



## Some observations on altered morphology in *Amphipsyche meridiana* (Hydropsychidae: Trichoptera) larvae from the Pasak Jolasit Dam Outlet, central Thailand

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### Abstract

*Amphipsyche meridiana* Ulmer, 1909. larvae from the River Pasak below the Pasak Jolasit Dam were examined for alteration of morphological structure such as the anal papillae, surface, and tracheal gills of the larvae. The tracheal gills were the most altered followed by surface and anal papillae. Factors such as conductivity, and inputs of orthophosphate, sulfate, turbidity, other contaminants, and/or stream profiles may have contributed to the abnormalities.

**Key words:** Trichoptera, Hydropsychidae, Amphipsyche, altered morphology, outlet, Thailand

### Introduction

The gills of aquatic macroinvertebrates are one of the most affected structures on an organism when the surrounding environment is altered. They are particularly sensitive due to their large surface area, which increase the accumulation of compounds and gases (Skinner & Bennett 2007). Direct effluent discharges and agricultural runoff contains complex mixtures of contaminants which may produce new compounds due to break-down and transformation processes and hence contribute to the complexity of the total toxic burden. The use of only chemical and physical measurements may not fully assess the synergistic effect of pollution on the biotic community (Resh & Jackson 1993). In general, biological indicators provide the potential for direct observation of the overall effect of environmental contaminants by virtue of their role in aquatic ecosystems (Warwick 1988).

The larvae of Hydropsychidae can be ideal subjects for the study of the effect of water quality on morphological abnormality for several reasons. First, hydropsychids are widely distributed and abundant in many types of running waters. Second, they respond to variations in the water quality and their autecology is well enough known for the impact of pollutants to be distinguished (Vuori 1995). Third, due to their robust bodies, hydropsychid larvae are easily handled and observed for morphological abnormalities. Fourth, abnormalities in the hydropsychid tracheal gills and the ion-regulatory, anal papillae, can be attributed to a disruption of the respiratory and ion regulation functions of the individual (Camargo 1991; Vuori 1994). Fifth, the relatively large size facilitates sampling and analysis of the concentrations of chemicals in the larvae. Finally, the hydropsychid larvae, as facultative filter feeders, are exposed to pollutants in seston, flowing water and the organic matter accumulated in riffle microhabitat (Vuori & Kukkonen 1996).