

North American sturgeons and paddlefish: biology, threats and conservation

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Greg T. O. LeBreton, F. William H. Beamish & R. Scott McKinley (editors) 2004. *Sturgeons and Paddlefish of North America*. Kluwer, Dordrecht, 323 pp, US \$86.00 (hardcover)

Sturgeons and paddlefishes belong to an ancient group of vertebrates, the order Acipenseriformes, and are among the most valuable commercial fishes. They are anadromous or restricted to freshwater, and live in cold to temperate northern hemisphere. The extant Acipenseriform consists of two families: Acipenseridae or sturgeons with 25 species, and Polyodontidae or paddlefishes with two. Unfortunately, nowadays sturgeons and paddlefishes the world over are greatly depleted in numbers due to overfishing, damming of rivers, and pollution. I totally agree with LeBreton, Beamish and McKinley that “Sturgeon and paddlefish are strange and wondrous animals”. In fact, this small group of fishes is the target of many conservation or management programmes, research papers, and scientific or technical books.

Two classic reference works were published near 20 years ago compiling the available information about North American (Binkowski and Doroshov 1986) and European (Holcík 1989) sturgeons. How-

ever, the current scientific and technical interest in these primitive fishes is evident, and several meetings and books testify to this concern. Some highlights of this recent interest are the five International Symposia on Sturgeons held in Bordeaux (France) in 1989, Moscow (Russia) in 1993, Piacenza (Italy) in 1997, Oshkosh (USA) in 2001 and Ramsar (Iran) in 2005; as well as the foundation of the World Sturgeon Conservation Society in 2003. In North America, two relevant milestones were the meetings held in New York in 1994 and in St. Louis in 2000, and the subsequent proceedings volumes (Birstein et al. 1997, Van Winkle et al. 2002). On the other hand, world information and references about Acipenseriform fishes were compiled by Hochleithner and Gessner (2001) and Hochleithner et al. (2001), and a first global review of sturgeon and paddlefish fisheries was very recently presented by Pikitch et al. (2005).

Sturgeons and Paddlefish of North America provides many insights into a variety of biological characteristics of these fishes. The title is comprehensive enough to include any kind of information about the Acipenseriform fishes of North America. The book, besides the Forewords, consists of an Introduction, 14 main Chapters, and a Conclusion. Furthermore, an Identification Key for species and a Glossary close the volume. The materials presented are successful at summarising and synthesising the current state of knowledge in this group of fishes. If you are looking for a single volume that will provide

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a reliable account on North American Acipenseriformes, this book should be your choice. On this account, I believe this reference will be widely cited, at least in America.

The success of the book is due in no small part to the efforts of LeBreton, Beamish and McKinley, this book's editors. Their selection of authors and topics resulted in the broad coverage and accurate findings of this volume. Chapters are thematically well integrated and have consistent authorial tone, since all the authors of the different chapters are specialists in each area. Chapters are primarily reviews and consequently are thorough and insightful. They should provide readers with a solid background in the presented topics. The reference lists of all chapters are excellent sources of primary literature and special publications for many readers interested on sturgeons and paddlefish.

The chapters that I read with the greatest interest were those devoted to native wild populations decline. Chapters titled "The decline of the North American species" by Saffron, and "Native American utilization of Sturgeon" by Holzkamm and Waisberg provide examples of the overharvest and depletion of traditional fisheries. The collapse of sturgeon fisheries at Rainy River resembles the similar facts occurring on the other side of the Atlantic Ocean, where *Acipenser sturio* was extirpated by overfishing in the Elbe, Gironde and Guadalquivir rivers during the same period of time.

A collection of essays as such always presents a problem of flow. On this account, the book has the limited cohesive structure usually found in this kind of volumes that compile the contributions of multiple authors. Unlike many edited volumes, none of the chapters here would be more appropriate as a stand alone journal article. Likewise, the readability of the book is hindered by poor delivery of the material within chapters. The format of the chapters is not homogeneous enough, since some of them include in the title "North American Sturgeons" or something similar, but others do not. Some chapters include a very interesting section recommending future research directions, with valuable ideas on potentially informative studies. In the same way, many of the chapters have valuable summaries or conclusions, but some chapters do not.

The same lack of homogeneity is found with regard to the names and number of the considered species. The editors reported in the Foreword the occurrence in North American waters of one species of paddlefish and nine (sic) species of sturgeon, but they only recorded eight sturgeon species (one of them with two subspecies). Likewise, there are lists of North American sturgeon and paddlefish species in chapters 2, 3, 5 and 12, and in the Identification Key, but unfortunately these lists include different number of species and subspecies. Some authors of the chapters accept the subspecies *Acipenser oxyrinchus desotoi*, but it is not included in the Identification Key. Likewise, some chapters accept the Alabama sturgeon as a valid species, *Scaphirhynchus suttkusi*; one chapter as a subspecies, *Scaphirhynchus platyrhynchus suttkusi*, and one chapter does not consider it. However, chapter 10 on "Genetics of North American Acipenseriformes" by Robinson and Ferguson confirms the existence of molecular evidence for accepting *Acipenser oxyrinchus oxyrinchus* and *Acipenser oxyrinchus desotoi* as two subspecies; as well as for considering three valid species within the genus *Scaphirhynchus*: *Scaphirhynchus albus*, *Scaphirhynchus platyrhynchus* and *Scaphirhynchus suttkusi*.

In general, the book would have benefited from a more thorough editing job. Unfortunately, it is marred by errors that could easily have been avoided. Some chapters contain an unusually high number of distracting typographical and editorial mistakes. These include incorrect citations, and references cited in the text but missing or out of order in the references cited section. There are many cases in different chapters where genera and species are not printed in italics. Figures and Tables are not always cited in text. Fish images show indiscriminately left or right side, when only one side should be preferable. One might wish that some photographic illustrations were not quite so dark. The e-mail addresses are only provided for a few authors.

Such shortcomings, however, do not detract from the overall utility of this book. My larger view of this book is one of an outstanding contribution to Acipenseriformes and as much, it will be a landmark. Who should read this book? The book is so comprehensive that clearly meant as a reference source,

and is mainly addressed to professionals of research, aquaculture, fisheries, conservation and management.

My main grouse, as European reader, is that literature from outside North America has not been sufficiently used and referenced. One glaring omission in the book is the absence of comments analysing Ludwig's et al. (2002) hypothesis, related to the natural occurrence of an American sturgeon species, the Atlantic Sturgeon *Acipenser oxyrinchus*, on the eastern Atlantic. Those authors presented genetic, morphological and archaeological evidence indicating that *A. oxyrinchus* colonized the Baltic Sea between 1200 and 800 years ago, when it replaced the formerly native sturgeon species there, the European Atlantic Sturgeon *Acipenser sturio*. It is a unique case of a natural transatlantic trip for a freshwater spawning fish, and I would like very much to read further comments about this subject.

Besides some of my fair-minded comments and criticisms on the poor editorial presentation, I believe that this book fit in the high level of contributions included in the Springer Fish and Fisheries Series. The bottom line is, this is an excellent book. I recommend that this monograph be added to the bookshelves of all researchers and managers interested in sturgeons and paddlefishes.

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