Managing Development and Chesapeake Bay's Estuarine Fish Habitat and Fisheries

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An understanding of potential problems from suburban development for Chesapeake Bay's estuarine fisheries is emerging. Sprawl, measured as impervious surface (IS), is associated with multiple stressors of fish habitat. Development of watersheds from rural (<5% IS; farms, forest, and wetland) to suburb (>10% IS) disrupts stream hydrology and spawning by anadromous fishes. Yellow perch egg and larval survival in estuarine nurseries is related to the amount of IS and egg viability and larval feeding appear to be affected. In several watersheds, yellow perch egg and larval viability is too low for successful compensation by reduced harvest. Dissolved oxygen (DO) in bottom waters of the Bay's brackish tidal tributaries diminishes with IS and becomes hypoxic during summer as the watershed becomes suburban; use of this habitat by blue crab and fish declines because of low DO. Contaminant burdens in white perch increase with IS, leading to human consumption advisories and the potential for detrimental reproductive effects. While generally small subestuaries have been impacted by development so far, remaining rural watersheds will become increasingly influenced by sprawl in the future. Currently, regulation of land-use and stressors associated with it is scattered among local, state, and federal agencies. Fisheries managers will need to join with these agencies to preserve rural watersheds, restore watersheds with manageable damage, and steer growth to less valuable watersheds.

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