

— Autumn dispersal and limited success of reproduction of the deepbody bitterling (—



The terrestrialization of floodplains has become a concern to river managers and ecologists because it has degraded habitats for floodplain-dependent organisms. We examined the temporal distributions of the endangered deepbody bitterling (*Acheilognathus longipinnis*) throughout its life history, which is an autumn-spawning annual fish spending its egg and larval stages in unionid mussels and emerging in spring, to understand its population decline in the terrestrialized floodplains of the Kiso River, central Japan. We first validated our *A. longipinnis* environmental DNA (eDNA) sampling method and observed an 89.3% probability of consistency between the eDNA and the direct capture surveys of 56 floodplain waterbodies (FWBs). Subsequently, the temporal distributions with autumn dispersal (9 of 14 FWBs) were found using time-series eDNA samples collected from 14 FWBs on a floodplain with a length and width of 1.4 and 0.2 km, respectively. In the following spring, juveniles were only detected in the two FWBs connected to the river channel. Moreover, the direct capture data revealed that juveniles occurred in 52.9% (9/17) of the connected FWBs, but only in 5.1% (2/39) of the FWBs isolated from the river channel. Autumn dispersal of *A. longipinnis* would be disadvantageous for reproduction in terrestrialized floodplains with numerous isolated FWBs.

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