onserving stream fishes with changing climate: assessing river hydrology and habitat suitability in Lancang River, China

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**Abstract:** Climate change affect the precipitation patterns, and as a direct consequence, river discharge regime will change as climate warming continues. This has an effect on river ecosystem and aquatic life. Schizothorax (Schizothorax) and schizothorax (Racoma) were selected as target fish in Lancang River to investigate the impact of climate change on fish habitat and community. We firstly use the Soil and Water Assessment Tool (SWAT) models to predict hydrological regime from 2020 to 2100 under climate change scenarios. Air temperature change result in four flow patterns in river. Then habitat suitability and fish abundance were assessed under four flow patterns based on habitat models and logistic population model for fish. Model simulations indicated that rising temperatures lead to river flow reduced, which leads to fragmentation of both fish habitats. High levels of habitat fragmentation due to ultra-high flows. The habitat suitability for both fish decreased significantly in the condition of habitat fragmentation. The decline in numbers and densities of Schizothorax and Racoma may lead to extinction over a long period of time. Based on these results, climate change mitigation measures should be taken seriously, and fish stocking is an effective measure to protect river ecological system. For further research, a coupling model is recommended to assess the response of river ecosystems on climate changes, which is combined with the climate, hydrodynamic, population, habitat evaluation and restoration models.