

QUANTIFYING PRODUCER RESPONSES TO ANTECEDENT FLOW CONDITIONS IN THE MIDDLE OCONEE RIVER, GA

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Stream flow has a major influence on ecosystem structures, functions and the corresponding services provided to us by rivers. Because river biota are adapted to a specific set of flow conditions in unmanaged rivers, alterations to land use, climate, and river management can affect hydrologic variability in ways that degrade – or perhaps enhance – ecological characteristics. While there are decades of well-supported research on how flow variability impacts ecosystem structure, there is relatively little known about how these changes affect ecological functions. Nevertheless, scientists have proposed that these functions be considered as management objectives alongside ecosystem structural attributes due to their importance in maintaining ecosystem services. With funding from the US Army Corps of Engineers, we are studying the effects of different flow conditions on primary productivity in the Middle Oconee River. We measure biomass of different primary producers monthly, and are measuring biomass-specific primary productivity rates through chamber studies. By modeling productivity in response to biomass changes and antecedent flow conditions, we aim to quantify the effects of different flow conditions, and thus different management strategies and climate scenarios, on important ecosystem functions.

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