PRODUCTION CHARACTERISTICS OF HYBRID WALLEYE (Sander vitreus female x S. canadensis male) REARED TO FOOD SIZE IN PONDS

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Introduction
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. For example, muskellunge (Esox masquinongy) x northern pike (E. lucius), striped bass (Morone saxitilis) x white bass (M. chrysops) and plaice (Platichthys flesus) x flounder (Plaenonectes platessa) x flounder hybrids accept formulated feeds more readily and are more easily habituated to intensive culture conditions than their respective parent species. Muskellunge x northern pike, lake trout (Salvelinus namaycush) x brook trout (S. fontinalis) and striped bass x white bass hybrids grow faster than either parental species, at least during the first few years of life. The improved performance resulting from hybridization is one of the factors responsible for the rapid growth of the hybrid striped bass industry over the past several years.

Natural hybridization between walleye and sauger has been documented and both reciprocal hybrids have been artificially propagated in the laboratory. Intertank growth studies conducted by our laboratory comparing purebred walleye with several geographic crosses of walleye-sauger hybrids concluded that hybrids displayed superior growth and survival as fingerlings, and maintained these desirable characteristics through adulthood.

To date, growth studies of hybrid walleye have been confined to tank-based culture. The objective of this study is to document growth rates, gonadal development, and fillet yield of hybrid walleye fingerlings reared to food size in ponds in southern Wisconsin.

Methods
All fish used in this study were the offspring of wild walleye captured from Rock Lake (Jefferson County, Wisconsin) and wild sauger captured from the Mississippi River at Genoa (Wisconsin). This geographic cross was one of the better performing strains examined in previous growth studies. Hybrid fry were stocked into production ponds, and harvested at 25-30 mm total length (TL). Fry were then placed into 220-L tanks supplied with tempered water, aeration, and internal tank lighting for habitation to formulated feed. Successfully trained walleye fingerlings were reared indoors in tanks for the remainder of the first season. In spring of the second year, age-1 hybrid fingerlings (20-80 g) were stocked into 4 ponds at a density of 900 fish/ha.

Two ponds each were fed once daily (at sunset) using either sinking or floating food (Silver Cup, Murray, UT). The study lasted 156 days.

Results and Discussion
The fish showed an active feeding response throughout the study, except for a 21-day period during which water temperatures were in excess of 27°C. Normally, pond temperatures ranged from 16-26°C. After harvest in mid-October, fish were weighed, measured, identified for sex, and processed as scaled skin-on fillets. No growth differences were found between fish fed sinking or floating food (0.80 vs 0.78 g/day and 0.62 vs 0.57 mm/day, respectively, Fig. 1).

![Weight Gain](image)

Fig. 1. Weight gains of hybrid walleye fed floating and sinking diets. Data represent the mean ± SEM of n=20 individuals per treatment.

No growth or fillet yield differences were noted between the sexes (Fig. 2). Fillet yields averaged 46.8%. The lack of size difference between the sexes can be attributed to harvesting the fish at 150-160 g, prior to the onset of sex-related dimorphic growth in this species. This agrees with our findings on the onset of dimorphic growth in walleye (size differentiation apparent at 200-250 g) presented at this poster session. The relatively high fillet yields were a result of the minimal gonadal development (male GSIs < 1.5% female GSIs < 0.5%) exhibited by the 1+ age fish. Extending the growth into the next season may result in larger fish to market, but may be negatively affected by dimorphic size variation as well as gonadal development. Fish averaged 157 g at the end of the study, and scaled skin-on fillets.
Fig. 2. Final weights of male and female hybrid walleye fed sinking and floating feed. The data represent the mean ± SEM of n=20 individuals per sex. Averaged 73.4g/fish. Our findings demonstrate the feasibility of raising age-1 hybrid walleye fingerlings to food size in a single growing season in ponds in southern Wisconsin.

Acknowledgements.
This work was supported in part by the University of Wisconsin-Madison College of Agricultural and Life Sciences; the Wisconsin Department of Natural Resources; and the University of Wisconsin Sea Grant College Program under grants from the National Sea Grant College Program, National Oceanic and Atmospheric Administration, US Department of Commerce, and the State of Wisconsin (federal grant NA46RG0481, Project No. R/BT-10), and the North Central Regional Aquaculture Center under grant 98-38500-5863 from the United States Department of Agriculture to Michigan State University.