The Study of Mayflies (Ephemeroptera) ecology in Latvia's freshwaters (1986-2006)

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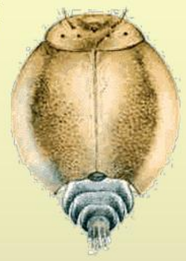
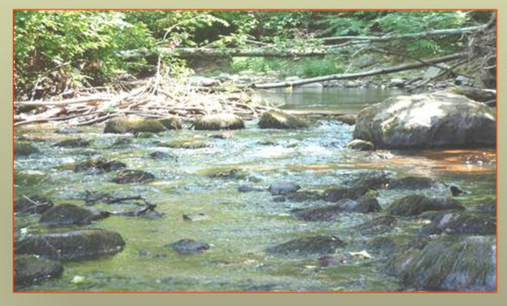


In the perod of 1986-2006 more than 5000 samples of Ephemeroptera were sampled in lotic and lentic hydroecosystems from 362 sampling "squares" covering all the Latvia's territory

Now 59 species belonging 11 families are stated in Latvia's inland waters. Running waters are characterised by 45 species of Ephemeroptera. *Ephemerella notata, Siphlonurus lacustris, S. armatus, E. carelica* and *Arthroplea congener were* recorded for first time in Latvia in lotic environments.



Rhitron community mainly with *Fontinalis antipyretica* as substrate (velocity of stream - 0.3-1.0 m/s; summer water temperature t^0 16- 20^0 C; pH - 7.5-8.0; river depth - 0.1-0.7 m; dissolved oxygen - 8.0-10.2 mg/l; electrical conductivity 18^0 C – 270-360 µs/cm^2) characterised by Ephemeroptera species typical for running, oxygen rich waters. *Baetis vernus, Caenis horaria, Ephemerella ignita*, *Ephemerella mucronata, Heptagenia sulphurea, Heptagenia lateralis, Ecdyonurus venosus* are common. As occurance of Ephemeroptera indicates high or very high quality of investigated small streams.

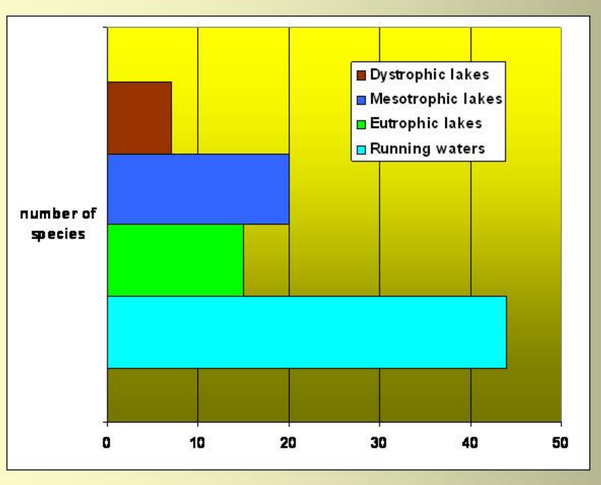
Potamon community dominated by *Nyphar* sp., *Sagittaria* sp. (velocity of stream - 0.1-0.2 m/s; summer water temperature t^0 17- 19^0 C; pH - 6.8-7.7; river depth - 0.7-2.0 m; dissolved oxygen - 5.4-7.7 mg/l; electrical conductivity 18^0 C – 210-270 µs/cm^2) characterised by potamophyl species *Caenis rivulorum, Cloenon dipterum*, *Baetis rhodani* which always are stated in high abundance and biomass on the silt bottom and on the littoral part of the potamal stretches.

Mixed community with *Potamogeton* spp. as substrate (velocity of stream - 0.2-0.5 m/s; summer water temperature t^0 15- 22^0 C; pH - 7.2-7.9; river depth 0.4-0.7 m; dissolved oxygen - 6.8-10.0 mg/l; electrical conductivity 18^0 C – 240-320 µs/cm^2) characterised by *Cloeoon dipterum, Cloeon simile, Baetis niger*, *Baetis fuscatus* on the sand-mud mixed substrate.

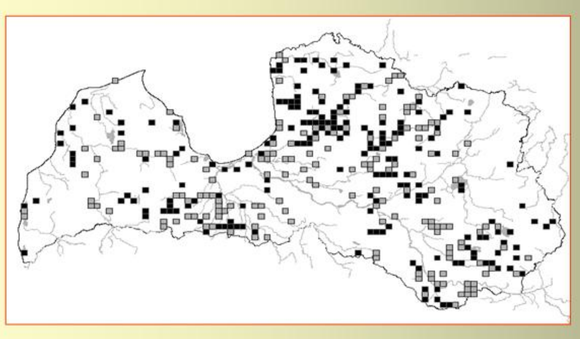
Due to river regulation ecological conditions were changed: reduced flow, mean temperature of water – a major factor controlling the distribution, abundance and life cycles of aquatic insects became warmer. Changes in substrate composition through sedimentation alter species composition and community structure. Species typical for lentic waters - *Cloeon dipterum , Caenis horaria, Caenis moesta, Baetis niger* became dominated species in the dammed reservoirs.

Most of Latvia's lakes are eutrophic or mesotrophic: the highest abundance and biomass of Ephemeroptera are stated in littoral zone or in the "riverine" part where acton of stream flowing throw the lake is tangible. The same situation are observed in man made reservoirs where species of Ephemeroptera characteristic for running waters such as *Ephemerella ignita*, *Heptogenia flava* and *Heptogenia sulphurea* are stated in the riverine part.

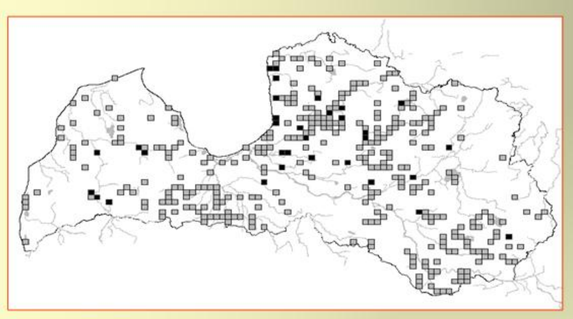
Dystrophic bog lakes are characteristic by minor species of Ephemeroptera – only 3 species – *Cloeon dipterum, Baetis rhodani, Leptophlebia vespertina*. Humic substances in bog lakes and acid waters caused simplification of Ephemeroptera fauna.



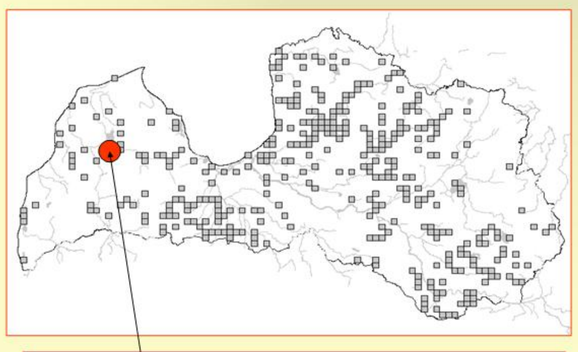
Number of Ephemeroptera species observed in Latvias freshwaters



Cloeon dipterum - common species for Latvia (black marked up quadrats)



Ephemera danica - relatively common species for Latvia (black marked up quadrats)



Ephemerella carelica – very rare species for Latvia)

Conclusions

Dominated species for territory of Latvia: ***Baetis fuscatus, Baetis rhodani*, *Baetis vernus*, *Cloeon dipterum*, *Caenis horaria*, *Caenis robusta*, *Ephemerella ignita*, *Ephemerella mucronata*, *Ephemera vulgata*.**

Rare species for Latvia (1- 3 fields) : ***Ephemerella notata*, *Ephemerella karelica, Polymitarcus virgo*, *Heptagenia coerulans and Ecdyonurus fluminum* .**

New species for Latvia : ***Arthroplea congener*, *Siplhonurus ornatus*, *Siphlonurus lacustris*, *Heptagenia affinis***

Unfortunately very rare Ephemeroptera - ***Prosopistoma foliaceum*** (Fourcroy, 1785) found in the last century in Latvia in period of study (1986-2006) was no detected.