

# THE RELATIONSHIP BETWEEN TURBIDITY AND CAROTENOID-BASED COLORATION OF CENTRARCHID FISHES IN URBAN STREAMS.

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Agricultural and urbanization practices cause increased runoff of nutrients and sediments into aquatic systems, leading to increased turbidity and biodiversity loss. In many fishes of the family Centrarchidae, carotenoid-based colors (red and yellow) are used in sexual signaling. High levels of turbidity, resulting in absorption and scattering of underwater light, can severely alter the effectiveness of these signals. It is energetically costly for fish to acquire carotenoids from their diet, and if signals are interrupted by increased turbidity, the cost of obtaining and displaying carotenoid-based colors may not be profitable. The objective of this study was to investigate if there is a relationship between carotenoid-based colors and turbidity, with the hypothesis that turbidity will influence the saturation (intensity of color) of red and yellow coloration in centrarchid fishes. Centrarchids were sampled at four sites on the Olentangy (n=2) and Scioto (n=2) Rivers during spring, summer, and autumn 2015. Point-in-time turbidity samples (n=3/site/ sampling effort) were also taken. A standard color analysis technique was used to assess the saturation of red and yellow body color for each individual (n=219). Preliminary analyses suggests that each river had a site with consistently lower and a site with consistently higher average turbidities across three seasons. Differences in mean turbidities between the sites were 10.91 NTU and 11.71 NTU for the Olentangy and Scioto Rivers, respectively. We also found that carotenoid-based coloration varies with species and standard length. Further analyses will evaluate changes in turbidity and color associated with season for each site. This data will be used to test if carotenoid-based coloration is negatively associated with increased turbidity, which could disrupt centrarchid mating systems, thereby thus altering community structure and ecosystem functioning.