

The following paper “Assessing the impact of famine, pestilence and the Scots on Swaledale and the North Riding in the early fourteenth century” by Alan & Judith Mills was published in The Local Historian<sup>i</sup> October 2018.

The stimulus for the paper was the results of the SWAAG project, “The Swaledale Big Dig” supported by the Heritage Lottery Fund. Further details of the project, including the final report, may be found on the SWAAG website [www.swaag.org](http://www.swaag.org) under the projects section.

We hope you find this paper of interest.

Alan & Judith Mills  
November 2018

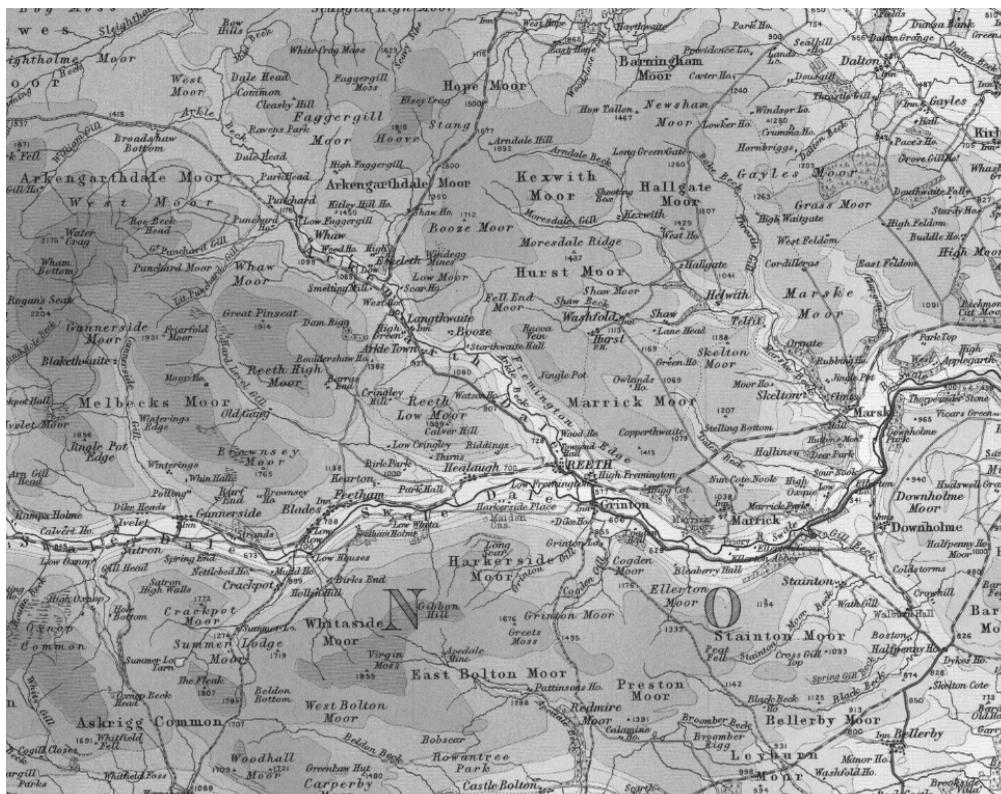
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<sup>i</sup> <https://www.balh.org.uk/publications/local-historian>

# Assessing the impact of famine, pestilence and the Scots on Swaledale and the North Riding in the early fourteenth century

ALAN AND JUDITH MILLS

Swaledale is the most northerly of the Yorkshire Dales. Historically in the North Riding of Yorkshire, it is now in North Yorkshire. During 2014 and 2015 a major community archaeology project took place here, in and around the village of Reeth. The pottery finds suggest that Swaledale suffered heavily in the fourteenth and fifteenth centuries, perhaps as a result of the Great Famine and bovine pestilence in the early fourteenth century, the Scots raids which followed their victory at Bannockburn in 1314 and, later, the Black Death. In this paper we use the lay subsidy returns of the early fourteenth century to attempt to estimate the economic impact of the events of that period on both the North Riding and Swaledale. The area in question is shown in figure 1.



1 Swaledale and Arkengarthdale

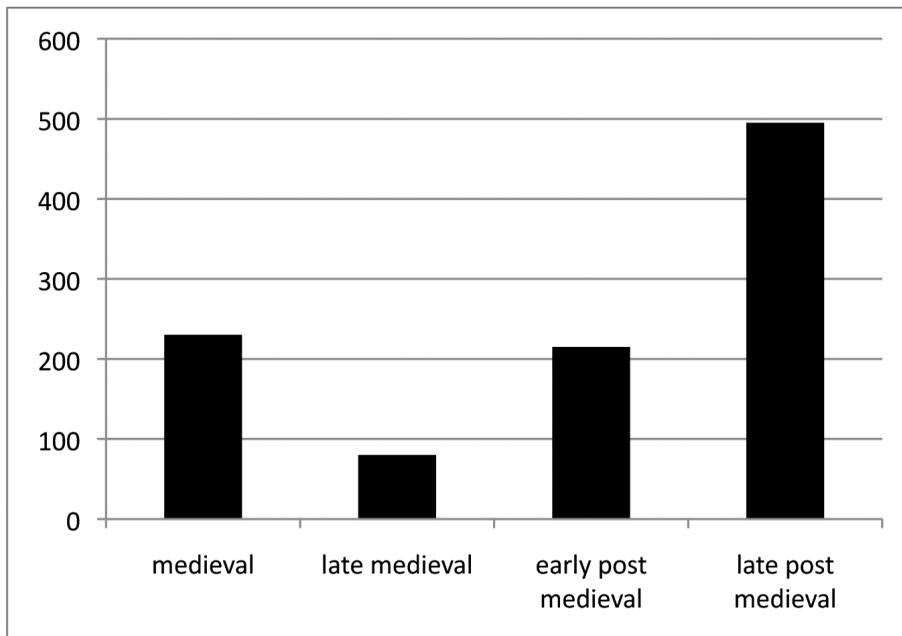
## The Swaledale Big Dig

The Swaledale Big Dig was a community archaeology project managed by the Swaledale and Arkengarthdale Archaeology Group, supported by the Heritage Lottery Fund. It ran for two years, 2014-2015, with two major objectives. The first was engaging the local community in a programme of activities to ‘uncover the hidden history’ of Swaledale—the dale after the Conquest and before the eighteenth century, a period characterised by a notable lack of documentary evidence. The second, no less important, was to leave a lasting legacy of knowledge and skills in the local community. Over 500 people joined in the Big Dig, including more than 90 local schoolchildren. In addition to participating in 24 free courses and eleven free guided walks, those involved carried out documentary research, studied aerial photography and Lidar images, and undertook topographical and geophysical surveys. These activities helped to create a deeper understanding of the development of the area.

Of greatest relevance to this paper are the finds from the fifty one-metre-square test pits dug over the two-year period, following the guidelines developed by Professor Carenza Lewis and colleagues at Access Cambridge Archaeology.<sup>1</sup> More than 4000 pieces of pottery were recovered and analysed by a medieval pottery expert, Jenny Vaughan of Northern Counties Archaeological Services. Where possible, each piece was assigned to one of several broad time periods. Apart from two possible pieces of Roman material, all pottery was from one of the following periods:

Medieval	13th - early 14th centuries
Late medieval	early 14th -16th centuries
Early post medieval	17th - early 18th centuries
Late post-medieval	early 18th - early 19th centuries
Modern	early 19th century to the present

**2 Graph showing the number of pottery finds by periods**



The number of finds by period, excluding the large number from the modern period, is summarised in figure 2. The Big Dig recovered 237 pieces of pottery dated to the medieval period but only 71 of these were from the late medieval. Pottery is often considered a proxy for some function of population and wealth. The significant reduction in the number of finds in the late medieval period is generally thought to be largely a result of depopulation caused by the Black Death. However, northern Europe, including most of the British Isles, was also hard hit by the Great Famine and bovine pestilence in the early fourteenth century, and northern England was also ravaged by Scots raids following Bannockburn in 1314. The general impact of the natural disasters and the man-made disaster in parts of northern England is now considered.

### The Great Famine of the early fourteenth century

Now in that year [1316] there was such a mortality of men in England and Scotland through famine and pestilence as had not been heard of in our time<sup>2</sup>

The time of the Great Famine was an extraordinary period of bad weather, beginning at harvest time in 1314. It was characterised by cold wet summers and harsh winters across northern Europe. The resulting failure of crops and pasturage led in turn to a catastrophic subsistence crisis resulting in the mortality of men and animals. There is some uncertainty as to how long this natural disaster continued. Lucas suggested that it lasted for three years, while William Chester Jordan suggested seven, akin to the famous famine foretold in Genesis 41. The work of James E. Thorold Rogers argued, albeit indirectly, that the famine lasted around seven years. His monumental work, *A history of agriculture and prices in England*, briefly describes the situation in England at this time, his analysis being based on data relating to price and volume of foodstuffs sold at market.<sup>3</sup> In summary his findings for the period 1314-1322 are as follows:

- 1314 'Wheat is high and rises rapidly towards the end of the year, being affected by the prospects for the next harvest': there had been much rain 1314 making the harvest difficult, and the winter was probably hard
- 1315 'Winter prices low, rises in February, quantities brought to market low and prices high ... the crop of this year must have been nearly a total failure'
- 1316 'the circumstances of the two years, 1315, 1316 plainly indicate an absolute dearth'
- 1317 'the crop though far better than ... the past two years was plainly deficient'
- 1318 'scarcity has eased'
- 1319 'prices below average'
- 1320 'the rise in the price of wheat is marked and gradual'
- 1321 'the prices of wheat are excessively high ... the scarcity is universal ... the general result must have fallen little short of the distress experienced [in 1315-6]'
- 1322 'the price of wheat is still very high, though declining'
- 1323 'the price at the beginning of the year is very high but it begins to fall rapidly. Barley falls considerably; beans etc. though still high are falling'

Contemporary records, such as the patent rolls and the *Anonimale Chronicle*, also report the effects of unseasonable weather and famine, particularly in 1316. For example, the *Chronicle* reports that 'In the same year [1315] there were great floods in England so that the walls of the Greyfriars at York collapsed because of this water about the feast of St Margaret [20 July]'. Later, it notes that 'Soon after this time the crops failed throughout the whole of England ... because of the heavy rain which fell

continually from Pentecost through to the next Easter following. On account of this there was great loss of life among the people and the high price of wheat lasted continuously for three years'.<sup>4</sup> Entries in the patent rolls paint a similar picture:<sup>5</sup>

- August 1315 flooding in the King's manor of Miton [Myton] by Kyngeston upon Hull  
 January 1316 William Pulleyne ... going to divers parts of the realm to buy corn and other victuals on account of their scarcity  
 February 1316 the present scarcity of corn and other victuals in the realm  
 May 1316 the unusual scarcity of corn and other victuals in the realm and the famine oppressing the people

Later entries in the patent rolls show that the effects of the Great Famine continued to be felt into 1318. For example a 'grant of the King's alms' was made in that year to the convent of *Elmestowe* [Elstow, Bedfordshire] which 'was so greatly impoverished by the scarcity of the past years'.<sup>6</sup> Thorold Rogers' analysis suggests that the crisis was most severe in the period 1315-1317, improving somewhat in 1319-1320 only to return with a vengeance in 1321, lasting seven years in all.

### The great bovine pestilence

It grieves me and my convent that we are not able to help you more generously, for within the last year and a half we have lost more than a thousand oxen, cows and other cattle (*Henry of Eastry, prior of Christ Church, Canterbury to Edward II, 5 March 1321*)<sup>7</sup>

As the Great Famine continued to grip England the great bovine pestilence, which had ravaged much of Europe, struck the south and then spread to the whole country. Sheep and cattle had already been dying in large numbers as a result of the Great Famine.<sup>8</sup> Weakened by the lack of pasturage and the cold wet weather, they were susceptible to disease, but the pestilence raised mortality among cattle and oxen to an altogether different level. It is unclear exactly what the pestilence was although rinderpest is thought most likely.<sup>9</sup> It is also unclear exactly when this disease first arrived in England. The *Chronicle of Lanercost* (Cumberland) records that in 1319/20

the plague and the murrain of cattle which had lasted through the two preceding years in the southern districts, broke out in the northern districts among oxen and cows, which, after a short sickness, generally died; and few animals of that kind were left, so that men had to plough that year with horses<sup>10</sup>

This suggests that the disease broke out in 1317/18 in the south of England, reaching the north around two years later. Slavin suggests it arrived in the country in 1319, while Newfield favours circa 1320, but it is clear that by the time of the arrival of the pestilence livestock were already weakened by the lack of pasturage caused by the extreme weather. At this time, holdings of cattle represented much of the wealth of the people at all levels of society: 'With a mortality rate in affected herds averaging around 60% and on occasion reaching 100%, this cattle pestilence undoubtedly represented a staggering loss of capital, and of the traction and manure necessary for contemporary agrarian economies'.<sup>11</sup>

On an estate with a large infected herd the economic impact of losing an average of around 60 per cent of the cattle could be catastrophic. For a peasant economy in a rural community, with individual and enclosed farms, the rate of transmission of the

disease and therefore mortality would probably be much lower than in a herd, but nonetheless any loss would be disastrous. Numbers of cattle held in rural communities were small, as is shown in the small number of detailed lay subsidy returns which have survived; for example, in the small settlement of Shillington, Bedfordshire in 1297 eleven of the nineteen households had one cow, and similarly in the rural settlement of Austwick in the West Riding, the majority of households had at least one.<sup>12</sup> Not only did cows represent a significant element of the wealth of the owner, but they also were vital to the well-being of the rural population as dairy products seem to have been peasants' most important source of protein at this time.<sup>13</sup> The loss of this source of protein, minerals and vitamins meant that the bovine pestilence exacerbated the effect of the Great Famine leading to an increase in human mortality.

Although some contemporary sources suggest that the pestilence lasted 'a long time', it seems to have died out after approximately two years.<sup>14</sup> The impact of the extreme weather, together with the bovine pestilence, was exacerbated in England by a number of other factors:-

- substantial population growth in the twelfth and thirteenth centuries had led to rising land prices, rising corn prices and falling real wages, such that by the early fourteenth century the population had outgrown resources<sup>15</sup>
- war with Scotland reduced trade and made distribution difficult, particularly in northern England
- high taxation during the previous 25 years, to fund wars in France and Scotland, reduced the reserves of the population and consequently their ability to cope with the unexpected

Famine led to increased mortality, and while not comparable with that of the Black Death in the middle of the century, the population is estimated to have declined by 10 to 15 per cent.<sup>16</sup> A poem from the reign of Edward II [1307-1327] is believed to be a contemporary description of the situation in the early fourteenth century:

... To binde alle the mene men in mourning and care  
 The orf deide al bidene [cattle died all forthwith], and made the lond al bare, so faste,  
 Com nvere wrecche [punishment] into Engelond that made men more agaste.  
 And tho that qualm [mortality] was astin [stopped] of beste that bar horn,  
 Tho sente God on earthe another derthe of corn,  
 That spradde over al Engelond bothe north and south,  
 And made seli [simple] pore men afingred [hungry] in here mouth ful sore ...<sup>17</sup>

### **The Scots raids in northern England in the early fourteenth century**

In the kingdom of England three cruel scourges afflicted the people most horribly even unto death: Scots raids, famine, and pestilence<sup>18</sup>

Times were hard in northern England as the Scots took advantage of their victory at Bannockburn and raided extensively. The last decade of the thirteenth century and the early years of the fourteenth were dominated by this conflict. In 1296 Edward I launched a major offensive against Scotland, with some success, but by 1307 the war was spilling over into the border counties of Northumberland and Cumberland and the adjacent counties of Durham and Westmorland,<sup>19</sup> mostly as small scale raids for cattle and booty. Their impact on the economy of Northumberland was such that the

lay subsidy of 1309 was waived by the Crown for the entire county.<sup>20</sup> The raids increased in intensity and extent following Edward II's largely ineffective 1311 campaign in Scotland. The Scottish forces penetrated further into England and were now sufficiently large to discourage resistance. As was to become common, early in 1312 the largely defenceless Northumbrians bought a short truce, in this case for the huge sum of £2000. The *Lanercost Chronicle* reported later that year that in August King Robert the Bruce stayed three days at Lanercost Priory while his men burned land in nearby Gilsland and Tynedale, and went on to raid as far east as Durham. Large scale incursions continued into 1313, this time led by Robert's brother, Edward.<sup>21</sup> Edward II's ill-fated campaign of 1314 resulted in his overwhelming defeat at Bannockburn in June. This barely altered the balance of power or the ultimate outcome of the wars with Scotland but it did leave the north of England vulnerable and defenceless against further Scots raids.

Immediately after Bannockburn, in the summer of 1314, Edward Bruce and James Douglas led the Scottish army south, pillaging Northumberland and then heading into Durham where they were bought off. They continued south into Richmondshire and then into Swaledale, for the first time. From there they turned west, over the Pennines and returned home, laying waste and taking cattle, booty and prisoners as they went. In 1315 a Scottish siege of Carlisle castle was unsuccessful, due in part to the atrocious weather which made it impossible for the besiegers to fill in the moat. Such fortune was rare. In the summer of 1316 the Scots mounted a major assault on Yorkshire. They came to Richmond where 'the nobles ... compounded with them for a large sum of money so that they might not burn that town, nor yet the district, more than they had already done'. They carried on through Swaledale before taking their now usual route back up the west side of the country.<sup>22</sup>

A further major incursion into Yorkshire in 1318 resulted in Northallerton and Boroughbridge being burnt; both Swaledale and Wensleydale were pillaged. This is noted in the patent rolls where it is recorded that in November 1318 the prioress and nuns of Marrick in Swaledale were relieved of various debts 'in consideration of the poverty of their house, which has been destroyed by the Scots'.<sup>23</sup> Ripon, further south in the West Riding, was only spared in return for 1000 marks, and it likely that once again Richmond paid up. The Scots raided as far as what is now the outskirts of Leeds and then crossed the Pennines to pillage Lancashire. The cumulative effect of the continuing raids was such that in 1318 many parish valuations in northern England, used to determine the amount of ecclesiastical tax payable, were revised down. Some 77 parishes in Lancashire and Yorkshire had their valuations reduced by 50 per cent, including the Swaledale parish of Grinton.<sup>24</sup> There were further raids in 1319, again penetrating far into the West Riding. The raiders were said to have disappeared 'like a puff of smoke',<sup>25</sup> but these, together with the earlier raids of 1318, resulted in 57 vills in the West Riding and 49 in the North Riding also being granted exemption from the lay subsidy of 1319.<sup>26</sup> In addition the county of Lancashire was excused a large part of the same subsidy.<sup>27</sup> Following devastating raids in Cumberland in November and December 1319 a truce was agreed for two years, until Christmas 1321.<sup>28</sup>

Hostilities erupted again in July 1322, principally in Durham, Lancashire and the East Riding of Yorkshire although the area around Richmond, probably including Swaledale, was also attacked. Indeed, it might have been a specific target, as Edward II had previously ordered that cattle from west of the Pennines should be driven for safety to Richmond and other places in Yorkshire.<sup>29</sup> Edward II again invaded Scotland but was forced to withdraw when the loss of his supply ships led to famine

and disease. Once more, the Scots took advantage of the weakness of English defences and invaded through Carlisle and then crossing the Pennines to Richmond and on to Northallerton. It is suggested that heavy rains and flooding at this time may have led to their withdrawal in November.<sup>30</sup> The cumulative effect of this long sequence of raids was catastrophic. In July 1322 the archbishop of York wrote to the pope saying that 'the greater part of the Archdeaconry of Richmond [is] the worst devastated, with most of the religious buildings, villages and manors reduced to ashes and smouldering embers'.<sup>31</sup>

Later in 1322 there was another major raid on northern England, carried out by Robert the Bruce between 30 September and 2 November. It began with an attack on the area around Carlisle, after which the raiders crossed into Yorkshire and penetrated as far as the East Riding, resulting in much property being looted, burned or destroyed and a number of prestigious prisoners being taken. Around the same time other Scots raiders headed down from Carlisle and into Lancashire, reaching as far south as Chorley. A thirteen-year truce was agreed in 1323, but it did not stop further significant raids in 1327, resulting in 55 northern parishes having their valuations reduced by 50 per cent or more.<sup>32</sup> The raids continued, at a lower level of intensity, until the middle of the fourteenth century, only ending with the defeat of the Scottish army at the Battle of Neville's Cross, west of Durham on 17 October 1346. The last recorded raid on Swaledale was described as follows: 'on Sunday after three weeks of Michaelmas, 16 Edward III [1343], the king's enemies, the Scots, entered the priory of Ellerton in Swaledale ... and the priory was totally despoiled'.<sup>33</sup>

### **The lay subsidies of the early fourteenth century**

A 'lay subsidy' was a form of taxation levied in the medieval and early Tudor period exclusively upon the lay population as a whole; religious houses and orders were subject to separate taxation, referred to as ecclesiastical or clerical subsidies. First introduced by Henry III as an exceptional form of taxation, the subsidies were developed into a frequent and effective means of raising revenue under Edward I and his successors, Edward II and Edward III. During the early fourteenth century the subsidies were used principally to finance the wars with Scotland.

In essence the population was required to subsidise the Crown through a tax levied on personal property. Ten subsidies were levied in early fourteenth century, in the period 1301-1327. Broadly, these took the same form, being a fixed proportion, such as 1/15th, of the value of the moveable property held by each person. Moveable property was taken to be all goods in the hands of the people at Michaelmas, assessed at 'true' value. Occasionally some urban areas were allowed to 'compound' for their subsidy—that is, to agree a lump sum—but that was unusual. Certain exemptions were specified, mainly for the benefit of the well-to-do: for example, the armour, riding horses, jewels and clothing of knights were exempt, as was a garment for a man of a city, borough or market town, and one for his wife, together with a bed and some limited personal property for them. No exemptions were specified for the majority of the population, although it is clear from the returns that what was necessary for life and work was generally not assessed. For example, there is rarely any mention of assessing such commodities as butter, cheese or other stuff likely to be in the larder, or those things necessary to earn a living such as the agricultural tools to work the land and the seed corn for the next harvest.<sup>34</sup> Willard suggests that what was actually assessed represented goods and grain above and beyond the needs of the

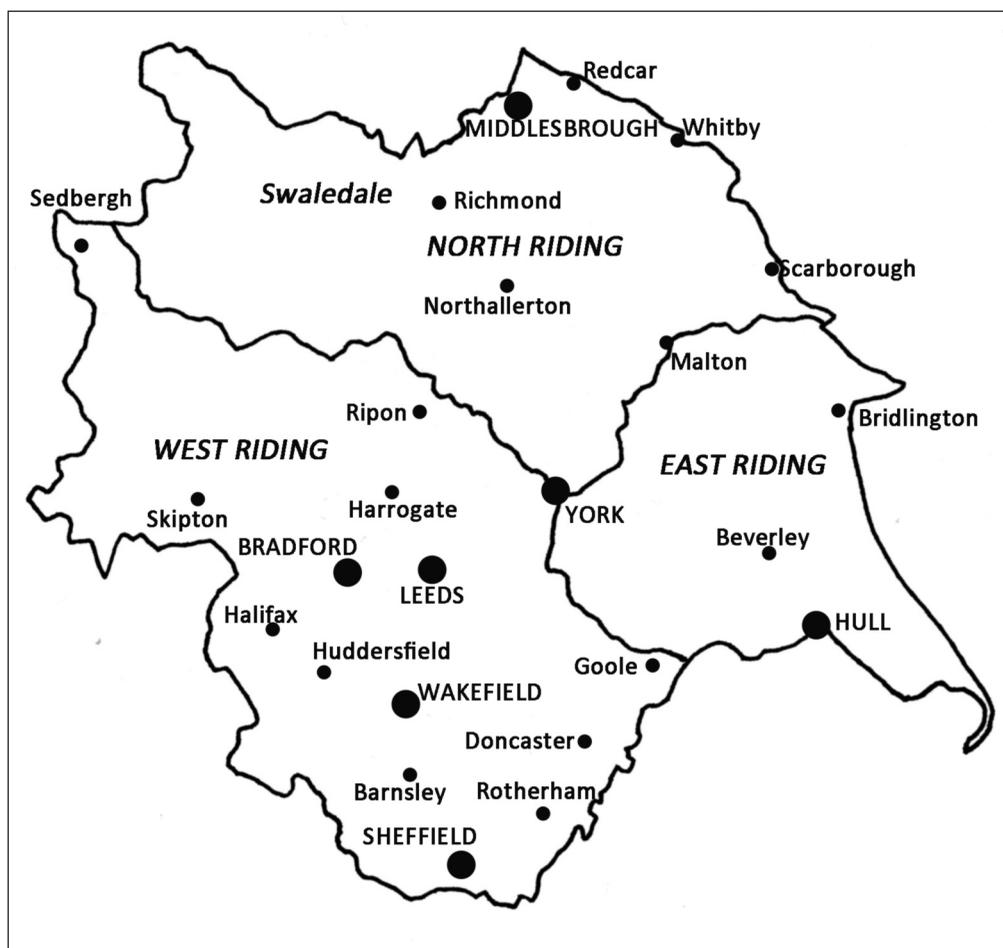
individual and his family. Jenks puts this another way, suggesting that what was actually measured was the ability of individual taxpayers to engage in commerce.<sup>35</sup>

The subsidies were approved by parliament, commonly with one rate applied to the assessed value of moveable property held by those in rural areas with another, higher rate applied in the cities, boroughs and towns. For example, in 1307 the first parliament of Edward II granted a rate of 1/20th and 1/15th respectively. Detailed records were made at the time of the assessments. These were by each settlement (*vill*) within a wapentake or hundred, and included a list of the names of people liable to the tax, a schedule of their moveable property and its assessed value, together with the tax to be paid and summaries by wapentake or hundred, and also by county. Many survive although most of the more detailed returns do not.<sup>36</sup> Surviving returns are held at The National Archives.<sup>37</sup> In addition to providing insights into the economy at this time, the returns may also be used to identify existing settlements, their relative wealth and in some instances the names and number of the taxpayers, from which it is possible to estimate population size.<sup>38</sup>

Whether the lay subsidy returns may be relied upon to tell us something about the economy of England in the fourteenth century is central to this paper. Willard's work (1934) is the most thorough examination, while Hadwin (1983) provides a more recent and critical analysis. Both cast doubts upon the accuracy and reliability of the lay subsidy returns, suggesting that they flatter to deceive, but Jenks (1998) is rather more positive.<sup>39</sup> While there was undoubtedly some avoidance or evasion on the part of the taxpayer and some under-assessment, together with variation in practice and corruption on the part of the tax collectors, Willard was of the view that there is no reason to assume any significant change from one subsidy to another, either in the practice or the effectiveness of the tax-raising system. He notes that the administrative procedures, particularly during the reigns of Edward II and Edward III, were intended to collect as much tax as possible and 'testify to the watchfulness of exchequer'.<sup>40</sup> Hadwin is wary of placing too much reliance upon the returns, suggesting that any work which does is akin to an architect building upon weak foundations and hoping that the structure will not topple and crumble away. However, he does concede that the lay subsidies 'provide the most comprehensive evidence we have of personal and national wealth in the 13th and early 14th centuries', and although he doubts their accuracy and reliability, he does accept that they provide 'a picture of some sort of reality' from which 'we may be able to estimate within tolerable margins of error'.<sup>41</sup>

Willard noted that the total tax being raised fell over time and argued that declining totals were the result of exemptions amounting to fraud. Hadwin observes that they might in part have fallen as a result of changes in the money supply and crises in agriculture. He proposed that the significant fall in the amount of tax raised from 1319 to 1322 supports the hypothesis that the amount fell most when the rate of tax was highest—that is, the temptation to evade is greatest when the tax is highest.<sup>42</sup> However, a simpler explanation is that the events of that period inevitably led to a reduction in assessed wealth. The famine had a catastrophic effect upon the people and the economy, dependent as they were on agriculture. Increased mortality reduced the number of taxpayers, the continuing extreme weather reduced crop yields and hence stocks of assessable grain and hay, while the bovine pestilence reduced significantly the number of cattle, for many people the single most valuable item of moveable property. Furthermore, northern England continued to be hit hard by the Scots. While evasion no doubt occurred, and might well have been exacerbated by scarcity, its impact on the total tax raised would surely pale into insignificance when compared with the effect of these events.

In summary, both Willard and Hadwin expressed doubts about relying upon the accuracy and reliability of the lay subsidy returns but both accepted that they provided a picture of some sort of reality. Jenks provides a useful summary of the subsidies in which he is more positive regarding their value. He notes that the records for the period considered here have been considered by a number of scholars as reliable indicators of the relative wealth of English settlements, and goes on to consider whether they can be taken as a reliable measure of the 'wealth' of the country. Even if not absolutely accurate, they are at least comparable at the county level, and bear a consistent relationship to the real wealth of the country.<sup>43</sup>



3 The three Ridings of Yorkshire

Jenks usefully summarises the enrolled accounts showing the Crown's income by county from the lay subsidies during the period 1275 to 1334. He focuses on the correlation of the counties with London in this period, his results showing that whatever the lay subsidies measure it was broadly the same and measured in the same way across the country—town and countryside, north and south alike. He is particularly critical of the validity of Hadwin's basic statistical analysis of the subsidies and of his conclusions, and goes on to consider what the lay subsidies actually

represent. His conclusion is that the lay subsidy taxed the surplus available for local and, perhaps to a slightly higher degree, interregional and foreign trade, and that 'In short, the lay subsidy figures provide us with a yardstick with which to measure the performance of the English economy in a period where there are precious few indicators available'.<sup>44</sup> That analysis seems sound and as will be seen, the statistical analysis below supports his conclusions regarding the consistency of the returns.

### **The economic impact of famine, bovine pestilence and the Scots raids on Swaledale and the North Riding**

As mentioned previously, the initial stimulus for this paper was the substantial reduction in the number of pottery finds from the late medieval period made during the Swaledale Big Dig. Much of this reduction is undoubtedly a result of the Black Death in the middle years of the fourteenth century but, as we have seen, the early years of the century saw the Great Famine, the great bovine pestilence and, in northern England, the Scots raids. To what extent, if any, might the lay subsidies allow estimates to be made of the economic impact of these events on Yorkshire and Swaledale? It was hoped that the returns for the Swaledale villis would reflect the decline in pottery finds and enable the economic impact of the famine and raids to be quantified. However, only the 1301 and 1327 returns survive for Swaledale and so, although they are considered below, the initial focus is on the returns for the Yorkshire Ridings. The 1301 returns for the city of York were included with the North Riding and so the separate 1327 York returns have been added to those for the latter. Using the Ridings seems prudent in view of the concerns raised by Willard and Hadwin, who both note that the smaller the area the more caution should be applied.<sup>45</sup>

Lay subsidies were not levied every year and neither were they regular. The most useful for the purposes of this paper are those of 1313, 1322 and 1327. The subsidy of 1313 occurred before the Great Famine, the great bovine pestilence and the significant Scots raids. The first two were over by 1322 and although the Scots raids continued for a further year their impact was already substantial as they had taken place continually since 1314. By 1327, though, there had been about four years of relative stability in England as a whole, allowing the economy to undergo a degree of recovery. The subsidies of 1313 and 1322 can therefore be compared to estimate the economic impact of the famine, the pestilence and the raids.

To make any meaningful comparison, it is not possible to use simply the value of the subsidy raised, since the basis of the subsidy varied from year to year. In 1313 it was levied at a rate of 1/20th in rural communities and 1/15th in urban but in 1322 it was 1/10th and 1/6th respectively. Multiplying the returns by these respective fractions and aggregating the results for a particular year will give the total value of the property assessed and may therefore give an estimate of the 'disposable wealth' of the nation, by county. For example, Jenks gives the 1313 returns for Bedford as £755 from the 1/20th and £25 from the 1/15th, giving an estimate of the disposable wealth of the county of  $(755 \times 20 + 25 \times 15) = \pounds 15,475$ . The corresponding figure for 1322 is £7616, a reduction of just over 50 per cent. The data for all counties for which returns survive are shown in tables 1 and 2 below. Table 1 gives the lay subsidy enrolled account returns together with the corresponding estimate of wealth for those English counties south of Yorkshire and Lancashire, referred to here as the 'southern and midland counties', and table 2 shows the same for the three ridings of Yorkshire.

**Table 1 Lay subsidies and 'wealth' for the southern and midland counties of England (in £)**

county	1313		wealth	1322		wealth	1327		wealth
	1/20th	1/15th		1/10th	1/6th		1/20th	1/20th	
Bedford	755	25	15,475	746	26	7,616	482	12	9,880
Berkshire	750	34	15,510	1294	129	13,714	832	26	17,160
Buckingham	659	19	13,465	615	37	6,372	470	20	9,800
Cambridge	949	62	19,910	1199	101	12,596	640	23	13,260
Cornwall	433	44	9,320	601	89	6,544	418	37	9,100
Derby	465	40	9,900	376	52	4,072	312	34	6,920
Devon	741	151	17,085	736	258	8,908	587	107	13,880
Dorset	629	54	13,390	920	117	9,902	612	38	13,000
Essex	1,252	55	25,865	1,505	58	15,398	862	14	17,520
Gloucester	982	297	24,095	1,191	338	13,938	1,001	175	23,520
Hampshire	911	128	20,140	1,188	323	13,818	845	124	19,380
Hereford	475	63	10,445	433	84	4,834	281	34	6,300
Hertford	639	28	13,200	578	20	5,900	435	-	8,700
Huntingdon	532	53	11,435	492	54	5,244	281	23	6,080
Kent	2,236	67	45,725	2,122	271	22,846	1,401	-	28,020
Leicester	636	35	13,245	627	54	6,594	582	20	12,040
Lincoln	3,661	118	74,990	3,680	282	38,492	2,085	87	43,440
Middlesex	387	-	7,740	363	25	3,780	334	-	6,680
Norfolk	2,877	296	61,980	3,802	479	40,894	2,418	119	50,740
Northampton	1,391	43	28,465	1,180	130	12,580	843	-	16,860
Nottingham	647	56	13,780	625	91	6,796	443	25	9,360
Oxford	1,100	83	23,245	1,555	199	16,744	1,066	67	22,660
Rutland	296	-	5,920	270	-	2,700	145	-	2,300
Shropshire	463	41	9,875	362	85	4,130	352	43	7,900
Somerset	1,283	125	27,535	1,445	142	15,302	868	61	18,580
Stafford	528	69	11,595	381	61	4,176	451	25	9,520
Suffolk	1,191	63	24,765	1,416	129	14,934	1,083	-	21,660
Surrey	611	48	12,940	717	102	7,782	501	-	10,020
Sussex	981	70	20,670	1,126	92	11,812	813	39	17,040
Warwick	693	41	14,475	658	72	7,012	668	57	14,500
Wiltshire	1,237	94	26,150	1668	210	17,940	1,204	78	25,640
Worcester	417	57	9,195	430	71	4,726	357	-	7,140
London	-	1,029	15,435	-	1,609	9,654	-	377	7,540
<b>TOTAL</b>	<b>30,807</b>	<b>3,388</b>	<b>666,969</b>	<b>34,301</b>	<b>5,790</b>	<b>377,750</b>	<b>23,672</b>	<b>1,665</b>	<b>506,740</b>

**Table 2 Lay subsidies and 'wealth' for the three ridings of Yorkshire (in £)**

riding	1313		wealth	1322		wealth	1327		wealth
	1/20th	1/15th		1/10th	1/6th		1/20th	1/20th	
<b>East</b>	985	78	20,870	876	34	8,964	675	13	13,760
<b>North</b>	1,377	173	30,135	221	142	3,062	302	92	7,880
<b>West</b>	1,382	17	27,895	618	5	6,210	518	3	10,420

Tables 1 and 2 reveal a marked reduction in assessed wealth between 1313 and 1322. This is to be expected, as assessed wealth included livestock (cattle, sheep, pigs), grain stocks, hay, peas and beans and other produce. All would have been hard hit by the crop failures which characterised the years of the Great Famine, and cattle, the most valuable of the livestock, by the bovine pestilence. The north was also subject to the Scots raids, resulting, as described above, in widespread devastation.

**Table 3 Ratios of 'wealth' relative to 1313**

	1313	1322	1327
<b>Southern and midland counties</b>	1.00	0.57	0.76
<b>East Riding</b>	1.00	0.43	0.66
<b>North Riding</b>	1.00	0.10	0.26
<b>West Riding</b>	1.00	0.22	0.37

It is clear from table 3 that while the southern and midland counties overall suffered heavily from the Great Famine and bovine pestilence they were recovering well by 1327, when their total assessed wealth had risen to 76 per cent of its 1313 value after falling to 57 per cent in 1322. Further detailed analysis is beyond the scope of this paper but it is useful to note a wide variation in rates of recovery across the south and midlands. David Stone has shown that between 1323 and 1333 southern and eastern England were subject to periods of intense drought.<sup>46</sup> Analysis of the data in table 1 for the period 1322-1327 shows the average rate of growth of assessed wealth for those counties subject to drought to be 27 per cent, virtually half that of those unaffected, where the growth rate averaged 53 per cent.

Table 3 shows that the three ridings of Yorkshire suffered a larger decline than the southern and midland counties in the period 1313-1322, attributable to the additional impact of the Scots raids. The East Riding was only marginally affected by the raids, possibly because the Bruce family had landholdings there, and its experience seems broadly comparable with the decline in wealth in the south and midlands. Both the North and West Ridings were hit hard by Scots raids, the former particularly so. All three ridings made significant recoveries between 1322 and 1327, with wealth in the North Riding more than doubling, albeit from a low base, but the North and West Ridings lagged well behind the south and midlands in 1327.

### A statistical analysis of the changes in estimated wealth

A more rigorous statistical model to identify the separate effects of the Great Famine and bovine pestilence on the one hand, and the Scots raids on the other, follows. A simple model for economic growth in the southern and midland counties in the period 1313 to 1322, unaffected by the Scots raids and before the droughts, is to assume that the overwhelming influence on the nation as a whole was the combined effect of the Great Famine and the bovine pestilence and that other influences were relatively minor. Individual counties would vary only marginally from the national level, depending upon local social, economic and demographic issues. Thus, one might assume that for any given county

$$\text{Wealth}(1322) = R \times \text{Wealth}(1313) + C$$

where R is the national rate of economic change and C is a local perturbation.

This hypothesis may be tested by calculating the correlation between the 1313 and 1322 wealth datasets for the southern and midland counties; using the Excel **correl** function, the calculated correlation coefficient is 0.97 indicating that the assumption of a linear model is not unreasonable and allowing the development of a further simple model based upon the rate of change of wealth by county.

Tables 4 and 5 show r, the rate of growth of wealth by county, between the 1322 and 1313 subsidies. All counties show a marked fall, which is particularly clear when expressed as a percentage fall. The average fall in wealth across the southern and midland counties of England (table 4, final row) was 43.4 per cent, which is the best estimate obtainable of the decline in wealth caused by the Great Famine and great bovine pestilence.

There is no reason to assume that the impact of the famine and pestilence was markedly different in Yorkshire. It is clear when comparing the data for the three Ridings of Yorkshire (table 5) with that for the southern and midland counties (table 4) that Yorkshire was hard hit in this period, with the North Riding particularly so; measured wealth fell by 57 per cent in the East Riding, 77.7 per cent in the West Riding and by a catastrophic 89.8 per cent in the North Riding, compared with 43.4 per cent across the southern and midland counties of England. Clearly these falls, at least in the North and West Ridings, are significantly different from those in the south and midlands. The statistical significance may be determined as follows. The rate of growth, r, in tables 4 and 5, is calculated as

$$r = [\text{wealth}(1322) - \text{wealth}(1313)] \div \text{wealth}(1313)$$

Here r is a random variable, the product of random events; it must be greater than or equal to -1 hence 1+r must be strictly positive so log(1+r) will follow a lognormal distribution; for the Southern Counties, this has a mean of -0.6106 and a standard deviation of 0.1992.

The Excel function **normdist** may be used to determine the probability that a given value is drawn from a particular normal distribution. The probability that the fall in the East Riding is drawn from the southern and midland counties distribution is 12 per cent, on a par with a few of the southern and midland counties. This suggests that the dominant factor for the fall in wealth in the East Riding was the combined effect of the famine and pestilence, with the Scots raids perhaps accounting for a fall in wealth of around 10% or so.

**Table 4 Comparing the estimated wealth of the southern and midland counties 1322 and 1313**

county	wealth		r = rate of change	% decline 1322 v 1313	1+r	log(1+r)
	1313	1322				
<b>Bedford</b>	15,475	7,616	-0.5079	-50.8	0.4921	-0.7090
<b>Berkshire</b>	15,510	13,714	-0.1158	-11.6	0.8842	-0.1231
<b>Buckingham</b>	13,465	6,372	-0.5268	-52.7	0.4732	-0.7482
<b>Cambridge</b>	19,910	12,596	-0.3674	-36.7	0.6326	-0.4578
<b>Cornwall</b>	9,320	6,544	-0.2979	-29.8	0.7021	-0.3536
<b>Derby</b>	9,900	4,072	-0.587	-58.9	0.4113	-0.8884
<b>Devon</b>	17,085	8,908	-0.4786	-47.9	0.5214	-0.6513
<b>Dorset</b>	13,390	9,902	-0.2605	-26.0	0.7395	-0.3018
<b>Essex</b>	25,865	15,398	-0.4047	-40.5	0.5953	-0.5187
<b>Gloucester</b>	24,095	13,938	-0.4215	-42.2	0.5785	-0.5474
<b>Hampshire</b>	20,140	13,818	-0.3139	-31.4	0.6861	-0.3767
<b>Hereford</b>	10,445	4,834	-0.5372	-53.7	0.4628	-0.7704
<b>Hertford</b>	13,200	5,900	-0.5530	-55.3	0.4470	-0.8053
<b>Huntingdon</b>	11,435	5,244	-0.5414	-54.1	0.4586	-0.7796
<b>Kent</b>	45,725	22,846	-0.5004	-50.0	0.4496	-0.6939
<b>Leicester</b>	13,245	6,594	-0.5022	-50.2	0.4978	-0.6975
<b>Lincoln</b>	74,990	38,492	-0.4867	-48.7	0.5133	-0.6669
<b>Middlesex</b>	7,740	3,780	-0.5116	-51.2	0.4884	-0.7167
<b>Norfolk</b>	61,980	40,894	-0.3402	-34.0	0.6598	-0.4158
<b>Northampton</b>	28,465	12,580	-0.5581	-55.8	0.4419	-0.8166
<b>Nottingham</b>	13,780	6,796	-0.5068	-50.7	0.4932	-0.7069
<b>Oxford</b>	23,245	16,744	-0.2797	-28.0	0.7203	-0.3281
<b>Rutland</b>	5,920	2,700	-0.5439	-54.4	0.4561	-0.7851
<b>Shropshire</b>	9,875	4,130	-0.5818	-58.2	0.4182	-0.8717
<b>Somerset</b>	27,535	15,302	-0.4443	-44.4	0.5557	-0.5875
<b>Stafford</b>	11,595	4,176	-0.6398	-64.0	0.3602	-1.0212
<b>Suffolk</b>	24,765	14,934	-0.3970	-39.7	0.6030	-0.5058
<b>Surrey</b>	12,940	7,782	-0.3986	-39.9	0.6014	-0.5058
<b>Sussex</b>	20,670	11,812	-0.4285	-42.9	0.5715	-0.5596
<b>Warwick</b>	14,475	7,012	-0.5156	-51.6	0.4844	-0.7248
<b>Wiltshire</b>	26,150	17,940	-0.3140	-31.4	0.6860	-0.3768
<b>Worcester</b>	9,195	4,726	-0.4860	-48.6	0.5140	-0.6656
<b>London</b>	15,435	9,654	-0.3745	-37.5	0.6255	-0.4693
<b>TOTAL</b>	666,969	377,750	-0.4336	-43.4	0.5664	-0.5685

**Table 5 Comparing the estimated wealth of the three ridings of Yorkshire 1322 and 1313**

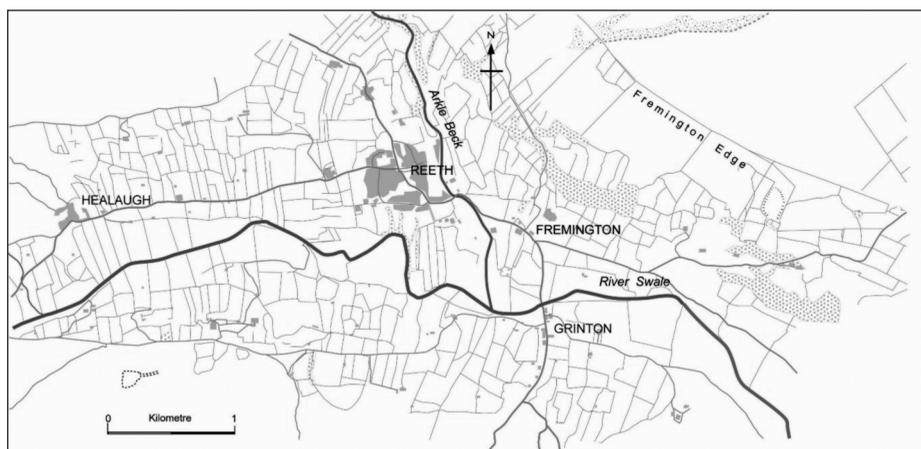
	wealth		r = rate of change	% decline 1322 v 1313	1+r	log(1+r)
	1313	1322				
<b>East Riding</b>	20,870	8,964	-0.5705	-57.0	0.4295	-0.8451
<b>North Riding</b>	30,135	3,062	-0.8984	-89.8	0.1016	-2.2866
<b>West Riding</b>	27,895	6,210	-0.7774	-77.7	0.2226	-1.5023
<b>Yorkshire total</b>	78,900	18,236	-0.7689	-76.9	0.2311	-1.4648

The picture for the North and West Ridings is very different. In the East Riding the clear probability is that the decline was based on factors similar to those in the south and midlands, but in the North Riding the corresponding probability is less than one in  $10^{23}$ , and in the West Riding one in 250,000—both vanishingly small. Both Ridings were hit by the Scots raids, and these together with the impact of the famine and the bovine pestilence would overwhelm any other local factors. Assuming that the impact of the famine and pestilence was similar in Yorkshire to that in other parts of the country, the best estimates for the reduction in wealth as a result of the raids are:

West Riding      77.7 per cent - 43.4 per cent = 34.3 per cent  
 North Riding    89.8 per cent - 43.4 per cent = 46.4 per cent

### The situation in Swaledale

The pottery finds from the Swaledale Big Dig, referred to above, were the stimulus for this paper. They provide indirect evidence for a substantial decline in wealth in the fourteenth century, continuing into the sixteenth century. It was hoped initially that the medieval lay subsidy returns for the Swaledale villis would confirm this and enable the decline in Swaledale to be quantified, but only the 1301 and 1327 returns survive for the local villages.<sup>47</sup> Some of our preliminary observations are set out below, but it is intended that the situation in Swaledale will be explored further, and in more detail, in a later paper.



**4 The geographical focus of the Swaledale Big Dig**

Table 6 shows the actual tax collected from the Swaledale vill in 1301 and 1327. The former was taxed at a rate of 1/15th, the latter at 1/20th. Therefore the total value of the moveable property assessed—in other words, the wealth of the vill—may be estimated by multiplying the 1301 returns by 15 and the 1327 by 20; this is shown in table 7. The 1301 subsidy gives separate returns for the villages of Reeth, Fremington and Healaugh, whereas in 1327 and thereafter Fremington and Healaugh do not appear and are assumed to be included in the return for ‘Reeth cum hamlets’. For consistency, in table 6 the entries for Reeth include these neighbouring villages, and they probably also include several small settlements to the west, in Upper Swaledale, known to exist but not named in the returns.

**Table 6 Lay subsidy returns and calculated wealth for Swaledale vill**

vill	lay subsidy returns		calculated wealth 1301 : 1327		
	1301	1327	1301	1327	% fall
<b>Reeth</b>	£10 17s 5 <sup>3</sup> / <sub>4</sub> d	£5 0s 6d	£163 2s 2 <sup>1</sup> / <sub>4</sub> d	£100 10s 0d	38
<b>Arkengarthdale</b>	£4 3s 10d	13s 0d	£62 17s 6d	£13 0s 0d	79
<b>Grinton</b>	£1 0s 3d	13s 0 <sup>7</sup> / <sub>4</sub> d	£15 3s 9d	£13 0s 5d	14
<b>Marrick</b>	£2 11s 5d	7s 6 <sup>2</sup> / <sub>4</sub> d	£38 11s 3d	£7 11s 3d	80
<b>Marske</b>	£2 12 6d	12s 6d	£39 7s 6d	£12 10s 0d	68
<b>Richmond</b>	£15 7s 10d	£2 6s 10d	£230 17s 6d	£46 16s 8d	80
<i>North Riding</i>	<i>£1669</i>	<i>£394</i>	<i>£25, 035</i>	<i>£7880</i>	<i>69</i>

The data in table 6 raises some significant questions. The decline in wealth is almost identical (at about 80 per cent) for Arkengarthdale, Marrick and Richmond and only marginally worse than that for the North Riding as a whole, while Grinton stands out as having been barely affected. This is clearly anomalous and is perhaps related to the ownership of much of Grinton by Bridlington Priory, although it is not clear how this could affect the lay rather than the ecclesiastical subsidy. The relatively small decline in value in Reeth is also strange. There is no obvious explanation as to why it should be roughly half that of the neighbouring settlements. One possible explanation is that the Scots raids did not penetrate Swaledale much beyond Marrick and Marske, which lie east of Reeth, lower down the valley. The topography of the dale is such that to raid further west, beyond Reeth, would be in effect going up a cul-de-sac. It is also possible that the inhabitants of the Reeth area could take evasive action by moving livestock and valuables further up the valley. Care is needed in interpreting this data, because the sample sizes are small—there were only twelve taxpayers in Richmond in 1327 and seven in Marrick—but it appears that much of Swaledale suffered to a similar degree from the Scots raids as the rest of the North Riding.

## Conclusion

A community archaeology project (in this case the Swaledale Big Dig) can provide the stimulus and the basis for research into the history of a local community. The paucity of data available for Swaledale in the early fourteenth century led to shift the focus to a larger area, the North Riding of Yorkshire. Analysis of the lay subsidies for the

period has enabled us to estimate the economic impact of the Great Famine and bovine pestilence, on the one hand, and the Scots raids on the other, on this larger area and, by implication, on Swaledale. The precision of the analysis should be treated with caution, for numbers can flatter to deceive, but we suggest that the famine and pestilence reduced disposable wealth across England as a whole by around 40 per cent and the Scots raids by a further similar additional amount in the North Riding. Further work will focus on the subsidy returns for Swaledale in particular.

## Acknowledgements

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