

Application of Physical Habitat Simulation (River2D) to Rehabilitation in Urban Stream

DONGKYUN IM^{1,4}, SUNG-UK CHOI², HYEONGSIK KANG³, SANGHWA JUNG^{1,4}

¹Ecoriver21 Management Research Center

²Yonsei University

³Korea Environment Institute

⁴Korea Institute of Construction Technology

Urban streams have to provide not only aesthetic and economic values for human but also habitat of aquatic ecosystem. Many urban rivers have been degraded as a result of a combination of flow regulation (Petts et al., 1993), river channel alteration, and pollution (Thornton and Walsh, 2001). A key of enhancements in urban stream restoration is recovery of physical habitat and maintenance of suitable ecological flow to sustain a stream aquatic ecosystem. This study focuses on the application of two-dimensional physical habitat simulation (River2D: Steffler and Blackburn, 2002) to rehabilitation in an urban stream. For this study, Hongje urban stream in Seoul Metropolitan City was selected for estimating physically-based ecological flow for with/without meso-habitat structures. Meso-habitat structures, i.e., the center and side boulders, spur, and riffle were simulated in the urbanized riverbed before a restoration planning. The habitat simulation result show that aquatic habitat under a natural flow regime increases about 1 % of the WUA in some habitat structures, which is not a significant improvement. However, suitable habitat for target fish is highly increased prior to installation of the riffle in the site.

Keywords: rehabilitation; River2D; environmental flow

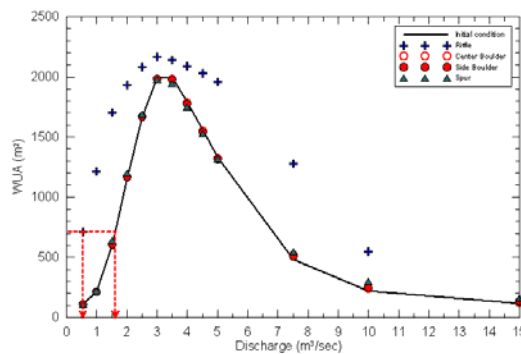


Figure 1. WUA for each life stages of Zacco platypus over a range of discharges