

In-River Performance of a 2-MM Slot Wedgewire Screen for Reducing Entrainment

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The efficacy of a 2-mm slot width wedgewire screen (WWS) for reducing entrainment was estimated by comparing ichthyoplankton entrained through a test screen to those nearby in the Hudson River. A 12-in. diameter WWS was deployed with the slots perpendicular to the ambient current at a depth of 10 m near the Indian Point intakes. 48 continuous 2-h samples were taken per week from 11 Apr-23 Sep 2011 at a pumping rate of 414 gpm, providing a through-slot velocity of 0.25 fps. Simultaneous control samples were collected through an unscreened port and a towed net (Tucker trawl) immediately upstream.

A total of 275,245 ichthyoplankton of 31 species, mostly larvae, were collected in 1,904 samples analyzed. Larval densities were between 1.4 (river herring) and 4.5 (striped bass) times higher in the trawl vs. the control port, indicating significant avoidance of the control port. Length-specific densities were higher in the trawl than in the control port, further demonstrating avoidance of the control port. The WWS reduced ichthyoplankton densities by 77% compared to the trawl, and 64% compared to the control port. Because most of the larvae could easily fit through the 2 mm WWS slots, the entrainment reductions are primarily the result of avoidance and hydrodynamic bypass rather than physical exclusion.

<https://afs.confex.com/afs/2014/webprogram/Paper15751.html>