

BADGERS IN BUCKINGHAMSHIRE

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In 1960 the Mammal Society embarked on the National Badger Survey, a detailed and comprehensive study of the species throughout Great Britain, of which the objects were:

- (a) To map the distribution of badger sets in Great Britain.
- (b) To discover what ecological factors had a bearing on this distribution.
- (c) To make more detailed studies of the distribution and density of sets in selected areas; for this purpose units of 10 km. were chosen.
- (d) To estimate from these data the comparative population densities in these areas.
- (e) To provide data for determining future changes in the status of this animal.
- (f) To take note of persecution or measures of control prevalent at the time.

The Survey was operated on a county basis. The writer was both the Organiser of the whole survey and the Recorder for this county.

THE FINDINGS OF THE SURVEY

THE DISTRIBUTION OF BADGER SETS

At the time of writing, 395 sets have been located and plotted. The area covered stretches from Newport Pagnell in the north to below Slough in the south and from the eastern boundary to the western throughout this distance.

The highest concentration of sets occurs in the Chiltern Hills where conditions are specially favourable for badgers; a further concentration, though smaller, occurs to the west of Aylesbury. North of the Chiltern escarpment the topographical features of the county contrast sharply with those existing in the Chilterns; here, the large wooded areas are missing as are the high hills. Woods are replaced by hedgerows, copses and a few parklands, and it is in these places that the sets are found.

Badgers are adaptable animals and if the ideal situations are not available they will often settle for something less; however, certain factors must be present though not necessarily all of them at once. These factors are:

- (a) Food availability.
- (b) Good covers.
- (c) Ease of digging.
- (d) A slope.
- (e) Good drainage.

It is obvious that (a) must be present always, but instances could be quoted where one or more of the remaining factors have been relinquished, though rarely good drainage.

Although the survey in North Bucks is not complete, there is sufficient evidence available at this time to show that badgers were once more numerous there than they are today. It is obvious from the pattern which has emerged that some serious disturbance of the population has occurred. The pattern referred to shows a "mosaic-like" effect on the ground and nowhere are there any concentrations of sets as is common elsewhere. The sets are widely scattered and isolated one from another.

Such a pattern, ecologically speaking, is recognised often as the prelude to the extinction of a species, and later on in this report, this problem will be discussed and some conclusions drawn as to the possible cause of this.

In South Bucks, the broad belt of chalk which comprises the Chilterns gives way to a variety of clays, sands and gravels. Here, woodlands mostly occur in the clays and glacial gravel, whilst in the extreme south, the town of Slough and its suburbs stretches almost completely across the county. In such an environment the badger does not appear to flourish and those sets which do occur are mostly in the "fingers" of chalk which extend down from the Chilterns. Occasionally, a set is found in a "pocket" of sand or even alluvium or glacial gravel, but chalk remains the favourite site.

Large areas which are wooded, e.g. Burnham Beeches, might appear to the layman to be ideal for badgers to live in, but do not have a single set in them; most of such areas are sited on the Reading Beds which comprise mottled clays, sand and pebbles as base, or London Clay and Glacial Gravel.

Here again, there are no concentrations of sets, and such as are found are widely scattered. It would seem likely that geological factors are the prime cause of such "scattering" here.

From this, it is concluded that the Chilterns provide the stronghold of the badger in Bucks. Elsewhere in the county the species is in a precarious position.

POPULATION

It would be premature, at this stage of our investigation, to decide whether badgers are on the increase or decrease in this county. Most people seem to think that they are numerous and on the increase, but their opinions are based on mere guesswork or on faulty deductions from too few facts. The most common fallacy is to suppose that wherever there are sets, there are badgers living in them. There have been, of course, at some time, but they may not be there now.

A further fallacy is that the size of a set is indicative of the number of badgers living in it—such is not the case. Usually, reports of a large number of badgers at one set prove upon investigation to be due to a number of cubs being present; these of course, normally leave the breeding set in the autumn and are not permanent residents. Again, there are occasions when, for reasons not yet fully understood, badgers from a wide area will congregate at one

particular set for a day or two, afterwards dispersing to their own sets. Such gatherings may be observed by the casual watcher and from this, it is assumed that all of them live there.

It is exceedingly difficult to check on the movements of even a small group of badgers for it has been found that they move around an area to a far greater extent than might be imagined. Such movements would at first appear to be erratic and although there is much yet to be learnt, a discernable pattern is beginning to emerge and no doubt we shall one day fully understand the purposes behind them.

It was interesting and not a little surprising to discover that out of the 395 sets checked, only a little over one-third were occupied by badgers.

Table 1

Occupied sets	41.14%	} 58.86% empty
Disused sets	...	...	...	...	27.30%
Used sets	...	...	...	...	31.56%

Note. "Used sets" differ from "Occupied sets" in that the former are not permanent living quarters, but are only used for indefinite periods during a year.

SIZE OF SETS

The largest set so far recorded by the Survey in Bucks has 75 entrances and is 30 yards long by 20 yards wide. The amount of excavated material from this set is estimated to weigh approximately 50 tons! Sets of this size and indeed larger are by no means uncommon in other counties, sometimes covering an acre of ground.

Digging is not always easy: in the Chilterns large flint boulders occur throughout the Upper Chalk layer which, near Tring, reaches a depth of some 230 feet. These large sets are witnesses to the badger's amazing propensity for digging and also to its strength.

Nevertheless, badgers do not construct their underground fortresses overnight; rather, they are constructed by generations of badgers. Not all badgers dig at the same rate, some are more enthusiastic than others. There is some evidence to show that the rate of growth of a set might be accelerated to some extent by constant filling-in of holes, especially when such filling is done thoroughly and tins and wooden poles are used to block entrances. When this occurs, if the badgers happen to be stubborn in possession of the set, they will excavate a new entrance and passages leading to it.

It is likely that there are other factors which dictate how much excavating is done at any one set; for instance, new birth chambers being constructed for litters to be born in or, again, an increase in the population of the set.

Generally speaking, the size of a set gives some indication of its age, and the set mentioned above is undoubtedly fifty years old and may be nearer one hundred. As there are no established criteria for judging the size of a set, the figures given below rest upon the writer's own estimates. These are based

on the quantity of material which has been excavated; unless we dig the set out we have no other evidence at our disposal.

Table II

Small (5 or less entrances)	...	...	...	...	...	24.83%
Medium (6-15 entrances)	...	...	...	...	...	51.06%
Large (16-50 entrances)	...	...	...	...	...	23.40%
V. Large (51 and over)	...	...	...	...	...	0.71%

ALTITUDE

The highest point in the county lies at Coombe Hill near Wendover, here, the Chilterns rise to a maximum of 852 ft. To date, the highest set recorded is at 800 ft. whilst the lowest is at 75 ft. Ernest Neal in his book *The Badger*, states that badgers are most commonly found at heights between 100-600 ft. and the findings in this county would appear to confirm this.

Land lying below 300 ft. tends to be heavily cultivated or built upon, so that man has driven out the badger. At high altitudes there is little surface disturbance, but food is far less readily available. It is therefore at medium heights, such as there are in Chilterns, that the badger finds his most favourable habitat.

TABLE III

0 ft to 100 ft	1.30%
101 ft to 200 ft	2.34%
201 ft to 300 ft	15.10%
301 ft to 400 ft	21.39%
401 ft to 500 ft	33.85%
501 ft to 600 ft	11.46%
601 ft to 700 ft	11.98%
701 ft to 800 ft	2.60%
801 ft to 852 ft	NIL

SLOPE

The presence of a slope greatly assists badgers in the removal of excavated material from the set entrances. Slopes are easier to commence digging into than is flat ground and again, soil stratas are more readily detected on slopes as there is more likelihood of their being exposed. Finally, when an entrance is on a slope, excavated material builds up naturally until it forms a conical funnel with the entrance at the lowest point. This has the advantage of catching wind eddies from all directions and enabling the badger to detect danger by scent without exposing itself. The funnel may also possibly act as a form of crude amplifier for sounds.

Occasionally, sets are found on flat, or nearly flat ground, and without any cover at all. This may appear odd to the observer especially when there is a wood nearby with slopes and cover available; when such a situation is found, one can be sure that there is some good reason for this although it may not be readily apparent. Most likely, the answer will lie in good drainage or ease of digging, factors which take precedence over slope and cover.

The proportion of sets occurring on slopes as against those on flat ground is as follows :

TABLE IV

Slope	90.07%
Flat	9.93 %

GEOLOGY

During the winter of 1966/67 and 1967/68 a detailed study was made of the distribution of badger sets in relation to the geology of the Chilterns.¹ An area of some 250km² was chosen and 218 sets plotted on a six inch Ordnance Survey map; these were then correlated with a Geological Survey map. It was found that with the sole exception of one set, all were sited in chalk; the odd one out was in an old pit and reached down into the chalk below the clay plateau.

Although there were woods on the clay plateau, with slopes in plenty, no sets occurred in them. It was concluded therefore, that while cover and good drainage tend to coincide in this area, drainage appears to be the prime factor.

Owing to the difficulty in obtaining Geological Survey maps for much of the county, it has not been possible to make similar studies in other parts of it where the soils are of a different nature from those in the Chilterns.

In Table V therefore, it has only been possible to analyse those sets which occur in places for which maps are available and the percentages shown are for 271 sets against 395 sets in other tables.

TABLE V

Chalk with Flints	82.62%
Chalk Rock	1.42%
Undivided & Flood Plain Gravel	3.19%
Glacial & Bunter Pebbles	0.17%
Glacial Gravel	1.42%
Portland Beds	2.84%
Alluvium	0.36%
Sand	7.45%

HABITAT

Although badgers are creatures of the woodlands, they do not always live in them. Where woodlands afford good cover it would seem that badgers require additional factors to be present before they will live there.

Sets have been found in woods, copses, open fields, hedgerows, scrubland and quarries, to name the more usual. They have been found also in railway embankments, canal banks, long barrows and golf courses, and even under timber in timber yards. In fact, a long list of strange places could be given.

By far the greatest number of sets were found in woodlands (70%). Most of these lie near to the perimeter and only rarely do they occur deeper than 100 yards into a wood. From this, it is concluded that food availability is the determining factor, for normally, pasture fields adjoin the woods and earth-

worms, which are the staple diet of badgers, are to be found in quantities in such places; thus, a set near the perimeter combines good cover with food availability.

The second best choice of habitat is the hedgerows and although the present percentage of 18.79% would seem to be considerably lower than that for woodlands, it is likely to rise sharply by the time the survey is completed as many areas have yet to be investigated, especially in the northern part of the county where woodlands are less numerous than in the Chiltern area.

Those sets which occur in open situations have not always been so exposed; for in a number of cases, it appears that where some sets are now in the middle of open fields there was once a hedgerow there which has been removed to facilitate agriculture. It has been observed that such sets are usually only occupied during that part of the year when crops are growing and so afford good cover; later, when the crops are cut and the cover thus removed, the badgers leave and live in another set.

TABLE VI

Deciduous Woods	47.52%
Coniferous Woods	1.06%
Mixed Woods	21.28%
Hedgerows	18.79%
Open Fields	6.03%
Scrubland	0.71%
Chalk Pits	2.48%
Gravel Pits	0.36%
Canal Banks	1.06%
Others	0.71%

MORTALITY IN BADGERS — CAUSES AND EFFECTS

The mortality rate amongst badgers in this county is very high and reflects many aspects which are common to the species throughout the U.K. Causes of mortality can be arranged under four main headings, namely:

1. Natural causes.
2. Accidents.
3. Control measures.
4. Persecution.

These are dealt with individually in the following text.

1. NATURAL CAUSES

Apart from old age, disease is the only other natural cause of death. From an examination of many badger skulls obtained either from road victims, picked up from the spoil-heaps outside sets, or other means, it becomes evident that death from old age must rate as a luxury in the badger world. Of 38

skulls examined, 35 of these were of badgers not more than approximately 5 years old. Given good fortune, a healthy badger will live for some few years in excess of ten. There are a number of known instances where badgers are still living at fourteen years of age.

This high percentage of young animals being killed must inevitably be reflected in the population statistics and would appear also, to be closely tied to the facts emerging from a study of road accidents. (see under heading "Accidents").

Where disease is concerned, the picture is more optimistic. Badgers are not prone to ill health and no doubt they owe this fact largely to their inherent cleanliness both of themselves and their living quarters. There is however, one disease which they are observed to suffer from occasionally and which invariably proves fatal; this, is an acute form of "tonsilitis" (Sir Frederick Hobday) commonly known as "throats".

Only one record of this disease has been observed by the Survey in Bucks, in this instance, the victim was an adult boar which had been killed on the road near Wendover. Upon examination, it proved to be in an emaciated condition, weighing only 15 lb. Both lower canine teeth and the upper left one had been shattered although free from decay. This, it was concluded, had been occasioned by the unfortunate beast breaking them by biting on some hard material during extremities of pain. Had it not been for the timely accident on the road, this animal would have died a lingering death from starvation brought about by the inability to swallow food.

Local outbreaks of this disease may occur from time to time and may possibly bring about a reduction in numbers locally.

2. CONTROL MEASURES

It is illegal to gas badgers. With this one exception all other methods are not offences against the law unless cruelty is involved and can be proved as such. Methods used for the control of badgers in Bucks are known to consist of the following: gassing, shooting, snaring and digging.

Gassing

This form of control, although illegal, is by far the most widespread and commonly met with. Contrary to belief amongst those who use this form of control, death by this means may not be merciful. Badgers found dead from this method exhibit every symptom of having been in extreme agony at the time of expiry. Individuals examined have invariably had roots, earth or other material clamped in their mouths, these having been seized in desperation during the final extremities of death.

Gassing of badger sets is known to be carried out by many sections of the community whose work or business makes them intolerant of the species. Empty "Cymag" tins are often found jammed into set entrances or lying around in the immediate vicinity and along with other signs it is quite obvious that gassing has taken place.

When it has been possible to make enquiries about such gassings, the usual answer is to the effect that either it was believed foxes or rabbits were occupying the set and not badgers, or it was not known to be a badger set.

There can be little doubt, that the suspected presence of foxes or rabbits in a set is used as an excuse for gassing, when the primary target is really badgers.

The effects of gassing—and particularly the repetitive gassing of the same sets—on local populations of badgers gives cause for serious alarm. Large areas have been so severely controlled by this and other methods combined, that the badger has become totally absent from them. Gassing constitutes a major threat to the species in Bucks, as it does in many other parts of the U.K. If continued at the present rate, then we can expect to find this mammal disappearing from large tracts of the county.

Snaring

The use of this form of control where badgers are concerned is condemned by the following organisations:

- i. The British Field Sports Society.
- ii. The Game Research Association.
- iii. Eley Game Advisory Station.
- iv. The Council for Nature.
- v. The Mammal Society.

Also, many other responsible bodies condemn this method. Badgers are too strong and tough to be humanely destroyed by this method and badgers caught in snares die a lingering and painful death by slow strangulation. Snares set for foxes are occasionally the means whereby a wandering badger is caught.

Only a few snares have been discovered which have obviously been set for badgers, instances have been found at Cholesbury-cum-St. Leonard Princes Risborough, Fingest, Hughenden and Hambleton. However, it is not thought that snaring as it stands at the moment has any significant effect upon populations.

Shooting

Since evidence of this form of control is not easily obtained, much reliance has to be placed upon verbal confirmation. The nocturnal habits of badgers do not lend themselves easily to the chance shot; consequently, the shooting of badgers requires some degree of determination upon the part of the shooter. As a method of control, it is by far the most humane of all methods, provided that the correct weapon is used together with the correct size of shot.

The size of shot and bore, together with the recommended ranges are as follows:

Shotguns: Min. bore—20. Min. shot size—AAA. Max. range—25 yds.

Rifles: Min. bore—.22 Hornet. Max. range—50 yds.

Hollow or soft nosed ammunition should always be used with a rifle. Airguns are NOT considered to be suitable for use in predator control.

It is not likely that many farmers, gamekeepers or similarly interested persons would be able to spend the time in waiting for badgers in order to shoot them, other more convenient remedies are available to them. There is, however, an element who shoot badgers for no other apparent reason than the

fact that "they are there". Such rough shooters are known to operate occasionally in West Wycombe area.

Again, shooting is not considered a serious threat to population at this time.

Digging

The task of digging out a badgers' set can be an arduous and unrewarding chore when carried out by inexperienced persons; consequently, such activities are usually carried out by expert operators such as the servants of the various Hunts.

It is not the purpose of this report to comment upon the ethics of this practice, but rather, to state what the effects of such operations have on badger populations.

Firstly, perhaps it is as well to see why such digging is done. Apart from the occasional acts of irresponsible persons who dig out a set just for the "fun" of the thing or, to obtain cubs, digging is usually resorted to for the purpose of depriving the fox of a refuge when under pressure from the Hunt. It is inconvenient for the Hunt to go around "stopping" all badger holes previous to the Meet; if this action is carried out the day before the Meet, then the badgers will have dug it out again by the morning and so the purpose is frustrated. To go around all sets in the area on the actual morning of the Meeting is almost impossible in the time available.

Therefore, it is easier to dispose of the badgers permanently by digging them out and killing them; the economics of this action are obvious. Unfortunately, there is considerable evidence to show that this practice combined with other forms of control is having a disastrous effect upon badger populations in those parts of the county where hunting takes place.

Generally speaking, that part of the county lying north of the Chiltern escarpment lends itself to fox hunting. Here, the pattern emerging from plots, taken to an eight-figure map reference, of badger sets occurring in this area shows unmistakable signs of "fragmentation" or, a mosaic-like effect on the ground. That over-severe control measures are responsible for this, is illustrated by the observable fact that where a land-owner is tolerant of the badger and sometimes intolerant of the Hunt, or, the locale is for one reason or another not hunted over, then the badger assumes its normal pattern of the grouping of sets; elsewhere, such grouping is totally absent.

It would seem then, that over a long period of time the systematic destruction of sets and their occupants has led to a serious depletion of the badger population over the greater part of Bucks. Looking to the future, it is highly probable that unless there is some alleviation of the pressure on the badger from all forms of control, especially the destruction of sets, then it may well become totally absent over large tracts of the county where once it was common.

There are other digging activities which are not so readily understood and reports concerning them are scarce. It has been reported from the neighbouring county of Herts, that there is at least one group of badger diggers said to visit sets in that county for the purpose of obtaining badgers for badger-baiting meetings, and such baiting is rumoured to involve the use of bull terriers. This

report is disconcerting in that Bucks shares a common boundary with Herts and what happens there could easily spread—and perhaps already has done so—into this county. Badger baiting is illegal.

Additional to these practices, digging is undertaken to secure cubs for re-sale as pets and for zoos, also, there are reports of a renewed interest in securing pelts for use as fur trimmings on ladies shoes and coats. Such activities are extremely difficult to discover as they are carried out clandestinely. These latter reasons for digging out badgers have of recent times increased at an alarming rate and are giving cause for great concern in many parts of the U.K. In Bucks the matter is not so serious at the moment as it is elsewhere.

Accident

If gassing was considered to pose a serious threat to badger populations, then the motor vehicle is no less a threat. Road fatalities throughout the U.K. are rising rapidly and causing serious concern; here in Bucks, the threat is no less serious.

Unlike the fox, badgers would seem to be “accident prone” when it comes to avoiding collision with motor vehicles—and for that matter, rail traffic also. In Kent, 200 badgers are known to have been killed after the electrification of one section of line; whilst in Somerset, 130 were killed on the M4 within 3 weeks of its first opening (Civil Engineer’s report).

Statistics for this county are confined to reports from an area approximately 5 miles in circumference; within this area, 38 badgers are known to have been killed over a two year period on roads. This figure may not appear very impressive at first glance, but acquaintance with a few pertinent facts places a different face on the matter.

Firstly, the figure quoted is that of those victims which came to the notice of but one person; secondly, the area in which these fatalities occurred is small, especially when it must be remembered that Bucks covers some 1,895 square kilometres. Furthermore, it is a matter for speculation (a) How many victims remain un-reported? and (b) How many individuals were not killed outright, but retained sufficient life to enable them to crawl away into deep cover to die?

It is of interest too, to note that recently a number of schoolchildren on a bus travelling between Lower Winchendon and Long Crendon in the morning, observed a badger dragging a dead one across the road! This lends some support to the stated fact that badgers will often bury their dead, here, there is the possibility of badgers killed on the road being dragged away from the scene.

It has been an observed fact by recorders all over the U.K., that the death toll on roads reaches its peak during the February/April period; also, that there is a greater number of sow badgers killed in proportion to boars.

The significance of this is, that the period mentioned covers the main cubbing season for badgers, and at this time of year, cubs are either about to be born or are only a few weeks old and are wholly dependent upon the sow. Therefore, the death of the sow gives rise to a secondary mortality rate in cubs.

Normally, the size of badger litters averages 3.1 per family;² of the 38 badgers reported to the author, 18 were recovered and examined, of these, 7 were boars. Out of the remaining 11 sows, 8 of them were killed during the cubbing season which means, if we presume that cubs were present, that there was a possible loss of 34 badgers as against an observable 18 deaths!

Road fatalities are increasing yearly, and with the construction of new motorways in the county plus the heavy increase in the traffic on them, it is to be anticipated that a corresponding increase in badger mortality will inevitably follow.

To date, the Survey has not made any special study of this problem and its effects upon populations; however, in view of the serious threat posed by this form of mortality cause to local populations and the attendant peculiar aspects of it, then it is hoped that a more detailed investigation will be carried out at some future date. Meanwhile, the problem remains and is likely to grow worse and must be regarded as a suspected cause of a high mortality rate.

Persecution

Intelligent and properly conducted control measures are often necessary; they degenerate into forms of persecution when carried to extreme lengths. The persecution of badgers in this county centres around over-severe control in one form or another and extends to all corners of the county.

As an illustration of the above type of "over-severe control", the following example is given. Occasionally, a so-called "rogue" badger takes to killing poultry; in most cases, this is the signal for an all-out attack by the owner on any nearby set known to him and usually, gassing is carried out. It is known from experience that normally only one badger is responsible for such depre-dations and with the removal of that particular animal, all further trouble ceases.

Persecution as distinct from "control", is very much in evidence for most parts of the county and must rate as a major cause of badger mortality. Its effects have been to make badgers totally absent from many localities where once it was common.

Other causes

Mention must be made of two other causes of mortality; unfortunately, their effects are more difficult to assess and are not so readily understood as those previously mentioned. The two causes are, (a) Loss of habitat and (b) Pesticides & Herbicides.

Loss of habitat is a serious matter not only from the point of view of the added pressure on badgers caused by it, but also because of the permanency of the action. Unlike other pressures, which are often able to be relieved and the effects reversed, loss of habitat usually means the destruction of the local environment which, once destroyed, is lost for ever.

New motorways, housing developments etc, are replacing those areas where badgers find suitable conditions to live in. Earlier in this report under the heading "Geology", it was proved beyond doubt that badgers must have

certain soils available in which to dig their sets, denied these, then the badger must perish.

There is already some indication that within the Chiltern area, the natural valleys are increasingly being utilised by man; such valleys are also the strongholds of badgers to the exclusion of any other site in the Chilterns. Valleys appear to hold the same attraction for both species.

Continued exploitation of such areas in the Chilterns may possibly result in the badger becoming a rarity here.

Pesticides & Herbicides

These chemicals are biocides; destroyers of life. It is essential to the welfare of most animal species to have access to uninterrupted food-chains free of chemical residues. It would be true to say that the inadvertent effects of these biocides on birds and animals are less well understood than are the effects on plants and lower forms of animal life. A great deal of the mortality is the result of secondary poisoning which, owing to the absence of circumstantial evidence, is most difficult to attribute to these causes without analysis of body tissues.

Kenneth Mellanby in his book *Pesticides & Pollution* said, "It is difficult if not impossible to find a single field in England which does not contain a detectable amount of pesticide, or a bird or mammal without residues in its tissues."

A limited investigation was carried out by the Nature Conservancy's Monks Wood Experimental Station into the "Causes of badger mortality in eastern counties of England" (c. 1968). From tests carried out on seventeen badgers six certainly died of dieldrin poisoning and a further six probably died of the same cause. Sub-lethal doses are not without their effects either and are known to reduce breeding success in other species.

It has been observed not only in this county, but all over the U.K. that a noticeable reduction in the size of litters born to badgers has taken place of recent years; also, there has been a reduction in breeding success. At three breeding sets closely observed by the author over a five-year period, the following results were obtained:

TABLE VII

Set	1967	1968	1969	1970	1970
A	3	Nil	2	2	Nil
B	2	3	2	Nil	Nil
C	3	2	Nil	Nil	Nil
Total:	8	5	4	2	0

As a predator, the badger occupies a position at the end of a food chain and this, combined with its omnivorous feeding habits, renders it exceptionally prone to accumulating residues of poisons from chemical sources in its tissues.

Whilst it would be premature to conclude that pesticides and herbicides are directly responsible for these figures, they must remain high on the list of

suspected causes until such time as the contrary is proved.

The conservation of our indigenous wild-life and its habitat should be of the gravest concern to us all. This interim report may serve as a warning to those who unthinkingly or deliberately destroy these mammals. In so doing they perpetrate a moral offence against Society, and deprive it of a necessary part of its natural heritage. The burden of responsibility ought to weigh upon our consciences, and few creatures are more in need of compassion and help than the poor, persecuted badger.

REFERENCES

¹ J. Zool., London 1969, 158, 204-8.

² Neal (1958).