

Day 11 (Wednesday, September 11th 2013)

After staying at Mõedaku spordibaas overnight, the excursion day started with a short walk to a nearby forest. Among the floral species found there were hazel (genus *Corylus*), oak (genus *Quercus*), maple (genus *Acer*), spruce (genus *Picea*) and alder (genus *Alnus*).

The richness of the site is due to a good nutrient and water supply. These are essential factors for plant growth and plant health and their present was also indicated by the height of the examined trees (about 25-30 m).

No litter layer could be observed which stands for a high activity of soil animals and therefore a high decomposition rate.

Even though the general condition of the forest was fairly well, dead spruce trees could also be seen. The estimated reason for the death of these trees is a combination of factors – that is – the bark beetle (subfamily *Scolytinae*), a poor tree health because of an ongoing drought and the chance of the bark beetles to produce more generations during one mating period because of good conditions. When bark beetles produce multiple generations during their reproduction season there is also the possibility of them infesting healthy, vital trees.

Looking closer, a lot of different snails could be seen on the ground or on top of leaves. Particularly abundant was the white-lipped snail (*Cepaea hortensis*, Müller, 1774), which is a primary decomposer easily recognized by the white lip at the aperture of the shell of adult specimen that indicates their end of growth.

The pH of the soil was estimated to be between 6 and 6.5 at the top layers, therefore being a bit acidic due to the high decomposition rate and the thereby produced organic acids.

After leaving Mõedaku spordibaas we drove to Nõmmeveski in the Lahemaa national park. The Lahemaa national park is the largest and oldest national park in Estonia, established in 1971, covering 725 km². It was the first national park established in the Soviet Union. About a third of the park is sea and about two thirds is covered by forest. A small part of the park is closed to the public, about 0.1%

There is a canyon about 20 meters high and in the canyon flows the river Valgejõgi, formed of limestone and sand deposits. The canyons top sediment layer is sand, till and gravel with limestone beneath, then there is a layer of glauconite minerals, argillite and at last sandstone.

The Valgejõgi river was dammed in 1898 to produce electricity and was closed around 1970. In the canyon the old concrete channel built to transport water from the dam to the power plant is striking in the environment and big concrete blocks are scattered around the canyon. It is interesting to see the organismic succession on this old infrastructure, with mosses, lichen and even trees growing on the concrete structures. In many places the concrete has acquired a quite thick layer of calcium carbonate,

The canyon is well covered with mostly coniferous spruce and pine but also has among others elm, native maple, hazel, and many kinds of ferns. Horsetails are prominent in the forest floor. The leaf litter transports a big amount of nutrients to the river, and up to 80% of the nutrients of the Valgejõgi river are supplied by leaf litter.

Among curious organisms found at Valgejõgi was a water scorpion, a left-handed snail of the family *Clausiliidae* and many types of Trichoptera larvae. Trichoptera larvae are important for nutrient cycling and processing in aquatic food webs but their adult, terrestrial stage often goes unnoticed because it is usually short. Trichoptera larvae can be used as indicators of water quality by observation of their silk cases. The larvae form the cases to protect themselves from toxic substances in the water and therefore the cases indicate presence of toxins.

After leaving the Valgejõgi canyon our next destination was Palmse manor.

When we were finished with collecting animals we had free time to have a look around the Palmse Manor. The complex was established in the 16th century and renovated in the years 1973-1986. Visitors can learn about the Estonian manor life and architecture here. The manor, which is situated in the nature landscape of Lahemaa National Park, belongs to the biggest baroque mansions in Estonia. The main building, the Manor house, was built up 1720 and nowadays is completely renovated and fully-equipped with furniture from the 19th century. First floor looks very festive with the decoration and high ceilings. Bedrooms were situated on the second floor; wine cellar and the kitchen are in the basement. The Manor house is surrounded by gardens planted with *Cornus alba*, decorative trees such a big-leaf linden (*Tilia platyphyllos*) and other plants. There is a pond with a summer house (rotunda) behind the main house. Other historical buildings are situated in the area – bathhouse, greenhouse and barn, distillery, ice cellar, winter garden etc. There is a possibility to visit the café and the tavern which serves national dishes. Professor Kazda, Muhle and Reintam explained the typical land use mechanisms at the time of feudalism. Mr. Muhle showed many typically

garden plants and explained the architecture of the garden, which is orientated on French gardens from these times.

After visiting Palmse Manor we moved by bus to the next location – the fishermen's village of Altja. We went to the local tavern where we had cauliflower-carrot soup, salmon and bread pudding for lunch. After the lunch we went for an excursion in the village and at the coast. Altja is a typical shoreline village with one street surrounded by old wooden fishermen's houses and sheds, which were used to dry fishing nets in. Other structures were used as smoke-houses for preservation the fish for the winter. First known written record comes from the 15th century. Number of old houses has been restored recently. There are no professional fishermen living in the village these days. Most houses are in private property and they are used as summer homes. Tourists can take a hike along the local nature trail. The shoreline is rocky but there is a sandy beach close to the village too. We found again erratic boulders which are transported during the ice-ages from northern regions. Teachers explained the land use of such small villages in older times compared to the previous seen estate of Palmse Manor and compared to today's farming structures.

When we finished exploring the village and the coastline we all together met next to the bus at 18:30 and we took to the road back to Tartu.