Contents

Chairman's report – 2012

Geoff Oxford

Last year saw the sad death of one of our founding fathers, Michael Thompson. This year we, in conjunction with the Moorlands Supporters' Group and the Yorkshire Wildlife Trust, organised a fitting memorial – a small-mammal survey at the nature reserve where Michael first began trapping. A full description of this event can be found later in this issue. The Moorlands survey was one of a number of varied fieldwork sessions organised throughout the year by Ann Hanson and Rob Masheder. In addition we've had a splendid series of mammal walks to look for tracks and signs, and the animals themselves, including along the Pocklington Canal, at Wass (near Ampleforth) and at Hack Fall Wood near Masham. A field trip further afield saw the group visit the ancient white cattle herd in Chillingham Park, Northumberland.

Indoor talks have also been extremely varied, ranging from whisker movement in small mammals through disease transmission between mammal species in Spain to foraging patterns in York's bats. In general they have also been well-attended. For most of the year, members of the Committee have shared the secretarial responsibilities. We were delighted, therefore, when Natasha Hambly kindly volunteered to act as Secretary. Thanks Natasha, I hope you enjoy your role in the YMG. We are also grateful to Amy-Jane Beer for taking on the important role of Publicity Officer, and to Mary Youngman who gallantly took on the role in the interim.

The YMG usually attends two major wildlife events each year, at Dalby forest and at 'Wild about Wood' at the Arboretum, Castle Howard. This year we had to give the Dalby event a miss, but we were well represented at Castle Howard; thanks to Sian Abbey, Ione Bareau**,** Paul Butler and Mary Youngman (see later).

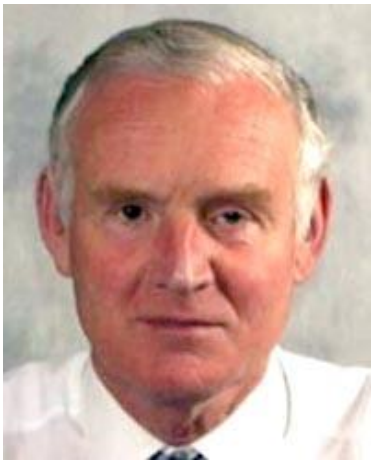
We are still working on our *Atlas of North Yorkshire Mammals*. John Ray has developed attractive web pages for the *Atlas* and we now need to organise short commentaries on the distributions of each species.

Lastly, I'd like to sincerely thank all those who have contributed to this volume of *Imprint* and Andrew Halcro-Johnston, who kindly agreed to act as editor for a third year.

February 2013: It has just come to our attention that the President of the Mammal Society, Dr Derek Yalden, has died suddenly. Derek was a towering figure in the British mammal scene and was known personally to several YMG members. Amy-Jane Beer has written an obituary, which is included in this issue. Derek will be much missed.

Obituary – Dr Derek Yalden (1940-2013)

Amy-Jane Beer



British mammalogy suffered a great loss with the death on 6th February 2013 of Derek Yalden, zoologist and President of the Mammal Society.

Derek studied Zoology at University College London and completed a PhD study of mammal wrist bones at Royal Holloway, University of London (then Royal Holloway College). He went on to become a lecturer in Zoology at the University of Manchester, where he remained for 40 years. His research included many aspects of Peak District ecology, extensive cataloguing of the historic mammal and bird faunas of Britain and of the extant mammals of Ethiopia. In view of the latter a new species of rodent *Desmomys yaldeni* (Lavrenchenko) was named in his honour in 2003. He is also commemorated in the species epithet of an Ethiopian treefrog, *Leptopelis yaldeni* (Largen 1977).

I first met Derek in (I think) 1991; Pat Morris had offered his first year undergrad students the opportunity of a lift to the Zoological Society of London and free entry to the annual Autumn Symposium of the Mammal Society (MS). When the morning arrived I was mortified to discover I was the only one going along. But Pat introduced me to the great and good of the gathering, including his old school friend Derek. I spent the day trying to keep track of who was who (Gordon Woodroffe, I think you were there!) and to take in some of the presentations, but it was all rather a blur. But at the end of the day we decamped to the Spaghetti House on Goodge Street – a favourite haunt of Pat and Derek's, and I was made unreservedly welcome. I remember talk of dormice, taxidermy and polecat-ferrets. Since then, Derek always remembered me, and often took me under his wing at

MS meetings. I was never part of any research group and usually attended on my own, and his warm welcome made all the difference.

A couple of minutes in Derek's company was all you needed to know he was extraordinary. Lots of zoologists gather information and many write books. Derek's *History of British Mammals* (T & AD Poyser, 1999) is a masterpiece of meticulous information gathering. But what struck me as most extraordinary was that after committing it all to the page he still retained the knowledge and could marshall it at the drop of a hat. It would take hypnosis to extract much of my own PhD research from the foggy backwaters of my mind, but Derek was a constantly bubbling fountain of knowledge. It could have made him insufferable but he was modest. I asked him to sign a copy of his book for me – the dedication I'm looking at now is small and neat, and tucked in a corner, as though he didn't want to deface the page.

Derek became president of the Mammal Society in 1997, an office he performed with dedication and good humour, welcoming mammalogists of all ages and all levels of ability. He was the academic and social lynchpin of MS events, striding about the venue on those long legs, meeting and greeting with evident pleasure, listening attentively, noticing everything and everyone. He usually brought proceedings to order with a few hearty raps of an old walrus bacculum on the podium. This was done with such mischievous relish he often seemed to forget whatever it was he had been about to say next. But casting about, he always found something, and his occasional bumblings added to his charm and somehow made his formidable intellect seem less intimidating and endearingly human. His speeches were unrehearsed, delivered off the cuff, drawing on his colossal reserves of expertise to handle any discussion, often deferring (probably unnecessarily) to the expertise of others and thereby making everyone feel included. He was downright nice. On more than one occasion he said to me 'What I like about you Amy is that you're always smiling.' I wouldn't say that's generally true, but if I smiled a lot in his company, it would be typical of him not to realise he was part of the reason.

Derek died in his sleep while on holiday in the Forest of Dean, aged 72. He will be acutely missed, but his meticulous work will be admired and referenced long after the rest of us have been forgotten. Meanwhile, I'll remember his encyclopaedic knowledge, boyish enthusiasm, mild manners and boundless energy, and bear in mind his usual farewell 'See you... keep smiling!'

Small mammal surveys at Flamingo Land Zoo

Natasha Hambly
CIRCLE Intern for Native Wildlife 2010-2011

Introduction


Wood mouse trapped at set-aside

Flamingo Land Theme Park and Zoo is located near Malton, just south of the North Yorkshire Moors National Park. It comprises a zoo, theme park, camping and caravan site, golf course and a series of set-aside fields. In October 2010 the CIRCLE (Centre for the Integration of Research Conservation and Learning) Office was opened, a joint collaboration between Flamingo Land Zoo and the University of York Environment Department. CIRCLE offers a series of research internships, and one of these focuses on native wildlife.

Previous to the opening of CIRCLE there was limited information on the native wildlife in and around Flamingo Land, and certainly no records of small mammals. The main aim for the native wildlife internship was to develop a Biodiversity Action Plan (BAP) which would outline the current extent of biodiversity at Flamingo Land, and then the actions needed to maintain and improve it. As part of this, Flamingo Land was interested in the populations and diversity of small mammals inhabiting our site. Small mammal populations are key to the maintenance of some higher predators, including barn and tawny owls.

Methods

Three key sites were surveyed for their small mammal populations, an area of set-aside, woodland and our fishing lake and margins.

Set-Aside (SE774804)
The set-aside land is an old camping field which is grown for hay. The lower field has a raised area of longer grass which has been left wild as it is not accessible for mowers. This is the area in which the trapping was concentrated. On this area Flamingo Land has recently planted a new area

of woodland. We are interested in the changes in small mammal communities over time as the woodland matures.

Woodland (SE 777799)
The woodland is a small patch of woodland in the north of the campsite, which is surrounded on two sides by grassy fields, one side by static caravans and the last side (in the north) by the golf course, which contains a mosaic of longer grass, shrubs and young trees. It is broadleaf mixed woodland, with many trees of the same age. The understorey contains a variety of vegetation including dense brambles.

Lake and margins (SE 782802)
The large fishing lake and margins are found alongside the zoo and theme park. The north and east the lake is bordered by a small river. The margins of the lake are mostly broadleaf woodland, with some hedges and scrub areas. Tawny Owls have been seen in these woodlands.

Trappers were trained by a member of the Yorkshire Mammal Group, and traps were supplied by the University of York. Traps were place in two transects of 10 traps each, at each site for 10 consecutive (weather permitting) days and nights. Traps were checked and removed in the morning and then replaced early evening in a new location within the site. Traps were removed to prevent any disturbance as all areas were accessible to the public. Locations for the beginning of transects were generated randomly, and traps were place approximately 2 metres apart.

Results

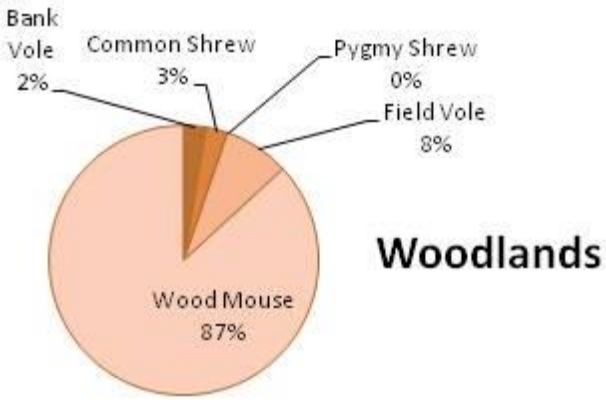
In total 125 small mammals were trapped, with the highest number around the lake side. All sites were equally diverse, with a maximum of four species found in each area. It is important to remember that the set-aside was surveyed first, in August, the lake next in September, and the woodlands last, in October. The trapping period was also shorter in the woodlands due to weather and time constraints.

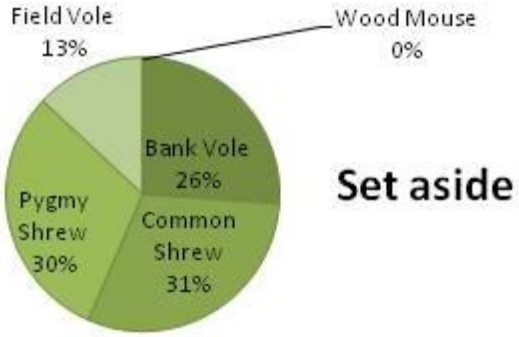
	Bank Vole	**Common Shrew**	**Pygmy Shrew**	**Field Vole**	**Wood Mouse**	**Totals**
Set-aside	6	7	7	3	0	23
Woodland	1	1	0	3	33	38
Lake	4	3	0	1	56	64
						125

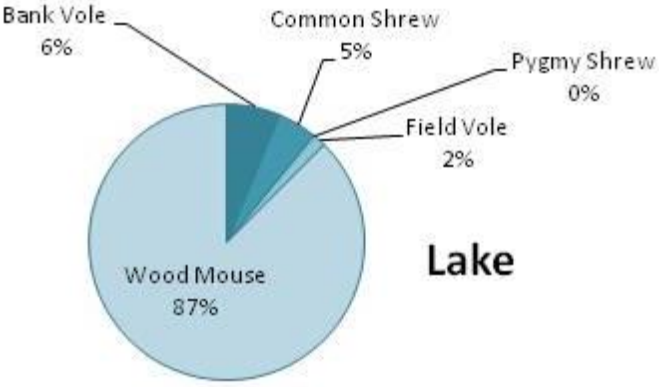
Conclusions

Mammal trapping at Flamingo Land has enabled us to get a baseline dataset of small mammal diversity. The trapping will be repeated each year to assess the effects of habitat management on our small mammals. This is especially important in a new area of woodland that has been created on the set-aside land, and for the potential understorey vegetation improvements in the woodlands.

It has also enabled us to use mammal trapping for education. This year Flamingo Land held its first Bioblitz (a 24-hour race against time to count as many species in a set area), during which we held a 'meet the mammals' morning. Members of the public were able to see mammal traps being emptied and get up close to some on the local wildlife they never knew existed.







Acknowledgements

I would like to thank Geoff Oxford for the training and advice provided to help with this project and the Yorkshire Mammal Group for licences and the opportunity to publicise the work at Flamingo Land. I would also like to thank the University of York, and Rebecca Sutton, for providing the Longworth traps.

Author with unidentified mammal at set-aside

Moorlands Nature Reserve small mammal survey – *in memoriam* Dr Michael J. A. Thompson (1933-2011)

Geoff Oxford

Introduction

On the 20th and 21st of June, 2012, the Yorkshire Mammal Group, with help from the YWT and the Moorlands Supporters' Group, undertook a live-trapping survey of small mammals in YWT's Moorlands Nature Reserve. The survey was organised in memory of Michael Thompson, a well-known and highly respected local naturalist, whose live-trapping at Moorlands in 1970 led to the formation of the Yorkshire Mammal Group, the first local mammal group in Britain. For more information about Michael see the obituaries by Oxford and Woodroffe (2011) and Howes and Oxford (2012).

The event was open to the general public and we were delighted to welcome 30 adults and four children on the Saturday morning when traps were examined. A special guest was Claire Thompson, Michael's daughter, who helped her father with the recording during the original 1970s surveys. Opening traps at Moorlands brought back fond memories for her.

Claire Thompson demonstrating the accepted way of handling a small mammal – a Bank vole. Photo: Ian Prentice

Methods

Longworth live-traps were set out on the evening of June 20th at ten locations around the reserve, with five traps at each. Traps were baited with wheat, peanuts, carrots and blowfly pupae, with a ball of hay for bedding. The trap locations (sites) are shown on the map (Figure 1) and their characteristics were as follows:

1. Edge of the main path beside a fallen tree trunk. Woodland floor vegetation.
2. Close to water level in a muddy ditch.
3. Either end of a pond-dipping platform over the first main water body in damp-ground vegetation.
4. Tall, damp-ground vegetation (mostly ferns) at the NW end of the second pond.
5. To the south side of the main path under a dense dead hedge.
6. Off the main path in the larch plantation. Traps placed under bracken and rosebay willowherb.
7. Close to the visitor hut, traps placed under Rhododendron patches in a clearing.
8. Thunder Wood – traps placed in dense vegetation.
9. Behind the classroom under Rhododendron bushes and a dead hedge.
10. At the edge of the path in a dense raspberry stand.

Results

In total 18 individuals were caught and were distributed across all sites except for 6 and 10. Three species were found, Bank vole (*Myodes glareolus*), Woodmouse (*Apodemus sylvaticus*) and Common shrew (*Sorex araneus*). Details of the catches are given in Table 1.

Discussion and conclusions

The three species found are the 'usual suspects' associated with deciduous woodland with a well-developed understorey. In the traps placed along the muddy ditch (site 2) and near the two ponds (Sites 3 and 4) we hoped we might find Water shrews (*Neomys fodiens*), but it was not to be. Interestingly, these were the same three species recorded in the original report from 1970, but over many more trap nights (720 *versus* 50 in the current survey). The 1970 report also notes that Water shrews had been seen near the ponds and the Field vole (*Microtus agrestis*) was suspected to be present (runs were found in tussocky grass - Moorlands Management

Plan (1981-1991)). Owl pellets examined during 1973-74 confirmed the presence of Field voles on, or near, the reserve. Despite annual reports on the mammals of Moorlands, it is not until the Moorlands Management Plan (1981-1991) that Pygmy shrews are mentioned – 'found anywhere on the Reserve, often dead on footpaths.' House mice (*Mus musculus*) are also noted as 'Rare visitor to the Reserve.' In 1988, while teaching part of a WEA course on British Mammals, I ran a demonstration small-mammal trap on the Reserve. The survey took placed to the north west of site 6 (see Figure 1). Of the 10 animals caught (in 50 traps), six were Woodmice, three were Common shrews and the last was a Harvest mouse (*Micromys minutus*), the first (and last?) record for Moorlands. The YMG surveyed for small mammals in 1989 (65 traps) and recorded the same three 'usual suspect' species. A further session during York Environment Week in 1991 found only a handful of Woodmice.

Table 1. Small mammals trapped at Moorlands Nature reserve.
[**KEY** - Sex, M = male; F = female: Age, A = adult; SA = sub-adult; J = juvenile]

Site	Species	Sex	Age	Weight (g)	Notes
1	Bank vole	M	A	27.0	
1	Woodmouse	M	A	30.5	tail tip missing
1	Woodmouse	M	A	20.5	
1	Bank vole	F	A	20.5	
2	Bank vole	F	A	24.0	
3	Bank vole	F	A	31.5	Pregnant
3	Bank vole	F	J	16.0	
4	Bank vole	F	A	27.5	
4	Woodmouse	F	A	27.5	
4	Woodmouse	M	SA	18.5	
5	Bank vole	M	A	24.0	
5	Woodmouse	M	A	25.5	
5	Woodmouse	M	?	?	Escaped
7	Woodmouse	M	A	28.5	
7	Common shrew	?	?	?	Escaped
8	Woodmouse	F	A	24.5	
8	Bank vole	F	A	22.0	
10	Bank vole	M	A	24.0	

From the above, it looks as if Moorlands has always had good populations of Woodmice, Bank voles and Common shrews, with lower densities of Pygmy shrews (which are almost always less common than Common shrews in lowland areas). Water shrews are seen sporadically. Field voles are associated with tussocky grassland, which is scarce in the Reserve today. Likewise, Harvest mice require open tall grass or similar for nest building. This habitat was present in the north-west section of the Reserve in 1988. Present-day aerial photographs suggest that tree cover is now almost complete in this part of Moorlands as a result of a relatively recently established larch plantation. The diversity of small mammal species may, therefore, have decreased as the wood at Moorlands has matured and originally open areas have been planted up.

Everyone who wanted to had a chance to empty a trap and let the catch go (another Bank vole). Photo: Mary Sykes

Acknowledgements

Thanks to Ann Hanson and Rob Masheder for organising the logistics of the survey. Mary Sykes kindly put at our disposal her extensive knowledge of the Reserve, gave advice on possible trapping locations, supplied maps and provided past mammal reports. Thanks also to Bernie Waddington and Tim Bailey for their encouragement in arranging on this event.

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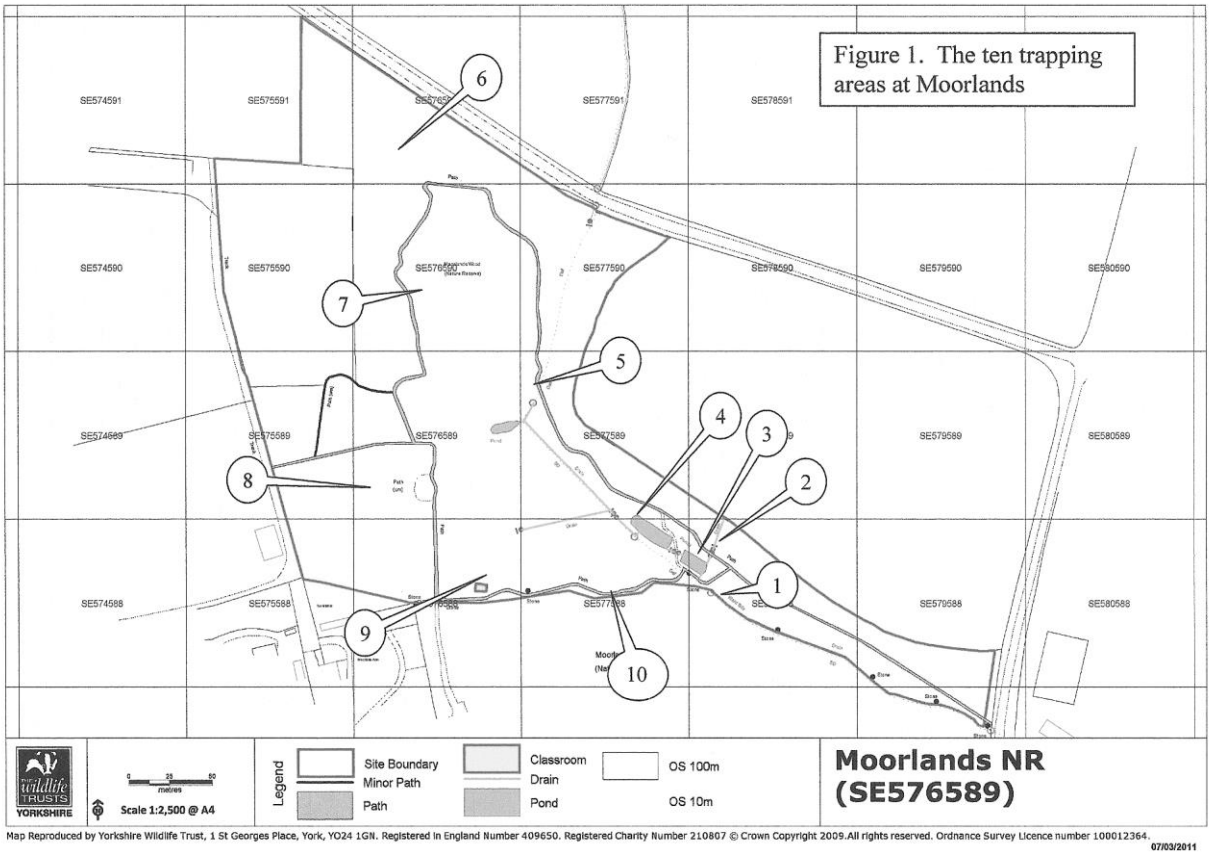

A study into the preferred foraging and commuting habitats of bats in and around Stub Wood, a broadleaved woodland in the Vale of York

Anne Heathcote

Life on earth has been continuously evolving into a rich and varied living world for around four billion years. However the rapid growth of the human population over the last few decades has placed immense pressure on natural ecosystems and has subjected the earth to habitat deterioration and climate change on an unprecedented scale. To help lessen global biodiversity decline it is important to monitor climate change and habitat

loss. This can be achieved, in part, by identifying bio-indicator species to help assess the impacts of human activity on the environment. Bio-indicator species are monitored for changes that may indicate difficulties within the ecosystem in which the organism lives thus allowing us to put in place strategies to counteract the problem.

With an estimated 1,116 species worldwide, bats are one of the most ecologically diverse and successful mammalian orders and have enormous potential as bio-indicators. In the UK bats form a significant part of our mammalian fauna and as top predators of common nocturnal insects, utilising a range of habitats, their presence is a good indicator of the wider health of the UK's landscape and wildlife. However, the distribution and population of British bats has, historically, declined over the past century due to the loss and fragmentation of foraging habitats brought on by agricultural intensification and landscape change. In the post-war period nearly half of our remaining semi-natural woodlands were damaged or destroyed through agri/forestry policies, more than in the previous 1000 years. From the 1950's onwards a drive for more food production and mechanisation of farming methods led to the formation of larger fields and resulted in the loss of hedgerows which form essential links between feeding sites and roosts for bats. Modern farming practices have also impacted on the food chain. Herbicides destroy the weeds that feed the invertebrates that feed the bats and artificial fertilisers reduce insect abundance by reducing plant diversity.

As The Vale of York has been intensively farmed over a long period and contains only small areas of broadleaved, semi-natural woodland the conservation of bats in this area is particularly significant. Stub Wood is one of the most diverse and extensive semi-natural woodlands in The Vale of York, and is also predominantly surrounded by arable farmland lying adjacent to the floodplain meadows of the River Ouse, making it an ideal site to study.

In order to identify the bat species present and their preferred foraging and commuting habitats, manual walked point transects were undertaken, at sunset, along three different routes, throughout the summer months (Figure 1).

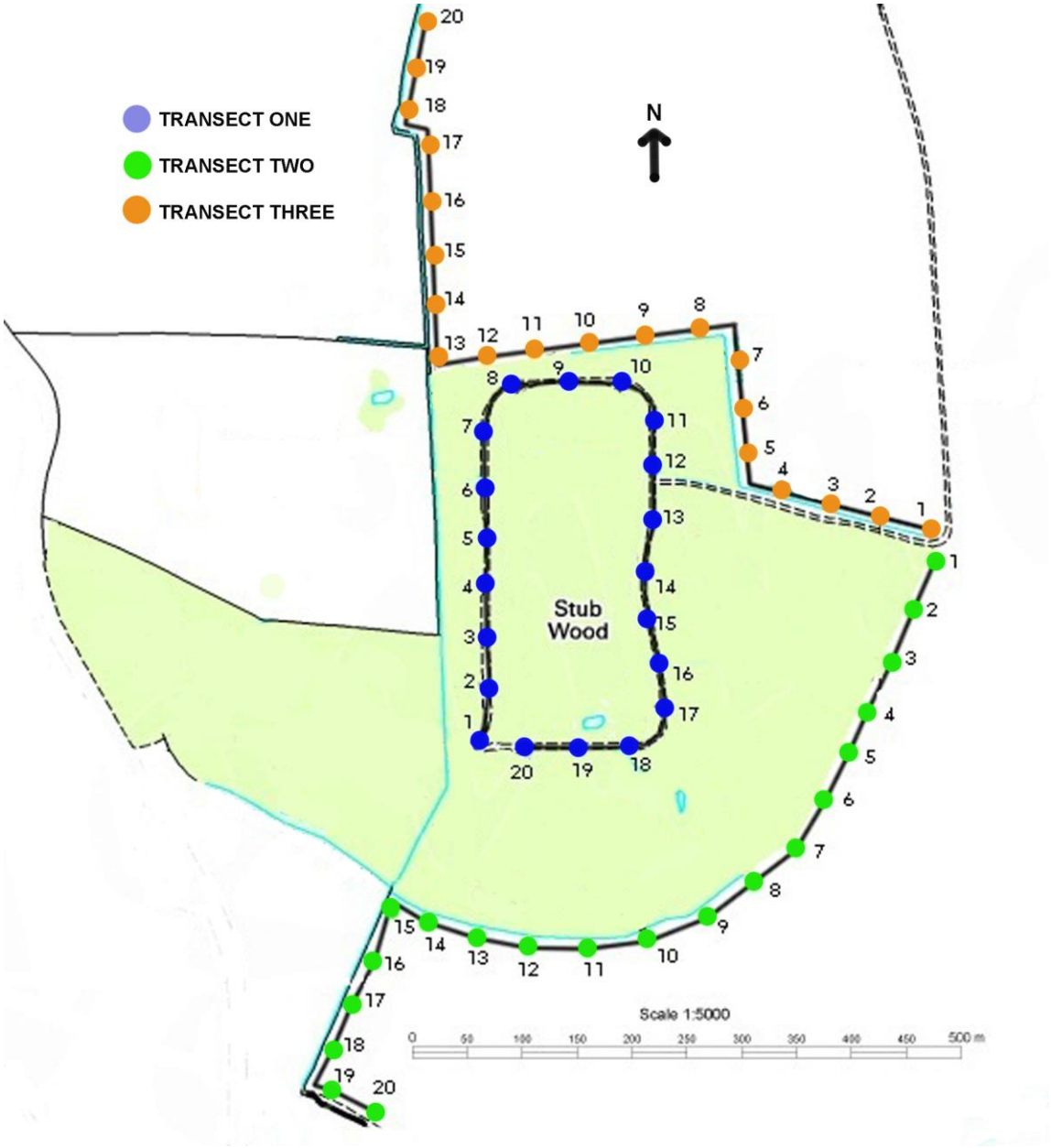

Figure 1: Map of Stub Wood indicating walked transect routes

- Transect One: Woodland interior encompassing areas of closed canopies and open glades, with a mix of mature trees and young plantations
- Transect Two: Southern woodland boundary with adjoining unmanaged tall mixed hedge with abundant mature oak & ash hedgerow trees.
- Transect Three: Northern woodland boundary with adjoining managed short blackthorn hedge with occasional mature oak hedgerow trees, leading to a small settlement surrounding a small lake and wooded area.

The results of the study found that the predominant species found in all the habitats was the common pipistrelle (*Pipistrellus pipistrellus)*, followed by the soprano pipistrelle (*Pipistrellus pygmaeus)* which accounted for 89% of all observed passes. Noctule bats *(Nyctalus noctula)* and *Myotis* species only accounted for 2% of observed bats.

The study also demonstrated that there was a significant difference in the foraging/commuting preferences of bats in and around the woodland environment. The highest number of passes was recorded along the northern boundary, with the majority of bats observed commuting south along the managed blackthorn hedgerow towards the wood. It is feasible therefore that these bats, mainly pipistrelles which have adapted to live in buildings, are roosting in the roof spaces of the houses situated to the north and using the hedgerow to commute to foraging habitats. More feeding activity however, was observed along the tall species rich hedgerow along the southern boundary transect compared to the species poor northern transect hedgerow. This could indicate that the less intensively managed species rich hedgerow was more important as a foraging habitat. In all three transects, bats were also predominantly observed feeding around mature oak trees, probably due to the fact that mature oaks have high biodiversity value and provide food and sheltered microhabitats for invertebrates in an otherwise exposed environment. High levels of activity were also observed close to sources of water in the form of two woodland ponds. As bats need open water to drink and many species feed on insects that have aquatic larval stages this could account for the increased number of passes close to these resources. The least number of passes were observed in the woodland interior which indicates that edge habitat and linear feature are utilised more than the woodland itself.

In order to enhance these habitats for bats, the over-managed connecting hedgerow to the north should be maintained on a rotational cycle with incremental height increase to promote a healthy dense and tall hedge. This would improve foraging opportunities by increasing insect diversity. The existing hedgerow trees should be maintained and new trees planted, and allowed to grow to maturity, along the hedge line. Gaps in the hedge should also be replanted to improve its use as a flight route. In addition to this, it is suggested that new hedgerows, with trees, be planted to establish further connections to existing tree lines, hedgerows and ditches.

Although Stub Wood already provides a good habitat for bats, these prescriptions would help establish connections to the wider area. In areas such as the Vale of York with limited woodland cover, connecting small

habitat patches is vital to enable species such as bats to improve genetic biodiversity and adapt to climate change by finding new foraging and roost sites.

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Why don't all hedgehogs carry ticks?

Dr Toni Bunnell
York Hedgehog Rescue

The following article forms part of a paper originally published in the Journal of Chemical Ecology:

Toni Bunnell, Kerstin Hanisch, Joerg D. Hardege and Thomas Breithaupt, 2011. The Fecal Odor of Sick Hedgehogs (*Erinaceus europaeus*) Mediates Olfactory Attraction of the Tick *Ixodes hexagonus*. *Journal of Chemical Ecology*, Volume 37 (4): 340 – 347.

If anyone would like a pdf of the published paper please email Toni Bunnell: T.Bunnell@hull.ac.uk

I have run a hedgehog rescue centre in York for over 20 years. All carers are used to seeing hedgehogs infested with ticks. This tick is usually *Ixodes hexagonus* and only the female tick parasitizes the hedgehog. I noticed that only some hedgehogs were coming in with ticks and that these seemed to be more sick than those without ticks. I decided to investigate this further, resulting in a study involving extensive research. Here is the abstract of the published paper:

Parasite loads of animals vary among individuals, but the underlying mechanisms have not been fully identified. Here, we investigated whether health status of hedgehogs (*Erinaceus europaeus*) is correlated with tick burden, and whether chemical cues linked to the health status of the host mediate attraction of the tick *Ixodes hexagonus*. An ecological survey conducted over 10 years, involving 226 wild hedgehogs, revealed a strong association between health status and tick burden of hedgehogs, with healthy animals being less likely to carry ticks than unhealthy ones. Behavioral choice tests demonstrated that ticks display a preference for the fecal odor from sick hedgehogs compared with healthy ones.

Chemical analysis of fecal odors using gas chromatography - mass spectrometry showed differences in the odor profile between sick and healthy hedgehogs. Sick animals tended to exhibit raised levels of the volatile aromatic heterocyclic compound indole in their feces. Ticks were attracted to indole when given the choice between indole and a solvent control. However, fecal matter from healthy hosts, with the addition of indole, was not attractive to ticks, suggesting that indole interacts with other, undetected compounds in mediating attraction. This study implies that it is the attraction to fecal odor that causes higher tick burdens in sick hedgehogs. Ticks might benefit from this preference by avoiding possible repulsion mechanisms of healthy hosts. We suggest that ticks potentially choose their host based on odor linked to the host’s health status.

I would particularly like to thank Geoff Oxford for all his help with critical reading of the manuscript and the suggestion of an appropriate journal for publication.

If anyone is interested in helping hedgehogs in York please email Toni Bunnell (T.Bunnell@hull.ac.uk) or post a message on facebook: Help York's Hedgehogs.

The otter (*Lutra Lutra*) on the River Leven, North Yorkshire

Derek E. Capes

Abstract

The frequency of otter sprainting activity has been monitored each month over a period from 2002 to 2011, at a series of sites on the River Leven and some of its tributary streams in North Yorkshire. The note describes the method employed and gives results in terms of annual totals and variations. Other miscellaneous data is given, including likely fish prey items and some data on road traffic accidents involving otters in the area. Some speculative comments are made on possible otter movements between several other adjacent river systems, and the need for more sophisticated studies to investigate this possibility.

1. Introduction

I first became interested in surveying for otters in the late 1970's after hearing a talk by Gordon Woodroffe describing his work on the Yorkshire Esk, and wondering if there were any otters on the River Leven which runs through my home village of Great Ayton. From February 1979 to February 1981 I did a total of 52 site visits, involving 9 sections of the river but encountered just 3 signs of otter. Twenty years later, my retirement in 1999 coincided with the launch of the Northumbrian Otters and Rivers Project so I decided to get involved, as following reports of an increase in signs generally, I was curious to see if the same applied locally. Initially, I monitored a few sites around the village on a routine basis, including other sites as and when time permitted. Then the idea was born to commit to a longer term survey, covering a wider area. A number of sites were selected

to be monitored each month. Foot and Mouth restrictions curtailed activity in 2001, so the survey started in January 2002, and continued until December 2011.

2. Background

The otter population of Britain, and especially England, fell dramatically from the mid 1950's, largely due to the introduction of organochlorine pesticides in agricultural practices. Once the problem had been identified and appropriate remedial action taken, the decline halted. Otter numbers started from a very low base, to make a slow recovery. In some areas, re-introductions from captive bred stock were carried out. Recovery continued, but at different rates throughout the country as young animals dispersed into their own territories.

In North Yorkshire, a project was undertaken by Woodroffe (1) and others, to introduce rehabilitated animals to several sites on the River Derwent system and to the River Esk to reinforce small existing populations. This took place between 1990 and 1993, and subsequent monitoring over several years showed an increasing number of otter signs, and evidence that breeding had occurred. There was the distinct possibility that otters may have dispersed more widely, and a survey of 17 sites largely covering the length of the Leven and some of its tributaries was carried out in May 1995 by Woodroffe and Winter (2), who found 4 of the sites positive (23.5%).

In February 1998, O'Hara surveyed the Leven (3) and found 5 positive sites from 13 examined (38.5%), all of these positive sites being located in the lower stretches of the river.

3. Method

3.a Sites

The River Leven rises on Warren Moor above Kildale in the northern part of the North York Moors at a height of 279m (915 ft), and flows indirectly northwesterly before joining the Tees below Yarm, a distance of approximately 29 miles (Figure 1).

Many of the tributary streams arise in the North York Moors and join the river near Stokesley. The only significant exception is the Tame which drains the generally flat agricultural land extending towards Guisborough. Although the Leven and its feeder streams pass through several villages,

the largest being Great Ayton, Stokesley and Hutton Rudby, much of the river system lies in quiet, undisturbed countryside. A high proportion of the river course passes through mature woodlands, and there are many sidestreams which afford shelter for lying up and potential breeding sites.

In view of the observations by O'Hara on the favourable conditions and yield of spraints below Stokesley, priority was generally directed towards the upper reaches and feeder streams where fish food resource may not be quite so abundant.

Eleven sites were selected – seven being on the main river and the remainder on tributaries. They are shown in Table 1.

Table 1. Sites Monitored during the Survey

Kildale	NZ 607 097
Little Ayton	NZ 569 102
Leven Court , Great Ayton	NZ 565 104
Friends School Weir, Great Ayton	NZ 564 105
Stone Bridge, Great Ayton	NZ 557 107
Ayton Grange, Great Ayton	NZ 552 102
Broughton Beck Bridge, Stokesley	NZ 539 079
Ingleby Beck, Ingleby Greenhow	NZ 589 065
Broughton Beck, Great Broughton	NZ 546 063
Potto Beck, Swainby	NZ 476 023
Nunthorpe Stell – River Tame	NZ 551 133

Having built up an idea of the sort of features favoured by otters for sprainting, suitable stones were positioned (some concreted in position to resist flood conditions) at a number of the sites to induce them to scent mark – and this proved successful.

A further criterion was that the sites should be readily accessible by road so that examinations could be carried out within limited time constraints. As a result, some sites were under road bridges in rural built up areas, for example, in Great Ayton, under the busy A173 bridge, with significant human activity close by.

After five years (2002-2006 incl.), the distribution of sites was reviewed, as it was considered to be too concentrated in the Little and Great Ayton area. Consequently the sites at Leven Court, the Friends School Weir and Ayton Grange were no longer monitored on a regular basis. In June, 2007 a

sprainting site was set up under a bridge on the Nunthorpe Stell which is a feeder stream of the River Tame, following reports of otters using the stream.

3.b Spraint Counts

At the end of each month, counts were made of the fresh spraints which had been deposited since the previous examination. A series of different coloured poster paints were used to distinguish previous months' spraints. Also included in the count were deposits of anal jelly and "tarry/oily" deposits with little or no solid or bone content as these also hold the scent used for communication.

4. Results

Figure 2 shows the annual total of spraints counted at the seven sites with the longest periods of monitoring. It is clear from the results that otters were active at all the selected sites to a varying extent.

The highest total number of spraints deposited over the 10 year period was at Swainby on Potto Beck, where a total of 480 spraints was deposited. The next highest total of 389 was from Ingleby Greenhow. Both these sites are on tributaries of the river. The highest number of spraints recorded for the river was from Little Ayton (362), Stone Bridge, Great Ayton (238) and Broughton Bridge Beck at Stokesley (235). NB. these latter 2 values were from just 9 years surveying (Table 2).

Table 2. Total Number of Spraints/Site over the Survey Period

Site	Years Surveyed	Total Spraint	10 Year Equivalent	Max No. & Year	Min No. & Year
Kildale	8.75	198	(226)	33, 2004	12, 2006
Little Ayton	10	362	-	48, 2005	23, 2003
Leven Court, G.A.	5	65	(130)	17, 2004	6, 2006
F.S.Weir, G.A.	5	63	(126)	22, 2002	4, 2006
Stone Bridge, G.A.	9	238	(264)	43, 2008	11, 2006
Ayton Grange, G.A.	5	90	(180)	30, 2003	11, 2006
Ingleby Greenhow	10	389	-	48, 2010	33, 2002
Broughton Bridge B.	9	235	(261)	37, 2004	15, 2007
Great Broughton	9	128	(142)	30, 2008	3, 2002
Swainby	10	480	-	80, 2007	17, 2010

At the 7 sites with the longer periods of observation, the average number of spraints/month/year varied throughout the year, with the lowest values of 1.3 and 1.6 in June and July respectively, the highest being 3.2 and 3.0 for March and September respectively (Table 3).

Table 3. Average Number of Spraints/Month

Site	J	F	M	A	M	J	J	A	S	O	N	D	Years
Kildale	1.9	2.4	3.1	2.7	2.1	0.9	1.1	2.1	2.0	1.1	1.9	2.0	8.75
Little Ayton	3.4	3.2	4.4	3.6	2.6	1.3	2.8	2.8	2.7	2.6	3.5	3.2	10
Stone Bridge, G.A.	1.7	1.6	2.3	2.2	1.6	1.0	1.8	1.4	3.2	3.6	3.2	2.9	9
Ingleby Greenhow	3.3	4.9	3.7	3.8	2.7	2.4	2.0	2.7	3.4	2.5	3.6	4.0	10
Broughton Beck Bridge	3.0	2.6	3.2	2.3	1.6	0.8	2.1	2.4	3.2	1.6	1.2	2.7	9
Great Broughton	1.4	1.4	1.2	0.8	1.3	0.4	0.7	0.8	1.7	1.8	1.6	1.1	9
Swainby	5.2	3.4	4.6	4.2	3.7	2.5	2.5	4.0	4.8	4.4	4.0	4.7	10
Average – all sites	2.8	2.8	3.2	2.8	2.2	1.3	1.6	2.3	3.0	2.5	2.0	2.9	

Figure 2 is a bar chart which shows the total number of spraints found each month at the seven sites which were monitored over the longest periods. In general, the sprainting activity appears to be reasonably consistent for each given site with possible indication of small long term increases at Kildale, Little Ayton and Ingleby Greenhow. At Swainby however, the number of spraints increased to an annual maximum of 80 in 2007, the highest number for any of the sites, but from this high count, the totals for the next 3 years progressively fell to a low of 17 in 2010. Nothing as extreme as this happened at any of the other sites.

The results from Nunthorpe have not been included in the overall averages because of the relatively short period of monitoring, and two winters when flooding seriously disrupted spraint counting. However, it is worth recording that in 2009, there were two consecutive months when eight spraints were counted; much more activity than had previously been recorded on this small stream. This was found to be the result of a family group using the stream and which was captured on camera several times by Kenny Crooks of The Tees Valley Wildlife Trust as part of their Wild Places Project.

5. Discussion

The River Leven has a history of otter activity in past centuries, although regrettably, much arising from persecution. The Great Ayton Church Warden's accounts show that between 1745 and 1775 four entries were

made, when a one shilling bounty was given for an otter's head. This would seem to be quite a low number in relation to the numbers believed to be present today, from which it may be speculated either that the otter wasn't such a serious pest at that time or possibly not so common as it is today. In the late 1800s, children at Crathorne School were given a day's holiday when one of the otter hunts came to work the Leven. More recently, Jack Grayson, a blacksmith at Great Ayton shot otters for their pelts in the years shortly following the Second World War.

To what extent the local population was affected by the organochlorine pesticide pollution which had such a devastating effect on otter numbers throughout England and beyond, is unknown, but the Biological Records Centre/Mammal Society Otter Distribution Map for 1970-1978 indicates the possibility that a small population may have survived in North East Yorkshire. The Leven is remarkably well connected in this respect for the recruitment of animals from adjacent river systems.

Northumberland rivers were found to be relatively less seriously affected by the pesticide pollution and maintained a significant population during this period. It is possible that otters may have dispersed south along the Pennine watersheds to the upper reaches of the River Tees. Before 1995, the lower stretch of the Tees at its confluence with the Leven was tidal and seriously polluted by industrial discharges. However, since the construction of the Tees barrage in 1995, water quality has improved profoundly to the great benefit of fish and other wildlife. Indeed, one member of the Tees Rowing Club was recently quoted as "having seen more otters on the Tees, than in a week looking for them in Scotland".

The River Tame which joins the Leven downstream from Stokesley, has its origin close to Guisborough, where several otter road casualties have been reported. From here it is a short distance to Howl Beck, which reaches Skelton Beck, which then flows on towards the coast at Saltburn.

To the west are potential links with the River Swale via the source streams of Cod Beck and the River Wiske, and being separated from the Scugdale and Potto Becks of the Leven system by short distances relative to an otter's overland capabilities. To the east, close to its source, the Leven is less than half a mile from Sleddale and Baysdale Becks. Spraints have often been found in this area and in 2010 a live sighting was made. These Becks join the Yorkshire Esk and onward to the sea. Otter Hills Beck is another Leven tributary which is within a short overland distance of

Baysdale, and in which sprainting has been recorded in the higher reaches where the stream is so small as to offer little in the way of sustenance.

The sources of several streams, the rivers Rye, Seph, Dove and Hodge Beck, which form a significant part of the catchment for the River Derwent, are also potentially accessible across the moor tops to Ingleby and Scugdale Becks on the Leven system. However, more work needs to be done in this area to find specific evidence of otter movements; the best so far being spraints in the upper reaches of Ingleby Beck and Otter Hills Beck. These links would be of particular relevance to the otter population of the Leven following the Otter Reinforcement Programme of releases into streams in the Derwent and Esk river systems carried out between 1990 and 1993.

Many otters are killed on roads and this area is no exception – at least 13 over a 12 year period have been brought to the attention of the writer, and it is known that there have been several more in the area. More details are given in Table 4. These data would suggest the male is particularly vulnerable from mid summer to early autumn.

Table 4. Otter Road Casualties

Date	**Location**	**Description**
Jan. 2000	Dunsdale	Lactating female, 6.1 kg
March 2000	Stokesley	Non–lactating female, 5.8 kg
Oct. 2002	Faceby	
Sept. 2004	Easby	Male, 8.25kg
2005	Loftus	
Jan. 2006	Croft	
Jan. 2006	Stewarts Park, Middlesbrough	
Summer 2007	Swainby	
Sept. 2007	Stokesley	Male, 7.5 kg
Oct. 2007	Scaling Dam	
Aug. 2008	Great Ayton	Male
July 2008	A174 Parkway, Middlesbrough	Male, 5.9 kg
Sept. 2009	Yarm	Male, 9.1 kg

Despite this loss of animals there were no apparent reductions in the sprainting frequency at those sites in the immediate area of the fatality.

One interesting observation on the Sept. 2007 specimen from Stokesley was that it had suffered wounding in the genital region as a result of fighting to establish or defend territory, and this behaviour is generally accepted as a sign that the otter population may be increasing to a level where food resources are becoming more limited. It may therefore, be significant that at least seven cases of otters raiding ponds have been brought to the attention of the author since 2008. One was even recorded on camera (again by Kenny Crooks), from the garden pond of a house in suburban Middlesbrough, demonstrating remarkable foraging ability to target food resources. The erection of electric fencing is the only successful and legal way to combat similar poaching incidents.

Further potential conflict with human commercial activities may arise when otters cross land which is maintained for shooting, and there is no doubt that otters would take eggs and birds if they were to encounter them. There is equally little doubt that gamekeepers would take steps to resolve the issue.

A pollution incident on the Main Stell at Nunthorpe in August 2005 killed trout, eels, lamprey, minnows, stone loach and bullheads and provided some evidence on the potential prey fish available in the smaller streams. It is notable that less than two years later, the presence of spraints indicated that otters were using the adjacent Nunthorpe Stell. Three spined stickleback, pike, and grayling are also known to be present in the survey area. Further downstream, dace, chub and gudgeon are present. Following the installation of a fish pass at Leven Bank in 2007, the Environment Agency has found that salmon are now using the Leven once more after a period of some 150 years.

That otters are using the Leven and its feeder streams with some regularity is clear, and that with one possible exception, the numbers of spraints counted at the different sites suggest a healthy population is being sustained throughout the Leven system. It may be significant that the site monitored at Potto Beck, Swainby was the site with the highest rate of spraint deposition, and is also close to a number of adjacent rivers known to be used by otters. What is not known however, is how many animals use the river, or to what extent they are resident or transient, or where they may come from or go to. It remains unclear whether there is any routine or pattern to their movements. To attempt to answer these questions would require the use of equipment or techniques beyond the scope of an amateur field naturalist. Nevertheless, the feasibility of extending the work to investigate these aspects could be considered by interested parties who

may have access to appropriate facilities and resources. The River Leven, situated as it is at the hub of several other river systems, each with their own otter populations, would seem to present an ideal venue for more sophisticated studies of otter behaviour by University, Governmental or other environmental research bodies.

6. Concluding comments

The objective of many otter surveys is to record the presence or absence of otters in a river system at a given point in time. The work described goes further in that by using a consistent effort, the frequency of the sprainting activity indicates their presence in the River Leven and its feeder streams over a ten year period, and variations from the normal that may occur.

As such, the study is not particularly remarkable, in that it could have been carried out at numerous sites all over the country, probably with similar results following the resurgence in the otter population nationally. No new information has been uncovered on otter behaviour. What it does however, is to place on record, the experiences of one amateur surveyor, and the gathering of miscellaneous associated data from one small area which may be of wider interest. The data provided serve as a benchmark to assess the status of the otter in this river system in the future. It also enables monitoring to be continued on a smaller scale, perhaps at just one site for example.

More importantly however, it raises many more questions on the scale and range of otter movements in this and adjacent river systems. With a generally consistent otter population and appropriate resources, the Leven catchment could serve as a very appropriate area for more comprehensive work in the future.

Acknowledgements are due to Gordon Woodroffe and Terry Coult for sowing the original seeds, to landowners or their agents for cooperation and allowing access to sites, Paul Frear of the Environment Agency and Ben Lamb of the Tees Rivers Trust for assistance and information on fish stocks, and to Laura Winter, without whose encouragement and help the work was unlikely to have been published. Thanks are also given to many members of the interested public who have shown me sprainting sites, delivered dead otters and provided miscellaneous otter related information.

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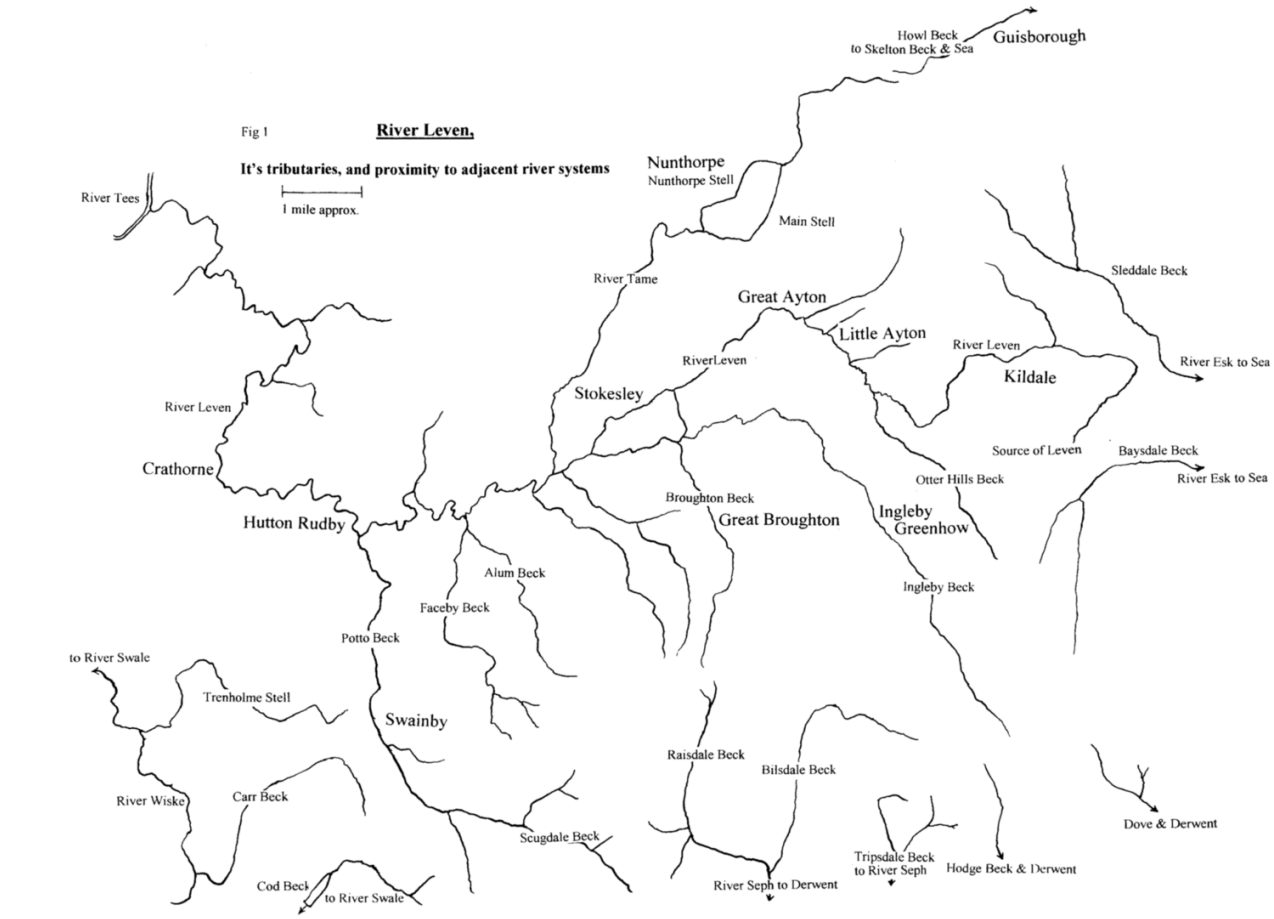

Figure 1. The River Leven

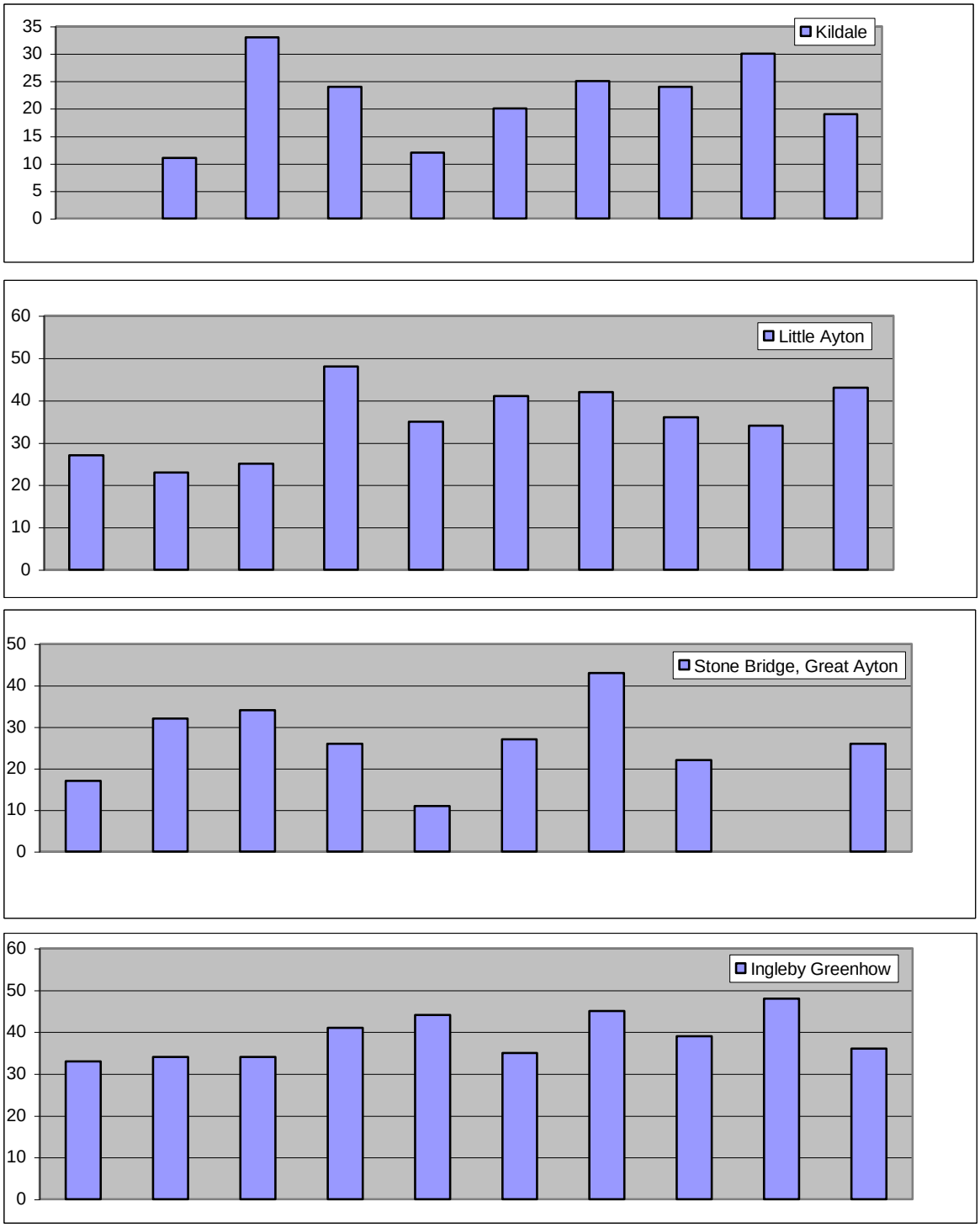

Figure 2. Total Number of Spraints/Site/Year 2002 – 2011

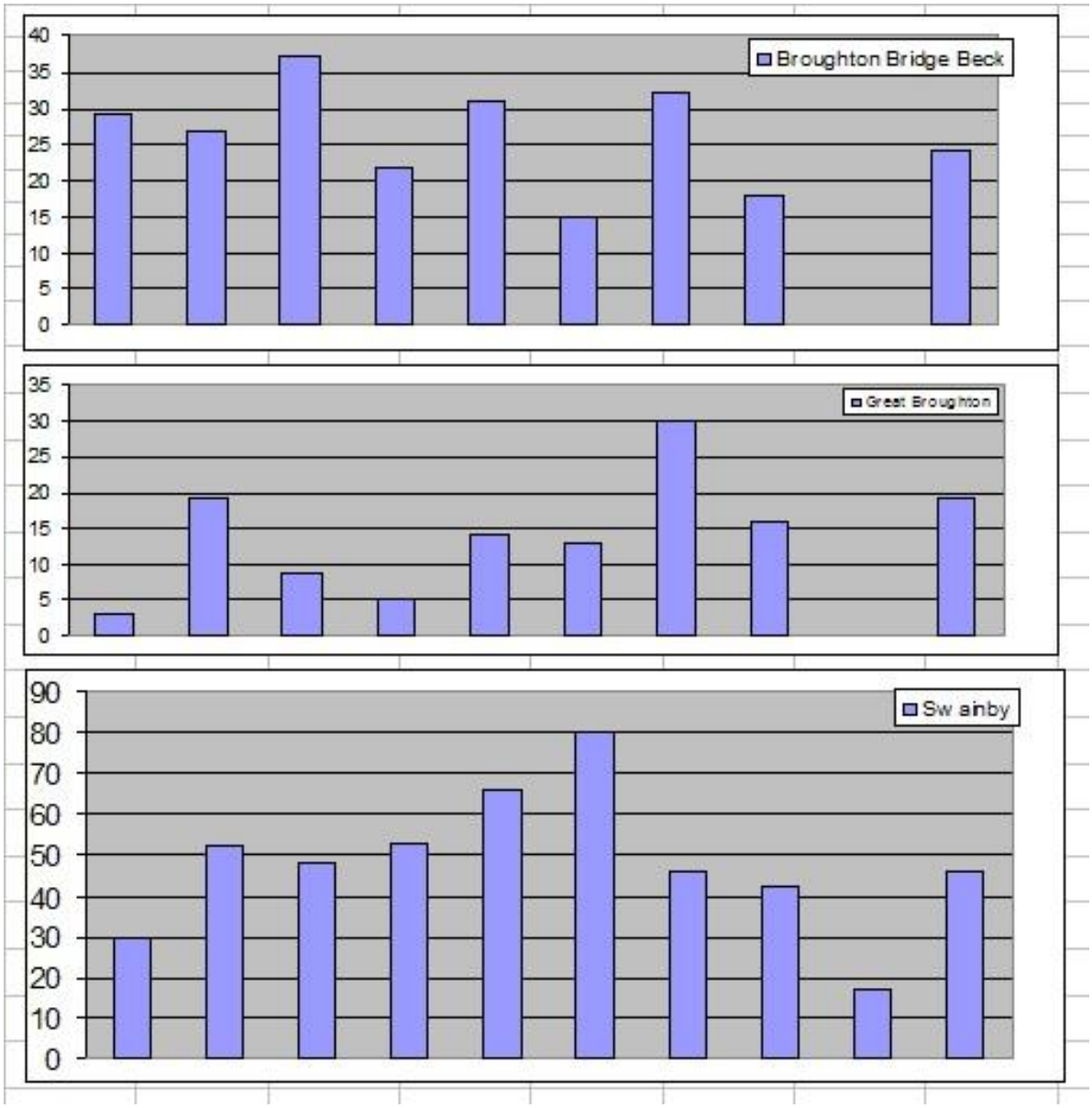

Figure 2 (cont.). Total Number of Spraints/Site/Year 2002 – 2011

Winter whitening in Yorkshire stoats (*Mustela erminea* L.) – A novel climatic indicator

Colin A. Howes

INTRODUCTION

In 1930 and 1934, when Yorkshire naturalists enjoyed a closer and more productive relationship with the landed and game-keeping fraternity, John R. Flintoff (1873-1941) the controversial naturalist of 'Water Ark', Goathland, undertook a questionnaire survey of gamekeepers and estate managers requesting the numbers, sexes and pelage forms of stoats trapped on shooting estates. Replies were readily provided from fifty one estates in Yorkshire, seven from Cumberland and Northumberland and two from Nottinghamshire and Lincolnshire. Flintoff's pioneering survey, decades ahead of its time, provides an invaluable legacy of raw-data, anecdotes and preliminary interpretation (Flintoff 1933, 1935 & 1936).

This study re-works Flintoff's data according to Natural England's 'Natural Regions' (Selman *et al.* 1999) and altitude in order to reveal how the 'ermine' mechanism operates in Yorkshire's geographically and climatically varied countryside. A review of this work was exhibited as a poster display at the YNU Conference on *Recording and Monitoring Yorkshire's Environment* (Howes 2002).

RESULTS

Of 5,784 stoats killed on Yorkshire estates, males accounted for 3,610 (62%) and females accounted for 2,174 (38%).

Of these, 165 (4.6%) males and 211 (9.8%) females exhibited ermine.

In examining the effect of altitude, on estates up to 500ft and 1000ft the proportion of stoats exhibiting whitening was 5.6% and 5.9% respectively, whereas on shoots above 1000ft the proportion raised to 13.8%, no doubt due to colder climatic conditions effecting the autumn moult (see McDonald & Harris1998).

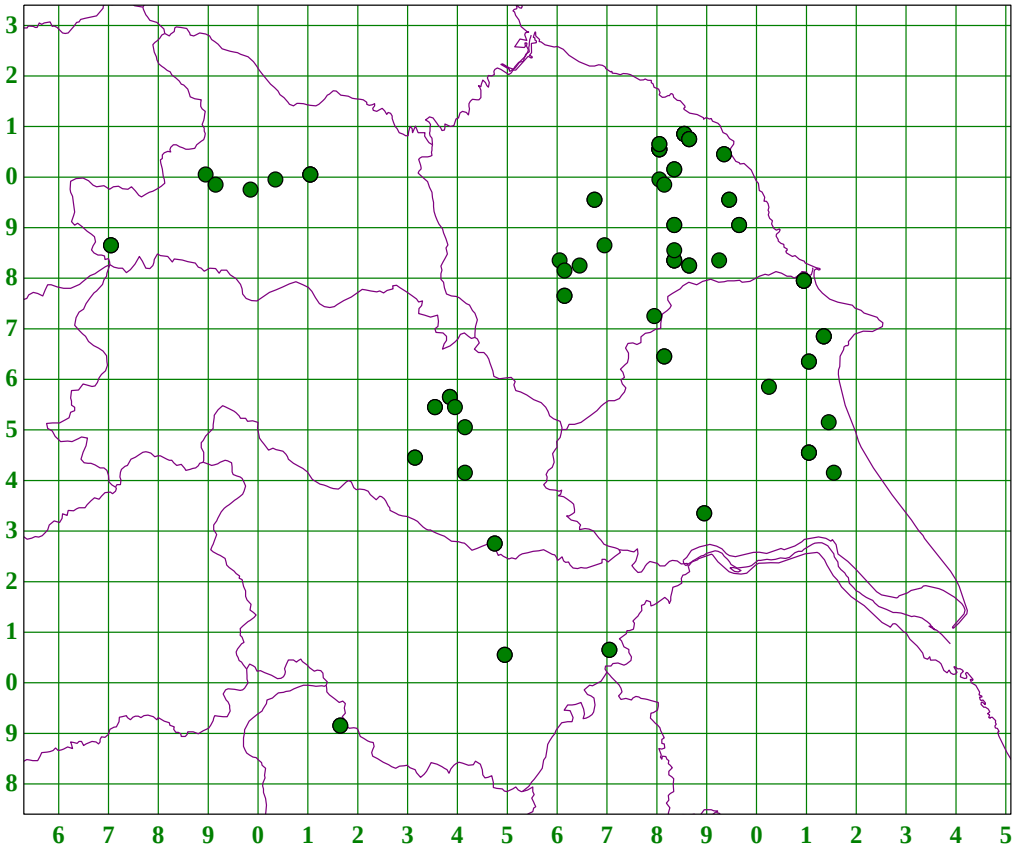

Figure 1: Locations of shooting estates where stoat kill data was obtained by John Flintoff 1931-1934 (based on data in Flintoff 1933, 1935).

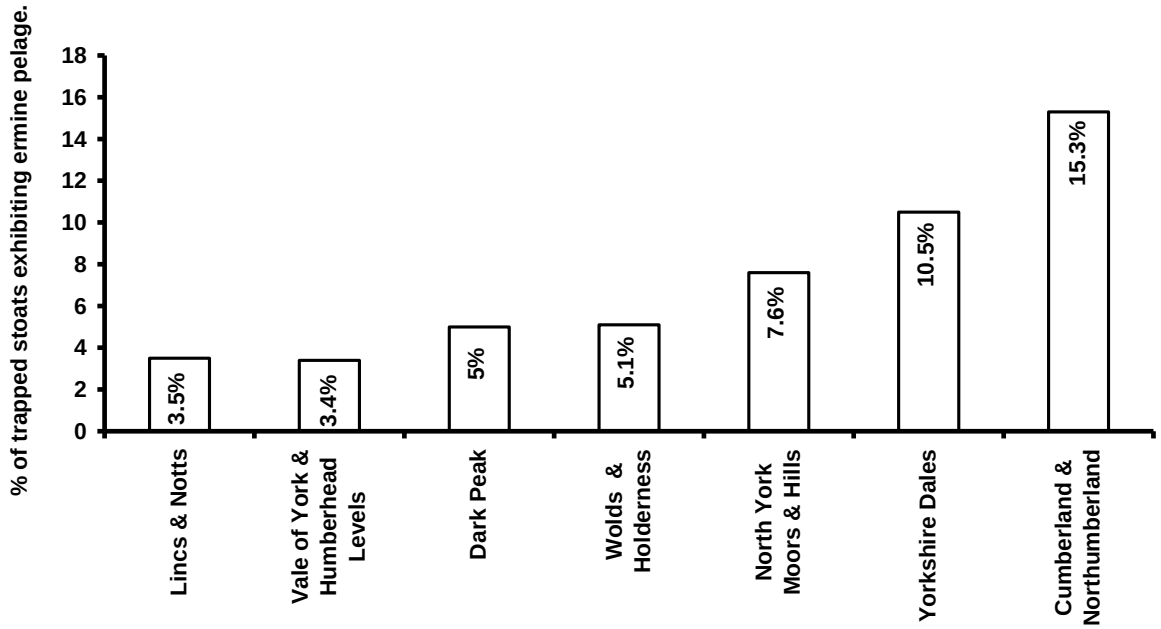

Figure 2: Percentages of stoats (both sexes) exhibiting ermine pelage in areas to the contrasting 'Natural Areas' of Yorkshire and adjacent areas to the north and south of Yorkshire.

The geographical location of Flintoff's shooting estates made possible the analysis of data according to Natural England's Yorkshire and Humber 'Natural Areas'. Appendix 1 provides the results from which Figure 2 is generated.

SEASONALITY: Sadly Flintoff's correspondents were only asked for gross annual figures so there was no attempt to indicate the months or seasons in which the animals were trapped or shot. Consequently the percentages of animals exhibiting winter whitening refer to annual rather than winter samples. They therefore represent a substantial but hopefully constant underestimation. In order to glean some data on the seasonality of winter whitening, YNU mammal records were examined for data on ermine and piebald pelage. The results given in Figure 3 show that winter whitening has been recorded from November to April with most sightings reported in February.

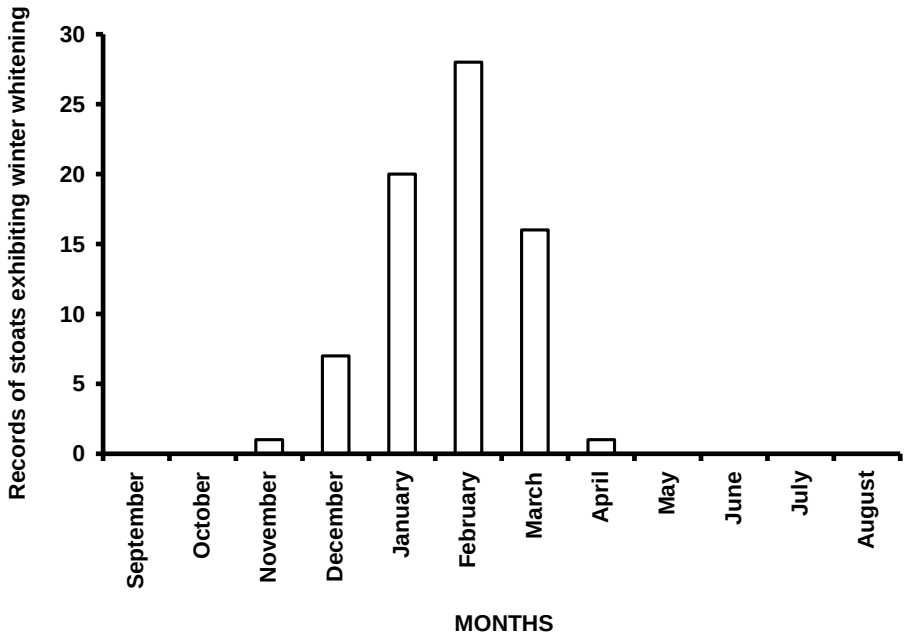

Figure 3: Seasonality of Ermine pelage observed in Yorkshire stoats (based on 73 records in YNU files).

DISCUSSION

Sex-linked - Although more males were killed (they wander more and are more likely to encounter traps (King 1989)), ermine was more frequently observed in females, in fact twice as frequently, indeed it appeared that all full ermine specimens were female (Flintoff 1933). Since genes which control the 'ermine' mechanism are thought to be linked with the sex

chromosome (of which females have two copies), females have a greater predisposition for winter whitening (McDonald & Harris 1998).

Not all stoat populations have the gene which gives rise to the winter whitening process. This tends to be absent in the south-east of Britain and present in the north-west (King 1989, McDonald & Harris 1998). With 'Watsonian' Yorkshire being on the boundary of these two zones, it makes the county an ideal laboratory in which to monitor changes in the winter whitening phenomenon.

Brown, White and Piebald - Shortening day length in autumn triggers the stoat's winter moult. If external temperatures drop below a certain threshold, pituitary hormones (which normally stimulate chromatophore development in the hair follicles) are suppressed. The newly forming outer 'guard' hairs therefore develop without pigment into the white, snow-camouflaged 'ermine' pelage. Spells of warmer weather encountered during the moult process can restore pigmentation, resulting in piebald stoats (King 1989, McDonald & Harris 1998).

Ermine ... its a regional thing - By analysing data separately for each 'natural area' of Yorkshire and counties to the north and to the south of 'Watsonian' Yorkshire, the results indicated regional differences in the proportion of the populations showing winter whitening. Appendix 1 and Figure 2 show that counties to the north of Yorkshire (Westmoreland and Northumberland) gave a figure of 15.3% of stoats exhibiting whitening. In 'Watsonian Yorkshire' the upland grouse moor areas produced most ermine as in the Yorkshire Dales with 10.5%, the North York Moors with 7.6% and the Southern Pennines and Dark Peak with 5%. The elevated Yorkshire Wolds also produced a figure of 5%. Whereas in the lowland regions and counties to the south of Yorkshire, whitening was scarcer, the Vale of York giving a frequency of 3.4% and Nottinghamshire and Lincolnshire jointly with 3.5%.

Yearly variations and climate change - The rate at which winter whitening appears in stoat populations evidently varies from year to year as demonstrated by field observations in the Southern Pennines and Dark Peak by the Sorby Natural History Society (Clinging 1984). Since the number of stoats exhibiting ermine is likely to vary according to prevailing temperature during the autumn moult, this makes them potential indicators of climatic oscillation. The abundance of 19th century specimens of ermine-coated stoats in museum collections suggests that more may have been available to taxidermists of the past than is the case today, thus

indicating colder winters a century ago. If our climate has changed significantly since the 1930's, a re-run of John Filntoff's survey of Gamekeepers' records should reveal differences in the proportion of winter whitening in trapped stoats in Yorkshire's Natural Areas and more particularly reveal changes in the rate of whitening in areas above and below 1000ft. Also, by combining indexes of ermine frequency with temperature data (not available in Flintoff's day), a more refined idea of the critical 'whitening' temperature may be obtained.

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APPENDIX 1: FLINTOFF'S (1930 & 1934) DATA RE-WORKED ACCORDING TO YORKSHIRE 'NATURAL AREAS'												
NATURAL ENGLAND YORKSHIRE 'NATURAL AREAS'	**No. of Estates**	**Brown males**	**Brown females**	**Pied males**	**Pied females**	**White males**	**White females**	**Total males**	**Total females**	**Total stoats**	**Total showing Ermine**	**% showing Ermine**
Yorkshire Dales & Dales Fringes	9	351	212	24	27	6	9	381	248	629	66	**10.5**
North York Moors & Hills	24	1441	986	82	89	3	23	1526	1058	2584	197	**7.6**
Vale of York	10	518	277	10	17	0	1	528	295	823	28	**3.4**
Yorkshire Wolds & Holderness	6	1,047	461	36	25	4	16	1087	502	1589	81	**5.1**
Southern Pennines & Dark Peak	2	88	63	0	2	0	6	88	71	159	8	**5**
Total Yorkshire Sites	**51**	**3,445**	**1,999**	**152**	**160**	**13**	**55**	**3,610**	**2,174**	**5,784**	**380**	**6.5**
Counties to north of Yorkshire	7	91	47	11	9	3	2	105	58	163	25	**15.3**
Counties to south of Yorkshire	2	179	66	6	2	0	1	185	69	254	9	**3.5**

Small mammals at St Nicholas Fields Nature Reserve, York Environment Centre

Ann Hanson

Introduction

In August 2012 YMG ran two small mammal ID and survey courses for volunteers and the general public at St Nicholas Fields Nature Reserve, York Environment Centre, located at Foss Islands near the centre of York. Grid ref. SE616516. The 24 acre site was historically a brick works and then a landfill site, and has been managed as an urban green space since 1994, being designated a Local Nature Reserve in 2004. See the St Nicks website for further information www.stnicksfields.org.uk. The courses included small mammal trapping, owl pellet analysis and a presentation on small mammal ID and survey techniques. This report details the results of the small mammal surveys.

Methods

Fifty Longworth traps were placed in a variety of habitats around the reserve for each course, baited with wheat, peanuts, sunflower seeds, carrots and blowfly pupae, and with a ball of hay for bedding.

Trap locations 04/08/12:
Site 1 – Wetland habitat around the pond in the environment centre garden (5 traps).
Site 2 – Hawthorn scrub and rough grass (10 traps).
Site 3 – Semi-mature deciduous woodland (10 traps).
Site 4 – Tall ruderal habitat, mainly rosebay willowherb (10 traps).
Site 5 – Dead hedge (5 traps).
Site 6 – Rough grassland (5 traps).
Site 7 – Blackthorn scrub (5 traps).

Trap locations 15/08/12:
Site 1 – Rough grass around stone circle (10 traps).
Site 2 – Hawthorn scrub and rough grass (5 traps).
Site 3 – Rough grassland (10 traps).
Site 4 – Semi-mature deciduous woodland (10 traps).
Site 5 – Rough grassland (10 traps).
Site 6 – Blackthorn scrub (5 traps).

Traps were set on the evenings of 3rd and 14th August and checked from 9.30am onwards on 4th and 15th August.

Results

Summary of small mammals captured at St Nicholas Fields Nature Reserve.

	04/08/12			15/08/12		
	Site 2	Site 3	Site 4	Site 2	Site 3	Site 4
Wood mouse	1	1	2	1	1	1

Appendix I shows a comprehensive table of results for this trap.

Discussion and conclusions

Only wood mice (*Apodmus sylvaticus*) were caught during both trapping sessions at St Nicholas Fields and in relatively low numbers. They were found in a variety of habitats including woodland, scrub, rough grass and

tall ruderal vegetation. The low species diversity of the site may be due to its history as a brickworks and landfill site (not to mention being capped with 50,000 cubic metres of clay in 1994 to make underground toxic waste safe before the area could become an Urban Nature Park), as well as its relative isolation from other areas where small mammals might thrive. The area had only sparse vegetation for several years after being capped, although seeing the site in 2012 after all the hard work of the Friends of St Nicholas Fields in planting trees and wild flower meadows, it is hard to believe it was once a fairly bleak and barren landscape. It's not surprising that wood mice have fairly quickly colonised the site, as their colonisation skills and ability to survive in quite open habitats is well known. Voles and shrews on the other hand may take a bit longer, although the habitat is now excellent for a range of small mammals. Colonisation routes do exist along Tang Hall Beck and Osbaldwick Beck, so the small mammal diversity of the site will no doubt increase in the future.

Thanks are due to everyone at York Environment Centre for their help and enthusiasm. Thanks also to Jonathan Dent of York Environment Centre and Rob Masheder of YMG for helping to lay the traps.

Appendix I

Table of results: small mammal surveys at St Nicholas Fields Nature Reserve, August 2012.

Weather: Warm and dry with sunny intervals.

Site	**Species**	**Sex M/F***	**Age A/SA/J***	**Weight (g)**
04/08/12				
Hawthorn scrub & rough grass (2)	Wood mouse	M	SA	19.0
Woodland (3)	Wood mouse	M	A	26.5
Tall ruderal (4)	Wood mouse	F	A	25.5
Tall ruderal (4)	Wood mouse	M	A	25.5
15/08/12				
Hawthorn scrub & rough grass (2)	Wood mouse	M	SA	20.0
Rough grassland (3)	Wood mouse	F	A	25.0
Woodland (4)	Wood mouse	M	J	17.0

* M = male; F = female; A= adult; SA = subadult; J = juvenile

Further small mammal surveys with East Keswick Wildlife Trust

Ann Hanson

Introduction

Back in July 2009 YMG carried out small mammal surveys at three sites within the parish of East Keswick, located to the north-east of Leeds near Harewood, at the request of East Keswick Wildlife Trust (Imprint no. 36, 2009). East Keswick Wildlife Trust is a local group of wildlife enthusiasts who currently manage several sites within the parish for their flora and fauna (see www.ekwt.org.uk). In 2009 we surveyed East Keswick Marsh, Frank Shire's Quarry and Ox Close Wood. By 2012 the trust had taken on the management of several new areas and we were asked to survey East Keswick Marsh, Beevers Meadow, Elliker Field and Coopers Marsh.

Methods

Fifty Longworth traps were placed in a variety of habitats at the four sites, baited with wheat, peanuts, sunflower seeds, carrots and blowfly pupae, and with a ball of hay for bedding.

Trap locations:
Site 1 – Beevers Meadow (SE362444)
Rough grass with patches of bramble and hawthorn scrub (10 traps).
Site 2 – Elliker Field (SE362445)
Rough grass with encroaching blackthorn scrub and extensive bramble patches (17 traps).
Site 3 – Coopers Marsh (SE363444)
Small stream flowing through blackthorn/hawthorn scrub, with nettles, great willowherb, meadowsweet and fleabane (8 traps).
Site 4 – East Keswick Marsh (SE360440)
Tall fen, with reed canary-grass, meadowsweet and great burnet (15 traps).

Traps were set on the evening of Friday 10th August and checked on Saturday 11th August from 9.30am onwards.

Results

Summary of small mammals captured in East Keswick parish.

	Site 1	Site 2	Site 3	Site 4
Wood mouse	2	5	4	1
Bank vole	0	1	1	0

Appendix I shows a comprehensive table of results for this trap.

Discussion and conclusions

Two species of small mammal were caught at four sites in East Keswick parish, including wood mice (*Apodmus sylvaticus*) and bank voles (*Myodes glareolus*). The majority of captures were wood mice, which were found at all four sites in habitats including rough grass, dense scrub and tall fen. The wood mice showed a good age distribution with adults, sub-adults and juveniles all being captured. Only two adult female bank voles were caught in Elliker Field and Coopers Marsh in rough grass and dense scrub habitats. A single wood mouse was captured in East Keswick Marsh, which was a bit disappointing as the habitat should be ideal for more elusive species such as harvest mice and water shrews. Other mammals recorded during this survey include molehills (*Talpa europaea*) and a distinctly foxy smell (*Vulpes vulpes*) at East Keswick Marsh.

Thanks are due to the members of East Keswick Wildlife Trust for another really enjoyable weekend of mammal surveys. Thanks also to Rob Masheder of YMG for all his help.

Appendix I

Table of results: small mammal surveys in East Keswick parish, August 2012.

Weather: Overcast, warm and dry.

Site	Species	Sex M/F*	Age A/SA/J*	Weight (g)
Beevers Meadow (1)	Wood mouse	F	SA	19.0
Beevers Meadow (1)	Wood mouse	F	A	22.0
Elliker Field (2)	Wood mouse	F	A	24.0
Elliker Field (2)	Bank vole	F	A	29.0

Elliker Field (2)	Wood mouse	M	A	30.5
Elliker Field (2)	Wood mouse	M	SA	21.0
Elliker Field (2)	Wood mouse	F	J	13.0
Elliker Field (2)	Wood mouse	F	J	15.5
Coopers Marsh (3)	Wood mouse	F	A	29.0
Coopers Marsh (3)	Bank vole	F	A	20.5
Coopers Marsh (3)	Wood mouse	M	SA	21.0
Coopers Marsh (3)	Wood mouse	M	SA	17.5
Coopers Marsh (3)	Wood mouse	F	A	25.0
Keswick Marsh (4)	Wood mouse	M	SA	19.0

* M = male; F = female; A= adult; SA = subadult; J = juvenile

"Over the hills and far away" – a report of YMG mammal recording walks 2012

Ann Hanson & Rob Masheder

Our first walk of 2012 started out from **Millington in the Yorkshire Wolds on the 29th January**. Before we had even left the village, our group of expert mammal recorders spotted a fox – on a weather vane… We headed out of the village, recording molehills and evidence of rabbits, ending up walking along Warren Dale where we spotted a big brown hare out in the arable fields. At Whinney Hill we located a fox scat and walking along Sylvan Dale found a rather macabre hare's head – could the two be related? A quick detour into Millington Wood found a grey squirrel drey, with several more molehills, signs of rabbits and field vole runs in the long grass alongside the road back to Millington village. We arrived back just in time for a rather fine tea shop experience in the Ramblers Rest.

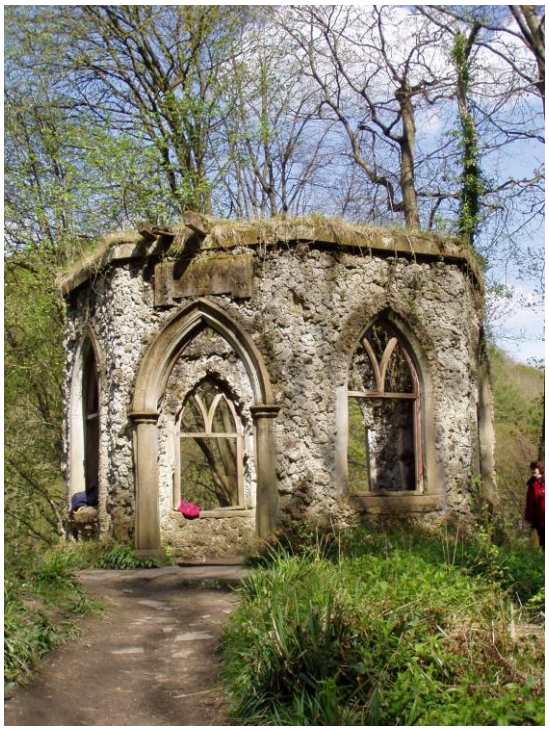
19th February found us at Follifoot near Harrogate, where a dead wood mouse close to the village looked like a cat kill. Heading out to Spofforth Moor we recorded molehills and then three brown hares chasing each other across the fields in an early fit of Mad March Hare frivolity. Lodge Farm

and Lodge Wood revealed more molehills and evidence of rabbits, as well as fox scats and squirrel nibbled pine cones. Spofforth Golf Course yielded a squirrel drey, more molehills and another fox scat. Roe deer slots and badger prints were found under the disused railway bridge just before a sunny lunch stop at Spofforth Castle. After lunch we headed back towards Follifoot along the Crimple Beck and were rewarded with otter spraint and footprints, as well as more molehills and rabbits.

Wass near Ampleforth was the location for our walk on 11th March on a glorious warm, sunny spring day. Heading out of the village we found the obligatory molehills and evidence of rabbits, followed by a grey squirrel and roe deer slots in Elm Hagg Wood. Our next mammal encounter was with some very friendly Exmoor ponies carrying out some conservation grazing on a small meadow. A little further on Snether Wood yielded more roe deer slots, badger footprints, a rather foxy smell and a £10 note (to be spent later on refreshments). We stopped for lunch at the Observatory in Snether Wood, admired the view and recorded molehills and more badger tracks. After lunch we recorded yet more molehills, roe deer slots and field vole runs near Cam Farm, followed by rabbit droppings and squirrel nibbled hazel nuts in Cockerdale Wood. Heading back towards Wass, we found badger footprints near Oldstead and a sett with dung pits in the woods near Scawling Farm. The road verge towards Byland Abbey yielded numerous molehills and rabbit burrows for our last records of the day.

An unfortunate dead hedgehog in the road was our first record on a walk from **Rievaulx near Helmsley on 22nd April**. In Air Bank Wood we found molehills and rabbit burrows, followed by a badger latrine on Bow Bridge with some fresh otter spraint under the bridge. We spotted a fast moving common shrew in a small swamp near Hawnby and yet more molehills in Oxen Dale alongside the River Rye. Meadow Hagg Wood yielded some squirrel nibbled pine cones and a possible badger hair. A bit further along near Caydale Mill we found a dead mole and a dead slow worm (cause of death unknown, but both were covered in tooth marks), followed by a dead common shrew in Low Gill Wood near Old Byland. Low Gill Wood also

yielded molehills, rabbit droppings, badger footprints, some possible fallow deer tracks and a dead rat. Having seen enough dead animals for one day, we retired to the tea shop at the abbey for tea and cake.



6th May saw us taking a stroll along the River Ure from West Tanfield near Ripon to Hackfall Wood. First records of the day were a fox scat, roe deer slots and molehills in Piccadilly Wood, with a perfect fox footprint on a sandbank next to the River Ure. At Old Sleningford Farm we found a badger latrine on the path by the river and some otter spraint next to a small beck in the adjacent woodland. Fields near Mickley yielded molehills and roe deer slots, with Hackfall Wood providing more molehills, a roe deer and a stoat, as well as numerous follies, ponds and fountains!

Pocklington Canal was the location on the evening of 7th June for a rather soggy walk. However, we were rewarded with water vole burrows and lawns at Canal Head near the lock, followed by a brown hare and a beautiful roe deer doe in the fields further along the canal. Finally we found some otter spraint under Coates Bridge and decided to call it a night before trench foot set in.

After a break for the summer, our first walk of the winter was from **Moor Monkton near York on 10th November**, following the rivers Nidd and Ouse. Minutes after leaving the village we found otter spraint on the banks of the Nidd, along with lots of fresh water mussel shells. At Sand Rigs there were molehills in the riverside pasture and, just past the confluence of the Nidd and Ouse opposite Beningbrough, a dead sheep that had been seriously scavenged by an unknown mammal… Rough grassland at Red House Ings contained field vole runs and feeding remains,

with a final record of a grey squirrel in Red House Wood before we high-tailed it back to the Ainsty Farm Shop Café for tea and cake.

The last walk of 2012 was from **Cod Beck Reservoir near Osmotherley on 9th December**. Molehills and signs of rabbits were evident in the woods alongside the reservoir, with an excellent find of fresh otter spraint under the dam at the end of the reservoir. Further along we spotted a squirrel drey in a small plantation, followed by a large brown hare running straight towards us in the fields at Black Share. Beacon Hill yielded more molehills and rabbit burrows, followed by a fox scat in South Wood. And finally for 2012, Cote Garth Wood alongside Cod Beck Reservoir gave us more molehills and some squirrel nibbled pine cones. And so it was back to The Coffee Pot in Osmotherley for our customary tea and cake and a discussion of the day's finds.

Thanks to everyone who joined us for some lovely walks in 2012, producing plenty of mammal records, lots of fun and once again some excellent tea shops!

Ann Hanson (Expedition Leader) and Rob Masheder (Navigator)

Wild about Wood Festival

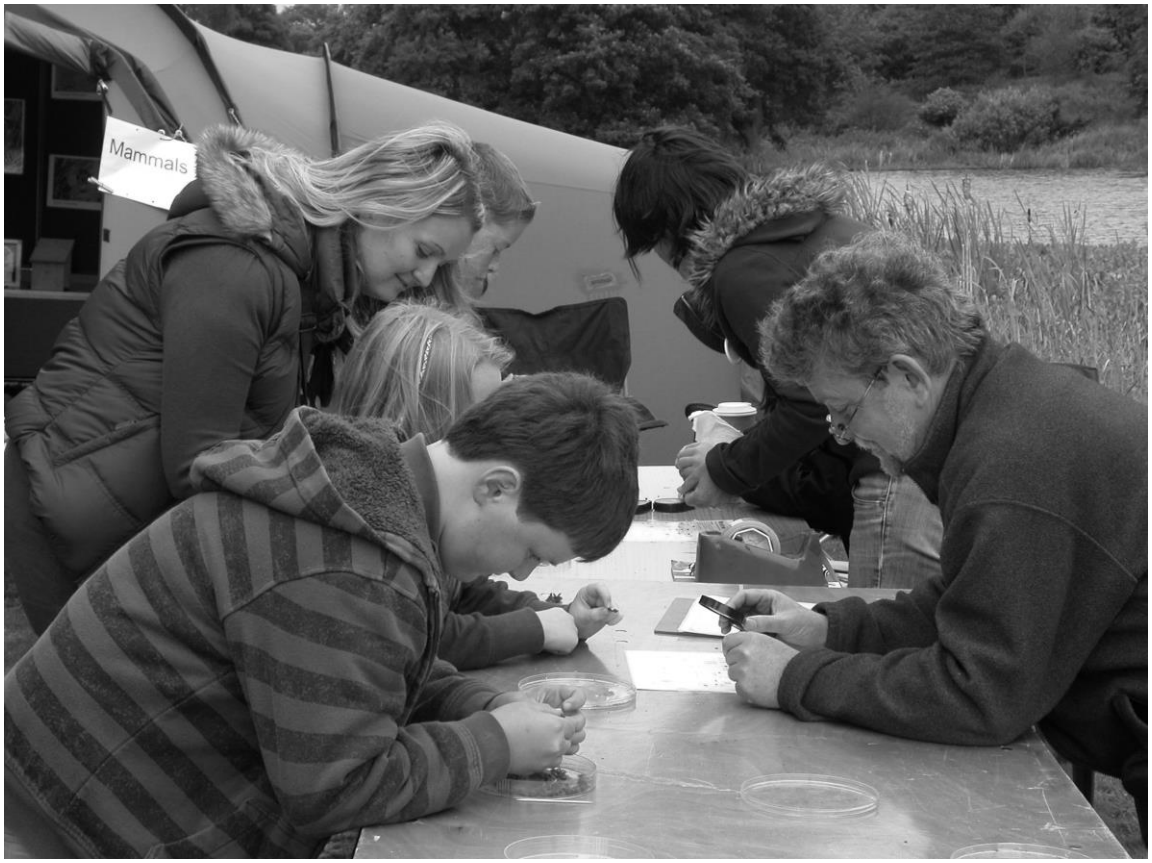
Geoff Oxford

Another year and another Wild about Wood Festival, with lots of excited children getting to grips with dissecting owl pellets, learning about the lethal effects of rubbish on small mammals, and marvelling at a collection of bleached skulls. The YMG tent was part of the Discovery Zone where children and their parents book in for a wide range of events including pond-dipping, woodland fairy stories, slugs and snails, mini-beast hunting and, of course, mammals. The weather was kind to us over the weekend, particularly on the Saturday. The number of visitors to the YMG tent over the two days was difficult to estimate but we were kept pretty busy with the pellet-shredding and chatting to people who drifted by.

This year I had remembered to bring Boris the badger, who sat outside the tent and was visible right across the Discovery Zone. He must have been responsible for drawing in at least some of our visitors. It was probably the first time many youngsters had got close to a badger and they enjoyed feeling the hair and the claws, and learning a little about how and where they live. Boris, on duty as a result of a traffic accident, also illustrated the perils of crossing a road without looking. Only one child, as far as we know, attempted to ride the badger wild-west style. Inside the tent Olly, a mounted barn owl, continued the theme of owl pellets and had its own sad message – never catch an express train head on! We again ran the competition to identify the lower jaws of four small mammals using a simple key. Visitors with only a vague idea of the answers nonetheless left

A young mammalogist meets Boris the badger.

Photo: Kathryn Hardaker



Paul and Ione (both right) helping to identify small mammal remains from owl pellets.

Photo: Geoff Oxford

clutching a YMG cotton shopping bag, probably the easiest competition they will ever enter.

These events are exhausting for those manning the stand, but at the same time very satisfying - several children who were there last year had remembered much of what had been explained to them twelve months earlier. I am most grateful, therefore, to those who helped with our display this year – Sian Abbey, Ione Bareau**,** Paul Butler and Mary Youngman. Special thanks, as always, to Steve and Sian Abbey for their logistical support with tent, tables and chairs.

Roma Oxford kindly commented on a draft of this piece.

West Tanfield dormouse report 2012

Mary Youngman

In the eighth year of the West Tanfield dormouse reintroduction project, the team started its activity by removing almost 90 boxes from trees scheduled for felling. Later, many of the boxes were re-positioned in other unaffected areas of woodland. We also added several more nest tubes into the surrounding hedgerows. Of particular note this year was the plethora of pygmy shrews found in the boxes during the August check.

Below is a summary of this year's box checks.

Month	Age	Sex	Active/Torpid	Weight (g)	Number of probable dormouse nests found	Possible dormouse activity in hedgerow tubes (*)
June	Adult	Male	Torpid	19	4	-
August	Adult	Female	Active	16.5	12	-
	Adult	Male	Active	16.5		-
October	Adult	Female	Torpid	22	27	2
	Adult	Female	Active	24		
	Adult	? Escaped	Active	?		

(* tubes are only checked in October).

Many thanks, to everyone who helped with the dormouse monitoring this year. If anyone would like to help with monitoring in 2013, please contact

Ann Hanson on 0113 2811286 or by emailing fieldwork@yorkshiremammalgroup.org.uk.

One of the many pygmy shrews found during the August box check.

Dormouse monitoring in Freeholders' Wood 2012

Ian Court[1] & Ian White[2]
[1]Wildlife Conservation Officer, Yorkshire Dales National Park Authority and [2]Peoples Trust for Endangered Species

Introduction

A reintroduction of 35 captive bred Hazel Dormouse *Muscardinus avellanarius* into Freeholders' Wood, Aysgarth was undertaken in 2008 and has been documented by White and Court (2012). This report provides the results of the annual monitoring work and a summary of the 2012 monitoring season.

Methodology

The monitoring work was undertaken in accordance with the National Dormouse Monitoring Program survey guidelines (PTES, 2011) with nest boxes checked by licensed fieldworkers once each month from May to October. The numbers of boxes that contained distinctive dormouse nests but where no dormice were present were also recorded. Where Dormice were found the sex, weight, breeding condition and whether the animal was active or in torpor were recorded. The Dormice were also aged as an adult (i.e. an animal that has survived at least one winter) by the orange-brown colour of the fur, or as a juvenile (i.e. independent young in their first year with a weight of >10g) with more brownish fur than an adult. The number of young were counted, weighed, where appropriate, and classed as pink (no fur), grey (grey fur and eyes still closed) or eyes open (with grey-brown fur and eyes open).

Monthly weather summaries for 2012 have been derived from seasonal summaries provided by the Met Office (2012).

Results

The number of Dormice and empty Dormice nests found during monitoring work between 2008 and 2012 is shown in Table 1 and Figure 1.

Photo: Roger Gaynor.

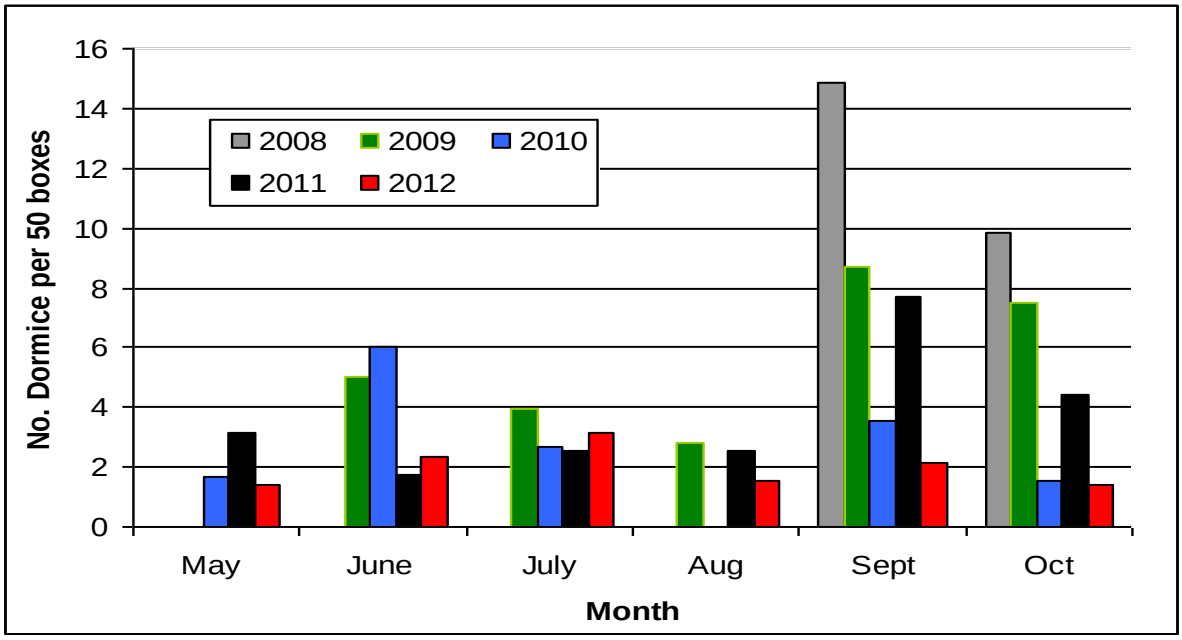
Table 1. The number of Dormice and empty Dormice nests found during monthly monitoring work between 2008 and 2012.

Survey Date	Total no. of dormice	No. of empty nests	No. of boxes checked	No. Dormice per 50 boxes checked
23/06/2008	35	n/a	0	n/a
29/09/2008	58	32	195	14.87
23/10/2008	39	34	198	9.85
22/04/2009	6	0	229	1.31
21/06/2009	25	4	229	5.46
22/07/2009	14	13	189	3.70
23/07/2009	4	4	60	3.33
21/08/2009	13	22	229	2.84
22/09/2009	40	27	229	8.73
22/10/2009	36	28	229	7.86
26/05/2010	8	10	240	1.67
23/06/2010	29	12	240	6.04
20/07/2010	13	25	240	2.71
23/09/2010	17	35	240	3.54
29/10/2010	8	27	240	1.67
23/05/2011	16	5	254	3.15
28/06/2011	9	14	254	1.77
18/07/2011	13	24	254	2.56
15/08/2011	13	28	254	2.56
26/09/2011	39	11	254	7.68
12/10/2011	15	11	169	4.44
22/05/2012	7	2	254	1.38
18/06/2012	12	8	254	2.36
16/07/2012	16	8	254	3.15
20/08/2012	8	20	254	1.57
17/09/2012	11	16	254	2.17
15/10/2012	7	26	254	1.38

The monthly weather summary for 2012 was as follows:

March - March was a very warm and dry month with the mean UK temperature 2.3 °C above the 1981-2010 average, resulting in the warmest March since 1957 with near record temperatures. There was also very low rainfall making it the driest March since 1953.

Figure 1. The number of Dormice found per 50 boxes checked at Freeholders' Wood, Aysgarth.



April - It was the coldest April since 1989 with a mean temperature of 0.6 °C, below the 1971-2000 average. In many areas average rainfall was two or three times the monthly average making it provisionally the wettest April on record across the UK.

May - The cool and wet conditions from April continued into the first three weeks of May with temperatures rising only in the last week of the month.

June - There was no change in weather conditions during the month with heavy rain and strong winds early in the month, resulting in the wettest June since 1910.

July - Another cool month with high precipitation with the mean UK temperature 1.0 °C below the 1981-2010 average and many areas having over twice their average rainfall.

August - Further prolonged periods of heavy showers or longer periods of rain continued throughout the month with higher than average rainfall in many areas.

September - A notable change in the first half of the month with fine and reasonably warm weather, but it became much cooler with significant rainfall and high winds at the end of the month.

October – An unsettled month with rainfall and sunshine total close to long-term averages but mean temperatures were 1.3 °C below the 1981-2010 average, with provisional results suggesting it was the coldest October since 2003.

Discussion

The number of Dormice present within the wood declined in 2012, presumably due to the cool and wet conditions during the season. It is likely that the warm weather during March will have induced an early emergence from hibernation, but the subsequent cool and wet conditions in April and May will have resulted in poor flowering of trees and shrubs leading to a reducing food supply for the Dormice. Bright *et al*. (2006) state that cool night time temperatures will reduce nocturnal foraging activity and, that as the fine fur of Dormice is not water repellent, wet weather can also prevent them from feeding.

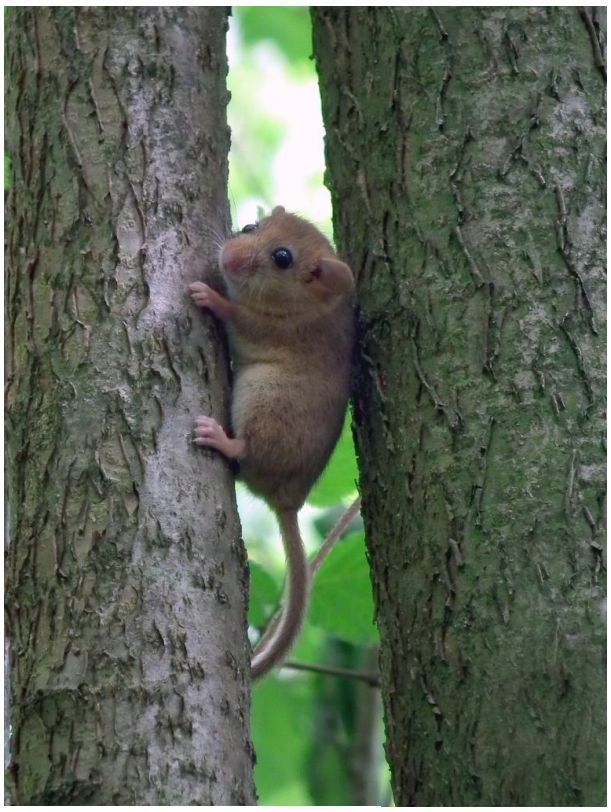


Photo: Roger Gaynor.

Based on the results of other reintroductions schemes it would be expected that following a drop in numbers in year two after a release, the Dormouse population should begin to stabilise and increase in subsequent years. The predicted increase in the population in year four of this scheme has not happened, most likely due to reduced foraging activity and low food availability as a result of cool and wet conditions in 2012, particularly in April and May.

Acknowledgements

We would like to thank Roger Gaynor, Mike Moran, David Preston and Paul Sheehan for undertaking the monitoring work and Cathy Bergs, Moira Bullen and Alison Crisp for their assistance with the fieldwork.

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Ferreting in the fog!

Colin Howes
YNU Mammal Recorder

Ah! Those white remembered dog droppings.

Without anyone realising it, while our backs were turned, while distracted by being distractive, our environment seems to have mysteriously lost a specialist habitat type, an element of street adornment, a category of public sculpture and yes Bah Gum, a cultural icon … where indeed have those white dog droppings of our childhood gone?

Fifty-odd years on from the quality Portland stone white dog dropping era, we find ourselves in a changed world where flaccid spineless excrement is extruded into an environment too harassed by the conspiracy of prissiness to savour the finer detail of how our natural surroundings actually work.

Firstly, those plump, glistening, serpent-coiled or log-like presentations, usually from the larger dog and big enough to clamber over, were heaved with effort - kneed up to the ears -, rectal-warm and steaming into a chilly 1950s world.

Then, given time, they were ecologically digested by a procession of specialist fungi, flies, bacteria and beetles. Even slugs on a damp evening would join in to munch and slurp their share of protein and calcium.

Finally, the undisturbed faecal carcasses, organically purged and reduced to their mineral skeletons of hair, gristle and bone-meal, were left for bitter cold-war winters to freeze-dry or for the long hot post-war summers, enriched with Strontium 90, to bleach as crisp and white as concrete.

Hunks of gnawed knucklebones, cadged from the butcher, were surely the mainstay of the white chalky element in the good old traditional Yorkshire dog dropping, particularly from the days of food coupons, privation and the black market. But where has our relative affluence and sophistication got us?

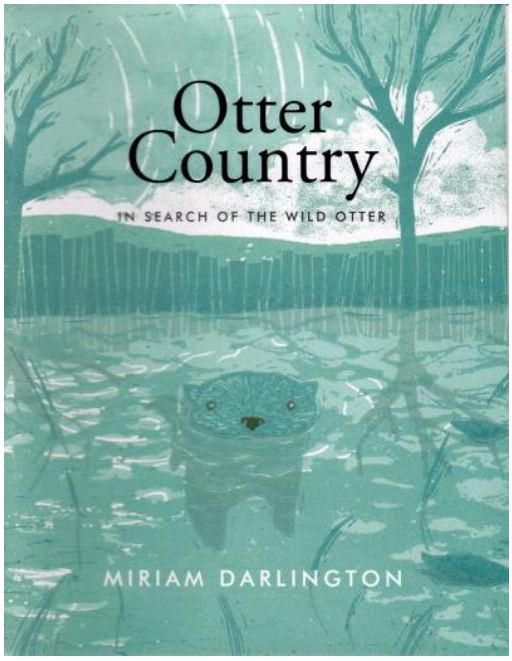
Those ubiquitous mucilaginous ‘meaty chunks’ served up by the pet food moguls, seems to have melted the ‘backbone’ out of today’s droppings. Furthermore, the persistent nattering of the ‘Keep Britain Tidy’, ‘Best Kept Village’, ‘Britain in Bloom’ and kindred brigades, has to shoulder much of the blame for this lost habitat. In our municipally correct pooper scooped world, dog droppings are removed from public show too quickly for the elegant process of ecological recycling to take place. It seems our dog droppings are no longer allowed to go white and age gracefully.

Ironically, those reviled but vital organisms, whose role in life is to recycle the world’s excrement, are partners with us in what since the 1992 Rio ‘Earth Summit’ Conference we loudly trumpet as our ‘Urban Biodiversity’. It comes as some comfort to note that *The Biodiversity Audit of Yorkshire and the Humber*, a corpulent and learned document, proudly endorsed by John ‘Two Jags’ Prescott MP when Deputy Prime Minister, exhorts Government Agencies, Planning Authorities, Uncle Tom Cobley and All, to identify and protect scarce and declining regionally important habitat types. Surely the habitat of the native dog dropping with its foetid community of natural recyclers should rank among these.

After extensive field investigation, I can report that biodiversity aficionados can rest assured that there are odd corners of God’s Own County where white dog droppings from traditionally fed mutts tenaciously cling on. Along heavily used dog-walks, where the daily ‘rain’ of excrement overwhelms efforts to remove it and where the harsh weather whips in off the North Sea or the Pennine tops, a few storm-bleached

excrescences, as rare as glow-worms, are still to be found stolidly marking out the edges of select public rights of way … but mind where you tread.

Book reviews

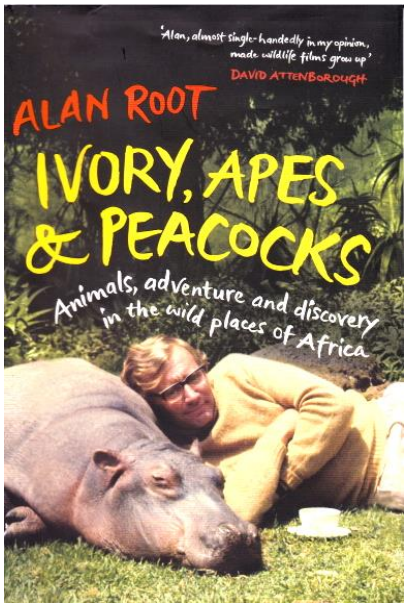


Otter Country: In Search of the Wild Otter (2012)
by Miriam Darlington

Granta. 362 pp. ISBN 9781847084859.
£20 hard back.

Miriam Darlington's interest in and quest to find wild otters was very much inspired by Henry Williamson's classic book, *Tarka the Otter* and Gavin Maxwell's, *Ring of Bright Water*. Over the course of a year and a half she travelled throughout Britain in her search for wild otters. Starting from her home in Devon Miriam visited the wilds of Scotland, Cumbria, Wales, Northumberland, Cornwall, Somerset and the River Lea to her childhood home near the Ouse. During these travels she met a number of otter pundits including members of the Williamson family, Gavin Maxwell's heir as well as scientists, fishermen and hunters. Miriam also learnt how to track otters and watch them in the wild. Although there are snippets of the natural history of otters the strength of this book lies in her passion for the animals and the lyrical prose of this prize winning poet.

Gordon L. Woodroffe



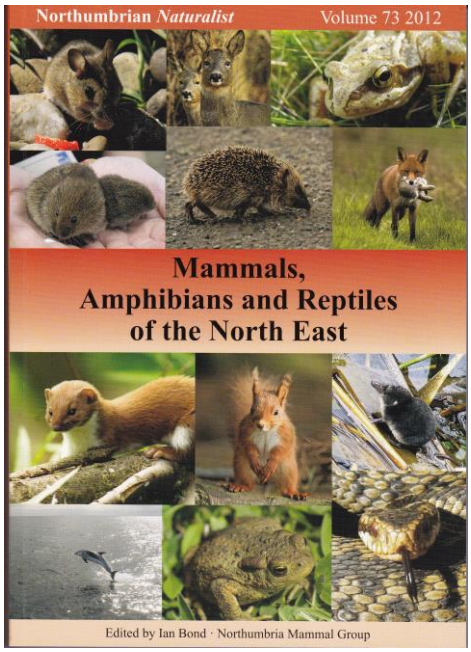
Ivory, Apes & Peacocks (2012)
by Alan Root

Chatto and Windus. 307 pp.
ISBN 9780701186036. £20 hard back.

Alan and Joan Root revolutionised wildlife films during the 1960s and 1970s. This book tells the story of Alan's life's work, from his arrival in Kenya as a young boy to the making of many memorable films. These studied the whole ecosystem. For example, these included the first time that the wildebeest migration had been filmed from a balloon, then flying it over Mount Kilimanjaro. Other firsts included filming inside a termite mound and a hornbill's nest, but one of his most dangerous assignments was diving with hippos and crocodiles in *Mzima: Portrait of a Spring* in Kenya to show hippos swimming underwater. Alan and Joan were also instrumental in helping Dian Fossey launch her Mountain gorilla research project in Rwanda. Many years later they were commissioned to film a charging silverback for a sequence in the Warner Bros film *Gorillas in the Mist*. A gorilla's charge is usually nearly all bluff but this gorilla wasn't bluffing! Alan found himself in a powerful grip by his left leg and waist, lifted into the air and flung down hard. Other firsts were the filming of the rare okapi and Congo peacock in the Ituri Forest but the last animal on his list of rarities in the Congo was the capture of the almost unknown aquatic genet, *Osbornictis piscivora*. However, in addition to his skills as a cameraman, his love and knowledge of wildlife comes shining through this eminently readable and interesting book. Sadly, Joan Root, his wife and collaborator for over 30 years, was brutally murdered in retaliation for her conservation campaigning.

The book is well illustrated with a mixture of photographs and excellent pencil sketches. I cannot recommend it too highly for anyone interested in the world's wildlife and wild places.

Gordon L. Woodroffe



Ian Bond (ed.) *Mammals, Amphibians and Reptiles of the North East*. *Northumbrian Naturalist* **73**: 1-246 (2012). Price £13.50 including postage and can be obtained *via* the Natural History Society's website: http://www.nhsn.ncl.ac.uk/news/mars-ne/

Many YMG readers will be familiar with the book *Yorkshire Mammals* edited by Michael Delany and published in 1985. That publication was an update of the seminal work by W. E. Clarke and W. D. Roebuck (1881) entitled *A Handbook of the Vertebrate Fauna of Yorkshire*. The volume under review here has a very similar aim and format to *Yorkshire Mammals*: its particular Victorian predecessor was *A Catalogue of the Mammalia of Northumberland and Durham* by H. T. Mennell and V. R. Perkins (1864).

The present volume, produced by the Northumbria Mammal Group, covers all terrestrial and marine mammals of the North East, as well as the amphibians and reptiles. The 'North East', as defined here, encompasses the counties of Northumberland and Durham and also the former county of Cleveland (vice counties 66, 67 and 68 and a small part of 62). It therefore abuts the area of North Yorkshire covered by our own embryo atlas (Oxford *et al*., 2007) and, as such, should be of great interest to YMG members.

The book begins with a short introduction and outline of the key geological, botanical and historical features of the area covered. In the introduction, Ian stresses that 'this is not meant to be an atlas even though distribution maps have been produced for many species'. The explanation for this coyness is that in some cases there are no dots where a species is known to be or, conversely, there are dots where presence has not been properly verified. These caveats surely apply to all mapping efforts including extensive countrywide surveys, for example by The Mammal Society and the Botanical Society of the British Isles. Not only will we never have complete knowledge of current distributions but, for many species, occupied ranges are constantly changing, such as those of invasive species and organisms affected by climate change. As a result, no biological maps can ever match a geographical atlas for completeness and

stability; they serve different purposes so one shouldn't get hung up on their approximate nature.

The main body the book is divided into sections, carnivores, ungulates etc. and within these, after a brief overview of the group, two or three pages are devoted to each species. Each of the species' vignettes are accompanied by a line drawing and a map of pre- and post-2000 distributions. The line drawings are (with a few exceptions) of an extremely high standard and, in my opinion, real works of art – some comprise reproductions of woodcuts by the renowned Thomas Bewick whereas others were specifically produced for this book. There are also ten pages in the centre with high-quality, colour photographs. The maps likewise are clear and very well-produced. The species accounts make fascinating reading. They contain, as expected, a broad-brush description of the ecology of each mammal but this familiar information is interspersed with historical records, often relating back to Mennell and Perkins (1864), personal experiences of the author and a lot of other unpublished material. This is real browsing material for a rainy day.

As well as covering the 'normal' mammalian fauna of the North East, one section deals with extinct and evasive species. Extinct mammals include hippos, elephants and elk from the Pleistocene, and beavers, wolves, wildcats etc. from relatively more recent times. The escaped species list contains an amazing array ranging from porcupine in Shinecliffe, red-necked wallaby in Lanchester, arctic fox in Alnwick and racoon in Darlington. Exotic cats, of course, have several pages devoted to them – Ian Bond gave a talk to the YMG last year on this topic.

In summary, this is a very well-produced book full of fascinating material and of considerable interest whether or not one lives in the North East. The editor, individual authors of the various sections, illustrators and photographers are to be congratulated on a really fine piece of work. Not only that, the book is astonishingly good value at £13.50 inc. postage and packing. So do put it on your birthday/Christmas lists – you won't be disappointed.

References

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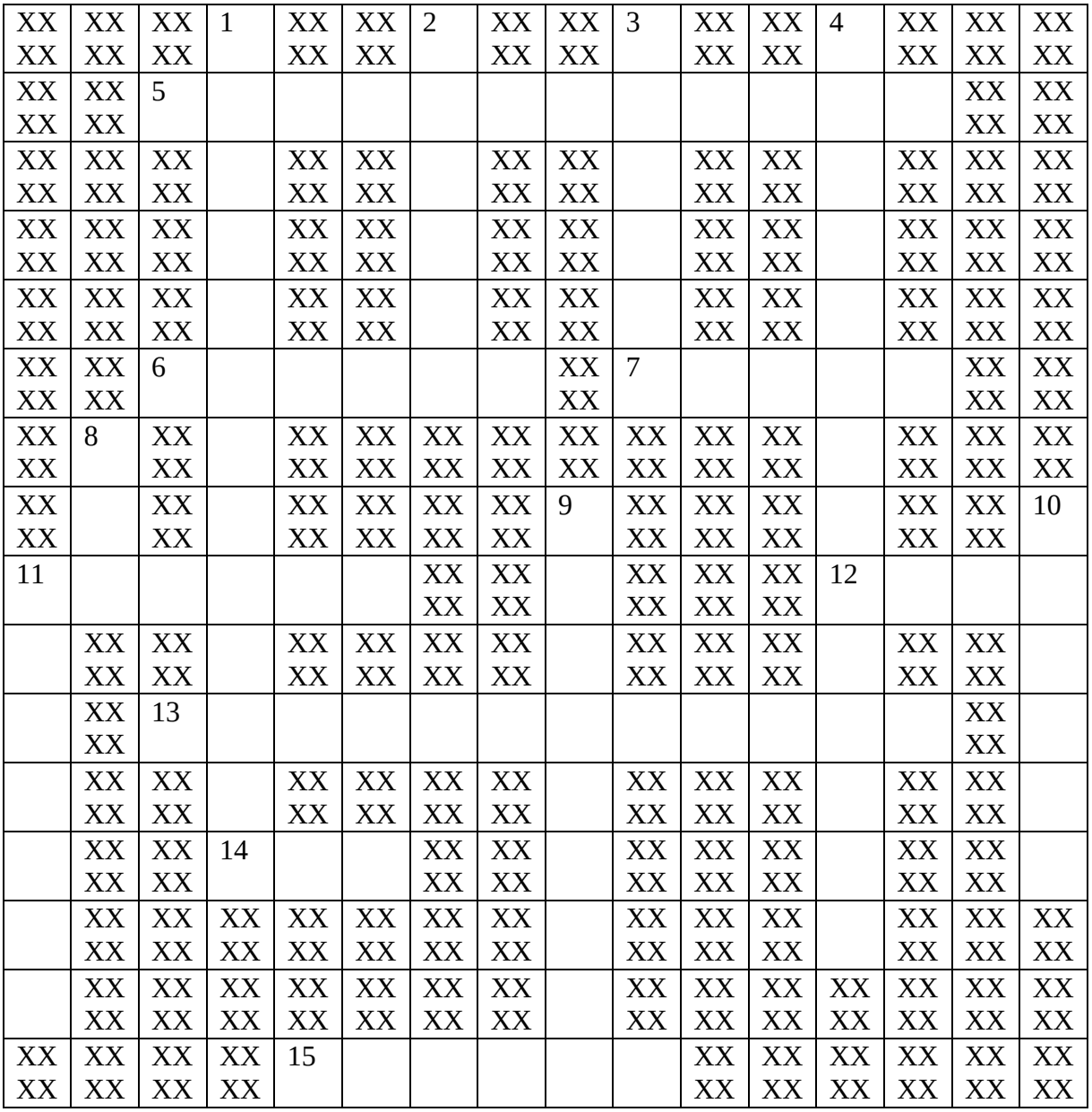
Geoff Oxford

YMG Crossword



ACROSS

5 Smart steamer in Scotland (6,6)

6 Seal, east and west (6)

7 Blake's burning bright (5)

11 A leading city ? (6)

12 see 11d

13 Old wives stick ? (9,3)

14 May arrange attention (3)

15 Has bat here, hedgehog in Arabia (6)

DOWN

1 Roman cooks endless lemon (5,8)

2 Rudolf the red nosed should be this (6)

3 Move it with barb ? (6)

4 Found on Latin head, it's said (5,9)

8 Clue is cunning ? (3)

9 Toe powder for dormice ? (5,4)

10 Brown or black (6)

11 & 12a O rain crocus, in water (7,4)