

# Lake Habitat Characteristics Influence the Introgression of Florida-strain Alleles in Louisiana Largemouth Bass Populations

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*Abstract:* Since 1982, the Louisiana Department of Wildlife and Fisheries (LDWF) has stocked Florida-strain largemouth bass (FLMB; *Micropterus salmoides floridanus*) to incorporate Florida alleles into native populations and enhance recreational fishing opportunities. Previous analysis of bass genetic data collected from water bodies throughout the state has shown that frequency of stocking and number of fish stocked do not account for between-system differences in FLMB introgression. To better understand the factors controlling introgression we collected water quality and water chemistry, lake depth, woody debris, and aquatic vegetation data from 12 stocked Louisiana reservoirs. Largemouth bass were sampled from each lake with standard LDWF electrofishing techniques and genetically identified with allozyme electrophoresis. Principle components analysis and logistic regression were performed to examine the relative influence of water body characteristics on the introgression of Florida alleles. Shallow lakes with reduced vegetation, more phytoplankton-based primary productivity and higher turbidity and nutrient levels were found to have a higher percentage of Florida strain bass ( $P=0.001$ ). Conversely, lakes with lower average temperatures, larger hypoxic zones, and more submerged and floating aquatic vegetation seemed to resist introgression and tended to have higher numbers of northern largemouth bass ( $P=0.0242$ ). Although initial predation may be reduced in these heavily vegetated lakes, high densities of submersed vegetation may result in reduced growth or size-dependent mortality in stocked FLMB, preventing extensive incorporation of Florida alleles into these populations. These findings may provide the opportunity for LDWF to better understand the effects of their FLMB stocking activities and to modify their stocking protocols to better achieve the management goals of the largemouth bass program.

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