Imprint

The Yorkshire Mammal Group - Newsletter

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Editor:

Beryl Cronin
16 Nethermoor View
Bingley
West Yorkshire
BD16 4HG

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Many thanks to Julie Hanson for the lovely cover illustration and also to Robert Masheder for the other badger drawings in this issue.

'Pawtraits' of people's pets can be drawn from photographs and make lovely presents. Details from Ann Hanson.

Contents

EDITOR'S REPORT

Looking through *Imprint No.24*, 1997 seems to have been the year of the water vole. With interest generated by national concern, quite a few field trips have concentrated on looking for waterside signs of this particular mammal. We have 3 articles on this species, plus a comprehensive wildlife profile of Rawcliffe Meadows where, on one memorable occasion, no less than 8 water voles were seen by YMG members!

Elsewhere our trapping sessions at West Bank Park and Hatfield Moor were well attended and gave valuable information to the management bodies concerned. YMG has received several requests for similar 'one-off' species sampling traps and we hope to carry out more of these next year at different sites.

Looking forward to next year, brings thoughts of the AGM in December. Our present committee is beginning to feel it is time to step aside and let some 'new blood' into the group. Our executive officers (Chairman, Secretary, Treasurer, Field Studies Advisor and even your Editor) have all held their positions for longer than the stipulated 3 years and many have already been 'recycled'! So this is a call to all our members, to give some thought to the idea of joining the committee. With only 2 or 3 meetings each year, it is hardly an onerous task and new faces would be very welcome. There are still 12 months to December 1998, so have a word with one of the present committee if you are interested in helping to run the Group.

BERYL CRONIN

MAMMAL NEWS

Water voles

Concern for the water vole *Arvicola terrestris* began during the 1980s and prompted a Vincent Wildlife Trust national survey between 1989 - 1990. The results appeared in 1993 and suggested that this mammal had disappeared from 60% of sites where it had been found at the beginning of the century. The prediction was that by the year 2000, it would remain at only 6% of those original sites. The survey also indicated that sites vacated by the water vole had been taken over by the American Mink, *Mustela vison*, a major predator of the smaller mammal.

The Wildlife Conservation Research Unit at Oxford University suggests that the water vole's decline came about before the increase in numbers of mink and began with the loss of waterside habitats. This was due mainly to agricultural intensification, with grazing and ploughing being taken ever closer to river edges such that the water vole's preferred habitat was gradually whittled away. Heavy use of pesticides, river channel 'improvements' and an increase in flooding following land-use changes in flood plains added to the water vole's problems and led to populations becoming fragmented. Water vole and mink can co-exist given large enough areas of undisturbed habitat, so the expansion of the mink population is likely to have been the last straw for the water vole population rather than the initial reason for its decline.

Although its hitherto common status meant that very little work was done on its conservation requirements, the water vole has now been included in the UK's Biodiversity Action Plan. The Environment Agency is heading a national steering group to study the factors involved in the water vole decline. Many Wildlife Trusts and Watch Groups have been involved in looking for water vole signs (foot-prints, latrines, burrows, chewed grass stems, grazed lawns) at the water's edge. Unfortunately, early indications suggest that the decline has continued since the 1990 survey.

The Yorkshire Mammal Group has also been busy surveying water vole habitats and reports of specific field trips are to be found in the *Fieldwork Reports* section of this magazine.

Reference: Tobin, B. (1997) Last Ditch for Ratty *Natural World* Spring/Summer: 26-28

Humpbacks

Latest sightings suggest that at least 17 humpback whales are living around the coast of Britain and their numbers are increasing. The last humpback to be harpooned was caught by Scottish whalers in 1928 and by 1970 the species was extinct in British waters.

Muntjac

'The biggest single threat to British flora is the muntjac', says an Oxfordshire Wildlife Trust Warden. He believes woodland plants are under severe pressure from the grazing habits of this small deer, a native of India and China which was introduced into Britain 100 years ago.

Natural World Spring/Summer 1997

Seal caveman

Stephen Westcott (The Seal Man of Cornwall) has launched his book on Cornish seals from one of the sea caves where they live. *The Grey Seals of the West Country* is the result of nine years spent studying these animals. Proceeds from the sale of the book will help fund further research including a seal pup census.

Daily Mail, July 1997

Daubenton's Bats at Kexby Bridge

Since 1978, the National Annual Bat Colony Survey has sought to monitor the decline in the numbers of bats of different species in Britain. The standard procedure is for observers to count bats emerging from

particular roost sites on at least two evenings during June. Considering that numbers of emerging bats may be affected by their reproductive state and the prevailing weather conditions, how accurate an estimate of the colony size is such a method likely to give? This was one of the questions posed by Geoff Oxford and his fellow contributors in the survey of Daubenton's bats at Kexby Bridge.

This roost site has been monitored since 1983 with annual counts of emerging bats being recorded. The purpose of the 1995 study was three-fold:

a) To monitor the changes in bat numbers at this roost site over a whole summer season.
b) To ascertain the value of 3 counts during June as a measure of the population present.
c) To examine counts from this colony over a 12-year period to detect long-term trends in population size.

This is the first detailed study of this species in Yorkshire to be carried out over an entire breeding season, and assimilated a wide range of data on emergence times and how they may be affected by sunset times, temperature, windspeed and direction, cloud cover and the bats' breeding status.

Counts were made at weekly intervals between March and October and recorded considerable fluctuation in bat numbers throughout that time. This was partly due to the use of alternative roost sites by the colony. In addition to the known south-east facing site, two more were discovered, one under the bridge and one on its north facing side.

Comparing counts over the years, there would appear to be no long-term trends in the numbers of adult females (ie. bats counted during June) but where more than one count was made in June, conflicting results emerged suggesting that counts taken during a fixed period should be treated with caution as an indication of population size.

Overall the size of the Kexby colony appears to have remained stable over the 12 year period. This may be due to the high water quality of the River Derwent or it may be that the size of the roost site is a limiting factor in the apparent size of the colony. As long as bat numbers are greater than the roost limit, the colony size appears to be stable, with excess numbers of bats roosting elsewhere. In truth, the overall size of the colony may be declining in line with national trends. Another indication that 'snap-shot' counts may not be very reliable.

Reference:

Oxford, G.S., Drewett, J., Lane, A., Moodie, J., Moodie, P., Oxford, R.H. (1996). Studies of Daubenton's bat *Myotis daubentoni* (Kuhl) at Kexby Bridge, North Yorkshire: Seasonal and annual fluctuations in numbers, and factors affecting emergence times. *Naturalist* **121**: 87-96

Rehabilitation

Animal rescue is becoming an increasingly popular activity, with members of the public going to heroic efforts to save life at all costs. But can rehabilitated animals survive in the wild? This is the question posed by Dr. Pat Morris in his concern that animals reared on tinned meat may not be able to recognise their natural food in the wild, be able to build nests, or cope with their peers out in the real world.

It is very rare for released animals to be monitored, so there are no reliable records of their fate. In a recent study supported by the British Hedgehog Preservation Society and the RSPCA, Pat Morris radio-tracked more than 40 hedgehogs for up to 9 weeks after release. In fact these animals coped very well. Even those that had been raised as juveniles in captivity interacted normally with wild hedgehogs. A high initial weight loss in some animals of 20% probably reflected a healthy return to a normal diet after being overfed whilst in captivity.

But this study was carried out in country areas and little is still known about survival in urban situations. Obviously there would be traffic hazards, and hedgehogs that have become tame, will not run away when approached. Very little is known about the survival prospects for other species. Badgers for example are often subjected to territorial attacks by resident animals. A study in Bristol on orphaned fox cubs found that they would have a better chance of survival if left to fend for themselves as there was a high mortality rate among released animals. No studies are available for rabbits, squirrels, hares or deer.

Pat Morris believes it is time for more follow-up studies to be instigated. Wildlife rehabilitation should be based on professionalism rather than wishful thinking.

Reference: Morris, P.(1997) Animal medicine or human therapy? *Biologist* **44** (1):288

Soay sheep

Britain's largest feral flock of Soay sheep are being used to keep the vegetation in check in Cheddar Gorge. Since the number of rabbits in the area was decimated by myxomatosis in the 1950s, the famous limestone features of the gorge had all but disappeared under the relentless spread of trees and scrub. Ivy caused some of the worst problems, since removing it left stones and rocks in a dangerous condition resulting in a costly stabilisation programme. Now the encroaching vegetation has been cleared and its up to the sheep to keep it that way!

Reference: Woods, M.(1997) Down your way - Cheddar *Conserver (BTCV)* September 1997

Dormice

BTCV volunteers have built a special 'school' at Sparshalt College near Winchester where captive-bred dormice learn to fend for themselves before being released.

Conserver September 1997

EDITOR

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'More About Mammals'

A regional Mammal Conference will be held in the Biology Department at the University of York on Saturday 24th October 1998
The following speakers have been invited:

Jeremy Searle - A shrew related topic
Gordon Woodroffe - Water voles
John Altringham - Daubenton's bat on the River Wharfe
Pat Morris - Rehabilitation of sick hedgehogs - can they cope after release?
Johnny Birks - Pine martens
Paul Bright - Dormice in the north of England
Piran White - Road programmes and the fragmentation of badger populations
Ruth Temple - The brown hare

Further information from Michael Thompson or Geoff Oxford

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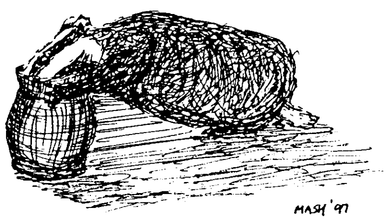


FIELDWORK REPORTS

LINDHOLME ISLAND, HATFIELD MOOR
THE DENNIS ASPINALL MEMORIAL TRAP 1996

The Dennis Aspinall Memorial trap for 1996 was carried out at Lindholme Island on 13th - 15th September 1996.

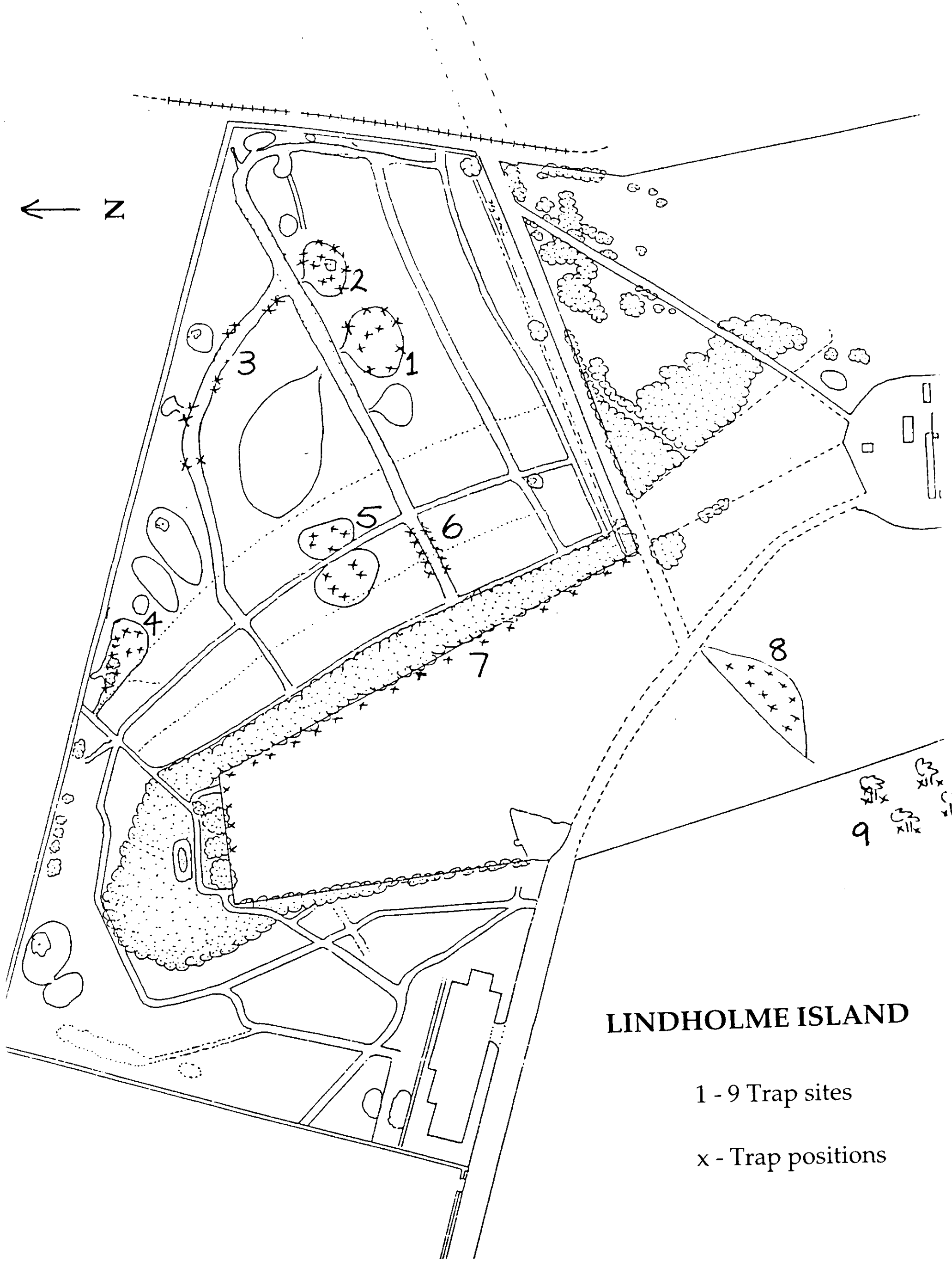
Lindholme Island lies at the centre of Hatfield Moor SSSI near Doncaster, and is a refugium of peat and heathland habitat, surrounded by an area of what was lowland mire. Unfortunately, most of the surrounding area has suffered from peat extraction for horticulture, and is now devegetated and drained, which is seriously affecting the water table and habitats of Lindholme Island.

Several different habitats were trapped in order to obtain an idea of the small mammals present on this rather unusual site. Traps were set on Friday and Saturday evenings, and checked on Saturday and Sunday mornings, by members of the Yorkshire Mammal Group, Doncaster Naturalists' Society and Lindholme Island Research Group.

Habitat notes and trap positions (see accompanying map)

Trap site 1 (10 traps)
This was a clearing, made about four years previously, in dense multi-stemmed birch scrub. The ground flora contains cotton grass and heather, with some cross-leaved heath. The distribution of cotton grass clumps shows evidence of peat pool shore-lines, which are now desiccated due to the fallen water table. The vegetation in this area was about knee to waist high.

Trap site 2 (10 traps)
This was a similar clearing to Trap site 1, but also contained a large Scots pine tree and some pine seedlings. The water table at this site was slightly higher, resulting in the occasional clump of sphagnum moss amongst the grass and heather.



Trap site 3 (10 traps)
This was a broad ride, made about four years previously, in dense multi-stemmed birch scrub with occasional Scots pine. The ground flora consists of cotton grass, heather, cross-leaved heath, and occasional clumps of sphagnum moss. Traps were set in pairs along about 150m of the ride.

Trap site 4 (10 traps)
This was a larger clearing, made about four years previously, with a group of mature Scots pine and pine saplings amongst birch scrub, heather and bracken. The peat is relatively shallow in this area, with the underlying sandy mineral layer closer to the surface. This gives a drier habitat, prone to invasion by bracken.

Trap site 5 (10 traps)
This site consisted of two clearings, north and south of the main ride which had been made about four years previously in multi-stemmed birch scrub. The ground flora was mainly cotton grass and heather in the north clearing, and regrown birch and heather in the south clearing.

Trap site 6 (10 traps)
This was a broad east to west orientated ride, made in tall, single-stemmed birch woodland. The peat progressively thins as it nears the moraine, and eventually becomes peaty-sandy loam at the western end. The ground flora includes purple moor-grass and a small amount of heather, but mainly bracken due to the drier conditions. Traps were set in pairs along about 100m of the ride.

Trap site 7 (20 traps)
Traps were set about 20m apart along the western and southern facing edges of the central moraine, which is an arable field. The field has been fallow for two seasons under a set-aside regime, and had a low grassy vegetation cover. Traps were set in the birch woodland edge, which has a ground flora of creeping soft-grass, wavy hair-grass and bracken. The sandy soil contains numerous rabbit burrows.

Trap site 8 (10 traps)
This trap site was also on the moraine, but on an area of permanent acid heath grassland, with wavy hair-grass, bent-grass and heath bedstraw. The site was a west facing grassy bank, with rabbit burrows, and the grass was very long and in large clumps.

Trap site 9 (10 traps)
This site was again on the moraine, in an area of massive, ancient oak trees. The ground flora was mainly bracken, bramble, rosebay willowherb, nettle, creeping soft-grass and hedge woundwort. The underlying soil is sandy, but covered by deep leaf mould. Rabbits were also active in this area. Traps were set at the base of the oak trees, and one was placed a few feet up in the branches.

Results: 14.9.96
Participants: Colin Howes, Helen Kirk, Ann Hanson, Geoff Oxford, Mary Youngman, David Laughton, Pip Seccombe, Thelma Dove, Jill Nithsdale and family.
Weather: Cool, dry night. Warm, sunny morning.

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
2	Apodemus sylvaticus	M	A	25.0	Scar on head and hole in ear.
3	Apodemus sylvaticus	F	J	16.0	Missing toe on left front foot.
4	Apodemus sylvaticus	M	A	28.0	
5 (north clearing)	Apodemus sylvaticus	M	J	18.0	Tick on left ear.
5 (south clearing)	Apodemus sylvaticus	M	J	20.0	
6	Apodemus sylvaticus	F	A	24.0	
7	Apodemus sylvaticus	M	J	21.0	

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
	Apodemus sylvaticus	M	J	14.0	
	Apodemus sylvaticus	F	J	18.0	
	Apodemus sylvaticus	F	A	26.0	
	Apodemus sylvaticus	F	J	14.0	Very dark underside
	Apodemus sylvaticus	M	J	14.0	Very dark colouring
8	Apodemus sylvaticus	F	J	16.0	
	Apodemus sylvaticus	M	A	20.0	
	Apodemus sylvaticus	M	A	17.0	
9	Apodemus sylvaticus	F	J	18.0	
	Apodemus sylvaticus	M	J	14.0	

Results: 15.9.96
Weather: Cool, dry night. Warm, sunny morning.

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
1	Apodemus sylvaticus	F	J	18.0	

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
2	Apodemus sylvaticus	F	J	15.0	
3	Apodemus sylvaticus	F	J	18.0	
	Apodemus sylvaticus	F	J	16.0	
5 (north clearing)	Apodemus sylvaticus	M	J	16.0	
	Apodemus sylvaticus	F	J	19.0	
	Apodemus sylvaticus	M	J	16.0	
6	Apodemus sylvaticus	F	A	21.0	
7	Apodemus sylvaticus	M	J	16.0	
	Apodemus sylvaticus	F	J	16.0	
	Apodemus sylvaticus	F	J	14.0	
	Apodemus sylvaticus	M	J	16.0	
	Apodemus sylvaticus	M	J	15.0	

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
	Apodemus sylvaticus	M	J	15.0	
	Apodemus sylvaticus	M	A	26.0	
	Apodemus sylvaticus	F	A	22.0	
	Apodemus sylvaticus	F	J	14.0	
8	Apodemus sylvaticus	M	J	18.0	
	Apodemus sylvaticus	M	J	16.0	
	Apodemus sylvaticus	M	J	17.0	
	Apodemus sylvaticus	F	J	16.0	
9	Apodemus sylvaticus	M	J	17.0	

Comments

This trap produced a rather unusual result in that Lindholme Island seems to be devoid of small mammals other than woodmice, *Apodemus sylvaticus*! The varied habitats and food availability would indicate that an equally varied small mammal community should be present. Shrew especially, would normally be present on such a site, due to the abundance of insect life.

However, the woodmouse population seems to be thriving, as plenty of evidence of breeding was seen, and a good proportion of juvenile animals were trapped. The animals seem to be fairly evenly distributed about the area, but especially prevalent in the birch woodland alongside the area of set-aside (trap site 7). This could be due to extra food available in the set-aside, as woodmice will forage in fairly open areas at night. Interestingly, data from long-eared owl pellet analysis on Hatfield Moor (Colin Howes, personal communication), also shows a very large proportion of woodmice in their diet. It is possible that recent very dry summers have affected the small mammal populations in the area, and woodmice have fared better than others, as they are extremely adaptable.

Many thanks to Doncaster Naturalists' Society and Lindholme Island Research Group, especially Colin Howes and Helen Kirk, for all their help during this most enjoyable trap at a most unusual site! Also thanks to Colin Howes for providing habitat notes and owl pellet analysis data.

THE SMALL MAMMALS OF A SUBURBAN PARK

A small mammal trap was carried out on 4th - 5th October 1996 in West Bank Park, Acomb, in order to investigate the fauna of a suburban park. This meeting was open to the general public.

The park has several different types of habitat, including bowling greens and formal gardens, a semi-wild wooded area and an area of long, uncut grass. A total of fifty traps were set in several different habitats. These included:

1) Under a large hedge adjacent to the bowling greens.
2) In rough grass approaching the wooded area.
3) Within the mature wooded area itself, with several traps being placed a few feet off the ground in trees.
4) In brambles and an area of tall ruderal vegetation alongside the wooded area.
5) In the area of long, uncut grass.

Traps were set on Friday evening, and checked on Saturday morning.

Results: 5.10.96
Participants: Ann Hanson, Claire Bramley (Park ranger), David Smith, YMG members and members of the public.

Weather: Cold, dry night. Cool, dry morning.

Site	*Species*	*Sex (M/F)*	*Age (J/A)*	*Weight (g)*	*Notes & condition*
Woodland clearing	Apodemus sylvaticus	M	J	15.0	
Woodland clearing	Apodemus sylvaticus	M	J	16.0	
Brambles	Apodemus sylvaticus	M	A	17.0	
Brambles	Apodemus sylvaticus	F	J	14.0	
Brambles	Apodemus sylvaticus	F	A	18.0	
Brambles	Apodemus sylvaticus	F	J	16.0	

Comments:
The overall catch was fairly low, although several juveniles were trapped, indicating a healthy breeding population. Only woodmice, *Apodemus sylvaticus* were caught on this occasion, although the habitat available would seem suitable for bank voles and shrews as well. The animals were mainly trapped in the area of brambles and tall ruderal vegetation, as this would provide plentiful food and cover at this time of year.

Many thanks to Claire Bramley and David Smith (Park rangers) for all their help during this trap.

WATER VOLE SURVEY AT RAWCLIFFE MEADOWS

Rawcliffe Meadows is an area of wet meadows and ditches situated on the floodplain of the River Ouse, on the outskirts of York. The meadows were surveyed for water voles at the request of the Friends of Rawcliffe Meadows on Sunday 18th May 1997 from 10.00am onwards.

The areas surveyed were Blue Beck, running alongside the Reservoir Basin and compartments C9, C10 and C13, and also the water-filled ditch which runs parallel to the cycle track, alongside compartments C5, C6, C7, C8, C9, C12, C13, C14 and C15. The new pond adjacent to the cycle track was also briefly surveyed.

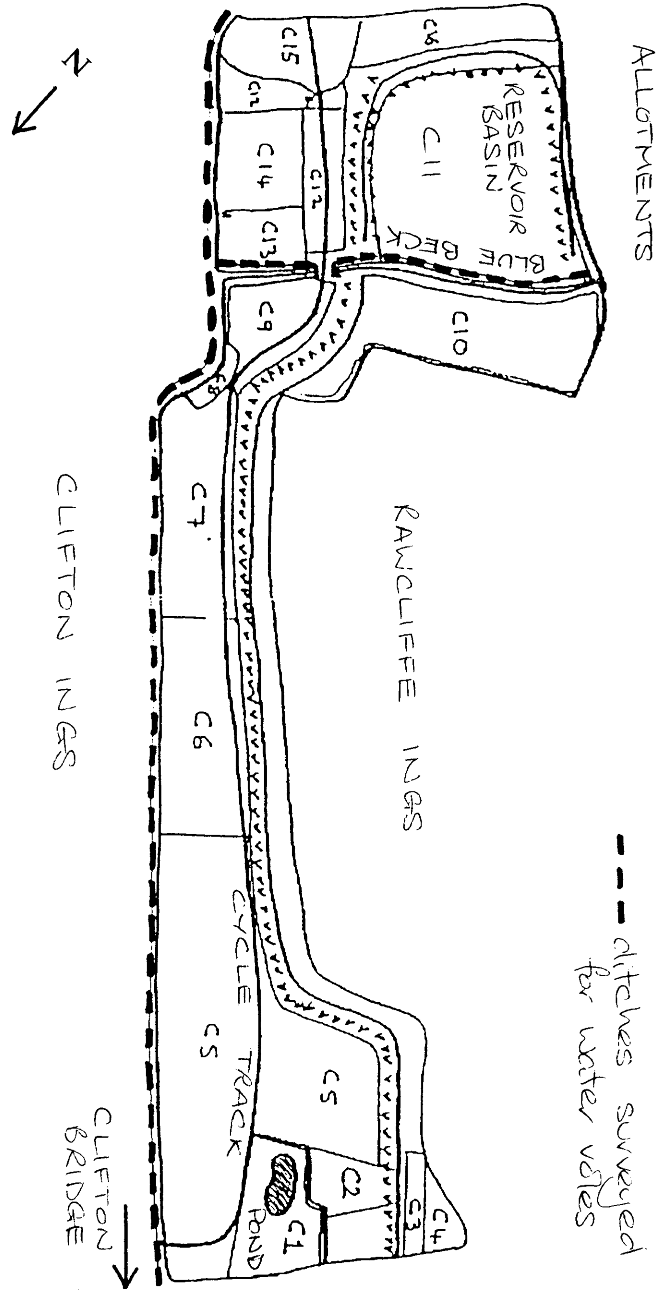
An indication of the population size present could be estimated by visual sightings of water voles, evidence of burrows in the watercourse banks and the number and distribution of latrines alongside the water.

Survey sites (see map)

1) Blue Beck:
This ditch has rather rank vegetation along both sides, rising to damp meadows, which are grazed by cattle and also cut for hay annually. It also suffers considerably from pollution,both of oil from road run-off and what seems to be detergent from a nearby hospital. The beck is regularly flooded for water control purposes, and also dredged and the bank vegetation cut twice yearly by the Internal Drainage Board.

2) Ditch running south-east to north-west, adjacent to the cycle track:
This ditch has very steep banks, with dense vegetation rising up to a hay meadow on one side and a mature hedge leading to amenity grassland on the other. The hay meadow is cut annually. This ditch is also flooded on a regular basis, and dredged and the bank vegetation cut twice yearly by the Internal Drainage Board.

3) New pond:
The vegetation alongside this pond is fairly well established, and the pond is relatively undisturbed compared to the ditches surveyed.



RAWCLIFFE MEADOWS - COMPARTMENTS

Results

1) Blue Beck:
The main area of water vole activity seemed to be adjacent to the Reservoir Basin. Numerous burrows and latrines were evident, and 3 adult water voles were sighted along this stretch.
2) Ditch adjacent to cycle track:
Water vole activity was evident along the whole stretch surveyed, although burrow density was variable along this ditch. Five water voles were sighted, including two juveniles, indicating successful breeding was taking place. Judging by burrow placement and behaviour of individuals sighted, water voles seemed to be feeding on the field side of the ditch and living on the opposite bank, possibly as this bank would have less disturbance and may be more stable due to the mature hedge running along the top. Latrines were difficult to spot along this ditch, as the banks are very steep and the vegetation quite dense. However, numerous runs could be seen, connecting burrows above the water-line, higher up the opposite bank.

3) New pond:
No evidence of water vole activity was found around the new pond on this occasion, although it would seem to be desirable habitat for the resident population of the meadows to move into.

Comments
The water voles at Rawcliffe Meadows seem to be thriving at present, although certain changes in habitat management may benefit the population. For instance, the meadows alongside the ditches surveyed are grazed and cut for hay annually right up to the ditch edges. If a corridor of vegetation, not less than 2 metres in width, could be left on either side of the ditches, this would greatly enhance the habitat for water voles and other small mammals. Ideally, the cattle which graze there would be fenced off these corridors completely, but this would probably be impractical as the IDB require access to the ditches at certain times of year.

Also at present, the IDB dredge the ditches and cut the bank vegetation twice yearly. If this could be reduced to once a year, preferably in late autumn, this would benefit the water voles by creating less disturbance during the breeding season. The intermittent flooding of the meadows for water control purposes probably doesn't have too much of an impact

on the water vole population, as long as there are areas of vegetation above the flood line for animals to shelter in.

The pollution in Blue Beck is undesirable, but would be difficult to solve. Although the population there seems to be thriving, the pollution could be having unseen effects on reproduction and general health of the animals.

It was certainly encouraging to find such a successful water vole population just on the outskirts of town, considering recent worries about the decline of this species generally. One of the adult animals sighted even treated us to a perfect display of water vole escape tactics, by diving under the water and kicking up mud with its hind feet to hide itself from us! All in all, Rawcliffe Meadows provided us with both an interesting and entertaining morning, and many thanks to Martin Hammond and the Friends of Rawcliffe Meadows for their help in setting up this survey.

ANN HANSON
FIELD STUDIES ADVISOR

WILD LINK ENVIRONMENT DAY 1997

Having missed exhibiting at a similar function in 1996 in York, the Yorkshire Mammal Group contributed to the function this year. The exhibition on the countryside and environment, which was organised by the City of York Countryside Services, was held at Rowntree Park on 30th May. Armed with the Mammal Group's new exhibition boards, I set up stall in the same tent as the York branch of the British Trust for Conservation Volunteers (BTCV). On a fine sunny day, a continual stream of visitors to the tent came and went, usually in ones or twos. I found myself in conversation with all sorts of people on mammal matters, but none it seemed, wished to join the Yorkshire Mammal Group.

Considerable interest was shown in the only stuffed mammal I had on the exhibit table. It was a stoat in partial ermine, which had been killed on the Moorlands Road, Skelton, and was mounted by the late Adam

Gordon, gamekeeper to the late Lord Faversham of Duncombe Park, Helmsley. Adam, who was one of Britain's leading taxidermists in the inter-war years, died when he was 98 and had prepared my stoat in his 93rd year.

I had a most enjoyable day, and I hope by being there, that I helped people to have a better understanding of mammals and the part they play in the British countryside. The Yorkshire Mammal Group also exhibited at the Tockwith Show and at the summer show at York's Hull Road Park.

MICHAEL THOMPSON

WATER VOLE FIELD MEETING
Sunday 20th July 1997

On a hot sunny day, a handful of YMG members met on Sinnington village green for Gordon Woodroffe's water vole field meeting.

We enjoyed a scenic drive across the North York Moors to a remote site of bog heathland situated on the edge of a conifer plantation. Equipped with sun hats and walking sticks we commenced searching around the pools and streams for signs of water vole. The function of the sticks soon became obvious, as with each step we risked plunging into well disguised boggy holes. Despite this we were successful in finding several water vole signs, including latrines and lawns (grazed areas). Sadly there were no sightings of the furry beasts themselves. We did however see much insect life in and around the pools, an abundance of spiders plus a rather impressive frog!

Many thanks to Gordon for organising a most enjoyable day.

MARY YOUNGMAN

NORTH YORKSHIRE BAT GROUP

The year to August 1997 has proved to be a busy one for the Group. New members have continued to join at a slow but steady rate which has more than offset those not renewing their subscriptions.

In view of low attendances at indoor meetings over the previous year we decided to concentrate on fewer but higher profile meetings. These were held at the University of York and widely advertised to the public. The first talk, by Mary Durose, was held at Holloween and looked at bats in myth and legend. There was a good attendance and much interest in our new range of batty sales goods. The other talk, held in conjunction with the Yorkshire Mammal Group was *'Bats in Art'*, given by Clem Fisher of the National Museums on Merseyside. Again, a fascinating talk looking at bats from a rather different angle.

Some press publicity syndicated around North Yorkshire newspapers in late summer 1996 encouraged many people to tell us about bat roosts in their houses. A particularly good response was obtained from householders in the Northallerton and Richmond areas, so a talk was arranged during the winter in Northallerton. A good turn-out resulted in several new members, for whom we arranged a bat walk along the River Swale this summer from Easby to Richmond as part of our summer programme.

Over winter we carried out a number of searches for hibernating bats. Few actual bats were seen on these expeditions but useful information was nevertheless gained. A visit to caves in the Wetherby area and Spofforth Castle highlighted several promising sites, leading to a follow-up visit to the castle this summer where numerous pipistrelles were seen.

The other main winter task was the checking of a large number of buildings and tunnels on the National Trust's Fountains Abbey and Studley Royal Estate. Many of these had not been checked in winter for many years. In future we hope to monitor them twice each winter, but early in 1997 we did find hibernating brown long-eared and pipistrelle bats on the estate.

Our involvement with the National Trust continued at Fountains Abbey in the summer when we scheduled two all night visits to track tree roosts. A potential roost was discovered on the first night, but bad weather on the second evening caused us to abandon the visit. Nevertheless, we did observe both 45kHz and 55kHz pipistrelles, noctules, Daubenton's and Natterer's bats on the first visit and took part in a National Trust roost count on another date during the summer. We also carried out winter and summer surveys at the National Trust's Beningbrough estate.

Public walks varied in popularity with attendances ranging from one to fifteen people. Those who did come were treated to some impressive displays. Among these was that of watching pipistrelles and noctules emerging from different piers of Clifton Bridge in York. Even more dramatic was the tremendous feeding display put on by swifts, Daubenton's and noctule bats at Boroughbridge on the only dry night in a very cold and wet week.

The variable weather meant a generally quiet start to the summer season with few enquiries from the public. However, come the hot weather of late July and August and most bat workers found themselves inundated with calls to abandoned young bats, injured and weak adult bats and householders who had suddenly discovered the presence of bats in their property. Also significant was the increase in visits to properties about to be demolished, to carry out bat surveys.

Early in the summer the Group purchased Biobase, a computer database for mammal recorders developed in association with the Mammal Society. The wet weather allowed considerable progress to be made in entering many of the records accumulated in the 1970s and 1980s by the York Bat Group. Almost 800 such records have been entered including information about both roosts and feeding or flying bats. This has been supplemented by some more recent records, mainly those made by John Drewett. The Group is now able to produce distribution maps and reports utilising this data, although there is considerable need for more up to date records. A series of organised North Yorkshire bat recording projects will be launched shortly.

The general bat work of members this summer turned up a number of new records including a rather spectacular roost of 68 noctule bats using a house chimney at Linton near Grassington. However, most successful

in discovering new roosts and confirming the presence of existing ones was the Bat Detector Workshop in Helmsley in July. Participants recorded 18 bat roosts over the weekend.

The primary purpose of the workshop was to help develop bat identification skills with the aid of a bat detector. The twenty participants certainly expressed their enjoyment of the weekend and all seemed to have learned something. Other than the first half of Saturday night, the weather held out. Even Saturday's rain did not stop the groups going into the field where they were able to confirm that bats do fly in the wet.

In a report of this kind so much has to be left out. However, I hope to have given some impression of our wide ranging activities. In particular, I would encourage all YMG members to join in our events to find out more about the lives of some of our least understood mammals.

JOHN DREWETT

THE DON GORGE BAT GROUP

Despite the fact that the Don Gorge Bat Group (DGBG) is recognised and supported by English Nature, the Group is not listed in the Bat Worker's Manual. The Group does not have either a steering committee or any formal membership. It has functioned since 1990 and produced two formal reports (see below) and provided vital evidence for planning meetings held by local authorities. The linchpin for the DGBG has been Colin Howes (Doncaster Museum and Art Gallery) whose unique brand of enthusiasm and persuasiveness has ensured that participants from a wide area have gladly lent their expertise and time.

The Don Gorge is an expansive area between Sprotborough and Conisbrough with a particular charm of its own, despite the ravages of mineral exploitation for magnesian limestone. Indeed many of the features now utilised by bats are the direct result of mining activities. Testimony to the quality and range of habitats found in the gorge is evinced by the number of conservation sites listed in the area including Sprotborough Gorge SSSI (Woods and grassland), Denaby Ings SSSI (YWT), Cadeby Quarry geological SSSI, Sprotborough Flash (YWT) and a host of Local Authority nature reserves and Regionally Important Geological Sites (RIGS).

Present day activities in the area are wide ranging, from leisure activities such as boating, angling, walking, mountain biking and scramble motorcycling to continuing abstraction of mineral and alternative land uses. These latter developments have prompted the DGBG surveys to be focussed on recent important issues such as the Levitt Hagg Quarry landfill site, the Cadeby Earth Centre (Cadeby Rattles railway cutting), strengthening the road bridge on the A630 (which crosses the disused railway cutting at Nearcliff Wood) and maintenance of several culverts under the Doncaster to Rotherham railway line. On each of these issues the DGBG has been able to bring its expertise and knowledge into play, through English Nature, in order to bring about the best solution to planning proposals and avoidance of potential conservation conflicts.

The DGBG usually convenes during the winter months when the numerous sites suitable for overwintering bats can be surveyed. It is remarkable that despite the considerable searching input to date, new sites are still being found. The characteristic rifts in magnesian limestone call for the special skills of the pot-holing fraternity and valuable contributions have been made by experienced members of neighbouring bat groups. Equally important field observations during the summer months, identifying important bat feeding areas and roosting sites, are usually conducted through the aegis of the Doncaster Naturalists' Society. Anyone wishing to learn more about the DGBG and participate in its activities should register their interest with Colin Howes c/o Doncaster Museum and Art Gallery, Chequer Road, Doncaster, DN1 2AE. Tel 01302 734289.

Acknowledgement:
Participants in the DGBG are too numerous to list individually, but include members of North Yorkshire, East Yorkshire, Derbyshire, North Nottinghamshire, Wakefield and Barnsley Bat Groups, Doncaster Naturalists' Society, English Nature (Wakefield), Countryside Commission (Leeds), Doncaster Museum, Bentley Training Centre, Hatfield Comprehensive School, Hull University, Kingston upon Hull Caving Club, South Holderness Countryside Society, Tickhill Countryside Group, Levitt Hagg Action Group, plus local historians and activists of no particular affiliation.

TONY LANE
East Yorkshire Bat Group

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COLONY COUNTING

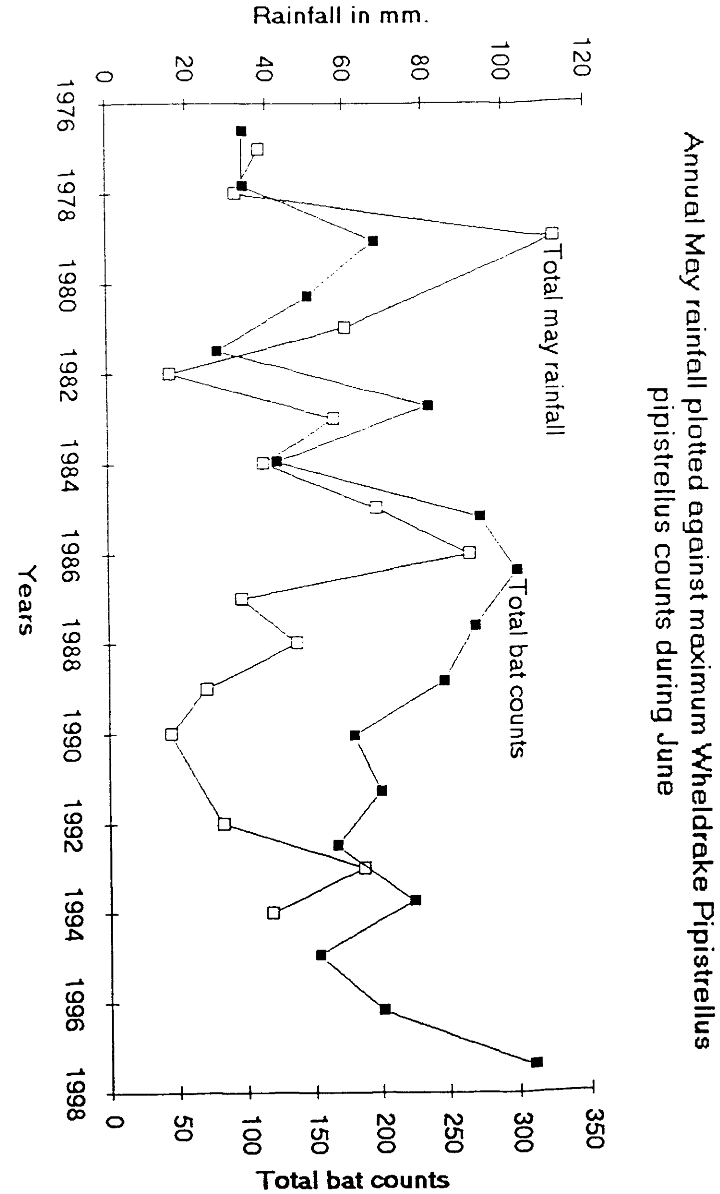
For the last 20 years I have been counting the number of pipistrelle bats *Pipistrellus pipistrellus* emerging from their roost sites at Wheldrake. This exercise has been part of the National Bat Colony Survey organised by the Robert Stebbings Consultancy Limited, and was one of the first to be added to that programme. My results as shown on the graph, are almost complete for the years 1977 to 1997 with 1980, 1981 and 1996 missing. These omissions have been due either to not locating the roost site for the colony that year, or not having been able to get down to Wheldrake because of other commitments. This colony is one of the most studied pipistrelle colonies in Britain.

This year's count of 310 carried out on 11th June, was the highest yet and indicates to me that the colony numbers fluctuate considerably over a period of time. The last time it peaked at this level was in 1986, thus showing maybe, that a natural cycle is occurring every 10 to 11 years. By the time I had finished my ringing programme of pipistrelles at Wheldrake in 1991, I had located 22 roost sites within the village for the colony. The ringing returns showed a very high level of roost philopatry, indicating that the females return year after year to their colony of origin. Thus I could guarantee that all roost sites within Wheldrake were from the same colony. This fragmentation of roost sites makes total colony counting more difficult, so to be more accurate more than one observer is often necessary.

Colony counting is carried out to monitor the increase or decline of bats locally, and when all the results are brought together, then nationally. The true indicator of success or failure is the number of adult females present at the beginning of the colony's existence. Initially the females come together in small groups scattered amongst the roost sites, but as the time approaches for the birth of the babies, the groups get larger so that by the time the births occur, most of the adult pregnant females are huddled together at one site. This may also occur during lactation. Thus the optimum time for colony counting is usually during the middle two weeks of June, before the juveniles are flying.

Looking at my graph, I realise that my initial attempts at colony counting were flawed, but that the general trend was upwards. All the first counts were made in June but would not appear to have taken into account colony fragmentation, thus the results may have been higher. Also there appear to have been two counts where the cut-off point was exactly 100, suggesting that at the time any count over 100 indicated that the colony was doing well, and that there was no further point in counting. However, by 1983 counting was becoming more accurate and as I came to understand the colony structure I was able to predict more precisely in which roost I would find the bats. This prediction often depended on current weather conditions, especially ambient temperatures. More often than not, the roost site containing the whole colony was at a north facing gable end of a modern house.

The gradual increase trend in the number of adult female pipistrelles in Wheldrake may be correct. The majority of roost sites for the Wheldrake colony are to be found in the gable ends of the houses that make up Derwent Park, a cul-de-sac built in the early 1970s. The first indication that bats had occupied these houses was in 1975 when Tony and Val Edwards reported a colony on the south facing gable end of their house. A total count of 207 was obtained, but because it was carried out on 24th June it was considered to contain juveniles. The colony is situated near some excellent feeding grounds for the bats, being within easy flying distance of the River Derwent and the Lower Derwent National Nature Reserve, which is a Ramscar Site.



According to Dr Stebbings (Avery 1991), the average national roost size is 200 bats with some roosts up to 1000. On the Vale of York counts up to 200 have been obtained, but at Kirkham Abbey counts in 1986 and 1987 were 750 and 820 respectively.

So what controls bat numbers? If the human factor is taken out, it is considered that weather is a major factor. I have made several attempts to find a relationship between weather and colony numbers on the Vale of York, but not with very much success. Poor weather such as very cold wet springs or severe winters reduces bat numbers. Exceptionally cold June weather reduces the number of available insects and if this occurs, then lactation fails and infant mortality goes up. After the females emerge from hibernation, they are much under weight and have to spend their time feeding before joining the colony. If the weather is wet and cold in May, then through lack of food, the reproductive performance is much reduced. I have therefore added to the graph the May rainfall figures from 1977 to 1994. I obtained the annual weather reports for the Vale of York from the Yorkshire Philosophical Society's rooms in the York Museum Gardens. I also took the rainfall figures for June and the maximum and minimum temperatures for May and June. Other than the rainfall for May, none of the others show any trends which may be considered helpful (I have as yet to do the statistics). If weather does have an effect, it would show up in the total counts of the following year, or even the year after that.

Looking at the graph, I find that the national figures correspond with the Wheldrake results, with peak numbers occurring in 1988-89 and marked declines in the 1990s. Although pipistrelle bats are still common, efforts are being made to help to arrest this decline. Among the human factors responsible for these declines are habitat and roost destruction, insecticides and the loss of field ponds. It will be interesting to see how the 1997 national figures turn out and maybe the Wheldrake count of 310 indicates the beginning of an upward trend in numbers.

MICHAEL THOMPSON

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MAMMALS AT RAWCLIFFE MEADOWS

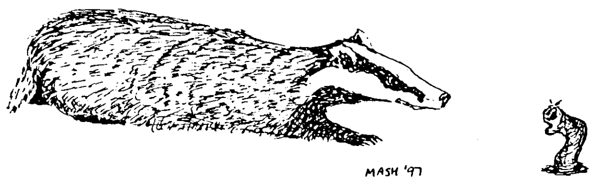
Rawcliffe Meadows covers around 25 acres of the floodplain of the River Ouse on the northern outskirts of York, situated between Clifton Hospital and Clifton Ings on the York-Beningborough cycle route. The land is owned by the Environment Agency, forming part of the city's flood defences and is managed by a local volunteer group, Friends of Rawcliffe Meadows. Most of the site is traditionally managed ings grassland, mown for hay in summer and grazed by cattle in autumn. Other habitats include mature, well-timbered hedgerows, a small copse, dykes with tall bankside vegetation, fen meadows and ponds.

Despite the high level of public access, nearly 20 mammal species have been recorded from the site during the past six years. Noctule and pipistrelle bats from the Clifton bridge roost feed over the meadows on summer evenings. A small population of harvest mouse breeds in tall streamside vegetation with reed canary grass, *Phalaris arundinacea*, a very typical habitat for this species in Yorkshire. Common small mammals such as bank vole, short-tailed vole, wood mouse, pygmy shrew and common shrew attract predators including both weasel and stoat whilst foxes are plentiful in this area. Most notably, both the stream which crosses the site, Blue Beck and the drain which forms its western boundary, the Ings Dyke support a healthy population of water vole. This is one of the few Yorkshire localities where water voles can often be seen and is a good place to seek out field signs such as burrow systems, latrines and food caches. This species appears to be thriving at present despite intermittently poor water quality, fluctuating water levels, extensive winter flooding and recreational disturbance.

Friends of Rawcliffe Meadows are keen to take account of the habitat requirements of mammals in managing the site. The Yorkshire Mammal Group and Otters and Rivers Project have visited to help assess the water vole population and provide advice. Unmown 3-metre verges are now left alongside Blue Beck to afford cover whilst coppicing of osiers along the Ings Dyke has probably benefited water voles by increasing the growth of lush herbaceous vegetation on the ditch banks. Two stands of tall fen vegetation have been fenced to prevent grazing for the benefit of harvest mice - in dry summers cattle congregate in the wettest areas and quickly graze down the reed canary grass whilst the mice are nesting. Finally, we have an agreement with our grazier not to treat livestock with persistent helminthicides like Ivermectin. These chemicals have an insecticidal effect when excreted in dung and can deplete the fauna of dung-dependent insects, which is an important food source for noctule bats.

Friends of Rawcliffe Meadows hold regular work parties throughout the year and help is always welcome. Please contact us via City of York Countryside Service, 9 St Leonard's Place, York YO1 2ET. Any records of mammals (or other wildlife) are also welcome: please drop a line to me at 110 Kingsway West, Acomb, York, YO2 4QB.

MARTIN HAMMOND



MORE BADGERS IN SOMERSET

Following Beryl Cronin's recommendation, John and I spent a weekend in Somerset earlier this year, participating in a University of Nottingham leisure course entitled *'Badger Country - Tracks, Signs and Badgers Themselves'*. The tutor was Michael Woods.

The course followed a similar programme to that which Beryl described *(Imprint No.23)*, the highlight for us being the badger watch on the Saturday evening. Despite many attempts and cold evenings spent standing/sitting around badger setts, we had never until that evening, been lucky enough to see badgers 'doing what badgers do' in their natural environment.

Prior to arriving at the sett Michael had stressed the importance of remaining motionless and silent when watching, so when someone started rummaging around in their rucksack I didn't rate our chances!

After approximately half an hour John was the first to note any badger activity, as he was seated slightly apart from the bulk of the group. It was extremely frustrating when he'd been watching badger 'comings and goings' for about ten minutes before I had my first glimpse, especially as he was indicating with very slight movements of his fingers that he was watching three badgers! They were nervous and surely knew we were there.

It was difficult to be certain exactly how many badgers we were watching, as they were constantly disappearing down holes and re-appearing elsewhere, or were they? We definitely saw one adult and two juveniles, probably three adults and two young in total.

After watching for approximately three quarters of an hour it became too dark to see clearly, so we departed. Most of the group, including ourselves, were delighted with our evening's entertainment. Michael however, thought it had been a poor viewing as the badgers had been late appearing.

On return to the hotel after our badger watch Michael set us an exercise: we were to write out an estate agent's particulars for a badger 'des. res.'!

This proved to be good fun and made for an entertaining breakfast next morning as everyone read out their efforts. Ours went something like this:

By Sub Caudal Annointment

Meles Meles & Son present

'Dun Pitting'

A superior residence, originally constucted 19thC., greatly extended, within easy commuting distance of lush, worm rich pasture. Approached via scenic pathways edged with mature elder, comprising:

Entrance hall:	With polished, domed, exposed root ceiling. Leading to:
Main chamber:	Cosy, with natural bracken floor covering. Leading to:
Nursery annexe:	Warm, straw lined chamber with separate entrance .
West wing:	Further warm, dry chambers with separate entrance with commanding view of surrounding hillside.
Bachelor/granny flat:	Approx. 700m from main residence, a further compact chamber for occasional use; would benefit from redecoration.

Price: 6,000,000 FW (fresh worms)

Viewing: Evenings only

We thoroughly enjoyed the whole weekend; Michael was an excellent tutor and we came home knowing more about badger ecology.

DENISE RAY

LIFE AND TIMES OF A COUNTRYSIDE WARDEN

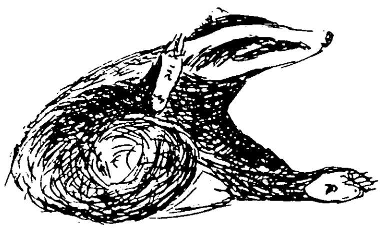
I was born in a little place between Dewsbury and Wakefield in West Yorkshire. My earliest memories of wildlife go back to hunting worms and beetles in the back garden. This progressed as I got older to walking all the local footpaths around my home, discovering the woods, hedgerows and water features. These early expeditions involved me packing my tent in my rucksack and camping anywhere I could. Every Saturday morning I would be off into the wide blue yonder to return Sunday afternoon, tired, weary, but excited to tell my parents what I had discovered on my expeditions, notebook filled with observations I would recount to them - all this and I was only just reaching my teenage years.

Around this time I read an article in The Dewsbury Reporter by a lovely old man, A. Norman Handley, who had a regular nature diary which I read with great excitement. I contacted this man who had been an icon to me and soon we became great friends, able to tell each other all about our travels and discoveries. Norman was in his twilight years so sadly couldn't get about much, but he did enjoy hearing about my adventures. In 1997 sadly, Norman passed away, such a sad loss to me but he will always be with me whenever I am out in the countryside.

Into my teens I found I could travel further afield, so the Dales and the Derbyshire Peak District became my goals each with new places to discover and both having a wealth of wildlife.

Into my working life I wanted to spend as much time outdoors as I could, so I worked for the local authority qualifying as a gardener after four years at college. I spent nine years gardening, gaining more qualifications but still come the weekend, I would be off on my travels; especially since now I had my own vehicle, the natural world was my oyster.

I then spent ten years running a landscape construction team which involved creating ponds and wildlife meadows. From this point a position as Countryside Ranger became available which I was privileged to get. The work concentrates on bringing the environment to schools, community groups, disabled and under-privileged people. I have held this position for a year now.



Norman Handley was the man who got me interested in badgers. He used to write the weekly article about badger watching. This mammal was alien to me, so I began reading everything I could about them, contacting other people for information etc. Then I saw my first badgers and from that moment I was hooked. Soon people were contacting me about badgers, I was on the committee for the West Yorkshire Badger Monitor based at Dewsbury Police Station and from here I became the founder member of the Kirklees Badger Group. Learning my skills as I went along, I gave talks and lectures to schools, community groups and private bodies. I then devoted a lot of time to getting other badger groups up and running. Throughout this period I had gained a substantial knowledge about the badger and his environs, so I became licensed by English Nature to deal with badger problems. For example, with illegal incidents I help the police and RSPCA as an Expert Witness in court prosecutions - all being successful up to the present day.

From these court cases the press became involved, so I started writing little articles, then along with Chief Inspector Paul Stilgoe I did some television work and also assisted in the making of a schools video on badgers and their persecution.

Since holding my licence I have worked with many private and public bodies regarding badgers; forestry operations, Yorkshire Water pipelines going through the countryside and of course helping to solve problems that badgers can sometimes create. This can mean advising on subsidence when badgers dig under roads, walls or even buildings; helping landowners when badgers start spreading out from their woodland habitat into fields where it could be dangerous for vehicles or livestock falling into holes or tunnel systems.

I moved to Harrogate about six years ago and now work with the Harrogate and District Badger Group as a consultant, being on call 24 hours a day if required. This Group had to provide hospital facilities for injured badgers as roads are now the biggest threat to badgers, and this area at peak times of the year can be really awful. The hospital facilities are provided by a farmer who let us convert an old disused piggery unit into a building where we can rehabilitate sick or orphaned badgers.

Even though I specialise in badgers I still love all aspects of the natural world and in my spare time I work as Wildlife Adviser to Rudding Park

Estates on the golf course, which is enabling me to study smaller mammals especially harvest mice. The golf course has only been open for about four years and we have already won The Amazone Groundcare National Award for being the most environmentally friendly golf course in Britain. I have nearly two hundred bird boxes of different types in the woodlands with around fifty bat boxes up, and for the harvest mice we have put up one hundred tennis ball nests. The work I do is to make sure we stay as environmentally friendly as possible, watching the grass mowing regimes, planting new hedgerows, managing the woodlands and wildflower meadows, also keeping a check on the lakes and water features for the aquatic life so that the flora and fauna on this site should be preserved for ever.

CHRIS FIRTH

SLINGSBY'S HARES

As one of those Yorkshire Mammal Group volunteers who helped in the national brown hare *Lepus europeaus* survey carried out between 1991 and 1993, I have maintained my interest in this British mammal. Over a year ago, Patricia and I moved out from York to Slingsby, a small village on the southern edge of the Vale of Pickering and overlooked by the Howardian Hills. This gave me an ideal opportunity to watch and possibly monitor brown hares. Almost immediately I realised that there were hares to be seen and that they were present in good numbers.

Slingsby's parish boundary is rectangular in shape, extending from the wooded slopes of the Howardian Hills down on to the Vale itself. It extends northwards almost to the riparian edge of the River Rye. The area is intensely cultivated, being predominantly arable with some pastures. Field sizes are moderate, with often a hedgerow boundary offering shelter and cover for this lagomorph. A good number of hedgerows have been retained, but since the Second World War the wetland areas, known as the Carrs, have been drained. The habitat seems to me, to be eminently suitable for the brown hare.

Using a pinned map of hare sightings, I soon realised that they are present in ones or twos throughout the parish and areas beyond. Gradually I am beginning to know the areas in which I will see hares and hopefully, will be able to monitor their success or decline over a

period of time. More often than not, the brown hare is seen in the open, but on occasions they have been disturbed in the woodlands of Slingsby Heights. The best time for seeing brown hares in any numbers is in the winter, especially with snow lying on the ground. Under these conditions they seem to congregate together. On the 1st January 1997, in six inches of snow, we counted 22 brown hares in two adjacent fields, their dark brown pelages standing out against the white background.

It appears from the national survey that brown hare density varies widely, often with two adjacent areas having high and low populations. It appears that in some of those areas of high density, the hares are protected for the shooting interest of an estate. I suspect that is the case within Slingsby parish, for large areas of the parish are part of the Castle Howard Estates. Brown hares are particularly vulnerable to over culling, especially from illegal coursing and lamping. Nationally however, since the mid-1960s, the brown hare has been in decline. For this reason it has been placed in the first tranche of British mammals to be given special measures to help its recovery under Britain's response to the Biodiversity Treaty 1992.

MICHAEL THOMPSON

RESEARCH VISIT TO BIALOWIEZA PRIMEVAL FOREST, POLAND

In early August 1996, I was fortunate enough to join a small group (14 people) of biologists from Southampton University to start a research programme in Bialowieza Primeval Forest (BPF). We were going to study the interaction between badgers, *Meles meles*, red fox, *Vulpes vulpes* and raccoon dog, *Nyeterentes procyonoides*. From general observations badgers seem to share their setts with foxes and raccoon dogs. The raccoon dog is not native to Europe but has escaped from fur farms, having been introduced from the far east.

With Poland recently emerged from the Communist Eastern Bloc, western currency is scarce and so each participant had to pay for themselves. BPF is a place that I had heard of and read about for many years, and to have the opportunity to visit and work in such a place was too good to miss.

To help with the work numerous pieces of equipment, including radio tracking material had been taken overland in two vehicles three days before we arrived.The Land Rover and VW estate vehicles were our transport to and from Warsaw airport, a five and a half hour journey from Bialowieza.

The BPF is the 'jewel in the crown' of Poland's nature reserves and national parks. Located on Poland's eastern border with Belarus, the forest crosses the border between the two countries, the greater part being in Belarus.

Within the Polish part is a strict reserve of some 47 sq km, and once inside the boundary, travel is via a few forest tracks. If you want to go deeper into the forest, to locate a badger sett for example, you have to walk off the track and into the forest proper. Travel within the forest where no motorised vehicles of any description are allowed, is by standard Polish bicycle. These are not to be taken lightly, and riding over bumps, ruts and tree roots, dodging branches and tall stinging nettles is challenging and dangerous. This I can vouch for from experience, having suffered three cracked ribs as a result of falling off. Full concentration is required at all times.

To gain access a permit is required and very few people or groups are granted these. Not even the locals are allowed into the strict reserve except at certain times of the year to visit the memorial to the villagers from Bialowieza who were massacred by the Nazis in the second world war as a reprisal against partisan action. It is this complete protection that has allowed the forest to survive in its present state.

Despite the few minor difficulties, the views and atmosphere are well worth it. BPF is like nowhere else in Europe, or perhaps in the world. A temperate lowland forest which has survived virtually unscathed, the ravages of human intervention around it by a quirk of its history and geographical position. This has left a variety of trees of different ages and sizes, forming a patchwork mosaic dominated by oak, hornbeam, Norway spruce and Scots pine. All dead trees and branches are left undisturbed where they fall, to rot. Spectacular trees with massive root plates now lay stricken on the forest floor, with mosses, lichens and fungi slowly reclaiming the wood back to the living soil. Light now gets in from where the tree canopy once stood and illuminates a patch of

ground stimulating seeds to germinate and stunted saplings put on a spurt of growth.

The forest is rich in fauna and flora and for those interested in mammals, wild boar, wolf, lynx, deer and European bison are present together with the species we had gone to study. Seeing these animals though is another matter.

Working and finding your way in the forest is difficult, and the use of a compass and maps are essential. Fortunately we have the Russians to thank from sometime in the late 19th century, for erecting a series of concrete posts which mark the corners of a grid which overlaps the forest map and makes navigation possible. (The distance between the posts is 1066m, some Russian quirk from when this part of Poland was ruled by the Tsars).

When working at night it is very easy to get lost and miss the badger setts. The darkness is intense due to the heavy tree canopy. (On two occasions a colleague and I did get lost, and this can be a little nerve-racking when working less than 500m from the Belarus/Polish border).

The ecological research undertaken covered a range of mammal surveying techniques including:

Recording of signs (footprints, pathways, dung pits, den entrances, hair etc.)
Habitat and conservation evaluation
Den site observations

During our visit we were able to find new setts, as well as confirm setts found by Polish forest workers. Seeing badgers and raccoon dogs at dusk adjacent to setts was very rewarding. The one disappointment of the work was that we were unable to catch any badgers or raccoon dogs. The baits, trapping methods and techniques used in the UK just did not work in Poland.

When studying badgers in Poland it is important to remember that they only know a wooded area, there are no fields for them to forage in. The badgers always appeared to be very nervous and would retreat very quickly down their setts for no apparent reason. Following them when moving away from the setts was impossible because of the undergrowth and darkness. From what we were able to discover, Polish badgers would appear to have a different social structure. They may not live in groups as we know and it is questionable as to whether they defend territories. Few dung pits were found. Badger numbers in Poland are very low compared to the UK.

In Bialowieza Forest we have an opportunity to observe the original ecology of the species living in the way they have for thousands of years and not influenced by the presence of humans.

Recent information sent to us from Poland shows that up to the end of June 1997 a number of badgers have been caught using Polish leg hold traps. Peanuts are not attractive and in any case they are very expensive in Poland. Small pieces of meat together with raw eggs seem to encourage them into the traps. The small number that have been caught have been fitted with radio transmitters.

A follow-up visit is being planned for March 1998 for a more intense study, with the possibility of snow-tracking badgers and raccoon dogs.

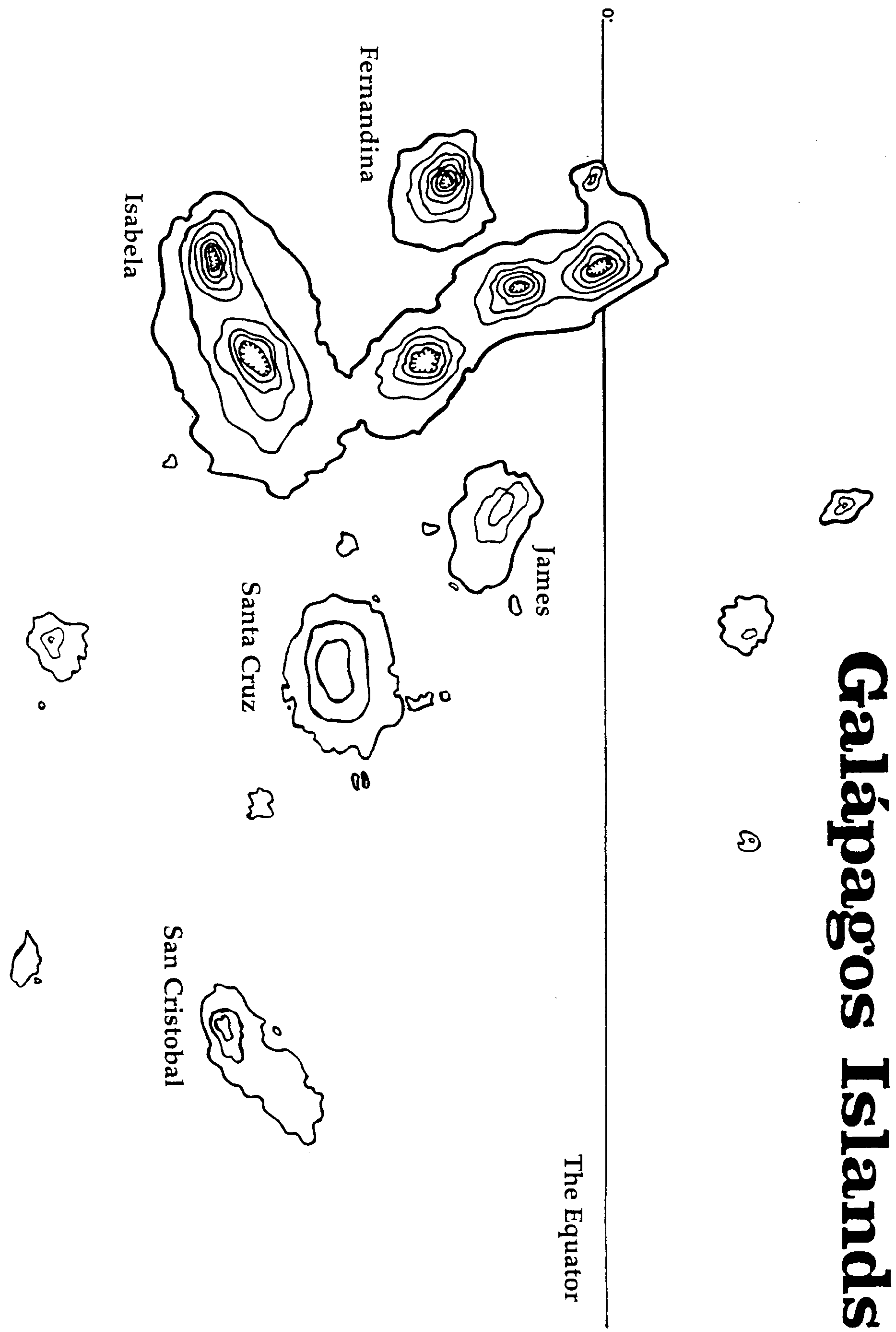
DON MALAM

THE PROBLEM OF INTRODUCED RATS IN THE GALAPAGOS

Background

This is an account of the second year I worked in the Galapagos islands as a visiting scientist, in 1994. In 1993 I spent 10 weeks with the Charles Darwin Research Station mapping the spread of the recently introduced common rat, *Rattus norvegicus*, on Santa Cruz island and studying the effect of its arrival on the ship rat, *Rattus rattus* (Key & Heredia 1994). In 1994 I returned with two students from Manchester Metropolitan University to survey the three other inhabited islands for the presence of the common rat, and to check the status of the remaining species of native rat.

The Galapagos islands are a province of Ecuador and four of them are inhabited. Santa Cruz island,where the Darwin Station is based, now has the highest human population (around 8,000 people, although



counts vary) but was the last of the four to be colonised. When people arrived in the 1920s native rats were extremely common, but by the late 1930s they had all disappeared and the ship rat was the rat of houses and fields. This pattern of the arrival of the ship rat with man and loss of the native rats has been repeated on other islands in the Galapagos, and today there are only three native species left out of the original seven, on two uninhabited islands. In 1980 the Darwin Station realised that they had a new problem to contend with as the common rat suddenly appeared in a few houses in the port on Santa Cruz, having been accidentally introduced in imported goods from the South American mainland. The common rat is a larger, more aggressive species and therefore constitutes a bigger pest problem than the ship rat, both in terms of public health and goods, and for conservation in the National Park.

In 1993 we had determined that the common rat was now the dominant species in houses on Santa Cruz and had spread into the National Park on the wet, deep soiled southern side of the island. My task in 1994 was to check the other three inhabited islands to see if it had got there, advise the inhabitants of the potential problem, and check the two islands where native rat species still occur for the presence of introduced rats.

Methods

With the assistance of a Royal Society grant, we hired a boat, loaded it with our traps, food, water and camping gear, and set off. On each inhabited island there is a port town where most people live, and a small village in the agricultural zone a few miles higher up the volcano; each island being effectively one volcano rising out of the sea. We sampled both port and agricultural zone where we could, using snap traps placed in the houses to check for commensal rats together with a transect line of cage traps in the bush near the town. Both Sherman and Tomahawk cage traps were used to maximise our chances of catching different species. Traps were set at dusk and disabled at dawn (too many non-target species are around during the day) and baited with that stand-by of small mammal workers, peanut butter. We trapped for a standard three nights. Most rats caught in the cage traps for the first two nights were examined and then fitted with a spool-and-line tracking device to study habitat use. On the third night rats were killed by an overdose of inhalation anaesthetic so that we could check stomach contents, record morphometric data and reproductive state, and collect parasites. Rats

caught in the snap-traps were all treated this way. On the two islands where native rats occur we just placed two parallel lines of cage traps and marked all rats caught for population estimates and movement studies.

On the inhabited islands I held seminars in both the port town and the upland village to advise people of the arrival of the second commensal rat and how to control rats. Each seminar consisted of a short talk, followed by a puppet show, illustrating the points raised in the talk. This proved so successful that it was videoed for local broadcasting on one island, and modified versions were given to children's natural history clubs on two others.

Results

We found the common rat on one other island, San Cristobal, the capital of the province, where numbers and the pattern of distribution suggest that they arrived at about the same time as they did on Santa Cruz. The other two inhabited islands were common rat free, although the ship rat was abundant.

The native species were also found to be abundant, with no sign of introduced rats on the two islands concerned. The rice rat,*Oryzomys bauri,* on Santa Fe island is a shaggy, alert beast with teeth like scissors and strong opinions about being handled in plastic bags. This species is probably not a true endemic to the Galapagos and may be genetically indistinguishable from a species found in Peru, presumably the origin of the population. The other two native species appear to be true endemics and are both found on the western-most and youngest island, Fernandina. *Nesoryzomys narboroughi* won our hearts completely by being tame to the point of docility, and whose idea of a bite was a tentative nibble on the fingers. The second species, *N. fernandinae,* had been identified in the mid-eighties from skulls in barn owl pellets and we hoped to be the first to actually lay eyes on the beast, but it was not to be. Specimens were finally caught on the other side of the island to where we were working by an American researcher, Robert Dowler, in 1995 (Dowler & Carroll 1996). Both of these species are classically rat like in appearance, but the again shaggier, *N. narboroughi* has white paws while *N. fernandinae* is a uniform grey/brown in colour (but very cute!)

Comments

The commensal rodents continue their spread in the archipelago, and the common rat is slowly displacing the ship rat in the houses; the ship rat remains the dominant species in the wider environment. There is some risk that one or both species will eventually get to the islands with native species which would almost certainly spell their end. Past anecdotal evidence suggests that native rats become extinct very quickly once the introduced commensal rodents arrive, possibly by transmission of disease. While *Oryzomys* has been the subject of some research in the past because the island is relatively accessible, the two species of *Nesoryzomys* are almost completely unknown and are extremely vulnerable. Fernandina is periodically occupied by illegal fishermen processing sea-cucumbers fished for the Japanese market, and the risk of introducing rats is therefore unacceptably high. One proposal has been to establish populations of the endemic rats on some of the smaller islands in the archipelago, in case the main population becomes extinct. However, any conservation action requires the investment of considerable effort and money, and unfortunately "rats" don't get the international press which sexier beasts like giant tortoises or tigers do. When tourists visit the island they marvel over the finches and iguanas, but the hidden story is at least as fascinating!

GILLIAN KEY
CENTRAL SCIENCE LABORATORY

References

Dowler, R.C and Carroll, D.S (1996) The endemic rodents of Isla Fernandina: Population status and conservation issues. *Noticias de Galapagos* **57**, August 1996: 8-12.

Key, G.E and Heredia E.M (1994) Distribution and current status of rodents in the Galapagos. *Noticias de Galapagos* **53**, April 1994: 21-24

BOOK REVIEW

COUNTRY FOXES by HUGH KOLB
British Natural History Series (ISBN 1-873580-29-0)

This latest edition in the British Natural History Series is well written and presented. First impressions give something of a light-hearted look at foxes together with the line drawings of the animal and its behaviour. However, the information contained within the pages gives a wealth of knowledge together with two chapters with interesting quotes - 'Hunting Quotes' and 'Fox Odds and Ends'.

This easily read book is ideal for the amateur, and useful for the professional zoologist. It can be picked up and read at any time, the chapters are many, but short and concise.

For those wanting to study foxes in depth, it should be read in conjunction with books specifically about the species, some of which are listed at the end of the book.

The author discusses some of the major fox problems, and having been presented with the arguments, makes the reader think.

This book makes a suitable companion to 'Urban Foxes' which is in the same series.

DON MALAM

YORKSHIRE MAMMAL GROUP PROGRAMME 1998

January 8th	*Mammals and Industry* John Avison from Huddersfield Environmental Co-ordinator, Zeneca
February 5th	*Bats around Helmsley* Nigel Wilson from Helmsley
March 5th	*Ecotoxicology of Mammals* Richard Shore from the Institute of Terrestrial Ecology, Abbots Ripton
April 2nd	*Badgers of North Yorkshire* Chris Peacock of the North Yorkshire Badger Group
May 7th	*Should we introduce wolves into Britain?* Martyn Gorman of Aberdeen University
June 4th	*Evening field trip to a nature reserve*
	During the summer months, there will be events organised by the Bat Group, as well as other field study surveys.
October 1st	*Members' evening*
November 5th	*The Scientist in Government - Policy and Research with Reference to British Mammals* Stephen Hunter, Head of Conservation and Environment Protection Group, Central Science Laboratory, Sand Hutton.
December 3rd	**AGM** *The Brown Long-eared Bat: Predator-prey relationship* Michael Thompson from Slingsby

All indoor meetings are held in the Common Room of the Biology Department, York University and start at 7.30pm.

YORKSHIRE MAMMAL GROUP COMMITTEE MEMBERS

CHAIRMAN	Geoff Oxford 519 Huntington Road York YO3 9PY Tel: (01904) 760422
SECRETARY	Michael Thompson 'Burwood', Railway Street Slingsby, North Yorks, YO6 7AN Tel: (01653) 628620
TREASURER	David Laughton 2a Melrosegate York YO3 0RP Tel: (01904) 423564
FIELD STUDIES OFFICER	Ann Hanson 'Red Loam', Occupation Lane Bramham Crossroads, Nr Tadcaster West Yorks, LS24 9NW Tel: (01132) 813877
PUBLICITY OFFICER	Denise Ray Barn House, North Farm Scoreby, York YO4 1NP Tel: (01759) 371167
IMPRINT EDITOR	Beryl Cronin 16 Nethermoor View, Bingley West Yorks, BD16 4HG Tel: (01274) 562154
COMMITTEE MEMBERS	Gordon Woodroffe 'Finnoch', Croft Green, Sinnington North Yorks, YO6 6SJ Tel: (01751) 432416
	John Drewett (Bat Section Rep.) 64 Pinfold Garth, Sherburn-in-Elmet, Leeds, LS25 6LE Tel: (01977 681898)