today to be a serious chance of the species being reintroduced in Germany, considering the progress made in combating pollution and the potential measures for limiting the effects of accidental fishing and managing the water currents.

Reintroducing the species in another large river basin, as well as the *ex situ* breeding of a fraction of the reproductions obtained at other sites, in order to strengthen the conservation of this critically endangered species, will lead to essential safety levels by spreading the risks and strengthening cooperation between countries for the protection of the species in marine areas that are occupied jointly by these two populations. It would contribute to the expansion of this reintroduction programme across the former range of this species that had previously been shared (Rochard coord., 2002).

These projects aimed at reintroducing the species, in addition to actions aimed at reducing the direct threats must form part of an international plan of action based on 4 major objectives (WWF France and World Sturgeon Conservation Society, 2004):

- *first objective*: slow down the decline in the numbers of the last population of the species in its natural habitat and anticipate the risk of increasing accidental catches following an increase in the population. The priority is to have an information and awareness campaign amongst the European fishing grounds structured around documents in many languages and using materials drafted within the framework of previous documents and around partnerships with professional organisations and authorities responsible for fishing so that the fishermen can themselves become the primary players in the conservation of *Acipenser sturio*;

- *second objective*: to strengthen the methods of conservation *ex situ* through the extension and increased protection of cohorts of parents in order to free them from the genetic limitations of reintroduction programmes using a small population. It is the sole means of supplying the material to repopulate the natural catchment basins due to the extreme weakness of the remaining population;

- *third objective*: developing and applying specific management plans for each region promoting reintroduction in the catchment basins and European coastal waters with programmes undertaken on a significant scale in restoring the habitats (in particular in spawning areas) and re-establishing a free circulation of fish in migration channels;

- *fourth objective*: reintroducing populations that are sufficiently viable and vigorous that can resist the pressure of controlled fishing through regular repopulation activities, over at least one generation. An effective control of the measures for reintroduction that are used will have to be set up, together with regular monitoring of their effectiveness in order check on the local conditions.

The parallel objective of such a programme is to set up the conditions for international collaboration and coordination in order to transfer the results and adapt the methods used for the progressive reintroduction of *Acipenser sturio* in its former range states, in particular along the North-East Atlantic coasts and in the Rioni in Georgia, but also for the reintroduction of other species of sturgeons and other migratory endangered fish in Europe. As a result, an international programme to reintroduce *Acipenser sturio* must include a strong element of reintroducing the habitat and dynamics of the river and estuary hydrological operation, which could also benefit other migratory species (not only the fish).

Long-term actions consist in transferring the results of the preliminary phases through collaboration with other programmes in Europe and in neighbouring regions for other species of sturgeon listed in the Convention on Migratory Species, for example *Acipenser naccarii* in the Po basin, *Acipenser oxyrinchus* in the Baltic basin, *Acipenser ruthenus* in the Black Sea (Danube population).

5. Range states

The only countries that still have spawning areas for *Acipenser sturio* are France and Georgia. The most recent data, as indicated by the catches, only relates to France, the Netherlands and the United Kingdom in the North-East Atlantic. Given the longevity of the species and the possibility that the adults can cover long distances in the sea, isolated individuals may still be living in various range states, although not as population groups, with the exception of France and possibly still Georgia.

The species is therefore at critical risk of extinction (CR) or already extinct (EX) in all the countries of the range:

ALBANIA (EX?), Algeria (EX?), AUSTRIA (EX?), BELGIUM (CR?), BULGARIA (EX?), CROATIA (EX?), DENMARK (EX?), Estonia (EX?), FINLAND (EX?), FRANCE (CR), GEORGIA (CR?), GERMANY (CR?), GREECE (EX?), HUNGARY (EX?), Iceland (EX?), IRELAND (EX?), ITALY (EX?), MOROCCO (EX?), NETHERLANDS (CR?), NORWAY (EX?), POLAND (EX?), PORTUGAL (EX?), ROMANIA (EX?), Russian Federation (EX?), SLOVENIA (EX?), SPAIN (EX?), SWEDEN (EX?), SWITZERLAND (EX?), Turkey (EX?), UKRAINE (EX?), UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND (CR), Yugoslavia (EX?).

6. Consultations with other range states: under way

7. Supplementary comments

The Convention on Migratory Species is an institutional and legal framework that, for species listed in Appendix II, allows one to reach international cooperation agreements on species whose conservation status is deemed to be unfavourable by the countries that have signed up to the convention. It is for this reason that the species of sturgeon is already listed in Appendix II.

The position of this species has, nevertheless, continued to worsen and, according to the latest scientific data available and the IUCN (The World Conservation Union), it is currently in danger of extinction and will also require the implementation of international agreements and the development of well targeted actions by Parties to the Convention on Migratory Species which are range states. This situation of a species threatened with extinction therefore totally justifies a request for it also to be included in Appendix I.

Such an initiative also ties in with the individual obligation of each country that has signed up to the Bern Convention to implement conservation measures for species appearing in Appendix II of this other convention and which the European sturgeon is part of. It also ties in with the EEC/92/43 directive according to which the sturgeon appears in Appendices II and IV (see 4.2).

Furthermore, the Convention of Migratory Species brings added security in terms of protection of the species as the field of application of this worldwide convention recognises that the countries must protect the wild migratory species that live within its national jurisdiction borders or which cross these borders and can therefore cover the whole marine environment in which a large part of the European sturgeon's biological cycle takes place.

It is therefore an extended vision and a coherent framework which is provided to Parties that have signed up to the Convention on Migratory Species, to undertake a determined and proactive step for a species that is in danger of extinction. The situation of this species, deemed to be Critically Endangered, can be scientifically proven and is based on convincing data in the terms of the above mentioned Convention (Article I-4 and Article III-2) and cannot be contested. On a political level, this measure would offer the advantage for the Contracting Parties to express their common wish to remedy this situation and would give full backing to the drafting of an *Acipenser sturio* international plan drafted with all the government and non-government players in the range states of the species, but also with the secretariats of the various conventions involved, which would ensure optimum governance of this matter.

Registration of this species of sturgeon in Appendix I would allow adequate conservation measures to be developed at an international level, both for the whole marine environment and for the river environments involved in order to:

- ensure, that the European sturgeon does not become extinct (Article III-4a);

- prevent, eliminate, compensate or minimise the negative effects of the activities that cause serious damage to the migration of this species (Article III-4b), as is the case in particular with accidental fishing at sea, for which an international campaign would have to be launched aimed at sea fishermen with the close collaboration of the profession;

- prevent, reduce or monitor the factors that place this species in danger or that risk placing it in more danger (Article III-4c), as is the case with illegal fishing, but also with the accidental introduction of exotic species, as is the case with the Siberian sturgeon (*Acipenser baeri*) with which there is the possibility of hybridisation.

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