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A landscape biography of the 'Land of Drumlins': Vooremaa, East Estonia

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11 Historical GIS: a new perspective for heritage and landscape management?

Historical GIS has a capability of providing an excellent platform for archaeological heritage and historic landscape management. In the following short chapter, I introduce the idea of archaeological landscape evaluation applying historic landscape change extracted from historical maps combined with numeric values for archaeological sites. The information on historic land use and the values of archaeological sites are then calculated to create archaeological micro-regions. The micro-regions indicate the potential archaeological/historic value of certain landscape areas, which then can be effectively used in managing landscape related processes in the region.

In order to detect the landscape change over time, it is necessary to examine each landscape feature separately. For each site there are 9 characteristics, which have to be compared at four different stages in time (1684; 1839; 1930s; 2010s). The characteristics, as introduced in the methodology chapter, include: 1) settlement 2) arable land 3) unused arable land or bush land 4) grassland 5) forest 6) wetland 7) waters 8) roads 9) quarry.

It is possible that none of the characteristics change so the minimal change is indicated by 0. With the maximal change of 9, the surrounding landscape is destroyed completely.

Of course, it can be argued, if the value of landscape can be assessed based on minimal landscape change at all. Change can also be very positive and contribute enormously to the value of the landscape. Still, in the current study, I am looking for minimal landscape change to identify the parts of landscape around archaeological sites that over the course of 330 years have changed the least. Even though, there is a big temporal gap between the oldest historical maps, and different archaeological sites, this is still in my opinion one of the most objective options for assessing large scale historic landscape change.

For example, on the drumlin of Igavere there are two recorded settlement sites, which in principle can be considered as one village, only their central location has shifted over the time. From the 17th century map it is possible to count 12 farms along the eastern slope of the drumlin, in clusters of 9 and 3, one additional farm is separately on the northern tip of the landscape feature. The different parts of the village are connected by a passing road, and the most densely inhabited part of the drumlin is situated by the riverside. The western part of the drumlin had no dwellings but was used as cultivated fields. Both the eastern and western

inter-drumlin depressions were exploited as grassland. Based on the pottery shards³⁷ collected during landscape surveys human habitation on the drumlin can be followed from the Pre-Roman Iron Age till. The historic landscape change on the Igavere drumlin would be characterised as follows:

Name	1684	1839	1930s	2010s	Change	Features in change
Igavere I	Settlement X Grass River Road	Settlement Arable X River Road	Settlement Arable Grass River Road	Settlement Arable Grass River Road	Arable Grass	2
Igavere II	Settlement Arable X	X Arable Grass	Settlement Arable X	X Arable Grass	Settlement Grass	2

Table 36. Landscape change in Igavere village.

Only the number of changing features, not the overall number of changes has been taken into

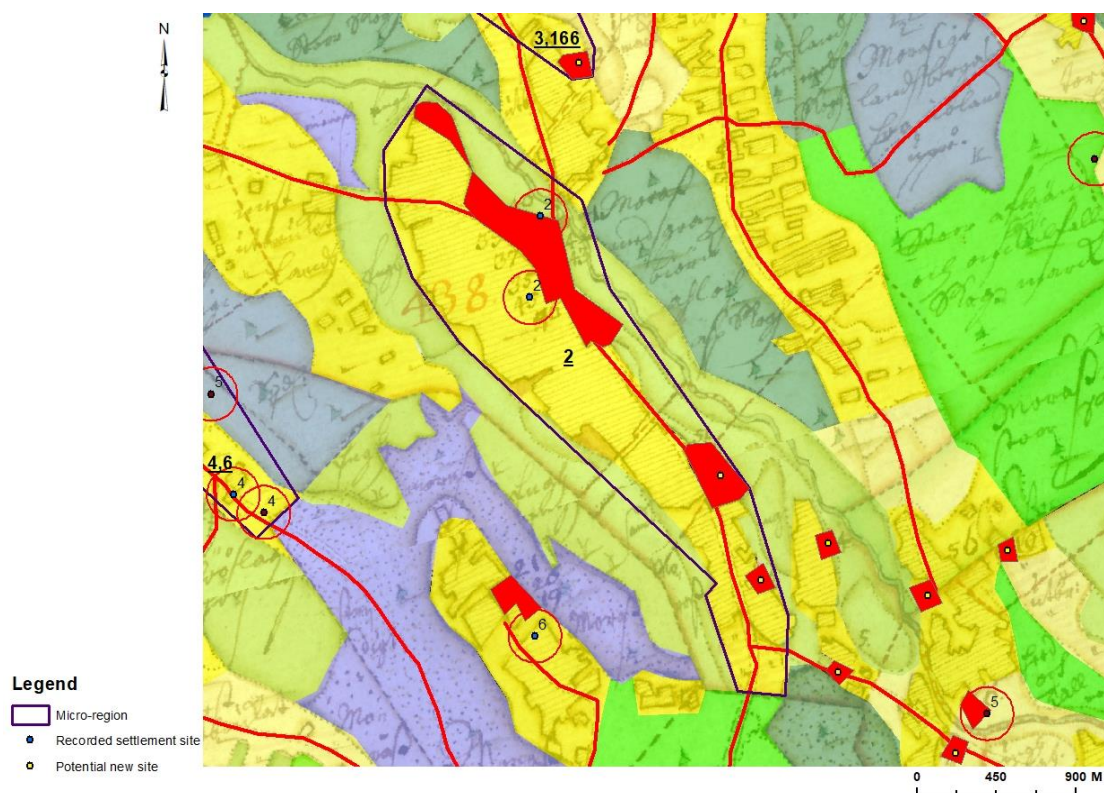


Figure 67. Historic landscape change around the sites on the Igavere drumlin.

³⁷ AI 5126; TŪ 1639

account. This can be reasoned, that it is important to track the changes of different features, not the changes within one specific feature.

In this case, we can see that in both of the settlement areas, only two elements have changed over the past 330 years. The top, and the western part of the drumlin has always been used as arable land, only the relations between the settled, cultivated, and grassland have changed on minor level (2). Thus, we can conclude, that the landscape change around and on the Igavere drumlin has been relatively minimal (Figure 67).

In the current study, each archaeological site has been attributed with one specific numerical value, which is deducted from the relevance of preserving the site as a unique feature in the landscape. The evaluation is designed to be as easy as possible in order to apply it in future landscape planning. Although similar evaluations in Estonia have been carried out earlier (Jonuks et al. 2014; Lang 2013), their scope was more site-specific, and concentrated mostly on the sites themselves than the surrounding landscape.

Each archaeological site received a number on the scale from 1 to 5 in GIS database. The numbers indicate in ascending order which type of sites are more important in the meaning of archaeological landscape preservation. The sites can be evaluated as follows:

1. **Stray find** – findings and artefacts, which cannot be associated with cultural layer, but might indicate other sites in the surrounding area. Also, **potential new settlement sites**, which can be located on the 17th century maps as old manor centres, villages, and farms, but have not been searched for archaeological findings on the landscape yet.
2. **Places of oral tradition** with vague archival records, which seldom have traces of archaeological findings. Often these places cannot be precisely located or mapped in the landscape. Still, they can convey considerable meaning as places of collective memory for the local people. Oral places can also be potential new archaeological sites, which are waiting to be checked.
3. **Settlement sites, iron-smelting places, hoards** – sites with cultural layer, which by excavation are destroyed partly or completely. The sites convey valuable scientific information, but *in situ* preservation is not very meaningful. Generally, there is nothing to see for the naked untrained eye. Reconstructions of this type of sites are usually solved by marking distinctive features or creating informative stands. In planning strategies, these sites may be destroyed after archaeological investigations.

4. **Stone graves, burial grounds, medieval rural cemeteries, cup-marked stones, offering stones, offering springs** – sites which convey significant archaeological value, are place specific, can be preserved *in situ*, moved to another location or reconstructed. When we are dealing with human remains always non-destructive methods should be considered. In planning strategies, this type of sites should remain intact in their original location, and should only be excavated fully and removed if there is no other reasonable solution.
5. **Hillforts, and other large landscape features, such as *hiis*-sites³⁸** – even after full archaeological research this type of sites should remain clear of any constructions or large-scale earthworks. These are the most important archaeological landscape features.

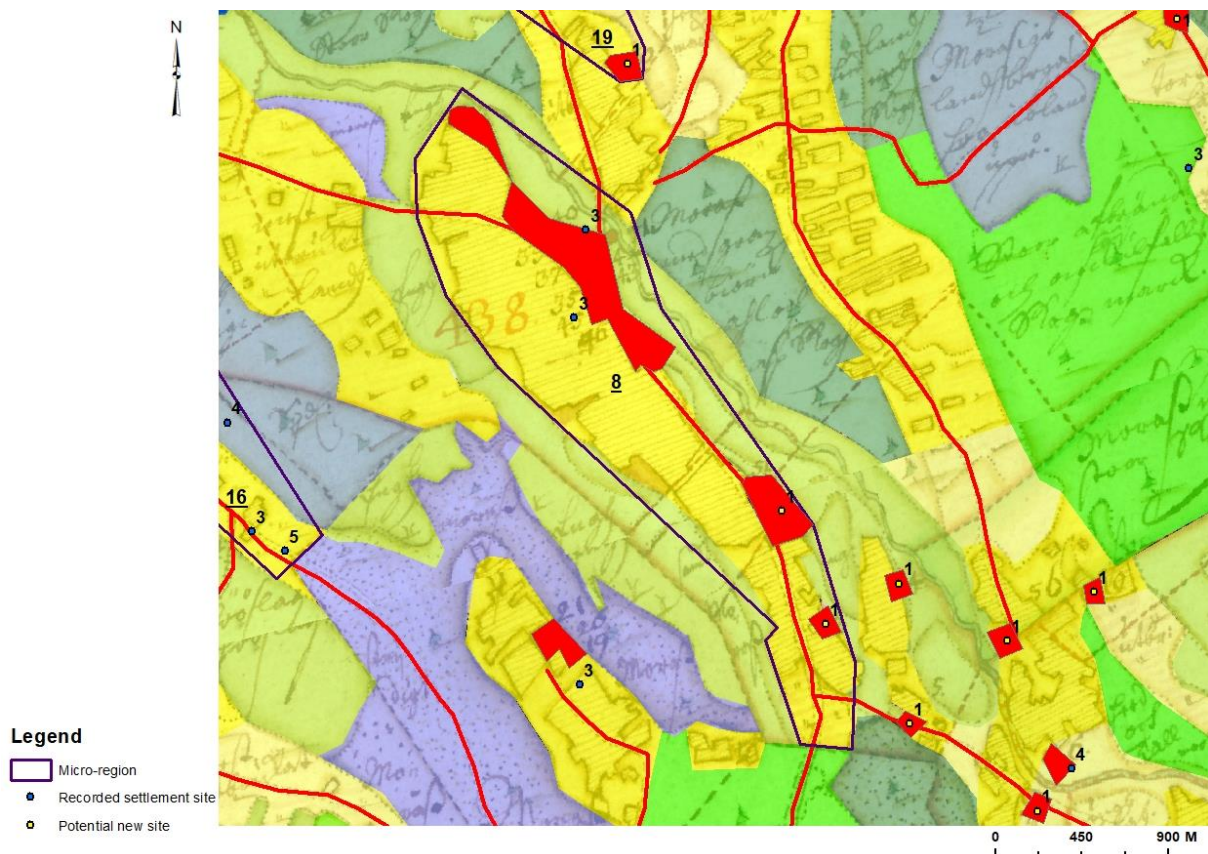


Figure 68. Archaeological micro-region on Igavere drumlin with two recorded settlement and two potential settlement sites, with the sum of archaeological value 8.

6. **Archaeological micro-regions** – on the bases of this simple evaluation archaeological micro-regions can be created. The micro-regions consist of clusters of sites situated in one compact area, the borders of these areas can be defined by historic land use and

³⁸ Historic natural sacred places, which often comprise of landscape features, such as hills, valleys, and forested areas.

specific landscape features. These micro-regions also indicate to what extent the sites tend to cluster around certain landscape features, such as drumlins, valleys, river

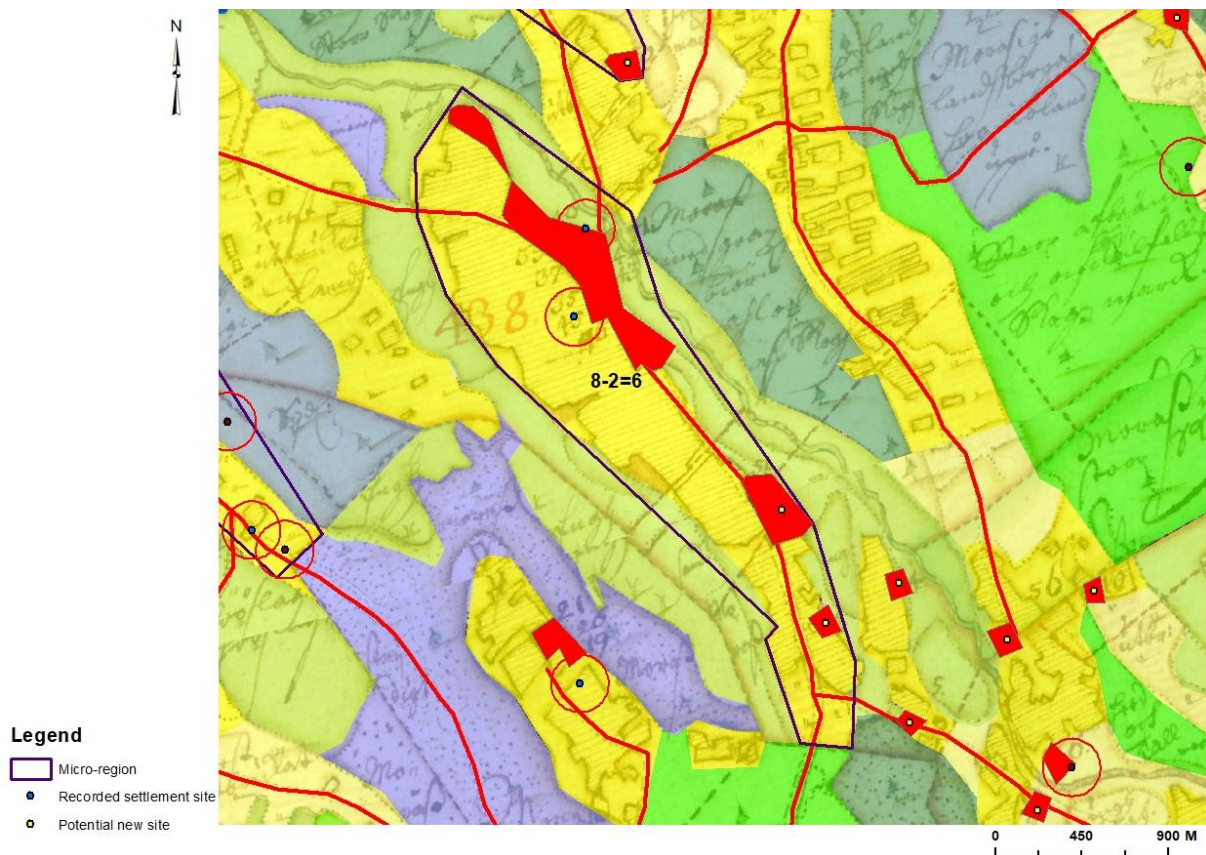


Figure 69. Combined archaeological and landscape value of the Igavere micro-region is calculated 6.

basins and so forth. The sum of the sites indicates the archaeological value of the certain region. The results can be combined with historic land use change, in order to detect the overall landscape alteration. For example, the archaeological micro-region on the Igavere drumlin (Figure 68) consists of two settlement sites (3+3), and two potential new settlement sites (1+1) with summed up archaeological value of 8 (3+3+1+1). The average historic landscape change indicator based on historic map analysis for this micro-region is 2. For the new potential sites, which have not yet been archaeologically located on the landscape, historic landscape change has not been considered. The higher the first, and lower the second number is, the more valuable the region can archaeologically be considered. The combined value of this micro-region can be calculated by deducing landscape change from the archaeological value: $8-2=6$ (Figure 69). This type of evaluation can only work in a certain defined region, where the values of different micro-regions can be compared against each other.

While in the case of Igavere drumlin the overall value of the archaeological/historical landscape was only 6, then in the case of Raigastvere the eventual number is already 18,6.

This is due to the fact, that in Raigastvere there are two Iron Age settlements (3+3), three Iron Age graves (4+4+4), and a potential new settlement site (1), which all sum together 19 points. At the same time, the change in historic land use in Raigastvere was minimal, and around the five archaeological sites only three landscape features changed over 330 years, showing that the average landscape change could be measured only 0,4 points (Figure 70).

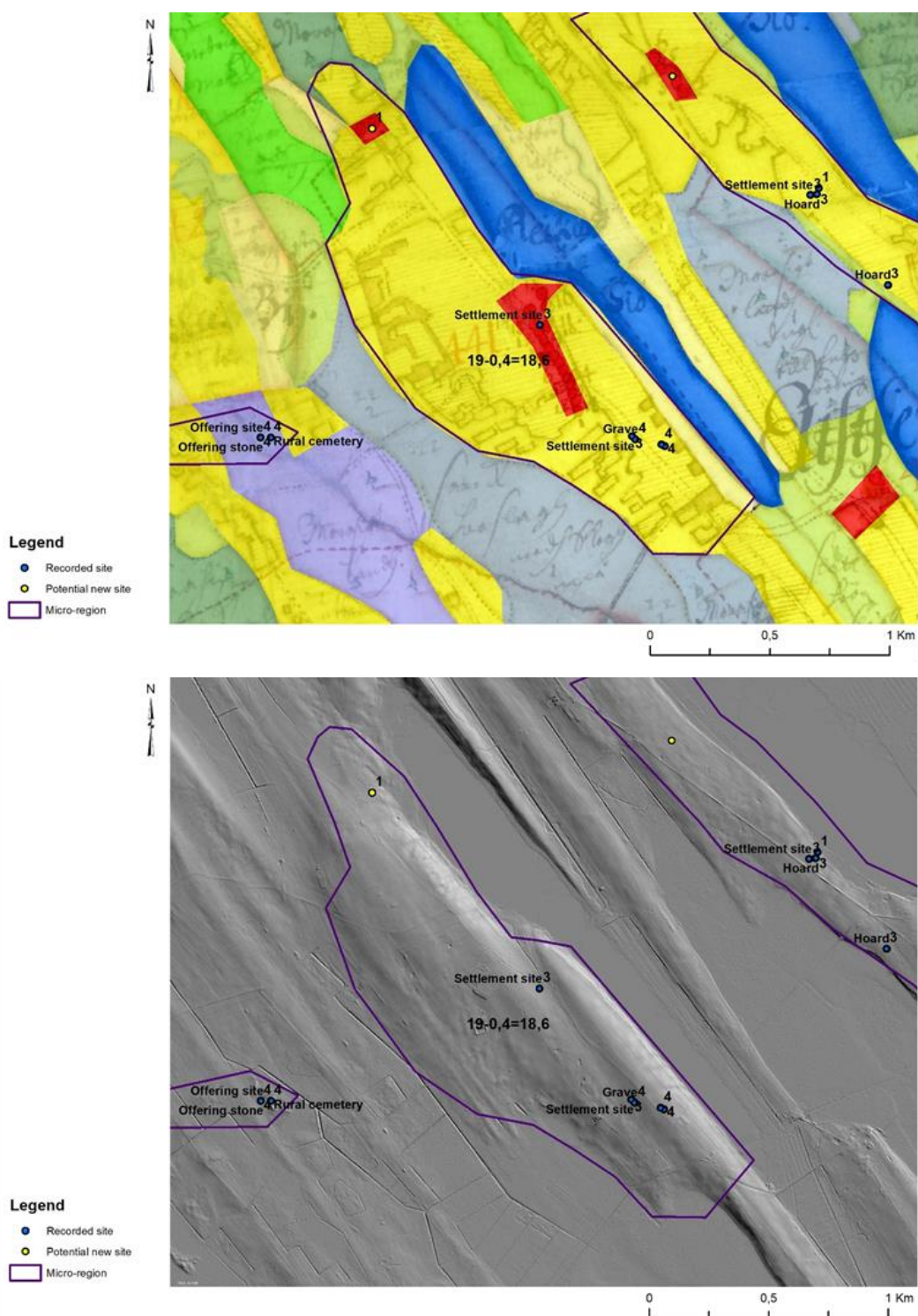


Figure 70. Archaeological micro-region of Raigastvere.