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6. Other sites

6.1 INTRODUCTION

This chapter briefly discusses Late Mesolithic and Early and Middle Neolithic sites that are not located in one of the regions presented in earlier chapters, for which a restricted archaeobotanical data set is available, that were investigated during this research or that became available to the author in a late phase of the research (see fig. 6.1). The relevant data are included in the second half of this study (chapters 7-11).

Some of the sites discussed in this chapter from which data became available during the course of this study are located around Rotterdam: Randstadrail CS, Bergschenhoek, Hillegersberg, Barendrecht 20.126 and Barendrecht 20.125. The reconstruction of the palaeogeography and vegetation indicates that this group of sites may be considered as a western extension of the central river area region, the western river area (see chapter 1, fig. 1.8).



Figure 6.1 Location of the sites discussed in this chapter. 1 = Randstadrail CS, 2 = Hillegersberg, 3 = Bergschenhoek, 4 = Barendrecht 20.126 and 20.125, 5 = Benschop cluster, 6 = Alblasterdam-Nieuw Kinderdijk, 7 = Nijmegen-Oosterhout 't Klumke, 8 = Winterswijk, 9 = Hüde I, 10 = Jardinga, 11 = Doel Deurganckdok-sector B (map W. Laan).

6.2 RANDSTADRAIL CENTRAL STATION (WESTERN RIVER AREA)

The site Randstadrail Central Station (Randstadrail CS) was investigated in 2002 and 2003 by BOOR (municipality of Rotterdam). The site was located on an inland dune at the location of the Central Station of Rotterdam, Zuid-Holland (coordinates 91.490/437.660). The information presented here is based on Guiran and Brinkkemper (2007). During occupation, a channel was present next to the dune. A refuse layer at the dune was characterised by the presence of charcoal and fish remains amongst others. This charcoal was dated to 5630-5480 BC and 5620-5380 BC (6610 ± 50 BP and 6560 ± 50 BP respectively). The channel contained similar refuse as well, which could partly be linked to the refuse layer by means of ^{14}C dates, but which also indicated earlier occupation. The site was investigated through the analysis of cores. The botanical analysis included the analysis of pollen and macroremains from the refuse layer and the channel.

The pollen analysis is based on eight samples from a single core at the location of the channel. The selection of these samples was based on the preservation, the height of the pollen sum and the relation to the Mesolithic occupation. The upper part of the pollen core was rich in charcoal and contained a fragment of flint, and was interpreted as an archaeological refuse layer. Two AMS dates indicate that this part of the core dates to the period between *c.* 6200-6000 and 6000-5700 BC. The corresponding part of the resulting pollen diagram shows changes that are probably related to human impact, such as a decrease in *Quercus* sp. and *Corylus* sp., an increase in *Hedera* sp. pointing to more open conditions, an increase in Poaceae, and the (increased) presence of dryland and wetland herbs indicative of disturbance such as *Artemisia* sp., *Polygonum persicaria*-type, Chenopodiaceae and Asteraceae tubuliflorae. The decrease in *Corylus* sp. does not correspond to the increase in shrubs that is characteristic of human impact at many of the studied Dutch wetland sites, but may be related to the local conditions of the landscape, the vegetation and human impact. A high peak of charcoal in the relevant part of the pollen diagram supports the relation of the changes to human activity. However, the restricted number of samples (that is partly related to poor pollen preservation) limits the possibilities to compare the composition of the vegetation before and during occupation in detail.

The macroremains analysis was based on 19 samples from one core from the channel and 12 samples from four cores from the top of the dune. The diameter of the core was 8 cm and the height of the samples was 10 cm. The samples were sieved on a 0.25 mm sieve. The botanical remains represent taxa of woodland of dry terrain, alder carr, dry and moist disturbed terrain, freshwater marshes, open water and salt marshes. There are no indications of the presence of crop plants, which corresponds with the Mesolithic age of the site. A considerable number of taxa were found in a carbonised state, including *Cornus sanguinea*, *Corylus avellana*, *Quercus* sp. (cotyledon), *Ranunculus ficaria* (tubers), *Trapa natans*, *Capsella bursa-pastoris*, *Chenopodium album*, *Echinochloa crus-galli*, *Galium aparine*, *Persicaria lapathifolia*, *Stellaria neglecta*, *Alisma* sp., *cf. Typha* sp., *Schoenoplectus lacustris*, stem fragments and fruits of *Phragmites australis*, and unidentified parenchyma. The samples also contained remains of rope. The botanical analysis indicates that the water of the channel was eutrophic. The salt marsh taxa identified (*Salicornia europaea* and *Juncus gerardii*) were probably transported to the site during seasonal or less frequent influxes of brackish water from the sea.

6.3 BERGSCHENHOEK (WESTERN RIVER AREA; SEE APPENDIX V)

Bergschenhoek, repetitively visited during *c.* 10 years somewhere between 4350-4050 BC, has been interpreted as a short-term fishing-fowling site. It was located on a piece of wood peat measuring *c.* 16 m². A central feature on the peat surface consisted of a few overlapping surface hearths with a complex hearth on top. The peat surface was raised with reed bundles and wooden artefacts including planks and fragments of a fish trap. Fragments of various other fish traps were found next to the peat. The finds mainly comprised organic material, of which particularly the bird bones indicated occupation during late autumn and winter.

The botanical analyses are presented in appendix V and concerned pollen, macroremains, wood, charcoal and mosses, based on data from W.J. Kuijper, W.A. Casparie, I.L.M. Stuijts and H.J. During. Mollusc analysis by W.J. Kuijper provided information on the environment as well. The pollen and macroremains analysis comprised two sample boxes, one covering a section of the hearth complex, and one collected 2 metres further away in a clay layer next to the peat. The interpretation of the wood and charcoal data is based on interpretation of a part of the original documentation and on personal communication with W.A. Casparie.

The various sources indicate that the site was located in a riparian zone at the edge of a calm body of open water, where trees were presumably absent (with possible exception of *Alnus glutinosa*). Alluvial woodland vegetation was present within the exploitation area of Bergschenhoek, *i.e.* within a distance of *c.* 5 km. The molluscs show a combination of predominantly freshwater taxa and additionally brackish water taxa, while the botanical macroremains confirm the occurrence of slightly brackish conditions. Brackish influxes occurred at least during and after occupation.

Indications of human impact consist of the evidence that people raised the surface of the site with wood and bundles of reed, and the presence of carbonised macroremains of particularly marsh taxa in the hearth complex. In addition, the pollen diagram of the clay next to the peat island shows minor indications of disturbance of the reed vegetation and a resulting development of forb vegetation, while a decrease in alder may be related to human impact as well.

Taxa of which macroremains were found in a carbonised state in the hearth are *Phragmites australis*, *Cladium mariscus*, *Atriplex* sp., *Iris pseudacorus*, *Calystegia sepium* and *Bolboschoenus* sp./*Schoenoplectus* sp./*Scirpus* sp. Although it cannot be excluded that several of these taxa functioned as food plants, they all may represent the natural vegetation used for raising the surface. A probable food plant found in a carbonised state is *Malus sylvestris* (Bakels 1991), while probable food plants in a waterlogged state are *Corylus avellana*, *Malus sylvestris* and *Prunus spinosa*. Many marsh plants present in the local vegetation may have been consumed as well. Crop plants were not attested. The moss data suggest the intentional collection of *Anomodon viticulosus*, *Neckera* sp. (not *N. crispa*) and *Hylocomium brevirostre*.

Apart from fish traps, the wood assemblage comprised the remains of a dug-out canoe, planks, pointed posts, roundwood, beams, and unworked trunks and branches. The taxa attested in the artefact assemblage are *Alnus glutinosa*, *Betula* sp., *Cornus sanguinea*, *Fraxinus excelsior* and *cf. Tilia* sp. The fish traps, investigated in exceptional detail, show clear evidence of selective use of *Cornus sanguinea*. The charcoal assemblage demonstrates the use of *Alnus glutinosa*, *Fraxinus excelsior*, *Prunus* sp. and *Ulmus* sp. for fuel. The documentation furthermore indicates the presence of wood and/or charcoal of *Corylus avellana*, *Malus*-type, *Populus* sp., *Prunus spinosa*-type, possibly other *Prunus* types, Rosaceae, *Salix* sp., possibly *Sambucus nigra*, *Sorbus*-type, *Ulmus* sp., *Viburnum opulus* and *Viscum album*. All wood is considered to have been brought in to the site.

Investigation of the fish traps, based on the analysis of thousands of withies, resulted in the conclusion that shrubs of *Cornus sanguinea* were coppiced on a large scale and during a considerable period. Coppicing is particularly supported because of the large number of twigs with a similar age, the large length of the twigs and the finds of intensively coppiced stools of dogwood at the site. The available evidence is the best evidence of coppicing of all studied Dutch Mesolithic and Early and Middle Neolithic wetland sites.

6.4 HILLEGERSBERG (WESTERN RIVER AREA)

The site of Hillegersberg was excavated in 1990 by BOOR (municipality of Rotterdam). The site consists of a refuse layer on a dune near Rotterdam, Zuid-Holland. The information presented here is based on Van Stokkom (2006). The excavation concerned a trench measuring 14 x 2 metres and demonstrated the presence of charcoal, pottery and flint. The period of occupation is not yet known but the depth of the refuse layer and the characteristics of the finds indicate that it probably concerns Neolithic occupation, possibly around 4000 BC. The dune of Hillegersberg has been investigated by pollen analysis repeatedly (Van den Brink 1980; Rikkers 1983; Voorrips 1964).

In 2006, I. van Stokkom identified the macroremains of nine samples from sample boxes. The sediment of the boxes (sand and peat) represents the dune, the refuse layer and peat that was deposited on top of the dune. It is unclear whether the samples represent the environment during occupation, but it is expected that the samples represent the environment during the Early Neolithic (c. 4000 BC) and possibly younger periods in view of the depth from which the samples were taken.¹

The macroremains assemblage consisted of waterlogged remains only. The results correspond with the results from other dune sites in the river area (see chapter 2). Crop plants were not identified, but the number of investigated samples is too small to conclude their absence. It is not possible to distinguish human impact in the resulting macroremains diagram, but human activity cannot be excluded either. The macroremains assemblage included a fruit of *Aster tripolium*, a salt marsh species.

6.5 BARENDRECHT 20.126 (WESTERN RIVER AREA)

Barendrecht 20.126 is located south of Rotterdam in the province of Zuid-Holland (coordinates 93.310/428.780). The information on the site is based on cores that were part of a prospection of the site in 2001 and 2002 by BOOR (municipality of Rotterdam; Moree 2006). Analysis of the cores indicated the presence of two refuse layers on top of a levee at 5.57-3.91 m -NAP. A ¹⁴C date of the earliest refuse layer indicates that the site dates to 4050-3790 BC (GrA-20074, 5150 ± 50 BP). This period corresponds with the presence of the Swifterbant culture in this region. The refuse layer comprised flint, stone, pottery and organic material including a human molar. O. Brinkkemper investigated four samples of 300-700 ml from the dated refuse layer for the presence of macroremains. The analysis demonstrated the presence of carbonised and waterlogged macroremains. Attested crop plants are *Triticum dicoccon* (grain and glume bases), *Triticum monococcum*-type (grain) and *Hordeum vulgare* var. *nudum* (grains and rachis internodes), all found in a carbonised state. Potential food plants found in a carbonised state are *Corylus avellana* and tubers of *Ranunculus ficaria*. Other taxa represent woodland vegetation, ruderals and herbs of moist to dry terrain, and marsh vegetation.

6.6 BARENDRECHT 20.125 (WESTERN RIVER AREA)

Barendrecht 20.125 is located south of Rotterdam in the province of Zuid-Holland (coordinates 94.227/430.248). The information on the site is based on the excavation of a test pit and field observations during disturbance of the site in 2001-2005 by BOOR (municipality of Rotterdam; Meirsman and Moree 2006). A ¹⁴C date indicates that the site dates to 3660-3380 BC (UtC-13791, 4789 ± 45 BP). At 4.20 to 3.70 m -NAP a refuse layer on a levee was present, containing pottery that is indicative of the Hazendonk group. The refuse layer did not reveal any features. The investigation included the analysis of pottery, stone, flint, bone remains, fish

1 The estimation of the age is based on the attachment point of the refuse layer (attachment point: location where the peat is attached to the dune, indicative of the height of the ground water level and representing the transition from the dune to the surrounding wetlands). See Verbruggen (1992) for further information on this method of reconstruction of the age of refuse layers.

remains, macroremains and charcoal. The zoological analysis demonstrated the presence of domestic animals. Y. Vorst and P. van Rijn investigated the charcoal remains (106 identifications from a single sample). O. Brinkkemper identified the macroremains. For the macroremains analysis, 60 litres of soil were sieved on a 0.25 mm sieve, dried, and investigated. One and a half litres of soil was sieved on a 0.25 mm sieve with water and was investigated immediately afterwards.

The charcoal analysis demonstrated the presence of *Alnus* sp., *Fraxinus excelsior*, *Cornus* sp., *Rhamnus cathartica*, Pomoideae (type *Malus* sp./*Sorbus* sp.) and *Ulmus* sp. The macroremains analysis demonstrated the presence of carbonised and waterlogged seeds and fruits. It is not excluded that the waterlogged remains represent contamination with recent macroremains but this is considered as unlikely. Attested crop plants are *Triticum dicoccon* (grains and glume bases), *Hordeum vulgare* var. *nudum* (grains) and *Pisum sativum* (N = 5), all carbonised.² Potential food plants found in a carbonised state are *Corylus avellana*, *Malus sylvestris*, *Prunus spinosa*, and tubers of *Ranunculus ficaria*. Other taxa represent plants of dryland and woodland of moist to wet terrain, plants of eutrophic marshes and banks, ruderals of dry to moist terrain, and water plants. Relatively exceptional taxa that are hardly found at comparable sites are *Taraxacum officinale* s.l. and *Carex cf. strigosa* (both waterlogged).

6.7 BENSCHOP CLUSTER (WESTERN RIVER AREA)

Between 2003 and 2006 ArcheoMedia B.V. investigated a number of sites located along a crevasse channel of the Benschop system, located in the Hoge Plaspolder (Zevenhuizen-Moerkapelle), Moordrecht, Eendragtspolder (Zevenhuizen) and Zuidplaspolder (Gouda), all located west of the central river area. The sites probably date to the Mesolithic and Neolithic. H. van Haaster performed preliminary assessment analyses of macroremains based on samples from cores. The reports do not give precise information on the age and contexts of the samples. The results represent taxa of woodland of dry terrain, alder carr, marshes and open water, and potential arable weeds, mostly found in a waterlogged state. Crop plants were not identified. Potential food plants found in a waterlogged state are *Cornus sanguinea*, *Corylus avellana*, *Rubus caesius*, *Rubus idaeus* and *Sambucus nigra*. The material from Eendragtspolder contained waterlogged remains of salt marsh taxa and a single carbonised stem fragment of *Phragmites australis*. The material from Zuidplaspolder contained carbonised stem fragments of *Phragmites australis* and carbonised cones of *Alnus glutinosa* (Van Haaster 2004a, 2004b, 2005, 2006b).

6.8 ALBLASSERDAM-NIEUW KINDERDIJK (CENTRAL RIVER AREA)

In 2005 and 2006 ArcheoMedia B.V. investigated an inland dune near Alblasserdam-Nieuw Kinderdijk (coordinates 103.300/431.900) that showed traces of occupation dating to the Late Mesolithic and/or Neolithic. M. van der Linden, W. van der Meer, P. van Rijn and M. van Waijjen investigated pollen, macroremains and charcoal from core samples dating to the period before, during and after occupation. The results indicate that the vegetation at the site showed large similarity with the other dunes in the river area (Van Haaster 2006a, 2008). The finds included carbonised shells of hazelnuts and fragments of carbonised parenchyma, as well as waterlogged remains of potential arable weeds and of potential food plants such as *Corylus avellana*, *Cornus sanguinea*, *Crataegus* sp., *Rosa* sp., *Rubus caesius* and *Quercus* sp. (Van Haaster 2006a, 2008). The charcoal identifications indicate the presence of various taxa including *Pinus* sp. The presence of this taxon can be considered as unexpected in view of the estimated age of the site, which may be explained by the use of Boreal or Pre-Boreal wood during the Atlantic or Sub-Boreal (Van Haaster 2008, see also chapter 7).

² The identifications of *Pisum sativum* have been confirmed by C.C. Bakels and W.J. Kuijper in 2008 (pers. comm. Brinkkemper 2009).

6.9 NIJMEGEN-OOSTERHOUT 't KLUMKE (EASTERN RIVER AREA)

In 2006, the municipality of Nijmegen excavated the multi-period site Nijmegen-Oosterhout 't Klumke in the eastern part of the river area, surrounded by Pleistocene sandy soils. Although various contemporaneous sites are located in the same region, the site is exceptional because of the retrieval of bone and archaeobotanical macroremains other than hazelnut shells. A single date indicated occupation during the period 3770-3530 BC (Poz-15677, 4880 ± 40 BP), which is confirmed by finds of pottery characteristic of the Hazendonk group.

W.J. Kuijper identified the macroremains from two samples of 5 litres and one sample of 1 litre that were sieved on a 0.25 mm sieve. All botanical remains were carbonised and fragmented. The analysis demonstrated the presence of grains and glume bases of *Triticum dicoccon/monococcum*, grains of *Cerealia*, shell fragments of *Corylus avellana* (that were dated), and macroremains of *Prunus spinosa* and *Chenopodium album*. It is assumed that the cereal remains represent *Triticum dicoccon* (Out in Ball and Van den Broeke 2007). The stone assemblage contained grinding stones.

6.10 WINTERSWIJK

A single sherd with characteristics of Swifterbant pottery was found at Winterswijk, province of Gelderland, in 1984. J.P. Pals identified the impressions of cereals in the pottery as a spikelet fork of *Triticum dicoccon* and a grain of *Hordeum vulgare* cf. var. *nudum* that was still in the chaff (Schut 1984). The interpretation as naked barley is based on common presence of naked barley and general absence of hulled barley in the Swifterbant culture (pers. comm. Pals 2007).

6.11 HÜDE I

Hüde I is located next to lake Dümmer in Niedersachsen, Germany. The site was located on a patch of dry terrain at the edge of freshwater marshes. Habitation dates to the Neolithic. Interpretation of a selection of ¹⁴C dates and the pottery indicate that the site was part of (a local group of) the Swifterbant culture and the Funnel Beaker culture (Amkreutz in prep.; Bakker 2003; Lanting and Van der Plicht 2000; Raemaekers 1999), although the occupation period and cultural identity are the subject of discussion. Occupation took place at the border of a lake in the middle of the marshes and channels, and as a result the preservation of organic remains was comparable with Dutch wetland sites. The subsistence was based on wild and domestic resources. Archaeobotanical analysis comprised the analysis of pollen, macroremains and possibly wood.

The publication on pollen analyses by Schütrumpf (1988) presents only a selection of taxa and does not discuss the presence of indications of human impact on the vegetation. Many diagrams show a decline of *Ulmus* sp. but this does not appear to be related to occupation at the site. Some of the diagrams show a decrease in *Alnus* sp. contemporaneous with an occupation horizon³ (Schütrumpf 1988, 15, fig. 5), followed by a period of recovery, indicating that people cleared the local alder carr. Some scarce identifications of *Cerealia*-type pollen are reported. M. Hopf identified cereal impressions from (at least) three sherds. The identified cereals are *Hordeum vulgare* var. *nudum*/*Triticum monococcum*, *Hordeum* sp. and *Triticum monococcum* (Kampffmeyer 1991, 312). Due to the small number of identifications, it remains unclear whether *Triticum monococcum*-type represents *T. monococcum* or grains from the top of ears of *T. dicoccon* (see paragraph 4.7.4.2). Carbonised remains of gathered plants included the shells of hazelnuts (Kampffmeyer 1991, 316).

Local arable farming in the wetlands around Hüde I has usually been rejected on the basis of the presumed unsuitability of the landscape (Deichmüller 1969, 34; Kampffmeyer 1983, 129, 1991, 312, 319;

³ The decrease in *Alnus* sp. can be recognised contemporaneous with horizon K1, which corresponds with the Funnel Beaker culture according to Bakker (2003, 25).

Stapel 1991, 6, 189). This makes the discussion on cereal cultivation at Hûde I very similar to the discussion on local cultivation at Dutch wetland sites of the Swifterbant culture (see chapter 11 and Out 2008c). Schütrumpf (1988) additionally argued that the scarcity of Cerealia-type is in contrast to local cultivation (but see paragraph 11.6.5). The find assemblage contained grinding stones and a Late Neolithic piece of flint interpreted as a sickle (Deichmüller 1969, 34; Stapel 1991, 157, 191). Recent developments indicate that detailed use-wear analysis of sickles is necessary to demonstrate the use of flint for cereal harvesting. Other artefacts discussed in relation to cultivation practices are a wooden spade and antler axes (Schütrumpf 1988, 29).

6.12 JARDINGA

The Late Mesolithic site Jardinga is located in Friesland, the Netherlands. Occupation took place repeatedly during the Mesolithic, Neolithic and Bronze Age (Prummel *et al.* 2002; Prummel and Niekus 2003). Archaeobotanical investigation included the analysis of pollen, macroremains and wood. The macroremains analysis is discussed in paragraph 9.4.1. The wood assemblage comprised a bunch of withies of *Salix* sp., dating to the Boreal (9090 ± 60 BP). This find is further discussed in paragraph 8.4. Other wood finds included posts, dating to the Late Mesolithic, that were interpreted as a possible fish weir (see paragraph 8.4). The identified taxa are *Corylus* sp. and *Alnus* sp. One trunk that was part of this structure was identified as *Pinus* sp., and dated to the Pre-Boreal (Bottema-MacGillavry 2003; see also chapter 7). It is concluded that this Pre-boreal wood was used in the Neolithic (Bottema 2003). The assemblage of posts also included a post of *Alnus* sp. dating to the Swifterbant culture (Bottema-MacGillavry 2003).

6.13 DOEL DEURGANCKDOK-SECTOR B

The site Doel Deurganckdok-sector B is located on a sand ridge with an extent of at least 30 by 220 metres. It dates to the second half of the fifth millennium BC and is related to the Swifterbant culture (Crombé 2005, 16; Crombé and Vanmontfort 2007, 274). The finds comprise flint, stone, pottery and organic remains. For the moment only part of the results of the excavation are published, while further information is expected in the future. There were no finds of bones of domestic animals, but their original presence cannot be excluded due to the poor preservation state of the bone (Van Neer *et al.* 2005). The archaeobotanical investigations included the analysis of macroremains and charcoal (Bastiaens *et al.* 2005).

The macroremains analysis was based on samples from 42 quadrants that were collected from presumed surface hearths and/or hearth dumps that were present in a layer containing a large amount of Swifterbant settlement waste. All samples were sieved on a 2 mm sieve. A group of 13 samples with a volume varying between 1.7 and 4 litres were sieved on a mesh width of 0.5 mm. The assemblage contained mainly carbonised macroremains (13 taxa), but also waterlogged macroremains (five taxa). The waterlogged macroremains are interpreted as representing the natural vegetation at the time of the submerging of the site. The macroremains contained carbonised macroremains of various potential use plants and food plants, which are further discussed in chapter 9.

The macroremains from Doel comprised a single grain of *Triticum aestivum/durum*, interpreted in the publication as *Triticum aestivum*. The scarcity of contemporaneous finds from the Scheldt valley hampers a discussion on the meaning of the species (especially in view of the results of carbonisation experiments with wheat by Braadbaart 2008). The grain has a *terminus ante quem* of 3960-3710 BC (5050 ± 55 BP). The age of the site indicates that the age of this find may well correspond with the age of other finds of crop plants at sites of the Swifterbant culture (see chapter 11). However, the meaning of the find in relation to the introduction of crop plants remains unclear for the moment due to the absence of further chronological details of the site.

Discussion on local crop cultivation based on the find of the single cereal grain has resulted in three hypotheses: cereals were cultivated at the site itself, cereals were cultivated outside the fen peat in the dry coversand area, or cereals were obtained by exchange with farming communities (Crombé and Vanmontfort 2007, 276-277). None of the hypotheses has been put forward as the most probable one, which may change when more information on the site is published or when more contemporaneous archaeobotanical information from the Scheldt Basin and surroundings becomes available.

Charcoal was retrieved from a selection of hearth pits (N = 18) that date to the Mesolithic (before 6000 BC) and surface hearths (N = 42). The analysis included charcoal particles of the 0.5, 1 and 2 mm fractions. The assemblage from the hearth pits comprised six taxa and indicated the use of fresh wood and dead wood. The finds of these hearths are not included in this study because of the relative early age compared with the period studied. The assemblage from the surface hearths (N = 1036) comprised 11 taxa, dominated by *Quercus* sp. and *Alnus* sp. The identifications of these charcoal finds from the surface hearths, which were part of a layer that was rich in Swifterbant settlement waste, are presented in chapter 7 and discussed in chapter 8. The combined results of the macroremains analysis and the charcoal analyses are interpreted to be indicative of the presence of hardwood alluvial woodland, while alder carr may have been present as well (Bastiaens *et al.* 2005).