

“Rodents, Agriculture and Wildlife Management in the UK”

Training Modules from Sparsholt College and the Campaign for
Responsible Rodenticide Use (CRRU)



● THE PROBLEM WITH RODENTS

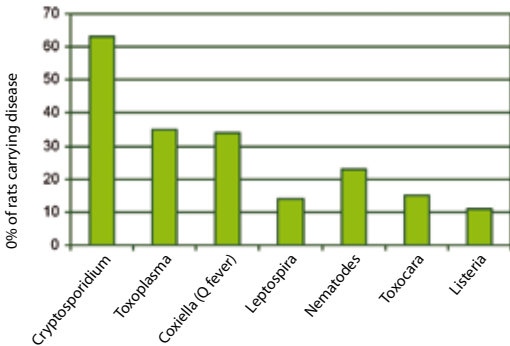
Human and Animal Health

Rats taken in the UK countryside carry a wide variety of disease-causing organisms, including those responsible for cryptosporidiosis, leptospirosis, Q fever, toxoplasmosis and listeriosis (Figure 1).

Cryptosporidiosis is a concern because rats pass the disease to cattle when they soil their foodstuffs with faeces and that leads to infected slurry contaminating watercourses, from which drinking water is abstracted. Many of the other diseases carried by rodents, such as Q fever, leptospirosis and toxoplasmosis are occupational diseases of those working with livestock and elsewhere in the countryside.

In view of this, and recent outbreaks of foot and mouth and bird 'flu, it is more important than ever that rodents, as proven carriers of disease, are not present on farms, near livestock and do not infest other rural enterprises.

Figure 1. The percentages of UK Norway rats which carry disease causing organisms. (Source: Webster, J.P. and Macdonald, D.W. (1995). Parasites of wild brown rats (*Rattus norvegicus*) on UK farms. *Parasitology* 109: 37-43.



Wastage

Apart from the health implications of rat infestations, there are economic reasons why rats must be controlled.

A conservative estimate is that there are 10.5 million rats in the UK and this number of rats consumes about 120 tonnes of food per day. However, rodents soil with faeces and urine much more food than they eat. A Norway rat voids 12-16 ml of urine every day and up to 50 faecal droppings. These excreta are deposited wherever the rodents are active and foodstuffs contaminated in this way are unsuitable for sale. With farm incomes being so low, no rural community can afford to suffer such losses.

● THE PROBLEM WITH RODENTS CONT...

Damage to property

Apart from the damage to crops from contamination, there is a significant cost from damage to property and buildings. The most important form of economic damage on farms comes from the gnawing of electrical cables and wiring. Innumerable equipment failures and 50% of farm fires are caused by this. One estimate made in 1989 is that all sources of rodent damage on farms in the UK amounted to £10-£20million each year. This is equivalent to £14-£28 million a year at today's prices.

Infestation levels

There is evidence that rodent populations in the UK are on the increase. For example, the National Rodent Survey from National Pest Technicians Association (http://www.npta.org.uk/assets/pages/rodent_report.html) shows that there was significant annual increase in the numbers of rat and mouse infestations treated by local authorities during the period 1999 to 2005. Such increases have been attributed to a many causes including the recent run of mild winters, an increase in the frequency of wild bird feeding in gardens, the more popular use of compost bins by home-owners and the volumes of food waste left in our high street near fast food outlets.

● ANTICOAGULANT RODENTICIDES

Efficacy and Safety

Anticoagulants have been used for rodent control for more than 50 years. They are the most effective rodenticides available and, in Europe, currently account for virtually all rodenticide bait products on the market. In spite of the fact that these compounds are designed to be toxic to vertebrate animals (i.e. rodents) they have an excellent safety record. This is due to their delayed mode of action and the presence of an antidote (vitamin K₁).

Effects on wildlife

In spite of this safety record, research over recent years has highlighted two main areas of concern with regard to the use of rodenticides in the UK and wildlife.

Occasionally the bodies of wildlife species are discovered that may have died from exposure to pesticides, and rodenticides are sometimes implicated. These cases are investigated and reported quarterly by the Pesticides Safety Directorate (PSD), though the Wildlife Incident Investigation Scheme (WIIS) (see <http://www.pesticides.gov.uk/environment.asp?id=2145>).

Another concern is that several species of UK wildlife carry in their bodies low-level residues of some of the most commonly-used rodenticides. This is monitored by the Predatory Birds Monitoring Scheme (see <http://pbms.ceh.ac.uk/>). Although, there is no evidence that these residues have measurable adverse effects, either on the individual animals or on wildlife populations, those using rodenticides should do so in ways that reduce to a minimum the exposure of wildlife.



● ANTICOAGULANT RODENTICIDES CONT...

Information from WIIS

The cause of each WIIS incident is attributed to one of the following: abuse of a pesticide, in the form of deliberate, illegal attempts to poison animals; misuse of a product, by careless, accidental or wilful failure to follow correct practice; approved use of a product, according to the specified conditions of use; and unspecified use, where the cause could not be assigned to one of the above categories.

An analysis of all WIIS incidents involving vertebrate control agents for the years 1993 to 2006 has been carried out. In terms of active ingredients, the products involved are mainly anticoagulant rodenticides but there are also non-anticoagulant rodenticides, i.e. alphachloralose and calciferol, and products such as hydrogen cyanide and strychnine, which were once used for pest control but are no longer available.

Incidents by type of use

Of the total of 1002 incidents involving vertebrate pest control agents, 468 (46.7%) were cases of 'abuse', where vertebrate control agents were used deliberately to harm wildlife and companion animals. This abuse often takes the form of poisoned meat baits, put out for rooks, crows, magpies, and foxes for the protection of shooting interests. These baits are indiscriminate and are also taken by other mammals, including dogs, and a wide range of birds of prey.

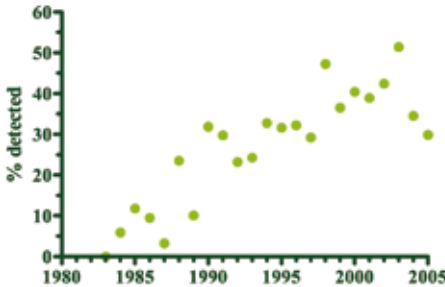
Many of these incidents involve criminal investigations and may result in enforcement action, including prosecution. The Campaign Against Illegal Poisoning of Wildlife is run by the Pesticides Safety Directorate and draws attention to this issue by publicising prosecutions (see <http://www.pesticides.gov.uk/environment.asp?id=504>).

The next largest category was the 'unspecified' incidents, totalling 350 (34.9%), in which investigations did not permit a specific cause to be attributed. Anticoagulant rodenticides are the products that predominate in these incidents. The careless or wilful 'misuse' of vertebrate control agents accounted for a further 110 (11.0%) incidents. Only 37 (3.7%) incidents, over the fourteen-year period, could be attributed with certainty to the use of products in an 'approved' manner and this provides confidence that, when they are properly used, vertebrate control agents do not present a significant risk to wildlife and companion animals.

Low-level rodenticide Residues in UK Wildlife

Evidence was found during the 1980's that barn owls in the UK carry residues of some of the most commonly-used anticoagulant rodenticides. This information was obtained by analysing for residues the bodies of birds found dead, mostly as a result of road accidents. As methods of analysis grew more sophisticated and the frequency of carcass collection was stepped up it was found during the 1990's that up to 40% of barn owls carried traces of rodenticides (Figure 2). At first sight the most likely cause of this is the consumption by owls of rats and mice. However, although owls may occasionally take these target rodents, analysis of the food of barn owls shows that they feed mainly on wild small mammals, such as field mice and voles. The extent of exposure of owls to rodenticides is difficult to explain only in terms of consumption of target rodents. It is more likely that they are indirectly exposed when non-target rodents take rodenticide baits during application of rodenticides in the countryside.

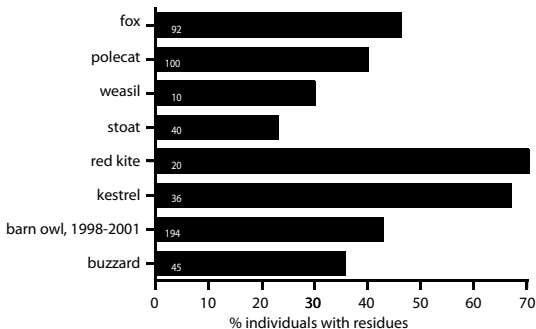
Figure 2. The percentage of UK barn owls carrying residues of second-generation anticoagulants. (Source: data provided by Dr Richard Shore, Centre for Ecology and Hydrology, from the Predatory Birds Monitoring Scheme.)



This information on rodenticide residues in owls must be seen, however, in the context that the most common documented cause of death in barn owls is collision with road traffic. Indeed, it is estimated that as many as 3,700 owls are killed every year on our roads. In spite of this, any exposure of barn owls to rodenticides is potentially detrimental and methods of application must be used that minimise exposure to these birds and other forms of wildlife.

Recognition of the level of exposure of barn owls to anticoagulants resulted in the search for residues in other wildlife species. Subsequently it has been shown that populations of several other species also contain residues of anticoagulants. These species include red kites, buzzards, kestrels, polecats, stoats and weasels (Figure 3).

Figure 3. The percentages of individuals of different UK wildlife species carrying residues of anticoagulant rodenticides. The values in the histogram are the numbers of individuals of each species analysed. (Source: the data are from various studies and collated by Dr Richard Shore, Centre for Ecology and Hydrology.)





● ANTICOAGULANT RODENTICIDES CONT...

There is no evidence that populations of any of these species are in any danger of decline as a result of exposure to rodenticides. Indeed, some species such as stoats and weasels are actively controlled by gamekeepers in the protection of game birds for shooting. Others, such as red kites, buzzards and polecats, are showing dramatic increases in their populations in the UK thanks to re-introduction programmes and other beneficial changes in the countryside.

However, the widespread distribution of these low-level residues of anticoagulants in UK wildlife is of concern to everyone. It is necessary to make rodenticides users aware of this and to provide guidance on how to use rodenticides in ways that minimise the exposure of wildlife. For that purpose the rodenticide industry, acting together, has initiated the Campaign for Responsible Rodenticide Use (CRRU) and has drawn up a Code for the responsible use of rodenticides in rural areas.

● SPARSHOLT-CRRU TRAINING MODULES

In collaboration with Sparsholt College, Hampshire, CRRU has developed a set of five training modules. The purpose of these modules is provide information on these issues for students on courses in wildlife management, estate management and game-keeping, at the colleges of the Land Based Colleges National Consortium, and to offer advice on the use of rodenticides in rural settings in order to minimise wildlife impacts.

There are five modules under the general title “**Rodents, Agriculture and Wildlife Management in the UK**”:

1. Why Control Rodents.

Provides an understanding of the problems caused by rodents to the rural economy. Particular emphasis is given to diseases carried by rodents and to the quest for quality within accreditation schemes driving an increased requirement for rural rodenticide use.

2. Rodent Species – Identification and Behaviour.

Outlines important pest recognition characteristics and behaviour relevant to implementing effective control. Draws attention to other non-target rodents that may be affected by rural rodent control programmes.

3. How to Control Rodents on Farms.

Explains the fundamentals of applying rodenticides safely and effectively in rural settings, including additional information for gamekeepers who apply rodenticides away from buildings.

4. Environmental Impacts of Rodenticides.

Describes primary and secondary routes of wildlife exposure to rodenticides, adverse effects of rodenticides and distribution of residues among key wildlife species.

5. The Campaign for Responsible Rodenticide Use.

Gives the objectives of the CRRU initiative, the important mitigations measures required to reduce wildlife contamination and the potential benefits of each of the measures recommended.

● THE CRRU CODE

The purpose of the CRRU Code is to ensure that effective rodent control can be carried out by all users, while ensuring that the exposure of all non-target animals, including wildlife, is kept to an absolute minimum.

This code stresses the need to adhere to the following good practice.
Its prime slogan is **THINK WILDLIFE.**

The Code

Always have a planned approach

Always record quantity of bait used and where it is placed

Always use enough baiting points

Always collect and dispose of rodent bodies

Never leave bait exposed to non-target animals and birds

Never fail to inspect bait regularly

Never leave bait down at the end of the treatment

For further details of CRRU and the CRRU Code see:

www.thinkwildlife.org.uk

info@thinkwildlife.org.uk

● THE MEMBER COMPANIES OF CRRU

Barrettine Environmental Health

Bell Laboratories Inc.

Killgerm Group Limited

Novartis Animal Health UK Limited

PelGar International

Rentokil-Initial plc

Sorex Limited

THINK WILDLIFE

Campaign for Responsible Rodenticide Use (CRRU)

