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Status Assessment 2020 - European Sturgeon

The status of European sturgeon is still highly critical in the OSPAR area, however a notable increase in abundance in Regions II, III, and IV due to restocking programmes in the Gironde and the Elbe river systems have been observed. A reproductive population is still non-existent but expected in the near future in the Gironde system in France. Threats, mainly from habitat alteration and bycatch in the Greater North Sea, Celtic Seas, Bay of Biscay and Iberian Coast as well as increased abundance of alien sturgeon species still pose a significant threat to this species.

OSPAR QSR2023

(/en/ospar-assessments/quality-status-reports/qsr-2023/)

Assessment of status		Non-Breeding Distribution		Non-Breeding Population size		Breeding Distribution		Breeding Population size		Condition i.e. breeding productivity		Previous OSPAR status assessments	Status
Region	I												NA
	II	↑	1,5	↑	2,5	←→	2,5	←→	2,5	←→	2	•	Poor
	III	↑	1,5	↑	2,5	←→	2,5	←→	2,5	←→	2	○	Poor
	IV	←→	1,5	↑	1,5	←→	1,5	←→	2,5	←→	1,5	•	Poor
	V												NA

⊞ Table Legend

⊞ Method of Assessment

Assessment of key pressures		Habitat alteration (spawning and nursery sites)		Poaching		Bycatch mortality		Introduction of non-indigenous sturgeons into open waters		Pollution		Estuarine and coastal feeding habitat alterations		Changes to river flowrate		Predation by introduced non-indigenous species (i.e. *Silurus glanis*, *Zander lucioperca*)		Threat or impact	
Region	I																	NA	
	II	←→	2	↓	5	←→	2	↑	1	←→	1	↑	2	↑	2	←→	1	←→	5
	III	?	5	↓	5	←→		↑	1	←→	1	↑	2	↑	2	↑	1	←→	5
	IV	←→		↓	5	↓	1	↑	1	←→	1	←→	1	↑	2	↑	1	←→	5
	V																	NA	

Confidence

High confidence in the status assessment because of the quantitative data used.

Low confidence in threat assessment because understanding of future effects of climate change and development of fisheries are unclear.

Background Information

- Year added to OSPAR List: 2003 (OSPAR 2009) The original evaluation of European sturgeon referred to global importance, decline and sensitivity criteria, with information also provided on threat. (https://www.ospar.org/site/assets/files/1888/sturgeon.pdf (https://www.ospar.org/site/assets/files/1888/sturgeon.pdf))
- Global/regional importance: The Common sturgeon was limited in its distribution to a population centred on the River Gironde in France at the time of listing (2003). Thus, the OSPAR Maritime Area is of global importance for this species.
- Decline: The species was once widely distributed in European waters, from the Barents Sea to the Black Sea, but was evaluated as extinct in a number of its former spawning rivers at the time of listing (2003) with only one population remaining throughout Europe, increasing the risk of a complete loss of the species.
- Sensitivity: Due to its life history characteristics (long-lived, late maturing and relatively slow to reproduce) the species was considered sensitive to adverse human activities with slow recovery time in response to population impacts. The species is vulnerable to physiological stresses when they migrate between fresh and saline water and it is at this time that they are also most vulnerable to fishing.
- Anthropogenic pressures and biological factors: The species was considered threatened due to lack of natural reproduction and mortalities through by-catch at the time of listing (2003).
- Last status assessment: 2008. OSPAR (2009) concluded that the original evaluation was accurate. There was concern that the management measures at that time were not sufficient to allow for the recovery of this species and that because of the extremely depleted state of A. sturio further actions are most likely required to ensure its' survival.

Geographical Range and Distribution

The European sturgeon was historically inhabiting major European rivers and coastal marine regions (Rosenthal et al. 2007). By the time of the last assessment only one population was shown to still persist in the Gironde with its tributaries Garonne and Dordogne. All other populations are considered extinct or missing.

The current marine range of the species, as detemined from by-catch records, extends from the north of Spain to the Kattegat and around the British Isles. There is a notable increase in distribution range since the last assesment due to changes in abundance attributed to releases in the Gironde and the Elbe systems and seasonal migration variation (FNAP 2020-2029).

Method of assessment**:** 2a for Gironde River and Bay of Biscay and Iberian Coast (Region IV), 2b other regions.

Population/Abundance

Trends in relative abundance show that the number of subadult sturgeons in the Gironde estuary and the Bay of Biscay are increasing as a result of the releases since 2007 in partial fulfillment of the French National Action Plan 2011-2015 (DREAL Aquaitaine, 2011). Limited releases in the Elbe River system under the German National Action Plan (Gessner et al. 2010) have resulted in increased reports of bycatch in the North Sea.

Mature male European sturgeons were observed in the Gironde estuary and coastal waters in increasing numbers in the reporting period. It is expected that mature females will be observed in the upcoming years. The occurrence of the fish released in the Gironde changed over time. In association with the releases between 2007 and 2015, the majority of catches occurred in the estuary. With increasing age the fish migrated into coastal waters and into open marine areas. In recent years, an increasing number of fish returned from the marine areas to the estuary prior to reproduction (**Figure 2**).

Method of assessment: 1a – Source: FNAP 2020-2029

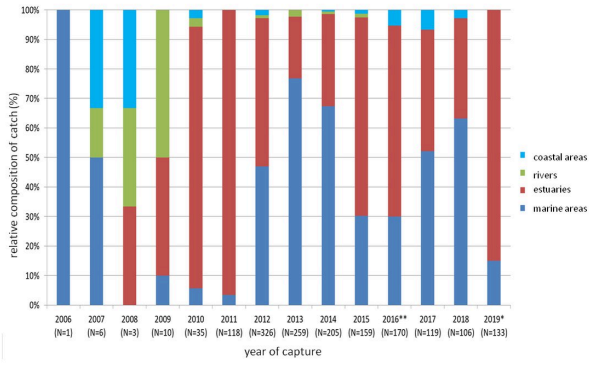

Figure 2: Utilization of different habitats by European sturgeon following the releases of juveniles between 2007 and 2015 in the French Gironde system

*/**not fully analysed (French AP 2020-2029)

Figure 1 Marine and freshwater distribution of European sturgeon. Light blue indicates rivers of past occurrence, dark blue gives the last river system of recent occurrence (Gironde, France), dashed dark blue indicates river system with reintroduction ongoing (Elbe River, Germany), green indicates coastal distribution up to the 100m depth contour (modified after Friedrich et al. 2019)

Condition

The feeding behaviour, growth and health condition as well as sex and stage of maturity of individuals from the population of the European sturgeon of the Gironde system have been assessed by stomach flushing, mucus sampling, blood sampling, external examination for parasites, pollutant levels, and ultrasound scans (Acolas et al. 2019) indicating good overall condition of the fish. For the Gironde population, comparison between wild fish and stocked individuals shows similar growth, migration and distribution patterns.

After the (preliminary) interruption of releases in 2015 the mean total length of the fish increases significantly over time (**Figure 3**), indicating lack of recruitment of juveniles and the return of the first mature males into the system.

Method of assessment: 1a – Source: FNAP 2020-2029

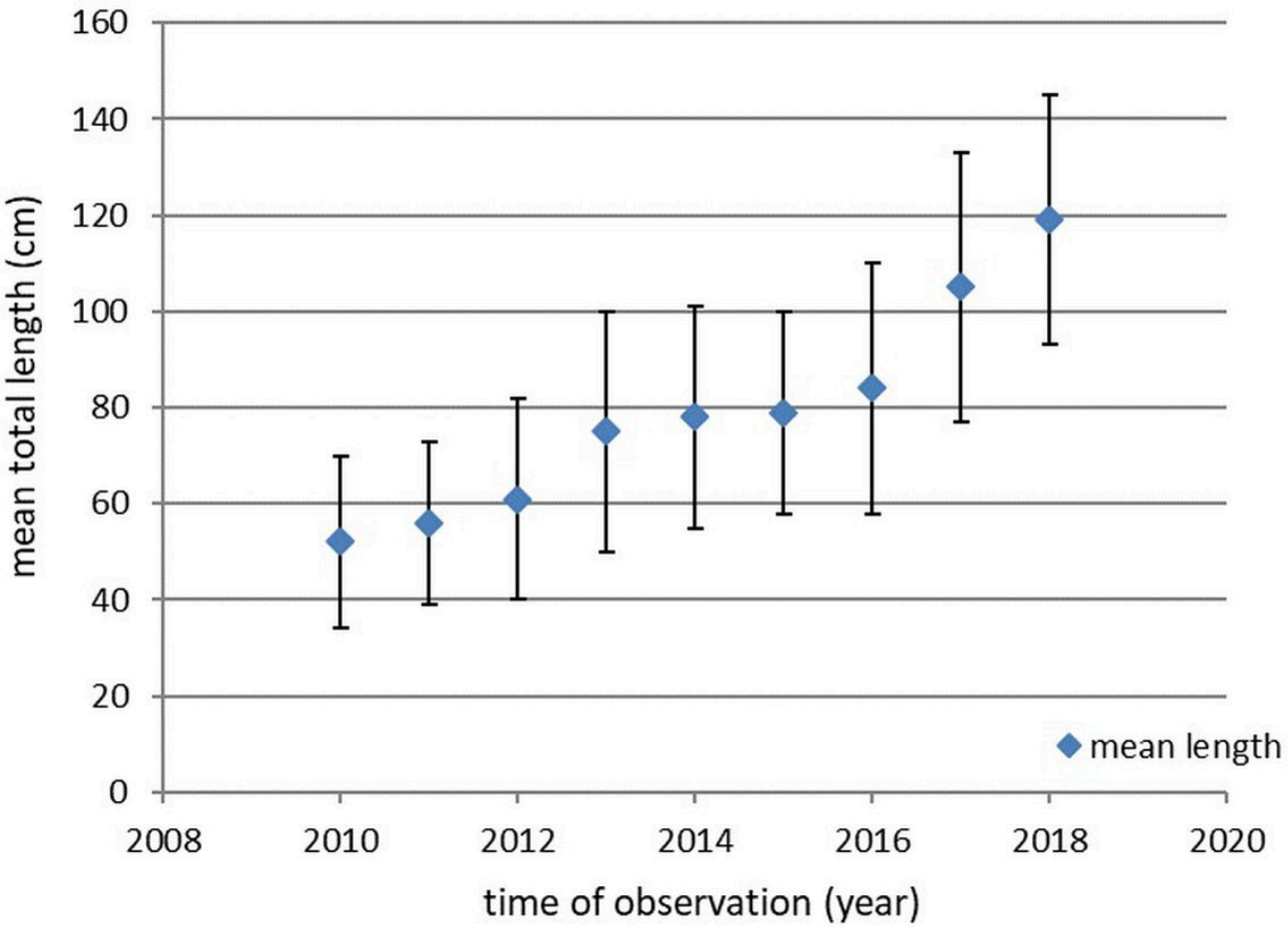

Figure 3: Development of the mean total length (cm ± SD) of recaptured sturgeons released in the French Gironde system over time

Threats and Impacts

Bycatch is the main threat for the last remaining population. Poaching in the future potentially can have a detrimental impact upon population development (Jaric & Gessner 2013). Coastal infrastructure developments can have detrimental effects through loss of productive feeding habitats or migration obstruction.

Stability of bottom sediments and maintenance of hydrodynamic conditions providing ample opportunity for benthic invertebrates to thrive are essential prerequisites for a sufficient food base for this species. Dredging, hydro-constructions (groynes), and bottom touching fishing gear adversely affect these conditions and results in a reduction of carrying capacity.

Climate change has the potential to adversely affect the reproduction and early life phases of the species due to altered river discharge providing suboptimal attraction flow for spawning migration, untimely cues for spawning by asynchronous temperature and discharge development and elevated summer temperatures that exceed the temperature tolerance of the species (Delage et al. 2014, Lassalle et al. 2010).

Introduction of non-indigenous sturgeon species have increasingly been observed (Arndt et al. 2002, Kirschbaum et al. 2011). The potential impacts of the alien species comprise introduction of pathogens, hybridization, and competition for food (Arndt et al. 2002). In addition, the introduction and mismanagement of predators such as the Wels catfish (Silurus glanis) for angling purposes increases the risk of predation of sturgeon juveniles.

Measures that address key pressures from human activities or conserve the species/habitat

- By national legslation the species is protected in Belgium, Denmark, France, Germany, the Netherlands, Sweden, and the UK. It is listed in the National Catalogue of Endangered Species in Spain (Rosenthal et al. 2007). The species is listed under Annex 2 and 4 of the Flora, Fauna, Habitat Directive EWG 43/92;
- France and Germany have national Action Plans in place;
- In Belgium, Denmark, France, Germany, Spain, The Netherlands, and the UK awareness raising activities were undertaken (FNAP 2020-2029);
- France has six MPAs designated for the European sturgeon;
- France has a monitoring programme in place (Acolas et al. 2011). Denmark, France, Germany, UK, and the Netherlands have ongoing bycatch monitoring.
- France, Germany, Spain and the Netherlands have adopted measures to minimize impacts and improve access to critical habitats.

Communication campaigns (fisheries, fisheries administration, auctions, stakeholdes) have proven to be successfull (FNAP 2020-2029) and need to be intensified spread throughout the range of the species to allow application of best practice fisheries techniques, compliance and ensure enforcement.

Conclusion (including management considerations)

Overall, the population of European sturgeon in the core area of its range (Region II, III, IV) is still highly endangered while showing slight signs of recovery and recruitment of mature fish based on releases throughout the period 2007-15. A reproductive population is expected in the near future in the Gironde system (Region IV). It is of critical importance to further reduce bycatch associated mortalities in fisheries in all regions. The joint development of a bycatch database with all range states will be of major importance for the assessments of future population development, habitat utilization and migration patterns. Adverse impacts upon feeding and nursery areas still impose a major threat upon population development. Current practices in fish farms and ornamental fish trade show clear indication for insufficient biosecurity leading to increased numbers of non-indigenous sturgeon species in the wild.

Based upon the findings in this assessment the species still warrants a priority action by OSPAR.

Knowledge Gaps

Factors that influence mortality need to be investigated in more depth to better understand the role of different impacts on the mortality rate of the species. Since the fisheries induced mortality is crucial for the potential of the population to recover (Jaric & Gessner 2013), more detailed information on the impact of fishery is required. Identification of habitat requirements for reproduction, early life phases, as well as ongrowing in estuaries and marine areas would be helpful to determine aggregation areas that render the species vulnerability against by-catch, poaching but also to pollution when it overlaps with aggregation areas. A joint database development on bycatch data may help to identify (marine) distribution patterns and to identify such aggregation areas. Pollution effects during ontogenesis are poorly documented and are considered to be extremely variable depending upon life cycle phase and age. The origin of individuals from occasional catches in UK waters needs to be investigated to identify their relevance for regional restoration. The role of predation by indigenous as well as non-indigeneous predators on early age classes needs further investigation to determine its impact throughout the life cycle.

Context & Guidelines

Guidance on the Development of Status Assessments for the OSPAR List of Threatened and/or Declining Species and Habitats

OSPAR Agreement 2019-05e (https://www.ospar.org/documents?v=40966)

⊞ References

Sheet reference:

BDC2020/European or Common sturgeon

OSPAR COMMISSION (https://www.ospar.org)