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Exploring Competition Between Striped Bass and Selected Predatory Fishes in Norris Reservoir: Prey Supply and Predator Demand

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Prey deficiency is generally considered the single most important limitation on gamefish production in southeastern reservoirs; thus, competition for limited forage is likely. We compared prey supply to predator consumptive demand to assess the degree of feeding competition among major game fishes in Norris Reservoir. Prey supply was defined as the biomass plus production of clupeids and lepomids. Predator demand was estimated with bioenergetics models and was partitioned into size-specific demands based on actual prey sizes eaten. The overall mean supply-demand ratio weighted by the importance of prey to the gamefish community was 3.5. Also, we modeled increases and decreases in both supply and demand, to simulate natural fluctuations in prey supply and predator demand. Given fluctuations in both supply and demand from 0.25 to 2 times that of the mean estimates, we observed the supply-demand ratio to range between 0.4 and 28.2. It is difficult at best to associate a supply-demand ratio to competition without additional information on the minimum ratio necessary to sustain predator demand, but given the potential range of supply-demand ratios, it is evident that intensity of competition varies annually. The mean supply-demand ratio, 3.5, may be interpreted as an approximation of what is needed to maintain historical average gamefish biomass and production in Norris Reservoir.

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