

## **Dissolved nitrogen removal in the ponded streams of an alluvial, suburban basin with a developing city, western Japan**

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**Abstract** This study aims to clarify the nitrate removal in a ponded stream with 12 pools, in western Japan. In the summer season, denitrification coincides with nitrate assimilation by phytoplankton in the pool. In addition, organic matter mineralization in sediment also occurs in summer. DN fluxes estimated on the main stream by the chloride ion balance method suggest nitrate has been removed within the pool. However, the estimated amount of nitrogen removed in each pool was quite different. The estimated amount removed was divided into denitrification and assimilation by the Redfield ratio. Consequently, it is suggested that assimilation by phytoplankton contributes significantly to removing dissolved nitrogen in the summer season, while denitrification contributes in autumn. Furthermore, the relationship between the amount of removed dissolved nitrogen, except for assimilation, and characteristics of pools, indicates that the removable amount of DN is larger in the pools characterized by large area, shallow depth or slow flow velocity.

**Key words** small reservoir; river basin scale; denitrification