

Leaf patches characteristics and macroinvertebrate assemblages in three mountain streams different in land use (Yoshino River, Central Japan)

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Abstract

The aim of our study is to reveal the effect of watershed conditions and land usages on stream environments and biotic communities. The first step was to examine whether litter patch types could be different by their location within riffle and stream pools (middle, edge and alcove) between three sites different in land uses at Yoshino River. We also compared the macroinvertebrate assemblages in litter patches between three sites. We conducted a series of field researches in three sites of Yoshino River namely Shigo Stream (NT) which represented stream flows through natural forest, Hiura Stream (PL) which flows through a replantation forest and Ogawa Stream (PR) which flows through partly residential areas.

We sampled leaf patches from riffles and three types of pools (middle, edge and alcove). Middle patches usually formed in mid channel near thalweg, while for alcove can be found on the side of the stream and distinguishable from middle patches by their U-shaped shoreline, whereas for edge patches, usually formed at shorelines near pool ends.

We found that broad deciduous leaves were dominated in NT stream scarcely with Japanese Cedar, while in the PL stream Japanese Cedar were dominant. Both streams recorded high number of *Paraleptophlebia sp.* In PR stream patches were dominated by reeds and high abundance of *Amphinemura sp.* The leaf patches in three sites were varied in amount and kind of leaves, which were affected by riparian vegetation.

In leaf patches, more than 50% of leaves were dominated at alcove in NT, edge of downstream of NT and upstream of PL and riffle at upstream of PL. However, none of leaves were recorded at the edge of upstream PL. Twigs yielded high abundance at riffle in NT, middle of upstream PL and downstream of PR and alcove of upstream PR whereas twigs at alcove of upstream PL were scarcely found. Leaves of Japanese Cedar were abundant at alcove of PL and PR, riffle of upstream PR and edge of upstream PL. Nevertheless, reeds only recorded less than 50% at all sites. Interestingly, reeds could be found in every habitat and abundant at middle of PL.

Keywords: Macroinvertebrate assemblages, Leaf patches, Yoshino river