

Difference in habitat preference of *Rhinogobius flumineus* among Erosional and Depositional reaches

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When we evaluate habitat conditions in stream ecosystems, it is beneficial to examine the hierarchical structure of riverbed geomorphology in relation to erosion-deposition process of sediment. In this study, habitat preference of freshwater goby, *Rhinogobius flumineus* was investigated in erosional and depositional reaches in Kamo River, Kyoto, Japan in early summer (Jun: low flow), summer (Jul-Aug: low flow) and autumn (Oct-Nov: high flow) 2004. Reaches of the study area were classified into three types: i.e., depositional reaches of a sediment control dam characterized by depositional features with low hydraulic gradient, erosional reaches without dam effects on stream geomorphology, and transitional reaches with intermediate amount of sedimentation along the channel. Distribution of adult and young fish was individually plotted on the riverbed maps in each reach. Habitat suitability indices for the depth, water velocity, and substrate were calculated for adult and young fish separately in each reach type.

Under low flow conditions in early summer and summer, preference of adult fish in the depositional and transitional reaches were separated in two groups, i.e., cobble of riffle and bedrock of pool. Matured male in early summer exclusively nested at cobble bed in the shallow area located at “pool tail and riffle head.” On the other hand, young fish preferred pebble and cobble beds in riffles. However, both adult and young fish in the erosional reach inhabited on cobble bed in riffle. Under high flow condition in autumn, both adult and young fish moved away from the erosional reaches to the depositional and transitional reaches, and preferred cobble and pebble beds in pools. They lived in the depositional and the transitional reaches in all seasons.

These results showed that habitat preference of *Rhinogobius flumineus* changed corresponding not only to growth stage but also to erosional-depositional habitat conditions and to flow regimes. Utilization of cobble bed in riffles in transitional reaches as spawning sites might be explained by higher velocity of hyporheic waters which brought more DO to eggs under nest stones.

Keywords: habitat preference; erosion-deposition process; pool-riffle structure; *Rhinogobius flumineus*