Introduction

Transition from traditional agriculture to intensive land use during the last century has caused drastic changes in the landscape of most parts of Estonia. Large areas of species-rich communities of unfertilized grassland have been converted into productive species-poor cultural grasslands or croplands. At the same time, grasslands in areas with lower productivity and located in the periphery of the country were abandoned and left to become overgrown. However, in Läänemaa County, in the western part of Estonia, this dualistic process has been less pronounced. Quite large areas of traditional landscapes and grassland communities have been maintained. Nowadays, the species-rich grasslands of Läänemaa County form more than one fifth of the total area that now survive in Estonia (Nõuakas, 2007). In 1999-2000 an extensive study was carried out by the Estonian Seminatural Community Conservation Association to map the location and management status of the remaining semi-natural grassland communities in Läänemaa County (Luhamaa et al., 2001). In subsequent years, the database has been improved and updated during several grassland inventories.

Läänemaa County

Läänemaa County is situated in the western Estonian lowlands, and borders the coast of the Gulf of Finland and the Strait of Väinameri. The territory of Läänemaa County covers 2,383 km². Average annual temperature is between 5-6°C, the warmest month being July (average temperature +15.8°C) and the coldest is February (average temperature -5.0°C). The average precipitation is 650 mm (Pärnamägi, 1998). The geomorphology of Läänemaa County has been influenced by continental ice that started to retreat about 13,000 years ago and was followed by a land uplift of 75-110 metres. At the present time, the rise is still continuing at a rate of 1-3 mm per year and was followed by a land uplift of 75-110 metres. At the present time, the rise is still continuing at a rate of 1-3 mm per year. Most of the Lääne County was, after the retreat of ice, covered by the Yoldia Sea and later by Lake Ancylus until 8,000 years BP (Eltermann and Ploom, 1998). The base rock comprises limestone and marls from the Silurian and Ordovician periods. The top layer, that varies from 20 cm to 30 m, consists mainly of moraines. In lower areas, sedimentary sands and clays lie on the surface and are the main parent material for soil genesis (Eltermann and Ploom, 1998). Soil genesis is influenced mainly by glaciations and leaching, but also by paludification processes (Leet, 1998). The vegetation of Estonia belongs to the boreo-nemoral biogeographic zone (Sjörs, 1965).

The rise and fall of grasslands

The first settlers at about 11,000 years BP (Kriiska, 2004) were hunters and gatherers and thus their influence on the vegetation was presumably quite limited. The first traces of animal husbandry in Northern Europe have been dated to 7,000 BP, but apparently hunting and fishing still remained the most important source of food for many subsequent centuries. The first grassland communities, which had the appearance of wooded meadows, may have been created around these settlements. Läänemaa County became more densely inhabited around 5,000 BP and since that period, one can assume that crop cultivation had a growing influence on the plant communities. In the early years of agriculture, it was easier to cultivate the primary grasslands that had arisen from under the sea due to the land uplift or flooded grasslands on the banks of rivers that had not yet become overgrown. Slash and burn was practised to prepare the land for cultivation (Kriiska, 2004). Most likely, considerable areas of meadow communities were created on former crop fields in rotation – impoverished and overgrowing fields came into use as pastures (Moora, 1998). As the scythe was unknown at that time, leaf sheaves were collected as additional winter fodder for animals. The branches of trees and bushes from the communities surrounding the villages were cut and bound into sheaves. This enhanced the development of a wooded meadow landscape. Until today, wooded meadows and pastures were essential to the identity of Western Estonia and the neighbouring Baltic region. The findings of scythe date back to the first half of the first millennium AD (Kriiska, 2004). The scythe enabled farmers to make hay and thus gather winter fodder for a larger number of animals. This was accompanied by an increasing area of pastures and hayfields. Village landscapes became dominated by wooded meadows and wooded pastures which had an extensive distribution by the end of the 19th century. In addition, coastal meadows and floodplain meadows on the banks of rivers were used as pastures and hayfields.