SEDIMENT STABILITY AND MACROINVERTEBRATE COMPOSITION

Agata M. Siedlecka, Martin W. van den Hoorn, Piet F.M. Verdonschot

Introduction

Global climate change will likely cause an increase of heavy precipitation events which lead to an increase of peak discharges. As a result the instability of the substrate in streams increases. Such disturbances influence aquatic fauna directly by dislocating animals from the streambed or indirectly by flushing out resources or shelters.

fig 1. Sediment trap placed in the Springendal stream

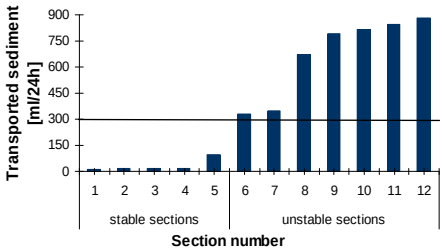

fig 2. Volume of transported sediment in stable and unstable sections.

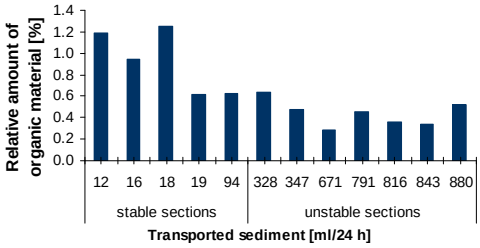

fig 3. Relation between amount of transported sediment and relative amount of organic material in stable and unstable sections.

Methods

Using sediment traps (fig 1), we measured the volume of transported material in 12 stream sections. We divided sections in stable and unstable, depending on the amount of transported sediment (fig 2). In every section we measured the relative amount of organic material (fig 3) and sampled for macroinvertebrates.

Relation between sediment stability and macroinvertebrate composition

Distribution of the most abundant macroinvertebrates depended on their method of maintaining habitat location. Most of the taxa clearly preferred stable areas in the stream (fig 4) only burrowers and one climber/clinger (*Dugesia gonocephala*) showed no preference for the stability of the substrate (fig 5).

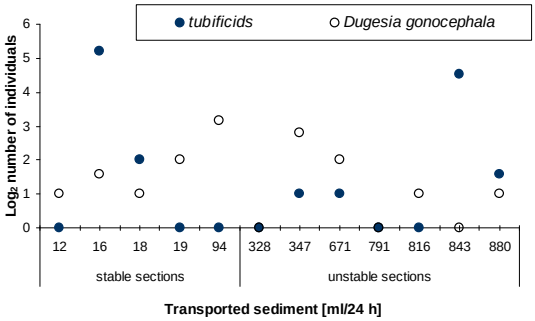

fig 5. Relation between the abundance of burrowers (tubificids) and climbers/clingers (Dugesia gonocephala) with the volume of transported sediment.

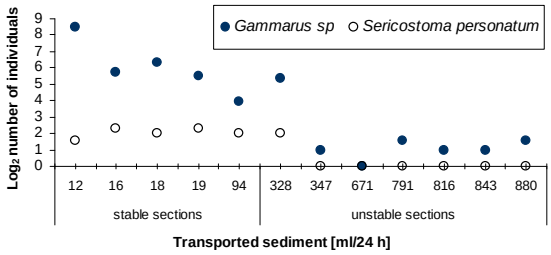

fig 4. Relation between the abundance of Gammarus sp and Sericostoma personatum and the volume of transported sediment.

Conclusions

- Substrate stability is an important factor for most macroinvertebrates
- Macroinvertebrates preference for stable or unstable areas depends on their behavioral habit of maintaining habitat location
- An increase of the area of unstable stream sections through climate change reduces the area of suitable habitat for many macroinvertebrates

Alterra, WageningenUR
Centre for Ecosystem Studies,
Team Freshwater Eclogy,
P.O Box 47, 6700 AA Wageningen,
The Netherlands,
Agata.siedlecka@wur.nl

landbouw, natuur en voedselkwaliteit

Contract No. GOCE-CT-2003-505540

Euro-limpacs