BARELY SURVIVING OR MORE THAN ENOUGH?

The environmental archaeology of subsistence, specialisation and surplus food production

EDITED BY
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This is a digital offprint from:

Groot, M., D. Lentjes & J. Zeiler (eds) 2013: *Barely Surviving or More than Enough? The environmental archaeology of subsistence, specialisation and surplus food production*. Leiden: Sidestone Press.

Published by Sidestone Press, Leiden
www.sidestone.com

ISBN 978-90-8890-192-8

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Lay-out & cover design: Sidestone Press

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Entrepreneurs and traditional farmers: the effects of an emerging market in Middle Saxon England

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Abstract

It has been suggested that the emergence of new trading settlements in the Middle Saxon phase housed the first population of non-agrarian workers, merchants, administrators and craftsmen since the Roman Period in England. At the same time, a network of inland markets and trading sites has been hypothesised. This paper attempts to elucidate the role of wics (coastal and riverine trading sites) and inland markets as consumer sites, and rural sites as producers of a surplus to supply them. Utilising archaeozoological data from Early and Middle Saxon sites within England to investigate trends in diet, animal husbandry and the production of meat and raw materials, results suggest that surplus production was limited to the hinterland of wics; inland rural sites continuing a regime based on self-sufficiency from the Early Saxon phase.

Keywords: *Saxon, England, wic, surplus, specialisation, market*

Background to the study period

Following the withdrawal of Roman influence in the Early Saxon phase (AD 410–650), England split into numerous territories fought over by British and Saxon warlords (Esmonde Cleary 2011, 26). The majority of the population were farmers living in kinship groups, continuing with the preceding Romano-British or Iron Age agricultural economy, providing enough for themselves, their family and servants (Crabtree 1991, 36-37), as well as enough surplus to provide for hard times and food taxes paid to the King in return for protection (Hodges 1988, 4; Härke 1997, 157).

By the Middle Saxon phase (AD 650–850) there was considerable consolidation of territories leading to five major kingdoms: Northumbria; Mercia; East Anglia; Wessex; Sussex; and Kent (Hinton 1990, 60). The relative stability that this enabled led to a change in agriculture, where large estates were established under the control of an estate centre or vill. These estates incorporated a number of farmsteads which were expected to produce a surplus of food as tax for the Church, King or Queen of the region, collected at the estate centre (Fowler 2002, 71; Jones and Page 2006, 81). Following a rejection of the church during much of the Early Saxon phase, a number of minsters and monastic sites were re-established in the Middle Saxon phase, initially under the protection and influence of Royal patrons, but later becoming independent estate holders themselves (Blair 2005, 204).

The combination of comparative political stability and potential for the production of wealth in the form of a surplus of food and raw materials led to the beginnings of a market economy in England. The scale and mechanisms of trade at this time have been widely debated, but three main forms have been identified:

- Local markets and fairs held countrywide at secular or ecclesiastical estate centres, allowing trade in bulk goods such as raw materials, food and wool (Astill 1991, 103; Naylor 2004, 134). It has been suggested that these were the main routes of trade in Western England (Griffiths 2003, 71). The importance of the role of ecclesiastical sites in the production and redistribution of goods has been emphasised by both documentary and historical sources (Blinkhorn 1999, 14).

- Productive sites where large quantities of coins and metalwork have been recovered (Ulmschneider 2000, 63). Their location on major inland trade routes suggests that these sites were localised centres of trade, important for both local and inter-regional communication. There is also evidence for some of these sites to be centres of production of food and raw materials, and many are associated with ecclesiastical and high-status sites such as Brandon and Wicken Bonhunt (Naylor 2004, 15; Palmer 2003, 54).

- The final category of trading site in the Middle Saxon phase are the wics or emporia. These were large sites of international trade under the control of the local elite who would exact tolls on goods passing through. They were situated on the southern and eastern coastal and riverine regions to optimise trade with Europe. These sites depended on the trade of surplus food taxes, raw materials and high quality manufactured goods (Astill 1991; Vince 1994). Archaeological evidence exists for the specialisation of occupations consistent with the presence of craft workers and merchants within wics (Blackmore 2002, 289; Driver 1984, 401; Riddler 2001, 66; 2004, 145). This would have resulted in a population that could not produce food or materials to meet their own needs, who were dependent on external provisioning for their food and raw materials (DeFrance 2009, 107-108; Saunders 2001, 12).

The role of these three types of market on local and regional production must be considered in order to understand the demands put upon the rural producers. For example, Hodges (1996, 289) suggested that wics monopolised all regional and

inter-regional exchange, with smaller markets fulfilling a relatively unimportant role. This theory is based upon the control of surplus production from rural sites by the elite occupying estate centres, who would then use excess food and raw materials to provision craft manufacturers within estate centres and wics, in return for taxes and trade in luxury goods through these wics (Hamerow 2007, 228; O'Connor 2001). If wics were under royal patronage, it is likely that these provisions were redistributed from local estate centres, which collected surplus from farms within their lands.

Alternative theories based on the quantity of coinage found at productive sites and regional markets suggest there was greater interaction along inland trade routes, with rural producers given the opportunity to freely market their surplus on inland sites as well as those on the coast (Astill 1991, 101; Brookes 2007, 26; Naylor 2004, 15; Palmer 2003, 53; Ulmschneider 2000, 71). If so, it may be expected that excess production of goods and food would occur at inland rural sites for distribution through inter-regional trade routes.

With the intention of furthering the current state of historical and archaeological knowledge regarding the nature of wics and inland trading sites, and their influence on the surrounding rural sites, this study aims to address three key questions:

1. Did the emergence of coastal trading sites (wics) in Middle Saxon England coincide with surplus production from local rural sites?
2. Is there evidence for specialisation and surplus production on rural sites further inland that may be used to infer the presence of similar, significant trading sites (productive sites and local markets) at more central regions within England?
3. If so, was this enabled by increased production *prior* to the founding of these trading sites, or was it brought about it by demand concurrent with their creation and their population by a non-agrarian section of society?

Surplus production or subsistence living?

To answer these questions, some criteria must be established for the identification of sites that were consumers of food and raw materials purchased, traded or redistributed from rural sites, and the subsequent identification of rural sites as producers of surplus or specialist goods. The mechanics of distribution and foodways between rural sites and wics or other trading sites in Middle Saxon England (see Hamerow 2007; Holmes forthcoming) are not specifically considered here, rather evidence for the types of production and consumption will be investigated.

Three major modes of production are commonly associated with animal husbandry (*e.g.* Davis 1987, 155-162; Maltby 1994, 85; O'Connor 1992): subsistence or self-sufficient production where animals are largely bred, reared, worked, killed and consumed within one site; net producer sites, where a surplus of animals is raised either for meat or secondary products that can then be traded, exchanged, sold or given as tax; and net consumer sites, where the majority of food and raw materials are bought in from producer or distribution sites. How are these different models reflected in the archaeological record?

Self-sufficient sites of which the inhabitants are both producer and consumer of animals and their products may be expected to include fairly non-specific signatures, either a narrow or diverse range of species, with animals culled at a range of ages providing both meat and secondary products and bones from all stages of processing (Clark 1987, 184). However, it should be borne in mind that this pattern may be consistent with some producer sites (Gumerman 1997, 116), depending on the intensity of production.

The specialist production of animals as sources of primary (*i.e.* meat, bone, skin) or secondary (*i.e.* wool, dairy, eggs) products will lead to the presence of animals at specific ages on both producer and consumer sites (Crabtree 1996a, 72), depending on where the processing of carcasses was taking place. Clark (1987, 184) has further refined this speculation, with regards to the provisioning of meat, suggesting that greater numbers of young males will be found at consumer sites, while missing from producer sites. Within the urban context itself, specialisation of industries such as butchery may also be indicative of a consumer site, as the consuming population becomes further divorced from the methods of food production (Gumerman 1997, 116). Alternatively, if animals were butchered at the producer site to provide specific cuts of meat, there may be an excess of primary butchery debris at that site, and a corresponding absence on the consumer site – subsequently there may appear to be an over-representation of young animals at prime meat age in the tooth wear data at the sites where such butchery took place (Clark 1987, 184).

Specialisation of secondary products will indicate a demand for goods such as wool or dairy (Gumerman 1997, 113). These may be observed by older, castrated and female sheep at producer sites where wool was of importance and older female animals where the onus was on dairy production (Crabtree 1996b, 102; Maltby 1994, 90; Wapnish and Hesse 1988, 84). It is likely that some of these older animals would also be marketed to consumer sites, as an excess of livestock and possibly a number of young males in the case of a dairy economy. Therefore some mixing of archaeozoological signatures should be expected between sites exhibiting different modes of production.

Materials and methods

Animal bone assemblages from 43 Early and 51 Middle Saxon sites in England were included in the data set (Table 1), conforming to the following criteria:

- Only domestic rural and wic sites were included - industrial or craft working sites were not included because of the potential for specific animal bones to be required at such sites.
- Ecclesiastical and high-status sites were included given their likely role in the specialist production of food and raw materials in Middle Saxon England.
- A minimum combined NISP (number of identified specimens) of 100 cattle, sheep and pig bones was chosen to maximise the potential data set.

Early Saxon Inland Rural Sites	County	Reference
Hartigans, Milton Keynes	Buckinghamshire	Burnett 1993
Pennyland, Milton Keynes	Buckinghamshire	Holmes 1993
Walton vicarage, Aylesbury	Buckinghamshire	Noddle 1976
Orton Hall Farm	Cambridgeshire	King 1996
Spicer's Warehouse, Sawston	Cambridgeshire	Holmes 2009
Stonea grange, Cambridgeshire	Cambridgeshire	Stallibrass 1996a
Sherborne House, Lechlade	Gloucestershire	Maltby 2003
Empingham west, Rutland water	Leicestershire	Morrison 2000
Eye Kettleby	Leicestershire	Knight forthcoming
Kings Meadow lane, Higham Ferrers	Northamptonshire	Albarella and Johnstone 2000
Middleton Stoney	Northamptonshire	Evans 2007
Aelfric's Abbey, Eynsham	Oxfordshire	Ayres *et al.* 2003
Audlett drive, Abingdon	Oxfordshire	Levitan 1992
Barton Court Farm, Abingdon	Oxfordshire	Wilson *et al*. 1986
Mill st, Wantage	Oxfordshire	Maltby 1996
New Wintles	Oxfordshire	Noddle 1975
Oxford Science park, Littlemore	Oxfordshire	Ingrem 2001
St Helen's Avenue, Benson	Oxfordshire	Hamilton-Dyer 2004a
Cadbury Congresbury	Somerset	Noddle 1970
Saxon County School, Shepperton	Surrey	Ayres 2005
Market Lavington, Wiltshire	Wiltshire	Bourdillon 2006
Deansway, Worcester	Worcestershire	Nicholson and Scott 2004
Early Saxon Rural Sites Close to Wics	**County**	**Reference**
Poundbury, Dorchester	Dorset	Buckland-Wright 1987
Fossets Farm, Southend	Essex	Grimm 2007
Old Down Farm, Andover	Hampshire	Bourdillon 1980
Manston rd, Ramsgate	Kent	Hamilton-Dyer 1997
Nettleton Top	Lincolnshire	Berg 1993
Quarrington, Lincs	Lincolnshire	Rackham 2003
Baynard's Castle	London	King 1980
Distillery site, Hammersmith	London	Ainsley *et al.* 2008
Harlington, London	London	Grimm 2009
Melford Meadows, Brettenham	Norfolk	Powell and Clark 2002b
Mundham, Norfolk	Norfolk	Leach and Morris 2008
Redcastle Furze, Thetford	Norfolk	Wilson 1995
Spong Hill, Norfolk	Norfolk	Bond 1995
West Stow a	Suffolk	Crabtree 1989
West Stow b	Suffolk	Crabtree 1989
West Stow c	Suffolk	Crabtree 1989
Botolphs, Bramber	Sussex	Stevens 1990
Caythorpe pipeline, North Humberside	Yorkshire	Stallibrass 1996b

Early Saxon Inland High Status Sites	County	Reference
Yeavering	Northumbria	Higgs and Jarman 1977
Cadbury Congresbury, Somerset	Somerset	Noddle 1992
Early Saxon Ecclesiastical Sites Close to Wics	**County**	**Reference**
Bishopstone, Sussex	Sussex	Gebbels 1977; Poole and Reynolds 2010
Middle Saxon Inland Rural Sites	**County**	**Reference**
Chicheley, Bucks	Buckinghamshire	Jones 1980
Walton Lodge, Aylesbury	Buckinghamshire	Sadler 1989
Marefair, Northampton	Northamptonshire	Harman 1979a
Saxon palaces, Northampton	Northamptonshire	Harman 1985
St Peters Rd, Northampton	Northamptonshire	Harman 1979b
Cresswell Field, Yarnton	Oxfordshire	Mulville and Ayres 2004
The Orchard, Walton Rd, Aylesbury	Oxfordshire	Hamilton-Dyer 2004c
Yarnton	Oxfordshire	Mulville and Ayres 2004
Cadley rd, Collingbourne Ducis	Wiltshire	Hamilton-Dyer 2001
High Street, Ramsbury	Wiltshire	Coy 1980
Middle Saxon Inland Trading Sites	**County**	**Reference**
Lake End Road, Dorney	Berkshire	Powell *et al*. 2002
Lot's Hole, Dorney	Berkshire	Powell *et al*. 2002
Middle Saxon Rural Sites Close to Wics	**County**	**Reference**
Riverdene, Basingstoke	Hampshire	Hamilton-Dyer 2003
Quarrington, Lincs	Lincolnshire	Rackham 2003
National Gallery Basement	London	West 1989b
National Portrait Gallery	London	Armitage 2004b
The Treasury, Whitehall	London	Ainsley *et al*. 2008
Chalkpit Field North, Sedgeford	Norfolk	Poole 2007
Crow hall park, Downham Market	Norfolk	Curl 2008
Hay Green, Terrington St. Clement	Norfolk	Baker 2002
Rose Hall Farm, Walpole St. Andrew	Norfolk	Baker 2002
Sedgeford, Norfolk	Norfolk	Clutton-Brock 1976
Brandon	Suffolk	Crabtree 2012
Friars Oak, Hassocks	Sussex	Stevens 2000
Cottam, Yorkshire	Yorkshire	Dobney *et al*. 1999
Site 39, Wharram	Yorkshire	Stevens 1992
Sites 94 and 95, Wharram	Yorkshire	Pinter-Bellows 1992
The south manor, Wharram	Yorkshire	Pinter-Bellows 2000

Middle Saxon Wic and Trading Sites	County	Reference
Sandtun, West Hythe	Kent	Murray and Hamilton-Dyer 2001
Anderson's road, Southampton	Hampshire	Knight 2006
Cook St, Southampton	Hampshire	Bourdillon 1993
St Mary's Stadium, Southampton	Hampshire	Hamilton-Dyer 2005
Melbourne St, Southampton	Hampshire	Bourdillon and Coy 1980
Six Dials, Hamwic	Hampshire	Bourdillon and Andrews 1997
Church Lane, Canterbury	Kent	King 1982
21-24 Maiden Lane and 6-7 Exchange Court a	London	Hamilton-Dyer 2004b
21-24 Maiden Lane and 6-7 Exchange Court b	London	Hamilton-Dyer 2004b
James Street, London	London	Armitage 2004a
Jubilee Hall, Covent Garden	London	West 1988
Lyceum Theatre, Exeter Street	London	Rackham and Snelling 2004
Maiden Lane	London	West 1988
National Gallery Extension	London	Rackham 1989
Peabody site	London	West 1989a
Ipswich 1974-88	Suffolk	Crabtree 1994
Ipswich	Suffolk	Jones and Serjeantson 1983
Fishergate, York	Yorkshire	O'Connor 1991
Middle Saxon Ecclesiastical Sites Close to Wics	**County**	**Reference**
Church Close, Hartlepool	Durham	Huntley and Rackham 2007
Church walk (76), Hartlepool	Durham	Huntley and Rackham 2007
Hartlepool Monastery	Durham	Rackham *et al*. 1988
Wearmouth and Jarrow	Durham	Noddle *et al*. 2006
Middle Saxon Inlnd Ecclesiastical Sites	**County**	**Reference**
Aelfric's Abbey, Eynsham	Oxfordshire	Ayres *et al*. 2003
Middle Saxon High-Status Sites Close to Wics	**County**	**Reference**
Wicken Bonhunt, Essex	Essex	Crabtree 1996a
Flixborough	Lincolnshire	Dobney *et al*. 2007
Caister-on-Sea, Great Yarmouth	Norfolk	Harman 1993
North Elmham Park	Norfolk	Noddle 1980
Middle Saxon Inland High-Status Sites	**County**	**Reference**
Copeshill rd, Lower Slaughter	Gloucestershire	Hambleton 2006
Middleton Stoney	Northamptonshire	Evans 2007

Table 1: Sites included in the analysis.

Rural, high-status and ecclesiastical sites were categorised depending on their proximity to wics and trading sites (Fig. 1), dividing the country into two zones – those close to wics, in a good position to supply them with food and raw materials, and inland sites that would not have been in such close contact with these consumer centres.

To investigate the mode of production, a combination of methods will be employed: animal husbandry will be investigated with mortality and sexing data where available; specialist butchery through carcass parts present; and diet through the relative numbers of particular species recorded at each site.

Mortality data is based on tooth wear data from sites with more than ten mandibles available per species. The conversion of tooth wear and eruption from a number of sources was made possible using Hambleton's (1999, 64) method. Cattle at prime meat age may be culled at around the age of 36 months – wear stage F-G, whereas sheep and pigs reach maturation earlier, and culls of these animals for meat may be expected at approximately wear stages E-F and D-E respectively. Sexing of cattle and sheep metacarpals was undertaken using metrical analysis described by Albarella (1997, 45) for cattle, and Davis (2000, 389) for

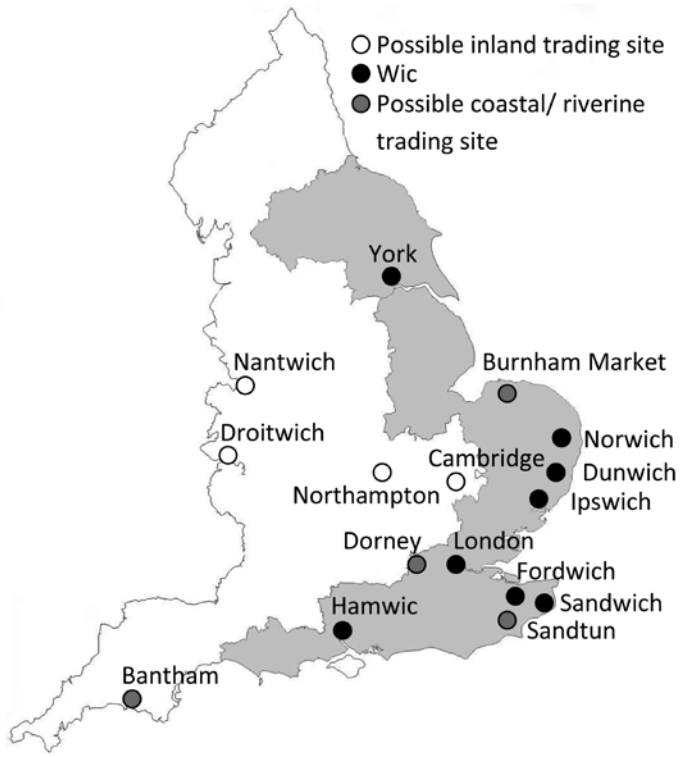

Figure 1. Map of England showing regions close to wic sites (grey) and those further inland.

sheep, based on the premise that these bones are more slender in females, robust in males and longer in castrates.

The relative quantities of particular carcass parts recorded at sites with a NISP or MNE of more than 40 elements per species were plotted to investigate the production of specialist cuts of meat or a demand for raw materials. This was based on the mean number of elements from various parts of the carcass (feet= phalanges; lower legs= metapodials; upper legs= scapula, humerus, radius, pelvis, femur, tibia; mandible; horn cores) plotted as a proportion of the most commonly occurring element. Ethnographic work by Brain (1981) has shown that, when animals are slaughtered, butchered, processed, consumed and disposed of on one site, there is a hierarchy of carcass parts more likely to survive for longer. For example, the dense, early-fusing bones are subject to best preservation and recovery, whereas later-fusing bones, attractive for dogs to chew on are more likely to be destroyed. Therefore, by considering the relative frequency in which parts of the carcass are present from a site they can be compared with this hierarchy. On a self-sufficient site, where animals are bred, eaten and disposed of within, it is likely that mandibles will be most commonly recovered, followed by lower and upper legs, then feet and horn cores. Sites where significant redistribution of body parts takes place will have more specific signatures, with a bias of particular elements varying from the expected pattern.

Wics and surplus production

Initial investigation will consider the role of wics as net consumers. The predominance of cattle and pigs at wic sites is striking (Fig. 2), and perhaps not surprising, as the provisioning of consumer sites that demand a meat supply is more likely to be met with larger animals, providing greatest quantities of meat per carcass such as cattle (Zeder 1991, 38). Furthermore, pigs are easy to raise within an urban environment, living off food waste and only requiring a small amount of space. Combined with this is the presence of younger cattle and sheep at the majority of wics (York, Hamwic and London), which is also consistent with the presence of a net consumer population. The exception to this is the site at Ipswich, which, as well as a number of animals culled at prime meat age, also has a considerably higher number of older cattle and sheep – possibly having been used for dairy or wool production or traction (Figs. 3 and 4). At St Mary's Stadium, Hamwic a very high number of sheep were culled later, indicative of those used largely for wool or dairy. Pigs were culled primarily for meat, even at Fishergate, York where the cull comes later (Fig. 5), nearly all animals had died by the time of maturity.

With the exception of Ipswich, where similar proportions of both male and female cattle were recorded (Crabtree 2012), there was no sexing data available for animals within wics.

There is little evidence for specialist butchery deposits, although both cattle and sheep horn cores are recorded in greatest quantities from wic sites (Figs. 6 and 7), which indicates the deliberate supply of these sites with horn for working.

Similarly, high numbers of cattle feet and metapodials and sheep metapodials from Fishergate, York suggest that this site was involved with craft working. Metapodials are bones that have little meat on them, yet are fairly straight, and therefore ideal for the manufacture of objects. There are also higher proportions of sheep and pig limb bones recorded at wics, suggesting that they were provisioned with particular cuts of meat. With these exceptions, however, the proportion of carcass parts from all the main domesticates (see also Fig. 8) are generally indicative of the deposition of all parts of the carcass, suggesting that animals were brought to wics 'on the hoof', and then butchered on site.

The evidence for wics is consistent with the deliberate provisioning of meat and some raw materials from cattle and sheep, where both cattle and sheep were apparently available at around prime meat age as well as following use for secondary products. The delayed cull of sheep at St Mary's Stadium, on the northern outskirts of Hamwic could indicate the presence of a farm outside the wic that was responsible for the provisioning of wool as well as meat.

The confirmation of the inhabitants of wics as net consumers in the Middle Saxon phase leads onto the next part of the investigation – whether this required surplus production from surrounding rural sites. A higher number of sheep can be observed at the majority of rural, high-status and ecclesiastical sites than within wics. Exceptions to this include Crow Hall Park, Norfolk and Friars Oak, Sussex,

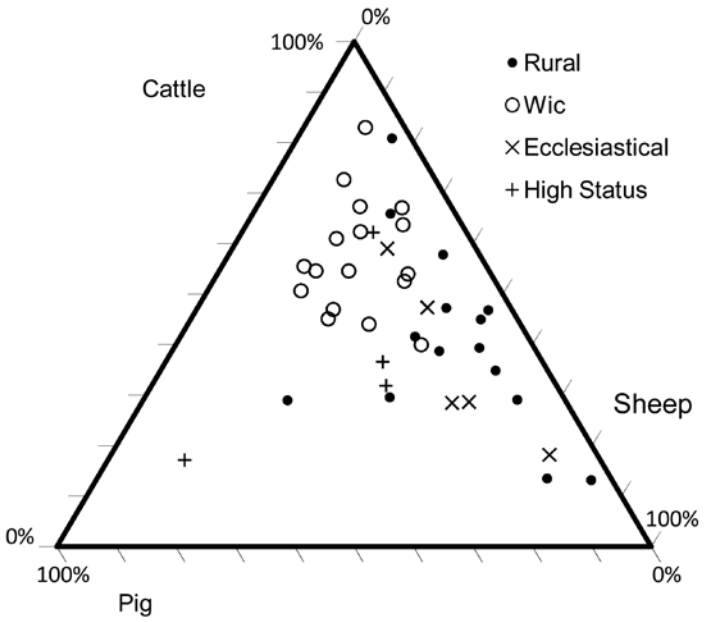

Figure 2. Relative proportions of cattle, sheep and pigs represented at wics and all other sites close to wics (NISP count) in the Middle Saxon phase.

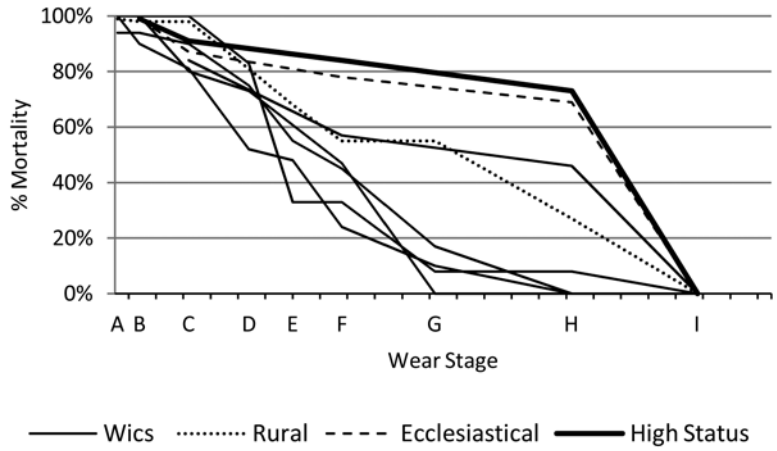

Figure 3. Middle Saxon cattle mortality data from sites close to wics. 1. Wicken Bonhunt; 2. Brandon; 3. Ipswich; 4. The South Manor, Wharram; 5. Melbourne St; 6. Anderson's Rd; 7. James St; 8. Fishergate.

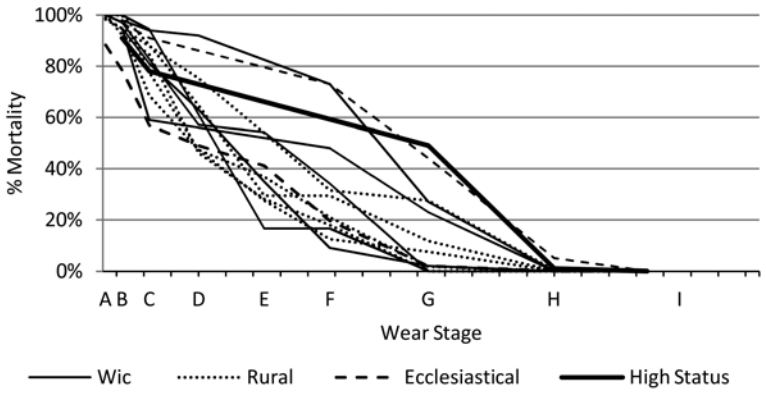

Figure 4. Middle Saxon sheep mortality data from sites close to wics. 1. Friend's Provident; 2. Brandon; 3. Wicken Bonhunt; 4. The South Manor, Wharram; 5. Ipswich; 6. Fishergate; 7. Hartlepool; 8. Hay Green; 9. Rose Hall; 10. Melbourne St; 11. James St; 12. National Portrait Gallery; 13. Sites 94 and 95, Wharram.

where cattle predominate; Riverdene, Hampshire and Wicken Bonhunt, Essex, which both recorded high numbers of pigs.

When the mortality profiles are considered it becomes apparent that some of the oldest cattle are found at the rural settlement at Wharram, Yorkshire, the high-status site of Wicken Bonhunt, Essex and the ecclesiastical site at Brandon, Suffolk (Fig. 3). At the latter two sites the evidence suggests that very few animals of prime meat age were present. This implies that there was specialisation of cattle herds, leading to a high number of old animals, such as dairy production, or that the younger animals from these sites were sent to the wics for meat upon reaching

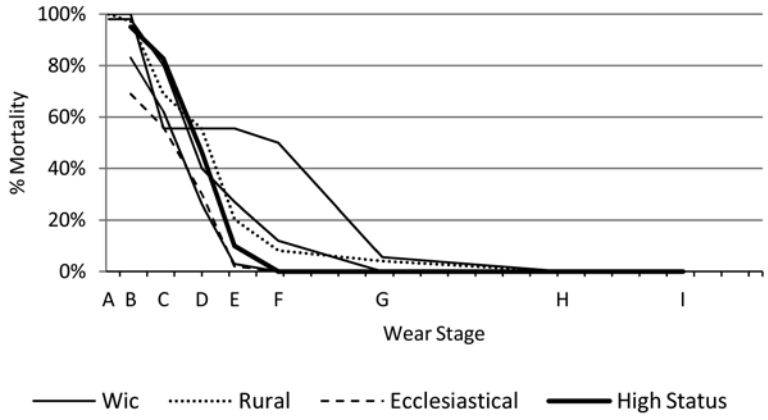

Figure 5. Middle Saxon pig mortality data from sites close to wics. 1. Fishergate; 2. The South Manor Area, Wharram; 3. Wicken Bonhunt; 4. Melbourne St; 5. Ipswich; 6. Brandon.

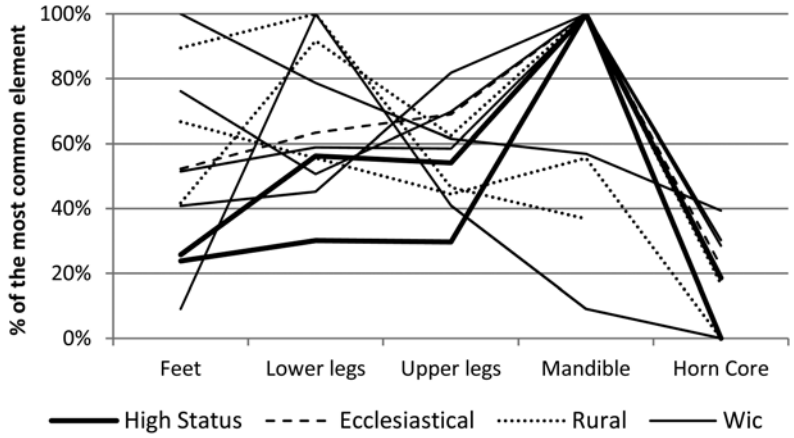

Figure 6. Cattle body part representation from sites close to Middle Saxon wics. 1. Fishergate; 2. Sites 94 and 95; 3. Friend's Provident; 4. Hay Green; 5. Brandon; 6. Peabody Site; 7. Rose Hall Farm; 8. Melbourne St; 9. North Elmham Park; 10. Flixborough; 11. Anderson's Rd.

maturity. By way of contrast, the animals at Wharram present a mixed strategy, with some culled for meat and others kept longer, possibly for milk or traction. It is also possible that a proportion of cattle at prime meat age at Wharram were also sent to the wic at York, therefore inflating the proportion of older animals in the assemblage.

There is less variation in the mortality profiles of sheep, with the majority of those from rural sites showing similar patterns to those from wics, whereby sheep were mostly at prime meat age (Fig. 4). Exceptions to this exist at Wharram, which has a combination of meat age animals and those culled later, and also at Brandon and Wicken Bonhunt, where, as with the cattle assemblage, the greatest number

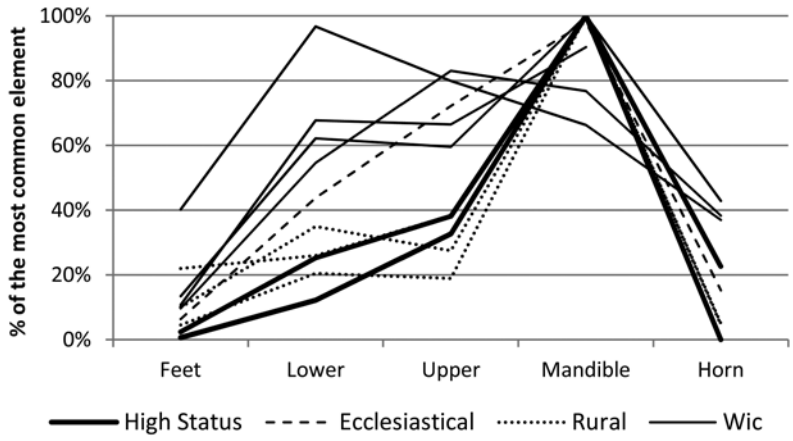

Figure 7. Sheep body part representation from sites close to Middle Saxon wics. 1. Fishergate; 2. Sites 94 and 95; 3. Friend's Provident; 4. Peabody Site; 5. Melbourne St; 6. Brandon; 7. Hay Green; 8. Flixborough; 9. Rose Hall Farm; 10. North Elmham Park.

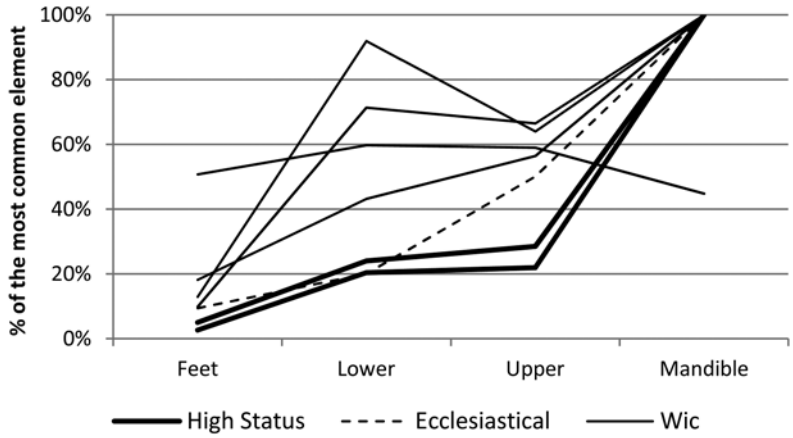

Figure 8. Pig body part representation from sites close to Middle Saxon wics. 1. Fishergate; 2. Friend's Provident; 3. Peabody Site; 4. Melbourne St; 5. Brandon; 6. Flixborough; 7. North Elmham Park.

of older sheep were recorded. Even at these latter sites, however, nearly all animals were culled before reaching wear stage H, which suggests that they were less than 6 years of age – old enough for long-term production of wool or dairy, but if these products were intensively harvested the animals could have been kept alive for longer. Again, it may reflect a husbandry strategy where animals at prime meat age were sent to consumer sites.

Unfortunately there is very little sexing data from Middle Saxon sites, the only sample of raw data available for analysis came from North Elmham Park, from which a large group of mature male cattle was recorded (Fig. 9), and the same

is recorded at Wicken Bonhunt (Crabtree 2012). This contrasts with Brandon, where a larger number of cows are present (Crabtree 2012). Both sites with greater numbers of male animals are considered high-status sites, where the keeping of larger animals is prevalent throughout the Saxon period (Holmes 2011, 98), which is likely to be related to the visual display of status through the possession of the largest animals. The evidence from Brandon, however, is more consistent with the use of older females for milk.

No raw data of substantial sample size were available for the sheep assemblage, although metrical analysis from Brandon revealed a greater proportion of males, suggesting their use for wool, whereas those from Wicken Bonhunt were mostly older females (Crabtree 2012) and may again have been used for wool and/or dairy production.

Although the majority of sites are indicative of animals being bred, butchered, consumed and disposed of on site, there are a number of exceptions. An under-representation of pig limb bones at both high-status sites of Wicken Bonhunt and Flixborough is indicative of the redistribution of specific cuts of meat to wics. A similar pattern in the cattle and sheep data can be seen at the high-status sites of Flixborough and North Elmham and the rural sites of Rose Hall Farm, Wharram and Hay Green, where fewer upper limb and mandible bones were recovered than may be expected (Figs. 6-8), again suggesting they were exported to other sites.

The data suggest that the rural sites in the hinterlands of wics fulfilled a variety of purposes. A number show signatures indicative of self-sufficient regimes, which do not reflect surplus production or the husbandry of producer sites. However, there are a few that exhibit specialist production regimes, some quite narrow in

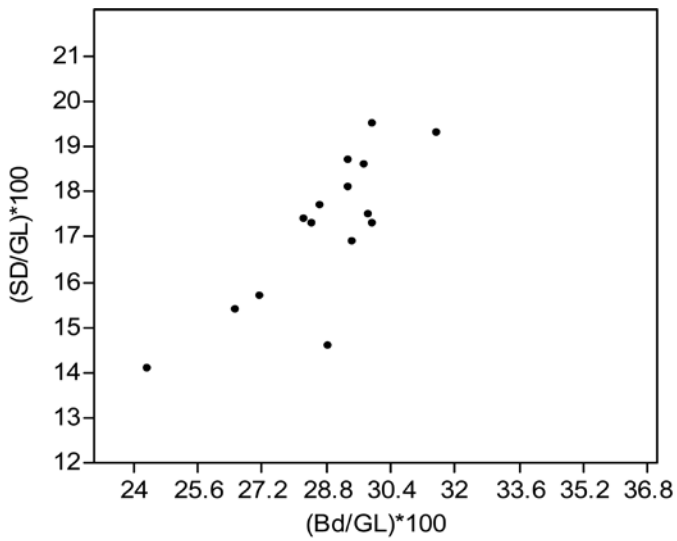

Figure 9. Middle Saxon cattle sexing data from North Elmham Park, based on metacarpal measurements. Bd= breadth distal end; GL= greatest length; SD= smallest diameter of shaft.

their base, such as Brandon and Wicken Bonhunt in the east and Wharram to the north. Combined with this is the function of wics as consumer sites, which seem to have been provisioned with young cattle to provide the mainstay of the diet, as well as a number of raw materials such as horn. This implies that there was no widespread obligation for rural sites to specialise as suppliers of meat, milk, wool or raw materials to the new consumer sites, rather a number of enterprising farms made the move towards surplus production.

Inland sites and surplus production

The second question to be addressed here is whether the move towards specialisation at some rural sites in the Middle Saxon period was localised to a few entrepreneurs in the hinterland of wics, or if it was more widespread, and required by the presence of inland markets. When the relative proportions of cattle, sheep and pigs are considered (Fig. 10), the two trading sites available (both from related sites close to the village of Dorney, near Maidenhead) record the greatest proportions of cattle, with the exception of the rural site at Yarnton, Oxfordshire. This is comparable to the proportions from wic sites (Fig. 2) and similar high proportions of sheep at other site types are also in evidence, although many inland rural sites also have higher numbers of pigs than their contemporaries in the hinterland of wics.

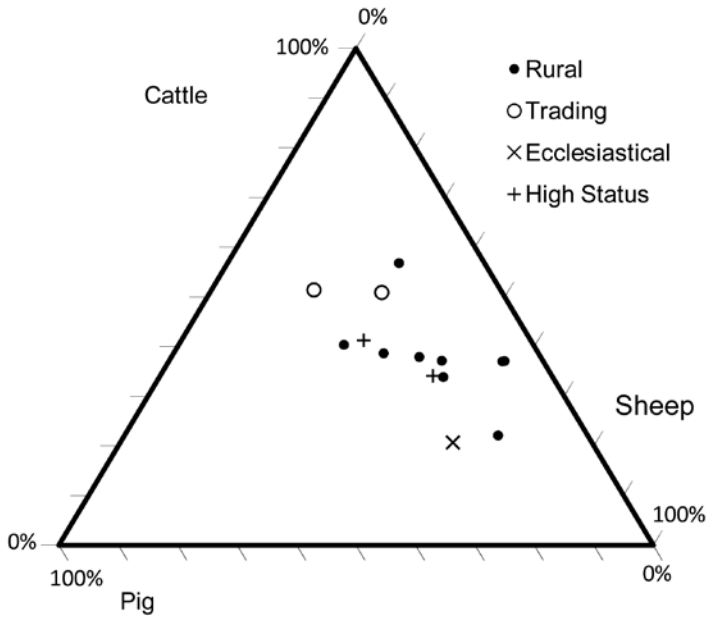

Figure 10. Relative proportions of cattle, sheep and pigs represented at inland sites (NISP count).

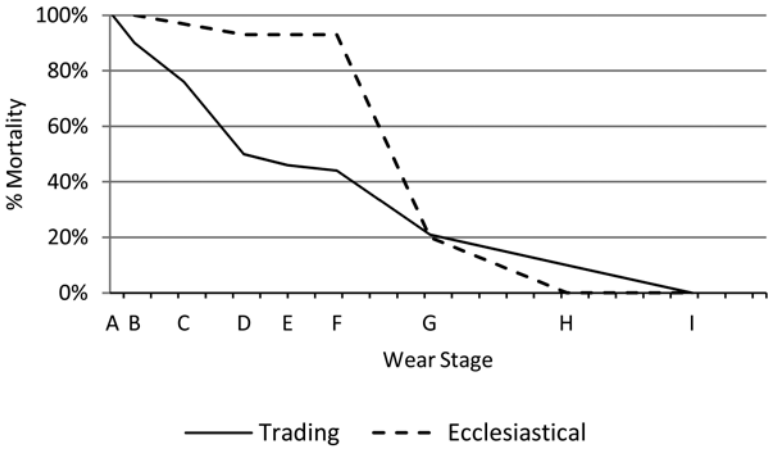

Figure 11. Middle Saxon cattle mortality data from inland sites. 1. Aelfric's Abbey; 2. Lake End Rd.

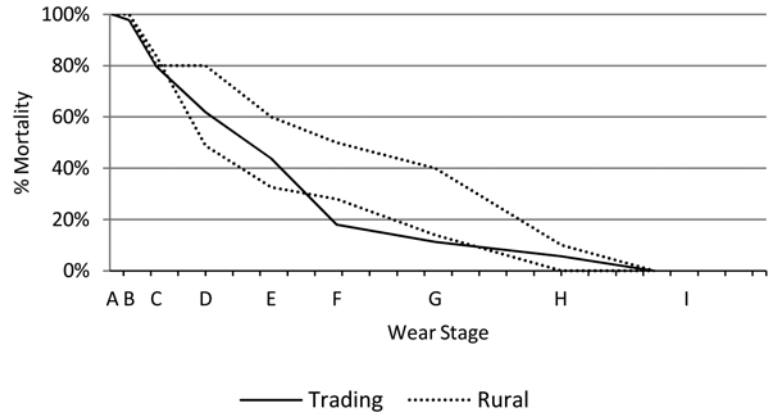

Figure 12. Middle Saxon sheep mortality data from inland sites. 1. St Peter's Rd; 2. Cadley Rd; 3. Lake End Rd.

As with wics, inland trading sites tend to have the youngest cattle and sheep (Figs. 11 and 12). Although cattle from the ecclesiastical site of Aelfric's Abbey, Oxfordshire and sheep from the rural site at St Peter's Road, Northampton exhibit later culls, the majority are culled by maturity. There are no sites that represent the production of a surplus of older stock, either for breeding or secondary products. Pigs at both available sites were culled young (Fig. 13). When the distribution of carcass parts is considered, cattle from the trading site of Lake End Road, Dorney are consistent with the deposition of all parts of the carcass, although it is notable that, as at many wic sites, there are more horn cores recovered than at other contemporary sites. Another outlier comes from the rural site of Walton lodge, Aylesbury, where there are more feet and lower leg bones than expected if complete

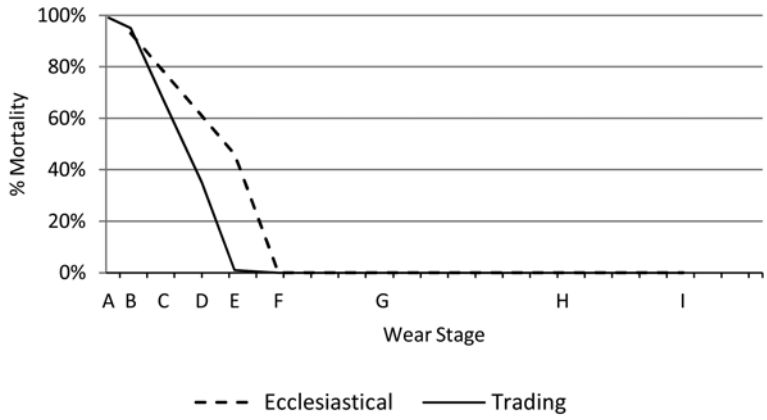

Figure 13. Middle Saxon pig mortality data from inland sites. 1. Aelfric's Abbey; 2. Lake End Rd.

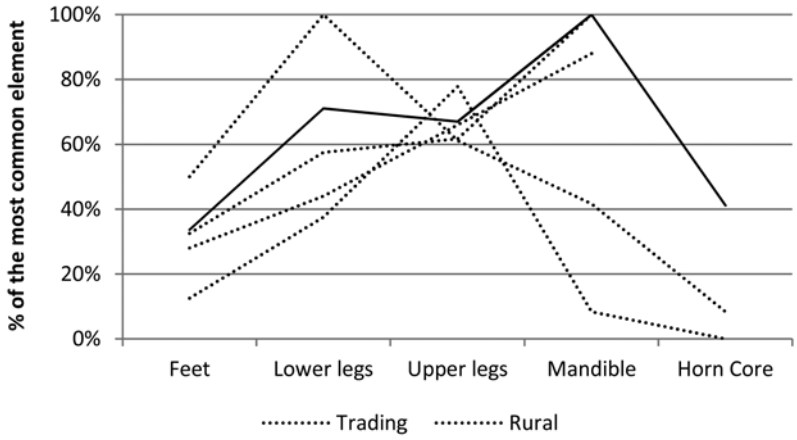

Figure 14. Middle Saxon cattle body part representation from inland sites. 1. Walton Lodge; 2. Lake End Rd; 3. Cadley Rd; 4. Marefair; 5. St Peter's Rd.

carcasses were deposited. Both the cattle and sheep assemblages from St Peter's Road (Figs. 14 and 15) include more upper leg bones, reflecting the predominance of meat-bearing cuts of meat. Despite these isolated sites, the majority are consistent with the deposition of complete carcasses (see also Fig. 16).

Unlike sites within wics, and those in their hinterland, inland settlements exhibit less specialisation and more consistent patterns. The size of the data set has limited the confidence with which generalisations can be made, particularly with reference to trading sites, of which only two were available (Lake End road and Lot's Hole, Dorney), both from the same settlement. Nonetheless, the results of this analysis have implied that there is some possibility that inland trading sites occupied a consumer status similar to that of wics, from the abundance of young cattle and horn cores, suggesting deliberate provisioning. The source of

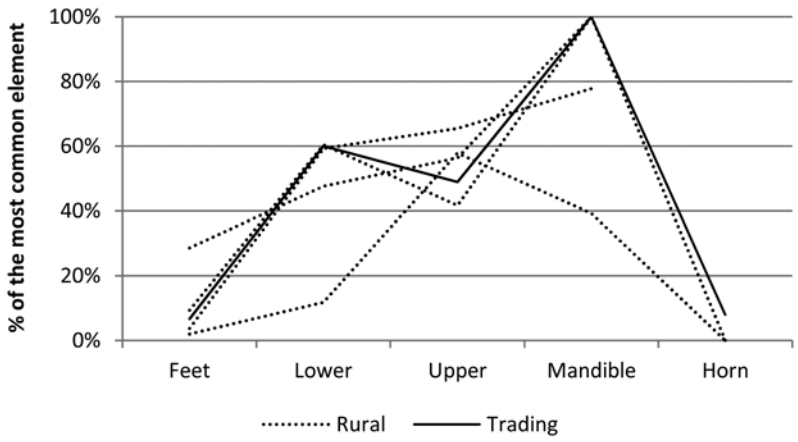

Figure 15. Middle Saxon sheep body part representation from inland sites. 1. Walton Lodge; 2. Cadley Rd; 3. Lake End Rd; 4. Marefair; 5. St Peters Rd.

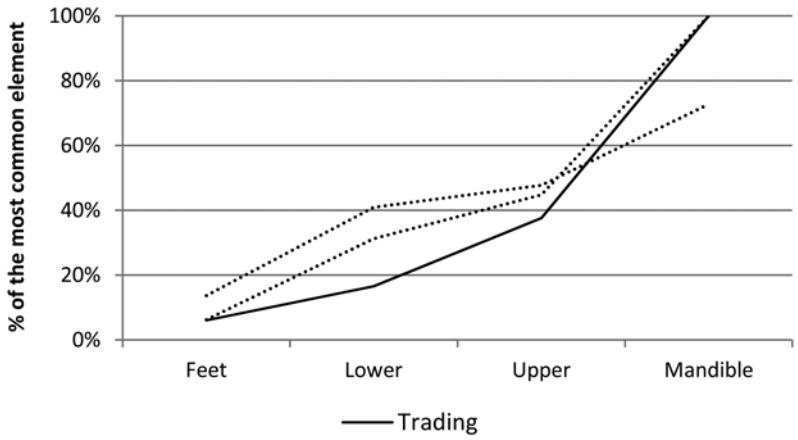

Figure 16. Middle Saxon pig body part representation from inland sites. 1. Marefair; 2. St Peters Rd; 3. Lake End Rd.

this provisioning is not clear, however, as the data from rural sites are generally consistent with a self-sufficient economy where animals were culled and disposed of on site, and used largely for meat with some small-scale secondary production.

Early Saxon progenitors

The final consideration to be made in relation to surplus production in the Middle Saxon phase is whether it was rooted in the preceding phase, contributing to the creation of new trading centres, or was brought about after their creation. The proportion of the main domesticates is more consistent at inland rural sites, although high numbers of cattle can be observed at Hartigans, Buckinghamshire

and pigs at Cadbury Castle, Somerset (Fig. 17). There is greater variation at sites closer to wics, particularly at Spong Hill, Norfolk, Nettleton Top, Lincolnshire and Fossets Farm, Essex where cattle are recorded as over 80 % of the main domesticates and Baynard's Castle, London, West Stow, Suffolk and Botolphs, Sussex where pigs are observed in greatest proportions.

Little variation can be observed in the mortality profiles of cattle, sheep and pigs (Figs. 18-20), as all exhibit culls consistent with the production of meat, alongside the small-scale production of secondary products, although at Fossets Farm cattle are alive slightly longer, apparently being more important for secondary products. A similarly recurrent pattern can be observed in the proportions of various parts of the carcass recorded, which indicate that whole animals were disposed of on the majority of sites (Figs. 21-23), with little direct evidence for redistribution. The main outlying site is that of Baynard's Castle, where there is an over-representation of sheep lower limb bones.

In general, then, the archaeozoological evidence is consistent with a self-sufficient economy in the Early Saxon phase at the majority of sites. Husbandry strategies emphasise the use of animals for meat, and the breeding, working, consumption and disposal of animals within the settlement itself. Although greater variation in species proportions can be observed in areas that later become the hinterlands of wics, there are also a number of distinctly outlying sites inland as well, which suggests that there was no particular emphasis on any one species in any area in the Early Saxon phase.

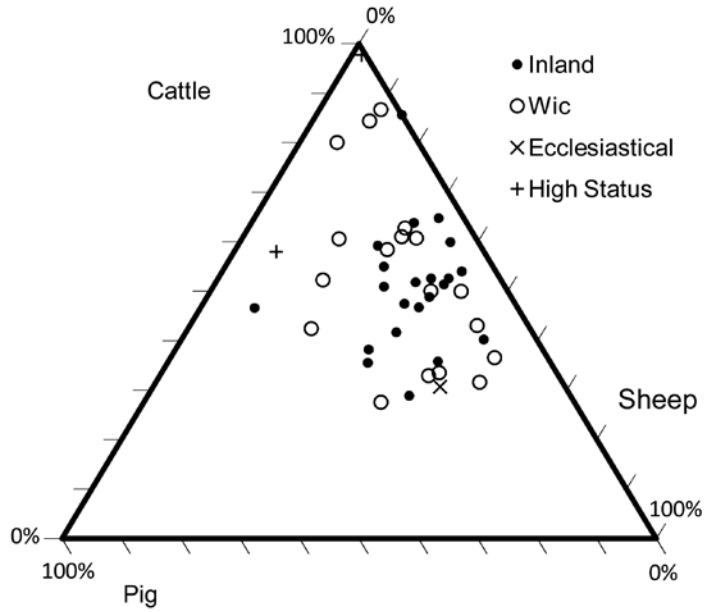

Figure 17. Relative proportions of cattle, sheep and pigs represented at Early Saxon sites (NISP count).

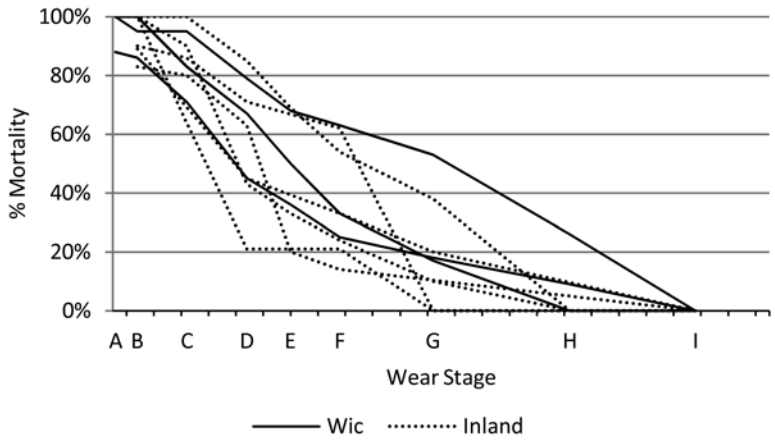

Figure 18. Early Saxon cattle mortality data from all sites. 1. Oxford Science Park; 2. Fossets Farm; 3. Market Lavington; 4. Melford Meadows; 5. Pennyland; 6. Aelfric's Abbey; 7. West Stow; 8. Sherbourne House; 9. Eye Kettleby.

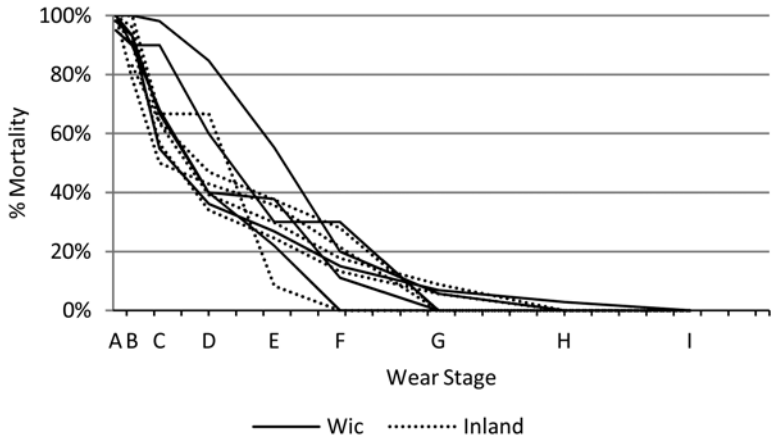

Figure 19. Early Saxon sheep mortality data from all sites. 1 and 2. West Stow; 3. Oxford Science Park; 4. Market Lavington; 5. Pennyland; 6. Aelfric's Abbey; 7. Melford Meadows; 8. Eye Kettleby; 9. Sherbourne House; 10. Redcastle Furze.

Discussion and conclusions

It has been asserted that the ability to provide food and raw materials to support the development of wics as consumer sites in the Middle Saxon phase was made possible by the production of surplus goods by rural sites at the end of the Early Saxon phase (Crabtree 2010, 132). With the exception of Fossets Farm, where an exceptionally high number of cattle were recorded, some far older than observed on other, contemporary sites, no such evidence has been forthcoming from this analysis. However, the separation of sites from the late Early Saxon phase in

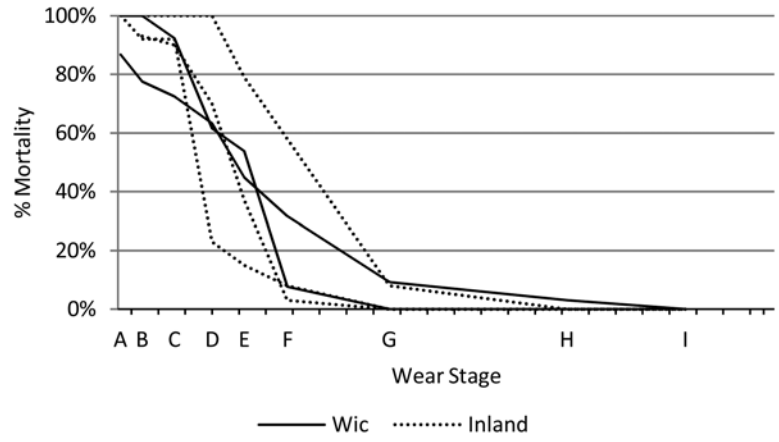

Figure 20. Early Saxon pig mortality data from all sites. 1. Aelfric's Abbey; 2. Pennyland; 3. West Stow; 4. Fossets Farm; 5. Eye Kettleby.

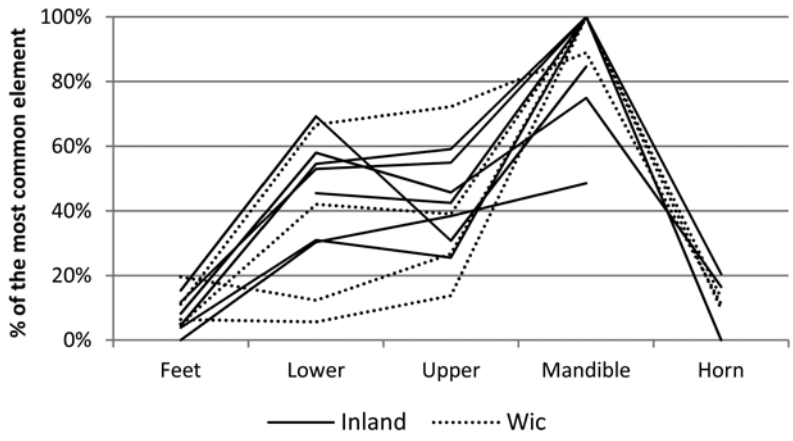

Figure 21. Cattle body part representation from all Early Saxon sites. 1. Baynard's Castle; 2. Orton Hall Farm; 3. Mill St; 4. Pennyland; 5. Redcastle Furze; 6. Poundbury; 7. Spong Hill; 8. Nettleton Top; 9. Melford Meadows; 10. St Helen's Ave; 11. Eye Kettleby; 12. Oxford Science Park; 13. West Stow; 14. Hartigans.

this study has not been possible, and it may be that only well-dated site-specific investigations will show this phenomenon. In general, there is no definite evidence for specialists in the Early Saxon phase, where both inland settlements and those near the south and east coasts are largely self-sufficient. Furthermore, it appears that this underlying husbandry regime continues in the Middle Saxon phase in inland areas, and many sites close to wics, with little apparent motivation towards specialist production.

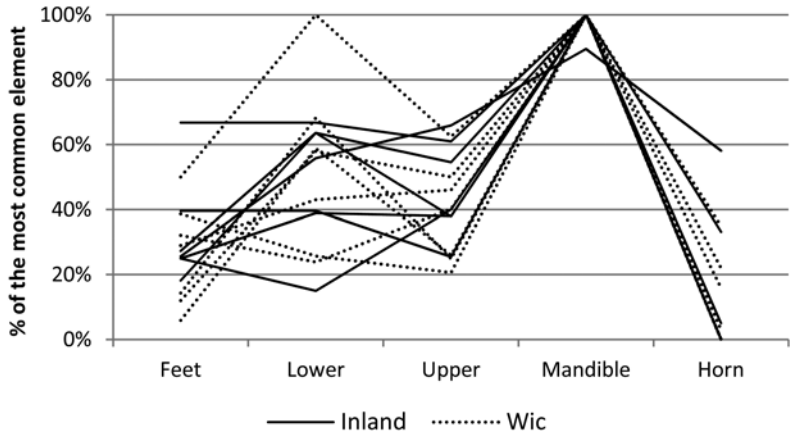

Figure 22. Sheep body part representation from all Early Saxon sites. 1. Melford Meadows; 2. Mill St, Wantage; 3. Eye Kettleby; 4. Oxford Science Park; 5. Orton Hall Farm; 6. Stonea Grange; 7. West Stow; 8. St Helen's Ave; 9. Pennyland; 10. Poundbury; 11. Redcastle Furze.

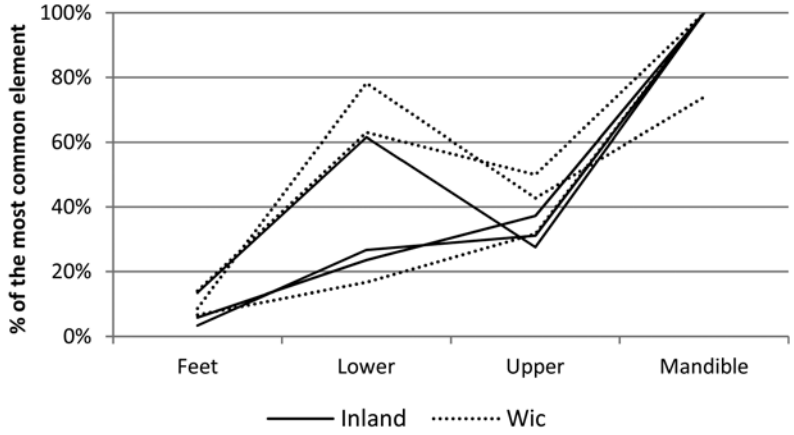

Figure 23. Pig body part representation from all Early Saxon sites. 1. Redcastle Furze; 2. West Stow; 3. Pennyland; 4. Eye Kettleby; 5. Orton Hall Farm; 6. Poundbury.

Evidence for the emergence of specialist producers at specific Middle Saxon sites in the hinterland of wics does occur. At rural sites these include goods such as: pork at Riverdene; beef at Crowhall Park and Friar's Oak; and dairy and/or traction and/or beef at Wharram. At the high-status site of Wicken Bonhunt they include pork and wool, and at the ecclesiastical site of Brandon wool, dairy and beef. Although some rural sites appear to have specialised in particular species, there is a less obvious production of any specific surplus such as dairy or wool (except at Wharram) to that observed on high-status and ecclesiastical sites. The origin of surplus products at these site types reflects the claims that secular and

ecclesiastical estate centres were instrumental in the provisioning of wics, and the absence of prime meat age cattle at either of these sites reinforces the probability that these animals were sent directly to consumer sites. The apparent redistribution of particular cuts of meat and raw materials such as horn cores from many rural and high-status sites to wics has also been observed, and further indicates the production of food and raw materials for the populations within wics.

Problems persist in the small data sets, particularly for inland trading sites, but nonetheless these findings can act as a springboard for future assemblages to be compared with. Greater homogeneity of inland animal husbandry indicates an economy that had fewer demands placed upon it, able to continue the Early Saxon regime of relative self-sufficiency. While this was apparently true of some rural sites in the vicinity of wics, some enterprising elites and possibly some independent farmers recognised the need for surplus production and specialisation with the emergence of a consumer demand specific to the areas around wics.

Although it cannot be concluded whether excess production was present prior to the establishment of wics, or whether demand from wics brought about the new regimes, it was not a widespread phenomenon, and there is no corresponding change on inland sites, suggesting that inland markets did not have the same consuming populations as wics.

Acknowledgements

Thanks to the AHRC for funding my PhD and the Association of Environmental Archaeology for assisting my attendance of the conference.

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