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**DIETARY LIPID STUDIES
WITH JUVENILE YELLOW PERCH**

A Thesis

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Deborah Diann Cartwright

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ABSTRACT

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Yellow perch (*Perca flavescens*) have become one of the focal points in aquaculture in the Great Lakes region; however, optimum levels and sources of lipid in diets fed to yellow perch are unknown. The purpose of this study was to determine the optimum dietary lipid source and level for growout of juvenile yellow perch.

Purified and practical diets were formulated and manufactured at Purdue University. All diets were formulated to be as close to isocaloric and isonitrogenous as possible. These diets were fed to triplicate groups of fish. Experiment 1 was designed as a 5 x 3 factorial design with five lipid sources and three levels of each source (6%, 12%, 18%). The five lipid sources were menhaden oil, cold-pressed soybean oil, coconut oil, tallow, and a menhaden:cold-pressed soybean oil mixture combined at a 1:1 ratio. Initial weight was 25g/fish, and the study lasted 15 weeks. Results of lipid sources, levels, and their interactions significantly affected weight gain, feed efficiency, hepatosomatic indices, liver and muscle lipid and fatty acid composition. Weight gain was highest in fish fed cold-pressed soybean oil at 6% or in fish fed the menhaden:cold-pressed soybean oil mixture at 6%, 12%, and 18%. Experiment 2 was designed as a 3 x 3 factorial design with three lipid sources and three levels of each source (8%, 12%, 16%). Lipid sources in experiment 2 were menhaden oil, cold-pressed soybean oil, and menhaden:cold-pressed soybean oil mixture combined at a 1:1 ratio. Initial weight was 47g/fish, and the

study lasted 22 weeks. Macrovesicular and microvesicular degeneration was observed histologically in the livers of almost all treatments from experiment 1 and experiment 2. Utilizing sensory analysis, fish from all treatments had a very mild tasting fillet. Fatty acid composition was significantly affected by dietary lipid, level, and their interaction. Any of these lipid sources, at any level were effective when mixed with practical diets.