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Threatened fishes of the world: *Acipenser ruthenus* Linnaeus, 1758 (Acipenseridae)

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Common names: Sterlet (E) Kecsege (Hu) Cega (Ro) Jeseter maly (Slov). **Conservation status:** Under IUCN, listed as Endangered in principal rivers (Volga, Danube) entering the Caspian and Black seas. Hungarian and Romanian sector of Danube population listed as Vulnerable. Dnieper River population listed as Endangered. In Siberia, the Ob, Irtysh and Yenisei River populations are Endangered (Birstein et al. 1997). The sterlet is listed under Appendix II of CITES. **Identification:** D 32–49, A 16–34 rays, 11–18 dorsal scutes, 56–71 lateral scutes and 10–20 ventral scutes. Body elongated and tapering posteriorly. Rostrum sharply pointed, length variable depending on age of individual or stock of origin. Two pairs of fimbrated barbells originating closer to tip of rostrum than mouth. Middle of the upper lip indented; lower lip interrupted. Mouth ventrally situated and small. Eye relatively large compared to other sturgeon species, comprising 12–14% of head length. Body covered with tiny denticles and five rows of scutes (1 dorsal, 2 lateral, 2 ventral). Post-dorsal plates tiny and numerous. Post-anal plates also small and scattered. Pre-anal plates small and in a single row of 1–4 (Hochleithner & Gessner 1999). Maximum size for *A. ruthenus* rarely exceeds 3 kg in weight and 80 cm in length. Coloration usually dark brown with lateral scutes forming a prominent white lateral band. Ventral surface white to pale yellow. **Distribution:** Widely distributed throughout the Ponto-Caspian Region, Europe and Siberia. The sterlet is a potomodromous resident of large rivers flowing into the Caspian, Black, Barents and Kara seas. In the Danube, *A. ruthenus* historically occurred as far upstream as Germany (Heckel & Kner 1858). The once large population in the upper Danube between Regensburg and Passau was thought to be local and not an annual influx of migrants (Kinzelbach 1994). No longer present in the German portion of the Danube and is rare in Austria (Balon et al. 1986). **Abundance:** Most common in the middle reaches of the Danube. In recent years, the sterlet has made a considerable resurgence in Slovakia and Hungary and is abundant in Serbia. Also present in the Tisza River, a Slovak-Hungarian tributary of the Danube (Hensel & Holcik 1997). Less common in the lower Danube. In Russia, *A. ruthenus* was once common to the mid and lower sections of the Volga River but was relatively rare in the Don, Dniester and Dnieper. In Siberia, it inhabits the Ob and Yenisei river basins but is absent from the Lena Basin. The 1990s saw a marked increase in the number of commercially caught sterlet in the Slovakian section of the Danube. This is likely due to their ability to spawn in the main stem of the Danube rather than requiring tributaries or floodplains for reproduction (Balon & Hoffman 1995). Rare in Austria despite repeated stocking efforts in both the Danube and Drava rivers since the 1980s (no more than 1000 individuals are stocked annually). In Siberia, sterlet have not been intensively stocked and hence, are rare. **Habitat and ecology:** The sterlet is a potamodromous species, migrating entirely within a river in search of food or to breed. Feeds primarily on insect larvae, crustaceans, mollusks and oligochaetes (Hochleithner & Gessner 1999). As water levels rise in spring, sterlet leave the main river channels and move into inundated flood plains and smaller side channels for feeding. In winter, sterlet seek out deeper pools and become inactive (Berg 1968). *A. ruthenus* is the smallest species of sturgeons and relatively short lived. **Reproduction:** Sterlet reach maturity between 3 and 8 years of age. Spawning takes place at temperatures ranging from 12 to 17 °C (Sokolov & Vasil'ev 1989). Sterlet are known to spawn in floodplains or main river channels. Adhesiver eggs are deposited in current over a pebbly or stony substrate. **Threats:** Almost all major rivers inhabited by *A. ruthenus* have been dammed which has significantly reduced spawning habitat for most stocks. Those populations which rely on floodplain habitats for spawning have been most seriously affected due to reduced and regulated discharges below impoundments. In the Danube, overfishing and anthropogenic factors have greatly reduced abundance of *A. ruthenus*. In the lower Danube, the sterlet is now considered endangered. Dredging is a major threat to this species since it's life-history is largely dependent on channel habitats. **Conservation action:** Reintroductions are currently underway in the Danube, Hungary and Austria. Harvesting of wild stocks has been prohibited in the Ukraine. Hungary, Romania and Bulgaria have regulations regarding fishing gear, seasonal closures and minimum size limits. In Russia, the capture of sterlet is forbidden from some watersheds while a limited fishery is permitted on the Ob River (Ruban 1997).

Heckel, J. & R. Kner. 1858. Die Suesswasserfische der Oesterreichischen Monarchie mit Ruecksicht auf die angrenzenden Laender. Verlag v. Wilhelm Emgelmann, Leipzig. pp. 328–371.

Hensel, K. & J. Holcik. 1997. Past and current status of sturgeons in the upper and middle Danube River. Environ. Biol. Fish. 48: 185–200.

Hochleithner, M. & J. Gessner. 1999. The Sturgeon and Paddlefishes (Acipenseriformes) of the World: Biology and Aquaculture, AquaTech Publications. 165 pp.

Kinzelbach, R. 1994. Ein weiterer Nachweis des Sterlets, Acipenser ruthenus, in der wuertembergischen Donau. *In*: Limnologie aktuell, Vol. 2, Biologie der Donau, Gustav Fisher Verlag, Stuttgart. pp 282 – 291.

Ruban, G.I. 1997. Species structure, contemporary distribution and status of Siberian sturgeon, *Acipenser baerii*. Environ. Biol. Fish. 48(1 – 4): 221–230.

Sokolov, L.I. & V.P. Vasil'ev. 1989. Acipenser ruthenus Linnaeus, 1758. *In*: J. Holcik (ed.) The Freshwater Fishes of Europe, Vol. 1, pt II, General Introduction to Fishes, Acipenseriformes, AULA-Verlag, Wiesbaded. pp 227 – 262.