Invertebrates – indicators of calcareous fens in Latvia

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Calcareous fens may harbour two habitats: Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* Code 7210 and Alkaline fens Code 7230. Both habitats are particularly protected in the EU. No complex investigation of invertebrates was done before in Latvia.

Invertebrates in eight fens of the Maritime Lowland and of different origin were investigated during 2010 and 2011. Two to five sample plots sizing 10x20 m were selected in the fens. Pitfall-traps, sweep netting of grass dwelling invertebrates and soil sampling were used to study various invertebrates in these plots: millipedes Diplopoda, woodlice Oniscoidea, grasshoppers and locusts Orthoptera, bugs Heteroptera, communities of grass dwelling insects, and whorl snails *Vertigo* spp. Vegetation was described according Braun-Blanquet method. Substrate pH was measured in accordance with standard methods.

Vegetation of the every of the studied fen was specific thus influencing a community of invertebrates. Diptera was dominating taxon among grass dwelling insects. Hymenoptera, Coleoptera and other orders were represented by less number of individuals. These insects form three definite cluster groups: 1) associated with damp fens with *Menyanthes trifoliata*; 2) associated with moist fens with *Schoenus ferrugineus*; 3) associated with moist fens with *Molinia caerulea*.

Miridae dominate among bugs (25 species) and clearly show damp-moist gradient of fens. Grasshoppers with nine species were mostly depending of the height of vegetation. *Conocephalus dorsalis, Mecostethus grossus* are well-known wetland species and depend on the height of vegetation.

Population density of whorl snails was calculated for every of six species found in the fens. *Vertigo antivertigo* was the most common species and has density nearly reaching 2000 individuals per sq,m. Important, that particularly protected *V. geyeri* had quite high density, depending on high alkalinity of fens and low-grown vegetation. The moisture of the fens negatively influenced this species.

Of other soil invertebrates millipedes were mostly influenced by the alkalinity of soil, and *Ommatoiulus vilnensis* might be a good indicator of the calcareous fens. *Ligidium hypnorum* eudominated among woodlice and depended on the litter of *Myrica gale*.

The investigated fens were developed at different periods of time; some were younger as 4500 years, but some before about 170 years. The age of the fens did not play important role in the occurrence of invertebrates. Even in the younger or old fens the environmental conditions could be favourable for calciphilous invertebrates.