

Urban rat infestations, housing and the risk to health

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Organisms that have been found carried by brown rats and the diseases caused

Parasite	Diseases in Humans
Ectoparasites	
Ticks	Vectors for Lyme disease
Helminths	
<i>Capillaria spp.</i>	Capillariasis
<i>Toxocara spp.</i>	Toxocariasis
<i>Hymenolepis nana</i>	Rat tapeworm
<i>Trichuris spp.</i>	Diarrhoeal disease etc
<i>Hymenolepis spp.</i>	Diarrhoeal disease etc
<i>Taenia spp.</i>	Diarrhoeal disease etc

Organisms that have been found carried by brown rats and the diseases caused

Bacteria	Diseases in Humans
<i>Leptospira spp.</i>	Leptospirosis
<i>Listeria spp.</i>	Listeriosis
<i>Yersinia enterocolitica</i>	Yersiniosis
<i>Pasteurella spp.</i>	Pasteurellosis
<i>Pseudomonas spp.</i>	Melioidosis
<i>Borrelia burgdorferi</i>	Lyme disease
<i>Coxiella burnetii</i> (antibodies)	Q Fever
<i>Salmonella spp.</i>	Salmonellosis
<i>Vibrio spp.</i>	Diarrhoeal disease etc

Organisms that have been found carried by brown rats and the diseases caused

Protozoa	Diseases in Humans
<i>Cryptosporidium parvum</i>	Cryptosporidiosis
<i>Toxoplasma gondii</i>	Toxoplasmosis
<i>Babesia spp.</i>	Babesiosis
<i>Sarcocystis spp.</i>	Sarcosporidiosis
<i>Coccidia & Eimeria spp.</i>	Coccidiosis etc.
<i>Entamoeba spp.</i>	Amoebic dysentery
Virus (antibodies)	
<i>Hantavirus</i>	Hantaan-fever

Levels of rat infestation

EHCS 1996 compared with 1993 Study

	No of Properties		Percentage infested
	In sample	Infested	
*Rats in dwellings (main sub-set EHCS)	8920	25	0.28
*Rats outside dwellings (gardens etc) (Main subset EHCS)	8619	177	2.05
**Domestic only in dwelling	-	-	0.7
**Domestic only outside dwelling	-	-	4.4

Source: *Langton et al (2001) and ** Meyer et al (1995)

Factors associated with infestations as identified by LA officers

Factor or source	No. Responses	Mean score	No scoring 3+
Open ditches or watercourses	156	3.08	100
Broken drain or sewer	156	2.84	87
Poor repair to drainage system	156	2.16	59
Open drains on building construction sites	156	2.14	49
Missing caps interceptors	154	2.01	51

Scored 0 = never a factor; 5 = very common factor (Source: Battersby (2002))

Investment in sewerage infrastructure

Sewerage Company	Critical sewers total (km)	Total replaced or renovated 01/02 (km)	Total replaced or renovated 1990-2002 (km)	Implied asset life at renewal rate since 1990 (years)
Anglia	8,191	3	153	642
Dwr Cymru	4,321	3	161	322
United Utilities	10,674	47	528	243
Northumbrian	5,982	41	347	207
Severn Trent	7,471	12	463	210
South West	1,815	11	62	354
Southern	6,460	12	55	1,410
Thames	18,936	24	503	452
Wessex	2,841	11	130	426
Yorkshire	6,846	5	80	1,026
TOTAL	73,537	169	2,482	355.5

Rat problems – a question of place

- Rat infestations an indication of a degraded environment and recent studies show an association with
 - Older housing in poor condition
 - Multi-occupied buildings (and therefore should be a consideration in management particularly of HMOs)
 - Ageing infrastructure
 - Poor environment – litter, dereliction, neighbourhoods of social deprivation etc
- If treatment by the authorities depends on complaint – these may be areas where people do not complain

Implications

- Rats carry a wider range of parasites than hitherto thought
- Studies so far indicate the prevalence of parasites in brown rats may be less in urban rats than in rural rats – possibly due to sufficient predation to prevent population densities matching those on some farms
- **But** :
 - In urban areas rats are living in closer proximity to the human population than farm rats
 - Inadequate interventions by municipal authorities could lead to increased population densities in some urban areas, with increased prevalence of parasites and further enhanced risk to the health of those already likely to have lower health status

SO PERHAPS



“Man and the rat will always be pitted against each other as implacable enemies”

Hans Zinsser, 1934, in “Rats, lice and history: the biography of a bacillus”. London: Macmillan. - (Papermac).