

AN EXPERIMENTAL USE OF SLASH-AND-BURN CULTIVATION IN KARULA NATIONAL PARK, ESTONIA

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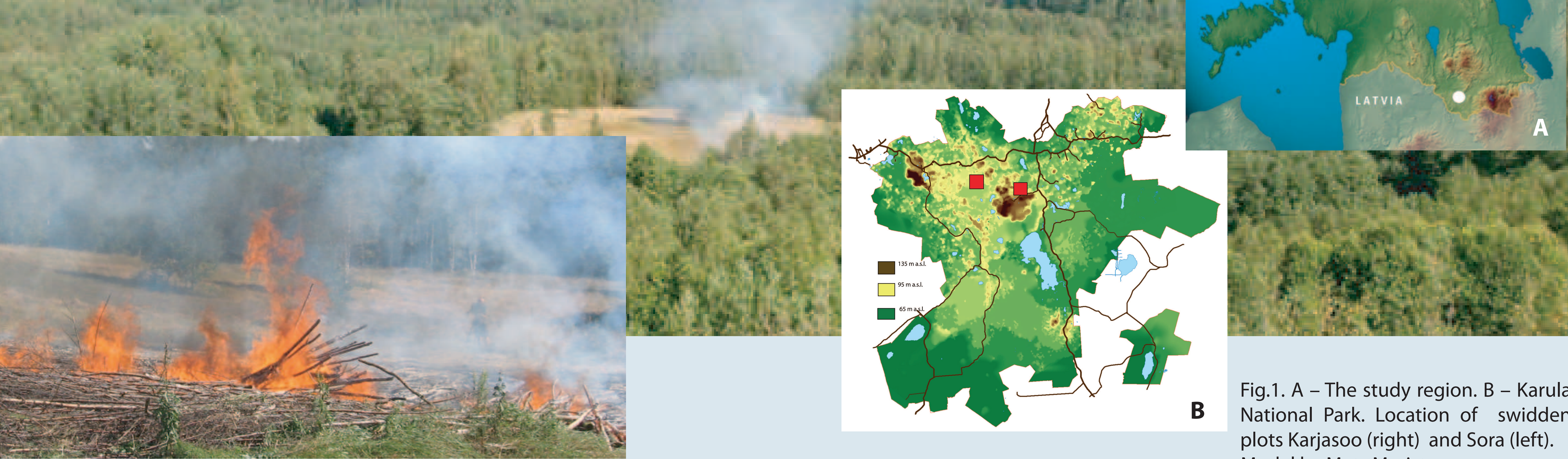


Fig.1. A – The study region. B – Karula National Park. Location of swidden plots Karjasoo (right) and Sora (left). Model by Mats Meriste.

SLASH-AND-BURN CULTIVATION

Slash-and-burn, also known as swidden cultivation means a clearing of forest for agriculture by cutting and burning the vegetation. Plots are cultivated for a few seasons and then abandoned as fertility declines. Such plots become used as pastures, later forest recovers.

PAST EVIDENCE FOR SLASH-AND-BURN CULTIVATION IN ESTONIA

Swidden cultivation has played an important role in land use for about 4000 years. It survived the longest, up to early 20th century, in Eastern and South-Eastern Estonia. According to the historical data two techniques of swidden cultivation have been practiced – the so-called high forest swidden agriculture and the coppice forest swidden agriculture. During this project we reconstruct the latter.

SITE SELECTION

Karula National Park was chosen as the slash-and-burn experiment site (Figure 1). In this region of extensive forests and the traditional settlement pattern of single farms swidden cultivation has historically been an important land-use strategy (Figure 2). The experimental sites serve as base for long-term research for developments relevant from the viewpoint of historic land-use as well as that of environmental effects occur on the site 10-20 years after the end of cultivation.



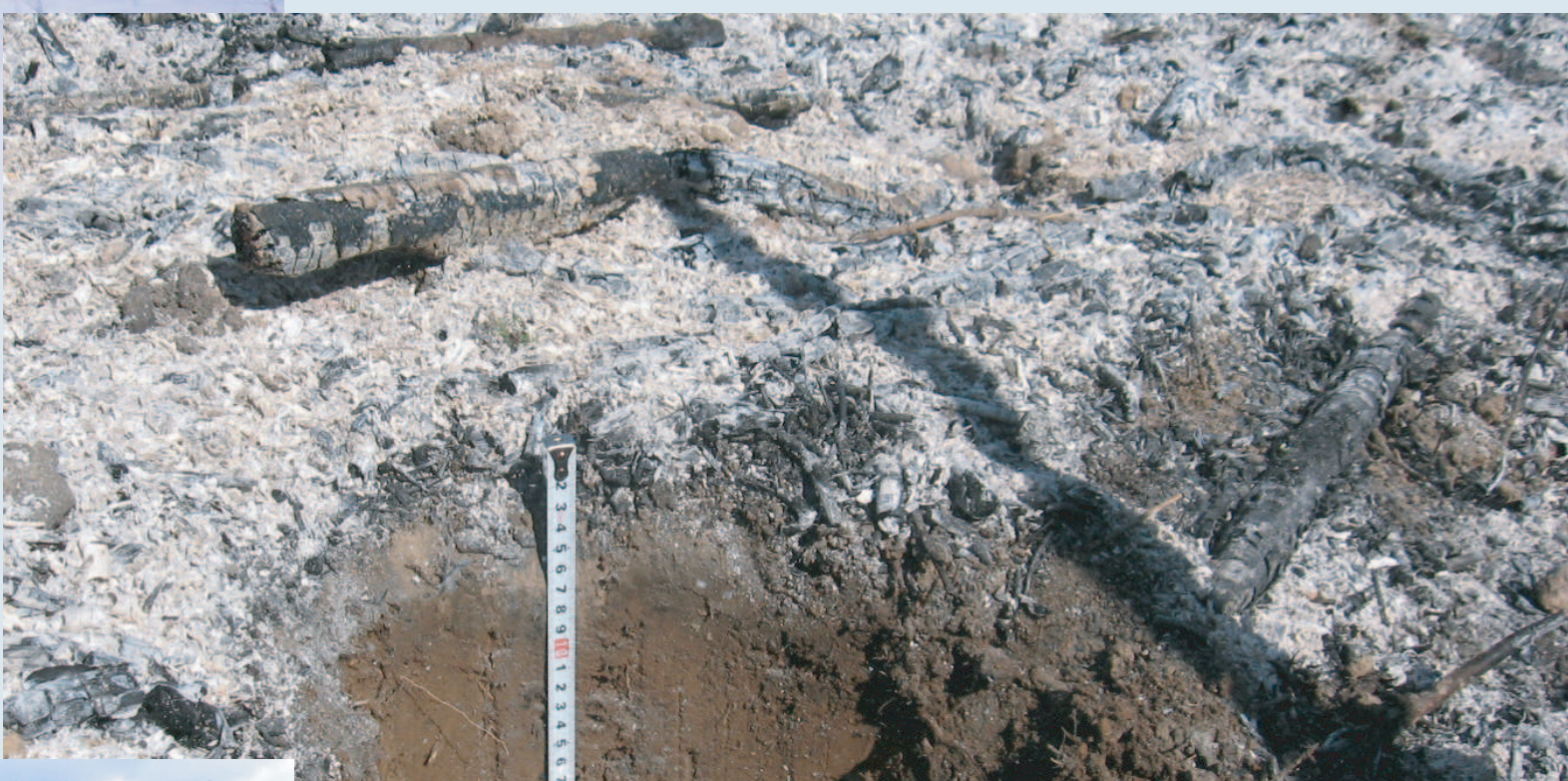
Fig. 2. Plan of the farm estate from 1867. Swidden fields are marked in light pink colour and the letter "c". Red square marks the site of our experimental field Karjasoo.



The experimental areas are chosen from among state-owned previous arable land covered with 15-20 year old coppice (mostly birch, alder and spruce).

THE PROJECT OBJECTIVE IS TO STUDY:

- the impact of burning practices and slash-and-burn cultivation methods on soil and vegetation;
- the dynamics of crop yields during the years;
- vegetation regeneration after cultivation, that enables to draw conclusions about the impact of slash-and-burn cultivation on formation of plant communities;
- how slash-and-burn cultivation and the subsequent changes of vegetation show in pollen spectra;
- atmospheric transportation capacity of microscopic charcoal particles, used in palaeoecological reconstructions;
- the specific structure of soil and burning remnants, that will serve as comparative material for archaeological interpreting of ancient swidden fields;
- the technology, tools and amount of workforce in traditional swidden cultivation



ACTIVITIES IN THE EXPERIMENTAL FIELDS

In one of the three planned experimental fields - Karjasoo - all the trees and bushes were cut in 2006 and left to dry for one year. In August 2007 dried wooden material was burnt; the plot was ploughed and harrowed following historical techniques as closely as possible and the burnt-land variety of rye was sown. By now we have completed two consecutive years of cultivation in this field.



In the second plot (Sora) dried trees and bushes were burnt in 2009 and the first year of rye cultivation is in progress. The site of the third field (Ansi) has recently been chosen and the preliminary vegetation mapping is in progress.



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