Quaternary International 404 (2016) 43–55

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Wild plant gathering in Stone Age Finland

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ARTICLE INFO

Article history:
Available online 27 November 2015

Keywords:
Archaeobotany
Wild plant gathering
Subsistence
Finland
Neolithic
Mesolithic

ABSTRACT

In this paper, a systematic review of archaeobotanical data from Stone Age (c. 8900–1500 cal BC) sites in mainland Finland is presented for the first time and compared with ethnographical data. The data was collected from 76 archaeological sites and consists of charred and waterlogged remains from soil samples and charred hand-picked remains from archaeological excavations. The data shows that various wild plants were gathered in Finland during the Stone Age and that different opportunities for plant gathering prevailed in various parts of the country. Hazel and water chestnut were widespread and used in locales further to the north than where they grow today, but they were still confined to southern Finland. Some plants, such as bearberry and crowberry, were ubiquitous and collected throughout Finland. In the light of the data analysed, it is suggested that most of the charred plant remains derive from food processing (roasting, smoking, frying, cooking), waste management, and fuel use.

1. Introduction

Stone Age societies in Finland based their subsistence mainly on hunting and gathering. Small-scale cultivation was practiced sporadically. Stone Age plant gathering has received much less attention than hunting (e.g. Edgren, 1993), even though the importance of gathering has been understood and the need for more archaeobotanical analyses has been acknowledged (Zvelebil, 1994). Studies of Stone Age subsistence and cultural ecology have previously been based on zooarchaeological and artefactual evidence, while aspects of foraging subsistence practices related to plant gathering have received much less attention (e.g. Siiriäinen, 1981; Nunez, 1990). When the availability of wild plants (Nunez, 1990) and plant cultivation (Siiriäinen, 1982; Nunez, 1999) have been discussed elsewhere, archaeobotanical data has played a minor role. One exception, however, is Hertell (2009), who has used hand-picked hazelnut shells from excavations as a proxy for the portion of vegetable foods in the hunter–gatherer diet.

This apparent downplay of archaeobotanical material is most probably due to the fact that no earlier synthesis has been made of Stone Age archaeobotanical material for the whole of mainland Finland, even though a small number of papers have been published (e.g. Jussila, 1996; Lempiäinen, 2010). The main challenge regarding this data category is that most archaeobotanical research results are generally only available in 'grey' literature, such as plant lists or separate reports attached to main excavation reports. Therefore, our first objective is to compile and review the available archaeobotanical data on plant remains from Stone Age mainland Finland and to map the use of wild plants in different parts of the country.

It can be difficult to interpret the archaeobotanical remains of wild plants. Ethnographical and historical accounts provide information on how the plants could have been used and consumed. Our second objective is to discuss how the plants found in Stone Age Finland could have been used. This discussion is based on a survey of Finnish ethnographical and historical literature, relevant archaeobotanical literature, and old floras. Our main focus is on the preparation and consumption of plants as food, even though we acknowledge that plants have been used for various other purposes.

Finland is located in the circumpolar region, approximately between the 60th and 70th parallels north, which limits the distribution and growth of plants (Fig. 1a, b). There are significant differences in climate and vegetation from one extreme to the other and gradual changes between them. However, climate and vegetation have changed during the millennia. The climate was warmer during the Holocene thermal maximum, which allowed thermophilous plants to grow further north. Our third objective in this paper is to compare the distribution of the most common plant taxa from Stone Age sites with the current distribution of these plants.

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http://dx.doi.org/10.1016/j.quaint.2015.10.036
1040-6182/

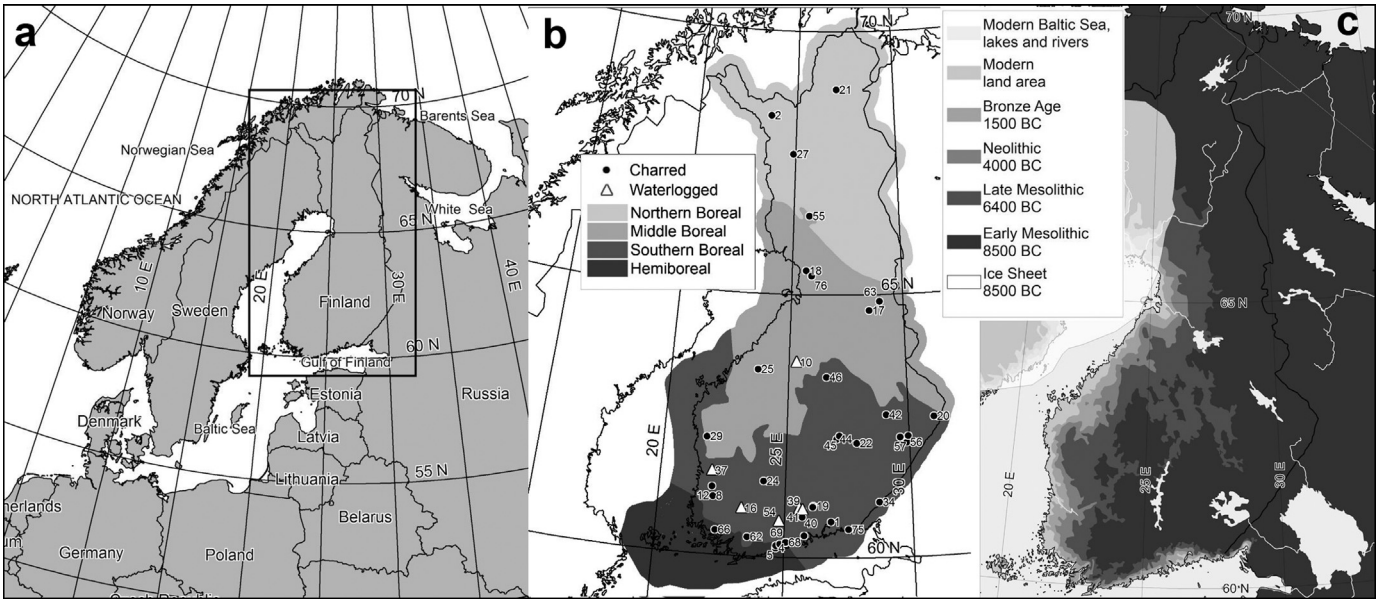

Fig. 1. Geographical setting. a) Location of Finland, b) Forest vegetation zones of Finland (© SYKE) and sites where archaeobotanical analyses have been conducted. All site numbers are not visible. Coordinates and site information are provided in Appendix A. Hand-picked hazelnuts are presented in Fig. 3c, c) Land uplift with current major lakes, rivers, and seas. The situation in 8500 cal BC represents the Ancylus Lake and later phases the Litorina Sea. The data is valid only for the area of current Finland. Land uplift data is retrieved from Daniels 2010 unpublished digital atlas; Påsse and Daniels, 2011.

This comparison can illustrate how the Holocene thermal maximum changed the distribution of these plant species.

1.1. Regional and chronological setting

The geographical area covered by this study is mainland Finland (Fig. 1), excluding the Åland archipelago in the south-western part of Finland. The chronological limit is the Finnish Stone Age (c. 8900–1500 cal BC), based on Carpelan's (1999, 2002) chronology.

Most of Finland consists of lowlands below 200 m a.s.l., but there is a lot of local variation in the topography. Areas with higher elevation are mainly situated in eastern and northern Finland, which also emerged first after the last glaciation (Fig. 1c; Tikkanen, 1994). During the Holocene, land uplift changed Finland's land area drastically. Fig. 1c summarizes this development, where the first phase of 8500 cal BC represents Ancylus Lake (c. 8700–6200 cal BC). A marked change took place in the Baltic Sea c. 6200 cal BC, when the former Ancylus Lake transformed into the salty Litorina Sea (Andrén et al., 2000).

Varied environmental conditions between both north-south and east-west axes provided habitats for different animals and plants. This variation can also be seen in the archaeological record. Maritime hunting and fishing were preferred in the coastal regions, whereas terrestrial hunting and fishing in lakes and rivers were common forms of subsistence in the inland regions. Freshwater plants were readily available due to the large number of freshwater basins, especially in south-eastern and central Finland (Fig. 1c).

1.2. Current vegetation

Finland lies mostly in the boreal zone, which is further divided according to the spread of tree taxa and vegetation into the southern, middle, and northern sub-zones (Fig. 1b). Only the south-western parts of the country are situated in the transitional hemiboreal zone. The Finnish boreal zone is characterized by coniferous forests, where Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*) are the main woody species (Hotanen et al., 2013).

In Finland, coniferous forests are common in the hemiboreal zone, which is defined by the occurrence of English oak (*Quercus robur*) (Valste et al., 2006). It is a transitional zone between the southern nemoral and northern boreal zones, characterized by a limited inclusion of thermophilous deciduous trees, and it has the richest vegetation and the greatest amount of groves in Finland, especially in places with alkaline bedrock (Kuusipalo, 1996; Valste et al., 2006).

The northern limit of the southern boreal zone is defined by the distribution of small-leaved lime (*Tilia cordata*) (Valste et al., 2006). Thermophilous trees are less common than in the hemiboreal zone, but small-leaved lime (*Tilia cordata*), hazel (*Corylus avellana*) and wych elm (*Ulmus glabra*) grow occasionally in groves (Valste et al., 2006). The predominant tree species in the zone are Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*), and spruce forests are rather common (Kuusipalo, 1996).

Due to climatic factors, spruce and pine produce less biomass in the middle boreal zone (Valste et al., 2006). Its northern limit is more or less defined by the distribution of alder (*Alnus glutinosa*), and thermophilous trees are rare in this zone (Valste et al., 2006).

The northern boreal zone is characterized by the slow growth of trees and sparse forests. The only tree species growing in this zone are spruce, pine, and birch (Valste et al., 2006). Treeless areas prevail in the northernmost parts of this zone.

1.3. Archaeological background and development of subsistence strategies

Table 1 presents the periodization of the study and the main subsistence strategies during these periods. Typologies and their dating follow those defined by Carpelan (1999, 2002), with the exception that the beginning of the Late Neolithic is set as c. 3400 cal BC instead of Carpelan's c. 2300 cal BC. Chronological limits are tentative and their aim here is merely to contextualize the archaeobotanical data.