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Sous la direction de
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AN OUTLINE OF THE SUBSISTENCE OF THE VLAARDINGEN CULTURE FROM THE NETHERLANDS

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INTRODUCTION

Today dozens of settlements of the Vlaardingen culture or group (further abbreviated as VL) are known from the Netherlands. Due to good preservation conditions the excavation of several of these sites has yielded numerous animal bones and botanical remains. The present article discusses what can be inferred from these archaeo-biological remains about the VL subsistence. It considers not only primary products, such as meat, but also includes a brief discussion of the extent to which animals were bred or hunted for secondary products, such as milk, traction and raw materials. Another point at issue is what the archaeobotanical and -zoological data tell us about the nature of the habitation. Are they, in other words, indicative of seasonal or permanent occupation, i.e. occupation by a social group of some kind through part or all of the year?

The sources used in this article are either borrowed from the literature or based upon our own research. The references to them can be found in tables I-IV. Not included in our investigations is a recently investigated VL site at Hazerswoude-Rijndijk, which has produced thousands of animal bones and botanical remains. At the time when this article was written, the reports on these ecofacts had not yet been concluded.

The present paper is a revised English version of a recent publication in Dutch (Brinkkemper et al. 2010). Of its kind it is not the first overview, as several researchers have given outlines of the VL before (e.g. Bakels & Zeiler 2005), whilst Louwe Kooijmans, in particular (e.g. 1993), has made an attempt to interpret the archaeobotanical and -zoological remains in terms of settlement differentiation.

THE VL: ITS DISTRIBUTION IN TIME AND SPACE

The VL is considered here as a separate archaeological culture, whose distribution within the Netherlands covers both the Western Coastal region and the Central River district (fig. 1). Both areas have, generally speaking, depositional conditions (a relatively high rate of sedimentation and high ground water tables) that favour the survival of archaeobotanical and -zoological remains. To the North of the VL the « territory » of the more or less contemporary West group of the Funnel Beaker Culture (usually abbreviated as TRB, as the Dutch and German terms are Trechterbeekercultuur and Trichterbecherkultur, respectively) is found, while in the South the Stein group borders the VL (fig. 2). Though Louwe Kooijmans (1983) has rightly pointed out the close resemblances in material culture of the VL and the Stein group, there are nonetheless differences between the two. In our opinion these dissimilarities are reason enough to distinguish the VL and Stein group as two separate archaeological entities (Van Gijn & Bakker 2005; Drenth et al. 2007, p. 121-122; Brinkkemper et al. 2010, p. 27-29). Whatever stance is held, it does not affect the present article, since the sites of the Stein group as depicted on fig. 1 have produced practically no archaeobotanical and -zoological remains.

With regard to figure 1, it should be noted that the sites have been plotted on a palaeogeographical map compiled by Vos & Kidern (2005) for the Netherlands around 2750 BC. Needless to say that such a reconstruction is coarse-meshed due to its scale and because it displays only one moment in time. Nevertheless it gives a general idea of the situation at the beginning of the third millennium BC and supposedly the end of the fourth millennium BC, showing how the environment differed from the present-day one.

There is not only disagreement about the demarcation of the VL in space but also in time. It is beyond doubt that, in the course of time, the VL was totally absorbed by the Beaker cultures. But various views are held as to when this process was completed. One opinion is that the completion had already taken place during the Single Grave culture (SGC), that is in the second quarter of the third millennium BC, most probably around 2650/2550 BC (Drenth et al. 2008). This idea of incorporation
subphases. **Lanting & Van der Plicht** (1999/2000, esp. 32-34) have postulated a somewhat different chronological scheme in which VL has three subphases (1a-c), since **Louwe Kooijmans** phase Ib has been split. Very recently **Beckerman** & **Raemakers** (2009) have proposed a chronological subdivision into an early, middle and late phase.

In view of the disagreement about the VL chronology we use here a simple subdivision of an early and a late phase. The early phase includes the phases VL 1a, 1b and 1c, as distinguished by **Louwe Kooijmans** and **Lanting & Van der Plicht** whereas our late phase equals VL 2a according to the definition of the aforementioned scholars. It remains to be seen when exactly the VL started.

In any case this must have been at some time in the second half of the fourth millennium BC (for example **Lanting & Van der Plicht** 1999/2000, 28, p. 32-33). Although the final date of the early VL, as used here, is also unknown, it must be after 2800 BC. The late VL, as we define it, falls within the second quarter of the third millennium BC, although a start 50 years earlier cannot be completely ruled out. Around 2650/2550 BC the incorporation of the VL into SGC was completed, thereby marking the end of the former culture.

In conclusion, the present article sees the VL as an archaeological culture, whose onset must be sought some time in the second half of the fourth millennium BC and its end in the second quarter of the third millennium BC (most probably around 2650/2550 BC). Within the Netherlands its distribution encompasses in essence the Western Coastal district and the Central River district. The next section will briefly elucidate the main environmental settings that the VL inhabited within these two regions.

**LANDSCAPE**

Physical geographical explorations into the abiotic environment of VL settlements have demonstrated a varying site location. A considerable number of settlements are situated on levees of creeks and rivers, such as those at Vlaardingen, Hekelingen and Barendrecht-Zuidpolder (Vlaardingen : **Van Regenbergen & Altens** et al. 1962, p. 23-28; Hekelingen I : **Bennema** 1953; Hekelingen III : **Louwe Kooijmans** 1986, p. 13; Barendrecht-Zuidpolder : **Huijser et al.** in press). River dunes were also inhabited, e.g. the Hazeodonk (donk = river dune) at Molenaarsgraaf (**Louwe Kooijmans** 1974). In all these cases, elevated locations in an extended fresh-water swamp behind the coastal dunes were chosen. True coastal sites are those at Haamstede-Brabers, Leidschendam-Priessenhof, Rijswijk and Voorschoten. These are situated on dunes that were deposited upon beach barriers (Haamstede-Brabers : **Verbark** 1992, p. 75; Leidschendam-Priessenhof : **Glaserberg et al.** 1967b, p. 98-99; Voorschoten-Boschgeest : **Glaserberg et al.** 1967a, 7; Rijswijk : **Koenders & Van Dierk** in press).

Apart from these, a VL settlement on a ridge in a salt marsh has been excavated at Hellevoetsluis-Oosthoek (**Goosen** 2009). An example of a VL site in a salt- to brackish-water environment has been investigated at Zandwerven (**Drenth & Lanting** 1997, p. 56). This settlement was probably located on a sand dune. Finally, the settlement site in Ewijk-Ewijk-Veld occurs in the Central Dutch River area, on a levee (**Jansen** 1989, p. 135).

Information related to the biotic landscape of VL sites is mainly derived from palynological studies. Next to pollen, botanical macroremains, wood and faunal remains provide information about the environment. Palynological data is available from the Hazendonk, Hekelingen, Leidschendam-Priessenhof, Vlaardingen and Voorschoten sites (**Van der Wilde** 1983; **Floedtsch** 1953; **Groenman-van Waateringe et al.** 1968; **Van Regenbergen & Altens** et al. 1963; **Groenman-van Waateringe et al.** 1968). In all instances, alder dominates the tree pollen spectra. The sites must have been situated in a generally wet environment. On the higher parts of the landscape, oak occurred as the dominant tree. During habitation phases, these drier forests seem especially to have been affected by deforestation, most possibly by man. Anthropogenic indicators (cereal-type, crop weeds, and others) often increase during phases of habitation recorded in the different pollen diagrams.

Waterlogged botanical macroremains provide the most reliable information on the near surroundings.
of the settlements. Where such remains are available in adequate numbers (Hazendonk and Hekelingen), they substantiate the picture of the wet environment that showed up in the palynological studies. Most of the excavated VL sites are located in a landscape dominated by alder carr and eutrophic, fresh-water marshes. Bakels (1968, 1) summarised this environment as follows: narrow river dunes to ribbon-shaped levees and stream ridges constituted drier elements in an otherwise swampy landscape.

**The subsistence from an archaeo-botanical perspective**

In order to gain insight into the subsistence, and thereby possibly into the VL settlement system information from settlements excavated so far has been gathered together (tab. 1). Data for eleven different sites are available (for references, see tab. 1). From several other sites only a few samples have been analysed. For example, both from Rijswijk-Schaapweg (Van Haaster in Van der Breeke 2002) and Rijswijk-de Schulp (Koertstra 2006), two samples from VL context were assessed, but not selected for full analysis on the basis of the poor preservation. From the three sites excavated in Rijnwijk, only from Schaapweg were (two) samples analysed.

The small dataset only allows us to sketch a broad picture of the plant part of the subsistence. This is among others due to the fact that, even in the sites that are investigated, usually per site only a limited number of samples have been analysed and published. Relative positive exceptions are the Hazendonk and Barendrecht-Zuidpolder sites with twelve and ten investigated samples, respectively; we can speak of a reasonable amount of information here. In the case of Hekelingen III, the settlements were intensively sampled and analysed, but the analyses of only a few samples have been published in a preliminary publication (Bakels 1988).

Not only is the archaeobotanical knowledge about the VL determined by the state of publication, but also by research tradition. To give an example, the dwelling sites at Vlaardingen and Zandwerven were excavated in the 1960s, when it was not yet customary to collect and analyse larger number of samples. Moreover, not all publications present the same level of information. Botanical material from Voorschoten- de Donk and Ewijk-Ewijkse Veld have been briefly mentioned in the archaeological publications in question, but it can be questioned whether all available data are published.

The settlement of Hellevoetsluis-Ossenhoek, excavated in the present framework of ‘Malta-archaeology’ shows that the state of affairs is also a matter of finances. Despite the availability of eight samples for archaeobotanical analyses, only four have, in the end, been analysed. The allocation of finances can be questioned here, as not less than 185 sieved residual strom excavated squares have been studied. The method of analysis of these latter residual strom is not mentioned, but the remains found suggest a minimum of 2 x 2 mm. Chaff remains are generally smaller, and they could have passed the sieves unseen. Analysis of the four de-selected samples might have provided more information than just another sample with some carbonised naked barley grains.

With the exception of the hardly studied sites of Voorschoten and Ewijk-Ewijkse Veld, all sites have yielded cereal remains. It is remarkable that the relatively well-studied settlement at Barendrecht has only yielded one single cereal grain, which belonged to naked barley. The remaining sites steadily produced a combination of naked barley and emmer wheat. In an archaeobotanical overview for the Netherlands Van Zeist (1968, p. 58) has mentioned the presence of hulled barley for VL2014. Van Zeist noted the presence of two asymmetrical grains as being indicative of this form of barley. But asymmetrical grains occur both in hulled and in naked barley. In the same treatise Van Zeist draws attention to a considerable number of similarly asymmetrical grains coming from the VL settlement of Zandwerven, which he nota bene assigns to naked barley. It is obvious that Van Zeist’s determination of the two asymmetrical grains from Vlaardingen is highly questionable, all the more so since other Dutch Neolithic sites have yet to produce remains of hulled barley.

The proportion of naked barley and emmer wheat varies between the sites. In most cases, barley predominates, but emmer wheat is more common at Vlaardingen and Hellevoetsluis-Ossenhoek. Of the two, emmer is much more demanding with respect to soil fertility. It is also much more sensitive to saline conditions (Bottema et al. 1980; Van Zeist et al. 1976). Barley on the other hand is a more suitable crop for wet environments (Koerkelj-Grohne 1987, p. 46; Brinkemper 1993, p. 125). However, the environmental situation at Vlaardingen and Hellevoetsluis, both located close to the Dutch coast, makes it unlikely that the circumstances were less saline than at e.g. Hazendonk and Hekelingen. At the moment, the dominance of emmer wheat in the two aforementioned sites is therefore a riddle. This is particularly curious since, in an archaeobotanical study of Early and Middle Neolithic wetland sites from the Netherlands, Out (2009, p. 421) has observed a positive correlation between the dominance of barley and a large saline influence.

Apart from naked barley and emmer wheat, grains of unidentifiable cereals have been discovered here and there. These are supposedly derived from one of the two species. One carbonised grain of oats has been attested for the Vlaarding site. Owing to the absence of chaff remains, it cannot be ascertained whether this grain is from cultivated or wild oats. Since cultivated oats has not been demonstrated in the Netherlands with certainty before the Iron Age, it presumably belongs to the wild crop weed here. With regard to the crop plants, mention should moreover be made of a single seed of linseed/flax that was recovered at Hekelingen III. Finally, one seed of opium poppy comes from Vlaardingen.

An extensive analysis of (potential) crop weeds may shed some further light on the question whether crops were imported or cultivated locally. In the relatively well-studied site at Hazendonk, some wild plant species that are considered today as crop weeds occur commonly. These are redshank, pale persicaria, fat hen and fig-leaved goosefoot. Less frequent are black bindweed, chickweed and black nightshade. These species are ecologically rather unspecific, so information about the location of arable fields cannot be inferred and besides,
some might well have grown in and around the settlement.

On the basis of only a single carbonised cereal grain found in ten samples from Barendrecht-Zuidpolder, Bakels (in press) assumes that this was not an « agricultural settlement ». However, since hardly any carbonised botanical macroremains have been found here at all (but lots of waterlogged ones), it remains in our opinion to be seen whether this far reaching conclusion can be drawn.

It is very possible that the VL inhabitants worked the soil of their arable fields by means of an ard, as ard marks have been found at Hellevoetsluis-Ossenhoek (fig. 3). Up to now, this is the only unequivocal example of ard marks for the VL. One should in this respect bear in mind that ard marks survive only occasionally and are difficult to date (DRENTH & LANTING 1997, p. 59).

The wild plant community may well have contributed to the provisioning of human food, too. Nuts from hazel and fruits from sloe appear to have been eaten as well. But in view of their scarce occurrence, they cannot be considered as staple food plants. OUT (2009, p. 363) argues that all collected fruits in Middle and Late Neolithic are from local provenances. Nowhere have species been found that cannot have grown locally.

In comparison to Late Mesolithic and Early Neolithic sites in the Netherlands, the remains of water chestnut and lesser celandine (both suitable for consumption) occur rarely in VL settlements (cf. Out, 2010, p. 442). The absence of water chestnut will have natural causes. This thermophilous species will hardly have been available after the end of the warmer Atlantic period, i.e. around 3800 BC, having therefore largely disappeared before the start of the VL.

The amount of archaeobotanical information from VL sites is so limited that it is impossible to discern diachronous trends. Yet, seen from a long-term perspective a trend becomes apparent. In the course of the Neolithic the proportion of wild plants decreased (OUT 2009, p. 361-363). Accordingly, the share of edible wild plants within the assemblage of gathered botanical remains is smaller at VL times than during the preceding Swifterbant culture and Hazendonk group. OUT argued that this absence is not caused by the number of species investigated, the dimensions of the find layers and/or the function of sites. OUT’s explanation is a shift within the subsistence, although she admits that environmental changes in the landscape due to intensifying use might have affected availability adversely.

THE SUBSISTENCE FROM AN ARCHAEOZOOLOGICAL PERSPECTIVE

There is archaeological data from about a dozen settlements (fig. 4). However, much can be used to reconstruct the VL subsistence. However, such a reconstruction is hampered in several respects. Firstly, the sites under consideration have not been excavated in the same way. This implies that a simple one-to-one comparison of data is out of the question. In particular, in the case of the early investigations no sieving was carried out (OUT, 2009, p. 50 in appendix 3). In contrast, mature acorns are edible, but they need to be roasted to remove the poisonous tannin. Carbonised acorns are therefore most probably related to consumption, but for waterlogged acorns this need not to be the case. Because the acorns and cupules at Hazendonk are mainly waterlogged and some of them are immature, they need not necessarily have been collected as food.

Dogwood and hawthorn, which both have edible fruits, wild apple, berries of (dog) rose, blackberries and dewberries, will all undoubtedly have been eaten as well. But in view of their scarce occurrence, they cannot be considered as staple food plants. OUT (2009, p. 363) argues that all collected fruits in Middle and Late Neolithic are from local provenances. Nowhere have species been found that cannot have grown locally.

A second obstacle in the comparison of data is that in several studies, once again in particular the ones of early date, only the number of bones is given. In other words, their weight is not mentioned, whereas this is a better indicator of the meat a species yields than the number of bones, since weight is a variable which is not affected by the degree of bone fragmentation.

Apart from shedding light on meat consumption, faunal remains can be informative about secondary products, that are animal products other than meat, such as is the case for wild boar. In most cases only lower limb bones and skulls have been discovered at VL settlements, indicating that as a rule brown bears were skinned outside the dwelling places (ZIELER 2010, p. 54). Moreover, most of the remains were hunted for their fur rather than for their meat. As far as bone and antler tools are concerned, it is a well-known fact that a broad spectrum of implements was manufactured from these raw materials. Illustrative of this are awls, spatulate and axes (VAN GIN & BAKERS 2005, p. 294-296). The frequencies of worked bones from wild and domestic mammals seem to correspond to the overall bone frequencies. At Hekelingen III, where hunting played an important role in the subsistence, the majority of the bone tools come from wild mammals, especially red deer and roe deer (HOSKINS 2005). It appears that hunting was less important, most tools are made of domestic animal bones.

The state of affairs is such that at least at one VL site ard marks have come to light, namely at Hellevoetsluizen-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age. The state of affairs is such that at least at one VL site and marks have come to light, namely at Hellevoetsluis-Ossenhoek (fig. 3). Presumably cattle were used for traction (see in this connection PERSSELIJN et al 2006). To what extent cattle were bred by the VL for milk production remains to be seen. The age profiles give no indications in this respect. At all sites, the numbers of remains of young calves are quite low; the majority was slaughtered at a later age.
### Table II: Identified mammal bones (numbers and - if available - weights) from VL settlements, with a further chronological indication; N = number of remains; BW = weight in g.

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<tr>
<th>Location</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tr>
<td><strong>Bones which cannot with certainty attributed to domesticated or wild animals</strong></td>
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<td><strong>Equid?</strong></td>
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<td><strong>Wild ungulates</strong></td>
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<td><strong>Aurochs (Bos primigenius)</strong></td>
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<td><strong>Wild boar</strong></td>
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<td><strong>Horse (Equus ferus caballus)</strong></td>
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<td><strong>Otter (Lutra lutra)</strong></td>
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<td><strong>Beaver (Castor fiber)</strong></td>
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<td><strong>Martes sp./Martes foina</strong></td>
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<td><strong>Brown bear</strong></td>
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<td><strong>Wildcat (Felis silvestris)</strong></td>
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<td><strong>Sea mammals</strong></td>
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<td><strong>Whale (Cetacea)</strong></td>
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<td><strong>Sperm whale</strong></td>
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<td><strong>Bottle-nosed dolphin</strong></td>
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<td><strong>Common porpoise</strong></td>
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<td><strong>Halichoerus grypus</strong></td>
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### References for Table II:
- Barendrecht-Zuidpolder: [Brinkhuizen and Zeiler 2000](#)
- Ewijk-Ewijkse Veld: [Brinkhuizen and Zeiler 1997](#)
- Hazendonk: [Brinkhuizen and Zeiler 1997](#)
- Hekelingen I: [Clason 1967](#)
- Hekelingen II, "phase 1": [Clason 1967](#)
- Hekelingen III, "phase 2": [Clason 1967](#)
- Hekelingen III, "phase 3": [Clason 1967](#)
- Leidschendam-Prinsenhof: [Groenman-Van Waateringe 1968 and 1971](#)
- Rijswijk-de Schilp: [Kootner & Van Dijk, in press](#)
- Voorschoten-Boschgeest: [Clason 1967](#)
- Zandwerven: [Clason 1967](#)

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### Table III: Identified bird bones (numbers) from VL settlements. For a further chronological indication and references see Table II.

* The swan bones from Hazendonk could not be identified more specifically than as « mute swan or whooper swan ».
provided excellent grazing areas (see above). It is therefore not surprising that the faunal assemblages from Voorschen-Boschgeest, Leidschendam-Prinsenhoft and Rijswijk-de-Schlip indicate that cattle breeding provided the main source of animal protein. The finds from Hellevoetsluis-Ossenhoek point to a closely related subsistence: cattle breeding had a leading part and there was a minor, though not unimportant role for hunting, fishing and fowling (especially ducks). Eel outnumbers all other fish species except sturgeon, indicating that for fishing mainly fykes (long, bag-shaped fishing nets held open by hoops) were used. Fishing was consequently first and foremost done passively (Van Duij 2009; Beerenshoudt 2009).

The situation at Ewijk-Ewijks Veld seems to have been different, certainly in comparison to the settlements in the fresh-water swamps. The (near) absence of fish and bird remains may result from the fact that the bones were not collected by sieving. However, this would not explain the low percentage of wild mammals. The fauna spectrum is dominated by pigs and cattle, followed by sheep/goat. Apparently meat was first and foremost provided by stock breeding, in particular of cattle. A similar picture emerges for Zandwerven, although it should be borne in mind that only c. 50 bones were collected during the investigations; there was no sieving done. With the exception of a handful of bird remains and a bone from a bottle-nosed dolphin, the finds all derive from domesticated mammals. Among them, those of cattle prevail, and the remainder includes bones from pigs and sheep/goats.

CONCLUSION AND FINAL REMARKS

To summarise the archaeobotanical evidence, the emphasis lay, as far as cultivated crops are concerned, on emmer and naked barley. There is evidence that the ard was used for cereal cultivation. The array of species hitherto discovered hints further at the local gathering of wild edible plants. In contrast to other Neolithic periods, information from VL sites concerning consumption of roots and tubers is still lacking.

The archaeozoological data indicates that the focus was on cattle in the regions with extensive grazing areas, whereas the settler's small river dunes in the fresh-water swamps attest more to hunting on wild mammals. Presumably fishing also played a more important role in the wetlands, but since sieving on ‘dry’ sites has yet to be done, this remains to be seen.

From the above emerges the picture of a close correlation between subsistence and the local environment during VL times, but other inferences cannot (yet) be made, e.g. about diachronic developments within the VL subsistence. The large majority of the data must be attributed to the early VL. Furthermore, given the fact that the VL inhabited various milieus, a diachronic comparison should start from a regional perspective. But a severe drawback is that the environmental settings of at most a handful of settlements are known. From both the Central Dutch river area and the salt water to brackish-water environment in the province of Noord-Holland there is only one settlement with faunal remains. Another obstacle is the current lack of consensus about the VL chronology. It goes without saying that this hampers not only a diachronic study but also prohibits far-reaching statements about possible relations between the regions in question. In this connection, a systematic archaeozoological analysis of skeletal element representation, with respect to the richness in meat, in relation to site differentiation could be very useful. Until now, such an analysis has not been carried out for the VL.

Given these constraints, it will come as no surprise that we furthermore refrain from any statements about seasonal or permanent occupation. What is more, it is equally problematic to decide this matter on the basis of archaeological evidence other than botanical and zoological (Bakels et al. 2010, p. 42-47).

One of the crucial issues in a study on VL subsistence is of course to what extent the diet consisted of plant and animal products. Due to the scarcity of data we do not dare to make statements about this. Models which are often used for younger periods (e.g. Bakels 1986) offer no solution. They are based upon the number of cattle stalls and granaries, structures of which there is at present no respectively hardly any evidence for the VL. Apart from that, the significance of wild plant food cannot be deduced from the excavated structures. The best perspective to reconstruct the VL diet is therefore isotope analyses of human bones. This may tell the share animals and plants had in subsistence. But up to now such human bones are a rarity for the VL.

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Résumé


*Mots-clefs* : culture Vlaardingen, subsistance, paysage, Pays-Bas.

Abstract

Excavations of several settlements belonging to the Vlaardingen culture in the Netherlands have yielded amongst other things animal bones and botanical remains. These remains yield information about the subsistence of the Vlaardingen people, in terms of both primary and secondary products. They provide evidence of husbandry, hunting, agriculture and the gathering of edible plants. It seems that first and foremost sources were exploited that were locally or regionally available. Unfortunately from the present dataset the question of permanent/seasonal occupation, that is habitation during the whole year or not, cannot be answered.

*Keywords* : Vlaardingen culture, subsistence, landscape, the Netherlands

Zusammenfassung


*Schlagwörter* : Vlaardingen-Gruppe, Lebensunterhalt, Landschaft, die Niederlande.

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