ANALECTA PRAEHISTORICA LEIDENSIA 37/38

PUBLICATION OF THE FACULTY OF ARCHAEOLOGY
LEIDEN UNIVERSITY

SCHIPLUIDEN

A NEOLITHIC SETTLEMENT ON THE DUTCH NORTH SEA COAST *c*. 3500 CAL BC

EDITED BY LEENDERT P. LOUWE KOOIJMANS
AND PETER F.B. JONGSTE

LEIDEN UNIVERSITY 2006

The publication of this volume was made possible by financial and organisational support from:

Hoogheemraadschap van Delfland

Archol
Archeologisch Onderzoek Leiden BV

Translation by Susan Mellor

Series editors: Corrie Bakels / Hans Kamermans

Copy editors of this volume: Leendert Louwe Kooijmans / Peter Jongste

Editors of illustrations: Walter Laan and Alastair Allen, Archol BV

ISSN 0169-7447

ISBN-10: 90-73368-21-9
ISBN-13: 978-90-73368-21-7

Subscriptions to the series *Analecta Praehistorica Leidensia*
and single volumes can be ordered exclusively at:

Faculty of Archaeology
P.O. Box 9515
NL-2300 RA Leiden
the Netherlands

Contents

19 Botanical remains and plant food subsistence

Lucy Kubiak-Martens

Analysis of plant macro-remains, including charred cereals, seeds and fruits and vegetative remains revealed a complex pattern of plant resources and plant exploitation in the Dutch coastal dune zone. Diversity in the landscape was demonstrated throughout the occupation phases. The high salt marsh and possibly low dunes in the surroundings offered possibilities for small-scale agriculture. Emmer and naked barley were the two cultivated crops. Besides these cereals, the diet comprised a broad spectrum of gathered wild plants, including fruits and berries, and roots and tubers. All the evidence combined shows a fairly broad spectrum of dietary diversity – a result of the exploitation of different resources and vegetation zones.

19.1 Introduction

One of the objectives of the Schipluiden project was the recovery of plant remains in order to reconstruct the environment during the Neolithic occupation of the site and specify the botanical part of the occupants' subsistence system.

This objective was of particular interest because it fell within the potential of the site, which lies in the Dutch coastal dune zone. Our knowledge of the settlement pattern and economy of this area during the Neolithic is rather limited due to the fact that only very few sites have been investigated (Van Zeist 1970, Raemaekers *et al*. 1997). Schipluiden has yielded a great deal of evidence relating to a local community that combined agrarian activities with the exploitation of both aquatic and terrestrial resources. The question whether the coastal zone may have been used for crop cultivation during the Neolithic can now be answered.

19.2 Methods

19.2.1 Recovery and selection of plant remains

The recovery of botanical samples was incorporated in the excavation strategy. In order to obtain assemblages of plant macro-remains representative of the site as a whole, the following strategy was followed:

1) 5-litre samples were taken from most of the features with potential for the preservation of plant remains, including wells, pits, hearths and post-holes;
2) 5-litre samples were every six metres systematically taken from the units in exposed sections. This led to the creation of a sampling grid (6 × 12 metres) covering the entire excavated area;
3) material collected on 4-mm sieves and hand-picked botanical remains were examined to assess their potential for the preservation of plant remains, including remains of processed food and roots and tubers. More than 500 samples were examined in this group.

This planned sampling strategy however resulted in more samples than could be analysed. Therefore a selection of 274 samples (of groups 1 and 2) was assessed in order to estimate the samples' botanical value, including preservation conditions, diversity of plant species and numbers of seeds and fruits. All samples were washed using a series of sieves with mesh sizes of 2.0, 1.0 and 0.5 mm, respectively. Subsamples of 0.5 litres were taken from each sample and they were washed through a 0.25-mm sieve.

In total, 60 samples were selected for analysis using combined information on botanical value, type and date of context and position within the settlement area. The samples were selected from similar ranges of context types from each occupation phase in order to determine the environmental pattern and diachronic changes in subsistence throughout the site's occupation. The majority of the samples of plant remains from the individual phases derived from wells and units. In addition, a number of samples were selected from some of the postholes, hearths and pits. The latter samples however have no clear archaeological dates and may represent any of the occupation phases. The positions of all the analysed samples in relation to the occupation phases and archaeological contexts are presented in figure 19.1.

The seeds and fruits were studied under a binocular incident light microscope at magnifications of 6× to 50×.

19.2.2 The preservation of plant remains

For the interpretation of plant remains in terms of palaeoecology and subsistence, various factors relating to the preservation of plant material are of great importance. In any archaeological context, and hence also that of Schipluiden, (almost) every botanical sample will have been influenced by man. The influence may have been either direct, in that many plants will have found their way into the settlement having been gathered for consumption or use as fuel and possibly

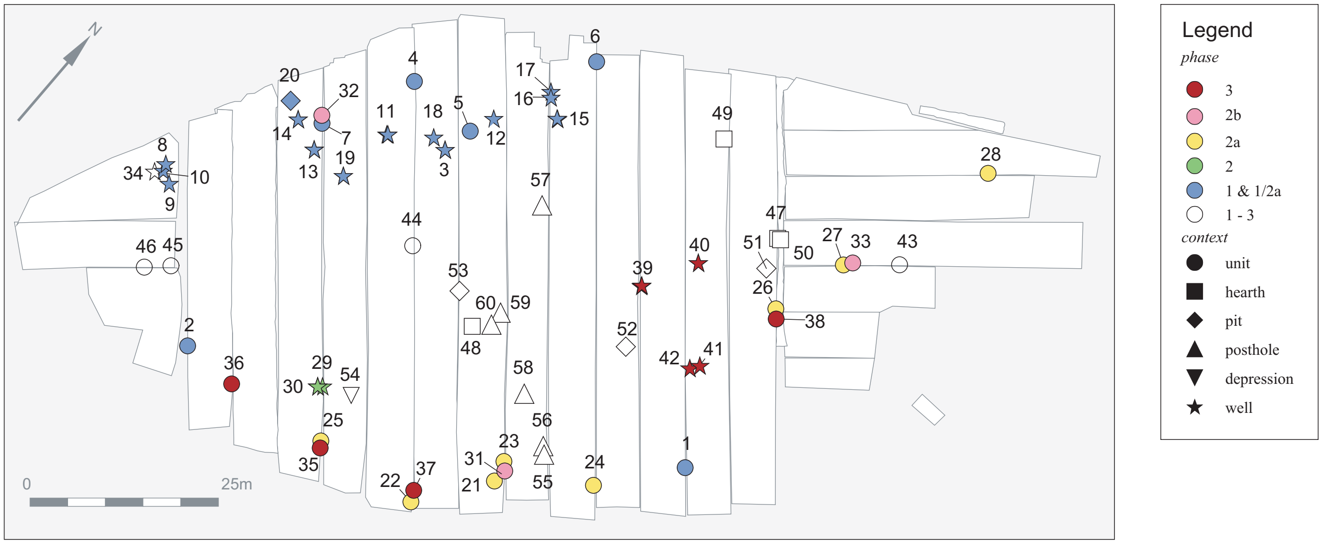


Figure 19.1 Position of the botanical samples, indicated according to occupation phase and archaeological context.

other purposes (medicine, magic), or indirect, for example via animal husbandry. Trampling, grazing and manuring are important factors interfering with the natural pattern of plant and seed distribution (see Groenman-van Waateringe in Therkorn *et al.* in press). At any site there will consequently always be a mixture of natural and man-affected data.

It should also be noted that archaeological sites present us with a complex taphonomy, the result of many different site-formation and archaeological-deposition processes that have led to mixing of botanical remains. At this site, for example, samples from the sequence of natural deposits represent a random mixture of plant remains from a time-span of many years, up to a century (see chapter 2). By contrast, well samples represent a much shorter time-span and may even reflect a single deposition event (section 3.4.2). The specific context of the Schipluiden site significantly biased the preservation of plant remains (*i.e.* waterlogged versus charred remains) and the diversity of plant species represented in the assemblages. Generally speaking, the wells yielded large, diverse assemblages of waterlogged remains, especially the wells from occupation phases 1/2a and to a lesser degree those from phase 2. The samples from wells dated to phase 3 however show surprisingly little (or no) diversity in waterlogged remains. This is probably attributable to differences in preservation conditions. Various factors, for example the wells' high position on the dune (*i.e.* above groundwater level for a long time), the fact that they were not closed off after their period of use but remained exposed, and the formation of (acid) peat, may all have affected the preservation of the waterlogged remains. It is hence quite well possible that waterlogged plant remains from the last occupation phase are underrepresented.

Contrary to the well fills, the stratified natural deposits proved to contain mainly charred remains and a small range of waterlogged remains, except for Unit 19N (phases 1/2a). Almost without exception, the postholes and hearths yielded only charred remains. The distribution of charred remains according to the different occupation phases is also rather uneven. Rather striking is that the samples from the early occupation phases (1 and 2a) contained small numbers and low frequencies of charred remains, whereas charred remains dominate the macrofossil records of phases 2 and 3. In all the samples, the range of species represented by charred remains was much smaller (some 55 different taxa) than that represented by waterlogged remains, which comprised more than 130 different taxa. The plant macrofossil assemblages of waterlogged (Appendix 19.1) and charred remains (Appendix 19.2) are presented separately. In both tables the species have been arranged according to the type of environment in which they most probably grew.

19.2.3 Ecological groups

For the reconstruction of the local environment during the Neolithic occupation all wild plant species identified in the archaeobotanical record (represented by both waterlogged and charred remains) were grouped according to the habitats in which they most probably grew. This approach is based on ecological criteria (*i.e.* indicator values of species) derived from modern plant ecology (see for example Behre/Jacomet 1991; Van der Veen 1992 for a discussion). Using this

approach the macrofossil record was divided into seven ecological groups distinguished with regard to environmental factors such as salinity, moisture and nutrient and light requirements characteristic of groups of species. These ecological groups are:
1) salt marsh plants
2) plants of freshwater marshes
3) plants of wet to damp grasslands
4) plants of dry grasslands
5) arable weeds and ruderals
6) plants of damp, nitrate-rich soils and
7) shrubs

The (pie) eco-diagrams were subsequently used in an attempt to illustrate the environmental conditions characteristic of the occupation phases, and to indicate the evidence of diachronic changes in an inter-phase comparison of environmental conditions (fig. 19.2). The diagrams show the numbers of species represented in the macrofossil assemblages for each ecological group. Separate diagrams are given for samples from stratified deposits and samples from wells. The samples of all the phases reflect different types of vegetation in different ratios.

19.3 Reconstruction of the former vegetation

In this section the composition of the archaeobotanical assemblage will be discussed on the basis of the ecological groups in an attempt to reveal environmental patterns in the occupation phases.

19.3.1 Occupation phases 1-2a

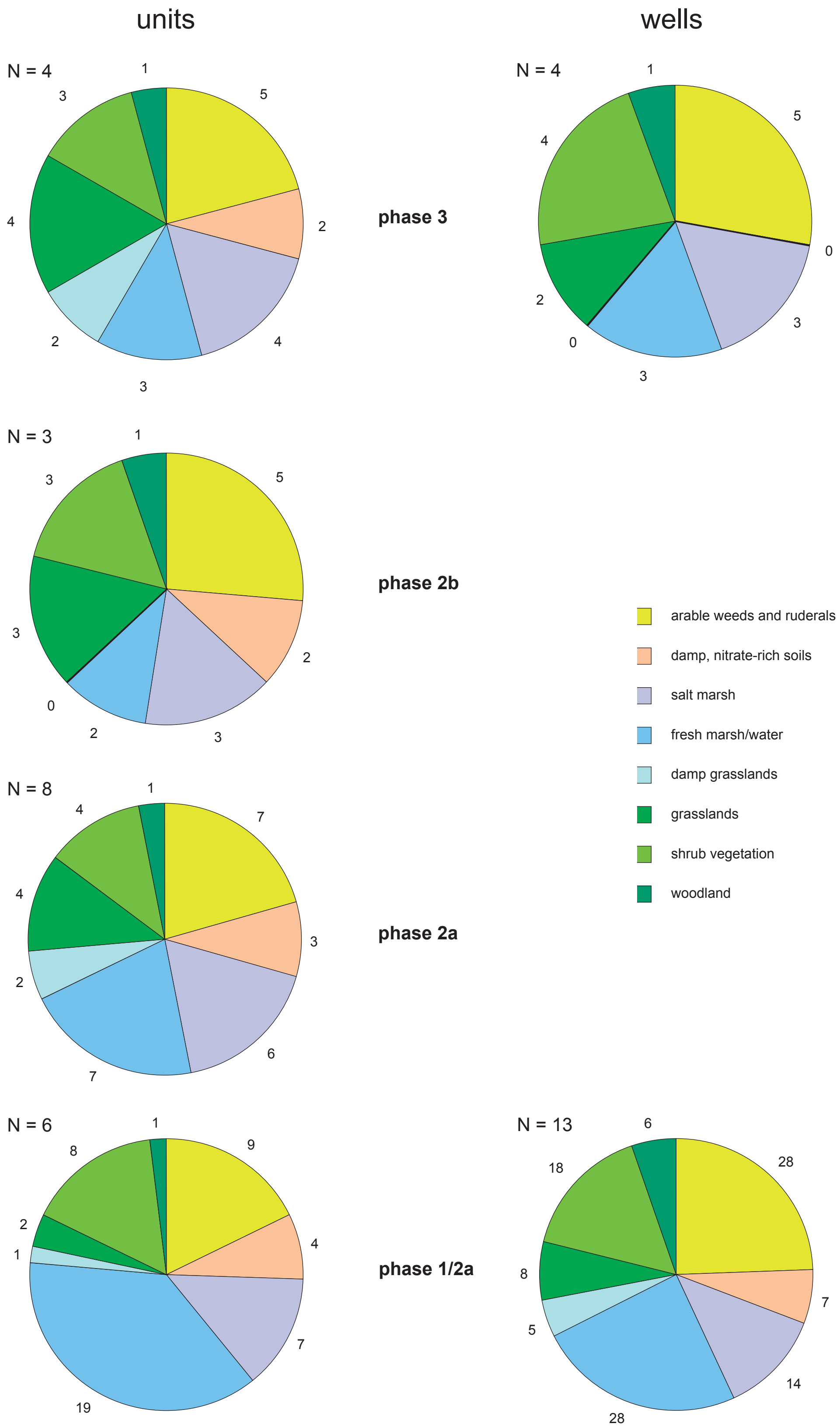
A number of plant species provide indisputable evidence of brackish conditions at and/or around the settlement during the early occupation phases. Seed remains of halophytic plants (*i.e*. plants with a preference for saline habitats) were found in samples recovered from wells and units that were dated to phases 1 and 1/2a on the basis of stratigraphical and archaeological evidence. The question is whether these plants favouring brackish conditions actually represent the vegetation at the site itself during the early phase of human occupation or whether they were imported into the settlement for example together with animal dung/fodder and hence represent conditions in the settlement's immediate or even more distant surroundings.

During the early occupation phases (1 and 1/2a) there must have been a creek adjacent to the dune (see chapter 14). This and other nearby bodies of water must have been brackish, since they were suitable for halophilous plants such as *Ruppia maritima*, *Zannichellia palustris* and possibly *Potamogeton pectinatus*. Typical salt marsh plants, such as *Salicornia europaea*, *Suaeda maritima* and *Spergularia marina/media,* may have grown on the mud flats bordering the tidal creek and also on the lower parts of salt-marshes that were regularly flooded by the sea (figs. 19.3a-b). *Suaeda maritima* may also have occurred on the drift litter, for example along a tidal creek where such remains were deposited.

Salt marsh plants (figs. 19.3c-d) such as *Aster tripolium, Limonium vulgare, Glaux maritima, Spergularia marina/ media*, *Juncus gerardi*, *Atriplex littoralis* and *Carex distans* are well represented in the samples and provide evidence of high salt-mash vegetation in the close surroundings of the settlement. This vegetation zone was flooded only a few times a year, during spring tides and storm surges. Other plants that may have grown in the high salt marsh and are represented in the record are *Althaea officinalis, Trifolium repens, Poa pratensis/triviali* and *Agrostis*. The presence of the last three species/taxa will be attributable to grazing. High salt marshes are known to have been quite suitable for grazing and hay production. Stock-keeping was important at the Schipluiden settlement, as can be inferred from the zoological remains recovered (see chapter 22). It is very likely that the animals were pastured on the nearby salt marsh, and many species associated with a salt marsh vegetation may have made their way into the assemblage together with animal dung. This assumption is also supported by the diversity of plant species, which are typical of dung and hay assemblages. In Schipluiden, the diversity of species is characteristic of many samples recovered from the water pits but also from the units dated to phase 1/2a. They comprise halophilous plants, but also freshwater plants. These plants cannot have grown together in the same places at the same time.

Good evidence for a discussion on this issue is provided by the plant remains recovered from one of the wells on the northwestern slope of the dune (feature 14-19 sample 11), which was dated to phase 1/2a. Striking aspects of this plant assemblage are the great diversity of plant species and the unusual preservation conditions. The matrix of plant remains consisted of compact layers of waterlogged stems of reed (*Phragmites*) and vegetative remains of hedge mustard (*Sisymbrium officinale*) and other herbaceous (unidentified) plants that were deposited in the upper part of the pit depression, presumably as a secondary fill. They were accompanied by seed remains deriving from species which today favour arable fields and ruderal places as their primary habitats. They include *Chenopodium album*, *Solanum nigrum*, *Persicaria maculosa*, *P. lapathifolia* and *Stellaria media*. The sample also yielded remains of a number of halophytic plants characteristic of salt marsh vegetations, including *Salicornia europaea*, *Suaeda maritima*, *Aster tripolium*, *Atriplex littoralis*, *Juncus geradi* and *Limonium vulgare*.

The presence of *Sisymbrium officinale* stem and valve fragments accompanied by seed remains is particularly


units
wells
N = 4
1
5
3
4
2
2
3
4
3
N = 4
1
5
4
0
2
0
3
3
phase 3
N = 3
1
5
3
3
2
0
2
3
phase 2b
N = 8
1
7
4
4
3
2
7
6
phase 2a
N = 6
1
9
8
2
1
4
19
7
N = 13
6
28
18
8
7
5
14
28
phase 1/2a
arable weeds and ruderals
damp, nitrate-rich soils
salt marsh
fresh marsh/water
damp grasslands
grasslands
shrub vegetation
woodland

interesting. Today, this species is associated with ruderal places and it occasionally grows as a weed in arable land. The archaeobotanical records suggest that this plant grew as a weed in cereal fields during the Neolithic. At the Neolithic lakeside settlement of Hornstaad Hörnle on the shore of Lake Constance in Germany, for example, charred seed remains of this species were found in stored cereals (Maier 1999). At Schipluiden, this species may also have been a weed, which found its way into the record in the form of waste produced in the processing of cereals.

All in all, the range of habitats represented in the assemblage and the preservation conditions (layers of compacted plant remains) could lead to the conclusion that these remains represent (stored) animal fodder, part of which was gathered in a freshwater marsh (reed stems) and a saline marsh, the other part consisting of waste produced in crop processing. The environmental conditions and the early agrarian society concerned however make it unlikely that the collection of animal fodder was common practice, though it may have taken place occasionally, for example if cattle were kept (sheltered) in the settlement during the calving period.

The rich waterlogged seed assemblages of both of the early occupation phases include many plants indicative of a freshwater marsh vegetation. Most were recovered from wells dated to phase 1/2a. Seed remains derive from species restricted to freshwater environments (including *Lycopus europaeus*, *Mentha aquatica/arvensis, Eupatorium cannabinum, Rumex hydrolapathum, Iris pseudacorus, Stachys palustris*) but also from species that tolerate slightly brackish conditions (including *Schoenoplectus lacustris*, *Phragmites australis*, *Sonchus palustris*, *Epilobium hirsutum*, *Cladium mariscus, Carex otrubae* and *Solanum dulcamara*). Most of these plants are tall herbs and their range suggests well-developed stands of marsh vegetation. The only places where these plants may have grown in the rather brackish environment of the early occupation phases are the depressions between the dunes where freshwater accumulated, and possibly the lower (wet) parts of the slopes of the dune.

Although plants such as *Solanum dulcamara* and *Eupatorium cannabinum* favour wet environments as their primary habitats, they can also grow on rather dry soils, for example in calcareous dune environments. They may hence have grown on the lower parts of the dune slopes. Bakels (in Raemaekers *et al*. 1997) has described a similar pattern for the Middle Neolithic dune settlement Wateringen 4 in the Dutch coastal area.

There were only a few aquatic plants in the record indicative of freshwater conditions (which however also tolerate slightly brackish conditions), including *Ceratophyllum demersum*, *Potamogeton natans* and *Potamogeton pectinatus*. The seed remains of these plants were recovered in only small numbers from well samples 8 and 19 and pit sample 20 dated to phases 1/2a and from the samples from phase 2a. There must hence have been (natural) bodies of open (possibly fresh) water at or close to the settlement, unless the wells afforded a suitable environment for these aquatics.

The occurrence of alder (*Alnus glutinosa*) fruit remains in the samples from the wells dated to phase 1/2a is a bit puzzling. Especially during the early phases of occupation the settlement's surroundings were probably too brackish for this tree to have grown here. The fruit remains were either imported from some source fairly distant from the site or there must have been habitats suitable for this species nearby after all. Alder may have occurred in a shrub vegetation, in particular together with hazel, dogwood and hawthorn, but its preferred habitat will have been a wet alder carr vegetation. Further evidence supporting the presence of such a vegetation in the vicinity of the site is provided by remains of plant species such as *Solanum dulcamara* and *Lycopus europaeus*, which are characteristic of an alder carr vegetation.

The rich seed assemblage of phases 1 and 1/2a also includes many potential arable weeds and plants from ruderal habitats. Dominant (both ubiquitous and abundant) among the waterlogged seed remains of this group are *Atriplex patula/prostrata*, *Chenopodium album*, *Persicaria maculosa*, *Polygonum aviculare*, *Plantago major*, *Stellaria media*, *Ranunculus sceleratus* and *Urtica dioica*. They were accompanied by less common specimens of *Galium aparine*, *Solanum nigrum*, *Brassica rapa*, *Fallopia convolvulus*, *Rumex crispus*, *Capsella bursa-pastoris*, *Sisymbrium officinale* and *Chenopodium glaucum/rubrum*. The plants of this group represent different types of environments, including arable fields, places trodden by man and animals (paths), places in the vicinity of houses and various other ruderal habitats. Several species among the seed remains are well-known arable weeds from Neolithic contexts (Bakels 1988b, 2000), for example *Chenopodium album, Brassica rapa, Galium aparine*, *Solanum nigrum*, *Persicaria maculosa, Fallopia convolvulus* and *Vicia hirsuta*. The Schipluiden assemblage also contains remains of these plants preserved by charring (with the exception of *Fallopia convolvulus*), which were consistently found together with charred cereal grain and chaff remains, suggesting that they arrived together with

◂ Figure 19.2 Composition of the analysed samples of waterlogged and charred botanical macroremains, presented according to phase and context (units or wells). The segments show the numbers of identified species.

the cereals and are hence to be inter-preted as arable weeds (see the discussion in section 19.4.2).

A combination of species such as *Chenopodium glaucum/rubrum*, *Capsella-bursa pastoris*, *Solanum nigrum*, *Atriplex patula/prostrata* and *Chenopodium album* may point to extremely nutritious environments, for example rubbish dumps or dung heaps. Plants such as *Ranunculus sceleratus*, *Persicaria maculosa* and *Stellaria aquatica* may have found suitable habitats for example around the watering places for the domestic animals where nitrogen-enriched soil will have favoured their expansion. Species characteristic of a tread-resistant vegetation (for example typical of paths) including *Plantago major*, *Polygonum aviculare* and *Capsella bursa-pastoris* are abundantly represented by the seed remains, suggesting that such a vegetation was quite common in and around the settlement, especially in the early occupation phases.

There is clear evidence (from both the analysed and the hand-picked samples) of the presence of a well-developed shrub vegetation dominated by species such as sloe (*Prunus spinosa*) and crab apple (*Malus sylvestris*) in phases 1 and 1/2a. A number of other species would also have grown in such a vegetation, including hazel (*Corylus avellana*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), dewberry (*Rubus caesius*), blackberry (*Rubus fruticosus*), rose (*Rosa*) and juniper (*Juniperus communis*), at least during phase 1/2a. Although all these plants may have been brought to the settlement from elsewhere as they may all have been gathered for consumption, it is very likely that they formed part of the local vegetation (see the discussion in section 19.5.1). The dune slopes may well have supported such a shrub vegetation, which would then have resembled the type of vegetation characteristic of young dunes today (Haveman *et al.*1999). Various herbaceous plants that favour shady spots on sandy soils, for example *Moehringia trinervia* and *Glechoma hederacea*, may have grown in this shrub vegetation. Other herbaceous plants such as *Silene otites* and *Carex arenaria* may have grown in more open places on the dune. Three other plants, namely *Anthriscus sylvestris, Torilis japonica* and *Silene dioica,* may also have found their habitats in the dune shrub vegetation.

19.3.2 Occupation phase 2b

There is a decrease in the remains of halophytes towards phase 2b, suggesting decreasing marine influence in the site's surroundings. The range of halophytic species is smaller than that from the previous phase. Plants characteristic of the higher tidal flats and lower parts of the salt marsh are either absent (*Salicornia europaea* and *Spergularia marina/media*) or occur only sporadically (charred seeds of *Suaeda maritima* and *Ruppia maritima*) in samples from phase 2. The water-logged seed assemblage however does contain various plant species characteristic of the high salt marsh, including *Atriplex littoralis* type, *Aster tripolium*, *Juncus gerardi*, *Carex distans* and *Apium graveolens*. Although all these remains were found in samples from phase 2 they cannot be dated to any specific part of that phase. Three species characteristic of high salt marshes were however recovered from samples datable to phase 2b, namely *Althaea officinalis*, *Hordeum marinum* and *Carex distans*, all of which were encountered as charred remains. This implies that there was still a salt marsh vegetation in the area, though by now presumably further away from the settlement and/or in some stage of desalination.

The brackish environment presumably began to give way to a freshwater environment some time towards the end of the second occupation phase, as suggested by the presence of species characteristic of wet (fresh) grasslands such as *Daucus carota*, *Lychnis flos-cuculi* and *Hypericum tetrapterum*, all of which were recovered from well sample 29, which was dated to phase 2. The spread of wet grasslands may have been caused by both the desalination process and human activity in the area (for example pasturing cattle).

The charred seed assemblage dated to phase 2b includes a number of species that may have grown as weeds in cultivated land or as ruderals in the settlement area (including *Atriplex patula/prostrata*, *Brassica rapa*, *Persicaria maculosa*, *Solanum nigrum* and *Stellaria media*; see the discussion in section 19.4.2).

The most abundant of the shrub remains was sloe (*Prunus spinosa*), whose stones, most of which were charred, and remains of plum flesh were encountered in units dating from phase 2b. They were accompanied by less common remains of crab apple (*Malus sylvestris*) and occasional specimens of hazel (*Corylus avellana*) and dogwood (*Cornus sanguinea*).

The presence of seed remains of enchanter's nightshade (*Circaea lutetiana*) (fig.19.4) in one of the well samples (29) dating from phase 2 is of particular interest. *Circaea lutetiana* is a common woodland plant and is also found in

◂Figure 19.3 Some characteristic salt marsh plants of the Schipluiden environment, (waterlogged) seeds of which were found in large quantities in the fills of wells from the earliest phases.
a glasswort (*Salicornia europaea)*
b annual-seablite (*Suaeda maritima*
c sea aster (*Aster tripolium)*
d sea milkwort (*Glaux maritima)*

Figure 19.4 Seed of enchanter's-nightshade (*Circea lutetiana*), a species characteristic of woodland habitats, sample 29, no. 7145, phase 2 (magnification 12×).

other shady places on damp rich or calcareous soils. Its presence in the macrofossil record suggests that there were habitats of this kind in the area, perhaps at some distance from the site. The club-shaped fruits of this species are covered with hooked bristles and are dispersed by animals, which could explain how it made its way into the settlement. *Circea lutetiana* has some medicinal properties, so it may also have entered the assemblage as a medicinal plant.

19.3.3 Occupation phase 3

Samples from the last occupation phase show a clear change to a freshwater environment. One sample (36) from a deposit dating from phase 3 yielded revealing evidence of a freshwater marsh in the form of numerous seeds of *Lythrum salicaria* (which do not grow in brackish conditions) plus remains of other freshwater marsh plants such as *Eupatorium cannabinum* and *Euphorbia palustris* and a plant indicative of wet (fresh) grasslands (*Lychnis flos-cuculi*).

Interestingly, remains of species associated with brackish habitats (including *Ruppia maritima*, *Hordeum marinum*, *Apium graveolens* (fig. 19.5) and *Althaea officinalis*) were all preserved in charred condition. Among the charred seed remains are also remains of species such as *Atriplex patula/ prostrata*, *Chenopodium album*, *Galium aparine*, *Solanum nigrum* and *Vicia hirsuta*, some of which have arable fields as their primary habitats (see the discussion in section 19.4.2).

Dominant among the shrub remains are fragments of stones and flesh of sloes (*Prunus spinosa*), occasionally accompanied by remains of crab apple (*Malus sylvestris*) and hazel (*Corylus avellana*).

19.4 Cultivated plants (subsistence and diet)

19.4.1 Cereals

The remains of cultivated plants were restricted to two cereal crops, namely emmer (*Triticum dicoccon*) and naked barley (*Hordeum vulgare* var. *nudum*). Both grains and chaff remains were recovered. With the exception of a few waterlogged chaff remains of emmer, all grain kernels and the chaff of both cereals were charred. Only relatively small numbers of grains were found (at most a few dozen specimens per sample) and many had been deformed during the charring process. The largest concentration of chaff remains consisted of about a hundred and twenty glume bases of emmer recovered from the dune sand Unit 25 (sample 43).

Emmer and naked barley were found together in samples from all the occupation phases, although those from phase 1/2a contained much smaller quantities of cereal remains than those from phases 2a/2b and 3 (see Appendix 19.2). An interesting feature of the cereal assemblage is an increased frequency of emmer remains accompanied by a decreased frequency of barley remains in the samples from phases 2a, 2b and 3. Emmer grain and chaff remains were regularly encountered in almost all the samples associated with these occupation phases, implying that emmer was the primary cereal during the second and third occupation phases.

Figure 19.5 Wild celery *(Apium graveolens),* plant characteristic of high salt marsh vegetation, in Schipluiden represented by waterlogged and charred seeds, the latter interpreted as an arable weed. Young leafstalks of wild celery may have been collected as plant food.

Emmer (*Triticum dicoccon*) is a hulled wheat in which the chaff is strongly fused to the grain. This means that a special processing method must be used to obtain a clean grain product. In the case of emmer, threshing causes the cereal ear to break up into spikelets, which must then be processed further, for example by parching and pounding, to release the grain from the chaff (Hillman 1981, 1984). Threshing/pounding remains of emmer found at the Schipluiden settlement consist of spikelet fragments including glume bases, spikelet forks and also some rachis segments (figs. 19.6 a, b). These remains suggest that at least some stages of emmer processing took place at the settlement itself.

The morphology of barley grains preserved at the site is characteristic of the naked variety (*Hordeum vulgare* var. *nudum*). The grains are rounded in cross-section and in the case of some specimens fine transverse wrinkling was observed on the surface. The grains also have a narrow ventral furrow that runs all the way to the apex. Many grains are somewhat asymmetric, suggesting that the variety represented in the assemblage is six-rowed barley (fig. 19.7a). The assemblage also includes a few more or less flattened grains showing some resemblance to the grains of hulled barley. They probably represent milk-ripe naked barley grains that were harvested before they were fully ripened, presumably in order to avoid the loss of grain (see for example Maier 1999).

Naked barley does not require the processing necessary for hulled cereals. In naked barley, the grains are contained loose in the ears and they fall clear of the chaff during threshing. The presence of rachis internodes characteristic of free-threshing, six-rowed barley contributes relevant evidence to the interpretation of barley remains in general. The basal parts of three spikelets (one median and two laterals) were encountered at the distal end of the internodes (fig.19.7b). Remains of glumes, lemma and the hairy rachilla were also observed on some specimens. Interesting are the lateral spikelets, which are pedicellate, and not sessile as in present-day naked and hulled six-rowed barley (Van Zeist/Palfenier-Vegter 1983).

The archaeobotanical record indicates that pedicellate lateral spikelets are characteristic of prehistoric naked six-rowed barley. They have been found at various Neolithic sites, for example Swifterbant (Van Zeist/Palfenier-Vegter 1983), Hazendonk and Hekelingen (Bakels/Zeiler 2005) in the Netherlands and a Rössen settlement near Langweiler in Germany (Knörzer 1971). Villaret-von Rochow (1967) suggested that pedicellate lateral spikelets are a primitive feature, deriving from the ancestor of cultivated barley (wild barley *Hordeum spontaneum*).

The slender form of some rachis internodes is indicative of the lax-eared type. The assemblage however also contains short and broad specimens, including individual internodes and rachis fragments. They are usually assumed to be characteristic of the dense-eared variety, but may also occur in the lowermost part of the ear in the lax-eared type.

The cereal remains found at Schipluiden are in agreement with the evidence of the cultivation of emmer and naked barley as the main crops in the Middle Neolithic. Evidence of the cultivation of these cereal crops has also been found at other Middle and Late Neolithic sites in the Netherlands, including Hazendonk (Bakels 1981), Swifterbant (Van Zeist/

Figure 19.6 Emmer (*Triticum dicoccon*), sample 21, no. 2142, phase 2a.
a grains (magnification 8×)
b chaff remains, including spikelet forks and glume bases (magnification 10×)

Figure 19.7 Naked barley (*Hordeum vulgare* var. *nudum*), sample 3, no. 9404, phase 1.
a grains (magnification 8×)
b pedicellate rachis internodes (magnification 10×)
c rachis segment (magnification 10×)

Palfenier-Vegter 1983), Hekelingen (Bakels 1988a), Schokland P14 (Gehasse 1995) and Wateringen (Raemaekers *et al*. 1997). Exceptional evidence comes from one site, Vlaardingen (van Zeist 1970) in the coastal area, where *Triticum aestivum* was the dominant crop in one of the contexts.

19.4.2 Evidence of local crop cultivation

One of the most intriguing questions concerning the site's subsistence is: did the inhabitants of Schipluiden cultivate their own crops, or was grain imported from somewhere else? If the evidence presented above is assumed to imply the first scenario, the next question to be answered is: *where* did the people of Schipluiden grow their cereal crops?

Producer and consumer sites

Ethnographic studies of various cereal-processing stages (Hillman 1981, 1984; Jones 1984) proved to be of great importance for identifying cereal production and processing activities in archaeobotanical assemblages. These studies suggest that producer and consumer sites can be distinguished on the basis of the presence or absence of waste produced in the early stages of crop processing. At producer sites there will be waste representative of the entire crop-processing sequence. At consumer sites, by contrast, only grain in fully processed form (in the case of free-threshing cereals) and semi-cleaned spikelets (in the case of glume wheats) are to be expected. If the Neolithic Schipluiden settlement had been a consumer site, we would have encoun-tered only the clean grain product in the case of naked barley. Besides this grain, the samples however also contained waste produced in early processing stages, including rachis inter-nodes and rachis segments (figs.19.7b, c). This leads to the conclusion that barley was cultivated locally.

The situation concerning emmer is more complicated. Although the cereal remains point to the presence of semi-cleaned spikelets, this is not persuasive evidence of the local production of emmer (only of its local processing). It is generally agreed that emmer wheat was transported and stored in the form of semi-cleaned spikelets. The grains were then dehusked prior to food preparation, presumably on a daily basis (*e.g.* Hillman 1984; Van der Veen 1992). This means that glume bases and spikelet forks of emmer may actually occur at both producer and consumer sites. In the case of glume wheats, straw nodes are the only residues of the early processing stage providing conclusive evidence of local cultivation. Unfortunately they cannot be identified to species level. The straw encountered among the Schipluiden remains

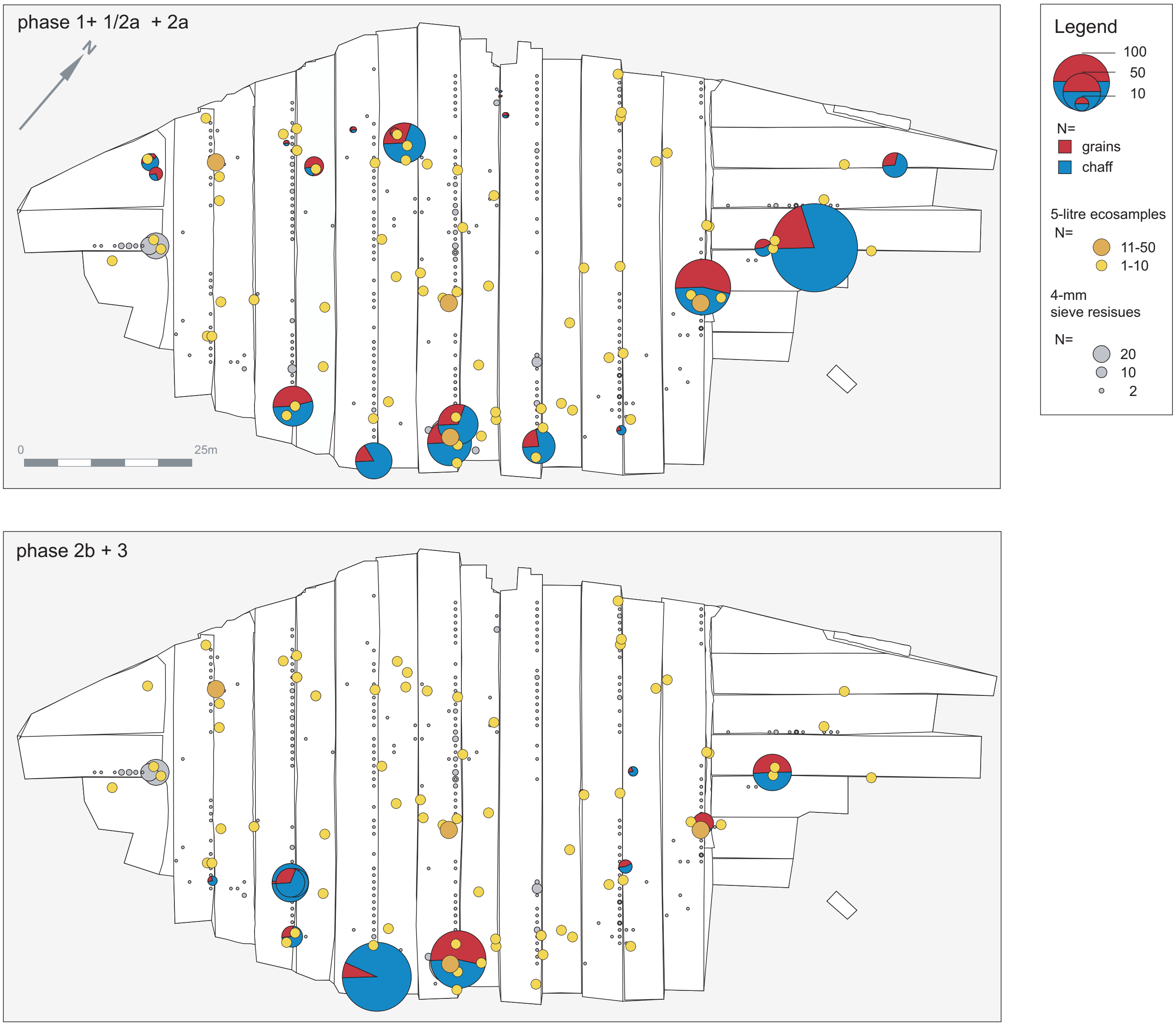


Figure 19.8 Charred cereal remains, quantity and ratio of grains and chaff in analysed samples, plotted on the distribution of charred cereal grains found in the 4-mm sieve residues and charred cereals and chaff recorded in the systematic assessment of 300 5-litre ‘ecosamples’.

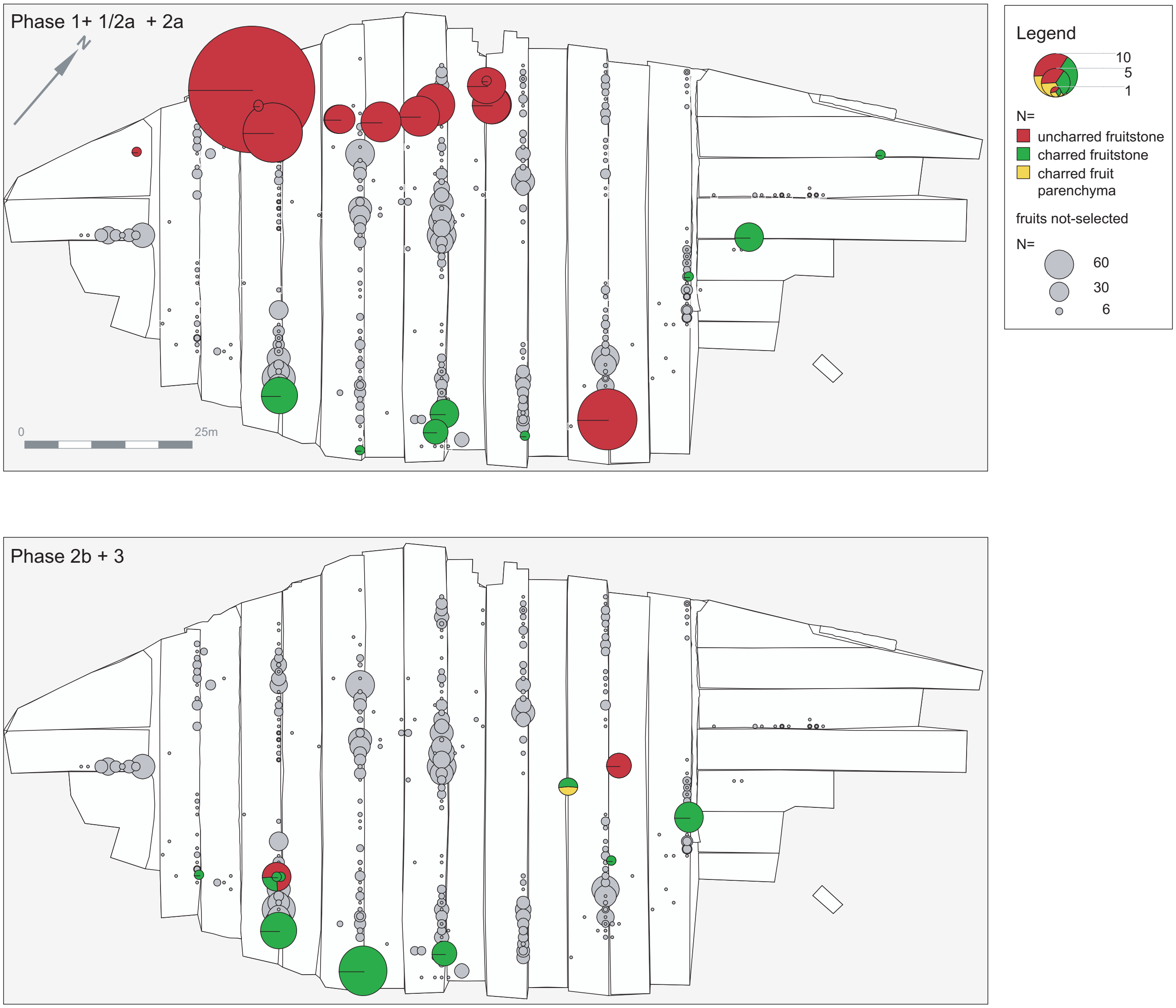


Figure 19.9 Numbers of charred and waterlogged stones of sloe in analysed samples plotted on the distribution of sloe remains found in the 4-mm sieve residues and recorded in the systematic assessment of 300 5-litre ‘ecosamples’.

a phases 1-2a. Sloe was preserved in waterlogged condition in wells of phase 1/2a on the northwestern side of the dune and in one sample from Unit 19S; in charred condition in some samples from Unit 18, along the southeastern margin.

b phases 2b-3. Waterlogged remains were preserved only at the base of two wells.

may derive from either of the two cereals and is only indicative of local crop processing in general. The chaff remains of emmer preserved in the archaeobotanical record therefore offer no clear information on the origin of the emmer encountered in the Schipluiden settlement. If conclusive evidence of the local production of barley should in the future be obtained, it may be assumed that other cereals were also cultivated locally.

Spatial evidence

The results of an assessment examination (fig. 19.8) show a relatively uniform distribution of charred plant remains (especially seed remains of wild plants) throughout the occupation area, implying that the entire dune area was used. The distribution of charred plant remains may therefore be assumed to reflect ‘true’ human activity areas within the settlement. More specifically, in view of earlier homogenisation and trampling processes, they are to be seen as representing the final phase of the site's occupation. The analysis of the samples provided some insight into this issue.

The spatial distribution of charred cereal and chaff remains indicates the crop-processing areas within the settlement. It shows a focus on the southeastern and northeastern slopes of the dune in the early occupation period (phases 1, 1/2a and 2a), and on the southeastern slope in occupation phases 2b and 3 (fig. 19.8b). There seems to have been another activity area close to the top of the dune in phase 2. Interestingly, charred remains of one of the main gathered plants – sloe (*Prunus spinosa*) (figs. 19.9a, b) – show a very similar distribution pattern. Together, these concentrations of charred plant remains may reflect actual activity areas that were most probably situated near the houses. This may also imply that each household processed its own cereals and other plant food. The study carried out by Knörzer (unpublished) at the Rössen culture site near Langweiler suggests that charred chaff remains are found mainly near the larger houses (Bakels 1991).

Weed floral evidence

The evidence provided by the weed flora is also essential for the interpretation of cereal production and processing (*e.g*. Hillman 1981, 1984; Jones *et al*. 1995). The complex taphonomy of charred weeds however often makes it difficult to distinguish between field weeds and ruderals. This is partly due to the fact that many environments disturbed by man, especially arable fields and ruderal habitats, may have changed considerably over time (see for example Bakels 1998), making it necessary to employ present-day classifications with some adjustments. Knörzer (1971) for example suggested that most carbonised weed seeds will have found their way into a settlement along with a crop (after Bakels 1978). Hillman (1984) has furthermore convincingly demonstrated that "charred seeds of typically ruderal species found consistently in association with crop 'cleanings' are likely to have arrived on the site – and got into fires – primarily as contaminants of crop products" and are hence to be regarded as field weeds. In the Schipluiden assemblage, the numbers and frequencies of charred remains of plants that nowadays have arable fields and/or ruderal places as one of their principal habitats are rather small. However, the fact that charred seed remains of plants such as *Chenopodium album, Galium aparine*, *Persicaria maculosa*, *Solanum nigrum*, *Brassica rapa* and *Vicia hirsuta* were consistently found together with charred grain and chaff remains suggests that they arrived at the site together with the harvested cereals. We consequently assume that these plants represent weeds of cultivated crops. A few other potential crop weeds were encountered among the charred seed remains: *Atriplex patula/prostrata*, *Capsella bursa-pastoris*, *Sisymbrium officinale* and *Malva*. They were presumably exposed to fire during the crop processing or discarded on fires.

A striking feature of the assemblage of charred remains as a whole is the degree of correlation between the occurrence of charred grain and chaff remains accompanied by field weeds on the one hand, and the occurrence of charred seed remains of plants characteristic of high salt marsh vegetations on the other. In samples from all phases, but especially those from phases 2 and 3, the frequencies of high salt marsh species parallel those of cereal and arable weed remains (table 19.1). The charred remains of species characteristic of high salt marshes/drift deposits (including *Althaea officinalis, Apium graveolens, Hordeum marinum, Carex distans, Ruppia maritima and Suaeda maritima*) may therefore also have arrived at the settlement as contamination of cereals. Taken together, these lines of evidence suggest that the cereal fields lay somewhere at the high (outer) margins of the salt marsh or on beach on other low dunes at some distance from the settlement. An alternative explanation could be that the remains of high salt marsh plants made their way onto the site along with animal fodder collected in salt marshes. The archaeobotanical evidence from the Late Neolithic settlement near Aartswoud in the Netherlands adds much credibility to the interpretation of charred brackish plants as field weeds. On the basis of the ubiqui-tous presence of charred remains of *Althaea officinalis*, *Atriplex spp*. and *Scirpus* sp., Pals (1984) convincingly postulated the possibility of small-scale agriculture on the highest parts of the levees in the salt marsh environment. Crop cultivation has been proven at other, contemporary sites (Zandwerven, Zeewijk) in this region by marks of the ard, an instrument that probably became available in Western Europe around the time of the period of occupation of the Schipluiden site, but for which we as yet have no evidence of its use at such an early time in our country.

Experimental evidence

Small-scale farming experiments conducted by Van Zeist *et al*. (1976) in the coastal region of the northern Netherlands have shown that it is actually possible to cultivate crops in the salt marsh, on the condition that the area is not flooded by salt water too often, especially not during the seedling stage. This means that any crop fields will have been restricted to the highest parts of the salt marsh, such as marsh bars and natural levees, which will have been inundated only during storm surges. Furthermore, the risk of flooding during autumn and winter meant that the sowing had to be done in spring. The experiments showed varying resistance to brackish influences among the cultivated plants. Barley (*Hordeum vulgare*), for example, was cultivated with

phase	1	1	1/2a	1/2a	2a	2	2	2b	2/'3	3	3
context	Unit 19S	well	Unit 19N	well	Unit 17/18	Unit	well	Unit 15/16	well	Unit 10/11	well
cereals											
Hordeum vulgare var. nudum	.	•	•	•	•	•	.	•	.	•	•
Hordeum vulgare, rachis internode	.	•	.	•	•	•	.	•	•	•	.
Triticum dicoccon	•	.	.	•	•	•	•	•	•	•	•
Triticum dicoccon, glume base	•	.	.	•	•	•	•	•	•	•	•
Triticum dicoccon, spikelet fork	•	.	.	•	•	•	•	•	•	•	•
Triticum, rachis indernode	•	.	.	.	.	.	.	.	.	.	.
Hordeum/Triticum, rachis internode	•	.	.	.	.	.	.	•	.	.	.
Cerealia	•	.	.	•	•	•	•	•	.	•	•
Poaceae, stem fragment	.	•	.	•	.	.	.	.	.	•	•
arable weeds and ruderals											
Atriplex patula/prostrata	.	.	.	•	•	.	.	•	.	•	•
Brassica rapa	.	.	.	.	.	.	.	•	•	.	.
Capsella bursa-pastoris	.	.	.	.	.	•	.	.	.	.	.
Chenopodium album	.	.	.	•	.	.	.	.	.	•	•
Galium aparine	.	•	•	•	•	.	.	.	.	•	•
Galium tricornutum	.	.	.	•	.	.	.	.	•	.	.
Malva	•	.	.	.	•	.	.	.	.	•	•
Persicaria maculosa	.	.	•	.	.	•	.	•	.	.	.
Plantago major	.	.	.	.	.	.	.	.	.	•	.
Polygonum aviculare	.	.	.	•	•	.	•	.	.	•	.
Rumex crispus type	.	.	.	•	.	.	.	.	•	.	.
Solanum nigrum	.	.	.	.	•	.	•	•	.	•	•
Stellaria media	.	.	.	.	•	.	.	•	.	.	.
Vicia hirsuta	.	.	.	.	.	•	.	.	.	.	•
salt marsh plants											
Althaea officinalis	.	.	•	.	•	•	•	•	.	•	•
Atriplex littoralis	.	.	.	.	•	.	.	.	.	.	.
Apium graveolens	.	.	.	.	.	.	.	.	.	•	•
Carex distans	.	.	.	.	.	.	.	•	.	.	.
Hordeum marinum	•	•	•	•	•	•	.	•	.	•	•
Ruppia maritima	.	.	.	.	•	•	•	.	.	•	.
Suaeda maritima	.	.	.	.	.	.	•	.	.	.	.

Table 19.1 Charred remains of cereals, weeds/ruderals and brackish plants, listed according to occupation phases and archaeological context.

success, while bread wheat *(Triticum aestivum)* gave only very low yield. An interesting feature of the weed association observed in the experimental fields is that various halophytes, including *Suaeda maritima*, *Glaux maritima, Salicornia europaea, Spergularia marina/media,* grew in the fields together with arable weeds restricted to a freshwater environment, for example *Polygonum aviculare, Persicaria maculosa* and *Solanum nigrum*.

Conclusions

Overall, when all the evidence presented above is combined, it seems very likely that the cereals represented among the Schipluiden remains were cultivated locally, but probably outside the settlement. During the early phases of occupation the crop fields, which were presumably small, will have been restricted to the highest parts of the salt marshes (lying furthest inland), which were in some stage of desalination towards phase 2b. There may also have been small fields around the dwellings on the dune, especially in phase 1, when the influence of the sea was still intense, or on other low dunes in the site's surroundings.

The distance between a settlement and its arable fields may have varied substantially – in the case of the Neolithic lakeside dwelling of Hornstaad-Hörnle in Germany, for example, it is estimated to have been 700 m (Maier 1999), whereas the closest areas suitable for agriculture for the

Neolithic inhabitants of Çatalhöyük lay some 10-12 km from the settlement (Fairbairn *et al*. 2002).

19.5 Wild food plants, gathering and processing

19.5.1 Fleshy fruits and berries

The remains of wild berries and other fleshy fruits identified in the Schipluiden assemblage indicate that a wide range of edible fruits was available in the area when the site was occupied. The following species represent this category of plant foods: sloe (*Prunus spinosa*), crab apple (*Malus sylvestris*), hawthorn (*Crataegus monogyna*), dogwood (*Cornus sanguinea*), elder (*Sambucus nigra*), juniper (*Juniperus communis*), dewberry (*Rubus caesius*), blackberry (*Rubus fruticosus*) and rose (*Rosa*). Nut food deriving from hazel (*Corylus avellana*) is also considered in this group.

It is very likely that all these plants were gathered as food. Different species however seem to have been gathered to varying extents in different occupation phases. Sloe plums, crab apples and hazelnuts were gathered throughout all occupation phases. In addition, hawthorn, dewberries and blackberries, elderberries, rose hips and juniper berries may also have been gathered in phase 1/2a. Dogwood drupes may have been the additional fruit species gathered in phase 2.

The remains of sloe plums and crab apples were particularly well represented in all the analysed samples. Sloe plum remains also clearly dominated the charred remains in the 4-mm sieve residues (fig. 19.10). The frequent and relatively abundant occurrence of sloe and crab apple remains among the remains of all occupation phases suggests that the fleshy fruits of both species were collected in larger quantities than other fruits. This further suggests that crab apple and sloe shrubs were readily available around the settlement, or at a relatively short distance from the site. Scatters of both shrubs may well have grown on the dune.

The charred remains of crab apple include pips, fragments of fruit flesh (fruit parenchyma) and a few specimens of apple halves. The edges of the apple halves are contracted along the margins, showing that the apples were dried prior to charring (fig. 19.11). They may have been exposed to fire as part of the drying process required to preserve them for storage and later consumption (possibly in winter). They may also have been baked in ashes before being consumed. The presence of charred (often complete) plums in addition to fruit stone remains (fig. 19.12) suggests that sloes were processed in the same way. So wherever the apples and sloe plums grew, they were evidently plentiful enough to be gathered for storage.

The abundant concentration of waterlogged sloe plums (sample 20, over 500 complete fruits) found together with fish bones (and other bone remains) in the basal fill of a special 'deposition pit' dated to phases 1/2a (section 3.5.3) constitutes possible evidence of a special technique employed in fruit storage (fig. 19.13).

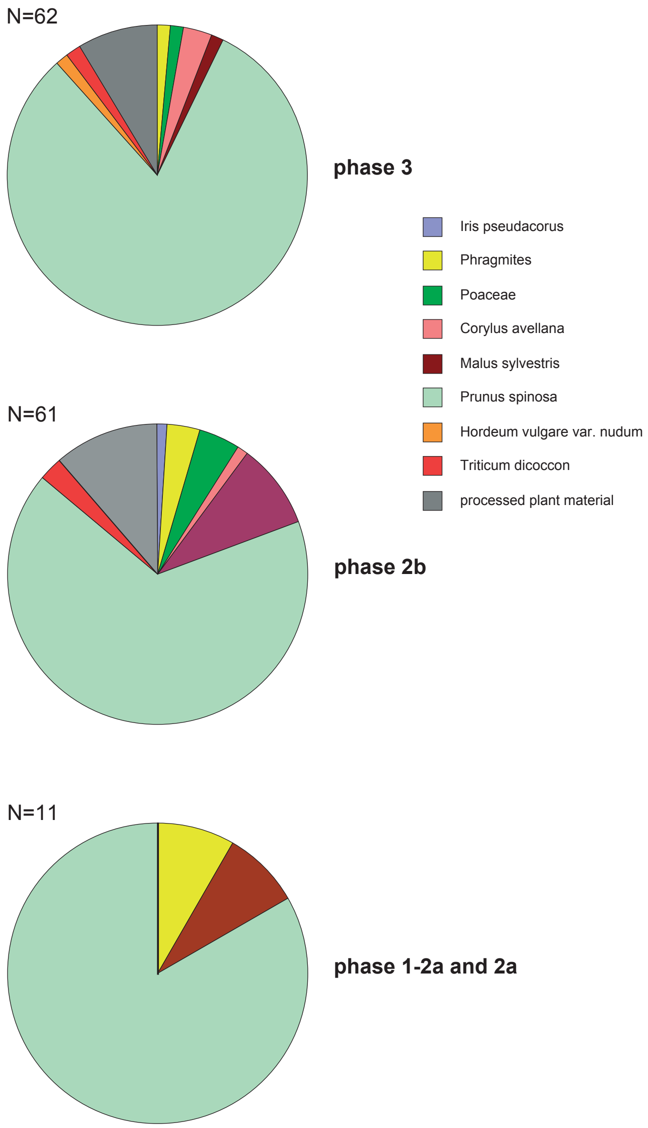


Figure 19.10 Species represented among the charred botanical macroremains, recovered by wet sieving through a 4-mm screen, showed according to phase. Sloe plum clearly dominates the charred remains, while other food plant species are represented in varying numbers in the samples from the different occupation phases. The low diversity characterising the samples from the earlier phases could be attributable to taphonomic factors.

Ethnographic records add some credibility to the interpretation of this archaeobotanical find. For example, ethnographic accounts of various North American peoples assert that one of the methods used to preserve fairly tart fruits such as crab apples and elderberries was to place them in a (wooden or bark) container and cover them with water and sometimes a layer of fish or animal grease or oil.

Figure 19.11 Charred part of a crab apple (*Malus sylvestris*) showing the contracted edge (arrow; no.10,440; magnification 5×) and recent wild crab apples.

Figure 19.12 Charred part of a sloe plum (*Prunus spinosa*) showing preserved fruit flesh (no. 1930; magnification 5×) and recent sloe plums.

Such a container would then be stored in a cool place, for example an underground pit. This method would soften the fruits and make them sweeter (Kuhnlein/Turner 1991; Kari 1995). A similar method used to preserve the sloe plums (and perhaps also crab apples) of Schipluiden would certainly have enhanced their palatability.

Figure 19.13 Waterlogged sloe plums *in situ* at the base of the fill of pit 12-48, showing preserved stones and fruit flesh (magnification 2×).

Other fruits that may also have been gathered in fairly large quantities (at least in phases 1/2a) are rose hips and dewberries. This is suggested by the fairly regular frequencies of rose and dewberry remains in the archaeobotanical record. The low frequencies of remains of hazel, hawthorn, juniper, blackberry and elder suggest that these species were either not available (in quantities large enough for processing) close to the site or they were not of (quantitative) importance in the local diet. Some fleshy fruits and berries, for example blackberries and dewberries, are difficult to preserve for later consumption, so they may have been consumed only during the gathering season. Berries that are eaten immediately, without being processed first, have a relatively small chance of becoming incorporated in the fossil record.

19.6 Conclusions

The evidence shows that the landscape surrounding the Schipluiden site was very diverse in all the occupation phases. The composition of plant remains shows that the local vegetation underwent at least one major change, from a brackish to a freshwater environment. This took place some time during occupation phase 2 (possibly in phase 2b). There is clear evidence of the presence of a well-defined shrub vegetation on the dune, with sloe and crab apple as the dominant species in all the occupation phases. Various herbaceous plants may have formed part of this shrub vegetation. So the dune was surrounded by a diverse landscape comprising brackish and freshwater marshes during the early occupation phases (1 and 1/2a), and freshwater marsh and wet grasslands during the later phases (2b and 3). There may also have been (small) woods in the close vicinity (indicated for phase 2). The weed flora represents different types of environments in and around the settlement, including arable fields, places trodden by man and animals, areas where rubbish was deposited and various other ruderal habitats.

The plant food subsistence activities included cereal cultivation and gathering. The high salt marsh and possibly also nearby low dunes offered possibilities for small-scale agriculture. Emmer and naked barley were the two cultivated crops. Both cereals were grown side by side in all the occupation phases, though emmer may have been the dominant crop in phases 2b and 3, after the shift from brackish to freshwater conditions. Evidence of local cultivation comes in various forms: (1) waste produced in the early stage of the processing of naked barley, though the evidence for emmer is rather meagre due to the absence of chaff remains characteristic of the early stage of processing of this crop, and (2) charred remains of high salt marsh plants encountered in frequencies paralleling those of charred cereal and field weeds, implying that the cereal fields lay in the high parts of the salt

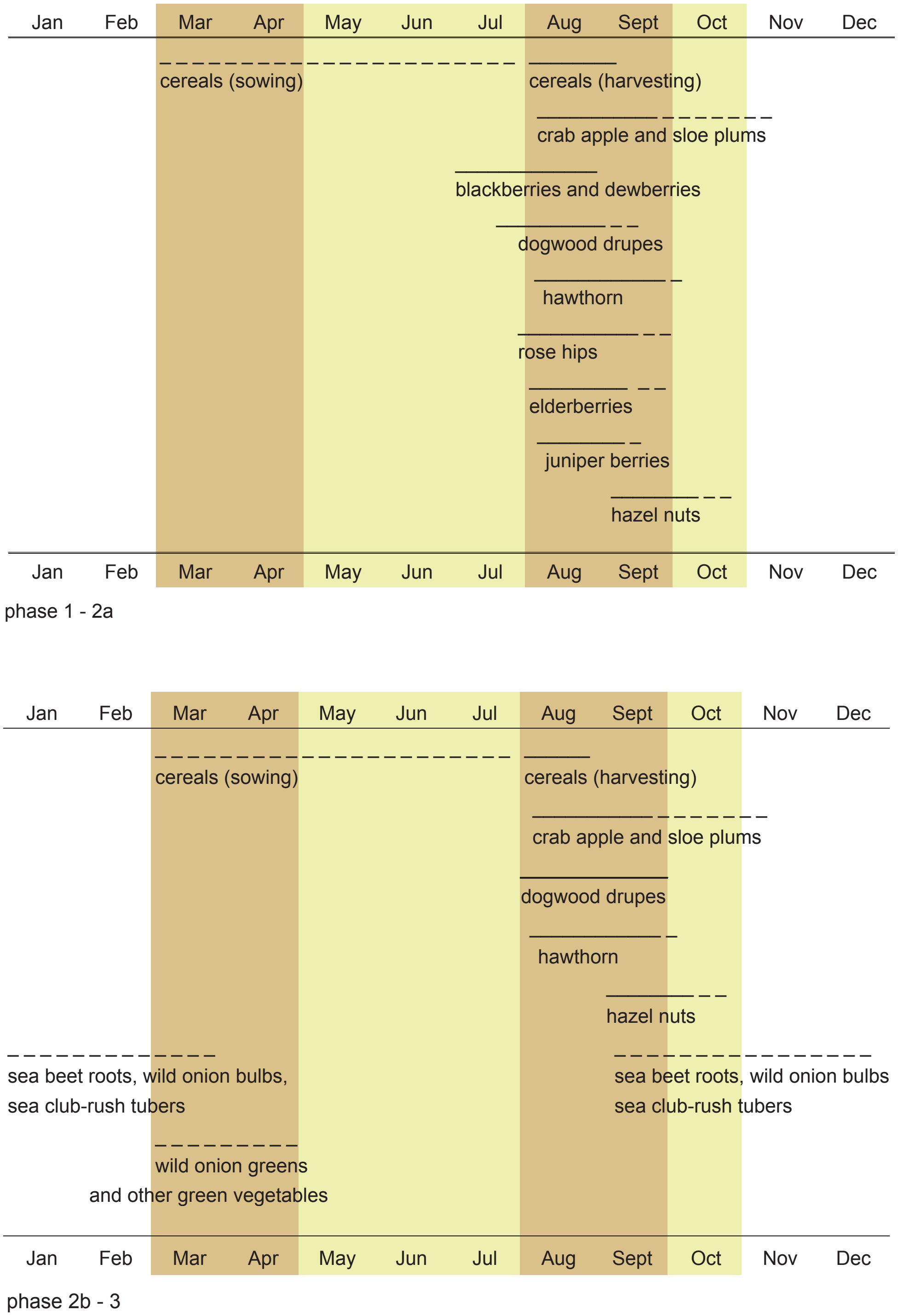


Figure 19.14 Botanical macroremains as indicators of the possible seasons of site occupation for phases 1-2a and 2b-3.

marsh (indicated for phases 1 and 1/2a), and on other low dunes nearby (indicated for phases 2b and 3).

Cereal chaff is evidence that crops were processed at the settlement itself. It may be assumed that the threshing and cleaning of the grains took place near the houses. These activities may have involved practices such as the parching of the spikelets of emmer wheat and possibly the burning of the threshing remains of both cereals. Besides theses cereals, the diet included a broad spectrum of gathered wild plants, including fruits and berries, roots and tubers (later discussed in chapter 20). Evidence of continuity in the exploitation of wild plants indicates that the inhabitants obtained a large proportion of their plant foods by gathering in all the occupation phases.

The archaeobotanical evidence suggests that the site was occupied for the greater part of the year (figs.19.14 a, b). Summer would have been the period of cereal harvesting and, if extended to early autumn, the optimum season for gathering the full range of fruits and berries. Hazelnuts may have been gathered later in the autumn. The sowing of the cereals on the high salt marsh will have started in spring.

References

Bakels, C.C. 1978. *Four Linearbandkeramik Settlements and Their Environment: A Paleoecological Study of Sittard, Stein, Elsloo and Hienheim,* PhD thesis Leiden (Analecta Praehistorica Leidensia 11).

Bakels, C.C. 1981. Neolithic Plant Remains from the Hazendonk, Province of Zuid-Holland, The Netherlands, *Zeitschrift für Archäologie* 15, 141-148.

Bakels, C.C. 1988a. Hekelingen, a Neolithic site in the swamps of the Maas estuary. In: H. Küster (ed.), *Der prähistorische Mensch und seine Umwelt (Festschrift für Udelgard Körber-Grohne zum 65. Geburtstag,* Stuttgart (Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31), 155-161.

Bakels, C.C. 1988b. On the location of the fields of the northwestern Bandkeramik. In: Bierma M./O.H. Harsema/ W. van Zeist (eds), *Archeologie en Landschap*, Groningen, 49-57.

Bakels, C.C. 1991. Tracing crop processing in the Bandkeramik culture. In: J. Renfrew (ed.), *New light on early farming: recent developments in palaeoethnobotany*, Edinburgh, 281-288.

Bakels, C.C. 2000. The neolithization of the Netherlands: two ways, one result. In: Fairbairn A (ed.), *Plants in Neolithic Britain and beyond,* Oxford (Oxbow Monographs), 101-106. Oxford.

Bakels, C.C./J. Zeiler 2005. The fruits of the land; Neolithic subsistence. In: L.P.Louwe Kooijmans/P.W.van den Broeke/ H.Fokkens/A.L.van Gijn (eds), *The Prehistory of the Netherlands,* Amsterdam, 311-335.

Behre, K.E./S. Jacomet 1991. The ecological interpretation of archaeobotanical data. In: W. van Zeist/K. Wasylikowa/ K.E. Behre (eds), *Progress in Old World Palaeoethnobotany,,* Rotterdam, 81-108.

Fairbairn, A./E. Asouti/J. Near/D. Martinoli 2002. Macro-botanical evidence for plant use at Neolithic Çatalhöyük, south-central Anatolia, Turkey, *Vegetation History and Archaeobotany* 11, 41-54.

Gehasse, E.F. 1995. *Ecologisch-archeologisch onderzoek van het Neolithicum en de Vroege Bronstijd in de Noordoost-polder met de nadruk op vindplaats P14*, Ph.D. Thesis Amsterdam.

Hillman, G.C. 1981. Reconstructing crop husbandry practices from charred remains of crops. In: R. Mercer (ed.), *Farming Practice in British Prehistory*, Edinburgh, 123-162.

Hillman, G.C. 1984. Interpretation of archaeological plant remains: the application of ethnographic model from Turkey. In W. van Zeist/W.A. Casparie (eds), *Plants and Ancient Man. Studies in palaeoethnobotany,* Rotterdam, 1-41.

Jones, G.E.M. 1984. Interpretation of archaeological plant remains: Ethnographic models from Greece. In: W. van Zeist/ W.A. Casparie (eds), *Plants and Ancient Man. Studies in palaeoethnobotany,* Rotterdam, 43-61.

Kari, P.R. 1955. *Tanaina Plantore Denaina Ketuna. An ethnobotany of the Denaina Indians of Southcentral Alaska,* 4th edn, Fairbanks (Alaska Native Language Center, University of Alaska).

Knörzer, K.-H. 1971. Pflanzliche Grossreste aus der rössenerzeitlichen Siedlung bei Langweiler, Kreis Jülich, *Bonner Jahrbücher* 171, 9-33.

Kuhnlein, H.V./N.J. Turner 1991. *Traditional plant foods of Canadian indigenous peoples: nutrition, botany and use*, Philadelphia (Food and nutrition in history and anthropology 8).

Maier, U. 1999. Agricultural activities and land use in a Neolithic village around 3900 B.C.: Hornstaad Hörnle IA, Lake Constance, Germany, *Vegetation History and Archaeobotany* 8, 87-94.

Pals, J.P. 1984. Plant remains from Aartswoud, a Neolithic settlement in the coastal area. In: W. van Zeist/W.A. Casparie (eds), *Plants and Ancient Man. Studies in palaeoethnobotany,* Rotterdam, 313-321.

Raemaekers, D.C.M. *et al*. 1997. Wateringen 4: a settlement of the Middle Neolithic Hazendonk 3 Group in the Dutch coastal area, *Analecta Praehistorica Leidensia* 29, 143-191.

Haveman, R./J.H.J. Schaminée/E.J. Weeda 1999. Rhamno-Prunetea (Klasse der doornstruwelen). In: A.F.H. Stortelder/ J.H.J. Schaminée/P.W.F.M. Hommel (eds), *De vegetatie van Nederland Deel 5. Plantengemeenschappen van ruigten, struwelen en bossen,* Leiden, 121-164.

Therkorn, L.L./M. Diepeveen-Jansen/S. Gerritsen/M. Kok/ L. Kubiak-Martens/J. Slopsma/P. Vos (in press). *Landscapes in the Broekpolder: excavations around a monument with aspects of the Bronze Age to the Modern. Beverwijk and Heemskerk, Noord-Holland*. Amsterdam.

Veen, M. van der 1992. *Crop Husbandry Regimes: An Archaeobotanical Study of Farming in Northern England, 1000 BC-AD 500*, Sheffield (Sheffield Archaeological Monographs 3).

Villaret-von Rochow, M. 1967. Frucht- und Samenreste aus der neolithische Station Seeberg, Bürgaschise-Süd, *Acta Bernensia* 2, 21-64.

Zeist, W. van 1970. Prehistoric and Early Historic Food Plants in the Netherlands, *Palaeohistoria* 14, 43-173.

Zeist, W. van/T.C. van Hoorn/S. Bottema/Woldring 1976. An agricultural experiment in the unprotected salt marsh, *Palaeohistoria* 18, 111-153.

Zeist, W. van/R.M. Palfenier-Vegter 1983. Seeds and fruits from the Swifterbant S3 site. Final reports on Swifterbant IV, *Palaeohistoria* 23, 105-168.

L. Kubiak-Martens
BIAX *Consult*
Hogendijk 134
1506 AL Zaandam
The Netherlands
kubiak@biax.nl

Legende to Appendices 19.1 and 19.2

CAT	catkins
CLX	calix
FLS	flowers
FRS	fruits
GLB	glume bases
LEM	lemma bases
NTS	nuts
PAR	parenchym
PPM	processed plant material
RAI	rachis internodes
SPF	spikelet forks
STB	stem bases
STEM	stems
TUB	tubers
VAL	pod fragment

Appendices

19.1 WATERLOGGED PLANT REMAINS IDENTIFIED IN THE SCHIPLUIDEN ASSEMBLAGE, LISTED ACCORDING TO OCCUPATION PHASES AND TYPES OF VEGETATION (in pochette).

19.2 CHARRED PLANT REMAINS IDENTIFIED IN THE SCHIPLUIDEN ASSEMBLAGE, LISTED ACCORDING TO OCCUPATION PHASES AND TYPES OF VEGETATION (in pochette).

19.3 GLOSSARY OF THE SCIENTIFIC, ENGLISH AND DUTCH NAMES OF PLANTS MENTIONED IN THE TEXT.

Scientific names	*English names*	*Dutch names*
Agrostis	*bent grass*	*struisgras*
Alisma plantago-aquatica	*water-plantain*	*grote waterweegbree*
Allium	*onion*	*look*
Alnus glutinosa	*alder*	*zwarte els*
Althaea officinalis	*marsh-mallow*	*echte heemst*
Anthriscus sylvestris	*cow parsley*	*fluitenkruid*
Apium graveolens	*wild celery*	*selderij*
Arctium lappa	*greater burdock*	*grote klit*
Aster tripolium	*sea aster*	*zulte*
Atriplex littoralis	*shore orache*	*strandmelde*
Atriplex patula	*common orache*	*uitstaande melde*
Atriplex prostrata	*spear-leaved orache*	*spiesmelde*
Beta vulgaris subsp. maritima	*sea beet*	*strandbiet*
Bidens tripartita	*trifid bur-marigold*	*veerdelig tandzaad*
Bolboschoenus maritimus	*sea club-rush*	*heen*
Brassica rapa	*turnip*	*raapzaad*
Brassica/Sinapis	*cabbage/mustard*	*kool/mosterd*
Capsella bursa-pastoris	*shepherd's-purse*	*gewoon herderstasje*
Carduus/Cirsium	*thistle/thistle*	*distel/vederdistel*
Carex arenaria	*sand sedge*	*zandzegge*
Carex distans	*distant sedge*	*zilte zegge*
Carex disticha	*brown sedge*	*tweerijige zegge*
Carex elongata	*elongated sedge*	*elzenzegge*
Carex hirta	*hairy sedge*	*ruige zegge*
Carex otrubae	*flase fox-sedge*	*valse voszegge*
Carex remota	*remote sedge*	*ijle zegge*
Carex riparia	*greater pond-sedge*	*oeverzegge*
Carex rostrata	*bottle sedge*	*snavelzegge*
Carex vesicaria	*bladder sedge*	*blaaszegge*
Carex vulpina	*true fox-sedge*	*voszegge*
Ceratophyllum demersum	*rigid hornwort*	*grof hoornblad*
Cerealia	*cereals*	*granen*
Chenopodiaceae	*fathen family*	*ganzenvoetfamilie*
Chenopodium album	*fat hen*	*melganzevoet*
Chenopodium ficifolium	*fig-leaved goosefoot*	*stippelganzenvoet*
Chenopodium glaucum	*glaucous goosefoot*	*zeegroene ganzenvoet*
Chenopodium rubrum	*red goosefoot*	*rode ganzenvoet*
Circaea lutetiana	*enchanter's-nightshade*	*groot heksenkruid*
Cirsium arvense	*creeping thistle*	*akkerdistel*
Cirsium oleraceum	*cabbage thistle*	*moesdistel*
Cirsium palustre	*marsh thistle*	*kale jonker*
Cirsium vulgare	*spear thistle*	*speerdistel*

Scientific names	*English names*	*Dutch names*
Chenopodium album	*fat-hen*	*melganzenvoet*
Chenopodium ficifolium	*fig-leaved goosefoot*	*stippelganzenvoet*
Chenopodium glaucum	*glaucous goosefoot*	*zeegroene ganzenvoet*
Chenopodium rubrum	*red goosefoot*	*rode ganzenvoet*
Circaea lutetiana	*enchanter's-nightshade*	*groot heksenkruid*
Cirsium arvense	*creeping thistle*	*akkerdistel*
Cirsium oleraceum	*cabbage thistle*	*moesdistel*
Cirsium palustre	*marsh thistle*	*kale jonker*
Cirsium vulgare	*spear thistle*	*speerdistel*
Cladium mariscus	*great sedge / saw-sedge*	*galigaan*
Conium maculatum	*hemlock*	*gevlekte scheerling*
Cornus sanguinea	*dogwood*	*rode kornoelje*
Corylus avellana	*hazel*	*hazelaar*
Crataegus monogyna	*hawthorn*	*eenstijlige meidoorn*
Cyperaceae	*sedge family*	*cypergrassenfamilie*
Daucus carota	*wild carrot*	*peen*
Eleocharis palustris	*spike-rush*	*gewone waterbies*
Eleocharis uniglumis	*spike-rush*	*slanke waterbies*
Elytrigia atherica	*sea couch-grass*	*strandkweek*
Elytrigia repens	*couch-grass*	*kweek*
Epilobium hirsutum	*great hairy willowherb*	*harig wilgenroosje*
Eupatorium cannabinum	*hemp-agrimony*	*koninginnenkruid*
Euphorbia palustris	*marsh spurge*	*moeraswolfsmelk*
Euphrasia	*eyebright*	*ogentroost*
Fallopia convolvulus	*black bindweed*	*zwaluwtong*
Fallopia dumetorum	*copse-bindweed*	*heggenduizendknoop*
Galeopsis bifida	*lesser hemp-nettle type*	*gespleten hennepnetel type*
Galeopsis speciosa	*large-flowered nettle*	*dauwnetel*
Galeopsis tetrahit	*common hemp-nettle*	*gewone hennepnetel*
Galium aparine	*cleavers*	*kleefkruid*
Galium tricornutum	*rough corn bedstraw*	*driehoornig walstro*
Glaux maritima	*sea milkwort*	*melkkruid*
Glechoma hederacea	*ground ivy*	*hondsdraf*
Hordeum marinum	*sea barley*	*zeegerst*
Hordeum vulgare	*six-row barley*	*gerst*
Humulus lupulus	*hop*	*hop*
Hypericum perforatum	*perforate St John's-wort*	*sint-janskruid*
Hypericum tetrapterum	*square-stalked St John's-wort*	*gevleugeld hertshooi*
Iris pseudacorus	*yellow flag / yellow iris*	*gele lis*
Juncus	*rush*	*rus*
Juncus articulatus	*jointed rush*	*zomprus*

Scientific names	*English names*	*Dutch names*
Juncus bufonius	*toad rush*	*greppelrus*
Juncus gerardi	*mud rush / salt marsh rush*	*zilte rus*
Juniperus communis	*juniper*	*jeneverbes*
Lathyrus/Vicia	*vetchling/tare*	*lathyrus/wikke*
Limonium vulgare	*common sea-lavender*	*lamsoor*
Linaria vulgaris	*common toadflax*	*vlasbekje*
Lychnis flos-cuculi	*ragged-robin*	*echte koekoeksbloem*
Lycopus europaeus	*gipsywort*	*wolfspoot*
Lythrum salicaria	*purple loosestrife*	*grote kattenstaart*
Malus sylvestris	*crab apple*	*appel*
Malva	*mallow*	*kaasjeskruid*
Medicago lupulina	*black medick*	*hopklaver*
Mentha aquatica	*water mint*	*watermunt*
Mentha arvensis	*corn mint*	*akkermunt*
Moehringia trinervia	*three-nerved sandwort*	*drienerfmuur*
Odontites	*bartsia*	*helmogentroost*
Oenanthe aquatica	*fine-leaved water-dropwort*	*watertorkruid*
Oenanthe fistulosa	*tubular water-dropwort*	*pijptorkruid*
Oenanthe lachenalii	*parsley water-dropwort*	*zilt torkruid*
Persicaria hydropiper	*water-pepper*	*waterpeper*
Persicaria lapathifolia	*pale persicaria*	*beklierde duizendknoop*
Persicaria maculosa	*persicaria / red shank*	*perzikkruid*
Persicaria mitis	*tasteless water-pepper*	*zachte duizendknoop*
Phalaris arundinacea	*reed-grass/reed-canary grass*	*rietgras*
Phragmites australis	*common reed*	*riet*
Plantago major	*greater plantain*	*grote en getande weegbree*
Poa	*meadow-grass*	*beemdgras*
Poa compressa	*flattened meadow-grass*	*plat beemdgras*
Poa nemoralis	*wood meadow-grass*	*schaduwgras*
Poa palustris	*swamp meadow-grass*	*moerasbeemdgras*
Poa pratensis	*smooth meadow-grass*	*veldbeemdgras*
Poa trivialis	*rough meadow-grass*	*ruw beemdgras*
Poaceae	*grass family*	*grassenfamilie*
Polygonum aviculare	*knotgrass*	*gewoon varkensgras*
Potamogeton	*pondweed*	*fonteinkruid*
Potamogeton natans	*broad-leaved pondweed*	*drijvend fonteinkruid*
Potamogeton pectinatus	*fennel-leaved pondweed*	*schedefonteinkruid*
Prunus spinosa	*sloe*	*sleedoorn*
Ranunculus sceleratus	*celery-leaved crowfoot*	*blaartrekkende boterbloem*
Rosa	*rose*	*roos*

Scientific names	*English names*	*Dutch names*
Rubus caesius	*dewberry*	*dauwbraam*
Rubus fruticosus	*blackberry / bramble*	*gewone braam*
Rumex crispus	*curled dock*	*krulzuring*
Rumex hydrolapathum	*water dock*	*waterzuring*
Rumex obtusifolius	*broad-leaved dock*	*ridderzuring*
Ruppia maritima	*beaked tasselweed*	*snavelruppia*
Salicornia europaea	*glasswort*	*kortarige zeekraal*
Sambucus nigra	*elder*	*gewone vlier*
Schoenoplectus lacustris	*common club-rush*	*mattenbies*
Schoenoplectus tabernaemontani	*grey club-rush*	*ruwe bies*
Scrophularia nodosa	*common figwort*	*knopig helmkruid*
Silene dioica	*red campion*	*dagkoekoeksbloem*
Silene otites	*spanish catchfly*	*oorsilene*
Sisymbrium officinale	*hedge mustard*	*gewone raket*
Solanum dulcamara	*bittersweet*	*bitterzoet*
Solanum nigrum	*black nightshade*	*zwarte en beklierde nachtschade*
Sonchus asper	*prickly sow-thistle*	*gekroesde melkdistel*
Sonchus palustris	*marsh sow-thistle*	*moerasmelkdistel*
Sparganium emersum	*unbranched bur-reed*	*kleine egelskop*
Sparganium erectum	*branched bur-reed*	*grote en blonde egelskop*
Sparganium natans	*least bur-reed*	*kleinste egelskop*
Spergularia media (subsp. angustata)	*greater sea-spurrey*	*gerande schijnspurrie*
Spergularia marina	*lesser sea-spurrey*	*zilte schijnspurrie*
Stachys palustris	*marsh woundwort*	*moerasandoorn*
Stachys sylvatica	*hedge woundwort*	*bosandoorn*
Stellaria aquatica	*water chickweed*	*watermuur*
Stellaria media	*chickweed*	*vogelmuur*
Suaeda maritima	*annual-seablite*	*schorrenkruid*
Thalictrum minus	*lesser meadow-rue*	*kleine ruit*
Torilis japonica	*upright hedge-parsley*	*heggendoornzaad*
Trifolium campestre	*hop trefoil*	*liggende klaver*
Trifolium repens	*white clover*	*witte klaver*
Triticum dicoccon	*emmer*	*emmer*
Triticum aestivum	*bread wheat*	*(brood)tarwe*
Triticum	*wheat*	*tarwe*
Typha	*bulrush*	*lisdodde*
Urtica dioica	*stinging nettle*	*grote brandnetel*
Valerianella locusta	*lamb's lettuce, cornsalad*	*gewone veldsla*
Verbena officinalis	*vervain*	*ijzerhard*
Veronica arvensis	*wall speedwell*	*veldereprijs*
Vicia hirsuta	*hairy tare*	*ringelwikke*
Zannichellia palustris	*horned pondweed*	*zannichellia*

Appendix 19.1 Waterlogged plant remains identified in the Schipluiden assemblage, listed according to occupation phases and types of vegetation

sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	Remarks
field number	6627	3698	9404	4215	4272	6030	6837	1899	1900	2084	3280	4269	7006	7012	6001	6016	6017	9415	10153	6085	2142	4225	4729	6636	7150	7389	7373	8407	7145	7146	4728	6839	7372	2086	7149	3011	4224	7388	6115	10615	10616	16020	7377	4221	1877	1879	7391	9592	10713	10757	7326	8996	10440	10130	8932	8933	8949	8947	9585	9589	
trench	20	10	15	14	16	18	12	2	2	2	14	16	12	12	18	18	18	15	13	12	16	14	16	18	12	22	26	24	12	12	16	12	26	2	12	10	14	22	20	21	21	21	26	14	3	3	22	16	21	30	22	19	16	13	17	17	17	17	16	16	
Unit / feature	4019	4019	29	19N	19N	19N	19N	12	12	12	19	15	50	36	421	432	432	23	97	48	4018	4018	4017	4017	4017	4017	8017	8017	314	314	4016	2015	8016	12	4011	4011	4011	4011	115	257	257	257	8025	4020	6020	6020	336	116	155	74	159	314	109	487	429	423	492	353	94	101	
context	Unit	Unit	well	Unit	Unit	Unit	Unit	well	well	well	well	well	well	well	well	well	well	well	well	pit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	well	well	Unit	Unit	Unit	well	Unit	Unit	Unit	Unit	well	well	well	well	Unit	Unit	Unit	Unit	hear.	hear.	hear.	hear.	pit	pit	pit	depr	post.	post.	post.	post.	post.	post.	
phase	1	1	1	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	2a	2a	2a	2a	2a	2a	2a	2a	2	2	2b	2b	2b	2/3	3	3	3	3	3	3	3	3	1	1-3	1-3	1-3	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
Cultivated plants																																																													
Triticum dicoccon, GLB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Triticum dicoccon, SPF	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Arable weeds and ruderals																																																													
Arctium lappa	.	.	2	.	.	.	.	.	4	12	2	.	8	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Atriplex patula/prostrata	13	.	92	.	59	1	1	481	32	5	20	50	118	7	.	607	94	43	20	56	.	.	.	.	.	.	1	.	71	.	.	.	.	19	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Atriplex/Chenopodium	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Brassica rapa	.	.	42	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	45	2	.	.	.	35	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Brassica/Sinapis	.	.	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex hirta	.	.	.	.	82	85	27	.	.	.	6	34	8	.	16	8	7	24	16	2	.	.	1	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex hirta/riparia	.	.	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Chenopodium album	5	.	52	.	28	6	.	10	156	13	6	.	109	5	14	12	5	14	22	52	11	.	.	.	.	3	1	.	749	108	.	.	.	7	.	.	10	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	2	32	.	.	.	
Chenopodium ficifolium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cirsium arvense/palustre	.	.	1	.	.	.	.	1	.	2	.	.	.	.	.	8	.	2	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cirsium cf. vulgare	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Conium maculatum	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Euphrasia/Odontites	.	.	.	.	.	.	.	.	.	.	12	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Fallopia convolvulus	.	.	.	.	.	.	.	.	.	74	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Galeopsis speciosa/tetrahit	.	.	1	.	.	.	.	.	.	.	.	1	.	1	.	.	.	3	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Galium aparine	.	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Juncus articulatus	.	.	.	.	.	.	.	.	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Linaria vulgaris	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Malva	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Persicaria lapathifolia	1	.	.	1	.	.	.	.	.	.	.	1	.	.	.	6	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Persicaria lapathifolia/maculosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Persicaria maculosa	1	.	8	.	351	.	2	.	3	.	67	28	71	29	9	228	40	134	.	15	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex crispus type	.	.	.	.	.	.	.	6	69	3	3	1	.	.	1	.	.	3	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex crispus, PER	.	.	.	.	.	.	.	.	65	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex obtusifolius	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sisymbrium officinale	.	.	2	.	.	.	.	.	34	.	4	.	.	1	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sisymbrium officinale, VAL	.	.	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	"forks"+stem frgm
Solanum nigrum	15	.	7	.	2	3	.	.	18	2	13	.	20	.	.	.	.	250	18	4	14	.	.	.	.	.	.	4	2	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	
Sonchus asper	.	.	.	.	.	.	.	1	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Stellaria media	.	.	86	.	13	.	.	6	63	19	29	30	189	24	24	12	5	92	3	13	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Calcareous soils																																																													
Galium tricornutum	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Tread resistant plants (paths)																																																													
Capsella bursa-pastoris	.	.	.	.	.	.	.	.	8	.	.	4	10	.	12	3	1	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Plantago major	.	.	.	.	29	.	.	.	7	.	49	20	52	5	2	141	22	99	.	84	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Polygonum aviculare	18	.	.	.	29	.	.	3	13	2	47	4	39	3	72	28	5	44	.	40	.	.	6	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Damp, nitrate-rich soils																																																													
Bidens tripartita	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Chenopodium glaucum/rubrum	1	.	.	.	.	.	.	.	1	.	2	.	.	.	10	.	.	18	.	8	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Juncus bufonius	.	.	.	.	100	.	.	.	.	.	6	.	.	10	15	100	1	50	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Persicaria hydropiper	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Persicaria mitis	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Ranunculus sceleratus	.	.	.	64	605	1394	40	.	.	.	94	7	80	7	78	618	20	49	.	20	.	.	3	.	24	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Stellaria aquatica	.	.	.	.	147	348	155	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	760	28	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	
Stellaria aquatica/media	.	.	.	.	.	.	.	.	.	.	.	.	30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	
Stellaria cf. aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Salt marsh																																																													
Althaea officinalis	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	.	.	.	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Atriplex littoralis type	.	.	3	.	.	.	.	2	.	.	101	.	.	.	.	2	1	2	.	16	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Apium graveolens	.	.	.	24	.	.	.	.	.	1	82	10	123	6	2	57	7	42	.	56	.	.	.	.	.	.	.	.	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Aster tripolium	.	.	2	.	.	.	.	1	.	.	56	3	4	1	2	15	6	17	.	52	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex distans	16	2	.	5	17	73	15	.	3	1	49	1	71	1	25	31	8	14	16	12	2	2	16	5	5	1	.	11	2	.	6	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	
Elytrigia atherica/repens	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Glaux maritima	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Hordeum marinum	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Juncus gerardi	.	.	2	5	100	.	.	.	100	.	4	.	24	15	25	.	.	5	.	.	100	.	100	.	13	.	.	.	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Limonium vulgare, CLX	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Oenanthe lachenalii	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Ruppia maritima	1	.	.	1	.	.	.	1	.	.	1	.	.	.	.	2	.	.	.	1	.	.	.	.	24	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Salicornia europaea	.	.	.	.	8	.	.	.	.	.	172	4	94	5	4	18	.	100	.	48	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Spergularia media (subsp. angustata) type	.	.	.	.	.	.	.	.	.	.	36	.	20	4	14	.	1	32	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Suaeda maritima	.	.	.	.	.	.	.	.	.	.	159	1	44	.	.	15	1	79	.	48	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Fresh and brackish water marsh																																																													
Alisma plantago-aquatica	.	4	.	.	.	.	.	.	.	.	.	1	.	.	.	15	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Bolboschoenus maritimus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	3	1	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex otrubae	3	.	.	3	.	.	.	.	.	.	81	1	106	8	23	.	10	69	1	40	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex otrubae/vulpina	.	.	.	.	42	4	20	.	.	.	.	.	.	.	.	59	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex riparia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Ceratophyllum demersum	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cladium mariscus	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Epilobium hirsutum	.	.	6	.	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Eupatorium cannabinum	.	2	.	2	.	.	.	.	.	.	3	2	.	.	.	14	3	9	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Euphorbia palustris	.	.	.	.	1	.	.	.	.	.	.	1	.	.	.	4	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Iris pseudacorus	.	.	4	.	2	.	.	.	.	.	4	2	2	.	.	6	7	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Lycopus europaeus	.	.	.	12	24	6	.	.	3	7	4	4	83	.	10	303	3	19	.	2	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Mentha aquatica/arvensis	.	4	.	54	4	42	5	.	3	.	2	.	4	.	2	45	19	18	1	.	.	.	.	.	24	.	.	.	20	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	
Oenanthe aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Oenanthe fistulosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Oenanthe	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Phalaris arundinacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Phragmites australis	.	.	.	.	4	.	.	1	.	.	2	.	.	2	4	135	.	39	.	2	.	.	.	.	.	.	.	.	55	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Phragmites australis, STM	.	.	15	.	.	.	.	.	.	.	100	5	20	50	.	10	.	100	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poa palustris	.	.	4	.	.	.	.	.	.	.	.	4	.	.	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Potamogeton natans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Potamogeton pectinatus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Potamogeton	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex hydrolapathum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus lacustris	21	.	.	1	.	.	.	4	.	.	4	8	8	.	1	4	7	14	.	4	1	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus lacustris/tabernaemontani	.	.	.	.	3	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus tabernaemontani	1	.	.	.	.	.	.	2	.	.	.	.	.	.	.	22	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	
Solanum dulcamara	2	2	6	.	5	.	1	3	.	76	7	12	32	1	2	12	8	20	8	8	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sonchus palustris	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sparganium erectum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Stachys palustris	.	.	.	.	2	1	.	1	.	.	.	.	4	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Typha	.	100	4	2	100	.	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Zannichellia palustris	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Damp grasslands																																																													
Daucus carota	.	.	.	.	.	.	.	.	.	3	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poa pratensis/trivialis	.	.	5	.	.	.	.	.	7	.	4	4	.	.	60	9	3	47	.	28	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Verbena officinalis	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex disticha	.	2	.	.	.	3	.	.	.	.	.	.	1	.	.	9	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cirsium oleraceum/vulgare	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Hypericum tetrapterum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Lychnis flos-cuculi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	18	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
cf. Lychnis flos-cuculi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Lythrum salicaria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Dry Grasslands																																																													
Carex arenaria	1	.	.	.	4	.	3	.	.	.	.	.	4	.	.	5	3	.	2	.	.	.	1	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Hypericum perforatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poa compressa/nemoralis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Silene otites	.	.	.	.	.	.	.	.	.	.	1	.	4	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Valerianella locusta	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Grasslands																																																													
Agrostis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cerastium cf. fontanum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poa	.	.	.	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poaceae	.	.	1	.	.	.	.	.	2	.	.	.	.	.	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poaceae, STM	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	100	.	.	.	.	.	.	.	.	.	.	.	.	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Trifolium repens, FLS	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	petals
Mesotrophic peat																																																													
Carex rostrata	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex rostrata/vesicaria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Shrub vegetation																																																													
Anthriscus sylvestris	.	.	29	.	.	.	.	.	.	96	2	.	37	.	.	.	.	9	1	.	.	.	.	.	.	.	.	.	2	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cornus sanguinea, FRS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Corylus avellana, NTS	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Crataegus monogyna, FRS	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Fallopia dumetorum	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Galeopsis bifida type	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Glechoma hederacea	.	.	10	.	4	2	.	1	3	36	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	6	.	2	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	
Humulus lupulus	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Juniperus communis	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Malus sylvestris	.	.	1	.	.	.	.	.	1	.	18	3	.	1	1	28	6	16	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Prunus spinosa, FRS	15	.	.	.	8	.	.	.	1	.	4	.	15	1	6	6	1	8	.	*500	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	* fruit stone +fruit flesh
Rosa	.	.	.	.	11	.	.	.	.	.	28	1	1	.	.	9	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rubus caesius	.	.	.	.	3	1	.	.	1	56	.	2	.	.	2	7	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rubus fruticosus	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sambucus cf. nigra	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Silene dioica	.	.	152	.	.	.	.	.	.	.	1	.	4	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Thalictrum minus	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Torilis japonica	.	.	3	.	1	.	.	.	2	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Urtica dioica	.	2	76	42	108	942	3561	2	7	27	38	82	152	2	12	15	2	54	.	40	2	9	3	.	864	30	2	78	740	52	.	15	.	.	.	100	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50	10	14	.	.	.	
Woodland																																																													
Alnus glutinosa	.	.	.	.	.	.	.	1	.	.	2	.	.	.	.	2	.	2	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Alnus, CAT	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex elongata	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex remota	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Circaea lutetiana	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Moehringia trinervia	.	.	28	.	.	96	25	.	.	.	2	4	.	3	.	18	.	24	.	2	.	.	.	1	.	.	.	.	2162	197	12	57	.	16	.	414	95	6	48	.	.	.	204	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Scrophularia nodosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Stachys cf. sylvatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Various																																																													
Apiaceae	.	2	.	1	.	.	.	.	.	.	.	1	16	.	.	3	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Arctium	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Brassica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carduus/Cirsium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex	.	2	.	.	1	.	1	.	3	.	.	1	.	.	.	2	.	.	.	.	1	.	.	1	.	1	.	.	1	1	1	3	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	
Chenopodiaceae	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	24	.	.	.	
Cyperaceae	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	
Hypericum	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Juncus	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Lamiaceae	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Myosotis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	35	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Potentilla	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rubiaceae	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex	.	.	.	.	.	.	.	5	143	.	.	.	.	.	.	24	.	.	.	.	.	.	.	.	24	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Solanum	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sphagnum, veg	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

Appendix 19.2 Charred plant remains identified in the Schipluiden assemblage, listed according to occupation phases and types of vegetation.

sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	remarks
field number	6627	3698	9404	4215	4272	6030	6837	1899	1900	2084	3280	4269	7006	7012	6001	6016	6017	9415	10153	6085	2142	4225	4729	6636	7150	7389	7373	8407	7145	7146	4728	6839	7372	2086	7149	3011	4224	7388	6115	10615	10616	16020	7377	4221	1877	1879	7391	9592	10713	10757	7326	8996	10440	10130	8932	8933	8949	8947	9585	9589	
trench	20	10	15	14	16	18	12	2	2	2	14	16	12	12	18	18	18	15	13	12	16	14	16	18	12	22	26	24	12	12	16	12	26	2	12	10	14	22	20	21	21	21	26	14	3	3	22	16	21	30	22	19	16	13	17	17	17	17	16	16	
Unit / feature	4019	4019	29	19N	19N	19N	19N	12	12	12	19	15	50	36	421	432	432	23	97	48	4018	4018	4017	4017	4017	4017	8017	8017	314	314	4016	2015	8016	12	4011	4011	4011	4011	115	257	257	257	8025	4020	6020	6020	336	116	155	74	159	314	109	487	429	423	492	353	94	101	
context	Unit	Unit	well	Unit	Unit	Unit	Unit	well	well	well	well	well	well	well	well	well	well	well	well	pit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	well	well	Unit	Unit	Unit	well	Unit	Unit	Unit	Unit	well	well	well	well	Unit	Unit	Unit	Unit	hear.	hear.	hear.	hear.	pit	pit	pit	vl	post.	post.	post.	post.	post.	post.	
phase	1	1	1	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	1/2a	2a	2a	2a	2a	2a	2a	2a	2a	2	2	2b	2b	2b	2/3	3	3	3	3	3	3	3	3	1	1-3	1-3	1-3	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
Cultivated plants																																																														
Cerealia	1	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	1	.	4	3	10	5	19	9	3	5	.	4	12	1	4	.	1	1	4	9	1	.	1	2	23	10	14	.	8	3	3	5	.	3	3	.	.	.	2	2	4	6	
Hordeum vulgare var. nudum	.	.	14	.	.	.	.	.	.	1	.	.	1	.	1	.	.	.	6	.	.	.	2	.	1	33	1	1	.	.	6	.	10	.	.	.	2	.	.	1	.	.	.	.	13	4	.	.	.	1	.	2	.	.	.	.	4	.	.	.	
Hordeum vulgare	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	2	.	.	.	.	5	.	.	.	.	16	.	.	.	.	.	.	2	.	.	1*	.	.	3	.	.	2	.	.	.	.	.	2*	.	.	3	4	.	.	.	* poss. incl. H. vulgare var. vulgare
Hordeum vulgare, RAI	.	.	34	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	.	2	1	5	2	3	12	.	1	.	.	8	.	3	1	.	.	8	.	.	.	.	.	.	.	6	.	1	.	.	.	.	.	.	.	.	.	1	.	.	.	lat.spikelets pedicellate, occ. rachilla pres.
Hordeum/Triticum, RAI	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Triticum dicoccon	.	.	.	.	.	.	.	2	.	.	1	.	.	.	.	.	.	3	3	.	8	4	.	3	3	1	2	.	1	1	11	1	7	2	4	.	3	.	1	.	2	1	14	4	8	.	14	1	.	9	.	.	2	3	1	.	.	2	.	15	* 1x aestivum (?)
Triticum	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	3*	.	.	.	.	.	.	3	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	
Triticum dicoccon, GLB	3	.	.	.	.	.	.	.	7	1	.	.	.	.	.	.	.	.	2	.	41	28	26	26	19	19	4	14	41	14	21	8	16	5	14	4	98	3	.	4	2	2	121	4	16	2	106	.	3	19	1	.	3	4	1	4	.	19	2	41	
Triticum dicoccon, SPF	2	.	.	.	.	.	.	.	3	1	1	.	1	.	.	.	.	.	1	.	5	7	3	1	6	11	5	1	4	4	10	2	3	2	1	.	13	5	.	1	4	.	20	2	9	1	13	.	2	1	.	.	2	2	1	.	.	1	2	21	
Triticum, RAI	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	*1	.	.	.	.	.	.	.	.	.	.	.	.	.	spikelet base
Poaceae, STM	.	.	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	poss. incl. Cerealia straw
Arable weeds and ruderals																																																														
Atriplex patula/prostrata	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	3	.	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	4	1	.	.	.	.	.	.	.	.	.	
Atriplex/Chenopodium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	
Brassica rapa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Galium aparine	.	.	2	.	.	1	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.	.	.	1	.	.	.	2	1	.	.	
Malva	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	2	.	1	92	8	.	1	.	11	.	.	.	18	.	2	2	.	.	1	1	.	.	.	.	.	4	
Persicaria maculosa	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex crispus type	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Sisymbrium officinale	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	
Solanum nigrum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	6	1	.	.	.	7	.	.	.	.	36	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	
Stellaria media	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	
Vicia hirsuta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	1	.	1	.	1	.	.	.	.	.	.	.	.	.	.	
Calcareous soils																																																														
Galium tricornutum	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Tread resistant plants (paths)																																																														
cf. Capsella bursa-pastoris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Plantago major	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Polygonum aviculare	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	1	.	.	.	.	1	.	.	.	1	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Damp, nitrate-rich soils																																																														
Persicaria mitis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Stellaria aquatica/media	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	.	.	.	.	.	.	.	.	.	30	.	.	.	.	.	.	.	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	
Salt marsh																																																														
Althaea officinalis	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	1	.	.	.	1	.	2	.	.	.	.	.	1	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	
Atriplex littoralis type	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Apium graveolens	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	
Beta vulgaris subsp. maritima, root	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2frgm	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex distans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	
Hordeum marinum	.	.	7	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	1	.	3	.	.	.	8	7	1	.	.	.	.	.	5	.	2	.	5	.	1	.	7	4	2	.	.	1	.	.	.	1	.	.	1	1	.	.	.	.	.	.	
Ruppia maritima	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	1	1	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	1	2	.	.	.	.	.	.	.	.	.	2	.	.	.	
Suaeda maritima	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Fresh and brackish water marsh																																																														
Bolboschoenus maritimus, STM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	
Carex otrubae	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Ceratophyllum demersum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	
Cladium mariscus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Eleocharis palustris/uniglumis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Mentha aquatica/arvensis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	
Phragmites australis, STM	10	.	.	.	.	.	.	.	.	.	.	.	5	10	.	1	.	15	10	.	.	.	.	.	.	.	.	.	10	.	.	.	5	5	.	.	.	.	.	10	16	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Potamogeton cf. natans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	
Potamogeton	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus lacustris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus lacustris/tabernaemontani	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Schoenoplectus tabernaemontani	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	29	.	.	2	.	.	.	.	.	.	.	.	.	1	.	.	.	
Sparganium emersum/natans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Damp grasslands																																																														
Medicago lupulina	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	
Dry Grasslands																																																														
Trifolium campestre	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Veronica arvensis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Grasslands																																																														
Agrostis/Poa	.	.	.	.	.	6	5	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	24	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	
Cerastium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	
Poa	1	2	.	.	.	.	.	2	.	.	.	.	1	.	.	2	.	.	4	.	1	2	2	5	.	43	1	.	14	4	12	1	2	.	1	.	15	19	.	.	.	1	.	.	.	.	54	.	2	.	.	.	.	1	1	.	1	.	.	2	
Poaceae, LMB	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Poaceae, STM	5	10	.	.	.	10	10	1	10	.	10	.	.	.	1	.	.	.	.	6	.	.	1	10	12	.	5	10	.	10	10	10	5	.	.	10	10	10	.	.	.	.	10	10	10	3	1	.	1	1	1	.	10	.	1	.	.	.	10	.	
Poaceae, STB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Trifolium repens	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Shrub vegetation																																																														
Cornus sanguinea, FRS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Cornus sanguinea, FRS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	
Corylus avellana, NTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	3	.	.	
Crataegus monogyna, FRS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Malus sylvestris	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	
Malus sylvestris, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.	.	1	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	1	.	1	*1	1	.	.	.	.	.	.	1/4 apple
Prunus spinosa, FRS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	1	4	1	6	1	4	1	1	1	3	2	.	1	6	1	10	4	1	.	1	.	.	6	1	.	.	.	1	1	.	.	.	.	.	.	2	.	1	2	
Prunus spinosa, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1	1	.	.	.	.	.	.	.	.	
Rosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Torilis japonica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Urtica dioica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	
Woodland																																																														
Alnus, CAT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	
Moehringia trinervia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	
Various																																																														
Althaea/Malva	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	
Caryophyllaceae	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
cf. Persicaria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Chenopodiaceae	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	1	.	1	.	.	.	12	.	.	.	.	.	.	.	30	.	.	.	.	.	5	1	.	66	.	.	.	.	.	.	.	.	.	4	.	.	11	
Galium	.	.	.	1	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	1	.	1	3	.	.	.	1	.	12	.	.	.	.	.	2	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	
Lathyrus/Vicia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Luzula	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rumex	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	
Stellaria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	24	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	
Indeterminatae, NOT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	small gall?
Indeterminatae, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	17	.	.	.	.	3	.	.	3	.	.	.	.	20	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	15	8	1	parenchym
Indeterminatae, PAR	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	16	.	3	1	6	.	.	.	.	.	.	.	10	.	.	.	fruit parenchym
Indeterminatae, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	fruit parenchym (no Malus/Prunus)
Indeterminatae, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	fruit+root/tuber
Indeterminatae, PAR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	parenchym with epidermis
Indeterminatae, PAR	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	root/tuber frgm
Indeterminatae, PPM	.	.	.	.	.	3	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	1	.	.	6	7	5	.	5	.	.	.	.	.	1	.	.	.	.	.	1	1	4	.	.	.	.	.	.	.	2	.	.	6	.	.	processed plant material
Indeterminatae, TUB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	tuber fragment