

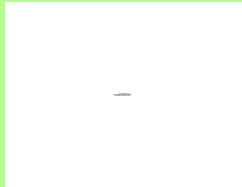
Hybrid Walleye (Saugeye)- The Wisconsin Experience

Jim Held

Aquaculture Outreach Specialist

UW-Extension

jaheld@wisc.edu



Why Walleye?

High market value

Wide-spread reputation as a food fish

Limited domestic supply

Established fingerling production methods

Why Not Walleye?

Aggressive behavior

Easily disturbed by shadows and movement

Poor growth rate under intensive conditions

Diminution in growth rate before market size
(especially in males -sexual dimorphism)

Hybridization

The advantages of some hybrid crosses are very obvious



Bear + Deer = Beer?

With certain fish species, interspecific crossbreeding has resulted in hybrids having behavioral and growth characteristics better suited for intensive culture than those of purebred fishes. BUT NOT ALWAYS!

Examples:

Muskie x Northern Pike---Tiger Muskie

Plaice x European Flounder

White Bass x Striped Bass--- Sunshine or Palmetto Bass

Yellow Perch x Eurasian Perch

Natural hybridization between walleye and sauger has been documented, and both reciprocal hybrids have been artificially propagated in the laboratory.



Hybrid walleye (Saugeye) have been stocked for resource enhancement in as many as 11 states.

Limited impact?

Heterosis-Hybrid Vigor

Fertility



Overview

- Growth studies over a decade ago established that walleye-sauger hybrids grew as much as 2 times faster than the purebreds.
- Organoleptic studies concluded that the hybrid walleye fillets compared favorably with farm-raised purebreds, both of which were preferred to wild-caught purebreds.
- Improvements in early spawning and fry feed-training techniques provide the opportunity for out-of-season fingerling production as well as eliminate the need for a pond phase of production.
- Taken together these statements suggest that hybrid walleye may be an ideal candidate for commercial RAS food fish production.

Question: Can we produce a food-size hybrid from egg to plate in one year with only indoor systems?



Objectives

- Use early season spawning and fry feed-training techniques to produce hybrid walleye fingerlings in indoor systems.
- Document key production characteristics for the grow-out of hybrid walleye to food size in RAS.
- Provide farmers with food-size adult and feed-trained hybrid fingerlings for market potential and field trials.

Spawning and Feed-training

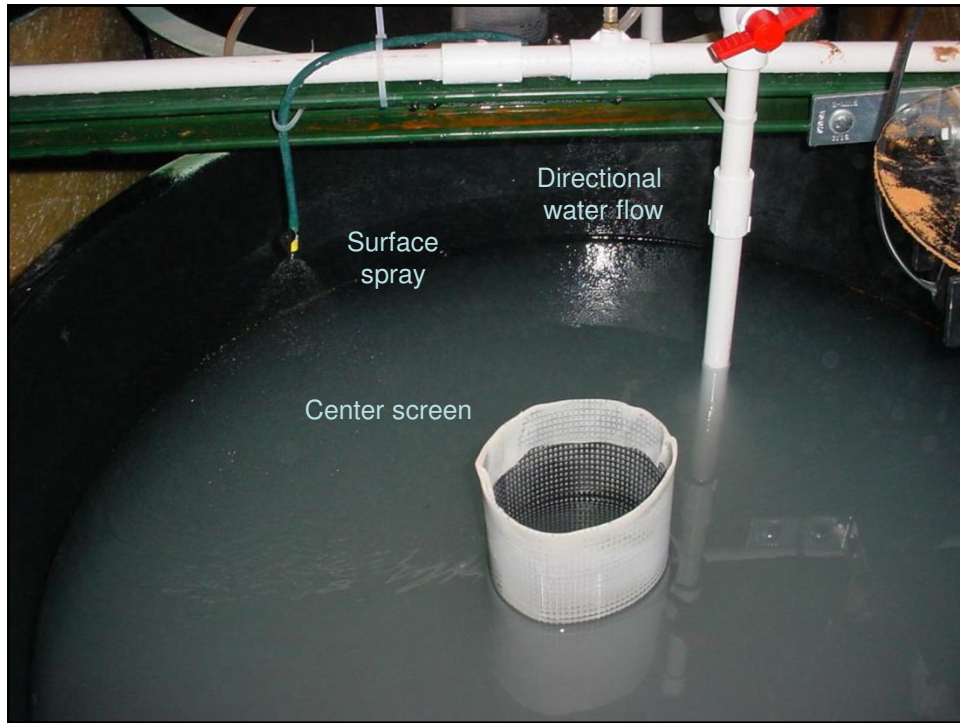
- Early season spawning went as anticipated. Two injections of hCG @500IU/kg 24 hours apart.
- Initially, brood stock sauger males were a challenge.
- Otohime diet, B1,B2, C1, 1.0mm Silver cup
- Fry training success was hard to quantify and highly variable.
- There was a learning curve.
- 85% survival from 4 inches to market size.

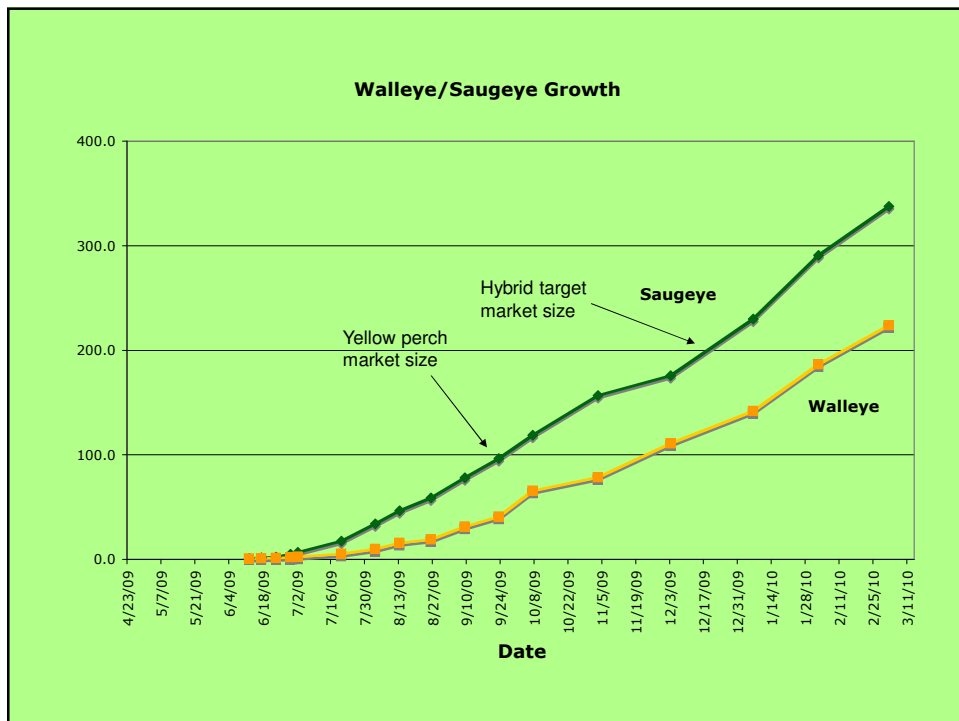
Materials and Methods

Experimental Tank Setup for Initial Rearing

- 230 L round tanks
- Sidewalls painted black
- Gray bottom
- Adjustable lighting
- Flow
- 24 hr feeders
- Surface spray
- Removable screens
- Daily cleaning system









Results

- Brood stock injected in mid-April.
- Average fish size reached market target by December 1.
- Larger fish could be culled for sale by early November.
- Marketing could continue through the following March
- 50% yield for scaled skin-on fillets.
- Good market acceptance.

Challenges

- Availability of sauger brood stock
- Fry training learning curve
- Cannibalism
- Rearing density in RAS (55 kg/m³)
- Economics

Acknowledgements

This study is funded by State of Wisconsin support of the University of Wisconsin Stevens Point Northern Aquaculture Demonstration Facility and Wisconsin Department of Agriculture, Trade and Consumer Protection Agricultural Development and Diversification Program grant #'s 23001 and 25007. We also appreciate the assistance of the U.S. Fish and Wildlife Service (Genoa, WI).

