

## Freshwater fish assemblage patterns in Rhode Island streams and rivers

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### ABSTRACT

Patterns in fish assemblages in streams and rivers can inform watershed and water management, yet these patterns are not well characterized for the U.S. state of Rhode Island. Here we relate freshwater fish data collected by the Rhode Island Department of Environmental Management to landscape and water use variables to characterize the patterns that occur in these streams and rivers, and to set the stage for assessing the affect of flow alteration of these assemblages. A total of 46 fish species were collected at the 276 sites, the most common being brook trout (*Salvelinus fontinalis*) and eel (*Anguilla rostrata*). Species richness ranged from zero (at 8 sites) to 20 species, with a mean of 4.6 species per site. Cluster analysis identified four main groups of sites: 1) smaller coldwater sites dominated by brook trout, whose abundance was negatively related to impervious cover; 2) smaller warmwater sites with higher impervious cover; 3) higher-order coldwater sites with flow dependent species; and 4) higher-order warmwater sites with more introduced species, a higher rate of water withdrawal, and a greater number of dams per square mile. An understanding of the natural framework for these species provides a setting for the management of human influence on these ecosystems.