Anthropogenic Impacts to Fish Assemblages in Northern New Jersey Streams

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Abstract
The New Jersey Fish Index of Biotic Integrity (IBI) has been used to assess the health and condition of fish assemblages and to identify potential stressors from high gradient streams in New Jersey. Since the initiation of the program in 2000, a number of impacted waters have been identified. Seventy-six percent of urban streams sampled have been impacted or have suspected impacts as a result of human activities. The most common urban stressor to the aquatic community is loss or degradation of natural habitat. Bank erosion and siltation have eliminated overhead cover, bank vegetation, riparian buffer, and suitable substrate in many urban streams. The effects of such habitat alterations are evident in the fish community, as benthic insectivores, which require clean substrate, have exhibited a decreasing trend in response to urbanization. Trophic imbalance is often evident in urban waters, as specialized feeders such as insectivorous cyprinids are replaced by generalists. In addition, data from the 2005 season indicates external deformities in fish are more common in urban settings, likely a result of environmental stress or input of contaminants.

Key Words
Fish IBI, urban stressors, bank erosion, siltation, habitat alteration, fish community, benthic insectivores, trophic imbalance, deformities

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