

ASSESSING FISH MICROHABITAT USAGE TO UNDERSTAND PATTERNS IN SPECIES DECLINES IN THE CONASAUGA RIVER, GA

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The Conasauga and Etowah rivers of north Georgia support high levels of fish biodiversity and endemism, but this fauna is also imperiled by land use changes, hydrologic alterations, and industrial inputs. Sampling of fish communities in the upper Conasauga River from 1995 to 2014 documented dramatic declines for four species—Tricolor Shiner (*Cyprinella trichroistia*), Coosa Chub (*Macrhybopsis* sp. cf. *M. aestivalis*), Coosa Madtom (*Noturus* sp. cf. *N. munitus*), and Amber Darter (*Percina antesella*). However, no such declines are evident from monitoring data for the same taxa within the Etowah River, and causes for declines in the Conasauga River are not known. For this study, we performed two analyses to assess whether there are patterns in microhabitat usage common to these four declining taxa that may suggest possible causes for declines. First, we performed pair-wise co-occurrence analyses to assess whether these four taxa occur together in microhabitats with greater frequency than would be expected by chance. Second, we used logistic regression models to assess the relationship between the presence of each of the declining taxa at a microhabitat scale and microhabitat characteristics. We also conducted both analyses for non-declining species representing the same or similar genera as the declining species for comparison with patterns of co-occurrence and microhabitat usage for the declining fish. Results of these analyses indicate the extent to which processes at the microhabitat level may affect species responses to environmental change, and may provide a framework for analyzing fish declines in other freshwater environments.

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