

2-7. Burrowing Mayflies, as Indicator Species for River Habitat Disturbances: a Long-Term Study on the Distribution and Abundance of Burrowing Mayflies (Ephemeroptera: Ephemeridae and Potamanthidae) from the Lower Reaches of the Han River in Seoul, Korea

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A long-term survey on the distribution and abundance of burrowing mayflies has been conducted from the main course of the Han River in Seoul, Korea, where the riparian environment and river banks have been greatly changed and altered since the large-scale construction along the river banks in 1987. Field investigations were taken at 12~26 sites from upper (Paldang) to lower (Haengju) reaches of the main course of the Han River (ca. 50 km) including the construction section (ca. 26 km) that flows through Seoul City. Quantitative and qualitative data taken 3~5 year interval since 1980 were used.

As results, five species of burrowing mayflies occurred from the study area: three species of Potamanthidae (*Potamanthus yooni*, *P. formosus*, and *Rhoenanthus coreanus*) and two species of Ephemeridae (*Ephemera orientails* and *E. strigata*). Larvae of *Ephemera* inhabited in the mixed sand, silt, and gravel substrate while larvae of Potamanthidae preferred pebble, cobble, and boulder sized stones embedded in the mixed sand and silt substrate where river banks are well preserved. In general, burrowing mayflies were relatively more abundant in the areas above Seoul City; *E. orientails* and *P. yooni* were relatively more abundant than other burrowing mayflies in the slow current or lentic areas (e.g., Paldang and Jamsil) with average density 10 inds/m² and 23 inds/m², respectively; *E. strigata* and *P. formosus* were relatively rare; *E. orientails* were more abundant during the spring season while *P. yooni* were more abundant during the Autumn season. All burrowing mayflies disappeared from the construction section in Seoul City immediately after the river bank construction in 1987 and their populations have gradually increased from the areas where the river bank habitats are recovered. However, the construction areas with high concrete wall along river banks have been represented with few burrowing mayflies. In conclusion, burrowing mayflies that are closely associated with littoral zone habitats in freshwater ecosystems well reflected anthropogenic environmental changes, e.g. habitat disturbances, in the large river systems.