

Habitat use of fish communities in a Virginia stream system

Robert L. Vadas, Jr.^a & Donald J. Orth

*Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University,
Blacksburg, VA 24061-0321, U.S.A.*

^a*Present address: Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute,
100 8th Ave. SE, St. Petersburg, FL 33701-5095, U.S.A. (e-mail: robert.vadas@fwc.state.fl.us)*

Received 14 October 1998

Accepted 7 April 2000

Key words: micro- and mesohabitat use, rheophiles, limnophiles, hydraulic and bottom-topographic variables, game and nongame fishes

Synopsis

Fish habitat use during summer was examined at micro- and meso-levels, to determine species associations in the upper Roanoke River watershed, Virginia. Based on multivariate-mesohabitat analysis and examination of mean microhabitat use, seven habitat-use guilds were apparent. These included four rheophilic (fast-riffle, riffle/run, fast-generalist, and shallow-rheophilic) and three limnophilic guilds (pool/run, open-pool, and pool-cover) that were reasonably robust across two river segments and two years. Although simple-hydraulic, bottom-topographic, and turbulence variables all segregated fish habitat-use guilds, turbulence variables were redundant with simple-hydraulic variables, substratum use by limnophilic fishes was related to availability, and only one guild consistently selected high cover levels. At the family level, suckers, darters, and especially minnows were notable for occupying several habitat-use guilds, because of species differences in habitat preferences. Such formulation of guilds can simplify habitat-impact analyses in biodiverse, warmwater streams, via focus on habitat needs of guilds rather than on individual species.