

First evidence of hybridization between endangered sterlets (*Acipenser ruthenus*) and exotic Siberian sturgeons (*Acipenser baerii*) in the Danube River

Arne Ludwig · Sebastian Lippold · Lutz Debus ·
Ralf Reinartz

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Abstract Most natural populations of Eurasian sturgeons have declined dramatically during recent decades, reaching historic low levels today. During the same period, sturgeon has become very popular in European aquaculture. Because many hatcheries are located near rivers, their unintentional escape is often documented, especially during floods. Until now, no cases of successful hybridization of these escaped fish with wild stocks have been reported. In this study, the genetic structure of a highly threatened population of sterlets (*Acipenser ruthenus*) from the Upper Danube was analysed as a requirement for their conservation. Surprisingly, we observed genotypes and morphotypes of Siberian sturgeon (*Acipenser baerii*), as well as hybrids between this species and native sterlets. This hybridization poses a serious threat for the

survival of this isolated sterlet population in the upper part of the Danube. For the first time, natural reproduction is documented for Siberian sturgeon outside their natural range in Europe. This finding demonstrates the risk of extinction by hybridisation of endangered populations. We would like to stress that taking into consideration the risks for native sturgeon populations, farmed sturgeon should not be released into the wild, and all measures should be taken to prevent their accidental escape.

Keywords Introgression · Release program · Extinction by hybridisation

Introduction

Today sturgeons and paddlefishes (Acipenseridae) are highly endangered freshwater fishes. Overharvesting and habitat destruction have caused dramatic population declines worldwide. Due to the successful management of North American species, their situation is less critical than that of their Eurasian counterparts (Pikitch et al. 2005). Several serious risks jeopardize all Eurasian species and populations; the most important are unsustainable harvest and poaching, river damming, and the intentional or unintentional release or escape of exotic sturgeon species into natural waters. Several efforts have been made to reduce the impact of these threats; e.g. the development of genetic approaches for trade control

A. Ludwig (✉) · S. Lippold
Department for Evolutionary Genetics, Leibniz Institute
for Zoo and Wildlife Research, 10252 Berlin, Germany
e-mail: ludwig@izw-berlin.de

S. Lippold
Department of Evolutionary Genetics, Max-Planck-
Institute for Evolutionary Anthropology,
Deutscher Platz 6, 04103 Leipzig, Germany

L. Debus
NAWA GbR, Am Dorfteich 7, 18184 Broderstorf/EMF
GmbH, Forstweg 3, 31582 Nienburg, Germany

R. Reinartz
Büro für Fischereifragen und Gewässerökologie,
Schöppingenweg 70, 48149 Munster, Germany