

Effect of freshwater discharge from Namgang Dam on ichthyoplankton assemblage structure in Jinju Bay, Korea

The movement of fish eggs and larvae in bay and estuarine systems is affected by freshwater discharge. In this study, the assemblage structures of ichthyoplankton eggs and larvae were assessed for the first time in Jinju Bay, South Korea, to identify the spawning and nursery functions of the bay. Fish eggs and larvae and several environmental parameters were sampled monthly from April 2015 to March 2016 inside and outside of the bay. Within the bay we collected eggs and larvae from 25 and 35 species, respectively, indicating greater diversity than outside the bay, where we collected eggs and larvae of 20 and 28 species, respectively. Fluctuations in water temperature and salinity were larger inside than outside of the bay, and chlorophyll-a concentration was higher within the bay, likely due to discharge from the Namgang Dam, which causes water to flow from the inside to the outside of the bay. This process influences fish larva abundance, such that more larvae are found outside than inside the bay. We also found that 28 fish species use Jinju Bay as a spawning ground. For some species, the timing of egg and larva appearance differed inside and outside of the bay, suggesting that the timing of spawning may differ between the two environments.

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