SUBSTRATE PREFERENCE

in sandy lowland streams - an experimental approach

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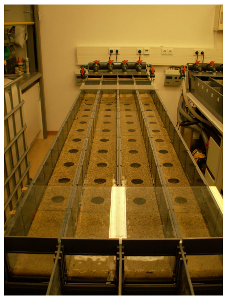
Introduction

Hydromorphological conditions in lowland streams will change due to an increase of discharge peaks. Substrate stability, which is a key parameter at habitat scale for macroinvertebrates, will decrease.
Laboratory experiments (figure 1) were used to examine substrate preferences of three species of Trichoptera (instar IV and V) that represent stream specialists (*Halesus radiatus, Micropterna sequax* and *Chaetopteryx villosa),* and three stream ubiquists (*Anabolia nervosa, Limnephilus lunatus* and *Mystacides longicornis).* Knowledge on preferences is needed as reference to evaluate hydromorphologic disturbance.

*fig 1. Experimental unit: an artificial stream consisting of 4 * 10 compartments. Each containing 400 cm^3 of substrate material (either leaves, detritus, gravel, sand and silt).*



Substrate preference

After 16 hours the number of specimens showing a preference was constant (measurements at 0.17, 0.33, 0.67, 1, 2, 4 and 6 days; v=10 cm/s). *H. radiatus, M. sequax* and *C. villosa* (figure 2) showed a clear preference for leaves. *A. nervosa* and *L. lunatus* (figure 3) showed a sub-preference for detritus or leaves. *M. longicornis* (figure 3) did not show any preference.

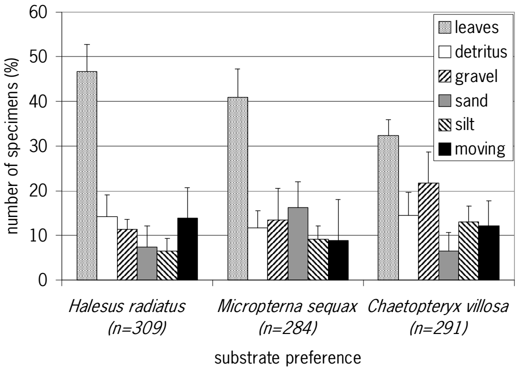


fig 2. Substrate preference of H. radiatus, M. sequax, and C. villosa (average of t=1, 2, 4 and 6 days) (p<0.05)

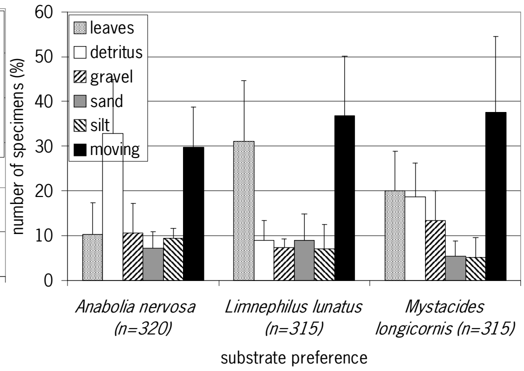


fig 3. Substrate preference (average of t=1, 2, 4 and 6 days) of A. nervosa, L. lunatus, and M. longicornis (p<0.05)

Influence of current velocity

Number of specimens drifting (figure 4) depended on current velocity and species. For example, at higher current velocities *C. villosa* was more and more moving around or drifting (figure 5).

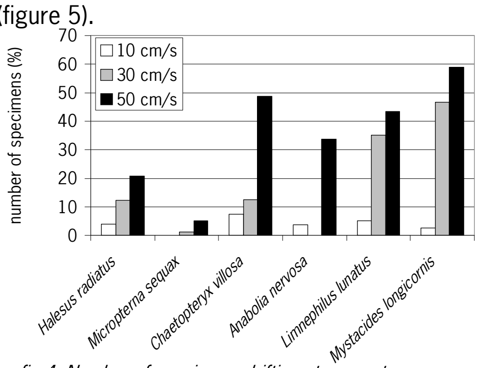


fig 4. Number of specimens drifting at current velocity of 10, 30 and 50 cm/s (p<0.05)

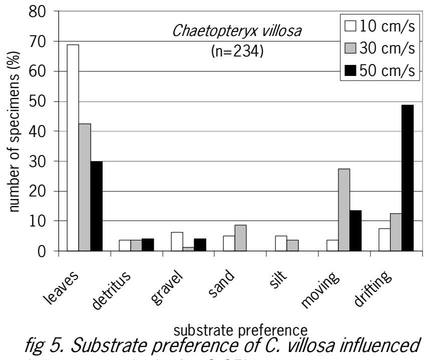


fig 5. Substrate preference of C. villosa influenced by current velocity (p<0.05)

Conclusion

Trichopterans occurring at natural-stable hydromorphological conditions showed a strong preference for leaves. Only *C. villosa* drifted at higher current velocities, *H. radiatus* and *M. sequax* were less or not affected by current velocity.
Trichopterans occurring at disturbed-instable conditions did not show a strong substrate preference. All three species started drifting at higher current velocities.

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