

## **Comparing results of high-resolution palaeoecological analyses with oral histories of land-use of a Sami reindeer herding pen in northern Sweden**

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Reindeer herding is a key component of Sami culture, but much is still unknown about its development both in the recent and more distant past due to the limited availability of historical and archaeological evidence. Pollen analysis provides a potential tool to supplement this lack of evidence through the detection and evaluation of landscape responses to the impact of reindeer pastoralism. In the boreal forests of northern Fennoscandia, localised forest clearance to create space for dwellings and livestock is presented in the palynological record as a decline in arboreal taxa and an increase in herbaceous taxa favoured by the increased light levels, resistance to soil trampling, and/or the increased soil nutrient levels provided by reindeer dung, domestic waste and ash from smudge fires.

Oral histories of 20th century forest Sami reindeer herding at an abandoned reindeer herding pen (renvall) at Akkajävi, northern Sweden (66.9° N, 21.1° E), are integrated here with high-resolution palaeoecological reconstructions of the local vegetation to: (i) assess the sensitivity and value of various palynomorphs to the impacts of reindeer pastoralism; (ii) investigate whether the patterns seen in the palaeoecological record match the timing of activity at and abandonment of the site as understood from these oral histories. A peat monolith collected from within an annexe of the renvall was pollen analysed at a high resolution, supplemented with coprophilous fungal spore (livestock grazing/gathering), microscopic charcoal ([anthropogenic] burning) and sedimentological (loss-on-ignition; soil erosion) records. For the first time, this has allowed for the identification of multi-decadal cycles of use and abandonment of a renvall in the pollen record, but more obviously so in its coprophilous fungal spore archive, with the pattern and timing of changes at the site confirming events previously known only from oral histories. A second, paired profile was collected from the fen beyond the boundary of the renvall. Here, the local pollen assemblage zones associated with the phasing of activity and abandonment were reproducible, but the coprophilous fungal spore record indicates an absence of herbivores on the fen during phases when the renvall was in use, and their presence during phases of abandonment. This suggests that the fen may have been used for the purposes of reindeer grazing when the renvall was not used for reindeer herding; something that was not previously known from the oral histories.

Palaeoenvironmental reconstructions can therefore provide a very valuable and accurate record of local landscape change as a cause of human impact, including reindeer herding. Now that its potential has been confirmed at a recently abandoned site where full oral histories are available, the tool can be tested at locations where reindeer herding is suspected to have taken place - based on what scarce archaeological and/or historical evidence is available - but where further evidence on onset/development/duration of such activities is lacking.