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A settlement in transformation
Local typology at Lida äng settlement, Södermanland, Sweden, c. 100 BC–AD 550

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The principal aim of this article is to obtain an understanding of the structure and changes of the Iron Age settlement at Lida äng, Södermanland, Sweden, by means of a thorough typological evaluation. Many of the Iron Age settlements in eastern central Sweden dating from c. 500 BC to AD 400 are situated in soil that has been intensively cultivated and ploughed. It is thus seldom possible to deduce a stratigraphical sequence between the houses or to distinguish contemporaneous houses from replacement ones. It is shown here that several of the radiocarbon dates could not conceivably apply to the houses from which the material was collected. The sampling strategy shed doubt on relying on radiocarbon dates when more precise information on the age of buildings is needed. Instead an attempt is made to reconstruct the settlement on the basis of architectural changes. A rough division could be made in terms of the trestle breadth/span length (tb/sl) ratio, and together with an evaluation of gable construction this led to the identification of several surprisingly well-defined units, often with two houses placed perpendicular to each other. The settlement consisted of one unit throughout the pre-Roman and Roman Iron Age, moving every 30th–60th year. Several of the units consist of two multifunctional dwelling houses, making Lida an atypical settlement. It is evident, however, that additional information of significance for understanding the structure and development of specific settlements can be obtained by this method.

Keywords: Iron Age, three-aisled long houses, architecture, household archaeology, Södermanland, house typology

Introduction

Several settlement phases located closely to each other or partly overlying each other is a common situation at excavations of Early Iron Age settlements (c. 500 BC–AD 400)in eastern central Sweden. The uncertainty regarding the relative order or simultaneity of such structures can greatly reduce the possibilities for reconstructing Early Iron Age settlements in this region. One of the reasons for these difficulties in dating is that the stratigraphic sequences cannot be recorded because most of the Early Iron Age farms that have been excavated are situated in modern agricultural fields where ploughing over a long period of time effectively has erased most traces of any cultural layer. The top parts of the features and their stratigraphic relationships to other contexts are therefore missing, and when the features do become visible after top-soil stripping the only sequence that can be documented is their intersection with the underlying clay. Since the houses dating from that period largely were post-built structures, it is even difficult to deduce the relation between two superimposing houses unless some features intersect each other. An additional problem is that there often are uncertainties regarding the connection between the radiocarbon dates and the actual

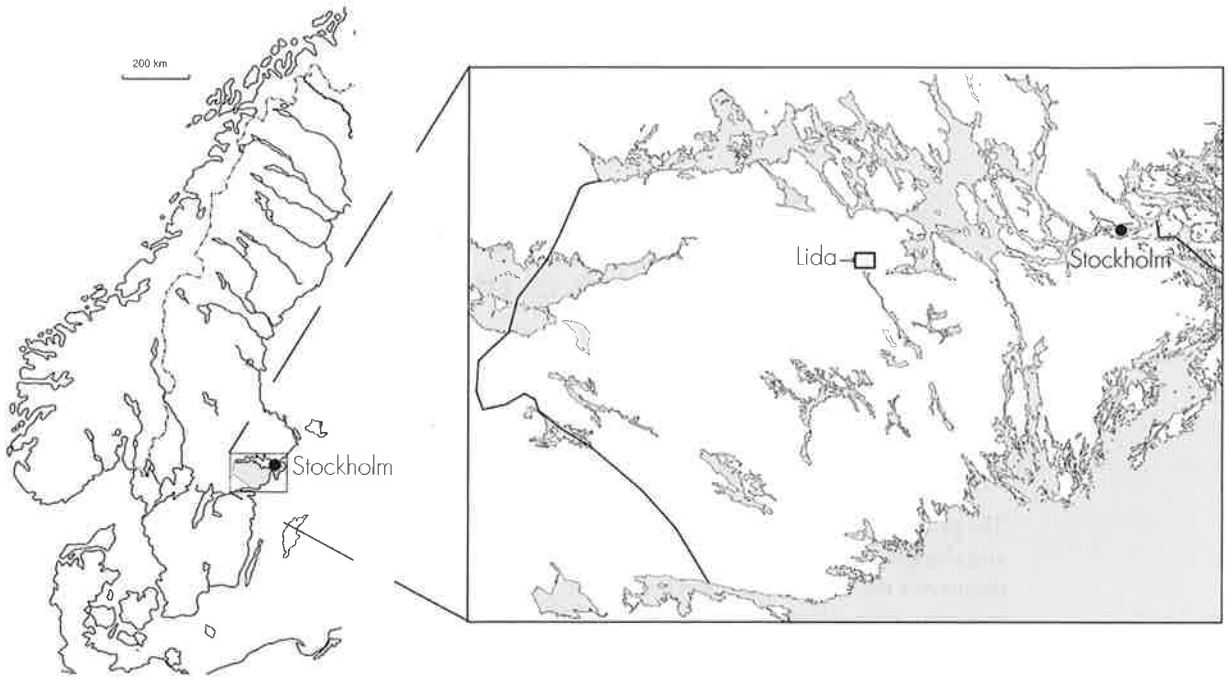

Figure 1. Map of Sweden and Södermanland. The square shows the location of Lida äng and the area shown in Figure 2.

house. Furthermore, there are several plateaus on the calibration curve for the period in question. These well known problems have made it rather too simple to include or exclude the radiocarbon dates that do not fit with (consciously or unconsciously) preconceived ideas of the typological traits or structure of the settlement.

All this implies obvious problems when discussing the size and extent of Early Iron Age settlements. A farm that shifts location gives similar remains to those yielded by a hamlet when all traces are seen as contemporary. The current house typology is good enough for distinguishing a number of house types (Göthberg 2000), but the dates of these house types often cover rather long time spans of up to 300 years. Considering that the median life of a house has been suggested to be anything between c. 30 and 150 years (see Ramqvist 1983; Hvass 1985; Björhem & Säfvestad 1993; Hamerow 1995) the same material can be seen as representing either nearby farms or successive farms. This article discusses some of the pros and cons of different methods for dating the Early Iron Age settlement of Lida äng in Södermanland, Sweden. Although the radiocarbon dated material is extensive, principal use is made here of typological traits in order to be able to discuss the size and extent of the settlement.

The settlement at Lida äng

Lida is one of rather few excavated settlements from Södermanland that are located in clayey soil. The percentage of Early Iron Age settlement situated in clay compared to till soil is much higher in the neighbouring districts Uppland and Västmanland. It seems as if there where more common to build on till soil already during the pre-Roman and Roman Iron Age in Södermanland compared to Uppland and Västmanland. Examples of Early Iron Age farms on till soil in Södermanland is e.g. Snytberga, Härad parish (Ekman & Neander 1994); Skavsta, S:t Nicolai parish (Olausson 1994) and Albertsro, Åker parish (Franzén & Schützler 2000). Both Snytberga and Albertsro are located close to Lida. However, the reason for that so few settlements in clayey soil has been excavated in Södermanland is probably partly dependent on where the larger infra-structural project and other larger building project has taken place during the last two decades. And most likely the relation between Early Iron Age settlements on till soil compared to clay soil will even out also in Södermanland. However, in focus for this article are settlements located in clayey soil.

The excavations carried out at Lida äng (see Fig. 1–2) during the years 1993, 1994 and 1995 covered

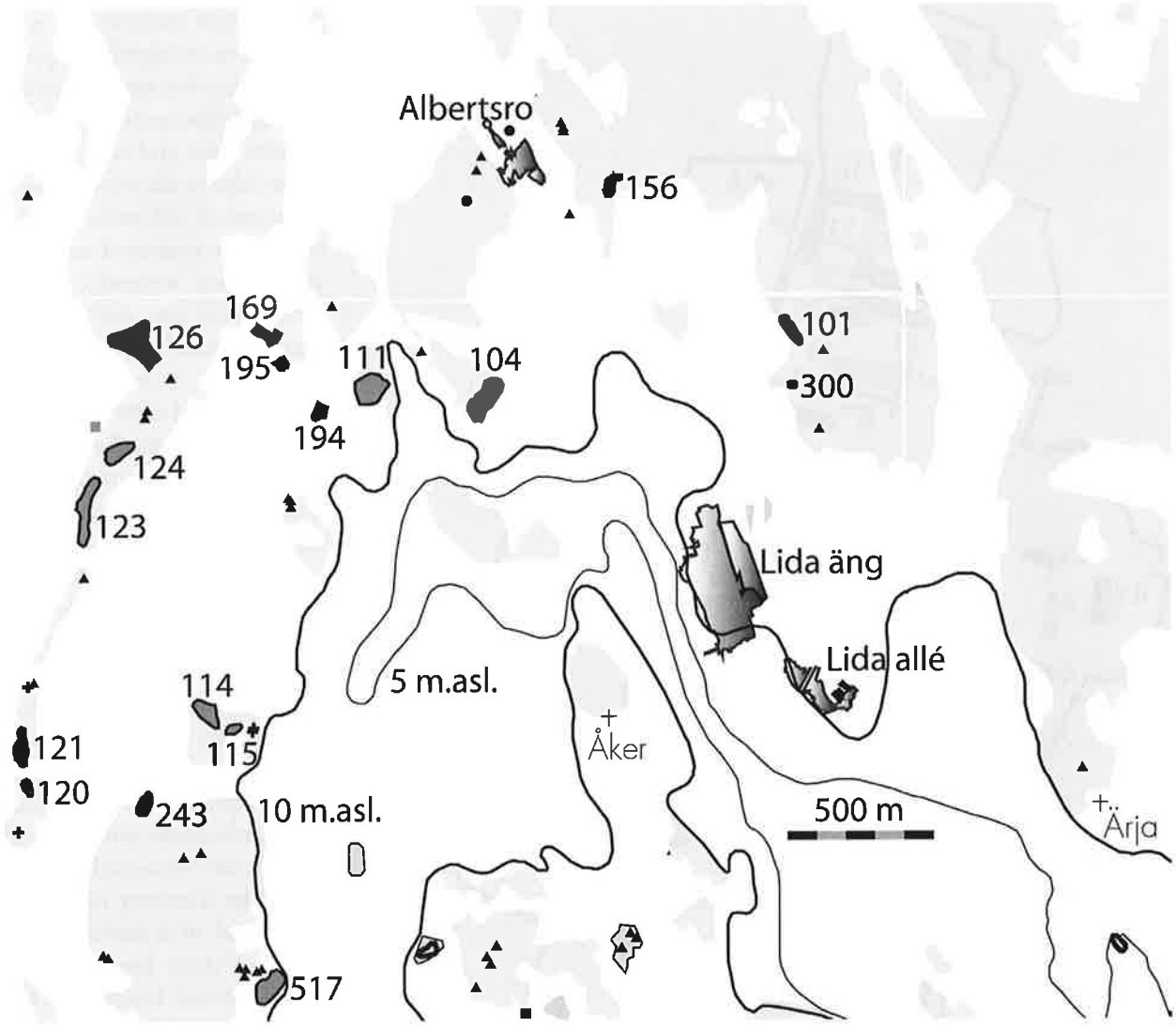

Figure 2. The central area of Åker parish. The excavated areas are shaded. The light grey indicates till soils or hilly areas, while the white indicates farmland. The dark grey areas are cemeteries with their corresponding Raä numbers. The 5 m a.s.l. and 10 m a.s.l. contours are marked. Iron Age settlements have been excavated at the nearby sites of Albertsro and Lida allé (Asp & Skär 1996; Franzén & Schützler 2000; Nilsson 2001).

a total of 32 three-aisled houses, 3 sunken floor huts and 8 houses of other constructions, together with a cemetery comprising 59 graves (Asp & Skär 1996; Grundberg & Grön 1998; Appelgren et al. 2002). Twenty of the graves were dated by finds of artefacts to the Migration Period–Vendel Period. Several of the remaining graves were dated to the Roman Iron Age.

All the houses, numbered in accordance with the excavation reports, are shown in Figure 3. The ages quoted in the reports were based on both radiocarbon dates and typological traits (Appelgren et al. 2002). Eight fences of varying lengths could be identified at the settlement, while the features numbered *95*, *100* and *d* are rows of hearths and *P1* is a more solid fence. The remaining features include 2026 postholes, 1662 stake-holes, 298 hearths and 7 wells (Appelgren et al. 2002). The large number of features sometimes makes it difficult to discern which belong to one and the same structure. If we add the problem that some postholes have been erased by ploughing, it is likely that some of the houses that existed at the settlement could not be identified at all during the excavation. I have studied the houses at Lida äng mainly on the basis of the interpretations made in the excavation report, although I have made reinterpretations in some cases. The primary areas with multiple features that might conceal more houses are an area between house 22 and house 7, a streak of features running southwest

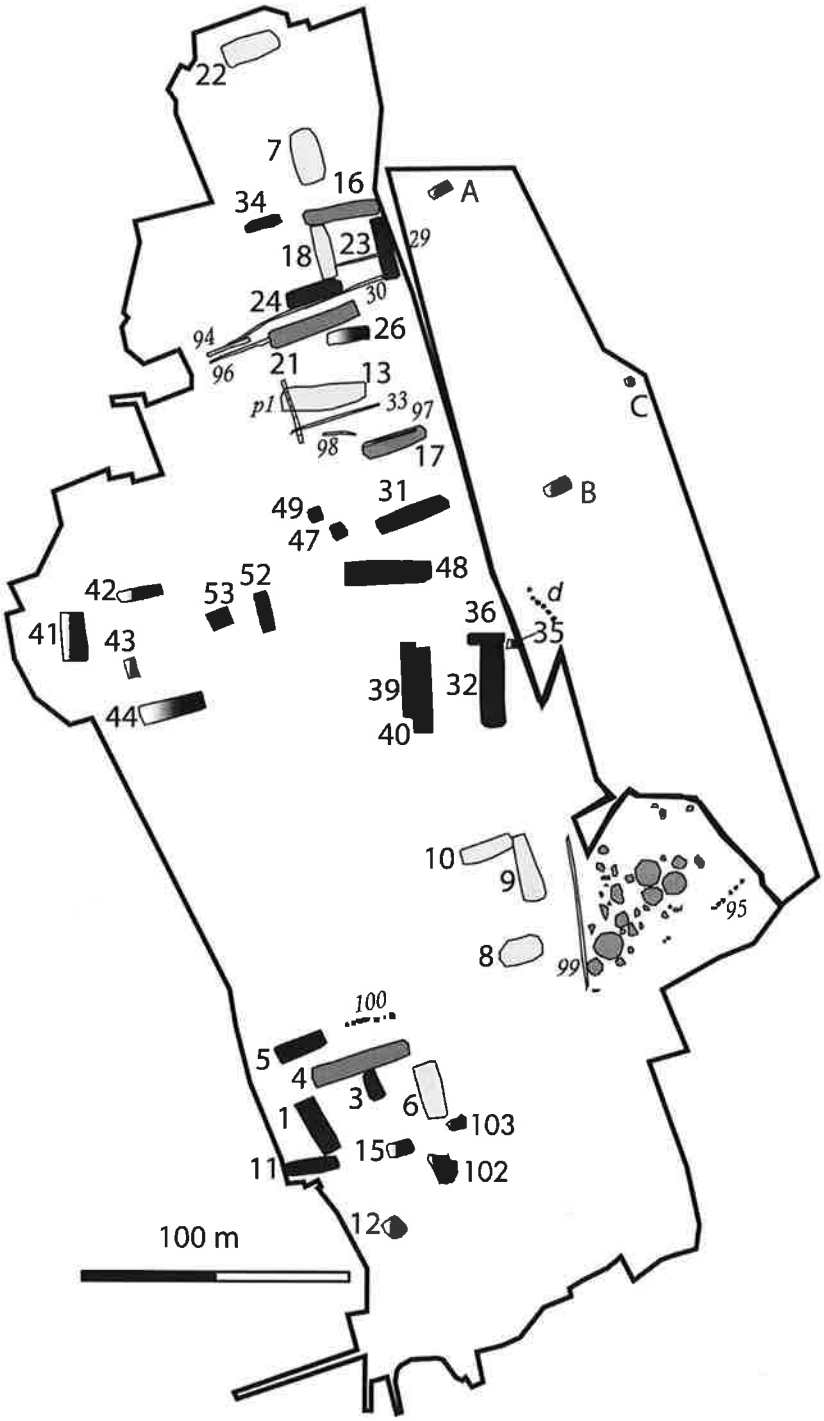

Figure 3. Plan of the area excavated at Lida äng, with all houses identified, after Appelgren et al. (2002) and Grundberg & Grön (1998). Light grey: Phase 1, Medium grey: Phase 2, Dark grey: Phase 3, Shaded: not dated. Numbers in italics indicate fences and rows of hearths. Constructions shown in letters are from the first excavation (Grundberg & Grön 1998). Phases according to Appelgren et al. (2002).

between houses 31 and 49 and down over house 48, an area around house 32, one area just south of house 32, and finally an area around houses 3 and 6.

The most common soil type in the area excavated was post-glacial clay, but two somewhat elevated areas, one in the south-western part and one further north, also in the western part, consisted of till soils. North-east of the excavated area was yet another, somewhat larger elevated till area that had remained uncultivated. Here the foundations of a house were uncovered and c. 40 cup marks were identified on the bedrock surface during a preliminary excavation (Appelgren et al. 2002).

An important consideration when studying Early Iron Age settlements is the extent of the settlement. Since in the case of a rescue excavation the borders of the area investigated will depend on the size of the area to be exploited, the clay situated settlements often extend outside the excavated area. It would be incorrect to discuss the spread of a settlement in terms of static borders; what are of interest instead are the limits beyond which we do not expect to find any more contemporaneous houses. In the case of Lida we have a good boundary for the settlement in the west, coinciding with the 10-metre above sea level (m a.s.l.) contour line, as shown in Figure 4. This corresponds roughly to the shoreline around the BC/AD transition, while the sea level at ad 1000 roughly corresponded to the present 5 m a.s.l. contour. Hence it is clear that the settlement was delimited to the west by water during the earliest phase of its existence, and that the area to the south of it was probably swampy. Some trenches were opened during the preliminary excavations that lay outside the final excavation area. These

could not delimit the settlement entirely, since some scattered postholes were to be found both to the north and to the south of the excavated area proper. The concentration of features was, however, greatly reduced (Appelgren et al. 2002). The area east of the north-eastern till elevation was not affected by the exploitation. Although the traces were already diminishing in the eastern part of the excavated area a continuation of the settlement to the east cannot be excluded. The boundary of possible settlement remains in the west and south becomes more uncertain during the Migration Period since a larger area had become exploitable through the land upheaval by then. All in all, it seems that the excavations cover the bulk of the settlement as it existed during the late pre-Roman Iron Age and up to the Vendel Period.

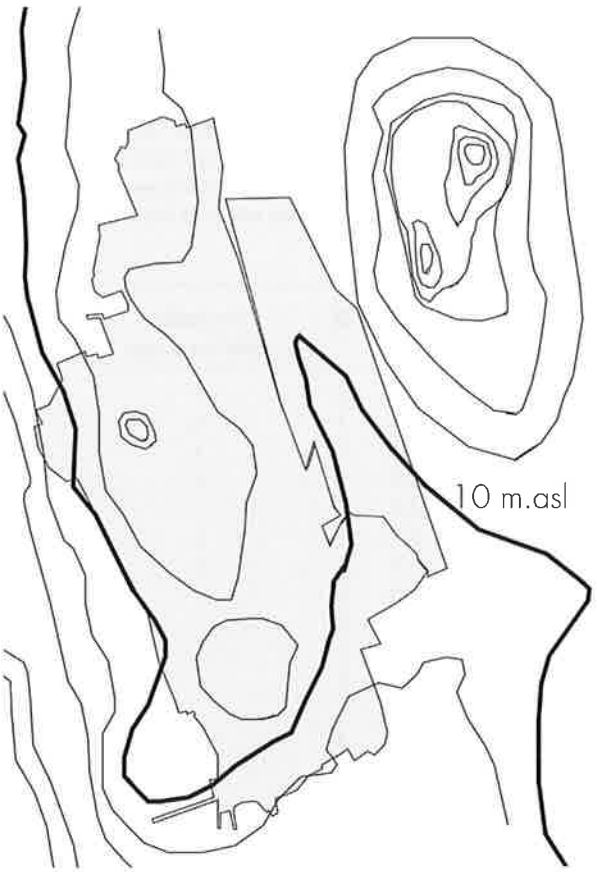

Figure 4. Topographic map of the vicinity of the Lida äng settlement. The excavated area is coloured grey, and the thick black curve is the 10 ma.s.l. contour. The figure is based on maps of the preliminary trenches, contours at 1 metre intervals and the area eventually excavated (Appelgren et al. 2002).

Radiocarbon dates – a matter of trust

A total of 106 samples from the Lida äng excavation were radiocarbon dated, mainly specimens of charcoal from features such as postholes, hearths and wells. This made it possible to create and test a model of how the settlement changed over time and to test the validity of the dates as representations of the ages of the houses. Uncritical use of the radiocarbon analyses to date Iron Age houses without taking the circumstances of the sampling and the character of the sample into consideration can be misleading (e.g. Norr 1998; Göthberg 2000) and is considered in the excavation report (Appelgren et al. 2002). The sources of errors that are stressed include the fact that the age of the material analysed is unknown (e.g. in the case of charcoal) and that the connection between the material and the structure that is to be dated is often unclear. The first test of a radiocarbon analyses should be to see if the dates concerned can be interpreted as applying to the same structure in the cases where more than one sample from the same house is analysed. If not, there are obvious reasons to mistrust the radiocarbon analyses as representing the age of any individual house.

Test of the reliability of radiocarbon results for dating the houses

The test and calibrations were performed using OxCal 3.5 and the IntCal04 calibration curve (Bronk Ramsey 2001; Reimer et al. 2004). When several dates are combined (i.e. more than one sample from the same structure has been analysed), the R_Combine procedure was used, where OxCal performs a chi-squared test at the 0.05 significance level. In short, the test gives a statistical estimate of how close in time the radiocarbon results are. Results for the 17 houses at Lida for which more than one radiocarbon sample was analysed are presented in Table 1.

As can be seen in Table 1, the samples for 8 of the 17 houses most probably do not date the same house. In order to achieve a more accurate representation of the settlement phases it is necessary to return to the excavation reports and make a critical evaluation of the material selected for the radiocarbon analyses. The criterion is that the sample must come from a feature that constituted a part of the roof supporting construction and only samples of charcoal from pine and oak are of interest since these are the most suitable species for roof-bearing constructions.

The number of houses with more than one radiocarbon analysis that could be used was greatly reduced when this criterion was applied, so that only three houses now fulfilled the requirements. The probability

Table 1. Probability limits for the results of the radiocarbon dates for houses with more than one sample analysed relating to one and the same building. T<pl (probability limit) means that it is possible that the samples date the same construction, while T>pl means that the samples most probably do not relate to the same structure. In eight of the seventeen cases it is clear that the analyses do not relate to the same structure.

House	χ^2	df	Probably same structure
Lida 1	4.8	2	×
Lida 3	0.3	1	×
Lida 5	3.1	1	×
Lida 7	0.0	1	×
Lida 10	34.6	3	
Lida 13	3.7	1	×
Lida 16	3.6	1	×
Lida 17	9.0	1	
Lida 18	43.0	1	
Lida 21	2.5	1	×
Lida 22	57.6	1	
Lida 23	10.6	1	
Lida 32	0.2	1	×
Lida 39	4.9	1	
Lida 42	0.4	1	×
Lida 44	40.5	1	
Lida 48	9.3	2	

Table 2. Houses with more than one radiocarbon sample fulfilling the source criterion. The samples for house 48 most probably not relate to the same structure even though they met the source criterion.

House	χ^2	df	Probably same structure	^{14}C-samples
Lida 1	4.8	2	×	3
Lida 48	9.3	2		3
Lida 42	0.4	1	×	2

limits for these houses, presented in Table 2, nevertheless indicate that the samples in one of the houses (house 48) most probably do not date the same structure, which arouses doubts even about trusting samples that fulfil these criterions.

As demonstrated, the radiocarbon-material from a posthole often represents something other than the construction, and it is often unlikely that the dated material actually comes from the roof-bearing post. How, then, can we use the radiocarbon results from Lida äng? The probable reason for the differing results is that the charcoal taken for dating came from both earlier and later cultural layers. When the house was abandoned, the postholes were filled in with material from older cultural layers, and later on voles and worms etc. have brought charcoal from both earlier and later cultural layers. Unless it is possible to take samples from the annual rings of a carbonized roof-bearing post or at least a carbon sample that for certain comes from the roof-bearing post, it is more suitable to analyse material of shorter duration, such as carbonized cereal grains. This does however solve neither the problem of reshuffled soils that can result in that material from both earlier and later context might end up in the posthole. Nor the problem that if the macrofossils relates to the house it should be deposited in the upper part of the fill or where the post has stood. The fill on the side of the postholes this far down in the features got there when the house was erected. Nevertheless, even though the radiocarbon results cannot be used to date individual houses from the settlement at Lida, they give a fairly good idea of the time span during which the settlement was inhabited. In this case 92 out of the 106 samples were dated to an interval between 2100 and 1400 BP (c. 120 BC–AD 650), which gives a fairly convincing age range for the settlement.

House typology

Although some of the dates could be correct, refuting them altogether means that we have a chance to study changes in the settlement in an unbiased manner (that is, architectural changes, not necessary chronological changes). The typological data and other characteristics of the houses are shown in Table 3. The characteristics noted are the length and breadth of the house, presence of a hearth, presence of a clay plate, additional roof-bearing posts in the middle aisle, house type, gable construction, the balance of the roof-bearing construction and finally the trestle breadth/span length ratio (tb/sl ratio, see below).

House type

The house types follow the classification by Hans Göthberg (2000), which employs three characters (e.g. A3a):

The first character (A–D) defines the "balance" of the house, i.e. the relation between the breadth of the trestles and the total breadth (Herschend 1989). To calculate the balance of the house, the breadth of the

Table 3. Information on the houses identified at Lida äng, in descending order of tb/sl ratio. It was not possible to calculate the ratio for the houses at the bottom of the table. When the balance of the house was not possible to calculate, the trestle breadth is given in metres.

House	tb/sl ratio	Length (m)	Breadth (m)	Clay plate	Gable	Balance (trestle breadth)	House type	Hearth (n)	Extra roof-bearing post (n)
22	2.19	18	7.7	1	-	50%	A3c	2	3
7	2.11	15	-	1	-	(3.2 m)	A3a	1	1
6	2.05	11	-	-	-	(3.2 m)	A2a	1	-
13	1.83	24	-	1	-	(3.4 m)	A2a	1	3
8	1.59	13	7.5	1	-	44%	A2c	1	-
9	1.56	17/22	6.5	1	-	(3.2 m)	A3	1	1
18	1.56	16	-	1	-	(3.2 m)	A3b	-	2
21	0.8–1.24	28	-	-	-	(2.3 m)	A1 / B3c	3 (4)	-
23	1.16	21	5.2	-	-	42%	B3b	2	-
10	1.15	16	6.2	1	-	42%	A3b	2	1
16	1.14	25	-	-	-	40%	B3a	2	2
17	1.13	18	-	1	-	(2.3 m)	B3c	1?	2?
11	1.09	16	-	-	-	(2.0 m)	-	1	-
4	0.67	27	-	-	*Hörn 2*	(2.3 m)	B3a	-	-
34	0.66	11	-	-	-	(1.6 m)	B2	1	-
32	0.62	27	-	-	*Hörn 2/Rak 4*	(2.1 m)	B3a	2	-
52	0.60	12	6	-	-	34%	B1	-	-
44	0.58	21	-	-	*Hörn 2*	(2.9 m)	B1a	2	-
1	0.56	19	7	-	*Rak 3*	30%	B2	-	3?
40	0.55	26	-	-	*Hörn 2*	(2.0 m)	B1a	-	1
48	0.55	27	7.7	-	*Hörn 2*	26%	B3b	4	-
31	0.49	23	-	-		(1.5 m)	B1	-	-
42	0.49	15	-	-	-	(1.9 m)	B1	1	-
24	0.45	18	-	1	-	(1.5 m)	B1b	1	2
39	0.42	23	-	-	*Hörn 2*	(1.8 m)	B1a	-	-
5	0.37	17	5.6	-	*Rak 4*	38%	B1b	2	-
3	-	8	4	-	*Rak 4*	31%	B5b	-	-
11	0.65–0.80	14 (5)	-	-	-	(1.9 m)	-	1	-
12	-	4.5	4.3	-	-	-	One aisled	-	-
15	-	6.5	2.6	-	-	-	One aisled	-	-
26	-	9 (14)	-	1	-	(2.4 m)	Three aisled	1	-
35	-	2	2	-			Four-post house	-	-
36	-	7	-	-	-	(1.8 m)	Three aisled	-	-
41	-	12	4	-	-	(4.0 m)	D1b	-	3
43	-	5.5	3.5	-	-	(3.5 m)	D1b	-	-
47	-	3.8	3.8	-	-	-	Four-post house	-	-
49	-	3.8	3.8	-	-	-	Four-post house	-	-
53	-	7	5.5	-	-	-	One aisled	1	-
102	-	-	-	-	-	-	Sunken floor hut	-	-
103	-	-	-	-	-	-	Sunken floor hut	-	-
A	-	7	3.5	-	-	-	One aisled	-	-
B	-	c. 5	c. 10	-	-	(2.0 m)	Three aisled	-	-
C	-			-	-	-	Sunken floor hut	-	-

middle aisle (i.e. the trestle breadth) is divided by the total breadth of the house. If the ratio is lower than 0.5 (the breadth of the trestle is <50% of the total breadth of the house), it means that the house is under-balanced. A) stands for a house with an over-balanced or balanced three-aisled construction, B) for an under-balanced three-aisled construction, C) for a Viking Age or early medieval house, either three-aisled, hybrid three-aisled houses or one-aisled, and D) for one-aisled houses.

The second character (1–3) defines the span between the trestles in the house: 1) corresponds to a span length with regularly placed trestles, 2) defines houses that can be divided into two sections of different span

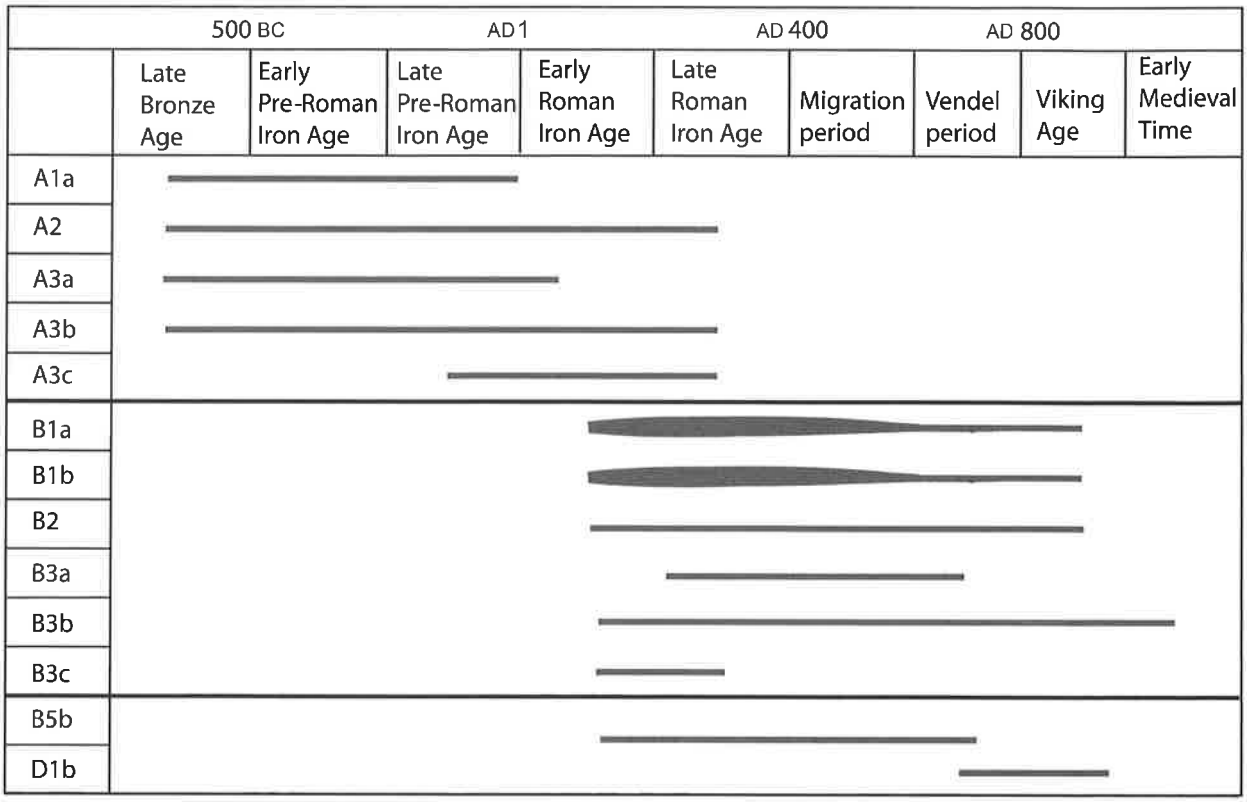

Figure 5. House types and their dating, based on Göthberg (2000:24–86). Only house types that were identified at Lida äng are included.

length, and 3) defines houses with three or more sections of different span lengths.

The third character (a–c) indicates the number of longer spans and their positions in the house (for a more thorough presentation, see Göthberg 2000:24–86). As can be seen in Figure 5, the ranges of dates assigned to these house types are fairly wide. House type A is generally dated to the pre-Roman Iron Age, with the early Roman Iron Age as a transition phase, while house type B generally is dated to the Roman Iron Age–Viking Age with a concentration earlier than c. AD 600 (Göthberg 2000).

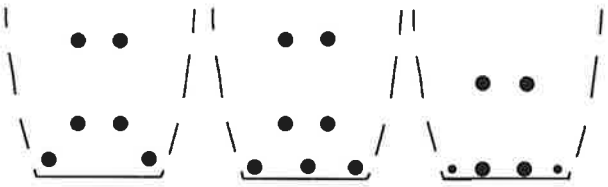

Figure 6. Schematic illustration of the gable post settings. The approximate outlines of the walls are illustrated with broken lines. From the left: *Hörn 2*, *Rak 3* and *Rak 4* (After Ulväng 1992).

Gable construction

One important typological feature is the construction of the gable. The posts from the gable construction are often missing, especially in houses older than the late Roman Iron Age, probably because the gable posts did not have such deep foundations (Ulväng 1992). As a result, there are many houses in which it is not possible to study the gable construction. The gable variants that can be identified, labelled *Hörn 2*, *Rak 3* and *Rak 4* (Ulväng 1992), are illustrated in Figure 6.

Thirty houses from different excavations in eastern central Sweden with identified gable construction and their times of use are presented in Figure 7 (see Tables 5–6 for additional data). The material used for this typological study of gable construction is taken from excavation reports published prior to 1999. It also contains only houses for which radiocarbon dates are available. Since the radiocarbon data for the Lida äng settlement just have been refuted, this is perhaps somewhat contradictory, but the only other possibility for dating the houses would be on typological grounds, which would cause a vicious circle in the reasoning, as it is the chronological typology that we

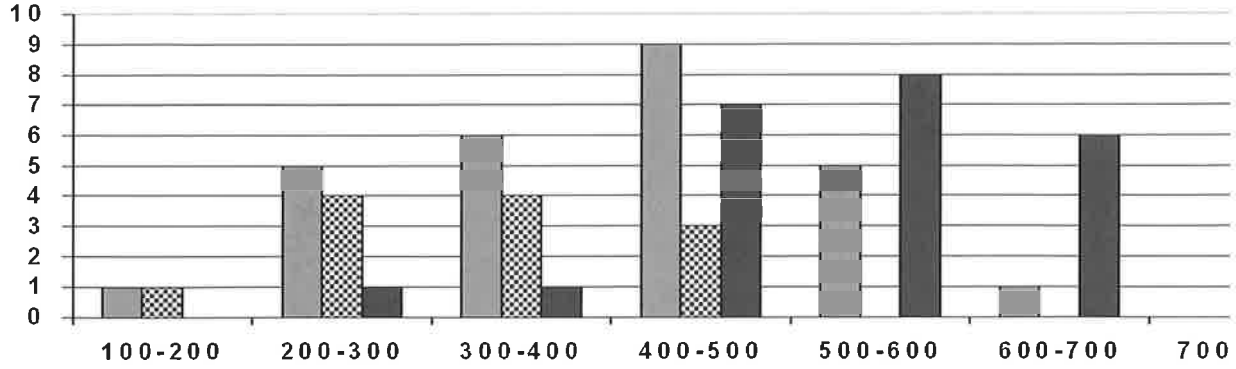

Figure 7. Distribution of houses with given styles of gable construction over time. Light grey: *Hörn 2*, Hatched bar: *Rak 3*, Dark grey: *Rak 4*. It should be noted that the same house can be present in more than one of the bars, since any house with a 1σ calibrated range that coincides with a given century will be included in the bar for that century.

wish to understand. Since the material consists of 30 houses, it should be possible to distinguish a trend in the radiocarbon dates even though some of the dates for individual houses are most probably incorrect. All these gable constructions were taken into use at approximately the same time, i.e. the third century, as seen in Figure 7, but it is still possible to partly separate them. There is a clear transition from *Hörn 2* and *Rak 3* to *Rak 4* during the fifth and sixth centuries, so that the majority of the houses with gable types *Hörn 2* and *Rak 3* can be dated to the third to sixth centuries while those with gable type *Rak 4* are concentrated in the period from the fifth to the ninth centuries. The earliest dates for *Rak 4* derive from short houses with only three trestles, including the trestle in the gable, and therefore probably represent outbuildings rather than dwellings. *Rak 4* continued to be used in shorter houses but eventually also came to replace *Hörn 2* and *Rak 3* in longer houses. The gable feature therefore gives us additional possibilities for distinguishing houses recognised as representing type B and its subclasses. Several excavation reports with houses having preserved gable constructions have been published since this compilation was made, but their data are not included in this study. However, by studying a selection of these reports (with material that is comparable, i.e. houses with any of these gable types that have been radiocarbon dated) the results were supported (see Göthberg et al. 2002; Häringe Frisberg & Seiler 2005; Åberg & Svensson 2006).

Trestle breadth/span length ratio

Another typological aspect that can be used to analyse the houses further is based on the relationship between the trestle breadth, i.e. the balance of the house, and the length of the span between the trestles. This ratio was used by Björhem and Säfvestad when working on their house chronology for southeastern Scandinavia (1993). It can be argued that the prerequisites for using this ratio to place houses in time are based on the assumption of a typological change that is too static. Hence their house chronology for southeastern Scandinavia has been criticized and it has been argued that the chronology is too fixed to a gradual development from "over-balanced" to under-balanced", whereas the development must in reality have been much more flexible (Martens 2005). This is a valid objection against dating on a typological basis, since there are no fixed models for house construction and variation can be very local in character. In the absence of any better foundation for dating, I have tried to see whether the trestle breadth/span length (tb/sl) ratio might have a potential for achieving a better local typology at Lida äng.

The calculated balance has previously been used as a basis for a rough typological dating. It is this ratio, for example, that is used by Göthberg to separate house type A from house type B (Göthberg 2000). The under-balanced house with a trestle breadth of 33% or less of the total house breadth seems to have been introduced in the late Roman Iron Age (see Ramqvist 1983; Liedgren 1992). The trestle ratio can seldom be used on houses located in present-day fields, however, since it is unusual for walls from these settlements to be preserved. It was only possible to determine the total breadth of the house in nine cases at Lida äng, for example.

The span between the trestles was shorter during the Late Bronze Age and Early Iron Age than in

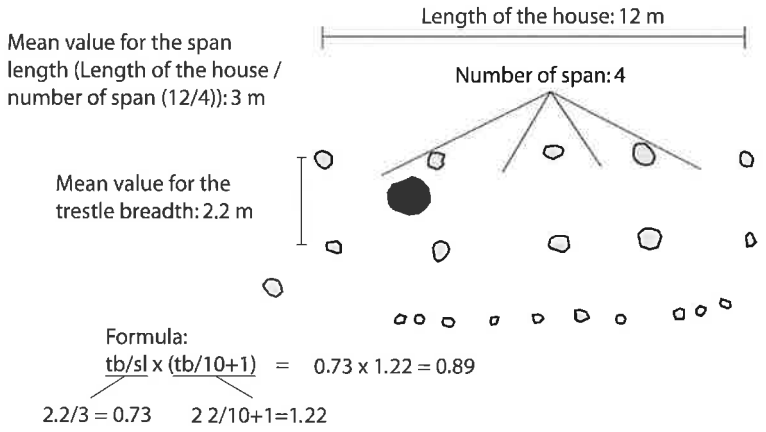

Figure 8. Calculation of the tb/sl ratio.

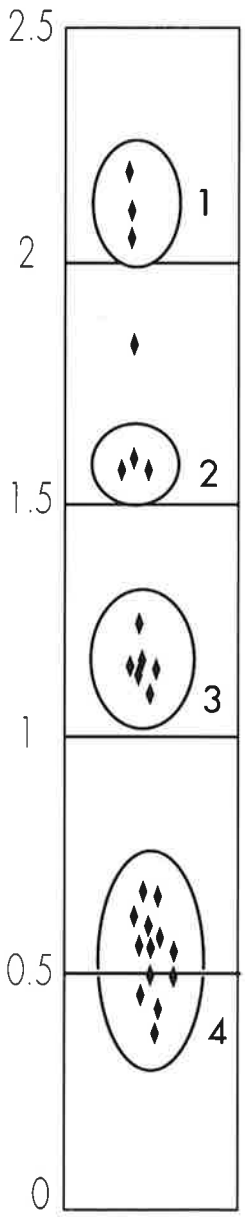

Figure 9. Distribution of houses from Lida äng by the tb/sl ratio. The houses separate into four clusters.

the Late Iron Age (see Björhem & Säfvestad 1993). The tb/sl ratio (see Fig. 8) was therefore applied to the material from Lida äng in order to create a local typology, enhancing the importance of trestle breadth by employing the formula tb/10+1 in order to distinguish the early houses better, i.e. a house with a trestle breadth of 2.2 metres and a span length of 3 metres will have a ratio of 2.2/3×(2.2/10+1)=0.89. Based on known conditions, it may be said that an older house will generally have a higher tb/sl ratio than a younger one. When calculating the mean values, only the span lengths between the trestles are included and not the span between the gable and first trestle.

As seen in Table 3, the houses with a high tb/sl ratio, not surprisingly, correspond to houses classified as type A and those with a lower ratio to type B. However, the houses can be even further separated using the tb/sl ratio. As can be seen in Figure 9, the houses fall into four clearly distinct clusters. The first cluster, with the highest ratio, includes three houses which all have a value of just over 2, while cluster 2 consists of three houses with a ratio between 1.56 and 1.59, cluster 3 consists of seven houses with ratios between 1.09 and 1.16 and the largest cluster, cluster 4, consists of thirteen houses with ratios between 0.37 and 0.67. It should also be noted that all but one of the houses with a clay plate, which has been interpreted as an element characteristic of houses older than the Late Iron Age, belong to the group with a tb/sl ratio over 1.1. The exception, house 24, was located in an area with numerous features and it is difficult to sort out the different phases. It is therefore possible that the clay plate did not belong to house 24.

A settlement in transformation

In order to test whether it is possible to distinguish the different phases of the settlement using the clusters in the tb/sl ratio the spatial relations between the houses in these clusters are studied. The houses for which the tb/sl ratio could be calculated are shown in Figure 10. Several houses with similar tb/sl ratios are positioned perpendicular to each other, forming units that are clearly separated from the other houses and units, see Figure 11. It is unlikely that this is a mere coincidence, but rather it can be taken as implying that the method gives basic data for a pattern in the development of

the settlement over time. The tb/sl ratio cannot be used for absolute dating, however, or even for relative dating within clusters of houses with similar ratios, such as cluster 4. In order to separate the phases further and to follow the development of the settlement, the tb/sl ratio must be used together with other typological characteristics, e.g. gable construction. The houses that are thought to have belonged to the same unit are shown in Table 4. The term "unit" will be used below to refer to a set of buildings that are believed to be contemporaneous and closely related to each other. Possible settlement units and suggested devolopmental phases at Lida äng are illustrated in Figure 11.

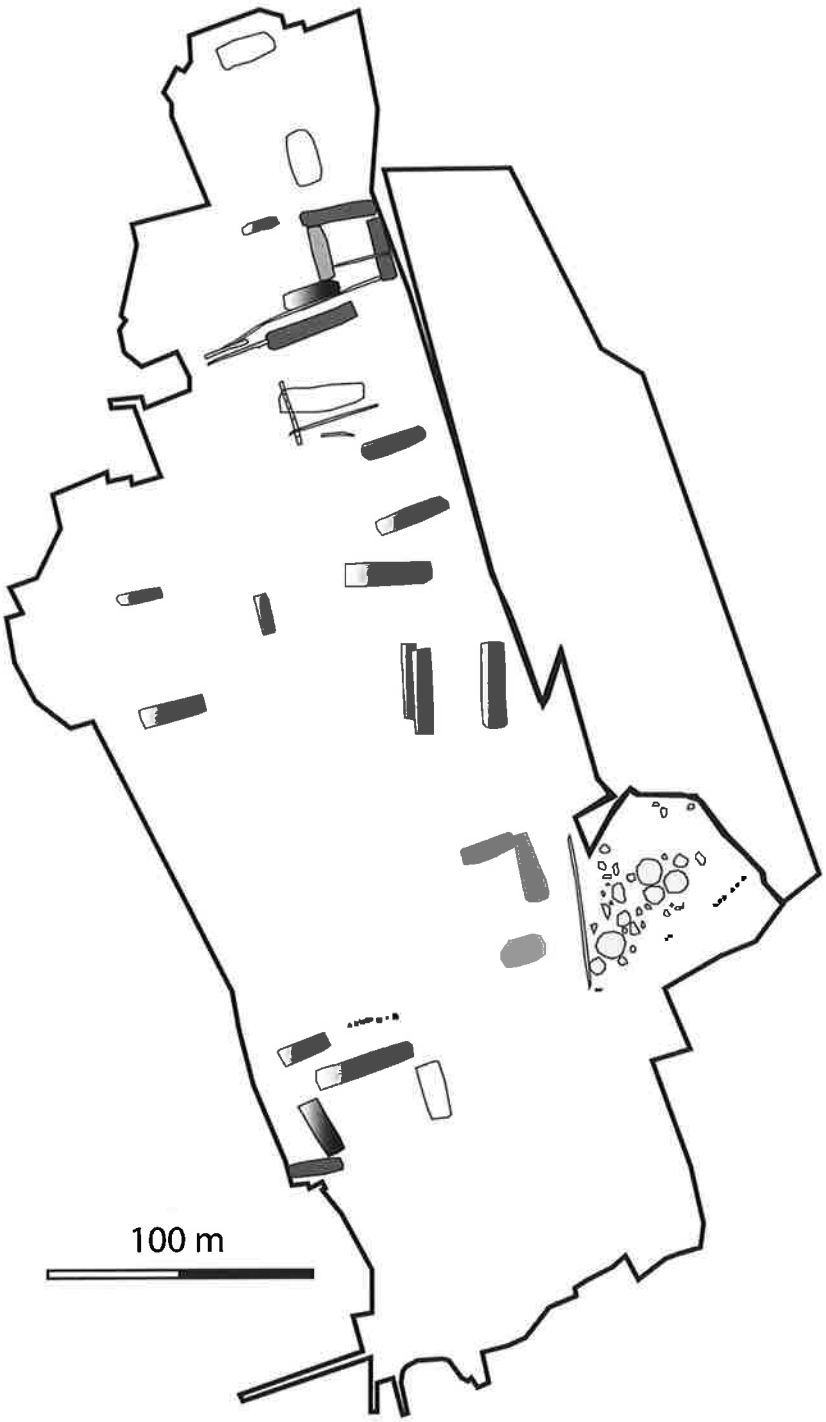

Figure 10. Distribution of houses by tb/sl ratio clusters on the site plan. Light grey: cluster 1, Medium grey: cluster 2, Dark grey: cluster 3, Shaded: cluster 4. Only houses for which it was possible to calculate the tb/sl ratio are included in the plan.

Phase 1 (Fig. 11a). The houses that can be dated to a period of about 200 years from c. 50 BC to AD 150, are shown in Figures 11a and 11b. The two houses in unit 1 are quite large with centrally located hearths and are classified as house type A3. Both can be considered to be dwelling houses. The distance of 30 metres between them is one of the largest within a unit in the whole settlement, and it is possible that the houses represent two subsequent phases rather than being contemporaneous. Their perpendicular position supports the interpretation that they are contemporaneous, however, and were placed with consideration for each other. House 6, located 300 metres to the south, is also a dwelling house. As mentioned above, both the area between houses 22 and 7 and the area near house 6 were full of postholes, and it is possible that some buildings are concealed in the masses of features, even though no interpretation is any more convincing than another.

Table 4. Characteristics and sizes of the units and houses, sorted according to tb/sl ratio. Most units have a total house area of 150–300 m². It is primarily units 9 and 10 that differ in size. This may, however, be due to the fact that the subsequent houses 39 and 40 could have had a different function and the combined house area of the dwelling houses and outbildning would then have been c. 460 m².

Phase	Unit	House	tb/sl ratio	Length	Gable	House type	m²	Unit m²
1	Unit 1	22	2.19	18	-	A3c	135	295
		7	2.11	15	-	A3a	160	
	House	6	2.05	11	-	A2a	95	
2	Unit 2	18	1.56	16	-	A3b	140	205
		26	-	9 (14)	-	Three aisled	65	
	House	13	1.83	24	-	A2a	145	
	Unit 3	8	1.59	13	-	A2c	125	285
		9	1.56	17/22	-	A3	160	
3	Unit 4	21	0.8–1.24	28	-	A1/B3c	180	480
		23	1.16	21	-	B3b	140	
		16	1.14	25	-	B3a	160	
	House	10	1.15	16	-	A3b	105	
	House	17	1.13	18	-	B3c	130	
	House	11	1.09	16	-	-	95	
4	Unit 5	1	0.56	19	*Rak 3*	B2	135	320
		4	0.67	27	*Hörn 2*	B3a	185	
	Unit 6	34	0.66	11	-	B2	70	165
		24	0.45	18	-	B1b	95	
	Unit 7	31	0.49	23		B1	75	115
		47	-	3.8	-	Four-post house	20	
		49	-	3.8	-	Four-post house	20	
	Unit 8	52	0.60	12	-	B1	90	225
		44	0.58	21	*Hörn 2*	B1a	135	
5	Unit 9, 10	32	0.62	27	*Hörn 2/Rak 4*	B3a	215	806
		40	0.55	26	*Hörn 2*	B1a	175	
		48	0.55	27	*Hörn 2*	B3b	200	(630)
		39	0.42	23	*Hörn 2*	B1a	170	
		35	-	2	-	Four-post house	6	
		36	-	7	-	Three aisled	40	
	Unit 11	5	0.37	17	*Rak 4*	B1b	110	215
		3	-	8	*Rak 4*	B5b	35	
		12	-	4.5	-	One aisled	35	
		15	-	6.5	-	One aisled	35	
	Unit 12	42	0.49	15	-	B1	115	270
		53	-	7	-	One aisled	45	
	Unit 13	41	-	12	-	D1b	80	
		43	-	5.5	-	D1b	30	

Phase 2 (Fig. 11b). The distance between houses 18 and 26 in unit 2 is 18 metres. House 18 is a dwelling house with a clay plate, while house 26 has a much frailer construction, although the clay plate and hearth found in it indicate that it is not an outhouse but was likewise used as a dwelling house.

House 13 has the highest tb/sl ratio of all the houses in this figure and is most distinct in its eastern part. Two interpretations are possible: the house is either c. 20 metres or 24 metres long. If the longer interpretation is correct, then the house cannot be contemporaneous with palisade 1. It is possible that house 13 may be related to unit 2, even though the distance from it to house 18 is 35 metres.

The distance between houses 8 and 9 in unit 3 is 10 metres (see Fig. 12). Both houses have a clay plate and a hearth. There is some uncertainty about the construction of house 9, and it is not clear whether the two north-eastern trestles belong to house 9 or house 10. If the trestles are interpreted as a part of house 9, then it is not possible for the two houses to be contemporaneous. If they are interpreted as belonging to

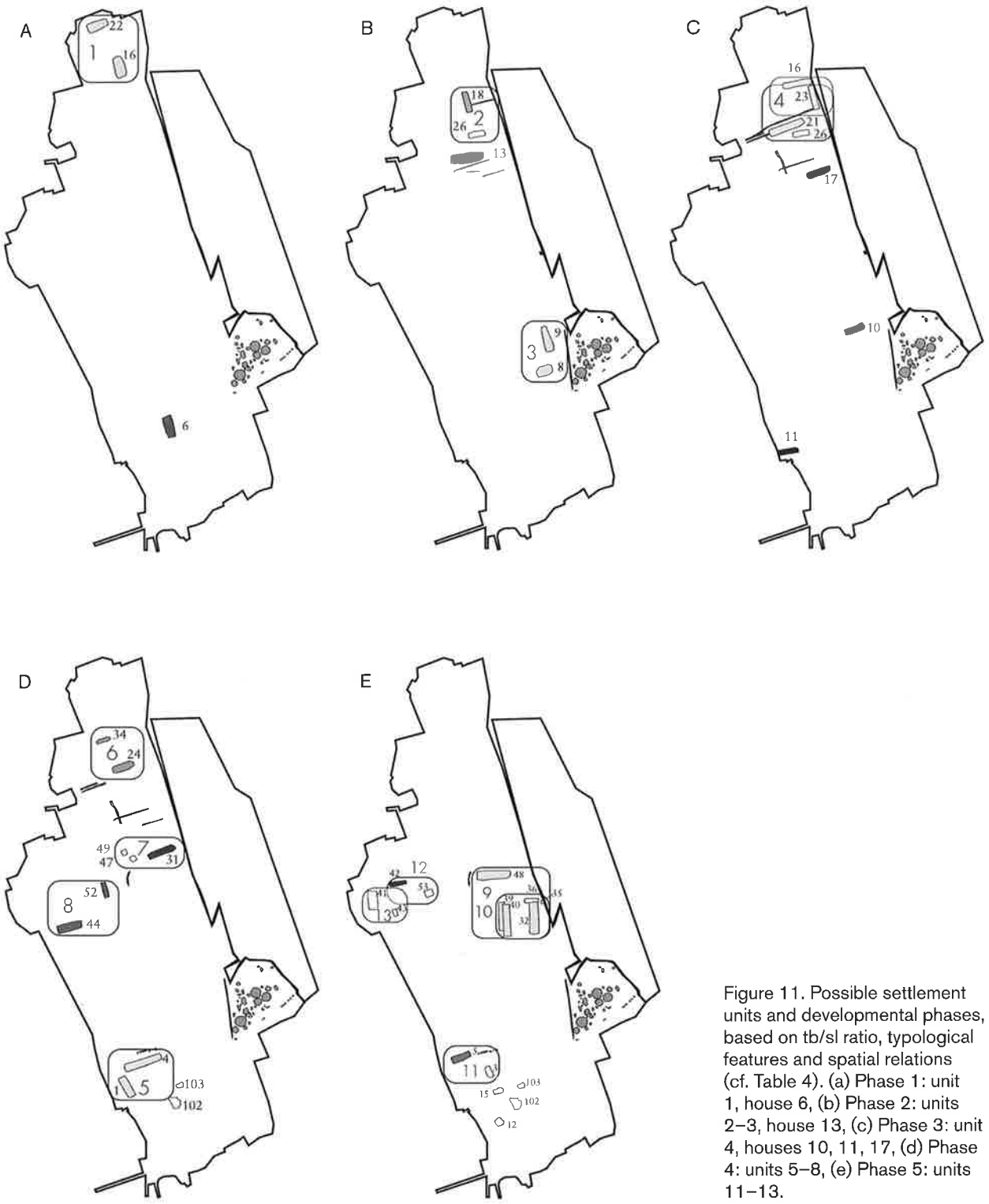

Figure 11. Possible settlement units and developmental phases, based on tb/sl ratio, typological features and spatial relations (cf. Table 4). (a) Phase 1: unit 1, house 6, (b) Phase 2: units 2–3, house 13, (c) Phase 3: unit 4, houses 10, 11, 17, (d) Phase 4: units 5–8, (e) Phase 5: units 11–13.

house 10 it is possible that the houses existed at the same time. Regardless of this interpretation, however, house 10 is related to the houses in unit 3 in a way that indicates that it was built in relation to houses 8 and 9, either as a subsequent phase or as a replacement for house 9.

Phase 3 (Fig. 11c). The houses in Phase 3 belong to cluster 3 and can be dated approximately to the second and third centuries AD. House 10 is situated close to unit 3 and seems to be related to it. No house has been identified close to house 17, which is a very distinct dwelling house with both a clay plate and a hearth.

Unit 4 (see Fig. 13) consists of three houses, all over 20 metres long and with more than one hearth but no clay plate. The circumstances governing the formation of this unit may have been similar to those prevailing in unit 3. That is, two houses made up the original unit and a third house was built to replace one of the others. The possibility cannot be excluded, however, that they were all contemporaneous.

There are two buildings, houses 10 and 11, which were situated alone during this period, and these were evidently somewhat smaller in area than the houses in the units. Although somewhat larger than the houses in the units from the next phase. House 10 is most probably related to unit 3, but it is not clear whether houses 11 and 17 are contemporaneous with any other units, or even with each other, or whether each was the only house in its area during the period for which it was in use.

Phase 4 (Fig. 11d). The houses in Phases 4 and 5 all belong to cluster 4, within which the differences in tb/sl ratio are too small to separate the houses chronologically. Instead they may be separated mainly on the basis of their gable constructions and spatial relations. The most obvious unit in Phase 4 is unit 5, in which both house 1 and house 4 are large dwelling houses with gables that indicate a probable date between AD 200 and 500.

The houses in unit 6 do not lie perpendicular to each other, and the distance between them is 25 metres. House 34 could be an economy building. The only indications that they represent the same unit are their spatial relation and tb/sl ratios.

House 31 in unit 7 is rather uncertain, which makes the whole unit unconvincing. The trestle breadth of 1.1–1.4 metres and span length of 3.7–4.7 metres in house 31 is not greatly different from the post setting in the palisade (*p1*), although house 31 is somewhat wider than the palisade and has a rather longer span. The lack of a hearth can be explained by the preservation conditions. The reason for connecting house 31 with the small houses 47 and 49 with only four posts mainly is their spatial relations and that they are oriented in the same direction. If the interpretation of house 31 as a dwelling house is incorrect, however, then the small houses with four posts could just as well be related to house 17 from the earlier phase (see Fig. 11c).

Unit 8 is another uncertain one, with a distance of 30 metres between the houses. It is situated close to the uncultivated elevated area in the southwestern part of the site. The houses are placed perpendicular to each other and have very similar tb/sl ratios, but apart from this it is difficult to connect the buildings in any other way than that they both belong to a rather late phase in the settlement and are possibly related to the other buildings around the elevated till area in the west, those in units 12 and 13 (see Fig. 11e).

Phase 5 (Fig. 11e). Units 9 and 10 are clearly the results of successive houses built around the same site (see Figure 14) and should most probably be regarded as a single unit that underwent some repairs and rebuilding. Houses 32, 39, 40 and 48 were all dwelling houses, in addition to which there were two outhouses, one small four-post structure and one three-aisled house 7 metres in length. The rather similar buildings 39 and 40 overlie each other and thus probably succeeded each other with a very short time interval. It is difficult to see any other interpretation in the excavation report, but the summary map of features makes it possible to deduce some additional posts, and it seems that house 32 might also have been replaced by a similar one or have been reinforced. It is not only the tb/sl ratio and the similar gable construction that link units 9 and 10, but all of the houses concerned also have a deviant alignment compared with the others at the settlement. Disruption in alignment is often used to separate houses chronologically. Even though the internal relations are not conclusive, it seems that at least two of the larger houses existed contemporaneous, and possibly even three large houses.

House 5 in unit 11 has the lowest tb/sl ratio and a gable of the *Rak 4* type, while house 3, in the same unit, also has a *Rak 4* gable but is only 8 metres long. The combination of a three-aisled house and a shorter house with a *Rak 4* gable was fairly common during the Migration Period (see e.g. Olausson 1997). The houses are aligned with the majority of the others at the settlement, but not with units 9 and 10. The one-aisled houses 12 and 15 might also be connected with unit 11.

Unit 12 consists of house 42 and the one-aisled house 53. House 42 is a three-aisled house that is at least 15 metres long if not longer, with yet another trestle to the east. This is another unit that is uncertain, the houses being connected mainly by the spatial relation between them. The one-aisled houses are mainly dated to Vendel Period–Viking Age, however, and if contemporaneous they should both be dated to the seventh century. This is not impossible, since the gable of house 42 might be of the *Rak 4* type even though the posts in the corner have not been preserved. It should be noted that the surroundings of this elevated uncultivable area in the west might very well conceal more constructions.

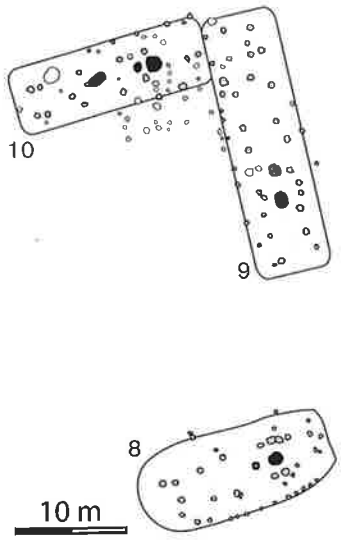

Figure 12. Unit 3 and house 10. Grey features with thin outlines are post-holes, grey-filled features with thick outlines are clay plates and black features are hearths.

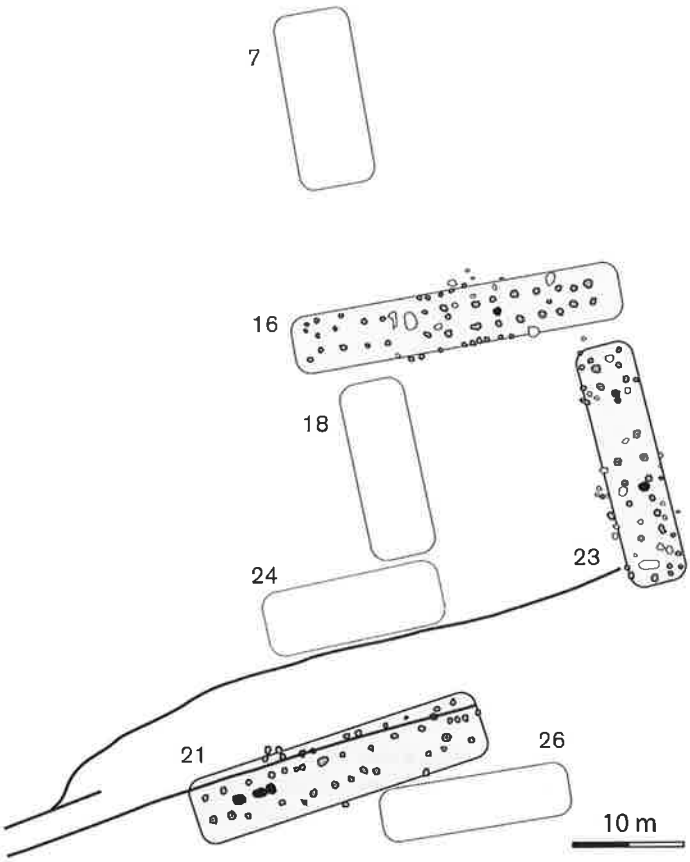

Figure 13. Unit 4. Only features connected with the houses in the unit are shown. The light grey areas represent earlier houses.

Both houses in unit 13 are one-aisled, house 41 probably also having some additional supporting posts in the middle. A house with similar post setting at Bagare, Sollentuna parish in Uppland has been dated to the Vendel Period–Viking Age (Carlsson et al. 1996). The dating of unit 13 should be the seventh century at the earliest. The distinction between unit 12 and unit 13 may not be correct, as the houses could be the result of the more stable site continuity around and on the till elevation. It should also be noted that house 42 would fit in well with unit 9.

Large farm or hamlet?

A number of conclusions could be reached from the study of Lida äng. Some of the more significant concern the structure of the settlement and typological distinctions, but the probable service lives of the houses and the relocation of units are also matters of importance. As shown above, the settlement must have been inhabited for at least 600 years. Thus, if the proposed development of the settlement is correct, taking the larger houses as separate units and that none of these units or dwelling houses (18) was contemporaneous, we obtain a mean life span for a house of 33 years. If, on the other hand, we do not count the uncertain units and assume that some units may be contemporaneous with the solitary houses, we would arrive at a higher mean duration of use for a house, but still no longer than c. 60 years. Both of these values are feasible, and there is no reason to contemplate a longer life span for the houses at Lida äng. Considering this as a probable life span for Iron Age houses on the clay terrain would imply that we must be very careful when interpreting sites from this period with numerous houses as hamlets rather than as farms with a shifting location. These figures are valid only for houses on clay soils, however, and are probably not applicable to houses located on till soils, since there are some indications that these houses were often used for longer periods of time.

Thus the units at Lida äng were re-sited every 30th to 60th year during Roman Iron Age, while from unit 9 onwards the farms changed location less frequently and it is possible that when the large unit 9 and unit

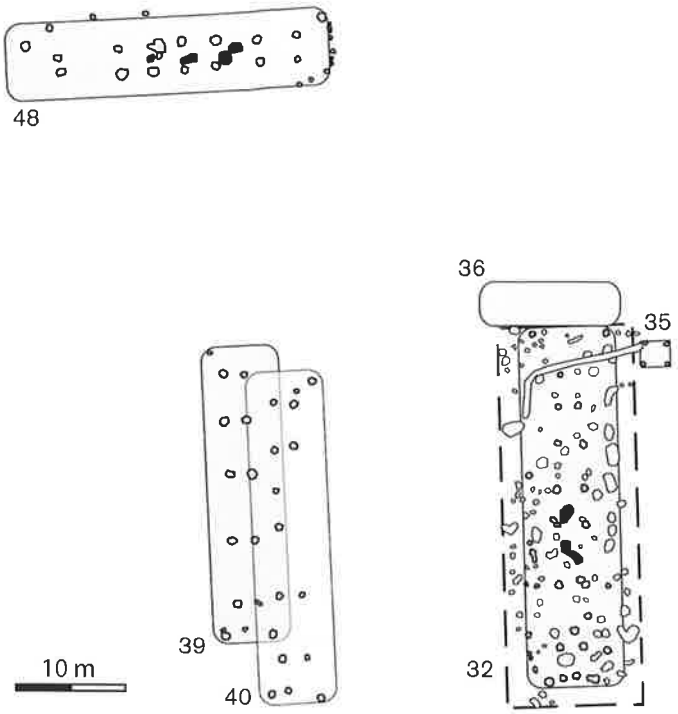

Figure 14. Houses in units 9 and 10. All the features indicated in the excavation report are shown inside the broken line around house 32. The white features are not included in the interpretation of the house.

10 were moved they were replaced by the two units 11 and 12 and by unit 13, respectively. These units, centred round the till elevations, therefore came to possess different house types from the three-aisled houses and seem not to have been moved at such short intervals as the earlier units.

When describing houses that relate to each other the value-neutral word *unit* has been used instead of calling them either farms or hamlets. The reason is that the units at Lida äng generally do not resemble the most commonly recognised farms from the period. Two Roman Iron Age units with possibly three contemporaneous dwelling houses are shown in Figures 12 and 13. It is just as probable, however, that the units were made up of two houses and that the third was built when one of the others was abandoned. The possibility that none of the houses in the units are contemporaneous may be regarded as highly unlikely, as they were evidently built with some spatial consideration for each other.

When Iron Age houses that are definitely related to each other are excavated in eastern central Sweden they usually constitute a farm with a dwelling house and an outbuilding. This is not the case at Lida äng, however, as the two contemporaneous houses are often equivalent in size and both were used as dwelling houses. Thus even though the perpendicularly oriented houses resemble a farm structure that has been seen at several excavated farms from Late Roman Iron Age and Migration Period, the respective functions with two dwelling houses is unusual. What does this represent? Are the houses in the units actually not contemporaneous, so that the spatial relation depends on the second house having been built while the first one was still in use? As far as their size, characteristics and position were concerned it is likely, however, that the houses were used simultaneously. This opens up several possible interpretations. The two houses may have belonged to two households forming a small hamlet, or both houses may have belonged to different generations or siblings within the same family, or it is possible that both houses could have belonged to the same household, with the "owners" occupying one and the workers and thralls the other. Or could there be still a fourth or fifth explanation involving a form of household organization that is difficult for us to predict.

The houses in units 9–10, shown in Figure 14, are examples of an even larger unit. Houses 32 and 48 are the largest of all in the settlement (200 m^2 and 215 m^2), while houses 39 and 40 probably replaced each other at a very short time interval. The time period for which the unit was used, i.e. some time between c. AD 350 and 550, saw the emergence of a house with a special function, often called a "hall" (Herschend 1997a). The complexity of these "special" houses will not be discussed here, but the concept is used for a building that differed in purpose from an outbuilding or ordinary multi-functional house. Houses 48 and 32 both show traits of typical dwelling houses, with hearths and without any extra long trestle breadth that could indicate a hall. Meanwhile houses 39 and 40 are centrally placed in the middle of the unit and are somewhat smaller than houses 32 and 48, lack hearths and have longer trestle breadths. These differences indicate that they might have had a special function in the unit, and we have to ask whether these were hall buildings, dwelling houses or outbuildings. The lack of a hearth is not a good indicator for resolving this problem. Although a hearth was necessary in a dwelling house, one could also be expected in a hall. Moreover, much of the uppermost parts of the postholes in houses 39 and 40 have been destroyed and

some of the pairs of posts are incomplete. This implies that any hearths they may have had would also have been destroyed. The question of whether they were hall buildings or dwelling houses must be left unanswered, however, even though there are indications that they had a special function in the unit. Regardless of the function of houses 39 and 40, there are clear indications that units 9 and 10 represent a farm of an extraordinary character.

Comparative material

To test the validity of the tb/sl ratio the method has been tested on two other settlements. From the settlement at Skäggesta (Göthberg et al. 1996) could the ratio be calculated on 12 houses. They all have a tb/sl ratio from 0.43 (House XIII) to 0.68 (House V) and hence all fall within Phase 4 if they would be compared to the Lida material. The three aisled houses at Skäggesta are dated from Late Roman Iron Age to early Viking Age and correspond well with the Lida material regarding dating and ratio. However, since all the houses fell within so close range the method needs to be tested on a settlement with more Early Iron Age houses. The method was hence used on a settlement at Kyrsta with over 40 houses from Bronze Age up to Medieval Time (Onsten-Molander & Wikborg 2006). The settlement site has not been possible to delimit and it is possible that more remains belonging to the same settlement can be found outside the excavated area. All of these houses have been radiocarbon dated with one sample. The dated material is mainly on carbonised ceralia collected from features that were a part of the roof bearing construction. The advantages and disadvantages for the sampling strategy, which are discussed above, are well considered for in the report. In the reconstruction of the settlement presented in the excavation report it is the results from the radiocarbon analyses that has been used. Only 5 out of the total of 68 radiocarbon datings from the settlement have given a result that is later than Roman Iron Age. Two of the samples with later dating come from an area with later house constructions. Hence the bulk of the settlement at Kyrsta is earlier and contemporary with the settlement at Lida.

In Figure 15 are the houses tb/sl ratio plotted against the mean value for the radiocarbon analyses. If we were to trust both the tb/sl ratio and the radiocarbon analyses as a good dating strategy there should be a correlation between the two factors. This is however not the case. The houses with the worst correlation are house 11, 18 and 33. There were no traces after a post in the features from where the radiocarbon-dated material was taken in house 11 and 18. Hence, it is possible that the filling from the features where the samples were taken comes from earlier cultural layers. Although the correlation improves if these houses are removed there is still no clear relation between the tb/sl ratio and the radiocarbon-dating.

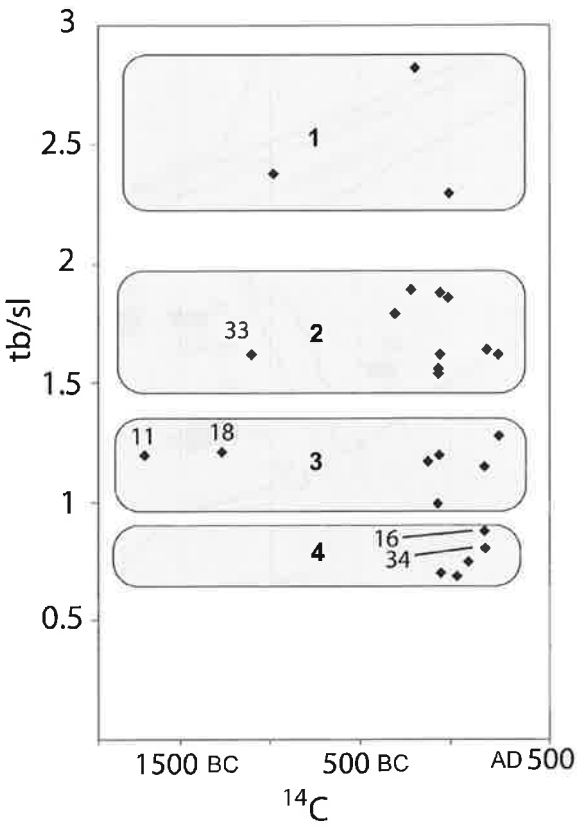

Figure 15. Distribution of the houses from Kyrsta both by their tb/sl ratio and the mean value for their radiocarbon results. Houses with numbers are mentioned in the text.

I do not argue against the proposition of the changes in the settlement from the excavation report. However, this is a test of the tb/sl ratio and the spatial relation of houses with similar ratio needs to be examined and an alternative view is presented. In Figure 16 the houses are plotted according to similar tb/sl ratios. Four of the houses only have three trestles and are probable economy buildings (house 3, 16, 21 and 29). Perhaps should the tb/sl ratio of these houses not be compared directly to the rest of the houses and house 16 and 34 could belong to houses in cluster 3. There are few perpendicularly placed houses at Kyrsta, which makes it more difficult to identify units. However, some possible units with similar ratios can be seen. House 19 and 34, House 18 and 29, House 8 and 13 and House 11

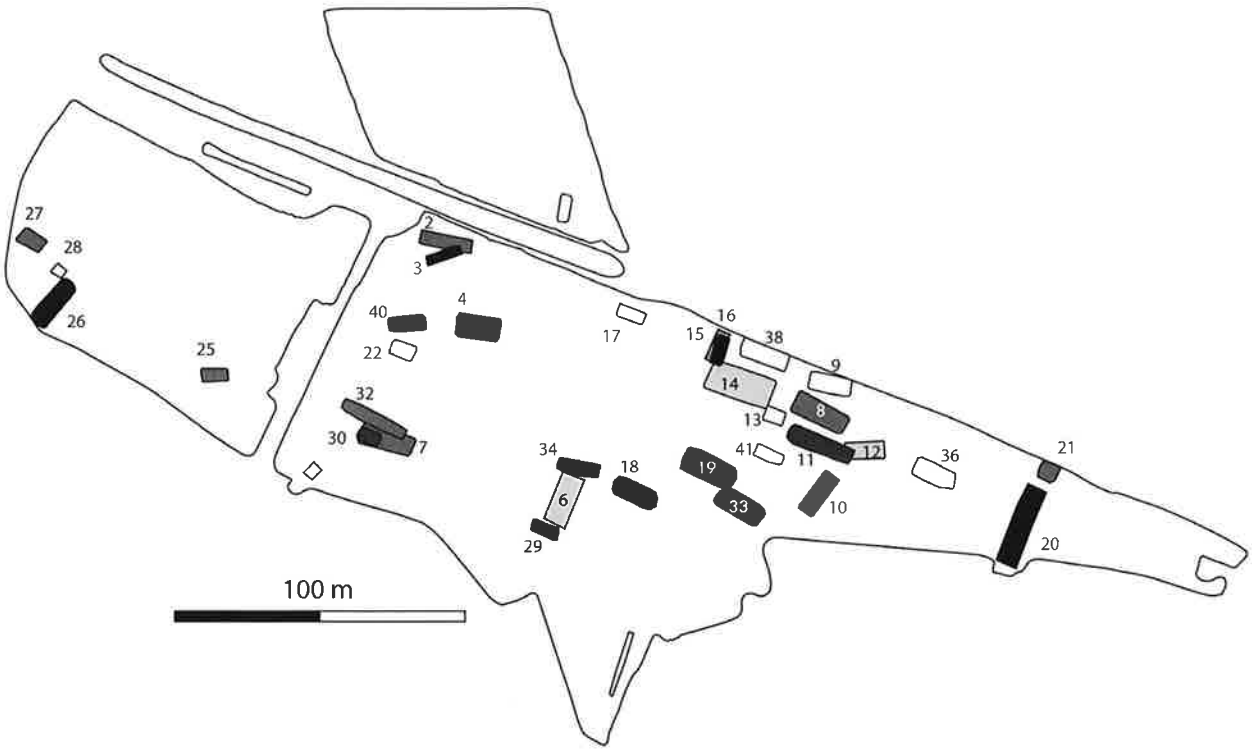

Figure 16. Distribution of houses by tb/sl ratio on the site plan from Kyrsta. Light grey: cluster 1, Medium grey: cluster 2, Dark grey: cluster 3, Black: cluster 4, White: houses for which it was not possible to calculate the tb/sl ratio.

and 41 are four possible rather similar units. One of few perpendicularly placed houses is house 10. House 10 relates spatially well with two houses from the same cluster, House 8 and House 33. The units at Kyrsta are different from the ones at Lida and are made up of a dwelling house and an economy building. The economy building is placed in the same direction some 5–30 metres from the larger house. Considering the proposed life span of the houses it cannot be argued with any certainty that there should have been more than one farm at a time at the settlement.

Conclusions

The work with the material from Lida äng started with the intention of studying a fairly typical settlement. What made Lida suitable was that the excavations apparently covered the majority of the prehistoric settlement. By using typological traits it has been possible to compose a more refined distinction scheme of phases in the development of the Lida äng settlement. This is of great importance in order to be able to discuss an excavated Iron Age settlement, since it often is difficult to identify which phases are contemporaneous and which are successive. A number of conclusions could be reached on the basis of the study of Lida äng.

The settlement at Lida äng consisted for most of the duration of its use of two multifunctional longhouses, both of which had all the traits of a dwelling house. The differences in size between the houses were generally small. The houses formed an L-shaped structure in most units, but the question of what these units represent is open for discussion. If found separately, both of the houses in the units would have been interpreted as a farm composed of a single multifunctional house. Given that these houses are contemporaneous, this interpretation might still be true, in which case the two farms would form a small hamlet, but they could also be interpreted as one large farm in which the houses were used by different generations or by the owners as opposed to thralls or other dependent workers. The units were moved approximately every 30th–60th year during late pre-Roman Iron Age and early Roman Iron Age. The two dwelling houses in units 1 to 5 each have an area of c. 130–190 m^2, while the houses in units 6, 7 and 8 (app. Third to fourth centuries) are smaller, c. 70–135 m^2. In units 9 and 10, which can be dated approximately to the fifth to sixth centuries, the same L-shaped structure as in the earlier units was still used, but an additional house was placed in the farmyard. It is argued that this building may have served a special function on the farm. These two units are very

large in size, with a total floor area of c. 630 m^2, and it is suggested that this large farm might have been connected with the highest strata in society.

Very few houses in the settlement overlie each other, but when they do so it is often a question of the direct replacement of an earlier house, as in units 9 and 10. The probable reason for this is that the remains of the earlier houses were visible for a long time afterwards and overlaps were avoided. Even though there are other examples with two nearby located contemporaneous farms this study points to the pit falls in an uncritical use of radiocarbon datings and that a farm moving some 30–100 metres every 30–60th year quickly gives the impression of several contemporary farms.

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English language revision by Malcolm Hicks.

Table 5. Radiocarbon dates for three-aisled houss with gable types *Hörn 2*, *Rak 3* and *Rak 4*, calibrated according to Stuiver et al. (1998). For references see Table 6.

House	Gable construction	Length	cal AD (1σ)	cal AD (2σ)	Number of ^{14}C-samples
Bärby 1	*Hörn2*/ Unknown	34	20–220	0–250	1
Görla V	*Rak4*	10	later than 210–410		0
Görla IV	*Rak4*	10	later than 170 BC–AD 60		0
Östra Ledinge 1	*Rak3*/ Unknown	27	130–330	120–380	3
Östra Ledinge 2	*Rak3*	15	later than Darsgärde 1		0
Bredåker II	*Rak3*/*Hörn2*	24	260–440	250–540	2
Görla VI a	*Hörn2*	22	240–420	130–540	1
Skäggesta I	*Rak4*/ Unknown	11	250–410	130–440	1
Görla I	*Rak3*/*Rak3-Hörn2*	30	260–420	240–430	3
Ekeby 35	*Hörn2*	23	250–430	130–540	1
Åslunda 100	*Rak3*/ Unknown-*Hörn2*	28	260–530	260–540	3
Väsby 7	*Hörn2*	24	390–540	260–610	1
Åslunda 103	*Rak4*/ Unknown	17	earlier than Åslunda 101		0
Åslunda 102	*Rak4*/ Unknown	c. 15	earlier than Åslunda 101		0
Åslunda 101	*Rak4*	19	430–540	410–600	2
Lindsunda 2	*Rak4*	18	420–540	390–570	2
Skäggesta IV	*Rak4*/ Unknown	30	430–570	430–570	4
Bredåker IX	*Rak4*	15	430–600	420–640	2
Bredkåker VI	*Rak4*	22	430–610	380–660	1
Görla VII	*Hörn2*	37	410–540	340–610	1
Bålsta B1	*Rak4*	25	420–570	340–640	2
Ekeby 33	*Hörn2*/ Unknown	>20	420–570	340–640	1
Tuna	*Hörn2*/ Unknown	20	435–559	426–605	3
Görla VI b	*Hörn2*	25	530–660	420–680	1
Skäggesta V	*Rak4*	43	540–605	530–650	5
Valsgärde 3a	*Rak4*?/Unknown	>20	595–665	540–690	3
Skäggesta XI	*Rak4*/ Unknown	11	680–900	650–1020	1
Täby 16	*Rak4*/ Unknown	>14	690–890	660–970	1
Täby 19	*Rak4*	21	895–995	880–1020	3
Täby 23	*Rak4*/ Unknown	>12	990–1160	900–1170	1

Table 6. References and additional information concerning the houses listed in table 5. All the houses are located in Uppland.

House	Parish	Radiocarbon lab code	Radiocarbon date BP	Reference
Östra Ledinge 1	Skederid	IXVAVT IXA 23 A218	1770±70 1680±70 1900±70	Bratt & Lindström 1997
Östra Ledinge 2	Skederid		later then Östra Ledinge 1	Bratt & Lindström 1997
Åslunda 100	Odensala	Beta-63331 Ua-6303 Ua-6304	1680±65 1680±65 1535±80	Hamilton & Sieurin-Lönnqvist 1998
Åslunda 101	Odensala	Ua-6302 GrN-20471	1635±60 1480±60	Hamilton & Sieurin-Lönnqvist 1998
Åslunda 102	Odensala		earlier then Åslunda 101	Hamilton & Sieurin-Lönnqvist 1998
Åslunda 103	Odensala		earlier then Åslunda 101	Hamilton & Sieurin-Lönnqvist 1998
Lindsunda 2	Norrsunda	St-14405 St-14406	1605±50 1560±60	Hamilton 1998
Skäggesta I	Litslena	Beta-38198	1710±60	Göthberg et al. 1996
Skäggesta IV	Litslena	Beta-32714 Beta-35747 Ua-1603 Beta-32717	1710±70 1230±60 1425±95 1740±60	Göthberg et al. 1996
Skäggesta V	Litslena	Beta-32716 Beta-35748 Beta-38202 Beta-40827 Beta-32719	1400±50 1410±60 1580±60 1440±50 1700±60	Göthberg et al. 1996
Skäggesta XI	Litslena	Beta-40832	1220±100	Göthberg et al. 1996
Bredåker II	Gamla Uppsala	Ua-5761 Ua-5901	1650±70 1670±75	Häringe Frisberg & Göthberg 1998
Bredåker VI	Gamla Uppsala	Ua-6282	1530±75	Häringe Frisberg & Göthberg 1998
Bredåker IX	Gamla Uppsala	Ua-5350 Ua-6686	1440±100 1565±60	Häringe Frisberg & Göthberg 1998
Görla I	Frötuna	Beta-41574 Ua-5027 Ua-5028	1620±60 1710±90 1800±80	Eriksson 1995
Görla IV	Frötuna	later then Beta:41883	2040±80	Eriksson 1995
Görla V	Frötuna	later then Ua-5026	1740±80	Eriksson 1995
Görla VIa	Frötuna	Beta-41879	1710±70	Eriksson 1995
Görla VIb	Frötuna	Beta-41576	1470±70	Eriksson 1995
Görla VII	Frötuna	Beta-41884	1590±60	Eriksson 1995
Bärby I	Danmark	Ua-6389	1900±55	Häringe-Frisberg et al. 1998
Bålsta B1	Yttergran	Beta-34609 Beta-34608	1660±110 1520±80	Franzén et al. 1996

Table 6. Cont.

House	Parish	Radiocarbon lab code	Radiocarbon date BP	Reference
Väsby 7	Vänge	Ua-14407	1605±65	Fagerlund et al. 1999
Täby 16	Vänge	Ua-14294	1240±70	Fagerlund et al. 1999
Täby 19	Vänge	Ua-13926 Ua-14411 Ua-?	1090±70 915±60 1260±60	Fagerlund et al. 1999
Täby 23	Vänge	Ua-13929	995±45	Fagerlund et al. 1999
Ekeby 33	Vänge	Ua-8695	1570±65	Fagerlund et al. 1999
Ekeby 35	Vänge	Ua-13925	1700±70	Fagerlund et al. 1999
Valsgärde 3a	Gamla Uppsala	Ua-11574 Ua-11575 Ua-11576	1350±95 1400±75 1490±80	Norr & Sundkvist 1997; Herschend 1997b
Tuna	Vendel	Ua-11895 Ua-11896 Ua-11897	1420±65 1590±65 1635±65	Isaksson 2002

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