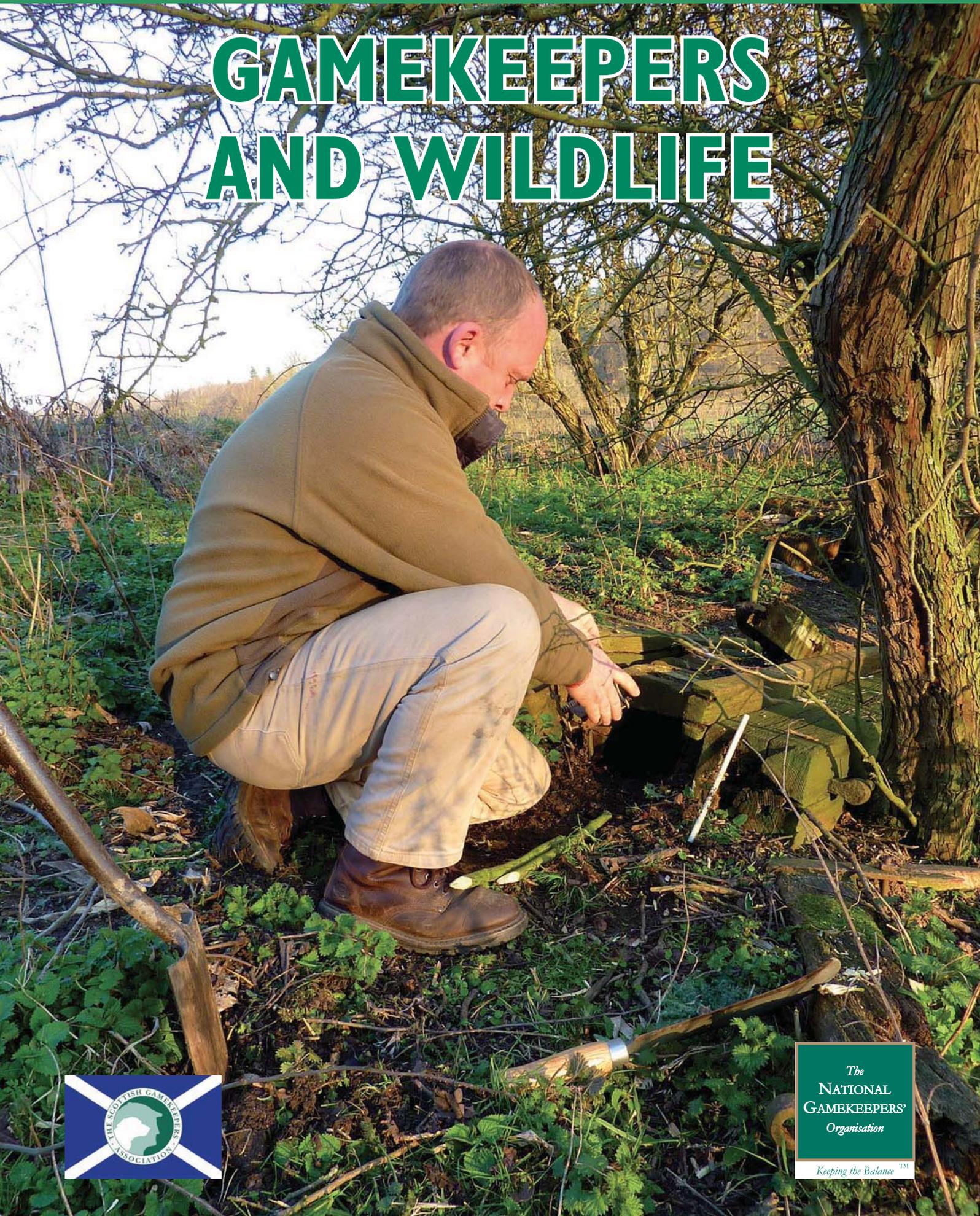


The full survey report 2011

# GAMEKEEPERS AND WILDLIFE



The  
NATIONAL  
GAMEKEEPERS'  
Organisation  
*Keeping the Balance™*

## **Contents**

|  |           |
|--|-----------|
| <b>INTRODUCTION</b>                        | <b>3</b>  |
| <b>RESPONDENTS' DETAILS</b>                | <b>4</b>  |
| <b>TOTAL AREA SURVEYED</b>                 | <b>7</b>  |
| <b>AGRI-ENVIRONMENTAL SCHEMES</b>          | <b>9</b>  |
| <b>GAME COVER</b>                          | <b>9</b>  |
| <b>HEATHER BURNING</b>                     | <b>11</b> |
| <b>QUARRY SPECIES PRESENT</b>              | <b>13</b> |
| <b>PREDATORY SPECIES PRESENT</b>           | <b>20</b> |
| <b>PROTECTED PREDATORY SPECIES PRESENT</b> | <b>22</b> |
| <b>OTHER MAMMAL SPECIES PRESENT</b>        | <b>27</b> |
| <b>OTHER BIRD SPECIES PRESENT</b>          | <b>28</b> |
| <b>CONCLUSIONS</b>                         | <b>29</b> |
| <b>REFERENCES</b>                          | <b>30</b> |

## Introduction

This report and the survey it summarises were the result of a project commissioned by the National Gamekeepers' Organisation (NGO) and the Scottish Gamekeepers' Association (SGA). A postal questionnaire (initially mailed to 5500 gamekeeper members of the NGO and SGA in February 2011) was used to assess the quarry, predator and wildlife species found on shooting estates throughout the UK. Shoots were also asked to give details on the number of people involved in gamekeeping activities on their land, the area managed, amount of game cover planted and/or heather burnt or cut. The survey was designed to shed new light on important aspects of game management, wildlife distribution and attitudes in the gamekeeping community.

Further information on this survey and the results reported in this document can be obtained from:

### **National Gamekeepers' Organisation**

PO Box 246

Darlington

DL1 9FZ

[www.nationalgamekeepers.org.uk](http://www.nationalgamekeepers.org.uk)

### **Scottish Gamekeepers' Association**

Arran House, Arran Road

Perth

PH1 3DZ

[www.scottishgamekeepers.co.uk](http://www.scottishgamekeepers.co.uk)

### **Results collated by the Game and Wildlife Conservation Trust**

[www.gwct.org.uk](http://www.gwct.org.uk)

## Respondents' details

Of the 980 respondents to the questionnaire, 941 (96.0%) are currently employed as gamekeepers. The majority of those who were no longer gamekeepers ( $n = 39$ ) were retired (79.5%) with no information given on the status of the remaining eight. Of those that returned the questionnaire, the majority were full-time keepers (Figure 1).

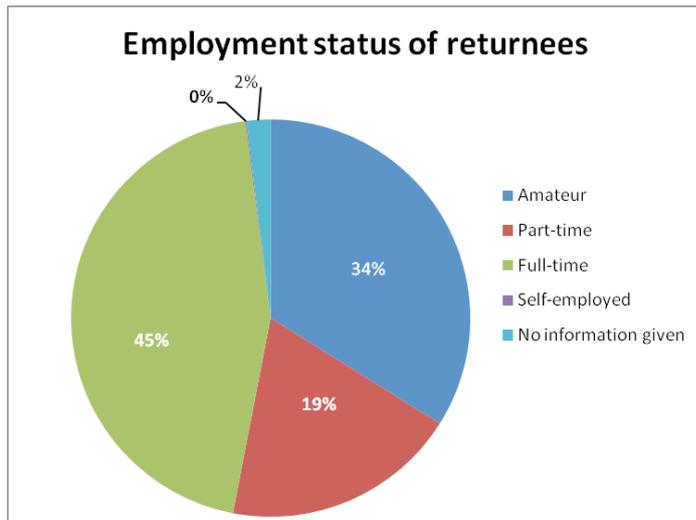


Figure 1. The majority of those that returned the questionnaire were full-time gamekeepers.

We asked the returnees to detail the number of full-time, part-time and amateur keepers on the shoot they managed, in addition to themselves. In total there were 859 full-time keepers, 556 part-time keepers and 330 amateur keepers covered by the shoots surveyed (Figure 2). If the 4% that returned their forms indicating they were no longer a keeper is representative of those initially mailed out, this indicates that there would have been 220 individuals initially mailed who are no longer a keeper. This means our initial mailing included 5280 keepers. In total the results from this survey covered the efforts of 1745 gamekeepers, 33.0% of the 5280 NGO and SGA gamekeeper members initially mailed.

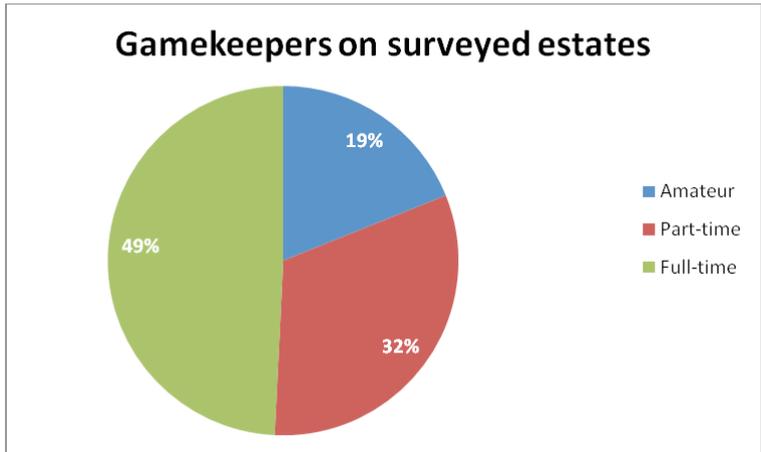


Figure 2. The majority of keepers on the surveyed estates were full-time gamekeepers.

The shoots that responded were classified according to size. Small shoots (25% of the total) were up to 25ha, medium shoots (41% of the total) were between 250 and 1000 ha and large shoots (34% of the total) were above 1000 ha (Figure 3).

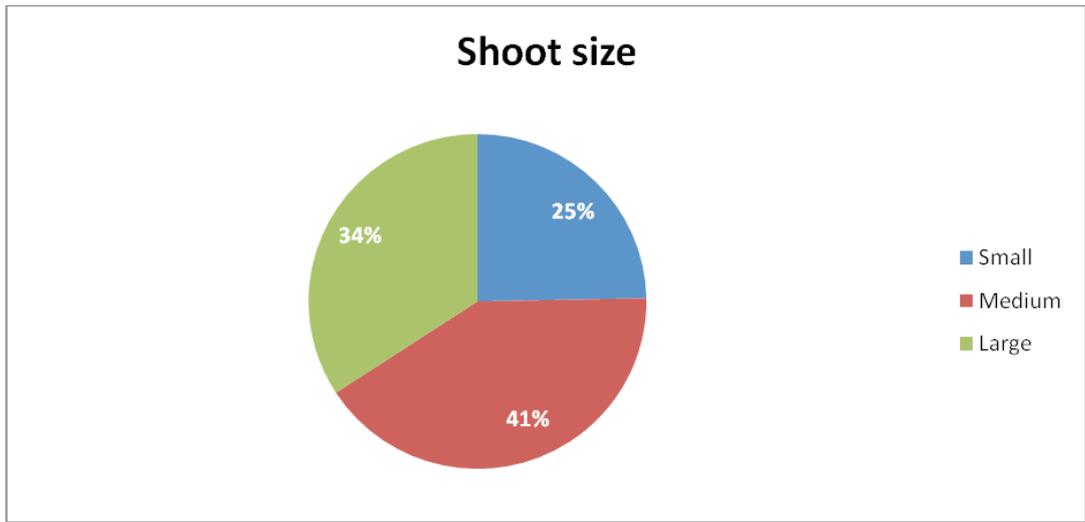


Figure 3. The shoots that responded were divided, based on size of the area managed, into small (<250 hectares – n = 224), medium (250 -1000 hectares – n = 373) and large shoots (> 1000 hectares – n = 310).

Large shoots varied from 1000 to over 109,000 ha in size with 18 ‘shoots’ covering more than 10,000 ha (Figure 4). (Note: ‘Large shoots’ here includes some estates with more than one land holding.)

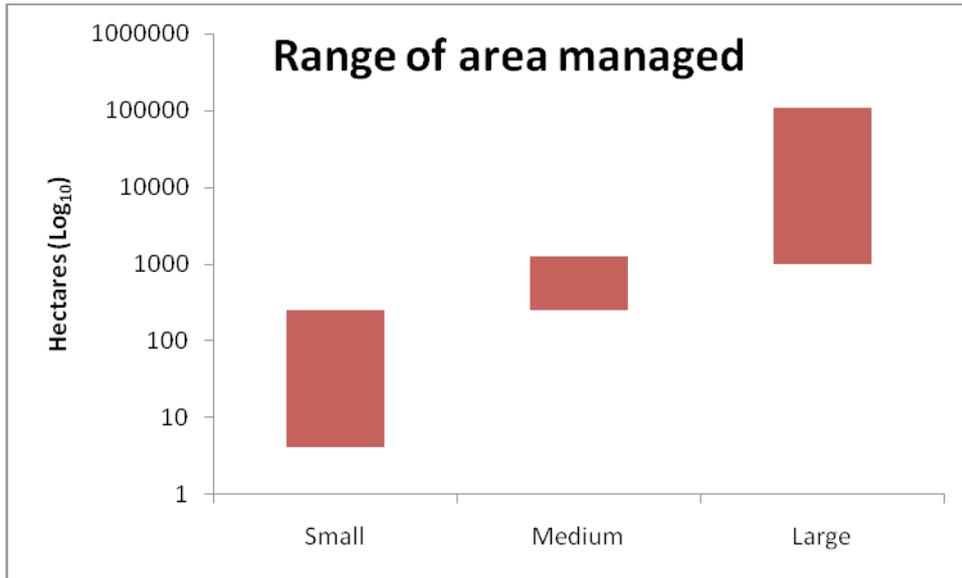


Figure 4. The range in area of the shoots surveyed.

Small shoots tended to use part-time or amateur keepers; large shoots full-time keepers (Figure 5).

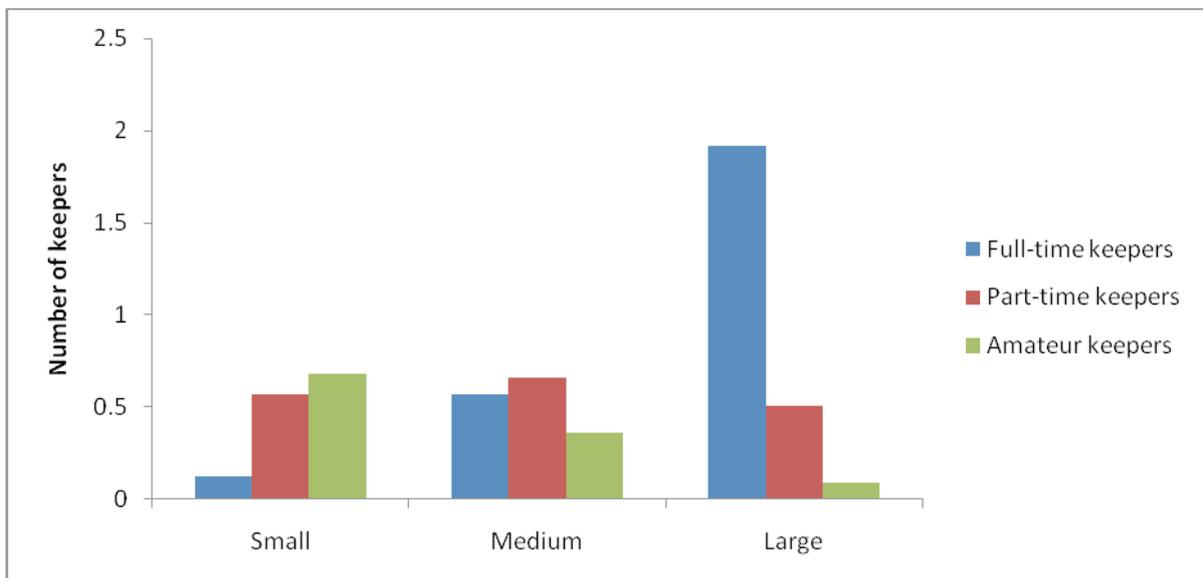


Figure 5. The average number of keepers (full-time, part-time and amateur) on each of the three types of shoots. (Note – these figures include zeros where there were none of that type on a shoot).

Keeper density was estimated by weighting keepers by their number of full-time equivalents (full-time = 1; part-time = 0.5; amateur = 0.25). The keeper density was highest on small shoots, where there was the equivalent of seven tenths of a fulltime keeper equivalent per square kilometre, with one tenth of a fulltime keeper equivalent per square kilometre on large shoots.

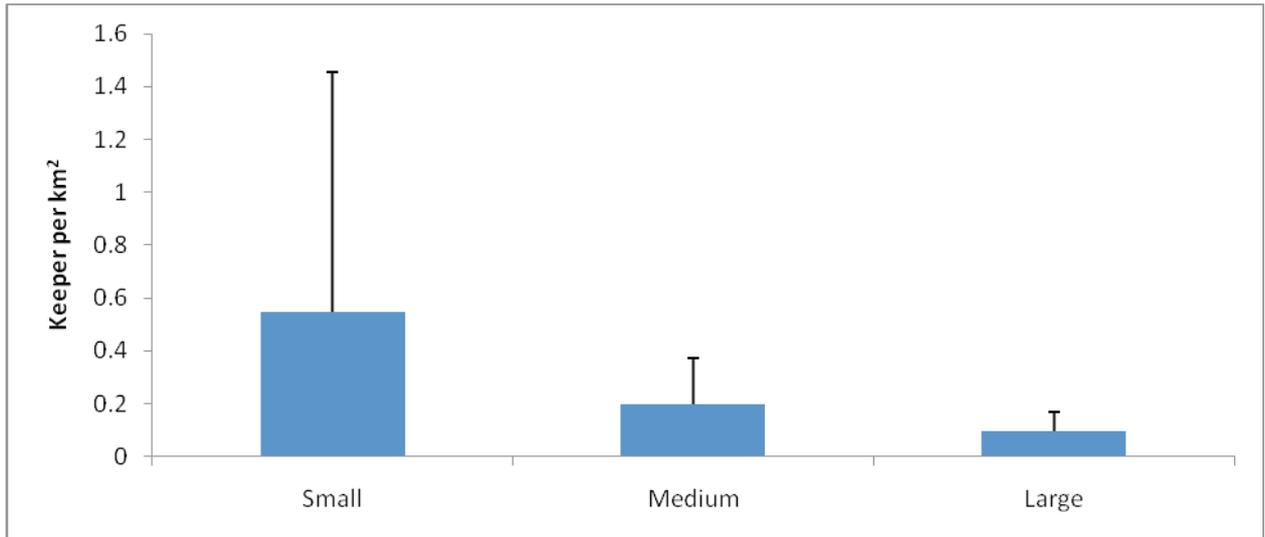


Figure 6. The density of gamekeepers (number of full-time equivalents) per square kilometre of area managed, error bars are standard errors – with small shoots showing greater variability in keeper density, as well as higher keeper density.

Of the individuals returning a survey form, the majority – as expected – were members of the NGO (858, 91.2%), a third were members of BASC (314, 33.4%) and nearly a tenth were members of the SGA (93, 9.9%), (Table 1). A third of respondents were members of two of these organisations (311, 33.0%) while only 1% were members of all three. The five returns with no mention of an affiliation (0.5%) with a gamekeeper organisation did not specify which organisations they were a member of.

Table 1. Membership of gamekeeper and other organisations

| Organisation                   | Respondents (%) |
|--------------------------------|-----------------|
| NGO                            | 91.2            |
| BASC                           | 33.4            |
| SGA                            | 9.9             |
| GWCT                           | 29.6            |
| Members of two organisations   | 33.0            |
| Members of three organisations | 1.0             |

## Total area surveyed

A total of 1,337,454 hectares were surveyed. This is an area 5 times that of the area of National Nature Reserves (NNRs) designated in the UK (NNRs total 255,789 hectares), and over thirteen times greater than the area covered by RSPB reserves (101,581 hectares). It is just under 60% of the total area covered by UK National Parks (2,245,394 hectares).

Of the 941 gamekeepers who filled in the survey, 894 (95.0%) provided enough details (post code, name of estate) for their information to be mapped. Mapping was undertaken by determining the grid reference of their post code and buffering around this point to give an area equivalent to their reported area managed. Any respondent who did not report an area managed (28 or 3% of the mapped sample) was assumed to manage 1 hectare of area. In order to preserve individuals and shoots anonymity the mapped data are displayed on 10 by 10 km squares (Figure 7).

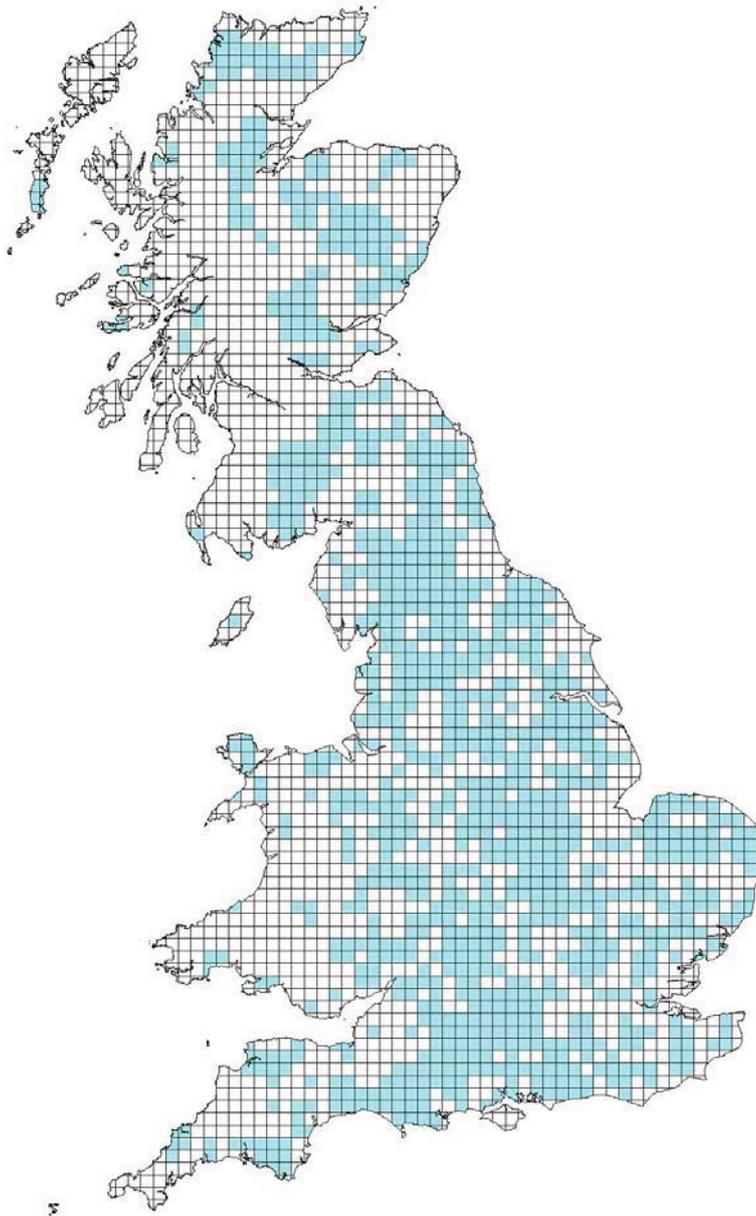


Figure 7. Area surveyed within 10 by 10 km squares throughout the UK and the Isle of Man by the 894 respondents to the survey that provided postcodes and locations . A total of 1,337,454 hectares were surveyed.

Of the 941 surveys of shoots with gamekeeping, 796 (84.6%) were in England, 93 (9.9%) in Scotland, 30 (3.2%) were in Wales, 4 (0.4%) were in Northern Ireland and 1 (0.1%) was in the Isle of Man, with 17 (1.8%) giving no information that allowed them to be mapped to a country.

## Agri-environmental schemes

Of the 796 gamekeepered shoots in England, the majority (568, 71.3%) reported participating in the main Government agri-environmental schemes: ELS, HLS or CFE (Table 2). There were 228 (28.6%) which did not report involvement in one of these schemes, with the status of 8 of these marked as unknown. Two of the 93 Scottish respondents reported being part of the SRDP.

Table 2. Membership of English agri-environmental schemes as reported by respondents to the survey.

| Agri-environment scheme membership | Respondents (%) |
|------------------------------------|-----------------|
| ELS Only                           | 154 (19.3%)     |
| HLS only                           | 71 (8.9%)       |
| CFE Only                           | 66 (8.3%)       |
| ELS & HLS                          | 54 (6.8%)       |
| CFE & ELS                          | 127 (16.0%)     |
| CFE & HLS                          | 36 (4.5%)       |
| CFE & ELS & HLS                    | 60 (7.5%)       |
| unknown or blank:                  | 228 (28.6%)     |

## Game cover

The majority of shoots (84%) with an interest in the commonly shot lowland quarry species (pheasant, red-legged partridges or grey partridges) reported planting game cover (Figure 8), while the proportions of shoots with a combined interest in both lowland and upland shooting were less likely to plant game cover (46%). Only 12% of upland shoots (mainly grouse) planted game cover while 64% of shoots with other interests (combination of wildfowling and deer where detailed) planted game cover. Besides providing food and cover resources for game, game cover crops have been shown to provide food for farmland birds in summer and winter (Henderson et al., 2004; Parish & Sotherton, 2004; Sage et al., 2005)

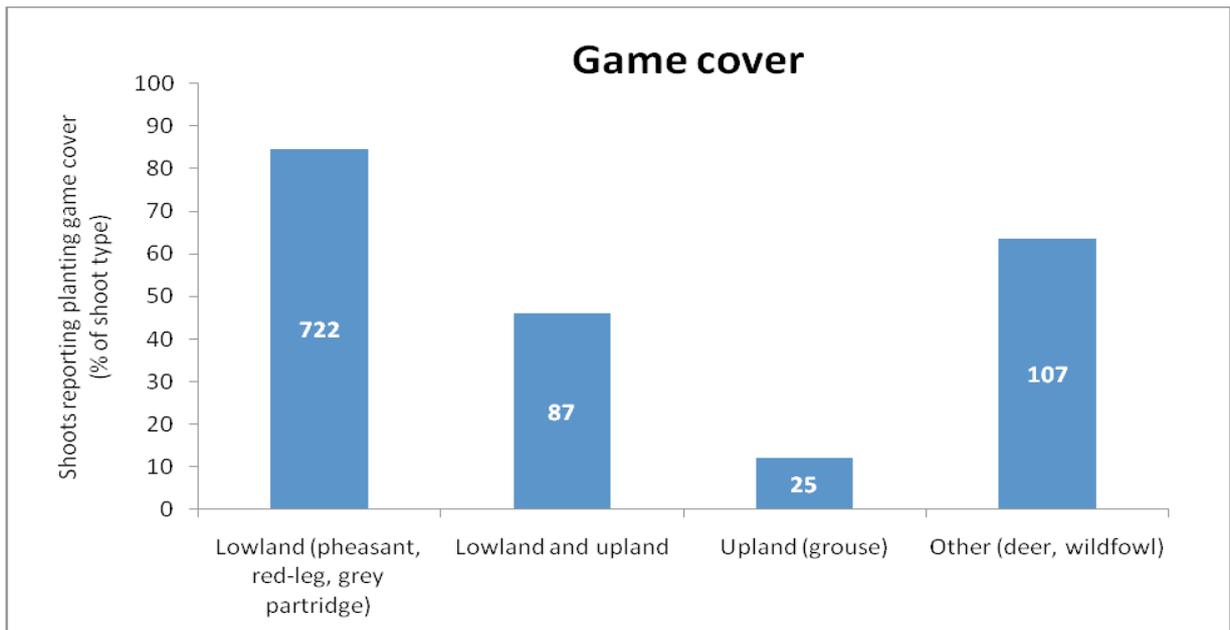


Figure 8. Lowland shoots were more likely to plant game cover than upland shoots with an interest in grouse or those with a combined interest in both grouse and lowland quarry species. Numbers on bars reflect the number of shoots in each category.

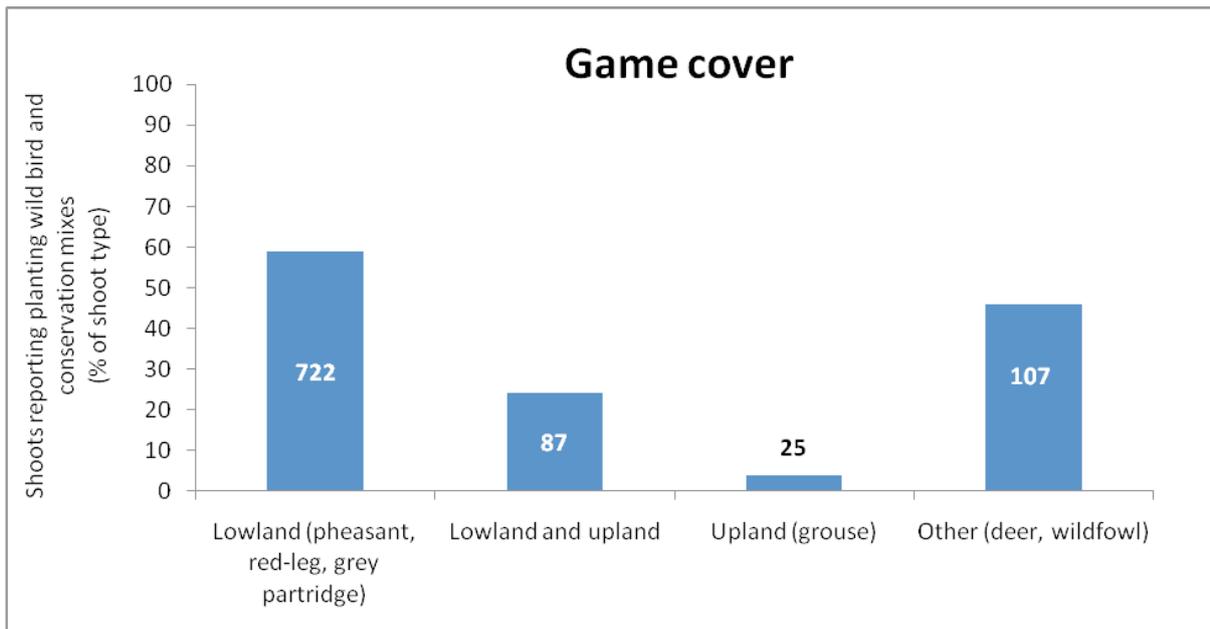


Figure 9. Over half of lowland shoots reported planting wild bird and conservation mixes. Numbers on/above bars reflect the number of shoots in each category.

A majority of lowland shoots (59%) reported planting wild bird and conservation mixtures, while 46% of the shoots with other interest planted these mixes (Figure 9). More area was planted to maize than to wild bird and conservation mixtures on all shoots, except those that were strictly grouse moors (Figure 10) although only one grouse moor reported the area planted of different types of game cover.

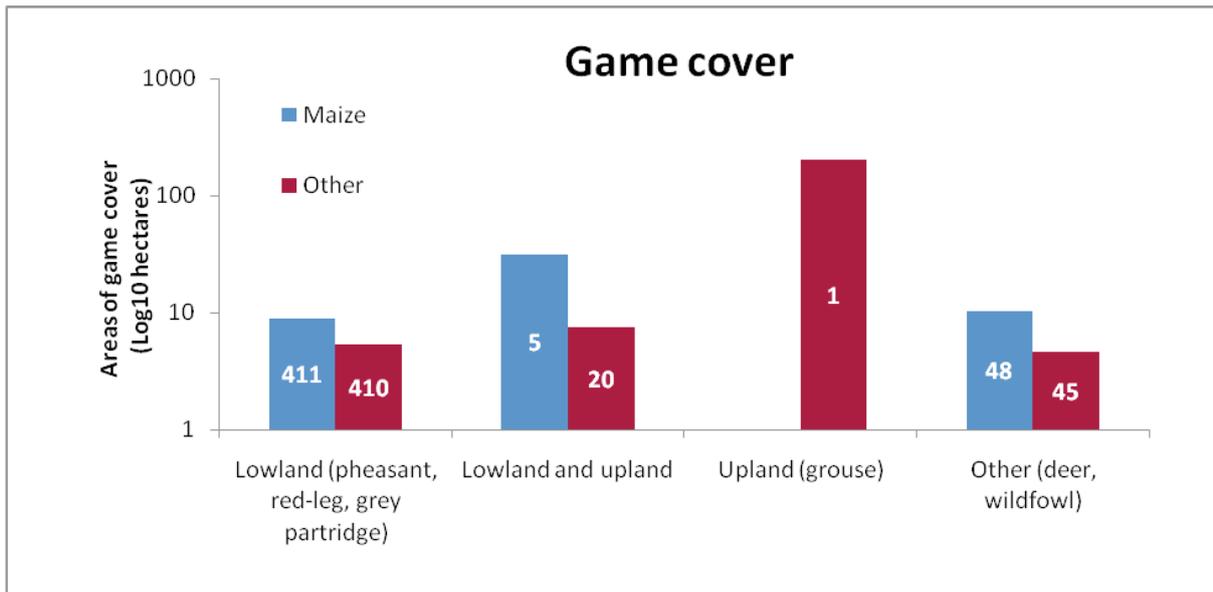


Figure 10. More area was planted to maize than other mixtures in all shoots except for grouse moors, though only one provided details on the area of cover planted. Numbers on/above bars reflect the number of shoots in each category.

## Heather burning

The majority (nearly 90%) of those shoots with an interest in grouse shooting reported undertaking heather burning (Figure 11), while just over 40% of those with red grouse but no current shooting interest in them also undertook heather burning. A small number (just under 2%) of shoots with no red grouse undertook some heather burning.

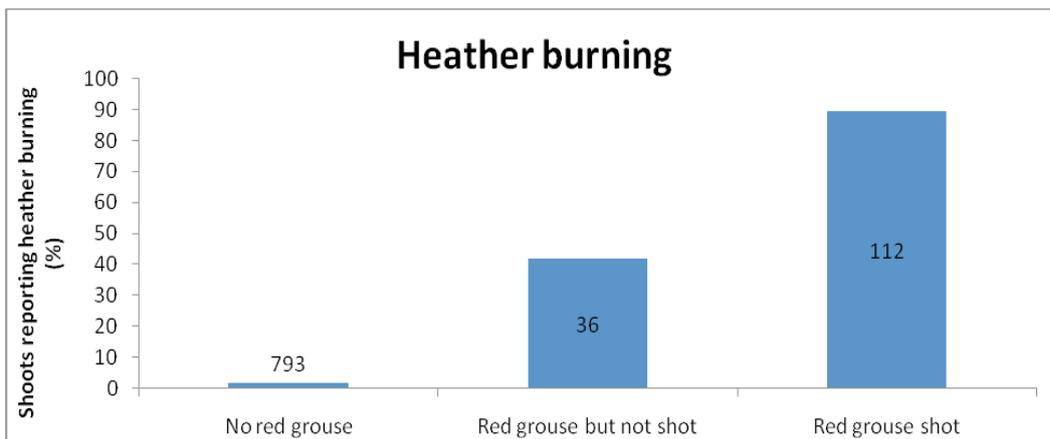


Figure 11. A majority of red grouse shoots reported undertaking heather burning. Numbers on/above bars reflect the number of shoots in each category.

As one might expect, the area of heather burned was higher on red grouse shoots (Figure 12). When this was compared to the area managed by each shoot, both the shoots with no red grouse interest

that reported heather burning and the grouse moors with burning reported burning over 6% of their managed area (Figure 13). Heather burning or cutting is an essential management tool for sustainable red grouse shooting (see Figure 16 in the following section). Management associated with red grouse shooting (heather burning/cutting and predator control) has been shown to be beneficial for breeding upland wader species (Fletcher, 2010; Tharme et al., 2001).

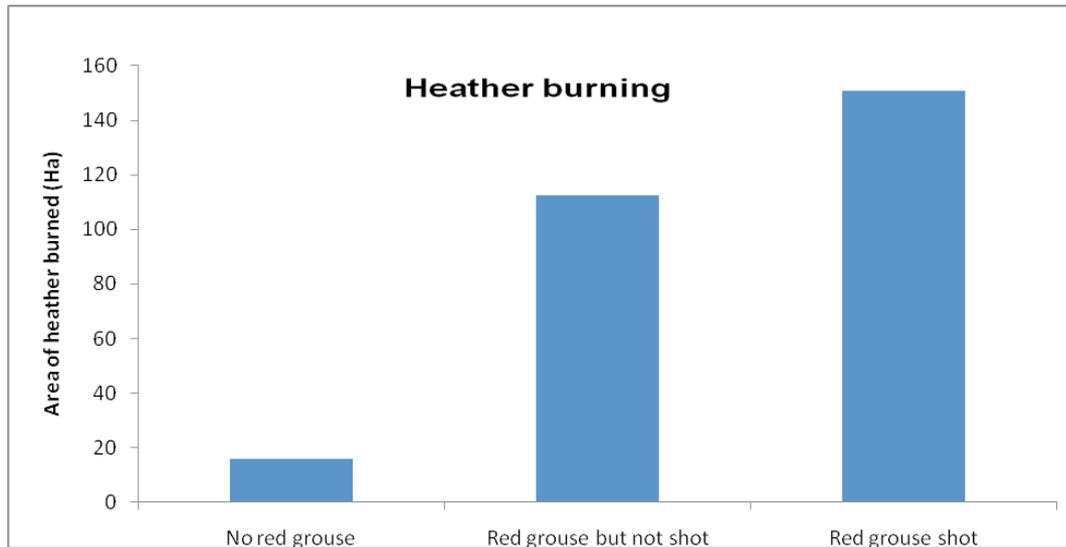


Figure 12. As one might expect, shoots that had an interest in red grouse shooting burned greater areas of heather.

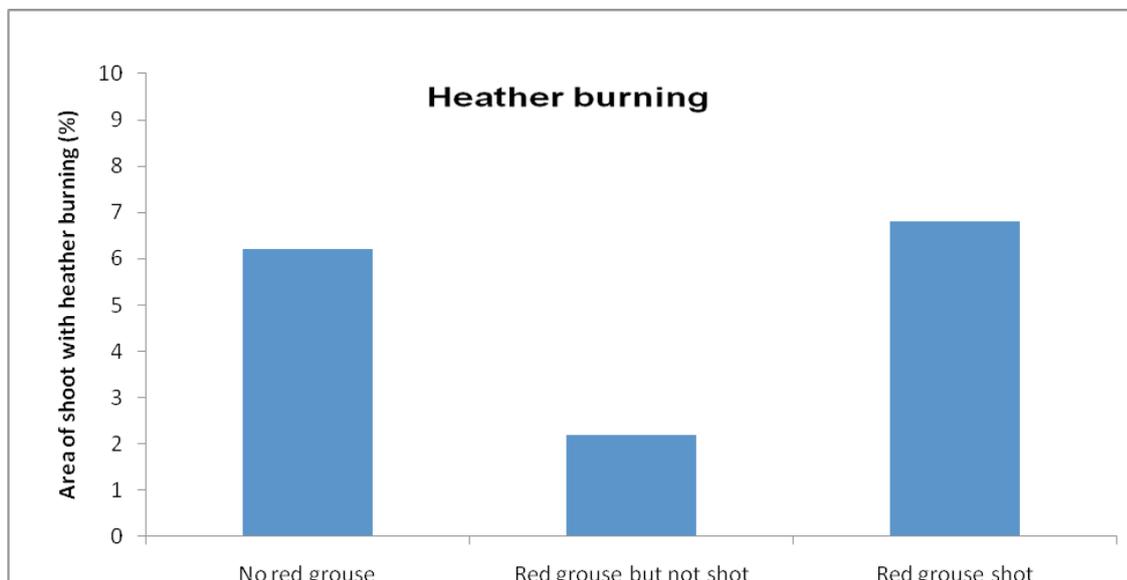


Figure 13. The proportion of the area managed that was burned was higher for red grouse shoots than for shoots where there were red grouse but no grouse shooting took place. Although shoots with no red grouse burned a smaller area of heather, this represented over 6% of the area they managed – a similar proportion to that burned on red grouse moor.

## Quarry species present

The vast majority of shoots surveyed reported the presence of pheasants, red-legged partridges, woodcock, duck and also brown hare on the land they managed (Greater than 80% of responders, see Table 3, page 14).

Most shoots that reported having pheasants or red-legged partridges had a shooting interest that included them (Figure 14, page 15, greater than 80% of those with these species), while three-quarters of those with ducks reported them as a shooting interest as did two thirds of those with woodcock.

For brown hare, although they were commonly reported as present, only a quarter of the shoots with them considered them to be a shooting interest (Figure 15, page 16). Similarly, although grey partridge are only found on a little over half the shoots surveyed, just under 40% of the shoots where they are found consider them a sporting interest (Figure 15).

It is worth noting that, although red grouse are limited in their distribution, where they are found three-quarters of the shoots that have them consider them a sporting interest (Figure 16, page 17).

Woodcock were found throughout the UK in the winter months and consequently were of widespread shooting interest (Figure 17, page 17).

For five of the six species of deer in the UK, between 50 and 60% of the shoots where they are found consider them a sporting interest (Figures 18, 19 and 20, pages 18 and 19).

Table 3. Quarry species reported for shoots surveyed out of a total of 941 shoots where the respondent was still involved in gamekeeping.

| Quarry species       | Shoots where present | Shoots where a sporting interest | Shoots where reported as a pest |
|----------------------|----------------------|----------------------------------|---------------------------------|
| Pheasant             | 915 (97.2%)          | 802 (87.7%)                      |                                 |
| Red-legged partridge | 784 (83.3%)          | 655 (83.5%)                      |                                 |
| Grey partridge       | 523 (55.6%)          | 200 (38.2%)                      |                                 |
| Red grouse           | 148 (15.7%)          | 112 (75.7%)                      |                                 |
| Black grouse         | 82 (8.7%)            | 17 (20.7%)                       |                                 |
| Ptarmigan            | 17 (1.8%)            | 6 (35.3%)                        |                                 |
| Capercaillie         | 7 (0.7%)             | 1 (14.3%)*                       |                                 |
| Woodcock             | 899 (95.5%)          | 596 (66.3%)                      |                                 |
| Snipe                | 735 (78.1%)          | 372 (50.6%)                      |                                 |
| Golden plover        | 386 (41.0%)          | 52 (13.5%)                       |                                 |
| Geese                | 521 (55.4%)          | 276 (53.0%)                      | 2 (0.4%)                        |
| Duck                 | 832 (88.4%)          | 628 (75.5%)                      |                                 |
| Brown hare           | 785 (83.4%)          | 197 (25.1%)                      | 5 (0.6%)**                      |
| Mountain hare        | 61 (6.5%)            | 21 (34.4%)                       |                                 |
|                      |                      |                                  |                                 |
| Red deer             | 161 (17.1%)          | 97 (60.2%)                       | 5 (3.1%)                        |
| Roe deer             | 713 (75.8%)          | 394 (55.3%)                      | 21 (2.9%)                       |
| Fallow deer          | 337 (35.8%)          | 196 (58.2%)                      | 10 (3.0%)                       |
| Sika deer            | 73 (7.8%)            | 43 (58.9%)                       | 3 (4.1%)                        |
| Muntjac deer         | 415 (44.1%)          | 221 (53.3%)                      | 16 (3.9%)                       |
| Chinese water deer   | 41 (4.4%)            | 19 (46.3%)                       | 2 (4.9%)                        |

\* No shooting of Capercaillie is currently taking place but there is the hope that, should numbers improve, there will be the opportunity for shooting in the future.

\*\* Culled to keep numbers down to avoid poaching.

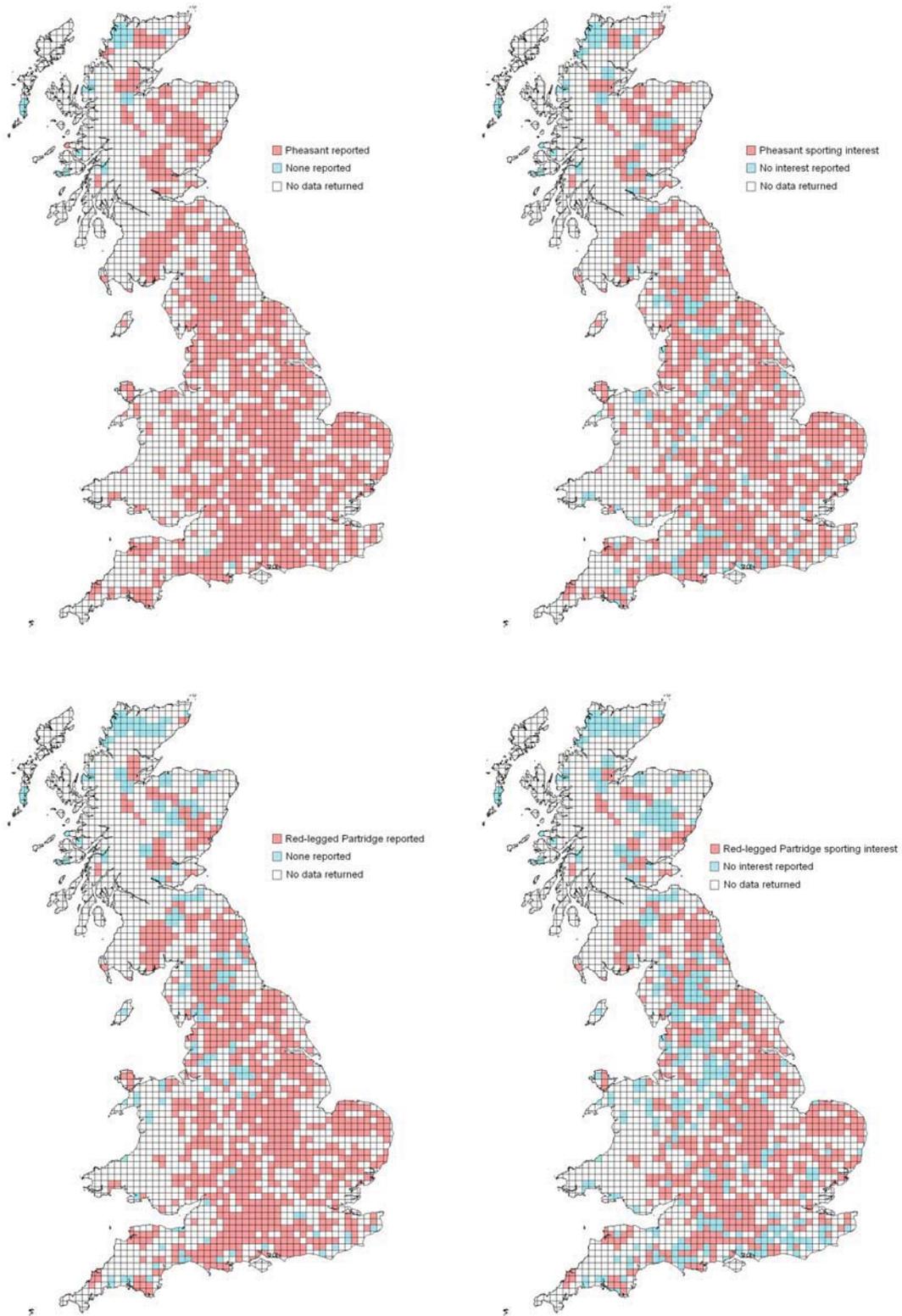


Figure 14. The two species most widely reported as quarry throughout the UK were the **pheasant** and the **red-legged partridge**.

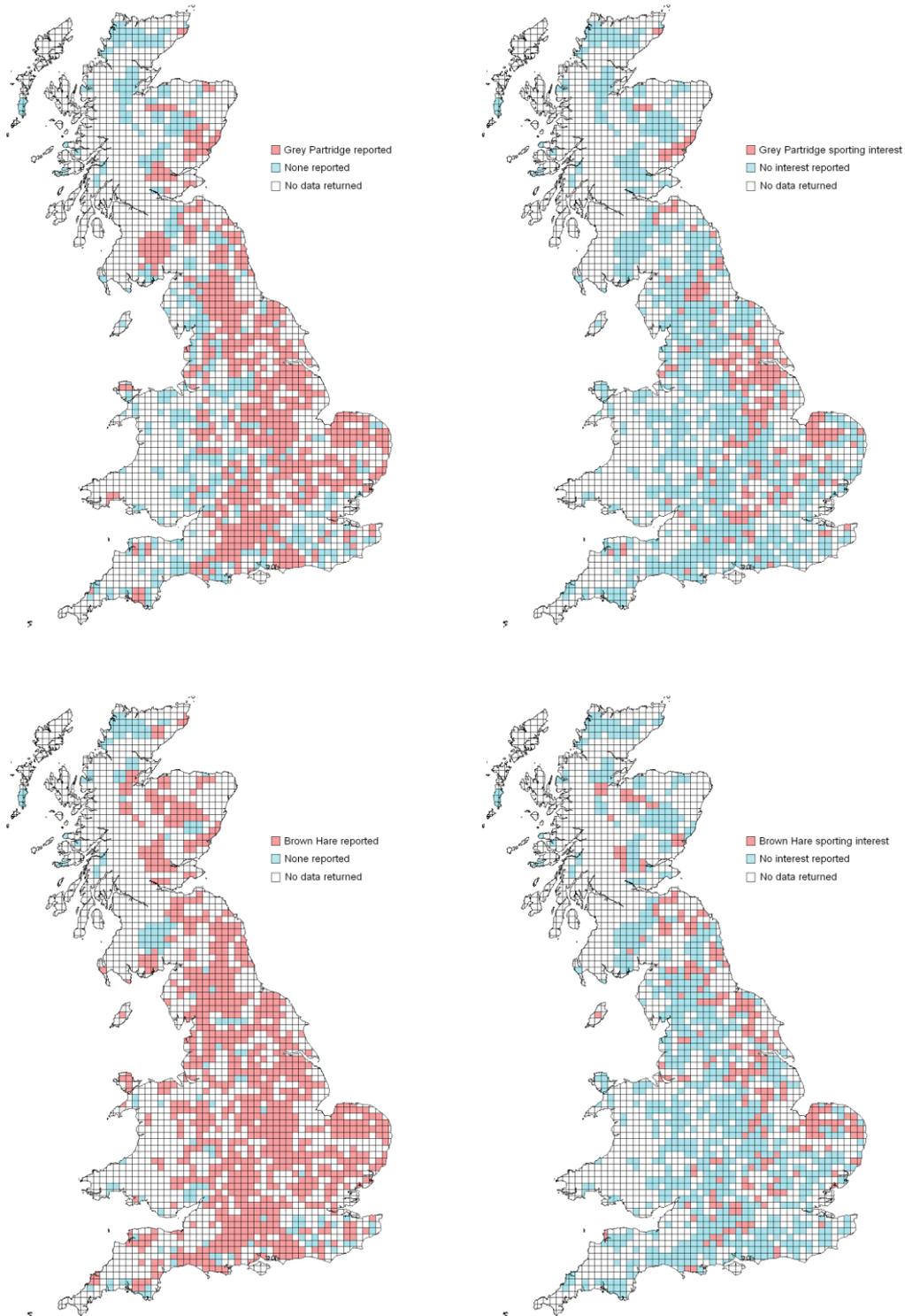


Figure 15. The distribution of shoots reporting **grey partridges** reflect the lack of this quarry species in the west and north of the UK, while **brown hare** were found throughout England and Wales, with notable absences in the north of Scotland. The distribution of the sporting interest in these two species, mainly in the east of the UK, reflects the fact that the abundance of both species is closely tied to the distribution of favourable arable management, as well as gamekeeping directed towards wild quarry species, with the additional predator management required.

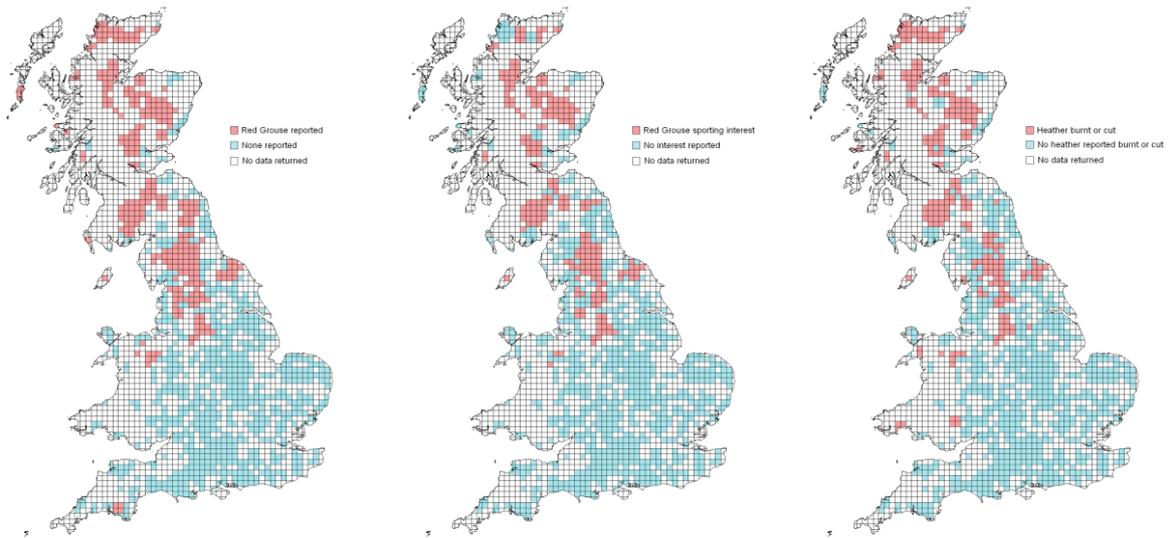


Figure 16. The presence of **red grouse**, together with its sporting interest, was mainly limited to the uplands of England and Scotland. There were notable exceptions to this, with some red grouse reported in Wales and southwest England. Both the presence of and sporting interest in red grouse coincided with the areas where heather was burnt or cut.

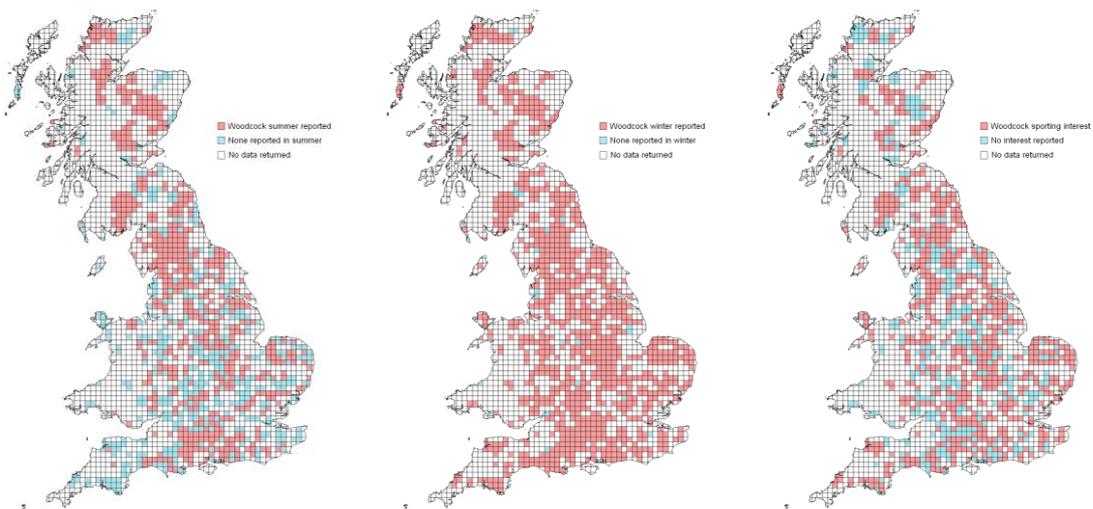


Figure 17. Breeding **woodcock** were reported throughout the UK's upland and lowland areas. In Southern England, breeding seemed to be concentrated in areas with more woodland cover. Both the presence of woodcock on shoots in winter and its sporting interest were ubiquitous throughout the UK.

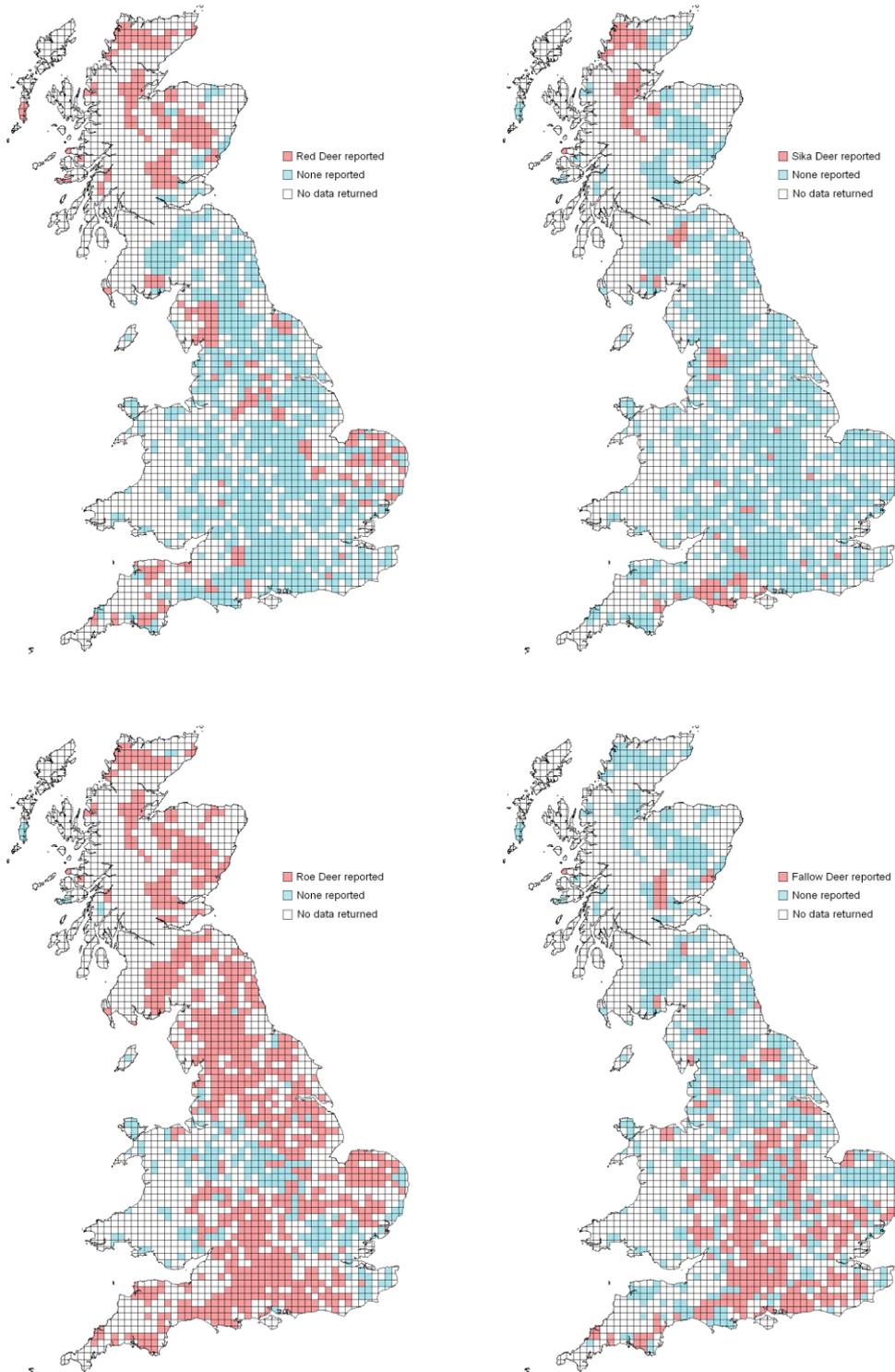


Figure 18. The distribution of shoots with deer throughout the UK. **Red deer** were reported, as expected throughout Scotland, East Anglia and into south west England. **Sika deer** are found in the north of Scotland, with shoots in Dorset also reporting their presence. **Roe deer** were reported from shoots in the north and south of the UK, with a band of shoots stretching from the Mersey across to Kent indicating that there were no roe deer present on the area they managed. **Fallow deer** presence was reported on central southern shoots, although their presence was reported in scattered places across Britain.

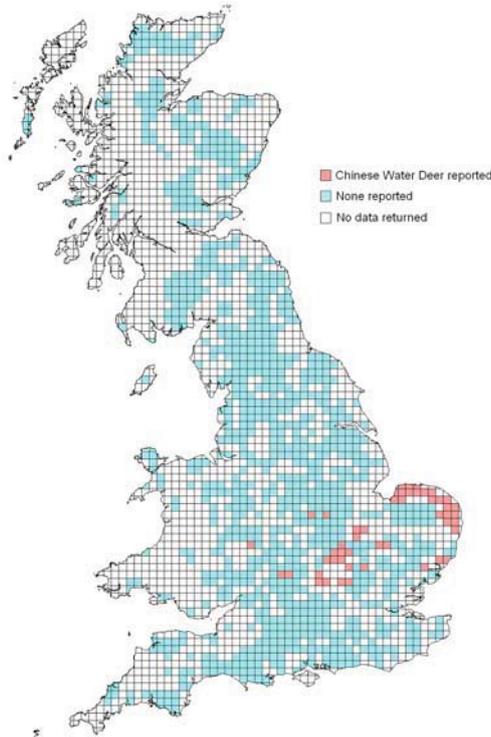


Figure 19. Shoots reporting the presence of **Chinese water deer** were mainly confined to coastal areas in East Anglia and parts of Buckinghamshire, Bedfordshire and Cambridgeshire.

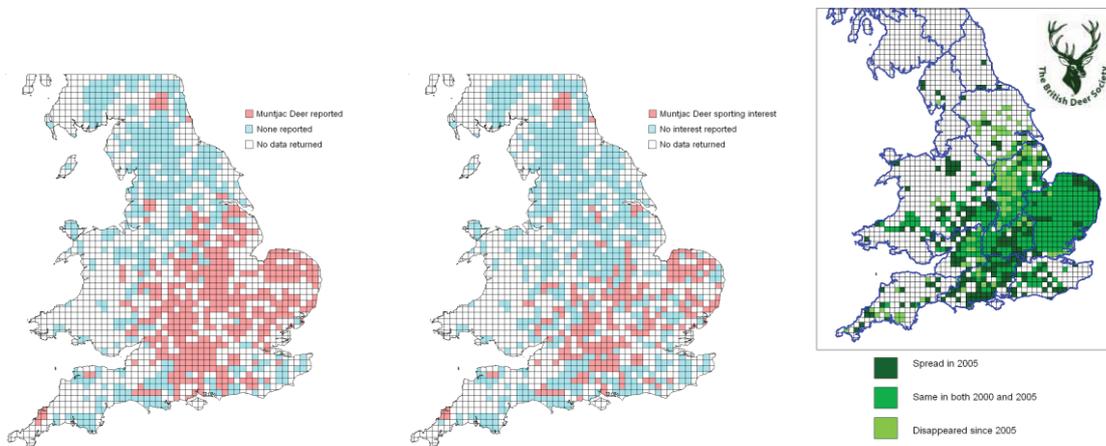


Figure 20. The distribution of shoots with **muntjac deer** and where they are of sporting interest. Although the stronghold of muntjac remains the Midlands and East Anglia, they appear to be spreading throughout England, as is also evidenced from the results of the British Deer Society's 2006/07 survey of deer distribution (Ward et al., 2008).

The British Deer Society is currently (2011) undertaking a survey of deer species distribution in the UK. The deer results of this survey of shoots can be fed into the BDS 2011 survey in order to provide as complete a picture as possible of deer distribution in the UK.

## Predatory species present

Generalist predators were commonly reported across the shoots surveyed and were broadly reported as being culled (Table 4). Mink, feral cats, large gulls and grey crows were not as widely distributed as might be expected. Only the large gulls were not controlled by a majority of shoots that did have them.

Table 4. Predators culled to protect game and wildlife.

| Species culled | Shoots where present | Shoots where culled (of those where present) |
|----------------|----------------------|--|
| Fox            | 932 (99.0%)          | 899 (96.5%)                                  |
| Grey squirrel  | 845 (89.8%)          | 814 (96.3%)                                  |
| Mink           | 523 (55.6%)          | 490 (93.7%)                                  |
| Rat            | 893 (94.9%)          | 860 (96.3%)                                  |
| Stoat          | 842 (89.5%)          | 709 (84.2%)                                  |
| Weasel         | 777 (82.6%)          | 619 (79.7%)                                  |
| Feral cat*     | 387 (41.1%)          | 344 (88.9%)                                  |
| Carrion crow   | 899 (95.5%)          | 855 (95.1%)                                  |
| Grey crow      | 92 (9.8%)            | 78 (84.8%)                                   |
| Large gull**   | 288 (30.6%)          | 130 (45.1%)                                  |
| Jackdaw        | 802 (85.2%)          | 629 (78.4%)                                  |
| Jay            | 823 (87.5%)          | 653 (79.3%)                                  |
| Magpie         | 893 (94.9%)          | 861 (96.4%)                                  |
| Rook           | 838 (89.1%)          | 653 (77.9%)                                  |

\*A Feral Cat is a descendant of a domesticated cat that has returned to the wild. It is distinct from the Wild Cat (*Felis silvestris*), a different species found in the north of Scotland which is protected. It is also distinct from a stray cat, which is a pet cat that has been lost or abandoned. Some estimates put the UK Feral Cat population at between 1 and 2 million individuals.

\*\*lesser black-backed gulls, possibly some herring and great black-backed gulls under licence.

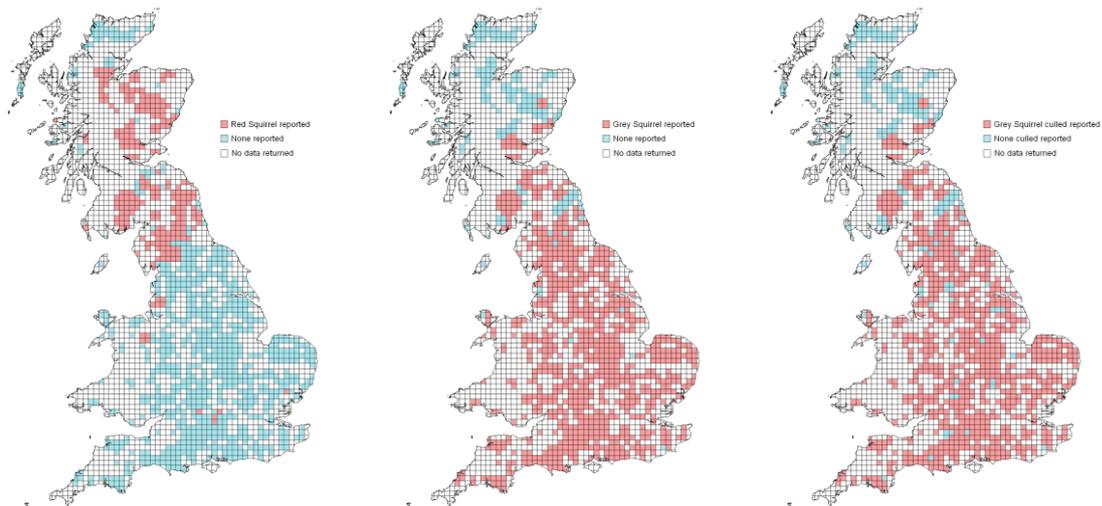


Figure 21. **Red squirrel** were found mainly in Scotland and northern England, with scattered reports elsewhere. Most gamekeepers reported culling **grey squirrels** where they had them. This is likely to be of particular importance for red squirrel conservation where the two species overlap in their distribution.

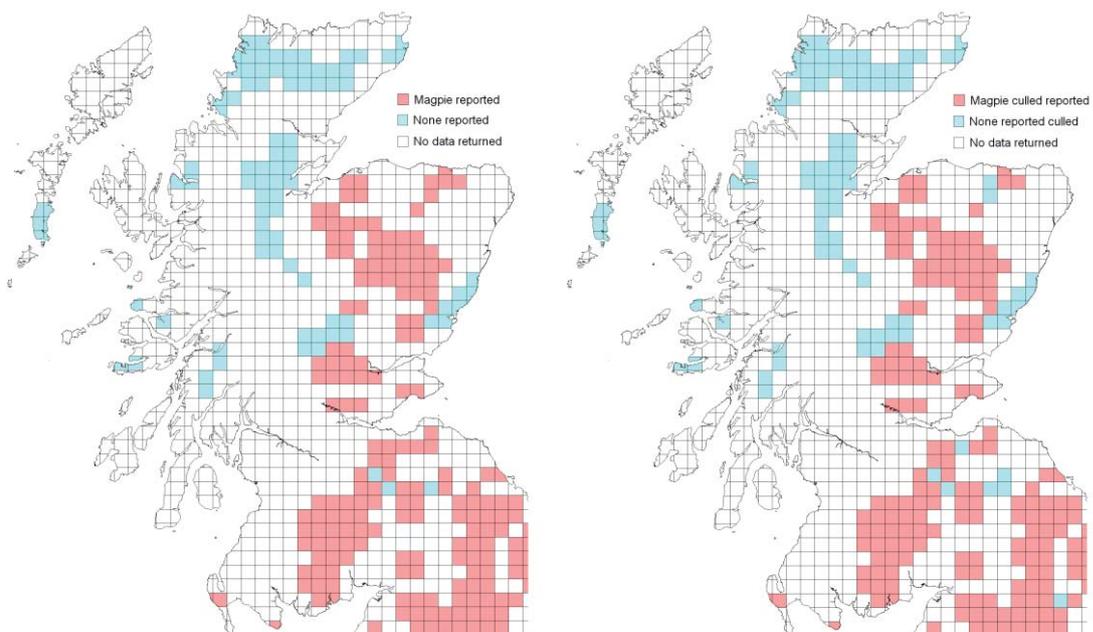


Figure 22. **Magpies** were found in southern and north-eastern Scotland (also throughout England and Wales) and were, in general, reported culled wherever they were found.

## Protected predatory species present

Most shoots surveyed reported having kestrels, buzzards, sparrowhawks, barn and tawny owls (over 80% of shoots surveyed, Table 5). Buzzards (Figure 24), sparrowhawks (Figure 25) and goshawks were viewed as having a detrimental effect on game by over 70% of those that reported having these species. Research into the effect of these raptors on game species is ongoing. Some evidence indicates that, in certain situations, predation by them could have negative effects on game but these effects do not appear to be ubiquitous (GWCT Grey Partridge News 2009; Park et al., 2008; Watson et al., 2007a & b). Marsh harriers, merlin, barn owls (Figure 26) and osprey were all viewed fairly benignly by those shoots that reported their presence, with less than 10% of those with these birds considering they had a negative effect on game or on wildlife in general. Kestrels (Figure 27) and red kites (Figure 28) were also considered to have no effect on game or wildlife by a majority of respondents who had these species on land they managed. We totalled up the number of raptor species on each shoot, using presence of kestrel, buzzard, sparrowhawk, goshawk, hen harrier, marsh harrier, peregrine, merlin, golden eagle, red kite, osprey, honey buzzard and white-tailed sea eagle as a measure of raptor presence. Over 90% of respondents had 3 or more raptor species present, 75% had 4 or more species and over 50% reported five or more species (Figure 23).

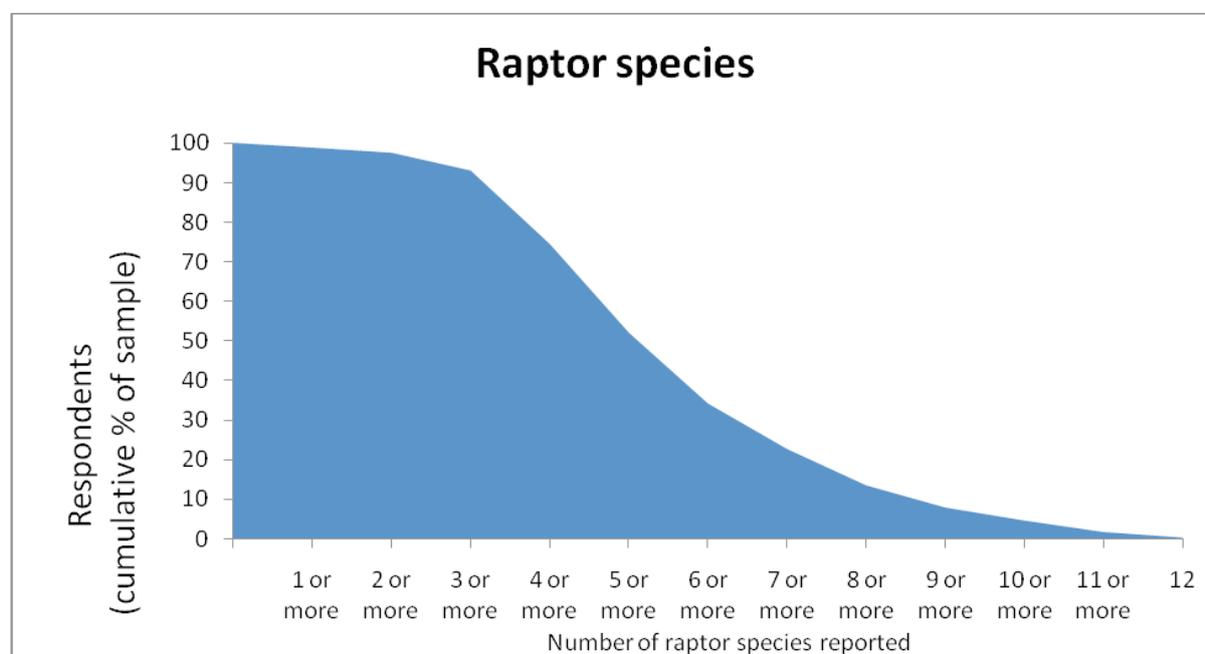


Figure 23. Number of raptor species reported as present on surveyed shoots. Over 90% of those who responded had 3 or more raptor species present, 75% had 4 or more and over 50% reported five or more species on the area they manage.

Table 5. **Protected avian predators.** These species was considered to be present where respondents reported them either breeding or visiting. Effects on game or wildlife were where respondents reported the species present and indicated that they perceived negative effects on game and wildlife.

| Protected predators        | Shoots where present | Effect on game | Effect on wildlife |
|----------------------------|----------------------|----------------|--------------------|
| Kestrel                    | 867 (92.1%)          | 107 (12.3%)    | 188 (21.7%)        |
| Buzzard                    | 910 (96.7%)          | 693 (76.2%)    | 574 (63.1%)        |
| Sparrowhawk                | 893 (94.9%)          | 647 (72.5%)    | 637 (71.3%)        |
| Goshawk                    | 246 (26.1%)          | 173 (70.3%)    | 157 (63.8%)        |
| Hen harrier                | 243 (25.8%)          | 138 (56.8%)    | 117 (48.1%)        |
| Marsh harrier              | 119 (12.6%)          | 9 (7.6%)       | 8 (6.7%)           |
| Peregrine                  | 457 (48.6%)          | 221 (48.4%)    | 188 (41.1%)        |
| Merlin                     | 248 (26.4%)          | 16 (6.5%)      | 47 (19.0%)         |
| Golden eagle               | 59 (6.3%)            | 24 (40.7%)     | 23 (39.0%)         |
| Red kite                   | 446 (47.4%)          | 100 (22.4%)    | 86 (19.3%)         |
| Barn owl                   | 780 (82.9%)          | 24 (3.1%)      | 61 (7.8%)          |
| Tawny owl                  | 827 (87.9%)          | 403 (48.7%)    | 246 (29.7%)        |
| Little owl                 | 613 (65.1%)          | 62 (10.1%)     | 79 (12.9%)         |
| Long-eared owl             | 149 (15.8%)          | 19 (12.8%)     | 22 (14.8%)         |
| Short-eared owl            | 216 (23.0%)          | 50 (23.1%)     | 44 (20.4%)         |
| Osprey                     | 131 (13.9%)          | 5 (3.8%)       | 10 (7.6%)          |
| Artic skua                 | 8 (0.9%)             | 1 (12.5%)      | 2 (25.0%)          |
| Great skua                 | 4 (0.4%)             | 2 (50.0%)      | 1 (25.0%)          |
| Common gull                | 434 (46.1%)          | 64 (14.7%)     | 88 (20.3%)         |
| Herring gull               | 403 (42.8%)          | 107 (26.6%)    | 126 (31.3%)        |
| Lesser Black -backed gull  | 321 (34.1%)          | 102 (31.8%)    | 117 (36.4%)        |
| Greater Black -backed gull | 291 (30.9%)          | 112 (38.5%)    | 121 (41.6%)        |
| Cormorant                  | 482 (51.2%)          | 106 (22.0%)    | 226 (46.9%)        |
| Goosander                  | 214 (22.7%)          | 45 (21.0%)     | 88 (41.1%)         |
| Merganser                  | 96 (10.2%)           | 21 (21.9%)     | 36 (37.5%)         |
| Honey Buzzard              | 48 (5.1%)            | 10 (20.8%)     | 7 (14.6%)          |
| White-tailed sea eagle     | 35 (3.7%)            | 13 (37.1%)     | 13 (37.1%)         |
| Eagle owl                  | 21 (2.2%)            | 10 (47.6%)     | 11 (52.4%)         |

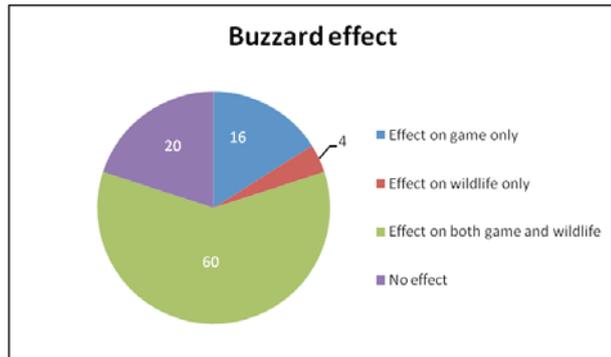
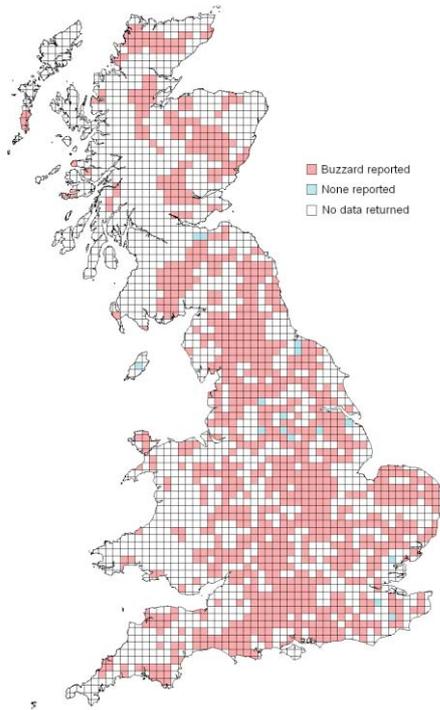


Figure 24. Although the majority of gamekeepers who reported **buzzards** on their land considered that they had a negative effect on both game and wildlife, they were reported as being present across the UK.

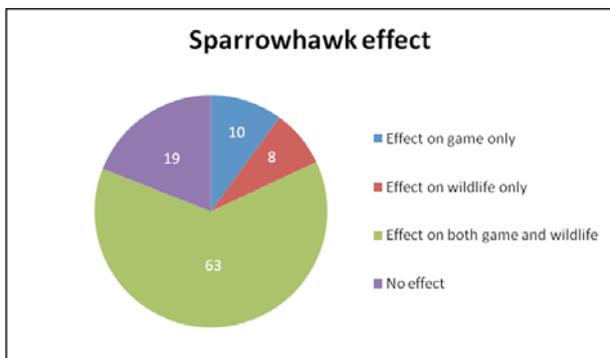
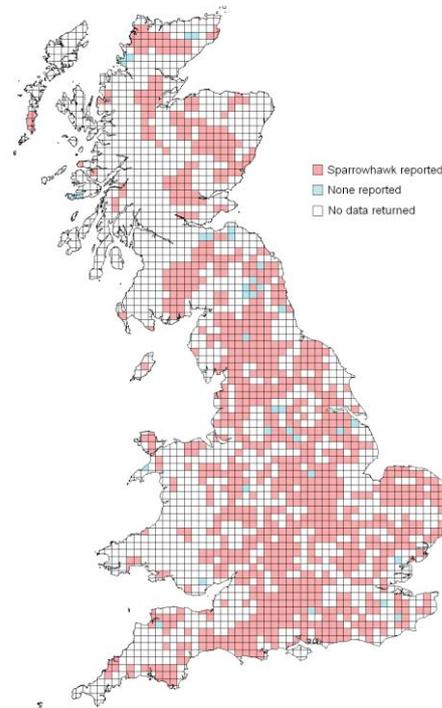


Figure 25. **Sparrowhawks** were reported as being present on the land they managed by a majority of gamekeepers, with a majority of those gamekeepers with sparrowhawks reporting a negative effect of them on both game and wildlife.

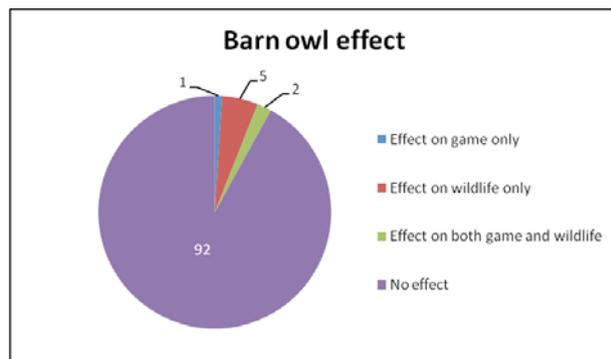
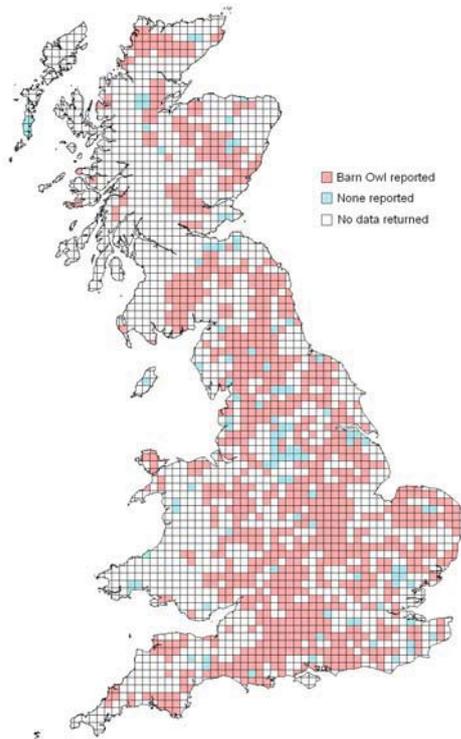


Figure 26. **Barn owls** were also reported throughout most of the area managed by gamekeepers, with the majority of gamekeepers reporting that they had no effect on game or wildlife.

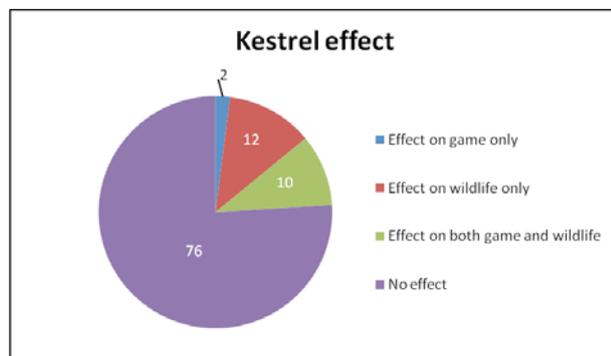
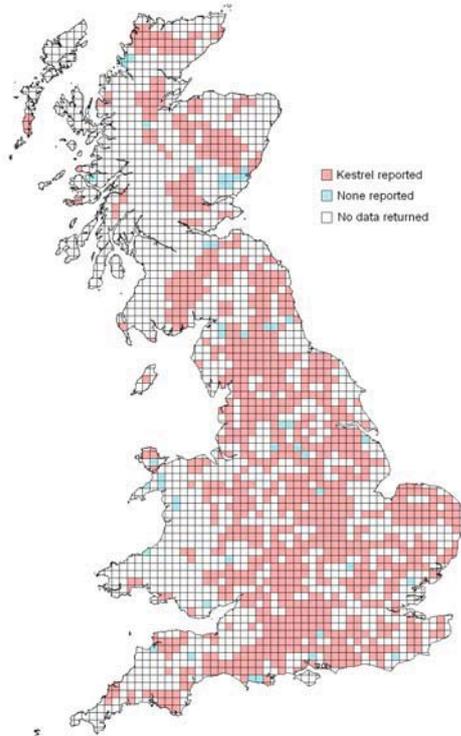


Figure 27. **Kestrels** were found throughout the UK and most gamekeepers who had them on the area they managed reported that they had no effect on either game or wildlife.

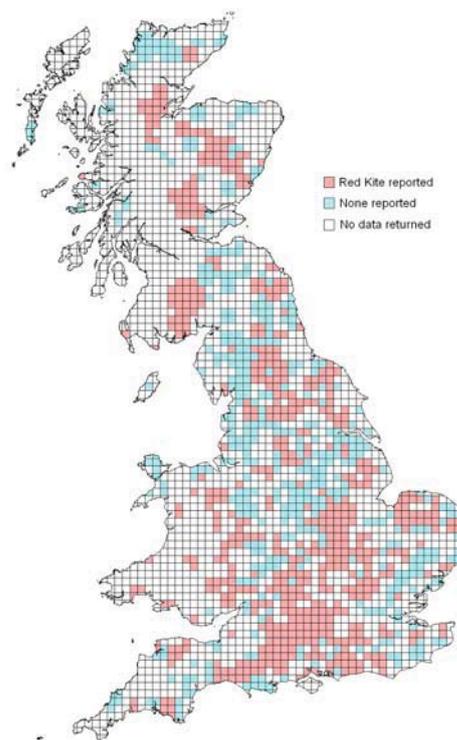
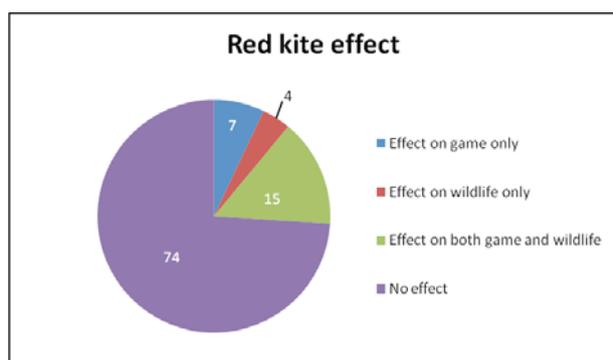


Figure 28. **Red kites** have spread and were reported on gamekeeper land throughout the UK. A majority of gamekeepers feel that they have no effect on game or wildlife.

Among the **protected mammalian predators** surveyed, badgers and hedgehogs were fairly well distributed across the surveyed shoots, with over three-quarters of them reporting one of these two species (Table 6). Badgers (Figure 29), pine martens and polecats were judged by roughly three-quarters of the shoots that had them as having a detrimental effect on game and also on wildlife. Hedgehogs and otters were viewed more benignly.

Table 6. **Protected mammalian predators**. These species were considered to be present where respondents reported them either breeding or visiting. Effects on game or wildlife were where respondents reported the species present and indicated that they perceived negative effects on game and wildlife.

| Protected predators | Shoots where present | Effect on game | Effect on wildlife |
|---------------------|----------------------|----------------|--------------------|
| Badger              | 840 (89.3%)          | 628 (74.8%)    | 608 (72.4%)        |
| Otter               | 338 (35.9%)          | 128 (37.9%)    | 136 (40.2%)        |
| Pine marten         | 59 (6.3%)            | 46 (78.0%)     | 45 (76.3%)         |
| Polecat*            | 251 (26.7%)          | 208 (82.9%)    | 193 (76.9%)        |
| Hedgehog            | 739 (78.5%)          | 354 (47.9%)    | 322 (43.6%)        |

\* Polecats are 'protected' in as much as they cannot be deliberately trapped but they may be shot.

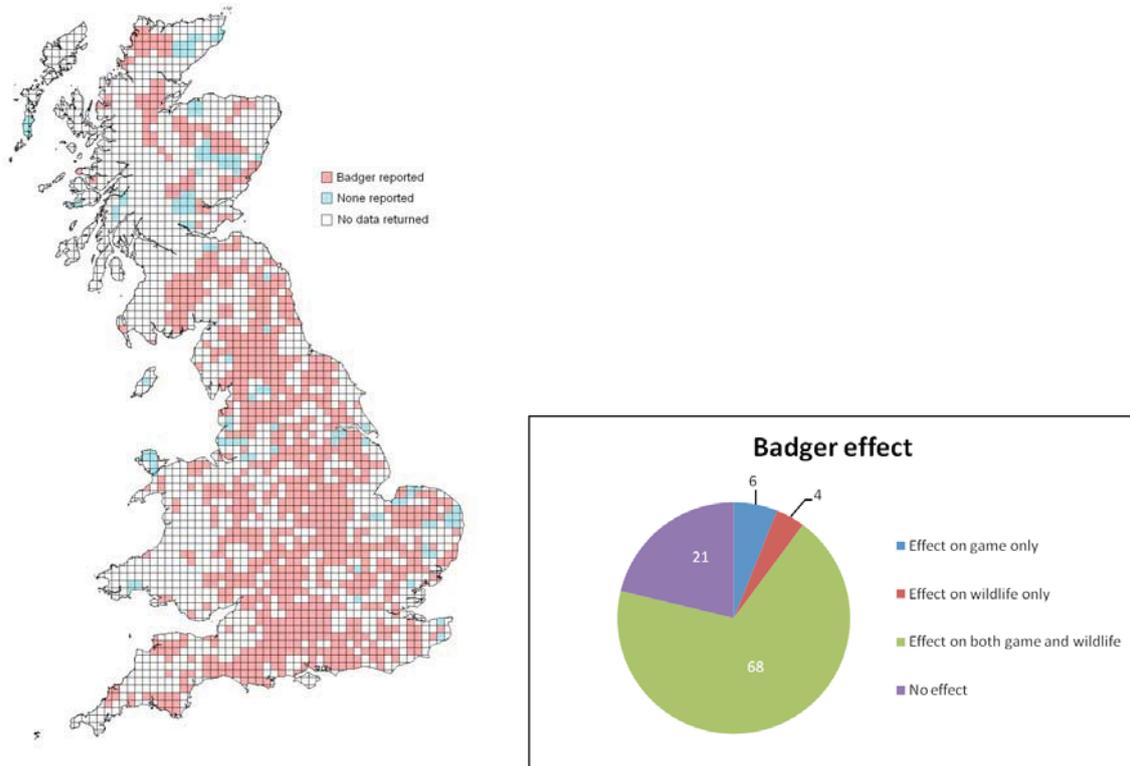


Figure 29. **Badgers** were reported across the mainland of the UK, with most gamekeepers who had them on the land they managed reporting that they consider they have a negative effect on both game and wildlife.

## Other mammal species present

Nearly a third of all the shoots surveyed reported having water voles within their managed areas (Table 8), while over ten percent reported red squirrel or hazel dormice. Less common were wild boar and edible dormice.

Table 8. **Other mammals.** These species were considered to be present where respondents reported them either breeding or visiting.

| Species         | Shoots where present |
|-----------------|----------------------|
| Red squirrel    | 132 (14.0%)          |
| Water vole      | 286 (30.4%)          |
| Hazel dormouse  | 153 (16.3%)          |
| Wild boar       | 23 (2.4%)            |
| Edible dormouse | 11 (1.2%)            |

## Other bird species present

Over three-quarters of the shoots surveyed reported lapwing, song thrush, starlings, cuckoo, house sparrow and skylark as being present on the land they managed, though the majority of shoots were not able to estimate the numbers breeding on their land (Table 7).

Table 7. **Other rare and charismatic birds.** These species was considered to be present where respondents reported them either breeding or visiting.

| Species                   | Shoots where present |
|---------------------------|----------------------|
| Raven                     | 503 (53.5%)          |
| Avocet                    | 25 (2.7%)            |
| Stone curlew              | 58 (6.2%)            |
| Curlew                    | 406 (43.1%)          |
| Lapwing*                  | 789 (83.8%)          |
| Oyster catcher            | 289 (30.7%)          |
| Bittern                   | 76 (8.1%)            |
| Scaup                     | 11 (1.2%)            |
| Dunlin                    | 88 (9.4%)            |
| Ruff                      | 8 (0.9%)             |
| Black-tailed godwit       | 22 (2.3%)            |
| Whimbrel                  | 22 (2.3%)            |
| Red-necked phalarope      | 3 (0.3%)             |
| Turtle dove               | 314 (33.4%)          |
| Corncrake                 | 27 (2.9%)            |
| Cuckoo                    | 746 (79.3%)          |
| Nightjar                  | 140 (14.9%)          |
| Wryneck                   | 12 (1.3%)            |
| Lesser-spotted woodpecker | 524 (55.7%)          |
| Skylark                   | 710 (75.5%)          |
| Tree pipit                | 99 (10.5%)           |
| Yellow wagtail            | 459 (48.8%)          |
| Ring ouzel                | 94 (10.0%)           |
| Song thrush               | 785 (83.4%)          |
| Spotted flycatcher        | 290 (30.8%)          |
| Golden oriole             | 8 (0.9%)             |
| Starling                  | 806 (85.7%)          |
| House sparrow             | 724 (76.9%)          |
| Tree sparrow              | 501 (53.2%)          |
| Linnet                    | 430 (45.7%)          |
| Lesser redpoll            | 52 (5.5%)            |
| Hawfinch                  | 88 (9.4%)            |
| Yellowhammer              | 625 (66.4%)          |
| Cirl bunting              | 18 (1.9%)            |
| Corn bunting              | 153 (16.3%)          |
| Parakeet(s)**             | 28 (3.0%)            |

\*(including green plover)

\*\*Most (20 – 2.1%) were ring-necked parakeets, 8 (0.9%) did not specify.

## Overall conclusions from this survey

- A large area was surveyed – many times that covered by some of the conservation designations in existence throughout the UK.
- Kepered estates are host to a wide variety of Britain's wildlife, a lot of it rare and/or charismatic.
- Most kepered estates have several raptor species present, even though some species are regarded as detrimental to game.
- There is widespread use of Government agri-environment schemes to create habitat for wildlife.
- Whilst control of common predators by gamekeepers is normal, the distributions of these species remain widespread.
- Several deer species are continuing to expand their range despite control being widespread.
- Full-time gamekeepered estates are an important part of British wildlife conservation
- Conservation carried out by small shoots with amateur and part-time gamekeepers also makes a significant contribution.

## References

- Fletcher, K., Aebischer, N.J., Baines, D., Foster, R. & Hoodless, A.N. 2010. Changes in breeding success and abundance of ground-nesting moorland birds in relation to the experimental deployment of legal predator control. *Journal of Applied Ecology* 47: 263-272.
- GWCT Grey Partridge News 2009. Where are our partridges going? GWCT Grey Partridge News 11: 2 ([http://www.gwct.org.uk/documents/grey\\_partridge\\_news\\_summer09.pdf](http://www.gwct.org.uk/documents/grey_partridge_news_summer09.pdf)).
- Henderson, I.G., Vickery, J.A. & Carter, N. 2004. The use of winter bird crops by farmland birds in lowland England. *Biological Conservation* 118: 21-32.
- Parish, D.M.B. & Sotherton, N.W. 2004. Game crops as summer habitat for farmland songbirds in Scotland. *Agriculture, Ecosystems and Environment* 104: 429-438.
- Park, K., Graham, K., Calladine, J. & Wernham, C. 2008. Impacts of birds of prey on gamebirds in the UK: a review. *Ibis*. 150: 9-26.
- Sage, R.B., Parish, D.M.B., Woodburn, M.I.A. & Thompson, P.G.L. 2005. Songbirds using crops planted on farmland as cover for game birds. *European Journal of Wildlife Research* 51: 248-253.
- Tharme, A.P., Green, R.E., Baines, D., Bainbridge, I.P. & O'Brien, M. 2001. The effect of management for red grouse shooting on the population density of breeding birds on heather-dominated moorland. *Journal of Applied Ecology* 38: 439-457.
- Ward, A.I., Etherington, T., Ewald, J. 2008. Five years of change. *Deer* 14: 17-20.
- Watson, M., Aebischer, N.J. & Cresswell, W. 2007. Vigilance and fitness in grey partridges *Perdix perdix*: the effects of group size and foraging-vigilance trade-offs on predation mortality. *Journal of Animal Ecology* 76: 211-221.
- Watson, M., Aebischer, N.J., Potts, G.R. & Ewald, J.A. 2007. The relative effects of raptor predation and shooting on overwinter mortality of grey partridges in the United Kingdom. *Journal of Applied Ecology* 44: 972-982.

