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AGRARIAN COLONIZATION AND SETTLEMENT OF THE ÅLAND ISLANDS IN THE FIRST MILLENNIUM AD

Abstract

The Åland Islands were colonized by the bearers of the peasant culture from neighbouring regions of Scandinavia during the first millennium AD. The newcomers arrived around 400 AD and their number increased rapidly throughout the rest of the first millennium. The development and the way of life of this Late Iron Age (approx. 400–1200 AD) peasant society are outlined on the basis of archaeological and environmental data. The implications of the geographical patterning shown by the spatial analyses of settlement data from over 300 sites are discussed.

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The Åland Archipelago lies at the entrance of the Gulf of Bothnia, halfway between the Swedish and Finnish mainlands. It falls within the southern coniferous zone where leaf-trees are not uncommon. Due to isostasy the region has been rising since deglaciation and the present uplift rate is 5–6 mm/yr.

Two major factors have been responsible for the shaping of a prosperous island society during prehistoric and historic times: the rich marine environment with practically unlimited resources, and the privileged situation between Sweden and Finland. Åland's maritime economy appears to have remained practically unchanged for 4000–4500 years (Dreijer 1986; Gustavsson 1987; Núñez 1986; 1990a). Not even the introduction of farming c. 2500–2000 BC seems to have altered this picture.

No major change can be detected until the mid first millennium AD when bearers of the Scandinavian Late Iron Age culture seem to have reached Åland. By then the dry land area had increased to c. 500 km² (Fig. 1), offering thus better opportunities for a more advanced farming economy. Radiocarbon-dated pollen data show a clear increase in agricultural and other cultural indicators by 400 AD (Fries 1963; Glückert 1978; Núñez 1993; Roeck-Hansen 1991; Sarmaja-Korjonen et al. 1991). A cultural change is reflected in the archaeological material about a century later (Dreijer 1963; 1964; 1986; Kivikoski 1963; 1980).

The Late Iron Age settlement

All known data suggest that the settlement unit was the farmstead, though the clustering tendency of cemeteries may reflect some sort of rural hamlets. Groups of 7–10 building foundations have been reported at a few sites (Planeringsrådet - Museibyrån 1979) but their utilization may be spread over several centuries.

Åland's Late Iron Age farmsteads share several characteristic features with contemporaneous sites in Scandinavia. The dwelling houses and their related cemeteries are generally located on agriculturally useless terrain but close to suitable arable and grazing land and with easy access to sea (Fig. 2; Karlsson 1987; Núñez 1985; 1990b; 1993; Núñez & Lempiäinen, n.d.).

Access to sea meant access to important wild resources (fishing, sealing, fowling, egg-collecting) and to searoutes and trade centres. This was possible through the various sounds that traversed Åland during the Iron Age. The importance of these sounds is shown by the concentration of sites along them (Fig. 3). The sounds not only pro-

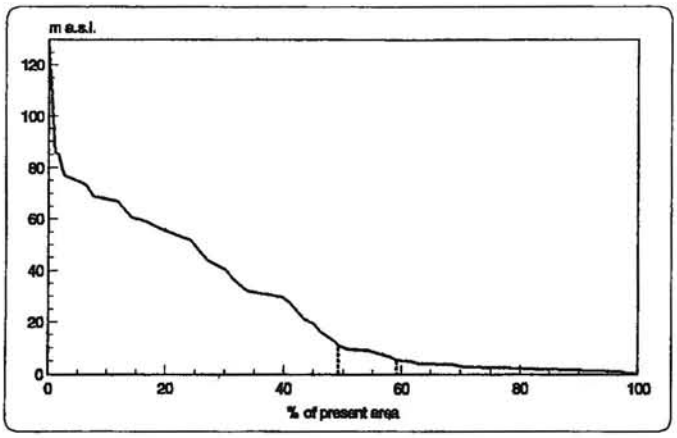

Fig. 1. Hypsographic curve for Main Åland according to Jaatinen et al. (1989). Observe that during the Late Iron Age the land area was only 48–62% of the present one (c. 1050 km²); in other words, there was a land area of 500–650 km² during 400–1100 AD.

vided a link to the outer world, however. They served as a shelter and as sea-routes for local and passing vessels. With unfavourable weather conditions, it would have been easier for N/S-bound vessels, even E/W-bound ones, to row across Åland through these sounds. This brought about the interaction of Ålanders and the passing vessels. Ships seeking the shelter of sounds and bays may have engaged in trade with the islanders, who in turn may have learned to demand some sort of payment for the use of their sounds. Such contacts may have stimulated ambitious Ålanders to join passing ships and/or to start sea-faring ventures on their own.

A negative aspect of sea accessibility would have been exposure to raids, and the six hillforts (Fig. 3) and other defense-related place names on Åland may reflect local attempts to protection against such danger (Dreijer 1948; 1986). Nevertheless, Åland's favourable position by the major searoutes (Fig. 5) was undoubtedly very beneficial for the development of local settlement and culture during the Late Iron Age. The islands were an ideal "stepping stone" between Sweden and Finland. Åland may not have been politically important — it had little else than calm sounds and safe harbours — but its geographical situation made it a convenient stop in the sea-faring network. The blocking of the sounds by the isostatic upheaval some time within 1000–1300 AD must have dealt a hard blow to the economy of those communities that benefited from them. As a result

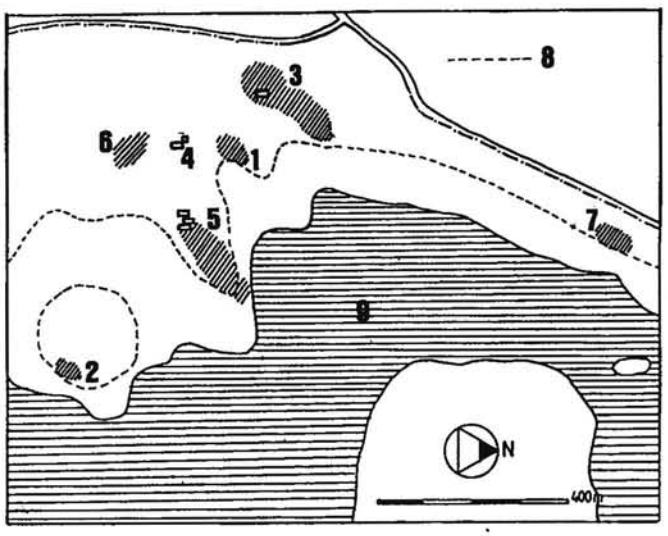

Fig. 2. The Late Iron Age farmstead complex of Kastelholms Kungsgård: 1) Ard-marked field datable within 900–1300 AD; 2) Cemetery with 5 mounds; 3) Culture layer with at least one house; 4) Dwelling site with 2 houses; 5) Cemetery with 137 graves and 3 houses; 6) Culture layer; 7) Cemetery with 39 graves; 8) The edge of a terrace-like formation that roughly follows the 20 m contour line; 9) The sound c. 1000 AD.

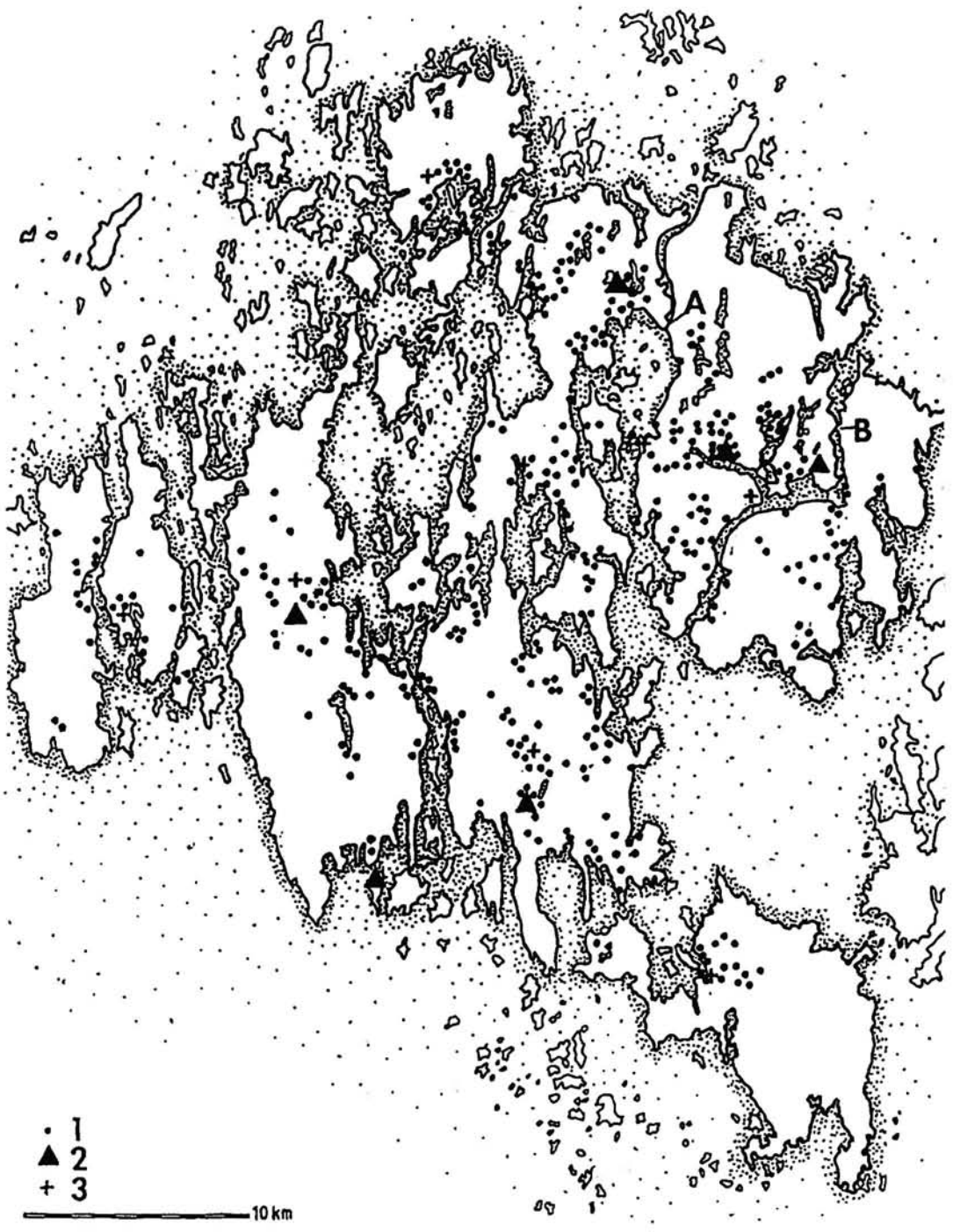

Fig. 3. Distribution of the more important Late Iron Age cemeteries (1), hillforts (2) and medieval churches (3) on Main Åland. The shoreline corresponds roughly to the coastline around 1000 AD when the water was 5–7 m higher than today (Dreijer 1948; Karlsson 1987; Núñez 1993; drawn by A.-M. Pitkänen-Darmark).

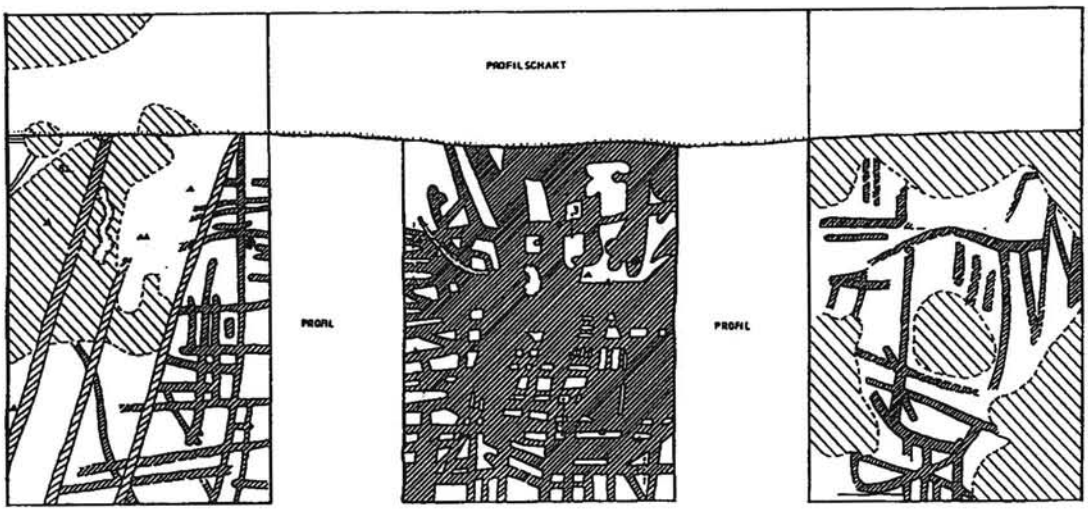

Fig. 4. Fossil ard field from a 4 x 8 m surface excavated at the north end of the Late Iron Age site of Kastelholms Kungsgård. The ard marks date within 900–1300 AD, but the three thicker furrows at the left were probably made by a modern plow in the late 19th century (Núñez 1985).

searoutes shifted further south closer to the path of the medieval Danish Itinerary (Fig. 5; Dreijer 1984; 1986; Eriksson 1984; Sundwall 1954; Westerdahl 1984).

The sounds were generally flanked by meadowy flats. Their clay soil rendered them unsuitable for the ard agriculture of the period, but they were important for grazing and winter fodder. The faunal remains show that Ålanders raised the most common livestock species and exploited wild resources (Table 1).

Agriculture was apparently restricted to the more easily tilled light sandy soils above the coastal flats (Fig. 2). The well-preserved marks of an ancient ard-plowed field datable to 900–1300 AD were detected within a c. 40 x 30 m area at the Kastelholms Kungsgård site (Fig. 4), and similar ard-marked surfaces and other indications of ancient field systems have been reported from other sites on Åland (Karlsson 1984; Núñez 1973; 1985; 1993; Núñez & Lempiäinen, n.d.; Roeck-Hansen 1991; Weber 1973).

Table 1. Fauna remains from Late Iron Age sites on Åland (Núñez 1993).

DOMESTIC	WILD
Cattle	Seals
Sheep/goat	Birds
Pig	Fish
Horse	Hare
Chicken	Fox
Dog	
Cat	

Charred cereal grains and other plant remains were retrieved from soil collected from the occupation layers of two Late Iron Age house foundations and from the ard furrows of an ancient field at the Kastelholms Kungsgård site (Table 2). Barley appears to have been the dominant cereal in all the three sampling locations, and remains of barley bread were found in some mounds at the local cemetery (Fig. 6), only 20–200 m from the sampling sites (Fig. 2; Kivikoski 1980; Núñez 1990b; 1993; Núñez & Lempiäinen, n.d.).

The cemeteries and dwellings were generally located on rocky/stony terrain of no agricultural value. It appears that each Late Iron Age farmstead had its own family burial grounds not far from the dwellings. Nearly 200 house foundations datable to the Late Iron Age/early medieval period are known from Åland, and most of these lie next to or within sight of mound cemeteries (Fig. 2; Dreijer 1955; 1986; Hackman 1941; Karlsson 1987; Kivikoski 1946; 1980; Planeringsrådet - Museibyrån 1979).

The most common burial form was cremation under a mound. The dead were cremated in full dress and their ashes and personal belongings placed in an urn which was then covered with a mound. Sometimes food items were provided as

Table 2. Charred seeds and other plant remains found in the soil samples collected from two of the house foundations and from the ancient ard-marked field at the Late Iron Age site of Kastelholms Kungsgård in Sund. (Analysis by T. Lempiäinen; see Núñez & Lempiäinen, n.d.)

SEEDS (NEEDLES)	HOUSE 1	HOUSE 2	ARD FIELD
Hordeum vulgare	64	1	47
Avena sativa	3	1	1
Triticum sp.	1	-	-
Unidentified Cerealia	131	1	44
Cannabis sativa	3	-	-
Cannabis/Humulus	2	-	-
Linum usitatissimum	1	-	-
Corylus avellana	3	-	-
Juniperus communis	-	1	11
Picea abies	-	8 (278)	(20)
Carex sp.	-	-	1
Poaceae	-	-	1

grave goods. A special feature often observed in Åland's graves are the so-called clay "paws" which seem to have their closest parallel in the Volga area. Like the clay paws, many finds from Åland show direct or indirect contacts with distant lands both east and west (Dreijer 1986; Fehner 1989; Kivikoski 1934; 1963; 1980; Nosov 1990). Some 400 Late Iron Age cemeteries with a total of over 10000 graves have been recorded on Åland. The few hundred excavated graves have yielded finds datable to 500–1050 AD with about half falling within the 9th and 10th centuries (Dreijer 1979; 1986; Karlsson et al. 1983; Kivikoski 1963; 1980).

On population size

What population size could have generated so many graves in a few centuries? The answer is not easy since there are many variables and we lack knowledge on the following four points:

1) How many centuries the cemeteries were in use: Archaeologists place them within 500–650 years (400/500–1000/1050 AD) but here, considering the problems of archaeological dating, the mound-burial period was given a range of 500–900 years.
2) The initial amount of users of these cemeteries: An initial immigrant group of 50–100 has been assumed, but probably more "mound-builders" arrived later, and/or the native population may have adopted the new burial tradition.
3) The total amount of deaths during the period: Obviously archaeologists have not detected all the graves and many have been destroyed. It was assumed that a total of 9000–13000 mound burials had taken place before the tradition was abandoned at the end of the heathen period.
4) The rates of increase (births, new immigrants, mound-burial converts) or mortality of this population: estimates can be made based on the known graves.

The simulations based on these parameter ranges suggest a population between 3600 and 6000 on Main (Fasta) Åland at the end of the heathen period; i.e. when the last mound burial took place. Taking into account the land area of Main Åland at the time, 600–700 km² (Fig. 1), we obtain a population density of 5–9 inh./km². These figures agree well with the historical data (Table 3).

Spatial analysis, assumptions and results

Given the abundance of Late Iron Age monuments on Åland, it may be possible to detect such settlement structure. Any viable farmstead would have required a certain territory (arable and grazing land, woods, fishing waters) that may be re-

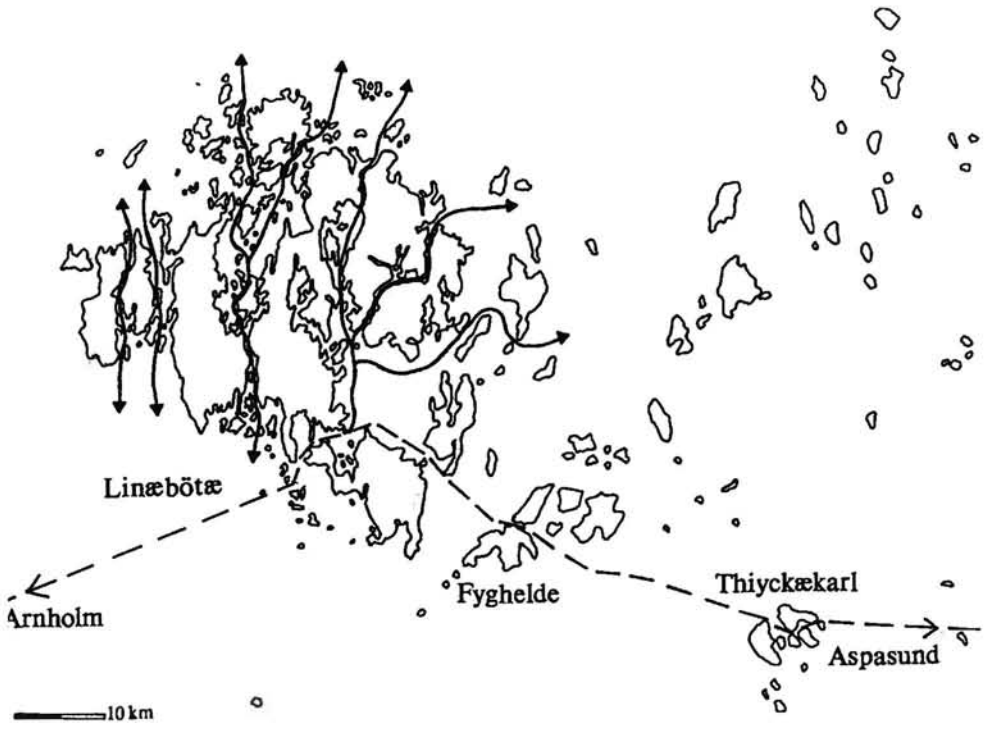

Fig. 5. The various possible searoutes through Åland's sounds during the Late Iron Age. The path of the 13th century Danish Itinerary and the places mentioned by it: Lemböte, Föglö and Kökar.

flected in the relative location of the sites.

The best spatial information about the Late Iron Age settlement is provided by the cemeteries which are numerous and tend to be situated very close to the dwellings. The cemetery data come from the site inventory lists compiled by M. Karlsson (Planeringsrådet - Museibyrån 1979). In addition to the 404 Late Iron Age cemeteries, corresponding information on the 6 prehistoric hillforts and 10 medieval churches from Main Åland were processed (cf. Núñez 1993).

One tool that gives an idea of spatial patterning is the concept of nearest neighbour (NNM), which is defined as the mean of the distances between

Table 3. The early population figures for Åland from the last mound burial (LMB) in the late heathen period to the 18th century. The first estimate is based on the number of Late Iron Age graves, the following four on tax records (cf. Hendriksson 1986; Kerkkonen 1965; Orrman 1983) and the last two are true censuses (Radloff 1795). The densities are based on contemporaneous land surface (cf. Fig. 1).

DATE	RAW DATA	POPULATION	Inh./km2
LMB	9000-12000 graves	3600-6000	5-9
1250	686 households	5500	7
1384	>934 households	7600	9
1559	1025 households	8300	10
1571	1046 taxpayers	8400	11
1749	8983 inhabitants	8983	11
1790	11404 inhabitants	11404	13

Table 4. The nearest neighbour statistics (in km) between Late Iron Age cemeteries (NNM), between cemeteries and hillforts (NFM), and between cemeteries and medieval churches (NCM) on Main Åland and its parishes. Lemland and Lumparland are considered as a parish.

AREA	n	NNM	NFM	NCM
All main Åland	404	0.44	4.7	3.5
Eckerö	24	0.54	5.7	2.4
Finström	72	0.36	6.5	4.7
Geta	15	0.44	9.1	1.7
Hammarland	39	0.53	3.0	3.2
Jomala	69	0.52	3.8	3.4
Lemland-Lumparland	24	0.76	10.8	1.9
Saltvik	86	0.35	2.5	3.1
Sund	75	0.53	3.8	3.4

each site and its closest neighbour. To obtain the NNM, the distances between the sites were calculated from their geographic coordinates. The NNM for the 404 cemeteries is about 440 m. When the same concept was applied to the location of hillforts and medieval churches with respect to cemeteries, the means of the distances from each cemetery to their nearest hillfort (NFM) and church (NCM) were respectively 4.7 and 3.5 km (Table 4). The values for each of the eight parishes fluctuate but do not differ much from those for all Main Åland. Most divergent are the more isolated and site-poor parishes of Lemland and Geta (Fig. 3).

The possible hierarchic organization of settlement into units of increasing importance was tested in the parishes of Jomala, Finström, Saltvik and Sund which contain c. 75% of the known Late Iron Age cemeteries of Main Åland (302 cemeteries with over 800 graves). The cemeteries from this area were grouped according to their size (all, cemeteries over 10 graves, cemeteries over 20 graves, etc.) and the mean nearest values (NNM, NFM, NCM) were calculated for the various groups. The results show that the NNM values increase with the size of the cemetery (Table 5). This may be partly blamed on the decreasing number of sites as larger and larger cemeteries are chosen, but there are other features that suggest that there is a valid trend that the larger cemeteries correspond to larger and more important places. There is also a tendency of NNM to group around values that correspond specific cemetery size ranges (Fig. 7; Table 6).

An interesting trend that cannot be blamed on the decreasing amount of sites is that NFM tend to decrease as cemetery size increases (Table 5, 6). This suggests that the more important places had a greater need for protection and were therefore located closer to the hillforts.

An even clearer relationship may be seen between the Late Iron Age cemeteries and the medieval stone churches. Though not necessarily contemporaneous with heathen cemeteries, medieval churches follow them closely in time and mark both the end of the heathen period and the spread of Christianity. The proximity of the medieval churches to the largest Late Iron Age cemeteries suggests, as one might expect, that early missionary and parochial activity was first directed to the larger and more important "centres"; i.e. to those

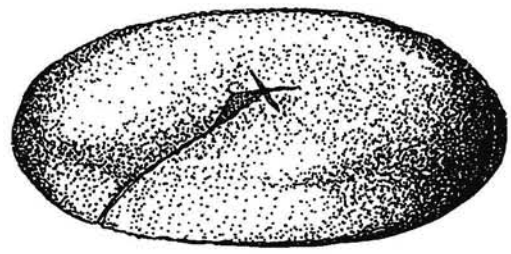

Fig. 6. Barley bread found in grave 28 at the cemetery closest to the Kastelholms Kungsgård farmstead (Fig. 2). The bun has now a diameter of c. 10 cm, but it may have shrunk after 1000 years (Drawing: A.-M. Pitkänen-Darmark).

Table 5. The spatial relationship between Late Iron Age sites from Main Åland. Comprises 404 cemeteries, 6 hillforts and 8 medieval churches. The cemeteries are grouped by size according to the number of graves they contain (all, more than 10 graves, more than 20, etc.). Note that the nearest neighbour values (NNM) tend to increase with cemetery size, whereas the corresponding figures for cemetery-hillfort (NFM) and cemetery-church (NCM) distances decrease.

SIZE	N	NNM [km]	NFM [km]	NCM [km]
>1	404	0.4	4.7	3.4
>10	282	0.5	4.5	3.4
>20	191	0.7	4.7	3.5
>30	130	0.9	4.4	3.4
>40	87	1.3	4.5	3.4
>50	60	1.5	4.7	3.3
>60	42	2.0	4.9	3.2
>70	28	2.4	4.2	3.1
>80	17	3.7	4.2	3.3
>90	14	3.9	4.0	3.5
>100	12	4.3	4.0	3.4
>110	9	5.0	3.9	2.7
>120	6	7.9	3.6	2.8
>130	5	9.2	3.2	2.0
>140	3	9.5	1.9	0.9
>150	2	29.4	2.3	0.2

places that offered the greatest potential for the Church's spiritual and economical needs.

This close relationship between large heathen cemeteries and the medieval stone churches implies settlement continuity from the late heathen period to the time when Åland held a Christian society organized in parishes with stone churches, and it refutes the claims of depopulation proposed by Hellberg (1987) on the basis of place names. Continuity is also supported by the pollen analytical data that show cultivation activity throughout the alleged depopulation period (Fries 1963; Sarmaja-Korjonen et al. 1991).

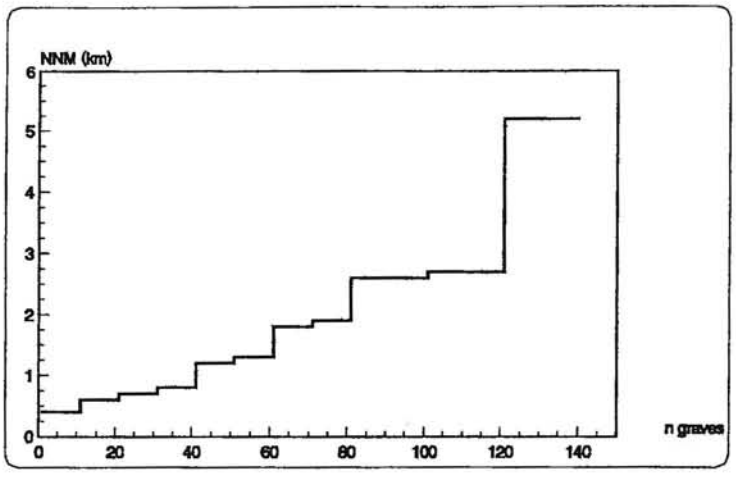

Fig. 7. Distribution of the nearest neighbour means (NNM) for cemeteries of various size ranges. Note that the NNM tend to form plateaux around certain size ranges (10–40, 40–60, 60–80, 80–120, >120 graves), suggesting some sort of hierarchy levels.

Table 6. The spatial relationship between sites from the cemetery-rich parishes of Jomala, Finström, Saltvik and Sund. The cemeteries are grouped by those size ranges that form plateaux in Fig. 7. Note that like in Table 6 the NNM values increase with cemetery size while the corresponding NCM figures decrease. The NFM behave more erratically (their location is dependent on the terrain), but also show a decreasing trend.

SIZE RANGE	n	NNM [km]	NFM [km]	NCM [km]
1-40	238	0.5	4.1	3.7
41-60	34	1.9	4.2	3.9
61-80	16	3.3	4.2	3.3
81-120	10	4.3	4.5	3.4
>120	6	6.9	2.7	1.5

References

Dreijer, M. 1948: Fornborgar och bötesberg på Åland. *Skärgårdsboken*. Helsingfors.

Dreijer, M. 1955: Hustomtningar i Tjudnäs. *Åländsk Odling* 16.

Dreijer, M. 1964: Guldsvärdsknappen från Kastelholm. *Åländsk Odling* 25.

Dreijer, M. 1986: *The history of the Åland people*. Mariehamn.

Dreijer, S. 1963: Västeuropeiskt inslag i Ålands vendeltid. *Finskt Museum* 1961 (LXVIII).

Dreijer, S. 1984: Hamnar och farleder på Åland i anslutning till Itinerariet. *Bottnisk Kontakt* 2.

Eriksson, C. 1984: Danska Itinerariet i finländsk forskning. *Bottnisk Kontakt* 2.

Fehner, M.V. 1989: Bobrovij promysel v Volgo-Okskom meždureče *Sovetskaja arheologija* 1989.3.

Fries, M. 1963: Pollenanalytisk bidrag till vegetations- och odlingshistoria på Åland. *Finskt Museum* 1961 (LXVIII).

Glückert, G. 1978: Östersjöns postglaciala strandförskjutningen och skogens historia på Åland. *Publications of the Department of Quaternary Geology of the University of Turku* 34.

Gustavsson, K. 1987: Charred-stone cairns on Kökar. *BAR International Series* 366.

Hackman, A. 1941: Två åländska husgrunder från yngre järnålder. *Finskt Museum* 1940 (XLVII).

Hellberg, L. 1987: Ortnamnen och den svenska bosättningen på Åland. *Studier i Nordisk Filologi* 68.

Hendriksson, B. 1986: Åland under senmedeltiden och 1500-talet utifrån de historiska källorna. *RAÄ* 1987.3.

Jaatinen, S., Peltonen, A. & Westerholm, J. 1989: Ålands kulturlandskap 1700-talet. *Bidrag till kännedom av Finlands natur och folk* 137.

Karlsson, M. 1984: Borgboda, 1500-årigt gårdskomplex i Saltvik. *Åländsk Odling* 44.

Karlsson, M. 1987: Åländska husgrunder från yngre järnålder — tidig medeltid. *Museibyrån* 1987.1.

Karlsson, M., Arén, L., Landin, M. & Rosborg, B. 1983: Under Godbyvägen. *Museibyrån* 1984.1.

Kerkkonen, G. 1965: *Ålands silverskatteregister 1571*. Mariehamn.

Kivikoski, E. 1934: Eisenzeitlichen Tontatzen aus Åland. *Eurasia Septentrionalis Antiqua* 9.

Kivikoski, E. 1946: Husgrunder i Storhagen, Kulla, Finström. *Finska Fornminnesföreningen Tidskrift* 48.3.

Kivikoski, E. 1963: *Kvarnbacken. Ein Gräberfeld der Jüngeren Eisenzeit auf Åland*. Helsinki.

Kivikoski, E. 1980: Långängsbacken. Ett gravfält från yngre järnåldern på Åland. *Finska Fornminnesföreningen Tidskrift* 80.

Nosov, E. N. 1990: *Novgorodskoe (Rurikovo) Gorodišče*. Leningrad.

Núñez, M. 1986: Om bosättningen på Ålandsöarna under stenåldern. *Åländsk Odling* 46.

Núñez, M. 1990a: Människa och miljö i den åländska skärgården under stenåldern. *Skärgård* 13.3.

Núñez, M. 1990b: Papers on the Kastelholm Castle: Phosphate Survey. *Norwegian Archaeological Review* 23.

Núñez, M. 1993: Searching for a structure in the late Iron Age settlement of the Åland Islands, Finland. *Karhunhammas* 15.

Núñez, M. & Lempiäinen, T., n.d.: A Late Iron Age farming complex from Kastelholms Kungsgård, Sund, Åland. *PACT* 36 (in print).

Orrman, E. 1983: Skatteenheter och bebyggelseutveckling på Åland under medeltiden. *Åländsk Odling* 42.

Planeringsrådet - Museibyrån 1979: *Fornminnesinventering* Vol. 8.

Radloff, F.W. 1795: *Beskrifning öfver Åland*. Åbo.

Roeck-Hansen, B. 1991: Township and territory. A study of rural land-use and settlement patterns in Åland c. A.D. 500–1550. *Acta Universitatis Stockholmiensis, Studies in Human Geography* 6.

Sarmaja-Korjonen, K., Vasari, Y. & Hæggström, C.A. 1991: Taxus baccata and influence of Iron Age man on the vegetation in Åland, SW Finland. *Annales Botanici Fennici* 28.

Sundwall, J. 1954: *Ålands medeltidsurkunder I. – 1400*.

Westerdahl, C. 1984: Itinerariet Blekinge-Reval. *Bottnisk Kontakt* 2.

Manuscripts

Núñez, M. 1973: Hammarland Kattby. Unpublished report, Museibyrån, Mariehamn.
Núñez, M. 1985: Provundersökning vid den planerade golfbanan i Kastelholm. Unpublished report, Museibyrån, Mariehamn.
Weber, K. 1973: Saltvik Kvärnbo. Unpublished report, Museibyrån, Mariehamn.