

Paddlefish (*Polyodon Spathula*) Ranching: Profit and Possible Algae Control

Peter Perschbacher*

University of Arkansas at Pine Bluff Aquaculture/Fisheries Center, Wilmington, USA.

Introduction

Paddlefish are the largest freshwater planktivores, found naturally in rivers and lakes of the Mississippi River drainage, but now introduced in Europe and Asia. They attain 2 m and 90 kg. They are a primitive fish with cartilage skeletons and a spiral valve intestine, and the only remaining member of the family. They thrive in eutrophic waters, rich in plankton and produce caviar similar to servuga sturgeon [1]. The flesh is also valuable.

Paddlefish ranching has been carried out by Osage Catfisheries, Inc., a private hatchery, for some years to harvest paddlefish caviar for their own brand. Fingerlings are stocked in private lakes and reservoirs at 10-20 fish/ha and after 10-12 years gill netted out at 20-30 kg each. The owners/managers receive returns based on whether the fish are gravid. Also indicated are improved water quality and reduced nuisance algae. These observations led to preliminary tank trials with channel catfish (*Ictalurus punctatus*) production pond water to determine plankton effects.

Methods and Materials

At the UAPB Aquaculture Research Station, University of Arkansas at Pine Bluff Aquaculture/Fisheries Department, outdoor, 1250-l tanks were stocked with 11 fingerling (20 g, 200-250 mm) paddlefish. One tank was stocked and another unstocked control. Pond water was pumped from nearby catfish ponds rich in algae and large, nuisance cyanobacteria (blue-green algae) such as *Microcystis*, and potent off-flavor [2] producers *Anabaena circinalis* and *Oscillatoria chalybea*. After 3 d, pond water was sampled with a column sampler and counts made of zooplankton and phytoplankton. Four replications from July 12-Aug. 2 were made from different catfish production ponds.

Results

Chlorophyll Asterisk was reduced by an average **31 ug/l**: highest initial level was **428 ug/l**

Phytoplankton density was reduced by an average of **27.5%***: *A. circinalis* eliminated in one trial Zooplankton density was reduced by an average of **25.25%***.

pH was reduced in three trials by an average of **3%** and increased in one trial by **2%**.

*The plankton parameters were significantly reduced by Wilcoxon's Signed Rank Test.

Conclusions

These preliminary results support paddlefish ranching observations of improved water quality and suggest further investigation. Adult paddlefish, as well as juveniles, consuming and possibly utilizing larger phytoplankton is supported by stomach examination of juvenile paddlefish, and the finding of damaged cyanobacteria filaments. It is proposed that the spiral intestine is able to mechanically damage larger phytoplankton and especially cyanobacteria lacking cellulose walls; allowing for potential utilization, and at least reduction in abundance of damaged species. It should be noted that the biomass stocked in the preliminary trials was about one half the biomass levels at harvest in ranching, and polyculture with carnivorous fish may be problematic as juvenile paddlefish were preyed upon by channel catfish in another trial at our facility.

A non-native, large planktivore the Indian carp *Catla catla* attains slightly lower sizes to paddlefish and the young utilize both phytoplankton and zooplankton [3]. Other variously effective, non-native [4] and native planktivores exist [5].

Acknowledgments

Mr. Jim Kahrs of Osage Catfisheries, Inc., Osage Missouri, is thanked for providing the paddlefish.

Conflict of Interest

There are no conflict of interests in this study.

References

1. <https://en.wikipedia.org/wiki/Paddlefish>
2. Zhu M, Aviles FJ, Conte ED, Miller DW, Perschbacher PW (1999) Microwave mediated distillation with solid-phase micro extraction: determination of off-flavors, geosmin and methylisoborneol, in catfish tissue. J Chromatogr 833: 223-230.
3. <https://en.wikipedia.org/wiki/Catla>
4. Perschbacher PW (2003) Biological control of off-flavor cyanobacteria. Off-Flavors in Aquaculture 10: 167-177.
5. Green B, Perschbacher P, Ludwig G, Duke S (2010) Threadfin shad impacts phytoplankton and zooplankton community structures in channel catfish ponds. Aquac Res 41:524-536.

*Corresponding author: Peter Perschbacher, University of Arkansas at Pine Bluff Aquaculture/Fisheries Center, Wilmington, USA, E-mail: pwpersch@gmail.com

Received: 04-Jun-2022, Manuscript No. jflp-22-66324, Editor assigned: 06-Jun-2022, PreQC No. jflp-22-66324 (PQ), Reviewed: 20-Jun-2022, QC No. jflp-22-66324, Revised: 23-Jun-2022, Manuscript No. jflp-22-66324 (R) Published: 30-Jun-2022, DOI: 10.4172/2332-2608.1000348

Citation: Perschbacher P (2022) Paddlefish (*Polyodon Spathula*) Ranching: Profit and Possible Algae Control. J Fisheries Livest Prod 10: 348.

Copyright: © 2022 Perschbacher P. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.