THE INTRODUCTION OF THE BROWN RAT *(RATTUS NORVEGICUS)*

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The brown rats we take for granted in the 21st century have not always been with us. Before the early 18th century they were unknown in Britain, or indeed in western Europe. Rats were present, but these were *Rattus rattus,* familiarly known as black rats. Neither description is wholly reliable, for in both species the colour can be misleading, but the terms are used here for convenience (Fig. 1). The black rat is indigenous in the south of India. It is frequently asserted that it was introduced to Britain by returning Crusaders, although there is no substance in the legend (Hinton 1910–21, 582; Lancum 1951, 37; Fitter 1959, 107–8; Wright 1987, 349). The bones and teeth of black rats have been excavated in several towns in contexts securely dated to the late Roman period (Armitage *et al*. 1984, 375–83; Rackham 1979, 112–20). They have been held responsible for introducing and spreading the Black Death in the 14th century, although increasingly this view is being questioned by historical biologists (eg Twigg 1984). It is relevant here to give some account of their behaviour.

In their native habitat they make their nests in trees, and feed mainly on fruit and seeds. They are proficient climbers, and where they occupy buildings they are always found high up in them. All animals can swim to avoid drowning, but black rats do not take to the water willingly. In a temperate climate such as Britain's they cannot live for long except in man's heated buildings – whether heated by fires or by the heat rising from animals (Hinton 1910–21, 605–25). When many houses and most farm buildings were thatched the rats made their nests in the thatch, and subsisted on spilled grain and what they could steal. There is no evidence that they were ever widespread in the countryside, or that they were

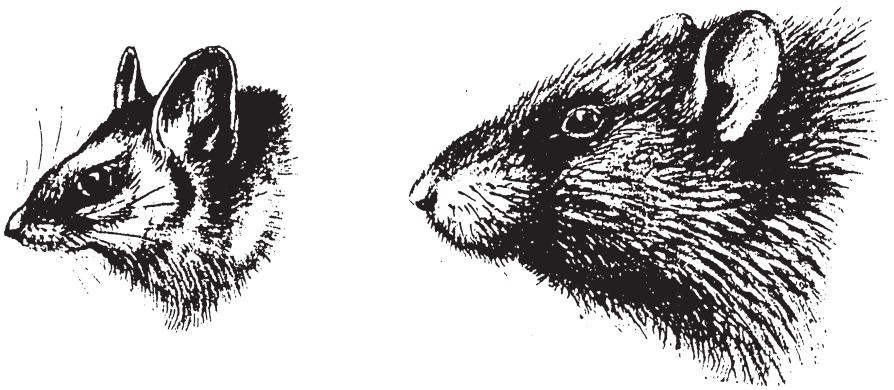

Figure Left: Rattus Rattus*, the black rat; right:* Rattus Norvegicus*, the brown rat (Barrett-Hamilton and Hinton 1910–21, vol. 11, pl. xxxiv; by permission of the British Library)*

regarded as a nuisance on farms. Before the 1720s farming literature described numerous pests and how to poison or trap them, but hardly mentioned rats, and then only as being less troublesome than mice (McCann 1996, 3).

The perception of rats changed entirely when brown rats were introduced in the 18th century. They were indigenous in eastern Asia, east of the 90º meridian, between the latitudes of 47º and 59º north, which is equivalent to the zone between central France and the Orkneys. In their natural habitat they live in underground burrows, and can find their way in total darkness; so in human society they take naturally to drains. They swim readily, and feed mainly on the foods which occur naturally along river banks and sea shores (Hinton 1910–21, 582). They can gnaw through all but the hardest food containers, and through many building materials. It is instructive to try to identify the period of their introduction more precisely. When in 1693 John Ray classified all the known fauna he recorded only one species of rat, described simply as 'The Rat' (Ray 1693, 217). The first indication in the literature that something was changing is in the section on Pigeons and Pigeon Houses in *The Sportsman's Dictionary,* published in London in 1735, although the anonymous author did not realise that a new species had been introduced. He described various elaborate measures to prevent rats from climbing the walls of dovecotes to enter at the eaves; evidently he still thought that a climbing species was responsible for the predation he described (Anon, 1735, unpaginated). Before that date there is no evidence that rats were regarded as a threat to dovecotes, or as predators on livestock at all. In 1740 another anonymous author published a long poem in rhyming couplets which instructed landed gentlemen on everything they needed to know to establish and manage new dovecotes. He wrote:

> The City's odious to the harmless Dove;
> Business suits ill with Innocence and Love.
> Beside, in Towns the Rat's insidious Kind
> Too often in the Cote an entrance find;
> Break the thin Eggs, and make with fruitless Pain
> Th'eluded Mother sit whole Months in vain
> (Anon, 1740, 4)

That is, he was aware of a new threat to dovecotes, but he did not then regard it as applying in the countryside. One may reasonably deduce that the city he was writing about was London. The appearance of rats of a new species was clearly recognised by the Scottish Society of Improvers in 1743: 'Since the common Poison given to other Rats will not destroy Baltick Rats' it offered a new recipe for poison (Maxwell 1743, 280). (One need not assume from this that brown rats had already reached Scotland, for Scottish land agents took a prominent part in advancing progressive agriculture in England). In 1748 the Swedish biologist Pehr Kalm was shown 'Hanoverian rats' infesting a watermill in the Chilterns, evidently a new phenomenon. The site of the mill was not specified but he was staying at Little Gaddesden in Hertfordshire, near the headwaters of the River Gade, a tributary of the Thames (Lucas 1892, 300). In Henry Fielding's novel *Tom Jones,* published in 1749, Squire Western fulminated against 'Hanover rats', but failed to make his case with his more sophisticated sister:

> I hope to zee it, sister, before the Hanover rats have eat all our corn, and left us nothing but turneps to feed upon'. 'I protest, brother,' cries she, 'you are now got beyond my understanding. Your jargon of turneps and Hanover rats is, to me perfectly unintelligible (Fielding 1749, 263).

Fielding was a Somerset man by origin, but at the time he was living in London. Thomas Pennant, writing in 1766, said 'This animal never made its appearance in England till about forty years ago', which suggests that it first attracted notice about 1726 (Pennant 1766, 47). All the available evidence indicates that brown rats were first introduced to Britain in the port of London by shipping from Baltic ports. Brown rats had been reported in Copenhagen in 1716, and were on the island of Bornholm in the Baltic by 1725 (Hinton 1910–21, 608).

For reasons which remain unknown they had migrated overland from their natural habitat to Russia and the Baltic rivers, perhaps as the result of climatic change. The naturalist Peter Pallas described an extraordinary phenomenon in the Caspian region 'when vast hordes of these rats migrated westwards after an earthquake; they swam across the River Volga, the bed of the river being choked by them, and entered the houses of Astrakhan in such numbers that nothing could be preserved from them' (Hinton 1910–21, 608). He described this as having occurred in 1727. He cannot have witnessed it, for he was not born until 1741, but this sounds like an account of a real event; he may have been misinformed about the date.

In 1754 a family at Wansford on the River Nene was terrified by 'a drive of Norway rats' which invaded their bedroom. By 1755 'burrowing rats' had infested an island in the Scillies (black rats do

not burrow). An incident involving 'a Norway rat' in the cellar of a waterside inn at Liverpool was reported in 1759 (*The Gentleman's Magazine,* vols 24, 241; 25, 448). Brown rats were causing major damage to cornfields in Anglesey by 1762 (*The Annual Register* 1759–69, 123). By 1768 the professional rat-catcher Robert Smith could write 'There are very few buildings either in town or country that are not troubled and pestered by them' (Smith 1768, 94). They spread from place to place inland mainly by rivers and drainage channels, but it is clear that they were being carried by coastal shipping also. They were less able to cross watersheds, but in 1787 Gilbert White reported that they had infested a remote farmstead on the downlands between Andover and Winchester, far from any waterways or drainage channels (Johnson 1931, 300).

Therefore one can deduce that brown rats were introduced to the port of London in the period 1720–30 by shipping from the Baltic, that they had become a hazard to dovecotes in London by 1735, and that by 1748 they had spread up the Thames and its tributaries. An oblique piece of evidence tends to confirm this. A new type of granary built of brick, raised on high brick arches, became current in the later 18th century; the earlest example known is dated 1746, at Purton, on the River Ray, a tributary of the Thames (Slocombe 1989, 61). I know of no direct evidence to prove when brown rats infested Somerset, but there is an interesting piece of circumstantial evidence. Throughout the early part of the 18th century the churchwardens of Horsington paid a bounty for the destruction of all creatures which were then held to be vermin, including polecats, stoats, otters, foxes, hedgehogs and many kinds of birds. Rats were not mentioned, but in 1761 all bounty payments ceased (SRO, D/P/Hors. 4/1/1). One can well imagine that a plague of brown rats would have emptied the parish coffers very rapidly. Horsington is 30 miles inland, on the watershed between the rivers flowing north into the Bristol Channel and those flowing south into the English Channel. Probably it was the last part of the county to be colonised by brown rats. At Horsington and several other places in the county dovecotes were altered to protect them from this new hazard. In most cases the lower tiers of nest-holes were blocked with stone, to a height which brown rats could not climb or jump; in two dovecotes the whole interior was rebuilt to achieve this (McCann and McCann 2003, 44, 57, 71, 84, 88, 90, 107). Regrettably, these alterations cannot be precisely dated, but are believed to have been undertaken in the 1750s or 1760s.

The progress of brown rats into inland Scotland occurred considerably later. Selkirkshire was infested in the 1770s. They spread through the Borders in the 1790s, but they were still unknown in rural parts of Angus and Moray in 1814 (Hinton 1910–21, 384–5).

At first brown rats were known in Britain as 'Norway rats', although in fact they were not found in Norway until after they became established in London. However, Linnaeus adopted the term *Rattus norvegicus* from English sources. The origin of the term 'Hanoverian rats' will be discussed in a future article.

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