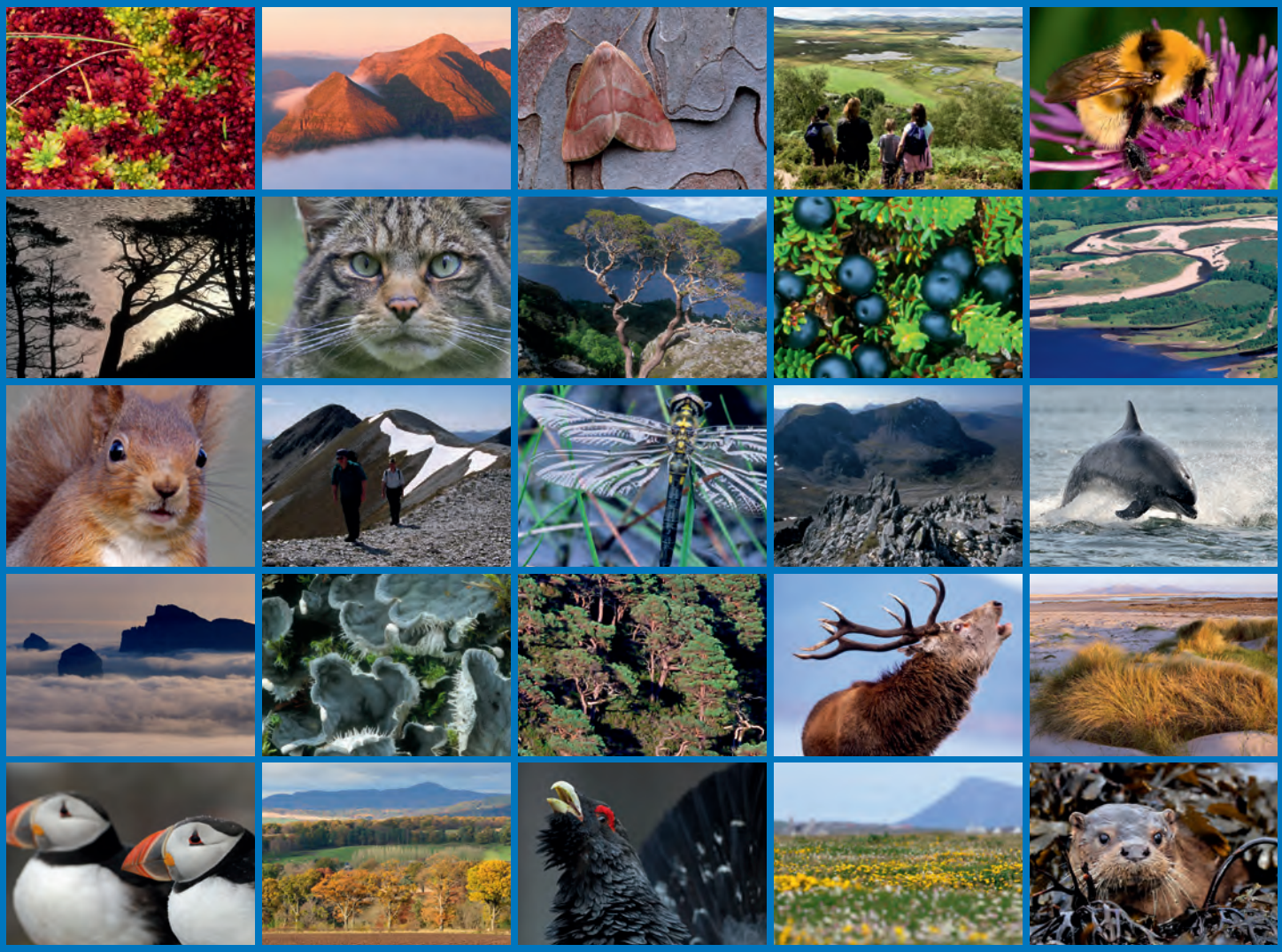
Scottish Natural Heritage
Commissioned Report No. 931

Assessing the nature and use of corvid cage traps in Scotland: Part 1 of 4

Questionnaire survey of corvid trap users in Scotland



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COMMISSIONED REPORT

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Questionnaire survey of corvid trap users in Scotland

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COMMISSIONED REPORT

Summary

Assessing the nature and use of corvid cage traps in Scotland: Part 1 of 4 – Questionnaire survey of corvid trap users in Scotland

Commissioned Report No. 931
Project No: 13747
Contractor: Jonathan C. Reynolds, Game & Wildlife Conservation Trust
Year of publication: 2016

Keywords

Regulation; general licences; corvid birds; trapping; conservation; agriculture; food hygiene.

Background

This survey was commissioned by SNH to inform their regular review of four General Licences which allow the control of corvid birds for various purposes. It specifically aimed to improve understanding of current corvid trapping practices, establishing how and where corvid traps are used in Scotland, how different trap types operate in different situations, and their effectiveness.

Main findings

- A postal questionnaire survey was sent by Police Scotland to all registered users of traps for corvid birds in Scotland. The purpose of the survey was to assist Scottish Natural Heritage (SNH) in its role of regulating lethal control of bird species through the General Licences. Trap users were given the option of responding by post or on-line. The survey was carried out in 2014; questions referred to the year 2013.
- 1,471 questionnaires were sent out, yielding 595 replies, 580 of them from people using traps in the survey year. Means of detecting bias were limited, but no bias was detected within the dataset or by comparison with other sources of data.
- Respondents often cited multiple reasons for trapping corvid birds. 89% of respondents were trapping corvid birds to assist the conservation of wild birds (General Licence 01), with wild game birds and songbirds cited with similar frequency. 52% of respondents controlled corvids to prevent serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit (GL02). 5% cited GL03 (preservation of public health, public safety, and preventing the spread of disease), but only one respondent gave this as the sole purpose of control.
- Correspondence Analysis was used to objectively group respondents by similar characteristics. Three clusters were identified, which were broadly characterised as 'Game management' (35% of respondents), 'Agricultural' (40%) and 'Suburban' (25%).
- The Suburban cluster was focused particularly on magpie as a predator of songbirds. Agricultural and Game Management sectors trapped far fewer magpies: their catch was dominated by carrion crows, with hooded crow, jackdaw, rook and magpie following in order of numbers caught.

- Depending on species, trapping accounted for 38% (rook) to 82% (magpie) of corvids killed by respondents; the remainder were killed by shooting. Trapping accounted for 65% of carrion and hooded crow bags.
- The current system for registering details of corvid trappers is clearly inadequate and fails to provide a reliable means of communication between SNH and trap users. We recommend that it should be overhauled. We also note that there is no equivalent 'handle' on those who shoot corvids under the General Licences, but do not use traps.
- Because of the partial engagement with the trapper community, knowledge of the overall scale of corvid control in Scotland is incomplete. We extrapolated to estimate the likely total bags of corvids taken by those using traps. Comparison of these estimated total bag sizes with estimated corvid population sizes in Scotland flagged no particular concerns about the impact of control measures on the status of these species.
- Crows reported as hooded crows far south of the known region of hybridisation with carrion crows caused considerable puzzlement. These cases were numerically few compared with carrion crows in the same areas. Differences between colloquial use of the term 'hoodie' and taxonomic use of 'hooded crow' may be responsible for mis-classification in some of these cases, but other explanations are also possible.

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Acknowledgements

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1. BACKGROUND

General Licences were created in the UK in the early 1990s to bring existing UK wildlife legislation (the Wildlife & Countryside Act 1981, as amended) in line with European Directives. The Schedule of birds that could be controlled year-round (the so-called 'Pest List') was replaced by General Licences (GL) which specifically allow acts of killing, taking or possession of certain bird species that would otherwise be forbidden by the Directives. General Licences are issued separately in England, Wales, Scotland, and Northern Ireland and are regularly reviewed.

Under Scotland's wildlife law all wild bird species are protected, but the control of problem bird species by authorised persons is specifically permitted and regulated either by individual licences or by General Licences. General Licences cover situations that are relatively commonplace, such as preserving public health or air safety, or damage to food and crops. They permit action only against species that are numerous, where control is unlikely to have an impact on their conservation status. The intention of the General Licences is to allow effective management of birds, where there is clear need. They avoid the need for individual licensing, but they do define strict conditions, and abuse of those conditions could constitute an offence.

Scottish Natural Heritage (SNH) reviews General Licences annually and makes occasional revisions to ensure that they are easy to understand, up-to-date and fit for purpose. SNH want General Licences to enable users to carry out control in the most effective ways, without challenge or interference, while also ensuring that the licences are robust and defensible. They also want to help to promote better understanding about why GLs are used, and how they are important tools in conservation and land management.

Among the fourteen General Licences available in 2014 are four that relate to the control of common corvid birds (members of the crow family: crows, magpies, rooks, jackdaws, jays; but not raven or chough). These four General Licences list the reasons for which corvid birds may be killed, namely: conservation of wild birds; prevention of serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit; preservation of public health, public safety and preventing the spread of disease; protection of air safety. They specify conditions, including authorised trap designs; restrictions on manner of use; provisions for welfare of decoy and captured birds; tagging of traps to identify the operator.

Large corvid traps of various designs have been used since at least the 1950s though without documented evidence of their effectiveness to control corvid numbers. The use of smaller traps to control corvids became widespread only after 1989, when the Game Conservancy Trust (GCT; now Game & Wildlife Conservation Trust) carried out field research on the efficiency of both multi-catch traps and Larsen traps to catch magpies and crows. The small Larsen trap originated in Denmark, where it was considered extremely effective in reducing magpie population levels. GCT research showed not only that Larsen traps were efficient and selective, but suggested they were 10-15 times more efficient with a decoy bird than with bait alone (Reynolds, 1990a). The GCT drew on published biological literature to explain, in terms of territorial behaviour, why corvids attempting to breed would be strongly motivated to expel the decoy, which they saw as an intruder on their territory.

Scientific literature relating to the ecological significance of corvid birds as predators was also reviewed. This literature review was not published but was widely distributed to aid discussion with other organisations and with government departments (Reynolds, 1990b). In 1990, the Nature Conservancy Council (fore-runner of SNH, Natural England and Natural Resources Wales) licensed a limited-scale trial by 273 gamekeepers using 537 traps for 12 months, which confirmed the efficiency of the Larsen trap (>12,000 corvid birds), the advantage of using a decoy bird, and the selectivity of this method: non-target species

formed only 1% of captures when a decoy bird was used and could be released unharmed (Tapper *et al*., 1991).

Since the 1990s, there has been further development of small corvid traps, including the introduction of new types which do not have decoy compartments. The present survey was commissioned by SNH to obtain better information about current corvid trapping practices, establishing how and where corvid traps are used in Scotland, how different trap types operate in different situations, and their effectiveness. This fact-finding exercise followed consultation with interest groups and had the support of the British Association for Shooting and Conservation, Scottish Gamekeepers Association, Game & Wildlife Conservation Trust, Royal Society for the Protection of Birds, Scottish Land & Estates and National Farmers Union Scotland.

2. METHODS

2.1 Questionnaire

Questionnaires were sent out by post on 15 May 2014 by Police Scotland to addresses held confidentially in its database of registered corvid trappers. Returns could be made either by completing the paper questionnaire and returning it to GWCT in the reply-paid envelope provided, or on-line via a Survey Monkey questionnaire (www.surveymonkey.com). There were 17 questions (Q1 to Q17), covering characteristics of the respondent and his/her location; reasons for trapping corvids; what traps were used; how traps were used, including location, seasonality of use, use of decoy birds and/or bait type; and inviting further comments. The Survey Monkey questionnaire was identical except that it had an additional question asking what feed was used for decoy birds.

Respondents were asked to supply contact details, because no details were passed to GWCT by Police Scotland, and geographical location was potentially important. However, they could alternatively respond anonymously: in this case they were asked to supply the first part of their post-code, so that we could group responses according to which part of Scotland they came from.

Registered trappers who were no longer actually trapping corvids were asked only to tick Q1 and return the questionnaire in the reply-paid envelope.

Copies of the covering letter and postal questionnaire form can be found at the end of this report (see Annex 1).

2.2 Comparative data

In this report, we have compared results from the present survey with data from the GWCT's National Game-Bag Census (NGC). The NGC is an historic database of 'bag' records from shooting estates, in part compiled retrospectively from estate game record books, but since the 1960s updated with annual returns from contributing estates. Records of predators and pests killed on the same estates were consistently recorded from 1961. The number of contributing estates varies from year to year. In 2013, the year to which data in this report relate, 152 estates in Scotland contributed data on corvid bags. As the NGC mailing goes out at the end of February, the nominal year '2013' actually covers the 12 months 1st March 2013 to 28th February 2014. Inevitably, some data will be common to both the present questionnaire survey and to the NGC. The extent of this overlap is difficult to estimate, but an attempt to de-duplicate by location and/or estate name suggests that roughly 40% of gamekeepers who responded to the present survey (i.e. about 12% of all respondents to the present survey) also provided data to the NGC survey, while 50% of Scottish NGC estates also responded to the present survey.

3. RESULTS

3.1 Return rate

1,471 questionnaires were sent out. 79 of these (5%) were returned as undelivered because of incorrect addresses.

Taking 16 May as day 1, response dates formed a skewed distribution, with peaks on day 6 and day 14 (the deadline quoted in the covering letter to the questionnaire; see Figure 1).

In view of disappointing returns, an email reminder was sent out on 3 June to all contacts who had supplied email addresses to Police Scotland (*n*=62), asking them to complete the online survey if they had not already responded.

Analysis commenced on 9 July. A total of 595 responses had been received by this date, including 50 on-line responses, representing 43% of those delivered. A further 15 postal questionnaires were received after 9 July (the last 17 months late, on 9 October 2015!)

Most respondents who were still trapping answered the questionnaire fully, except where contact details were withheld because the respondent preferred to respond anonymously. Because of the branched nature of the questionnaire, not all questions applied to the full sample of respondents (Table 1). Throughout this report, the relevant sample size for each analysis is indicated by "*n*=###".

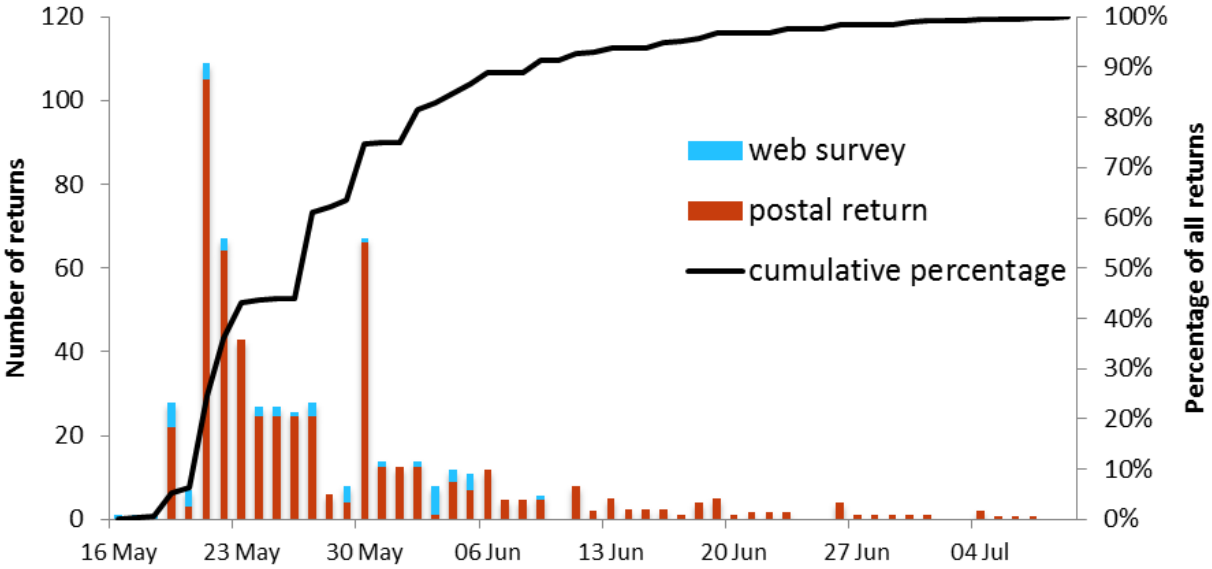

Figure 1. Number of questionnaire returns (vertical bars; left-hand axis), coded by method of return (see legend), by calendar day (horizontal axis). The peak on 30 May corresponds to the deadline quoted in the letter accompanying the questionnaire. Where postal returns accumulated over weekends or bank holidays, numbers have been averaged across the preceding days when no delivery was made. The black line (referring to the right-hand axis) shows the percentage of n=595 responses received by 9 July 2014, when analysis began.

Table 1. Number (and percentage) of respondents answering each question. Question numbers relate to the paper version of the questionnaire; the online version had slightly different numbering.

	Question	Respondents	% of respondents
1	No longer trapping	92	15
2	Full address	400	67
	Postal area	548	92
	Phone number	386	65
	Email	249	42
3	Anonymous	103	17
4	Occupation	509	86
	Age group	506	85
5	Land use in ha or acres	301	51
	Percent land use only	168	28
6	Principal use (single answer)	393	66
	Principal use (multiple answers)	65	11
7	Which General Licence(s)?	499	84
8	Reasons for using GL01	360	61
9	Reasons for using GL02	263	44
10	Reasons for using GL03	31	5
11	Trapping/shooting corvid bags	488	82
12	What trap types?	496	83
13	Seasonality of use	489	82
14	Where used?	493	83
15	Decoys	453	76
16	Bait	418	70
17	Comments	204	34
	Total returns	**595**	

3.2 Bias

Because the composition of the Police contacts database was unknown (section 2.1), there was no direct way to determine whether returns were biased towards particular sectors.

Several causes of occupation-related bias might be envisaged:

1. **Political**
   Some occupational groups might be un-sympathetic/ resistant to the aims of the survey.
2. **Time-related**
   Some occupational groups might have more time available to respond to the questionnaire.

In both cases, one might expect to see faster responses from some groups than from others, resulting in a composition by occupation that would shift over time. Examination of the order in which returns came in gives no support to this (Figure 2).

Figure 2. Composition of responses classified by primary occupation (see legend). The graph shows the composition of the sample as new questionnaires were added day by day. Composition remained constant over time, indicating similar speed of response for all occupation categories.

3.3 Current/discontinued use, and likely total number of trappers

Among 595 responses, 92 (15%) indicated that they were no longer using corvid traps. If we assume that this 'drop-out' rate applied to all (1,471 - 79) = 1,392 addressees, it is possible that there are 1,183 people actively and legally using corvid traps in Scotland. This represents about 0.017% of the 2013 population in Scotland, or 0.02% of those over 16 years of age (General Register Office for Scotland, mid-2013 population estimates, www.gro-scotland.gov.uk).

3.4 Geographical location

491 (98%) of respondents who were still trapping provided at least the first part of their postcode, indicating the postcode district. The locations by postcode district of respondents who provided location data are shown in Figure 3. There was no apparent locational bias between those currently trapping and those who were no longer trapping (Figure 4).

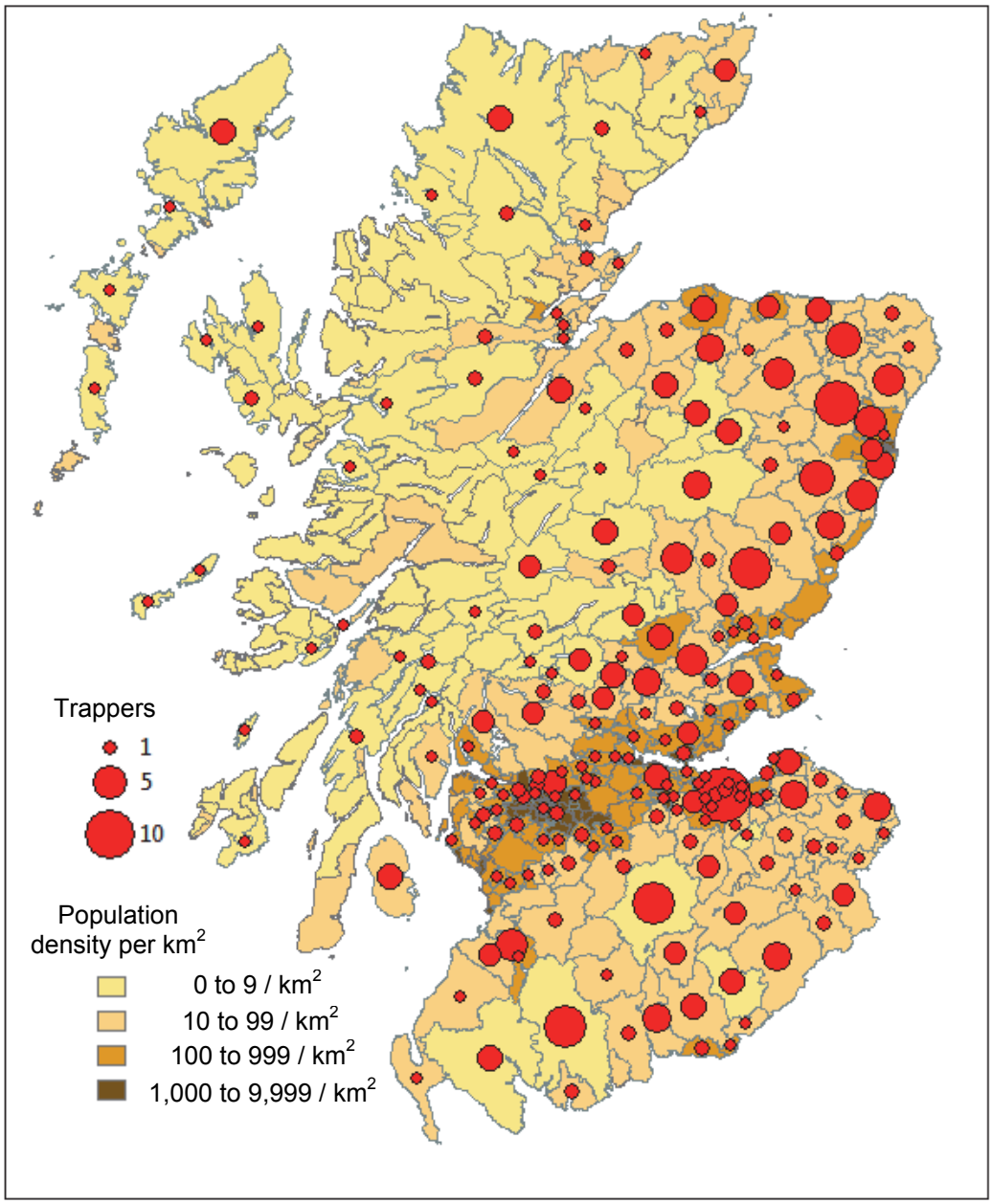

Figure 3. Geographical distribution by postcode district of 486 questionnaire respondents who gave at least the first part of their postcode and were currently trapping corvid birds in 2013. The number of trappers within each postcode district is indicated by the size of the red symbol (see legend). One further trapper in Shetland lies beyond the scope of this map. In the background, postcode districts are filled according to human population density (4 categories on a logarithmic scale; data from 2011 Census, ©National Records of Scotland).

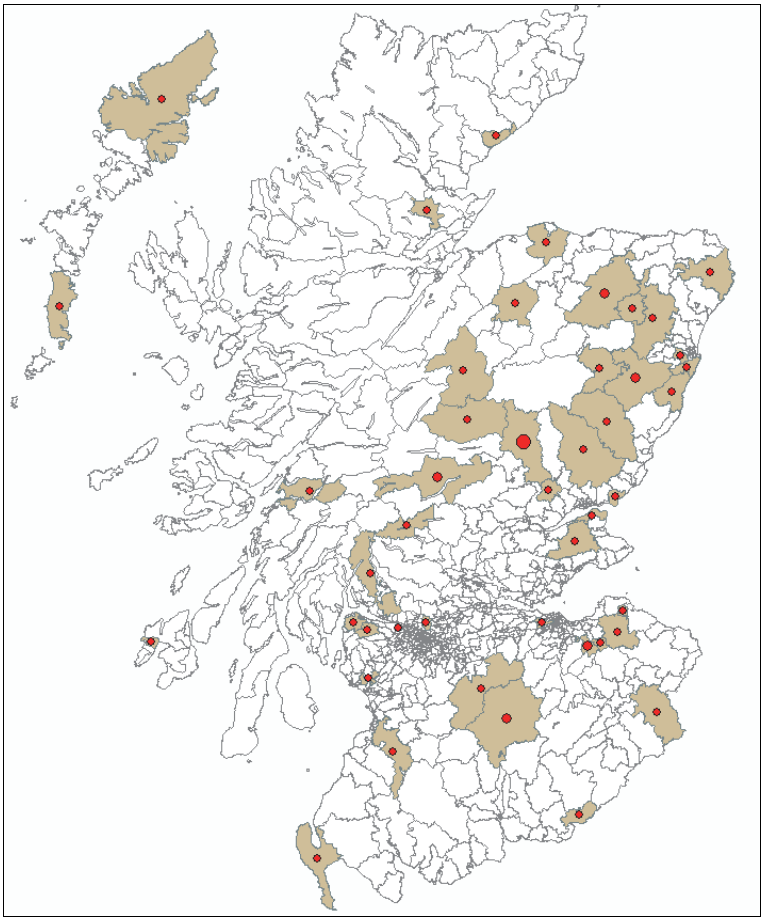

Figure 4. Locations by postcode district of 54 questionnaire respondents who were no longer trapping in 2013.

3.5 Size and nature of areas where trapping takes place

306 respondents indicated the total size of the land parcel on which they controlled corvids (Q5). Size varied by 2 orders of magnitude, but the two most common size classes were <100 ha and 1,000-10,000 ha (Figure 5).

For the 306 respondents together, the land area addressed totalled 4,810 km^2 (481,000 ha). Extrapolated crudely to the 1,183 trappers believed to be operating, this would suggest that corvid trapping takes place on approximately 25% of Scotland's 78,770 km^2 land area but we have no means of estimating the undoubtedly large errors around this estimate.

The two commonest size categories corresponded broadly to (a) small land-holdings <100 ha where the principal use was 'garden or park' or 'livestock husbandry'; and (b) very large land-holdings between 1,000 and 10,000 ha, where the principal use was 'shooting estate' or 'deer forest' (Figure 6). The spread of holdings of intermediate sizes included those where the principal use was 'agricultural crops', and 'livestock husbandry' and 'shooting estate'.

Trappers were deliberately <u>not</u> asked in Q5 over how large an area they trapped corvids, because the 'catchment' area addressed by each trap is unknown, and it is impossible for trappers to judge how broad an impact they have. While bearing this in mind, for the 306 respondents who gave land areas we can calculate the median density at which traps were available was 1 trap per 71 ha (i.e. half of respondents had higher densities of traps, half had lower densities).

Figure 5. Size of control areas among n =306 respondents. Note that size classes do not cover equal ranges.

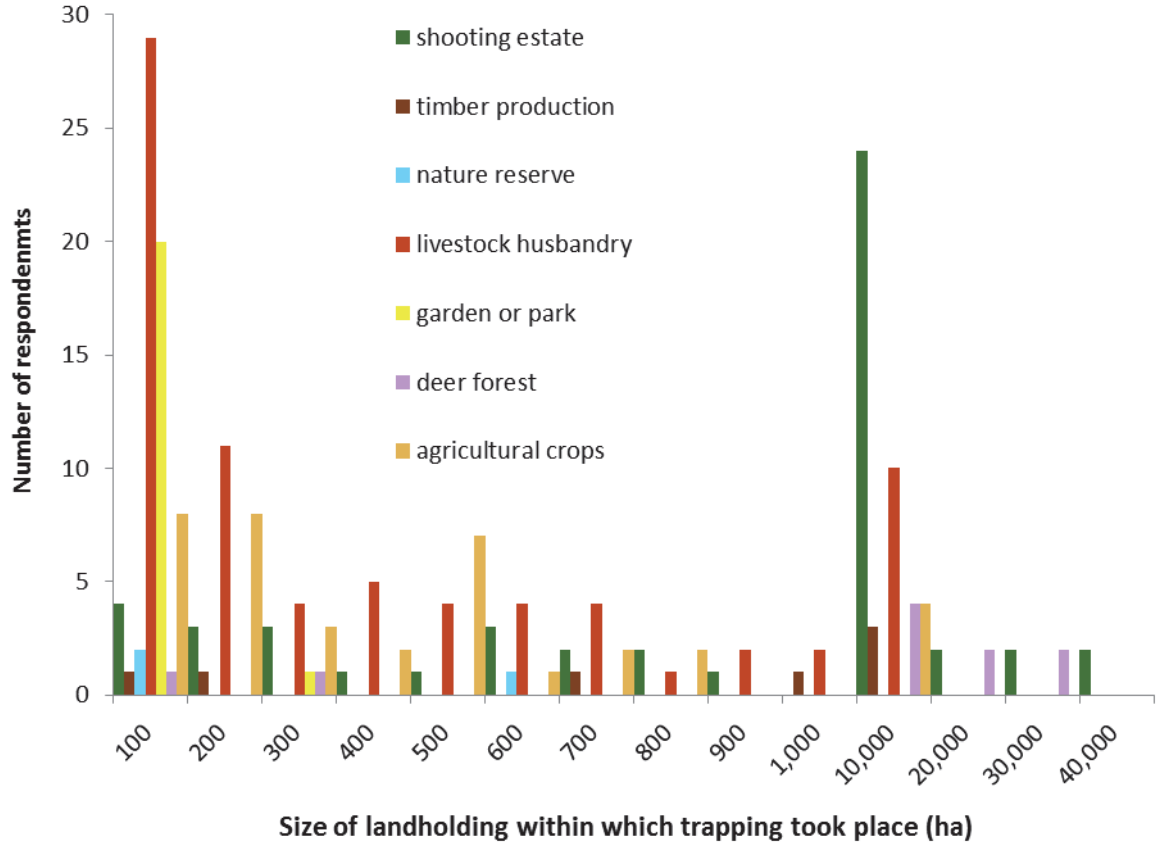

Figure 6. Size of control area classified by principal land use. As in Figure 5, size classes do not cover equal ranges.

Table 2. Principal land use on areas where corvids were controlled by n=360 respondents who answered Q6.

Principal use	n	% of respondents	Average (ha)	Range
Agricultural crops	52	14	430	1 to 2,711
Deer forest	15	4	11,769	85 to 29,137
Garden or park	76	21	7	0.05 to 205
Livestock husbandry	114	32	474	1 to 6,880
Nature reserve	4	1	207	4 to 600
Other	15	4	1,216	0 to 10,100
Shooting estate	76	21	4,033	8 to 32,800
Timber production	8	2	2,345	81 to 6,300

3.6 Age-group, gender and occupation

Q4, asking the respondent's occupation and age-group, offered 3 age group options: under 30, 30 to 50, and over 50. These were chosen because they divided the population into roughly equal parts (General Register Office for Scotland, mid-2013 population estimates[1]). All 503 respondents who were still trapping indicated their age-group in Q4. The distribution of ages showed a clear difference from population age structure. Under-30s were under-represented, whether compared with all under-30s in the population, or with those between 16 and 30. The over-50 age-group was strongly over-represented (Table 3).

Among 400 respondents who provided contact details, it was possible to determine gender from name or title for 379. 97% of these were male, 3% female.

Of the 503 current trappers, 493 gave their occupation. Of these, 31% were gamekeepers, 25% were farmers, 1% were nature reserve wardens, and 31% indicated some other occupation (Table 2, Appendix 1). Some of the latter group could be re-categorised as being clearly connected with estate/land management (16%) or with pest control (3%). This left 13% of current trappers engaged in occupations that had no obvious connection with wildlife management, and 12% who stated that they were retired.

The questionnaire provided no category for 'retired' persons. Nevertheless 62 respondents indicated that they were retired. Pensioners were slightly under-represented among trappers, compared with their proportion in the entire population. This would be expected because many pensioners will be unable to undertake physical work, but it also possible that our 'over-50' category included further retired persons who did not declare this.

Respondents who declared that the principal land use was 'garden or park' (Q6; one in five of all respondents currently trapping) were significantly more likely to describe themselves as retired than were other respondents (51% as opposed to 4%; *n*=78,301). These proportions were respectively significantly higher, and significantly lower, than in the entire Scottish population.

[1] www.gro-scotland.gov.uk

Table 3. Demographic composition of respondents, compared with data for the whole population of Scotland (from the General Register Office for Scotland, mid-2013 population estimates). Percentage compositions for the entire population either include (A) or exclude (B) those below working age.

	Scottish population, mid-2013 estimates			**Trapping respondents**	
Age group (yrs)	**n**	**% (A)**	**% (B)**	**n**	**%**
Below working age (<16)	911,679	18%		14	3%
Working age under 30 (16-29)	976,201	20%	24%		
30-49	1,436,806	38%	36%	128	27%
>50	1,618,955	33%	40%	337	70%
Total	**4,943,641**			**479**	
Working age (16-64)	3,360,473	64%	83%	419	87%
Pension age (>65 men, >61 women)	1,055,548	20%	26%	60	13%

3.7 Reasons for trapping

Among n=487 respondents answering Q7, General Licence 01 was the most commonly cited context for trapping corvids (89% of respondents; Table 4), either alone (48%) or in combination with other General Licences (41%). 52% of respondents cited GL02: 10% on its own, 42% in combination with GL01 or GL03 or both. 52% of respondents answering Q7 cited more than one General Licence. Only one respondent cited GL03 alone.

3.7.1 GL01 – Conservation of wild birds

Q8 [Which wild birds do you primarily aim to protect?] addressed those who had cited GL01 in Q7. Q8 prompted negative feedback from several respondents, who commented that restricting answers to one group of birds implied a value judgement. Were wading birds (for instance) more or less important than songbirds? Accordingly, 359 respondents answered the question as intended, while 81 ticked more than one group of birds.

Among respondents who completed Q8 as intended (n=359), the birds of primary interest were: wild game birds (51%), wading birds (7%), and other birds (42%).

- Of the 182 respondents who indicated wild game birds to be the primary concern, 110 were gamekeepers. However 25 were farmers, 2 were nature reserve wardens/managers concerned with black grouse, 35 had other occupations associated with shooting or land management, 1 was a pest controller, and 3 had occupations not clearly associated with shooting or land management.
- The 26 respondents primarily concerned to protect wading birds comprised 10 farmers, 6 gamekeepers, 6 occupations clearly associated with land management, and 3 others.
- The 151 respondents primarily concerned with ‘other’ birds were: 26 farmers, 5 gamekeepers (3 of whom indicated that their aim was to benefit a wide spectrum of birds), 2 nature reserve wardens/managers, 13 ‘other’ occupations associated with land management, 2 pest controllers, 49 occupations not obviously associated with land management, and 48 retired persons.

Table 4. Number and percentage (%) of trapping respondents (n=487) invoking each of the General Licences (GL01, GL02, GL03) that permit corvids to be killed or taken for different purposes. Each GL was cited (indicated by a tick) either singly or in combination with other GLs.

General Licence / Purpose		General Licence(s) cited						
GL01	Conserving wild birds	✓	✓				✓	✓
GL02	Prevention of serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit		✓	✓	✓			✓
GL03	Preservation of public health, public safety, and preventing the spread of disease				✓	✓	✓	✓
	Number of respondents	234	178	51	3	1	0	20
	%	48	37	10	1	<1	0	4

Where respondents ticked more than one group of birds (*n*=81) the three groups had more or less equal stature: wild game birds (98%), wading birds (75%), other birds (84%). Wild game birds were mentioned in all but one of these cases. These 81 respondents included 27 farmers, 30 gamekeepers, 17 'other' occupations associated with land management, 3 pest controllers, and 4 occupations not obviously associated with land management.

Q8 also asked respondents to list the main species they aimed to protect under GL01. For the 250 who indicated wild gamebirds to be the primary beneficiary, or who indicated no single target population but included gamebird species among those listed, the groups of wild birds listed, in decreasing order of frequency were gamebirds, wading birds, songbirds, and waterfowl (Table 5).

3.7.2 GL02 – Prevention of serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit

252 respondents cited GL02, mostly in association with GL01. The occupations of the 58 respondents who cited GL02 but not GL01 were farmer (35); gamekeeper (4); other (13 - of which 6 were engaged in pest control or other occupations related to land management); retired (4).

Q9 asked respondents citing GL02 to list the livestock, foodstuffs, crops, vegetables or fruit that they aimed to protect. These are summarised in Table 6. 29% of the 248 respondents answering Q9 listed more than one type of issue.

Table 5. Percentages of n=250 respondents who cited GL01 (Conserving wild birds) and who either indicated gamebirds to be the primary interest, or included gamebirds among the main species they aimed to protect. A full list of species is included in Appendix 2.

Species protected	Number of respondents	%
gamebirds	217	87%
wading birds	109	44%
songbirds	76	30%
waterfowl	43	17%
gulls, terns, seabirds	6	2%
raptors	4	2%
owls	1	<1%

Table 6. Percentages of n=248 respondents who cited GL02 (Prevention of serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit) and who indicated what problems control was aimed to address.

Problem	Number of respondents	%
livestock	155	62%
animal feed	29	12%
fodder crops	4	2%
poultry (including reared game), eggs	44	17%
cereal crops	63	25%
fruit, vegetables, leaf crops, root crops	21	8%
stored grain	2	1%
Christmas trees	3	1%

Livestock issues mainly concerned sheep, with lambs and backed ewes (i.e. those stuck on their backs and unable to rise) frequently mentioned. Damage to cereal crops was generally unspecified, but both newly-drilled and mature crops were mentioned by some respondents.

3.7.3 GL03 – Preservation of public health, public safety, and preventing the spread of disease

Only 23 respondents (6%) cited GL03. Among these, the reasons given involved disease transmission (15 respondents); noise (1); contamination (3); pollution of water supplies for livestock (1); and blockage of chimneys with ensuing structural damage (2). The disease risk concerned humans (3), livestock (7) or poultry (4). The contexts were domestic (3), amenity (2), workplace (2), food storage facility (1), food processing factory (1), and agricultural (11). Transmission of the gapes parasite (*Syngamus*) was specifically mentioned as a concern by several poultry keepers.

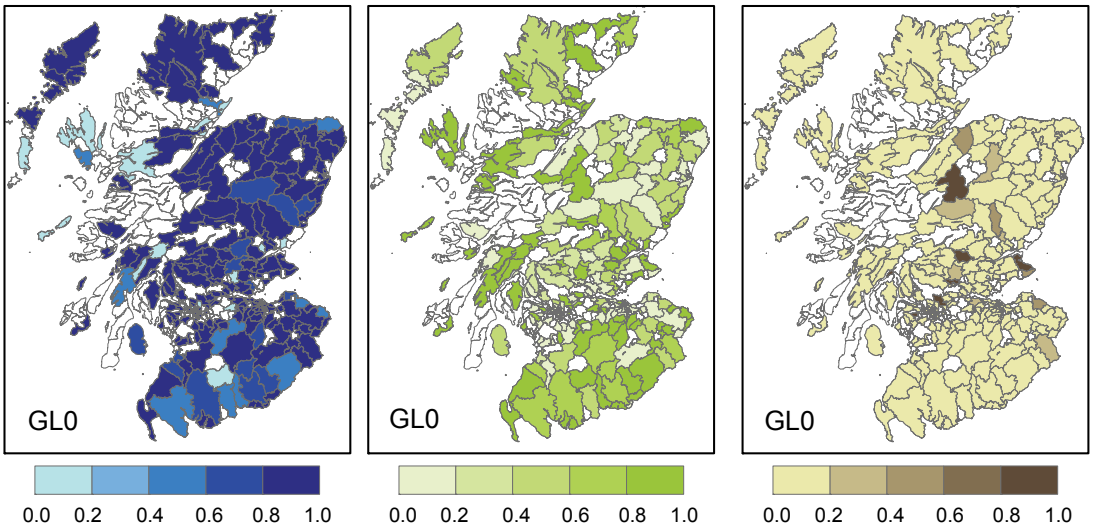

Figure 7. The proportion of active trappers in each postcode district citing General Licences GL01 (left), GL02 (centre) and GL03 (right). Note that these are proportions of very small numbers of respondents in some instances. Total sample sizes were GL01 (n=432), GL02 (n=252) and GL03 (n=23). Roughly half of all respondents cited more than one General Licence.

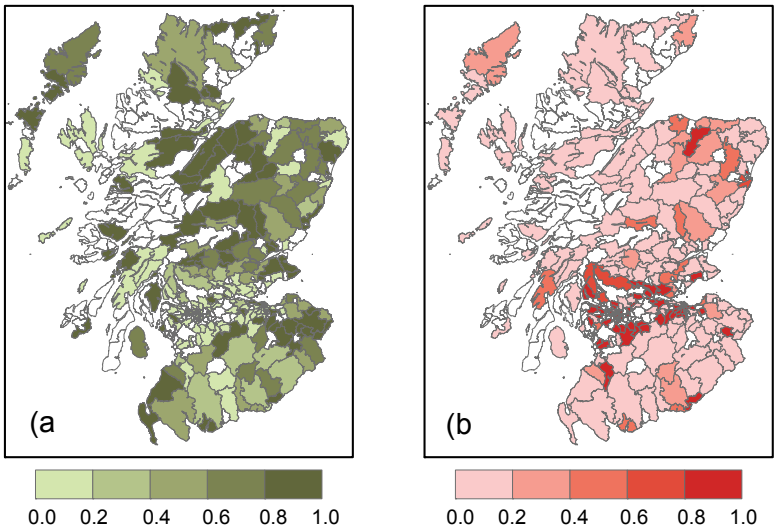

Figure 8. Proportion of active trappers citing GL01 in each postcode district who specifically mentioned gamebirds (a) or songbirds (b). These maps are essentially a breakdown of the map in Figure 7 (left). Note that many trappers mentioned both gamebirds and songbirds – see Table 5.

3.8 Characterisation of trap-user groupings

Several aspects of the analysis reported so far suggest that there are definable groupings among respondents. For instance, Figure 8(b) shows that trappers living within or near urban centres were particularly likely to mention songbirds among wild birds protected. Those trapping in gardens or parks were especially likely to be retired (section 3.6). We used Multiple Correspondence Analysis (MCA) to explore objectively whether trappers fell into clear groups. MCA combines factors to create new 'dimensions' which allow groupings to be recognised. We included 11 factors thought likely to define such groupings, and 297 current trappers for whom all these data were available:

- Respondent's occupation (including 'retired')
- Respondent's age-group
- Human population density within the respondent's post-code district[2]
- Principal land-use
- Trap type(s) used (small, large or both)
- Number of traps used[2]
- Whether gamebirds were mentioned
- Whether songbirds were mentioned
- Which General Licence(s) was invoked[3]
- Dominant corvid species in trap 'bag'[3]
- Total number of corvids killed, all species [2,3]

The analysis indicated that these 297 respondents clustered into 3 groups based on only 2 calculated dimensions (Figure 9). The contribution of factors to these dimensions is shown in Table 7.

The 3 clusters could be characterised as follows:

1. Cluster 1 (74 cases = 25%). **"Suburban"**. High human population density. Older age groups (67% >50 y.o), especially retired (55% of cases). Cite GL01 (93% of cases). Low number of mostly small traps (84% have 1 trap). Dominant trapped species usually magpie (78% of cases). 74% trap only, 26% also shoot corvids. Principal land use garden or park (88% of cases). Low to medium corvid bags.
2. Cluster 2 (119 cases = 40%). **"Agricultural"**. Mid-range human population density. Occupation farmer, 84% > 50 y.o., but only 4% retired. Low to medium number of mostly large traps (50% have >4 traps). Cite GL01 (100% of cases), frequently in combination with GL02 (54%) or with GL02 and GL03 (3%). Principal land-use agricultural crops or livestock husbandry (93% of cases), but this cluster also includes 4 nature reserves. Dominant trapped species most likely to be carrion crow (47% of cases), magpie (23%) or hooded crow (18%). 31% trap only, 69% also shoot corvids. Low to medium corvid bags.
3. Cluster 3 (104 cases = 35%). **"Game management"**. Large estates on which gamebird shooting and/or deer stalking were important but not exclusive interests. Human population density low or very low. Occupation usually gamekeeper (84% of cases). High or very high numbers of traps (50% have > 16 traps). Both small and large traps used. Cite GL01 (100% of cases), frequently in combination with GL02 (44%) or with GL02 and GL03 (6%). Medium to high, occasionally very high, corvid bags. Principal corvid species caught most likely to be carrion crow (50% of cases), hooded crow (19%), rook (14%), jackdaw (13%), magpie (3%). Mostly shot as well as trapped corvids (91%).

[2] These factors were normalised by taking logs, then grouped into 4 equal categories.
[3] These factors were not retained in the analysis, but were used as supplementary factors to assist interpretation of the calculated dimensions.

Table 7. Contribution of factors to the first two calculated dimensions in Multiple Correspondence Analysis. Factors are listed in descending order of their contribution to the dimension, as indicated by the R2 correlation coefficients.

Dimension 1	**R^2**	**Dimension 2**	**R^2**
principal land-use	0.757	principal land-use	0.634
gamebirds mentioned	0.717	occupation	0.587
songbirds mentioned	0.717	number of traps	0.327
number of traps	0.678	human population density	0.257
occupation	0.628	age group	0.087
trap types	0.537	General Licences invoked	0.085
principal corvid	0.419	trap types	0.064
shoot	0.380	principal corvid	0.085
human population density	0.319	total corvid cull	0.051
age group	0.257		
total corvid cull	0.213		
General Licences invoked	0.106		

The two dimensions explained just 28% of the 'inertia' (variability) in the data, indicating that the groupings were not crisply separated. This is easy to understand given the coarse classifications made among the factors listed above. For instance, smallholders with livestock or poultry living in a principally agricultural landscape close to a conurbation could fall into the "Suburban" cluster on account of the small scale of their trapping operation, age group, principal land-use in their control area, and/or human population density in the locality. A third calculated dimension separated out nature reserve wardens, explaining another 6% of the inertia.

The dominant species among the corvids trapped by each respondent are shown in Figure 10, broken down by the 3 groupings described above. Note that for some respondents dominance in the catch was sometimes closely contested between 2 or more species; ties were decided by toss of a coin.

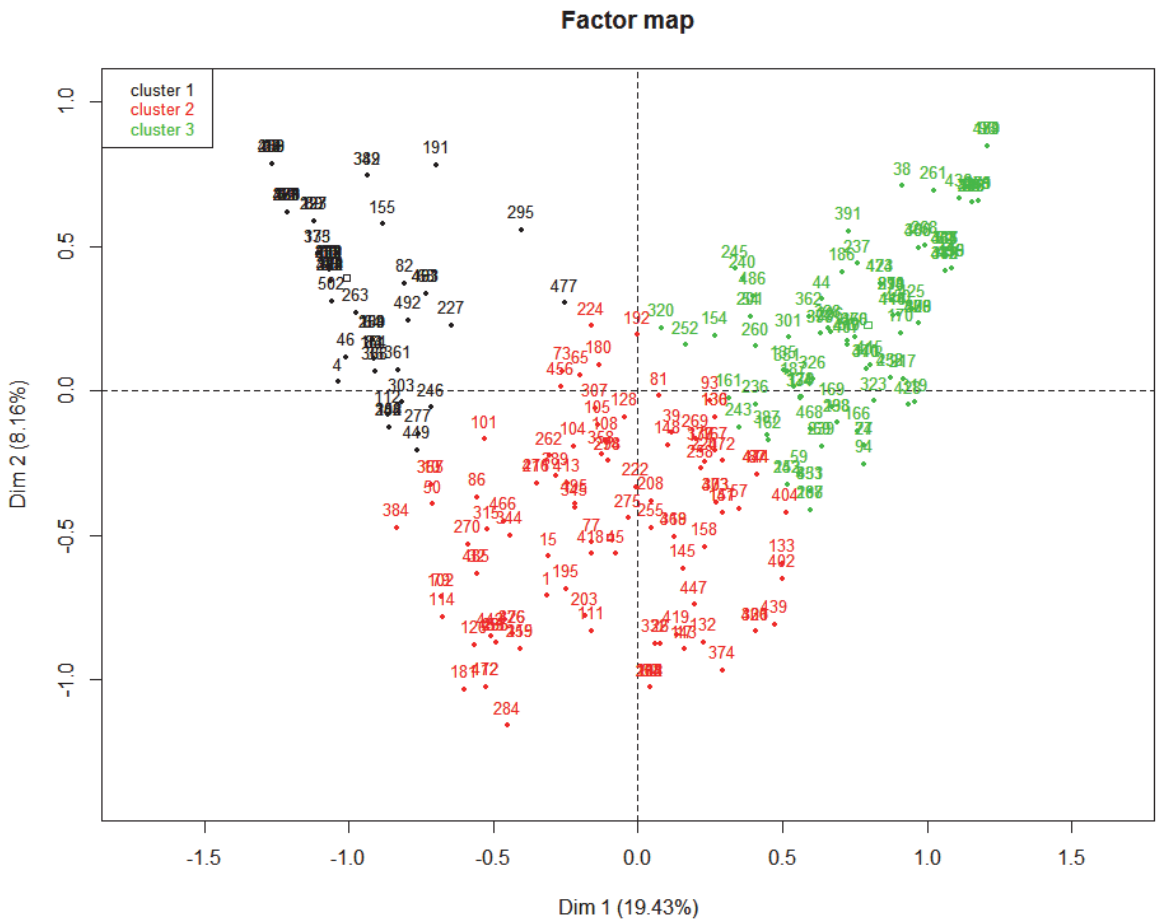

Figure 9. Results of Multiple Correspondence Analysis performed on data for n=297 respondents. Numbered symbols representing individual trappers are sorted into clusters in 2 dimensions created out of 8 factors (see text). Broadly speaking, cluster 1 (black) represents "Suburban", cluster 2 (red) "Agricultural", and cluster 3 (green) "Game management".

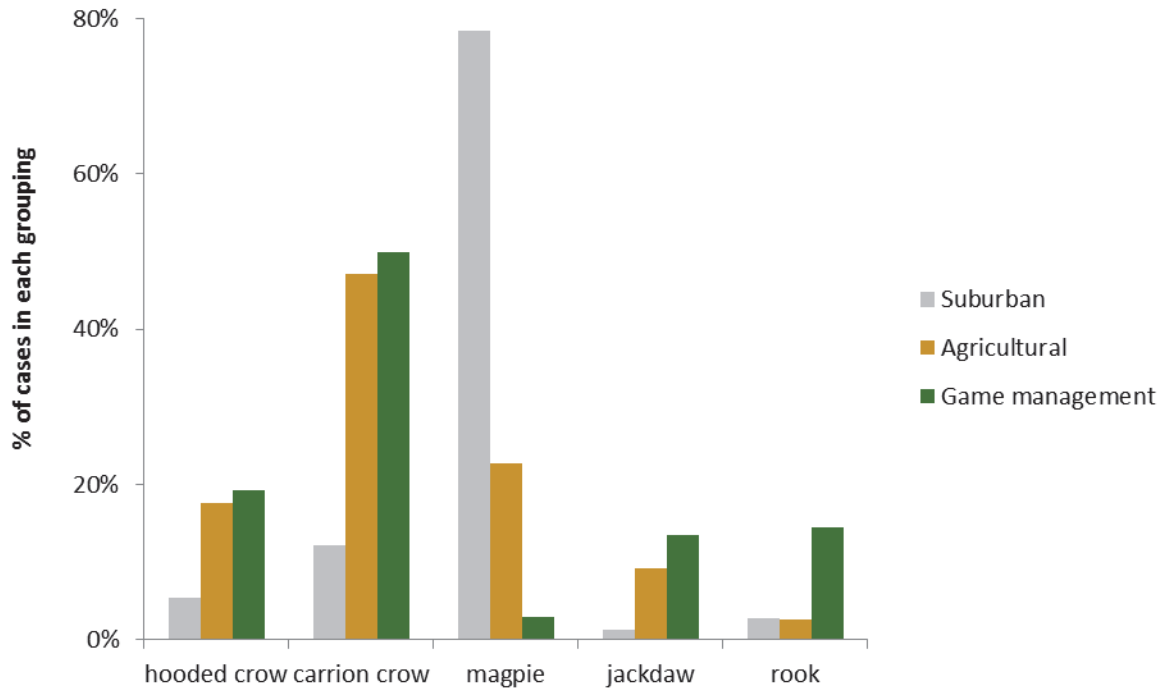

Figure 10. Dominant species in the trap catch of individual respondents, grouped into 'Suburban', 'Agricultural' and 'Game management' clusters by Multiple Correspondence Analysis, as described in the text.

3.9 Q11 – Trapping and shooting success

488 respondents indicated what success they had in trapping species (a) in a typical year (*n*=453) and (b) in 2013 (*n*=302).

268 respondents offered data both for a typical year and for 2013. For this sub-set, species bags in the typical year and 2013 were numerically very similar, as were the proportions of each species trapped rather than shot (Figure 11).

Not all respondents shot corvids, and the likelihood of them shooting as well as trapping varied with circumstances. Using the categories derived above, the percentages who shot as well as trapped were: "Suburban" 26%, "Agricultural" 69%, "Game management" 91% (*n*=74, 119, 104).

155 respondents gave bag data for an average year but not for 2013, while 32 respondents gave bag data for 2013 but not for an average year. To maximise the respondent sample size, we assume that for these 32 respondents 2013 was typical year, giving a total sample size of *n*=(453 + 32)=485. Bags for each species (trapped + shot) were pooled (Figure 12) and then scaled up for the 1,183 corvid trappers believed to exist in Scotland (section 3.3).

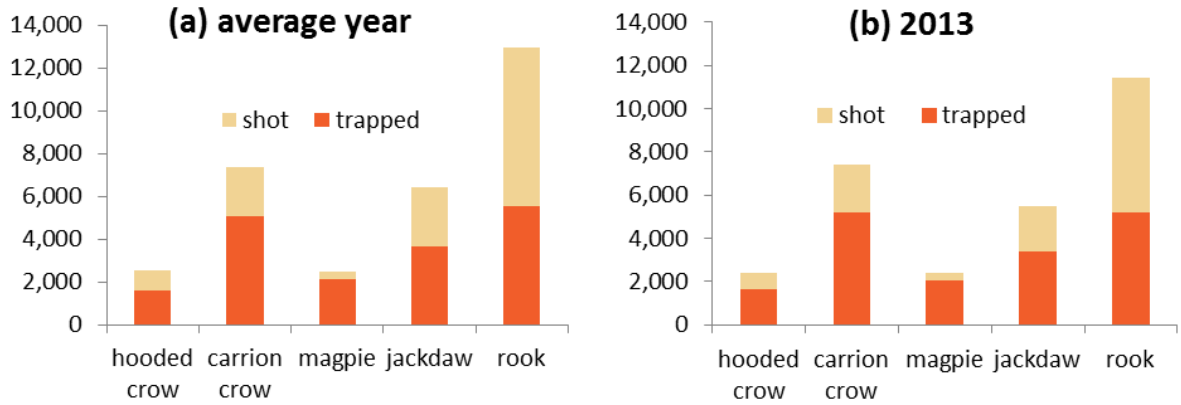

Figure 11. Total bag size of corvid species taken by n=268 respondents who gave figures for both an 'average year' and 2013.

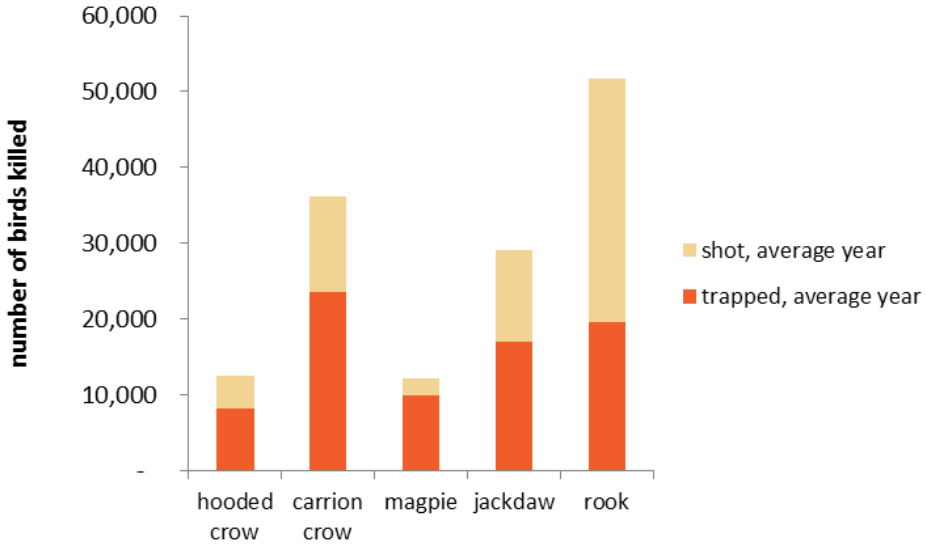

Figure 12. 2013 corvid bags reported by n=302 respondents in this survey (i.e. a greater proportion of respondents than for the comparison in Figure 11), broken down by method of capture.

Table 8. Bags of each corvid species pooled among 485 respondents who indicated bags either for an average year or for 2013, then scaled up to suggest the total bag taken in Scotland by an estimated 1,183 corvid trappers.

species	trapped, average year	shot, average year	% contribution of trapping	Scottish breeding population (individuals)	UK breeding population (individuals)	annual cull as % of Scottish breeding population
hooded crow	8,135	4,431	65%	50,000 to 90,000	520,000	14-25%
carrion crow	23,584	12,548	65%	200,000 to 400,000	2,000,000	9-18%
magpie	9,912	2,177	82%	35,000 to 42,500	1,200,000	28-34%
jackdaw	17,049	11,982	59%	160,000 to 240,000	2,800,000	12-18%
rook	19,557	32,108	38%	600,000 to 1,000,000	2,200,000	5-9%

The % contribution of trapping represents the percentage of each species taken by trapping out of the total bag (i.e. 100 × column 1/(column 1 + column 2)).

Estimates of the Scottish populations are taken from Forrester *et al*. (2007), and estimates of the UK breeding population from Musgrove *et al*. (2013). Note that these estimates do not include non-breeding birds. Roughly speaking, winter populations are considered to be 4 times the size of the breeding population.

The final column shows the estimated annual cull taken by an estimated population of 1,183 corvid trappers by both trapping and shooting, as a percentage of the estimated Scottish breeding population of each species. The range quoted reflects the uncertainty of population estimates, but does not include uncertainty in estimating the total number of trappers, or in extrapolating from survey respondents to that total. These percentages should therefore be accepted as very rough approximations.

3.10 Comparison with National Gamebag Census data

220 shooting estates in Scotland contributing to the GWCT's National Gamebag Census in 2013 reported a total bag of 21,306 corvid birds (excluding jay). In this survey, 190 identifiable shooting estates reported a total cull of 23,980 corvid birds. Species breakdown for these two samples was very similar (Figure 13), with the exception of rook, which was less prominent in the NGC sample. As would be expected, the species culls indicated by all contributors to the present survey was greater than those reported in the NGC, with the exception of jackdaw.

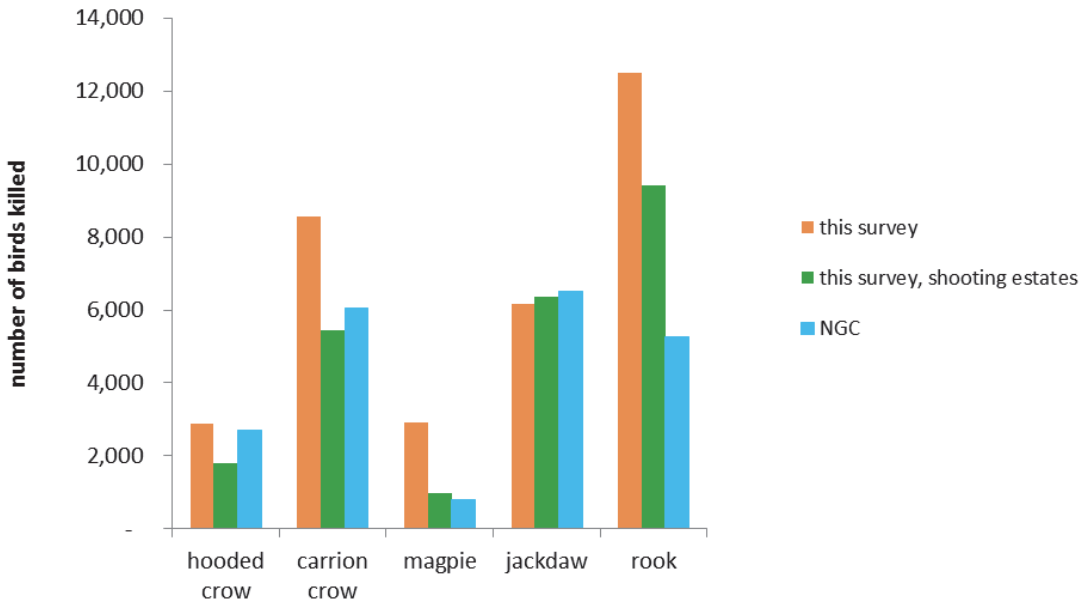

Figure 13. Corvid bags (whether trapped or shot) for 2013 reported by n=302 respondents in this survey (orange bars), by n=190 respondents in identifiable shooting estates; and for n=220 shooting estates contributing to the National Gamebag Census (NGC) in the same year. Some data are common to both surveys (see section 2.2).

3.11 Relative use of traps and shooting

In this survey trapping accounted for a greater proportion of the bag for the two crow species, magpies and jackdaws, while shooting generated a higher bag for rooks than did trapping (Table 7 above). These results mirrored information on the proportions of respondents using either trapping or shooting to control these species (Table 9).

Table 9. Proportions of respondents using trapping alone, shooting alone, or a combination of both methods. For each species, the sample size is the number of respondents with bag size > 0 in an average year.

	Trapping, but not shooting	**Shooting, but not trapping**	**Both trapping and shooting**	***n***
Hooded crow	35%	8%	57%	*195*
Carrion crow	33%	4%	63%	*331*
Magpie	55%	5%	40%	*301*
Jackdaw	28%	37%	35%	*186*
Rook	16%	53%	31%	*164*

3.12 Variation in bag size

Bag data typically formed highly skewed distributions among operators (Figure 14), with large percentages of operators taking small bags, and large bags relatively uncommon. Bag size distributions support conclusions already drawn from the data. Thus, carrion crows were commonly taken (42% of respondents, across both methods), and in relatively large numbers. Magpies, rooks, jackdaws and hooded crows were taken by fewer respondents (respectively 39%, 22%, 21% and 19% of respondents). However magpie bags were typically small; whereas, where taken, hooded crow bags could be large. Jackdaws were also taken in large numbers in some cases.

As already noted (section 3.8) magpies dominated the catch for the “suburban” cluster, who had relatively small bags of other corvid species (Figure 15). The “agricultural” cluster had smaller bags of magpies and larger bags of hooded crow and carrion crow. The largest bags of crows, rooks and jackdaws were taken by the “game management” cluster, by both trapping and shooting. The larger bags of magpies were taken only by trapping (Figure 14).

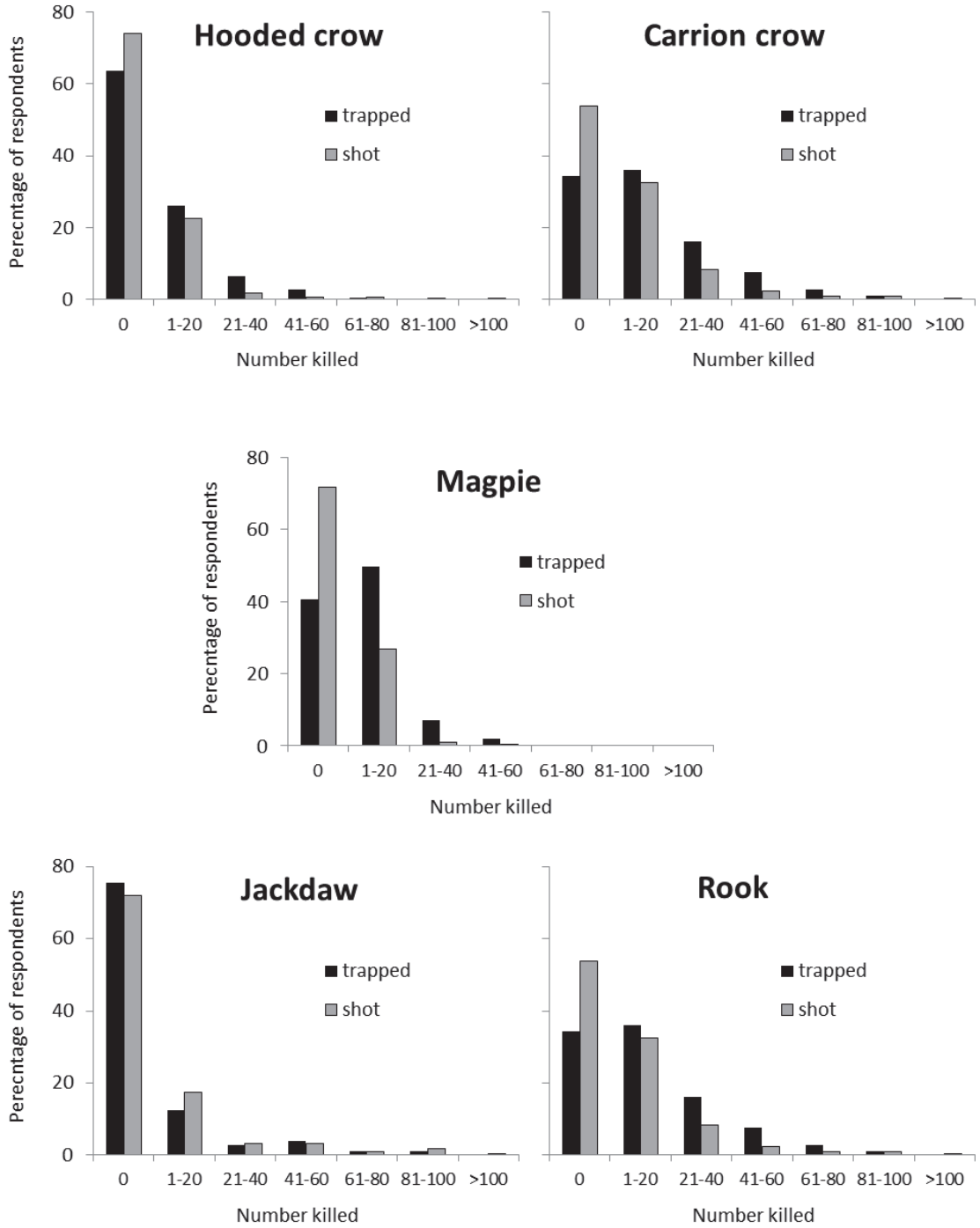

Figure 14. Frequencies of corvid bg sizes among n=486 respondents who reported any bag in 2013 or a typical year. The zero class (left-hand pair of columns on each graph) indicates the percentage of respondents who do not take the species by trapping (black bars) or shooting (grey bars). A relatively small class reporting a zero bag reflects a commonly taken species. A distribution spread to the right indicates a species where large bags are more often taken.

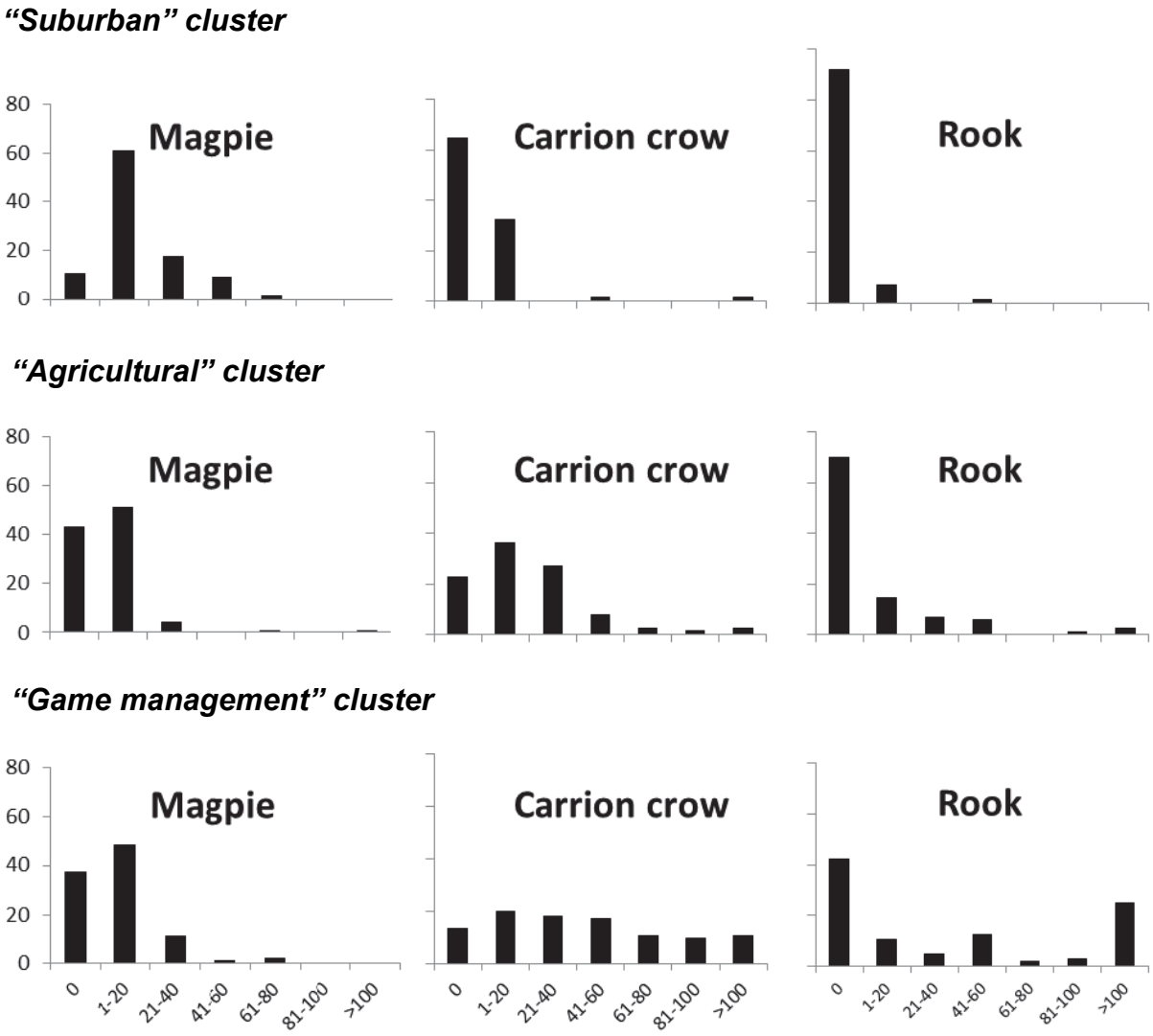

Figure 15. Frequencies of corvid bag sizes (combined trapped and shot) among respondents who reported any bag in 2013 or a typical year, classified by the different 'clusters' identified in section 3.8. The number of respondents for the three clusters were (top to bottom) n=74, 119, 104.

3.13 Distribution of species bags

To visualise the geographical distribution of corvid bags, pooled trap bags for each postcode district were divided by the area of the district to give 'bag density'. This 'bag density' metric reflects the density of active trappers and their catch, comparable among postcode districts even though these differ markedly in size. (The area effectively addressed by these trappers, and the total bag for each postcode district, are of course unknown.) The distribution of bag density among districts is heavily skewed, as it is among individual trappers, so this was normalised by taking logs. For each species, the resulting values were then grouped into 5 quantiles, so that each contained one-fifth of post-code districts in which the species was taken at all. The results are shown in Figure 16.

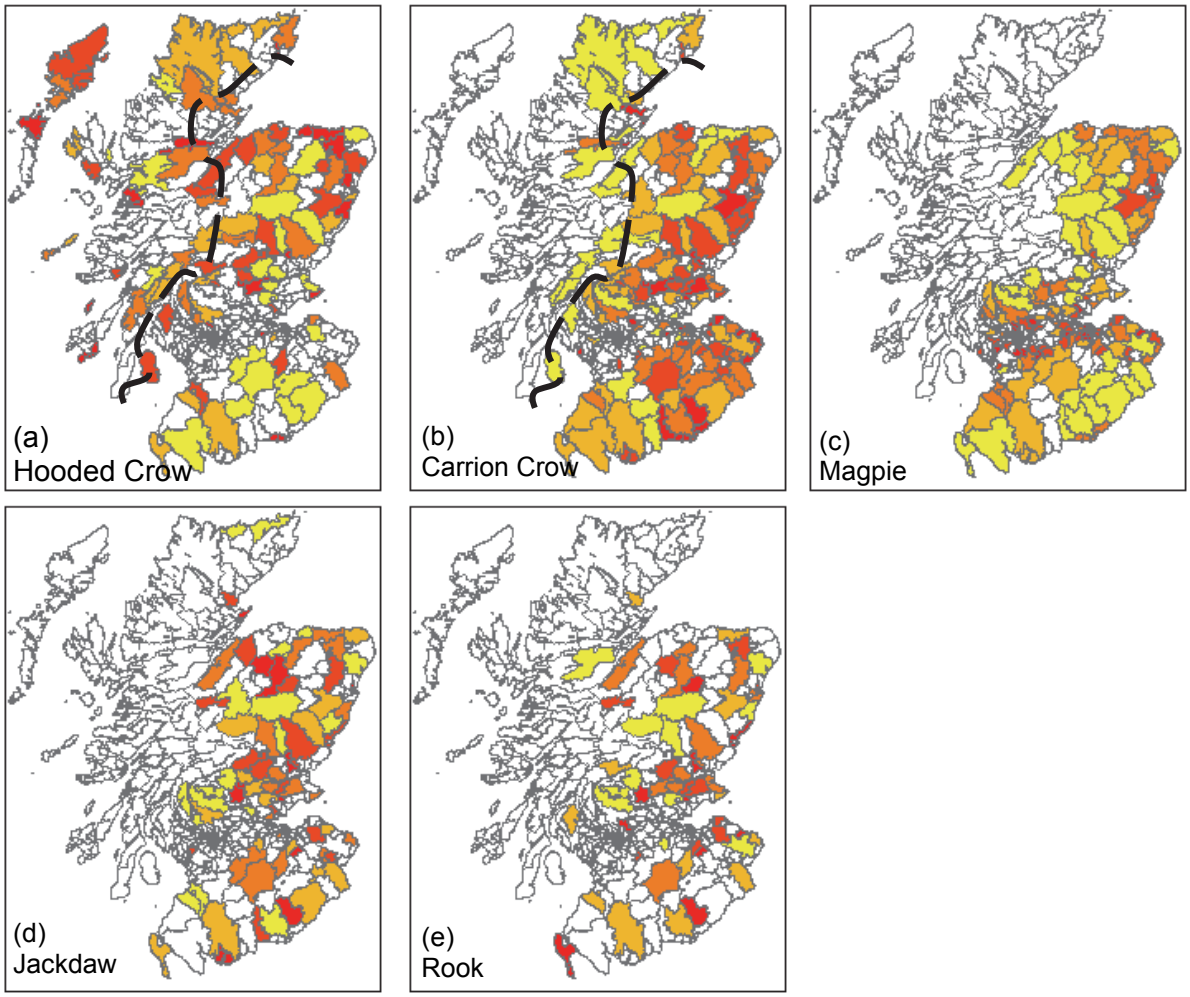

Figure 16. Bag density of each corvid species, by postcode district. To allow comparison of among districts, each map has 5 colour bands representing low (yellow) to high (red) bag densities for each species, grouped in quantiles so that equal numbers of postcode districts fall into each band. The calculation of bag density is described in the text. Postcode districts where no bags were reported for the species in question are uncoloured. Colour bands are not comparable between species (e.g. red does not represent the same bag density for carrion crow as for magpie). The dashed black line in maps (a) and (b) indicates the approximate centre of the zone of hybridization of hooded and carrion crows in 1974, after Forrester et al. (2007). Maps are based on n=486 respondents.

Bag densities of carrion crow, jackdaw and rook closely reflect winter distributions (which include the more restricted breeding distributions) of these species as depicted by Forrester *et al.* (2007). The bag density distribution for magpie, while also reflecting its overall range in Scotland, suggests relatively intensive trapping around the periphery of the Central Lowlands. Catches of Hooded Crow extend well beyond its supposed breeding distribution (Forrester *et al.,* 2007, p 1361).

3.14 Trap types in use (Q12)

496 respondents used a total of 2,947 traps. Individual respondents used 1 to 80 traps, the mean value being 5.94 (i.e. 50% of currently trapping respondents used 6 or more traps). 60% of traps were Larsen traps (Figure 17). The various multi-catch designs together made up 25%; Larsen Mates and Larsen Pods together made up 14%.

Larsen Mates and Larsen Pods differ in capture mechanism, but both are small traps with no decoy compartment. They can be used as supplementary capture compartments in association with a Larsen trap and its decoy bird; or they can be used independently, in which case they will inevitably be used with bait. The trap identification guide sent out with the questionnaire followed the names originally used for these two traps; regrettably it seems that nomenclature has subsequently been confused by suppliers and users. For later purposes in this report these two trap types have been merged into a single category.

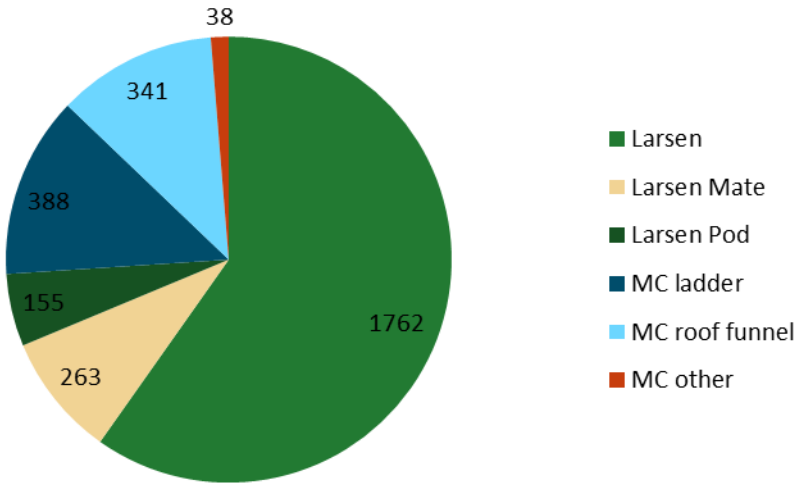

Figure 17. Number of traps of each type in use, pooled among n=496 respondents. (MC = multi-catch)

3.15 Seasonality of use

Use of all types of trap was strongly seasonal, peaking in April-May, with most of the activity concentrated between February and July (Figure 18). Autumn/winter use of the smaller traps was low, but use of the larger multi-catch traps picked up steadily from a minimum in October. This may reflect their use to protect growing agricultural crops, or may reflect a strategy of removing the population growth from the preceding breeding season.

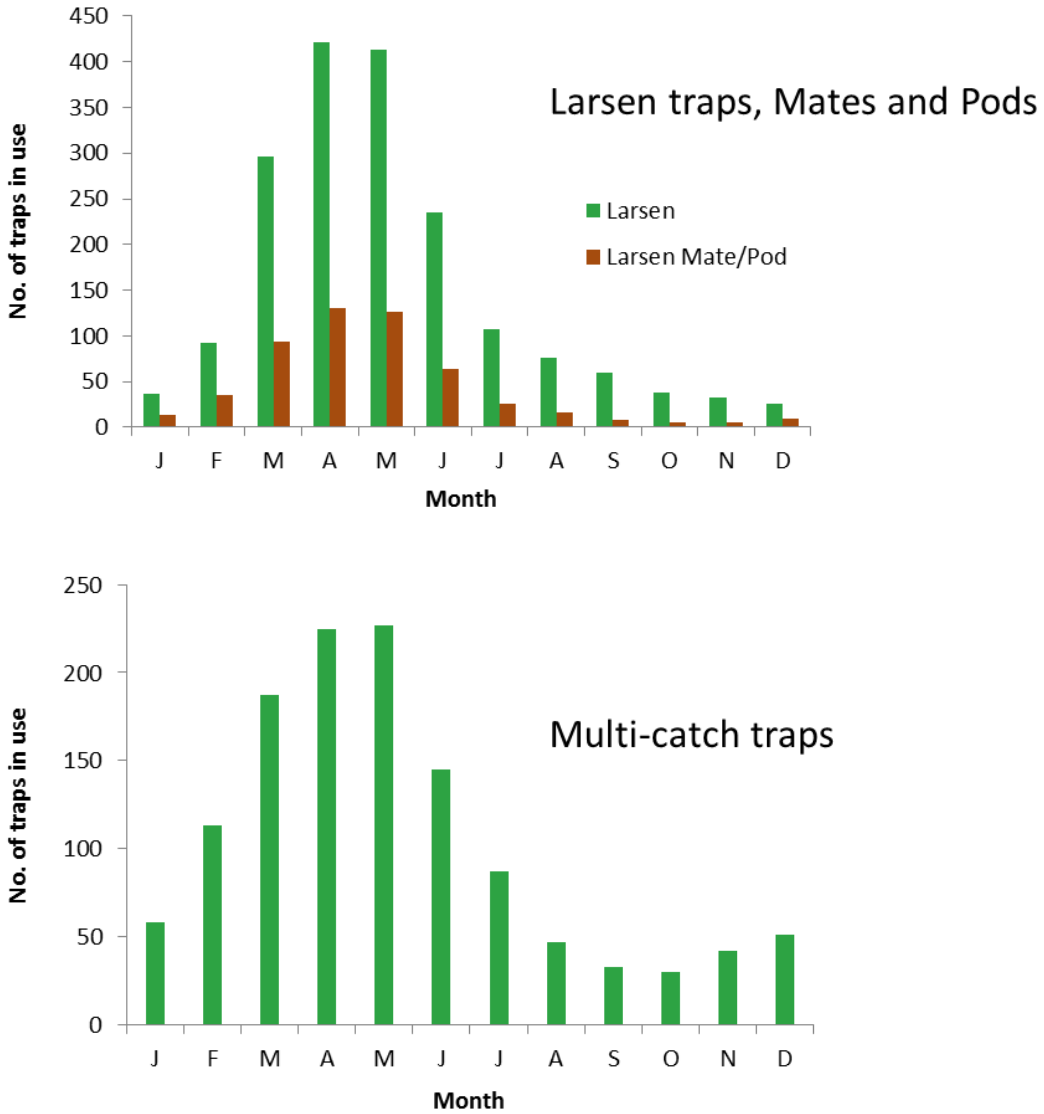

Figure 18. Seasonality of use for small traps (above) and large multi-catch traps (below). The vertical axes show the total number of traps stated to be in use each month among n=496 trappers (excluding those no longer trapping in 2013).

3.16 Decoy birds

There was a clear difference between Larsen and multi-catch traps in the species used as decoy birds, reflecting the suite of species expected to be targeted by each (Figure 19).

The online version of the questionnaire included an extra question asking what food was given to decoy birds. 10/35 online respondents who answered this question used eggs, 15/35 used cereal-based food, 23/35 used dog or cat food, and 27/35 respondents used carrion or other fresh meat. Dog food, rabbit and eggs were the most frequently cited items.

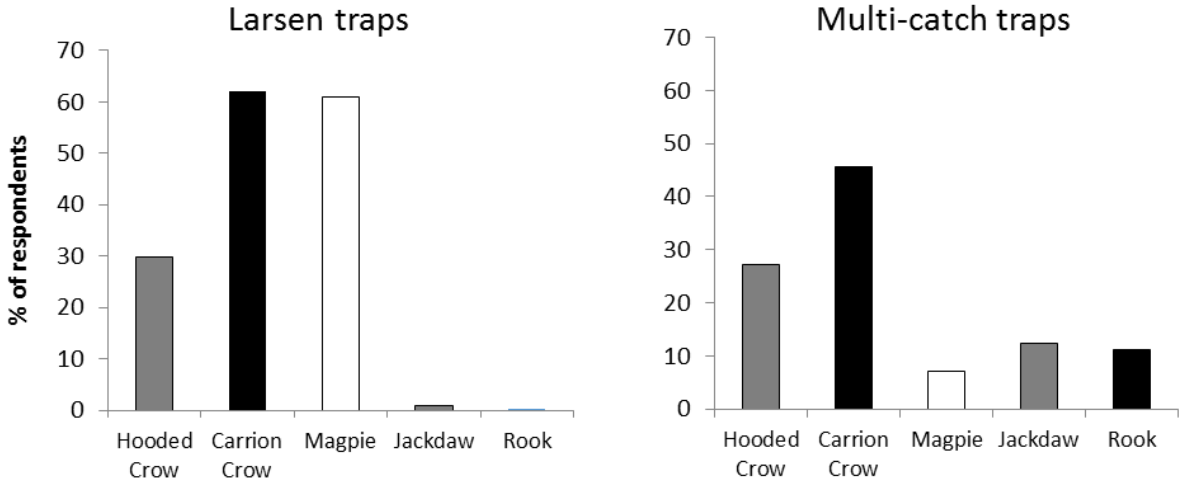

Figure 19. Species used as decoy birds in Larsen traps (left; n=442 respondents) and in large multi-catch traps (right; n=169). Note that some respondents used birds of more than one species, hence percentages do not sum to 100.

3.17 Bait

Q16 asked what bait types were used when traps were not used with a decoy bird. The proportion of respondents using different bait types did not differ significantly between baited Larsen traps and Larsen Mates or Larsen Pods, so these smaller traps have been grouped together. The majority of 'other' bait types used in small traps were dog or cat food. Other non-food baits used in small traps included plastic or china eggs (2 respondents), eggshells (1), golf balls (1), bright stuff like aluminium foil (1) and plastic corvid decoys (3). Two respondents used a mirror in a Larsen trap, which is actually illegal under Section 5 of the Wildlife & Countryside Act, 1981.

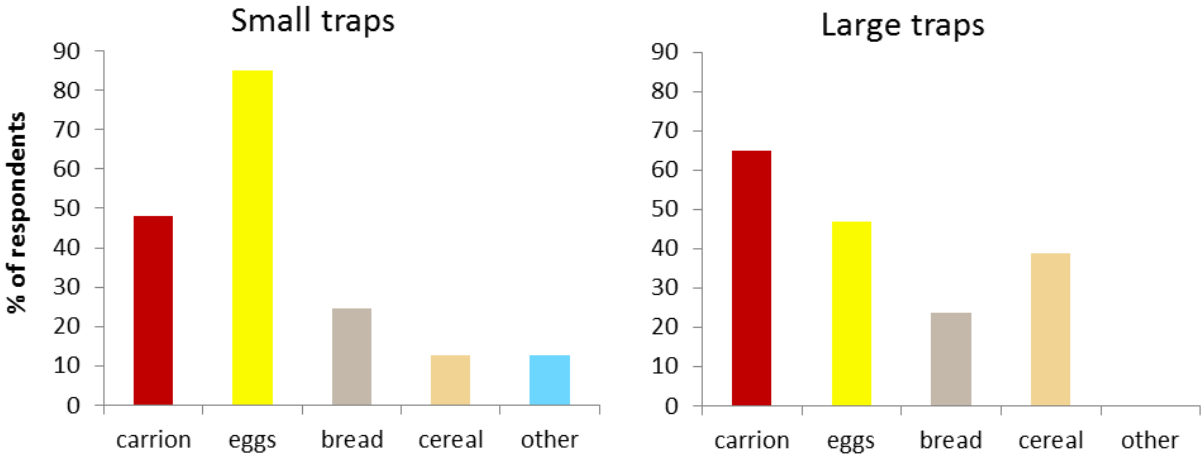

Figure 20. Percentage of respondents using small (left; n=394) or large (right; n= 172) corvid traps who used each of five categories of bait. Note that most respondents used more than one bait type.

The proportions of respondents using different bait types differed significantly for large traps compared with small traps (Figure 20). Eggs were the dominant bait type in these smaller traps (85% of users), while carrion was the bait most often used in multi-catch traps (65% of users). Cereal baits were used in large traps by 39% of respondents. No 'other' bait types were listed for large multi-catch traps.

Bait types were not statistically associated with either the General Licences under which they were used, or with respondent type (i.e. Suburban/Agriculture/Game Management clusters).

3.18 Other comments

Q17 invited respondents to add further comments about corvid traps or their regulation through General Licences. 204 respondents (41% of respondents who were still trapping) made comments in this section. These are reproduced in Appendix 3, and summarised in the following table. Note that these are volunteered comments reflecting points that respondents wished to add or emphasize, including unusual views. They are unlikely to cover issues dealt with earlier in the questionnaire, or to reflect commonly held knowledge or shared beliefs. For instance, 18 respondents made the point that traps without decoy birds were not adequately effective, presumably out of concern that the technique might be crippled by restrictions on the use of a decoy bird. Conversely, only 3 respondents specifically stated that traps with decoy birds were effective. Given that 453/503 current trapper respondents described their use of decoy birds in Q15, 450 respondents presumably felt this went without saying.

Nevertheless, a number of general conclusions seem justified from Q17. There was widespread insistence that corvid trapping is an essential management tool, particularly to safeguard wild bird species that are otherwise in decline. An appreciable number of respondents were convinced through personal experience that their trapping had benefitted other species, particularly songbirds. More commentators were content with the current General Licence system than resented it, though many also warned against increasing restrictions (e.g. with respect to seasons), and some commented that existing restrictions already made trapping unworkable in remote SSSIs where wading birds were the primary interest. A common theme was vandalism and interference with traps by members of the public. In this respect, greater support was requested from SNH, notably to improve public understanding of the purpose of corvid control and of the illegality of interfering with it.

Table 10. Summary of comments volunteered by 204 respondents in Q17. Comments have been grouped by common themes, which have been paraphrased. No attempt has been made here to collate comments about predatory behaviour by corvids on wildlife species, livestock or poultry; nor to collate comments suggesting that the species listed on the General Licence are too numerous. See Appendix 3 for verbatim comments.

Trends in corvid numbers	
Too many corvids (all species)	5
Too many carrion crows	5
Too many magpies	5
Too many rooks and crows	1
Too many ravens – should be added to General Licence	3
Aims	
Songbirds, waders, and gamebirds all equally important	2
Broad aims (agriculture, conservation)	1
Lowland birds	
Decrease in corvids caught annually since first started trapping	4
Personal experience of increased garden birds/songbirds following trapping	15
Garden birds not increased despite large annual magpie bags	1
Noticeable improvement in corncrake and chough numbers following hooded crow trapping	1
Jackdaw control frees up owl and kestrel nest boxes for intended occupants	1
Upland birds	
Upland wader/ waterfowl increase attributed to corvid control	6
Red grouse increase attributed to corvid control	2

Effectiveness of trapping	
Less effective/not effective without decoy	19
Larsen Mate/Clam not very successful	1
Clam trap very successful for rooks and crows	1
Shooting without trapping not sufficiently effective to control corvid populations	5
Very low non-target catch	5
Seasonal use imposed by short winter day-length	1
Regulation	
Trapping an essential management tool	28
Need to ensure continued use for sake of prey species	21
Current system works well	6
Avoid heavy-handed regulation / further restrictions	10
Don't restrict seasons	3
Licensing is unwelcome	4
Current GL too restrictive for a remote SSSI where waders are primary interest	2
Change 24 hr inspection requirement to daily inspection	1
Need to promote better public understanding of purpose and of legal issues	8
Vandalism/interference problem – need more support	25
Detailed suggestions on regulating specific trap types to minimise raptor by-catch	1
Larsen Mate/Clam trap trials should have preceded their addition to the General Licence	1
Range of trap types is needed to combat trap shyness	1
Bounty scheme should be introduced	1
Animal welfare	
Decoy birds become accustomed to situation. Changing decoy bird regularly involves repeated stress.	1
Why no mention of welfare?	2
Concerns over welfare of decoy birds	3
Questionnaire	
Questions (especially Q8) badly constructed, should allow multiple choices	4
Larsen Mate/Pod/Clam trap confused in trap identification guide	3
Data protection	
Police should not have disclosed personal information	2

4. DISCUSSION

4.1 Management of the corvid trapper register

The Police system for registering details of corvid trappers had clearly failed to keep up with changing contact details. 5% of questionnaires posted were undelivered due to incorrect address details. Responses received indicated that a further 15% of addressees were no longer trapping. Thus about 20% (one fifth) of the Police database was inaccurate or out-of-date. Anecdotally, we heard from several corvid trappers who had registered with their local police force but had not received a questionnaire. As means of keeping track of corvid trappers or trapping success, the present system is clearly inadequate and should be re-structured.

The use of a web-based registration system requiring annual renewal could help here, given that 249 (62%) of current trap users gave an email address. Despite the older demographic of our respondents compared with the population of Scotland, this percentage is close to the 67% of all Scottish households with internet access found by Scottish Government in 2011 (*Digital Participation in Scotland: a review of the evidence*[4]). Nevertheless, 38% of current trappers did not give an email address, so at least 38% would prefer contact by post or phone. Also, while everyone had the choice, only 8.4% of those who responded chose to do so on-line.

4.2 Engagement with the project

The return rate of 43% of correctly addressed questionnaires suggests a reasonable engagement of trappers (both current and lapsed) with this survey. This compares favourably with other postal surveys run by GWCT (e.g. 28-32% among 3 postal surveys where *n*=724 to 1,032 ; Heydon *et al.* 2000), but appreciably less good than the more expensive option of a postal survey combined with telephone contact of initial non-respondents (60-61%; Heydon *et al.*, 2000).

There are formal ways to improve data return rates. In Denmark, where hunters were required by law to submit bag records annually, return rate fell to about 60% after 2000; this has now been restored to about 95% following introduction of a system whereby hunters cannot renew their personal hunting licences until the previous season's bag records have been reported (T. Asferg, pers.comm.). Similar conditions apply to Schedule 1 licence holders in Scotland (e.g. ringers and raptor volunteers). However, the veracity of reported bags is still an issue to consider.

4.3 Bias and extrapolation

As far as we can tell from the size of the original mailing, the number of undelivered questionnaires, and the proportion of respondents who were no longer trapping, we received responses from almost half (43%) of the total number of current corvid trappers. This leaves the question of who the other half (57%) are, and whether our sample may be taken as representative of the whole trapping community.

Because of data protection issues, we could not compare composition of the sample of respondents with that of the original mailing, for instance by geographical region. This means there is no check on possible bias, and for the same reasons there are no grounds for extrapolation from responses to the other current corvid trappers. For example, one might hypothesize (a) that those who were no longer trapping were more likely to return the questionnaire because they had only to tick Question 1, while those who were still trapping

[4] http://www.scotland.gov.uk/Publications/2011/12/22155754/5

faced the full 17 questions; or alternatively (b) that those who were no longer trapping were more likely to put the questionnaire in the bin!

It is a little reassuring that the geographical distribution of those no longer trapping was very similar to that of current trappers (Figure 4); and likewise that the distribution of those who chose to respond anonymously was very similar to the distribution of those who provided full contact details (not illustrated). Thus at least there is no indication that trappers in some regions were less engaged than those in others.

31% of stated occupations were 'gamekeeper' (n = 156 of 509). Combining this with the estimate of 1,183 active trappers suggests a total of 367 professional gamekeepers using corvid traps. This is a surprisingly small number, as it is commonly accepted that there are probably around 1,000-1,500 professional gamekeepers in Scotland (Tapper, 1992), while the membership of SGA alone is "ca. 5,300 gamekeepers, stalkers, land and river ghillies, wildlife managers and rangers" (source: SGA submission to the Scottish Government, July 2014[5]). A further 77 respondents to this survey who listed their occupation as 'other' but who could be re-categorised as connected with land management, might perhaps have fallen within the SGA constituency, but this would still give a surprisingly small estimate of 551 'gamekeepers' (in a wide sense) using corvid traps in Scotland. One can conjecture that there may be a failure of gamekeeper trappers to register, or a failure of gamekeeper trappers who have registered to respond to the questionnaire. A few responses were clearly made by a head gamekeeper or estate factor replying on behalf of a team of trappers, but it is impossible to say how many more responses this might apply to. A total of 242 Scottish shooting estates contributing data to the NGC in 2013, employing 340 gamekeepers, and we received these estate data from 208 contacts (usually the factor or owner). This suggests that if registration was done at the estate-level across all shooting estates (i.e. the most extreme case), the true number of gamekeeper trappers might be greater by a factor of 340/208 = 1.63 or 63%, implying 551×1.63 = 900 gamekeepers using corvid traps in Scotland. The estates contributing to the NGC but not to the present survey employed 238 professional gamekeepers, implying that the total number of professional gamekeepers contributing data to one or both surveys is 367+238 = 605.

There are perhaps lessons for both regulator and trappers here. The regulator needs a better 'handle' on all sectors of the trapping community. This may involve promoting greater awareness of legal requirements (including registration on an individual basis); improving the design of database and feedback systems; and building trust in certain sectors. At the same time, trappers need to understand that the regulator cannot act on missing information. To be represented, individuals in every sector must engage in the feedback process. In addition, there may be trappers operating (illegally) without registering with their local police force; and there is certainly a body of people killing corvid birds under the General Licences by shooting only, who will not be represented in this survey.

4.4 Constituent groups within the trapping community, and their motivations

It is no surprise to discover different motivations for corvid control; these are already recognised in the General Licences. It is perhaps more of a surprise to discover three clearly discernible groups among registered corvid trappers, and to appreciate their relative sizes. We must emphasize that there is considerable overlap between these groups, and that agricultural and game management interests in particular overlap spatially, possibly in terms of resources too.

[5] http://www.scottish.parliament.uk/S4_RuralAffairsClimateChangeandEnvironmentCommittee/General%20Documents/Scottish_Gamekeepers_Association.pdf

A good deal of trapping was carried out to prevent ecological impacts of corvids on other wild bird species, GL01 being the most commonly cited licence. As the impact of corvids on other bird species is still a much debated issue in the scientific literature (Bolton *et al.,* 2007; Fletcher *et al.,* 2010; White *et al.* 2014; Madden *et al.,* 2015; Aebischer *et al.* 2016), it is interesting to note that many trappers expressed strong beliefs, and to consider what these beliefs are founded upon. Ljung *et al.* (2014) point out that beliefs about the importance of predator control could be the results of prejudice in the hunting community, though they note that there is plenty of hard evidence to reinforce such beliefs. While scientific studies have shown that controlling predator abundance can improve the productivity of prey species (e.g. Fletcher *et al.,* 2010) and that this can translate into population increase, such studies illustrate only optimal practice and local effects; they do not represent the actuality of culling among a variable community of operators, or in a variety of circumstances. While Chiron & Julliard (2013) found that trapping greatly increased the risk of local extinction for magpies in France, Bolton *et al*. (2007) found a variable effect on corvid densities of corvid removal by operators working on 11 separate wetland nature reserves in Britain. White *et al.* (2014) showed that while intensive, systematic corvid control had a positive influence on nesting success for 6 songbird species, sporadic corvid control benefited only one of these species.
Against this background, two points are noteworthy in the present survey: first, an appreciable number of 'suburban' respondents commented that they had personally observed an increase in garden birds or songbirds following corvid trapping over several years. Second, although the impact of much trapping is intended to be primarily local, comments suggested a fairly widespread opinion that populations of some corvids were too numerous, implying that culling was considered a necessary remedial action.

4.5 Comparison of bag size with Scottish corvid population estimates and trends

4.5.1 Magpie

At 28-34% of the estimated breeding population in Scotland, the estimated total cull of magpies by trappers suggests a high likely impact. The magpie cull was taken primarily by trapping (82% of the total), and primarily in "suburban" areas (those with high human population density). Despite this trapping intensity, the magpie population in Scotland is considered to be increasing (58% increase in the population index for 2012 compared with 1994[6]). For the UK as a whole, NGC data indicate that magpie bags on shooting estates have stabilised since the early 1990s[7]; although subject to large errors, available data for Scotland support that pattern.

4.5.2 Carrion crow and hooded crow

Outside "suburban" areas, the carrion crow emerged as the dominant species trapped among the greatest number of respondents, and the total cull was second highest after rook. The likely impact of this was relatively low at 9-18% of the carrion crow breeding population. The contribution of trapping (65%) to the cull of carrion crows taken by respondents was the second highest after magpies. The carrion crow population in Scotland was 16% smaller in 2012 compared with 1994.[4]

Trapping also contributed 65% to the total cull of hooded crows by respondents. Among the 6 corvid species, the hooded crow cull implied the second highest impact (after magpie), at 14-25% of the estimated breeding population. There has been a decline of about 38% since 1994 in hooded crow breeding population size, which Forrester *et al.* (2007) attribute to shrinking range relative to carrion crows, with the hybridization zone between the two species shifting north and west.

[6] http://www.snh.gov.uk/docs/A1108562.pdf
[7] http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=1&ProjectID=14890 – see Appendix 2.

Respondents to our questionnaire indicated bags of hooded crow well south of the hybridization zone, in Moray, Banff, Aberdeenshire, Kincardine, Angus, and parts of Perth. Hooded crow bags were also reported by 23 respondents in and around the Southern Uplands: 4 in the TD postal area, 8 in DG, 5 in KA, 2 in ML and 4 in EH. All these records are surprising, given the Scottish distributions of these species reported in the ornithological literature. For instance, Forester *et al.* (2007) state that '*during the winter months, a few* [hooded crows] *are recorded to the south and east of the Scottish breeding range*'. On the basis of 441 recoveries of crows ringed in Britain during the breeding season, mostly as nestlings, the two crow species are regarded as rather sedentary even outside the breeding season (Wernham *et al.,* 2002; Forrester *et al.,* 2007). Flock birds are probably more mobile, especially during winter. The winter population, particularly on the east coast, is supplemented by migration from Scandinavia (described by Lack (1986) as 'substantial', but believed by Forrester *et al.* (2007) and Balmer *et al*. (2013) to be very much reduced); and some movement of crows among different parts of the British Isles also occurs (Forrester *et al.,* 2007).

It has been suggested to us that there may be confusion over species names, with some – perhaps many – gamekeepers referring to all crows as "hoodies" irrespective of colouration. This possible misunderstanding will be explored in the second phase of this project. However, this suggestion would not explain the 59% of *n*=196 respondents who recorded bags of both hooded crows and carrion crows, most of whom were east and south of the hybridisation zone (Figure 21).

Geographically, the prevalence of hooded crows in this survey matches data from the National Game-Bag Census for 2013 (Figure 22a), which likewise indicate that hooded crows are killed in eastern and southern parts of Scotland. Separate recording of the two species has been standard to the NGC since 1961, and many shooting estates have been long-term contributors to the NGC (average of 17.5 annual records in the 53 years since 1961, range 1 to 53). It would be surprising if confusion and mis-recording could have persisted in the NGC over such a long period without query; hence we assume that most NGC respondents appreciate visible differences and record bags separately, although again no guidance is given on how to record hybrids. Among 152 Scottish estates reporting corvid bags to the NGC in 2013, 31% recorded both hooded and carrion crows. The geographical extent of this overlap (Figure 22b) closely matches that of the present survey. The numbers of hooded and carrion killed on shooting estates are also closely similar in the present survey and NGC (Figure 13).

Analysis of the proportion of hooded crows within the catch of both species in 2013, from both NGC and the current survey, shows that catches of hooded crows east and south of the hybridisation zone were small relative to catches of carrion crows (Figure 23). We do not know at what season these birds were taken, either in this survey or the NGC, although this study (Figure 17) indicates that trapping operated at about one-tenth of maximum capacity during the 'winter' months October-February.

In summary, the evidence regarding hooded crow bags is internally consistent, though we must also remember that some data are common to both the NGC and the current survey. There is apparently a broad area over which separate bags of hooded crows and carrion crows are reported, extending a long way south and east of the accepted zone of hybridisation. The surprise is really the extent of this area rather than the numbers of hooded crows caught there, which are small compared with carrion crow captures.

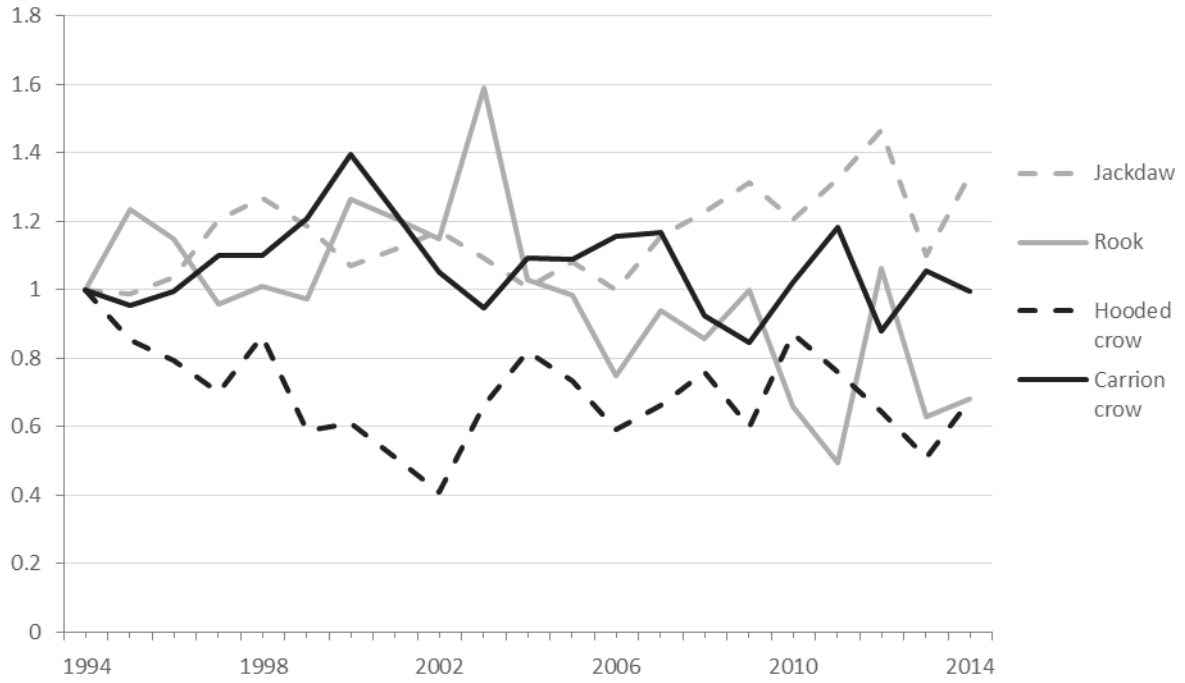

Figure 20. Trends in the population index for corvid birds in Scotland, relative to 1994. Data from Breeding Birds Survey, reproduced with permission of British Trust for Ornithology.

Neither the NGC nor the present survey gave any guidance on how to record hybrids, which can appear intermediate in colouration[8]. Plumage in these species is under fairly complex genetic control (Poelstra, 2013), with the result that hybrids can exhibit almost every transitional colouration between the two pure forms (Parkin *et al*., 2003). Arguably, trappers are better placed to notice plumage differences of the more subtle hybrid forms when they have the bird in the hand, than are ornithologists viewing them from a distance. Interestingly, the provisional BTO map showing 'breeding distribution' of hybrid hooded crow × carrion crow in 2007-2011 shows a distribution broadly similar to this overlap area (British Trust for Ornithology Online Mapstore[9]).

[8] See comment from respondent 0321 in Appendix 3.
[9] http://blx1.bto.org/mapstore/StoreServlet?id=1247

Figure 21. Distribution of survey respondents reporting catches of (left) hooded crow only; (centre) hooded crow and carrion crow; and (right) carrion crow only, in a typical year. The size of the black dot indicates the number of respondents in each category in each postal district (coloured if any were present, otherwise white). As in Figure 16, the dashed line indicates the supposed centre of the zone of hybridisation, after Forrester et al. (2007)

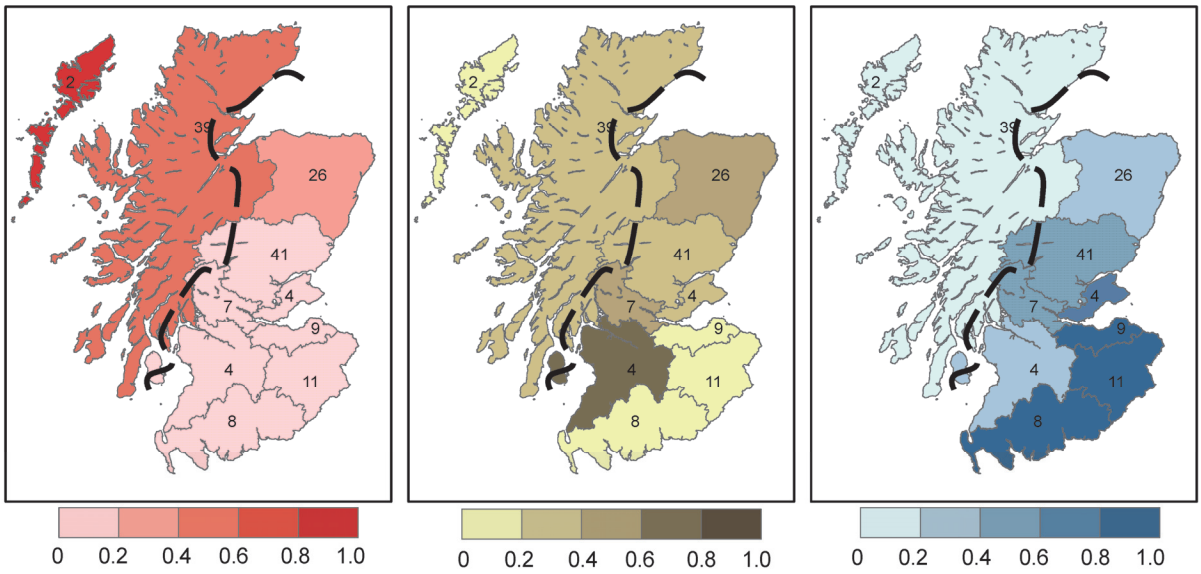

Figure 22. Distribution of estates contributing to the National Gamebag Census who reported catches of (left) hooded crow only; (centre) hooded crow and carrion crow; and (right) carrion crow only, in 2013, grouped by NGC regions (Tapper 1992). The intensity of shading indicates the proportion of contributing estates within each NGC region that fall into each category (see scale). The number of contributing estates in each region is shown on the map.

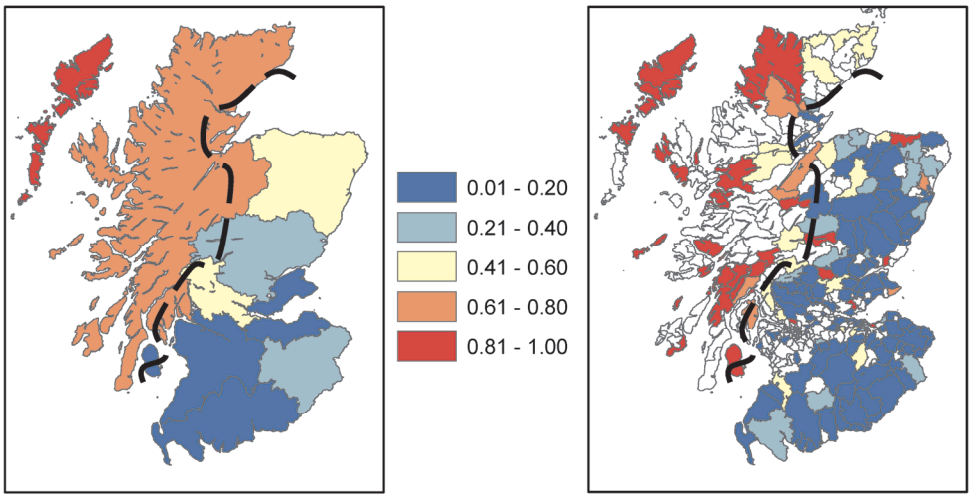

Figure 23. Proportion of hooded crows (see scale) among reported catches of hooded and carrion crows (left) in NGC data, pooled by NGC region, and (right) in the present survey, pooled by postcode district. Postcode districts with white fill are those for which no trapper data were received.

The Moorland Forum (Ainsworth *et al.,* 2015) found good correspondence between species trends as perceived by stakeholders and those recorded in the Bird Atlas, with the notable exception of carrion crow and hooded crow. Stakeholders suggested more positive population trends for both crow species than were indicated by Bird Atlas abundance methods. Atlas methods suggested that the hooded crow population decreased by 38% between 1988-91 (Gibbons *et al.,* 1993) and 2007-11 (Balmer *et al.,* 2013), but also that there had been an increase of about 4% in records of hybrids. In view of the uncertain grasp of hybridisation patterns and migration, and the possibility of mis-categorisation by trappers, extra caution is advised in comparing the estimated annual catch with the estimated breeding population of hooded crow in Scotland.

Analyses of NGC data for carrion crow and hooded crow have grouped the two species together[5]. They suggest that combined crow bags on shooting estates have been fairly stable since the early 1990s, or possibly declining in Scotland.

4.5.3 Rook and jackdaw

In population terms, these two species are considered either stable (rook 4% increase) or moderately increasing (jackdaw 51% increase) since 1994[4]. NGC data indicate no strong trend in bags on shooting estates either in Scotland or the UK as a whole since the early 1990s.

The total cull (by trapping and shooting) of rooks was numerically the highest among the 6 corvid species, yet the significance of this relative to the breeding population was almost the lowest at 5-9%. Trapping contributed relatively little (38%) to this cull, however, and because of the flock-feeding behaviour of rooks and jackdaws, and the communal nesting of rooks it is conceivable that shooting could account for large numbers of birds. Hence the actual cull of both rooks and jackdaws could be appreciably under-estimated by this survey, if there are other corvid controllers who are not registered trappers and use shooting as the sole means of control. A farmer survey by SASA suggests that this may be the case. Of 136 grassland and fodder crop farmers surveyed in 2013/14, 83 (61%) reported having problems with corvids other than ravens, and 72 farmers (53%) took action against them. Of those 72 farmers, many used more than one method of control; but overall 74% shot the

birds, 14% used traps, 44% used scaring devices, while 6% reported having a gamekeeper to control them (SASA, unpublished data).

The largest bags of rooks and jackdaws tended to be associated with the game management sector. This is surprising because although both species can be egg predators, they are more often thought of as agricultural pests. A possible explanation is that where a gamekeeper is already employed for game management, agricultural reasons and motivations 'piggy back' on the operation.

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ANNEX 1: QUESTIONNAIRE

CORVID TRAPPING QUESTIONNAIRE

YOU AND YOUR LOCATION

1 No longer trapping corvids?

If you no longer use corvid traps, please tick here (✓) ☐

You can ignore the rest of the questionnaire, **but please return it to us**!

2 Your contact details

Because of data protection legislation, GWCT does not know who you are or where you are. You can fill in this questionnaire anonymously if you wish (see Q3), but in a later stage we would like to ask your help to participate in field trials, so it would be very helpful if you would supply your contact details below. These will be held by GWCT solely for the purpose and duration of this study.

Name		
Address	address1 address2 post town	
Post code***		
Phone		Best time to call?
Email		

3 Prefer to be anonymous?

You can complete this questionnaire anonymously if you wish, but **please tell us the first half of your post-code in Q2 above*****. This will at least allow us to group responses according to which part of Scotland they come from.

Further information: Jonathan Reynolds (GWCT) 01425 652381 / Adam Smith (GWCT Scotland) 01738 554824

4 Occupation and age-group

Please tick to indicate your main occupation **and** your age bracket (✓x2).

			age group		
	full time	part time	<30	30-50	>50
Farmer					
Gamekeeper					
Nature reserve manager/warden					
Other (please state)					

5 The area where you trap

How much of the landholding(s) where you trap falls into each of these categories?

EITHER: If you know them, quote the actual areas in acres or ha (centre column)
OR: If you don't know the areas, please make a guess at the percentages.

land-use category	area (ha / acres) #	percentage %
Lowland arable (cropped) farmland		
Lowland grazing / pasture / silage		
Heather moorland		
Upland grass and grazing		
Woodland - mainly deciduous		
Woodland - mainly coniferous		
Woodland - mixed		
Housing, gardens, industrial areas, glasshouses, airfields		
	#please circle	100%

Further information: Jonathan Reynolds (GWCT) 01425 652381 / Adam Smith (GWCT Scotland) 01738 554824

6 Management

Please tick the **principal** land management in the area where you trap (✓).

	✓	
shooting estate		
deer forest		
nature reserve		
livestock husbandry		
agricultural crops		
timber production		
garden or park		
other		(please specify)

YOUR REASONS FOR TRAPPING CORVIDS

7 The purposes for which corvid birds may be killed are listed below. Please tick those that apply to your use of corvid traps (✓).

Note that in this context, gamebirds such as pheasants or red-leg partridges kept in rearing pens would be considered 'livestock' (GL02). Gamebirds living free in the wild are considered 'wild birds' (GL01).

General Licence number	purpose	✓	
01	Conserving wild birds.		Go to Q8
02	Prevention of serious damage to livestock, foodstuffs for livestock, crops, vegetables and fruit.		Go to Q9
03	Preservation of public health, public safety, and preventing the spread of disease.		Go to Q10

8 Which wild birds do you **primarily** aim to protect by trapping / killing corvid birds?

Please tick **one group only** (✓), and list main species.

	✓	please list main species
wild game birds		
wading birds		
other birds		

Go to Q11

9 What livestock, foodstuffs, crops, vegetables or fruit do you primarily aim to protect by trapping / killing corvid birds?

Go to Q11

10 What public health, public safety or disease issues do you primarily aim to prevent by trapping / killing corvid birds?

Go to Q11

HOW YOU USE CORVID TRAPS

11 Trapping success

Approximately how many of each corvid species do you kill in an **average** year?

If you have records, please **also** give the actual numbers for 2013 (Jan - Dec).

	average year		Jan-Dec 2013	
species	trapped	shot	trapped	shot
hooded crow				
carrion crow				
magpie				
jackdaw				
rook				

12 What trap types do you use?

Please check the descriptions and photos accompanying this questionnaire, then state how many of each trap type you use.

trap type	how many?
Larsen	
Larsen Mate	
Larsen Pod (Clam Trap)	
Multi-catch, ladder entrance	
Multi-catch, roof funnel entrance	
Multi-catch, other	

13 Trapping season

When in the year do you normally use these traps?
Please tick **all** the months in which you operate each type (✓✓✓✓).

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Larsen												
Larsen Mate												
Larsen Pod (Clam Trap)												
Multi-catch, ladder entrance												
Multi-catch, roof funnel entrance												
Multi-catch, other												

14 Where you place your traps

In Q5 we asked about the landscape in which you operate traps.
Please tick to indicate whereabouts within that landscape you place traps (✓✓✓✓).

	Lowland arable (cropped) farmland	Lowland grazing, pasture, silage	Heather moorland	Upland grass and grazing	Wood-land, mainly decid-uous	Wood-land, mainly coni-ferous	Wood-land, mixed	Housing, gardens, industrial areas, glasshouses or airfields
Larsen								
Larsen Mate								
Larsen Pod (Clam Trap)								
Multi-catch, ladder entrance								
Multi-catch, roof funnel entrance								
Multi-catch, other								

15 Decoy birds

Do you use decoy birds with any of these trap types, and if so which species? Please tick **all** that apply (✓✓✓✓).

	Hooded Crow	Carrion Crow	Magpie	Jackdaw	Rook
Larsen					
Multi-catch, ladder entrance					
Multi-catch, roof funnel entrance					
Multi-catch, other					

16 Bait types

When traps are not used with a decoy bird, what kind of bait do you use in each trap type? Please tick **all** that apply (✓✓✓✓).

	Carrion	Eggs	Bread	Cereal	Other bait (please describe)
Larsen					
Larsen Mate					
Larsen Pod (Clam Trap)					
Multi-catch, ladder entrance					
Multi-catch, roof funnel entrance					
Multi-catch, other					

ANNEX 2: 'OTHER' NAMED OCCUPATIONS (Q4)

Respondents' descriptions of their occupations; number of respondents giving each occupation; and how these were re-classified for analysis.

stated occupation	n°	classn.
estate maintenance	1	estate
estate manager	6	estate
estate owner	2	estate
estate worker	1	estate
factor	2	estate
factor shooting estate	1	estate
farm manager	1	estate
farmer/gamekeeper	1	estate
farmer/housewife	1	estate
farmer/naturalist	1	estate
farmer/semiretired	1	estate
farmer's wife	1	estate
fish & game dealer/smoker	1	estate
fishery manager	1	estate
fishing ghillie/deer stalker	1	estate
forest management	1	estate
forest owner	1	estate
forester	1	estate
gamekeeper/estate manager	1	estate
gamekeeper/forest ranger	1	estate
gamekeeper/forester	1	estate
gamekeeper/ghillie	1	estate
gamekeeper/gravedigger	1	estate
gamekeeper/handyman/gardener	1	estate
gamekeeper/landowner	1	estate
gamekeeper/naturewarden	1	estate
gamekeeper/other	1	estate
gamekeeper/stalker	1	estate
gamekeeper/stalker	1	estate
gamekeeper/warden/retired	1	estate
gamekeeper/work	1	estate
gamekeepr/farmer	1	estate
gardener	3	estate
gardener/gamekeeper	1	estate
geologist	1	estate
golf course manager	1	estate
ground owner	1	estate
GWCT	1	estate
hatchery manager	1	estate
laird	1	estate
land agent/farmer	1	estate
land manager	1	estate
landowner	5	estate
own shoot	1	estate
shoot syndicate manager	1	estate
shoot tenant	1	estate
sporting manager	1	estate
sporting tenant	2	estate
stockman/gamekeeper	1	estate
warranted river bailiff	1	estate
agricultural inspector	1	other
airline pilot/farmer	1	other
bird breeder	1	other
bird lover	1	other
boarding kennel owner	1	other
builder	1	other
builder/shoot sydicate member	1	other
business consultant	1	other
christmas tree grower	1	other
civil servant, deer stalker	1	other
company director	4	other
conservation	1	other
conservationist	1	other
conservationist/songbird protector	1	other
contractor	1	other
crofter	1	other
crofting estate owners	1	other
director	1	other
doctor	1	other
engineer	3	other
engineer/gamekeeper	1	other
engineering consultant	1	other
field sportsman/house owner	1	other
HGV driver/gamekeeper	1	other
homeowner	2	other
house manager	1	other
householder	3	other
housewife with a few poultry	1	other
joiner	1	other
lawyer	1	other
manager - food industry	1	other
marina operator	1	other
national park staff- traps at residence	1	other
NWCU intelligence officer	1	other
offshire worker	1	other
offshore engineer	1	other
offshore technician	1	other
private owner	1	other
rail engineer	1	other
researcher	1	other
river keeper	1	other
rural house owner	1	other
sales manager	1	other
shooter & stalker	1	other
shooter/conservationist	1	other
smallholder	2	other
smallholder and others	1	other
smallholder/youth charity manager	1	other
teacher	1	other
terrierman	1	other
tradesman	1	other
vet	1	other
visitor attraction	1	other
mole trapper/handyman	1	pest
pest controller	11	pest
vermin controller	3	pest

ANNEX 3: COMMENTS MADE IN RESPONSE TO Q17

"Do you have any further comments you would like to add about corvid traps or their regulation through General Licences?"

[NB – Comments are un-edited except to remove personal information or detailed locations, indicated by "XXXXX".]

0002
I have been trapping magpies for six years; the first year I started I managed to trap 78 magpies, each year since the number of magpies seen and caught has declined.

As a result we have far more wild birds in our garden the likes of woodpeckers, gold finches, bull finches, green finches, siskins, etc. to name but a few.

0006
12 yrs ago we caught 81 magpies & now it is average 20 per year, our small garden birds have not recovered as we had hoped, loss of jenny wren & blue tits.

0011
Only that the impact my own single Larsen trap in my garden has been remarkable. In the last 5 years I have caught about 60 magpies and 23 crows. My neighbours were complaining about the lack of small birds at their feeders, which led me to start trapping the corvids. We now have an amazing number of small birds of all types in our garden.

The issue as I see it, is not with the licenced traps, but with the unlicensed traps operating in the countryside, whose operators 'perhaps' don't act in a totally responsible manner, and this runs the risk of a ban on their use in the future.

0013
Our Trap Licence Number STR247 issued after contacting Graham Gordon our local Rural Liaison Officer in Maybole Police Office.

0014
Handled responsibly corvid traps are an effective method of control. I have been catching and shooting corvids since I was about 14 yrs of age. I'm now 54 and see no decrease in numbers, if anything maybe an increase.

I would agree that anything you can do to promote a better understanding of why these traps are used, to the general public can only be a good thing.

Please do not hesitate to contact me if I can be of any further assistance.

0016
My personal opinion is that all predatory birds also some animals be kept to a minimum. I have noticed that most garden birds, some wild game species and many ground nesting birds are declining due to predation, not only by corvids but by birds of prey, foxes, badgers, rats etc.

My job has taken me all over, in country areas, townships, private property and I have noted a serious decline in most species, but an increase in predatory species. I have also made a study of British wild birds during my lifetime of some 80 yrs!

0017
The amount of vermin in our area is increasing year on year, XXXXXX Estate and XXXXXX Estate are breeding grounds for thousands of grey squirrels, magpies, jays and crows.

Magpies ruined loads of songbirds nests up and down river banking past few years. But I'm frightened to set Larsen traps up and down river as some of the public do not like to see cages. I've already had SPCA investigating me as somebody wrote an anon letter to say people were trapping and poaching otters, deer, badger baiting and digging foxes when I was actually trapping mink with either fenn traps or cage traps along river. So now I don't trap corvids or mink along river corridor so you can imagine the vermin have free run of the place now.

Cormorants, gooseanders and mergansers should also be on the general licence.

0019
During 3 1/2 years we have trapped a total of 243 magpie.

0022
My averages are based on following:
2009 – 36 carrion 26th April - 21st May. No magpie trapping done.
2012 – 19 carrion 15 magpie 29th March - 26th April
2013 – 3 carrion 1 magpie 15th - 27th April. Not enough time available.

Decoy/callbird welfare:
Proper care of the above is fundamental to the success of Larsen traps. I feed them with canned dog food and bread with plenty water. I also check my traps at following ratio: 80% of time twice daily, 20% of time once daily.

I am surprised that there is no reference to welfare in the questionnaire.

0023
Since I started using Larsen traps I have noticed a huge increase in songbirds on my farm, but sadly no increase in waders and grey partridge, this I believe is down to predation by protected raptors and badgers both species have increased to levels that are causing huge damage to species that were once very common on this farm namely curlew, lapwing, oystercatchers and grey partridges.

P.S. It should be made "compulsory" that RSPB reserves are made to use the Larsen trap to protect song birds instead of blaming climate change, farmers etc. for the over whelming decline of these poor songbirds due to predation by magpies, etc.

0027
I have a relative living not too far from Glasgow, who keeps a few hens. Crows enter the small hen house and steal eggs. Shooting would not be sensible as neighbouring houses are not far away. His Larsen is out of action at present and the egg thieving has increased noticeably.

Also, his family cannot feed wild birds as crows, rooks, magpies raid the feeders and frighten small birds away.

This is a situation where Larsen and similar traps are very much justified. His trap is registered.

0030
We really need to continue trapping to prevent *(protect)* the other species of birds i.e. ground nesting and songbirds.

0031
The police have no right to send out my information

0038
Magpies seriously destroy songbird, nests and young.

0039
At present I am not using corvid traps as due to health issue I could not ensure that I could check traps on a regular basis as per General Licence.

I have answered the previous questions but these relate to up to 2012 for the reason stated above. I hope this is of use.

0041
We are currently without a keeper to carry out this activity and to check the traps. So we have put this activity into suspense at present. We have had great success with funnel/letter box traps for rooks, sometimes baited, and Larsens for hooded crows.

The high number of corvids here has contributed to the decline in grouse and blackgame.
We would like to see the general licence continue to allow the use of these very effective measures.

If I can be of further assistance please call.

0043
They are humane and essential to creating a balance of different species of wild life eg song birds, wading etc. Please do not make it more difficult to use thus useful tool.

0044
The estate runs an in-hand sheep farm. Pheasant/partridge shoot & walked up (at present) grouse. We have a strong presence of breeding waders and a grey partridge reintroduction scheme. Due to our grouse numbers climbing strongly neighbouring grounds are now also commencing corvid control.

Heavy handed regulation may jeopardise this interest resulting in a return to the slump in wild bird numbers, both locally & nationally. In Scotland we already have a tag system for crow traps & snaring so every trap/trapper is accountable.

0046
The regulation on the Larsen traps are ok through general licence, seems to work fine. However I do have a problem with right to roam? I keep getting my traps destroyed or corvid decoys let out and worst case getting the lot stolen.

0050
Since I started killing magpies, the number of garden birds has risen. In my first year, I caught 30 magpies. I now operate the trap infrequently – usually when I am given a decoy bird. I don't wish to eliminate magpies just keep their numbers in check. We do have too many crows and gulls but my trap is not suitable for those birds but those birds don't seem to prey on the small garden birds or not as much as magpies.

0052
It's a very important tool the Larsen trap for me to protect my livestock but also for the other wildlife on my farm. Lapwing and curlew and skylark numbers have also benefited as since catching and shooting crows and foxes there has been a slight rise in the breeding pairs on our farm.

0072
It is imperative that these traps are kept available for keepers to use, without further restrictions. The ridiculous situation brought about by Natural England must not be allowed to impose on this very necessary form of predator control.

0074
Please give more support to stop public damaging or upsetting trap or releasing decoy.

0075
Had 17 Larsen traps, only one left due to vandals. No longer trapping due to severe trap damage.

0079
Corvid traps are an essential aid to the country man. Over a 50 year period I have witnessed a massive increase in the numbers of all corvids. I have seen with my own eyes corvids' predatory behaviour taking game bird, wader and songbird chicks and eggs, over and again. It is not isolated and rare behaviour it is regular and normal corvid behaviour.

0080
This year 2 crows only came one sitting now cannot catch the other.

0081
We need to do more research on methods of trapping magpies, finding ways to lure them into some kind of trap.

0083
Corvid traps are a good way of keeping crow numbers down but there are still too many of them for the good of a lot of other bird life on the hill ground.

0087
Only used to reduce the magpie number to allow my garden birds to nest without harassment.

0090
Since I took on the part-time keepering of this ground, the increase in numbers of snipe, curlew, duck, black grouse and red grouse is marked. This year in the farmers words is the first time he has seen peewits (one pair) on the land in donkeys years. Ring ouzel and golden plover are also on the up, unfortunately so are buzzard numbers. The Larsen trap in my opinion is an essential piece of kit. I carry mine on two straps as I have no quad bike, that is how important I think they are.

0092
Until last year, I shared the swopping of decoy birds with an acquaintance, but I am no longer able to contact her. The magpies locally continue to be very active and deadly.

0093
My trap is used for domestic purposes. We no longer have songbirds in our garden and have trapped 15 magpies, 3 hooded crows, 1 crow. I have the trap in my garden clearly labelled.
It is my opinion that more must be done to reduce magpie numbers.

Having had as many as 6 magpies in the garden at one time shows the growth in corvid numbers and I can see a huge effect on songbirds. I have seen no bullfinches, bluetits, chaffinches, for 3 years.

(More needs to be done!!!)

0094
Why are there no mention in the questionnaire about the protection of song birds?

0096
Licence should include the shooting of ravens. Grouse nest are at high rick of being raided, as are wader and black grouse nests. Their numbers are increasing to warrant a cull.

0102
If of any interest, my corvid control is now in the hands of a self-employed gamekeeper. He makes a far better job than I ever did!

0103
As the number of Ramblers increases, the frequency of traps being released happens regularly. I will not be deterred by this as I feel that many small birds are killed by crows.

0104
My traps are 'roving traps'. The police allow me to set up Larsen traps in people's gardens. It only takes 24 hours to catch a pair of magpies or crows at the right time of year.

0109
Traps not in my possession currently. However when need arises I would possibly use numbers given. Q8 unfair question as this is a conservation farm which wants to protect all species of ground nesting birds. We have wildlife corridors linking woodland, also we are on a large shoreline with several estuaries and wish to protect wading birds, etc. Primarily livestock husbandry however we are a private shooting estate.

0110
Effective predation control is key element of conservation of certain species and these traps are a very efficient tool.

I have caught carrion crows and jackdaws when using a magpie as decoy but never a species not covered by general licence, regardless of decoy or bait used.

Personally, I have never had a trap tampered with by a member of the public, although I know others who have.

In addition to wild game birds (Q8), my trapping protects waders (lapwing, curlew, oystercatcher) and songbirds (skylark, yellowhammer, tree sparrow, song thrush) breeding on the farm.

0111
They feed on carrion road kill and seem quite happy to turn and kill and eat their own.
Yes I would like to see the people who damage legal traps punished as much as we would be for not operating within the law.

The birds on general licence don't stop eating or killing between Jan & Dec, why should I, plus it's about time something was done about sparrowhawks and buzzards. 30 years ago you had to travel 25-30 mls to see a buzzard now they're on every other pole along M80, at the back of my house, and I don't see the point of feeding siskins, chaffinch, goldfinch,

bullfinch, blackbirds, robins, wrens, thrushes and greenfinches to have them slaughtered at the table by a spar[*rowhawk*], and the people that complain about guys like me the only thing they put in the garden for wee birds is a cat.

0114
I presume you have accessed my details via "Police Scotland" since my trap is registered with them. Are they at liberty to disclose this information? Surely if they have disclosed the info they should first notify the trap registered keeper to ask permission before revealing the information?

0117
We have more small birds returning to garden since we installed the Larsen trap.

0118
Corvid traps are important in controlling corvids but the protection given to non target species such as lapwings, ducklings, leverets, etc is mitigated by the constant presence of big gulls (L.B.B. & herring) April –August who predate on all the species protected by corvid control.

Why does SNH/RSPB protect such a huge colony of big gulls on St Serf's Island Loch Lever when they know full well the damage they inflict on our wildlife over a 30 mile radius of their breeding site from May-August?

0121
I only set my Larsen trap when magpies come into the area.

[NB – confusingly, this respondent's only trap is a Larsen, and typical annual catch is given as 6 carrion crows.]

0122
A great method to keep numbers of crows down, I've had better returns in my nest boxes tits-woodpeckers-owls.

0123
Annually carrion crows manage to take eggs or kill young of oystercatchers. 3 pairs on our golf course have failed to raise a single chick during seasons 2011/12/13. Since I've been greens convenor one adult oystercatcher was killed by a carrion crow in 2012, witnessed by 3 members. We have no hooded crows during the breeding season.

We had lapwings on the farm up to 2010. None breed here anymore.

I trap magpies to try and encourage the breeding success of small birds which otherwise would be victims during the nest feeding period of magpies.

We have many more rooks (rookery 250 pairs) nearby but consider them an asset to the grassland areas and little threat to other wild birds.

I'm unsure about jackdaws but maybe in error have no direct evidence of them raiding nests and because they are less of a perceived threat have erected 5 BTO jackdaw boxes this year in the farm building – although none occupied.

0135
The main reason for catching magpies on our land is to protect the garden birds from the magpies, there has been a significant increase in small garden birds since we started using

the trap. And we even have a curlew and ducks nesting in our nature area which we allow to grow wild.

Before we got the trap we witnessed magpies eating eggs and young from nests on our land i.e. blackbird, greenfinch and song thrush.

0138
Q8 should be able to tick both columns.

This questionnaire seems to ask for more information on me and my circumstances than it does on Larsen trapping and can't see anyway it can make general licence better as the accompanying letter suggests.

0139
We must be able to use them all the time when we need to.

0143
They are a useful tool to employ to regulate predation in particular of small birds and oystercatchers.

Shooting corvids safely is not easy as they are so wary and indeed clever.

Sadly we have lost our capercaillie population and most of our red squirrels to pine marten so all the more important to keep on top of the corvids.

I keep my trap in line of sight of my house for ease of use.

0147
I help a full time keeper with his traps.

0149
1. There were plenty of magpies here when we moved in, in March 1997. They were a plague. It was remarkable that there were virtually no other birds. Trapping and shooting some thirty magpies from March to May 1997 was followed by an influx of other birds, which though they nested late, did well due to the good summer of '97. Trapping continued with a lower cull rate through the summer followed by an increase in the cull rate in the autumn and early winter. Shooting was tried, but compared to trapping, shooting had a low success rate. Shooting alone would not have had enough of an impact on the magpie population density to make a difference to the nesting success of the other birds.

2. Having tried virtually every altemative, it is clear that trapping using inanimate objects as lures or bait has almost no success compared to using a lure bird in the trap. Shooting had a low success rate as far as numbers of magpies culled went Shooting alone does not have enough of an impact on the magpie population density here to make a difference to the nesting success of the other birds. Shooting is time-consuming and not a safe option in many, if not most, useful culling locations.

3. In 1997, the area was also heavily populated by grey squirrels. These were attempting to "force entry" to the loft spaces, where of course they can cause considerable harm. They were also raiding bird-feeders, and seemed to be predating what few small birds' nests were in the wood. As a separate exercise, the squirrels have been culled over the years. Nesting birds in the wood seem to be thriving better.

4. ' Since 1997, we suppose that about a dozen or so “non target species” birds have been caught - we think two blackbirds and some starlings. These were all released within minutes, as our trap is under almost constant observation.

5. The wild birds (and hares etc.) populations are now so good that the North Lanarkshire Council Wild-life people consider it an exceptional area for birds and wildlife, probably among the (if not the) best in the North Lanarkshire Council area. Even they concur that this is due to the virtual absence of magpie predation of the eggs and chicks of all the other bird species. Our latest successes include the barn owls who (as at 9th May 2014) are raising 5 chicks (one egg was un-hatched), in the owl box we erected for them, and at last, a veritable invasion of house-sparrows.

6. Without the trapping regime, the evidence is clear enough there would be few birds here other than the magpies and other corvids.

0153
I consider them a vital part of my efforts to improve the breeding success of wild birds on this farm-part of the “3 legged stool” of habitat, food and predator control.

Without them, our efforts would be seriously undermined. We participate in the RSPB’s volunteer/Farmer Alliance bird surveys and were the Scotland winner of the RSPB’s Nature of Farming Award in 2013.

I have attended GWCT courses on the use of Larsen traps, amongst other types of trap.

0154
Having got 2 Larsen traps stole from estate with holding number on them. It should be a prosecution and for interfering with cage i.e. leaving *(letting?)* call birds out. An offence. These traps were set with accordance of the law i.e. water shelter food.

0156
I have had little success with the Larsen mate/clam trap but will still continue to use them.
In Question 8 I aim to protect all birds, which are threatened by corvids, equally.

0158
I would like to make clear that some of the questions are too specific and would have preferred to be able to give a more precise answer. Protecting “wild birds” to me is all birds and not just game birds, etc…….etc…….

In the past there has been talk of banning the use of ‘Larsen Mates’. I think that with all traps, if used correctly no suffering to non-target birds occurs. In fact in all the years I have used them, I have never caught a non-target species and I think they are an invaluable tool against corvids.

Decoy birds become accustomed to the cage they are in and the idea of <u>having</u> to change decoys regularly is wrong. Having to use a “fresh” bird all the time would only cause stress.

0160
The system as is easy to comply with enabling me to carry out targeted and limited control for animal welfare reasons.

0165
It is many years since I have used them.

I was successful only when I had a live decoy bird.

I tried to capture squirrels which also ate my birdfood.

I may have shot one with air gun.

0166
We have far too many carrion crows. We are not very good at reducing their numbers.

Ground nesting birds are under huge pressure in Scotland because of agricultural habit and predators.

In many areas predators are extremely plentiful and uncontrolled.

Predator control is extremely expensive. Many ground nesting birds are virtually disappearing; curlews, lapwing, waders, golden plover, grouse, black grouse, etc. Yet another licence for yet another rural activity.

0167
I have just been laid off as from end June.

0170
I think it all works well just now, as all are aware what they need to do, long as the public don't interfere with the trap.

0171
Corvid traps are an essential tool for control of crows and magpies. Without trapping, corvid populations would increase to the detriment of not only game birds but many of our small song birds.

0175
I feel responsible for all birds on my farm and have equal allegiance to them all. I hate to see nests robbed and chicks preyed upon, especially in birds struggling to survive.

Very few farmers seem to bother about crows. You see pairs very regularly as you drive around the countryside in spring and shudder when you think of the damage they do.

John Phillips has the correct solution on page 208 of 'Moorland Management', DAFS supplied eggs! Might save some eagles, kites and buzzards.

0176
We upped our corvid control using traps over the last 5 years. Due to this red grouse, black grouse and wading birds on the estate have greatly benefited.

0177
Information provided based on previous years control in Tay FD as delivered by XXXXXX under contract. Reference also made to previous work delivered in Easter Ross for Forestry Commission Scotland by various FCS staff and contractors.

Use of Larsens, allied to shooting, is a very effective method for corvid control. Trap use does require some intensive management, which with multiple traps can be a full time role. Ensuring the professional use of traps is the key for future improvement.

0181
The traps are not effective without a decoy bird.

0182
We have been at this address for nearly 43 years. In earlier times there was a large songbird population with perhaps 3 to 4 nests within our garden every year. At that time there were almost no magpies in evidence. With the arrival of the magpie the number of garden birds dropped considerably although we are in suburban area with low rise, almost entirely two story houses mainly with large gardens. We are within 100 yards of the Water of Leith which provides a long wooded corridor from the lower slopes of the Pentland Hills to the shore of Leith idea(*l*) habitat for almost all species of song bird and water fowl. Since I have been trapping over the last 15 years or so we have seen a marked increase in song birds and this year fledglings of blackbird, greenfinch, hedge sparrow and blue tits. The RSPB excuse of agricultural change impact is NOT the answer, but the cure conflicts with fund raising.

0187
Up to 1994 I used a Larsen on 300 acres of hill grazing.

1995-2012 at Ballyoukan I used the Larsen on lowland grazing and deciduous and coniferous woodland.

2013 +2014 I have not used the trap because I could not get a decoy. 2013 was a bad year for catching crows. This seems to happen every 4 or 5 years.

Due to do-gooders spying on traps with stop watches checking on the 24 hour rule of trap inspection the use of Larsens is much curtailed round here and I believe one very large estate has banned them in favour of hi-powered .22 rifles. If the inspection rule was changed to once per day and all the pens in the Larsen are provided with food, water and a perch and a roof for the decoy bird this would be a more sensible rule.

I gather from Mike Swan's article in a recent Shooting Times that Natural England are proposing to take powers to stop a person using crow traps if something has gone wrong in their opinion without any obvious right of appeal. This must be wrong – any such power should rest with the sheriff or magistrate.

Crow trapping with Larsens occurs at the same time as fox control at den and lambing time and a lamb killing fox can take precedence over everything so that is why a daily inspection rather than 24hr one would be more sensible.

0191
More should be done to make the public aware that it is an offence to interfere with legal traps.

0192
I have been using Larsen traps for many years now. They are essential to keep numbers of hooded crows down, which take the eggs and chicks of numerous species of birds, and also take the eyes from sheep and lambs – as witnesses on numerous occasions. I have found Larsen traps are excellent for being able to take them to a problem area. I would like the public to be made much more aware of it being illegal to tamper with the traps – in fact you have to put them where virtually nobody goes past otherwise they are let out. If crofters have a problem with livestock and crows the traps can be taken to wherever needed, or if there is a nest somewhere you can put a trap beneath the tree. I have found it essential to have a decoy bird for the trap to be effective.

0195
Please note question 8 is <u>very</u> badly constructed and will give misleading information to your survey, as there are separate but very valid reasons for trapping/corvid control and to exclude at the expense of the other will give you bad statistics.

Any responsible farmer/landowner should try and have a balanced approach to all corvid management.

0196
The use of the Larsen trap is mostly biennial and has been successful in increasing the numbers and variety of small birds in the area. There are, however, far too many rooks and crows, but I do not trap/shoot those.

0199
The only reason I do not trap all year round is that I come home from work around 7:00pm and it is too dark to carry out any maintenance issues on the trap.

0202
Not about the traps but the number of predators and vermin are so high now they all need to eat.

We farmers are not allowed to leave dead livestock out so a hungry bird has to find live ewes lambing etc. if they can't find other food.

0203
Have had birds released from trap!

0204
Since catching 5 magpies last year there are none in the immediate vicinity resulting in garden birds increasing in number.

I see no wrong in the use of Larsen traps providing birds are killed promptly.

0205
I have been issued with a license and have a number to use a Larsen trap, however due to the amount of people walking over the farm even with my license permanently displayed the decoy bird and the caught bird were being released by members of the public. Therefore I am only able to trap near the steading which has a limited effect in controlling hoodies at lambing. This year and last year I did not even bother with trap as it became too much trouble with birds being released.

0211
I have limited success with corvid traps as we are surrounded by keepered ground but there has been a reduction in the number of keepers recently and there has been an increase in carrion crow numbers. Corvid traps will become increasingly important in the future.

0215
There is still a problem with unknow tampering of traps – mainly releasing of decoy bird. This is despite all traps having signage describe their function and legality.

These traps are an essential aid to management and have a significant positive impact to our continuing wader population, lapwings and curlew.

0218
We regularly have 2 or 3 ewes which have had their eyes pecked out by crows. Also many lambs whose tongues are pecked out during the birth, often before the lamb is out of its mother's womb, or are attacked by crows after birth.

This area is particularly strong in songbirds, whose nests, eggs, and young are preyed on by crows, and waders – curlew, lapwing, snipe, black-headed gulls, mallard, teal, moorhen – on Harden(?) Moss and Highchesters Moss, and on the open hill.

0220
Greater education to general public on the purpose and legal operation of traps. Consider a standard SNH approved tag and labelling system. SNH branded. Essential part of managing predation.

During April 2014 I was contacted by a police officer 'advising' I attached a further label to all traps stating: "This trap is authorised by Inspector David McCullen".

This was in addition to my ID number and local police contact number. If additional signage, explanation is required operators must be notified of these changes. I fully complied with the police advice.

0225
Corvid traps are the most humane and effective method of vermin control. The number of songbirds in my area has grown greatly over the last few years as well as the number of wild pheasants.

0227
We currently have not required to trap crows – in the past 2 years. Our trap (ladder/funnel) has been dismantled but should it be required we could re-construct one.

We have found in past that when an outbreak of chicken attacking occurs – by catching/killing a small number of crows and attaching them to chicken shed roofs around field this cures the problem.

P.S. Can SNH please initiate a 'grown-up' discussion/review of law on other predators which are thriving e.g. buzzards and badgers – no ground nesting birds in our fields!!

0229
I find corvid traps necessary to control their numbers and think that trapping them benefits many species of birds at nesting time. I agree that their use has to be regulated.

0230
I have routinely shot magpie and carrion crow to protect wild birds (garden and farmland). My application for a trap was to address a specific problem with magpies. I had very limited success and do not agree with use of call birds. I find a shotgun and sometimes a rifle much more effective and humane. On average I may shoot 4 or 5 magpies per year and 2 or 3 carrion crows. I caught one magpie in a Larsen type trap (SGA home made) in 2012. Not used since.

0234
Only set when magpie seen.

0236
I would like to see some positive action taken against those who interfere with legal traps.

0241
Is a clam trap not a Larsen Mate rather than a Larsen pod?

I have serious doubts about the use of a Larsen Mate. I suspect it is likely to catch mammals by the neck which may be injured (or may or may not be released depending on the

operator. I think the trials should have taken place first before the use of the trap was agreed. I look forward to the SASA & GWCT trial findings.

0242
System is operating well and current legislation avoids misuse.

0251
The continued use of corvid traps is paramount in the protection of wild birds and animal livestock and continued to be used by a code of conduct in a professional manner.

It would be very helpful if the public were much more aware of the use of cages and the benefit to wildlife so as to prevent the vandalism of said traps.

0253
The continuing use of traps to control corvids is essential to protect all species of bird which are vulnerable to egg and chick predation.

These birds are especially black grouse, curlew, lapwing, oystercatcher, golden plover, all duck species and every variety of song birds.

The degradation of habitat in many parts of Scotland means that control of predators is even more important now than it has ever been.

I would like to see more developments in the design of all cage traps especially to increase the size of the decoy compartment as I feel that in many cases this is too small.

I would also like to see an acknowledgment that predator control (legal) is becoming more difficult and if it is to continue practitioners should be given more support and advice. The alternative is that few young people will want to become involved and our countryside will become a poorer place, vast swathes of our countryside are already testament to this.

0255
I am a member of the grey partridge scheme up here in Moray and in recent years the number of corvids is increasing which has had a catastrophic effect on lapwings, oystercatchers and all ground nesting birds.

Magpies have made an increased appearance and I caught more this year 2014 the number is 31 at present, and still going.

There is not enough being done to prevent corvid numbers increasing and our wild birds are being reduced as their numbers increase. I have had traps stolen, decoy birds released even though all regulations have been met it should be an offence to tamper with a legal trap.

I hope the information I have given will help.

0257
Magpies have killed a stock ram on my farm by continuously pecking his back and down to his spine. They have also spoiled ram lambs due for sale by pecking holes in their skin along the backs.

0258
All this regulation serves no purpose and discourages proper wildlife management which should be encouraged. It is intimidating to know that you could be breaking rules & regulations while going about your daily jobs. Decoy birds are hard to come by in a remote

area such as this. Even with a decoy bird hooded crows are too smart to go into the traps – or perhaps I am doing something wrong.

0262
I have from the beginning been sceptical as to the need of this General License, as law. I am uneasy regarding the inference of guilt within the wording of the License, and I think it is a charter to those of devious mind to create mayhem. Also, without in any way questioning the integrity of SNH, I am against 'private' or 'other' bodies being used to enforce law.

However, I'm not against the promotion of good trapping practice, nor the collection of information regarding the need, or otherwise, to control certain bird species.

The increase in the carrion crow population in the XXXXXX Valley is abnormal. It is may be significant that there was, over the same period, an increase in the number of free range henhouses, particularly on XXXXXX and XXXXXX. The hens are truly free range and wander over field and hill. It is inevitable that some lay out, and despite being locked in at night, some predation in daylight hours does occur. An increase in the carrion crow population is, in my opinion, a direct response to this increase in food source.

SECTION 4
Work on behalf of the farm owner and the syndicate is done by the undersigned and two other members of the syndicate, who live locally (one a retired keeper).

SECTION 5
I have been the shooting tenant on the ground owned and farmed by the XXXXXX Family at XXXXXX, for the last 30 years. The wording of the shooting tenancy agreement is clear, in so far that the interests of the farm are paramount. The syndicate walk-up grouse 2/3 times a season (care is taken to leave a breeding stock) and since 2006 we have released a small number of pheasants and redleg partridge on the low ground. The tenancy also includes the stalking rights.

SECTION 6
The prime land management function is, of course, livestock husbandry ; but, while, in no way can it be described as 'a shooting estate', the ground is shot and part managed (within the terms of the tenancy) for sporting purposes.

SECTION 7
Again, the main reason is to prevent serious damage to livestock. That in controlling the carrion crow population we also protect many other birds particularly ground nesting birds is an added benefit and a particular benefit to game birds, wild and released.

SECTION 11
Despite regular, but limited trapping from year to year, there was a steady build up in the carrion crow population in the Valley over the last decade ---- to such numbers that trapping was intensified in 2012 and 2013. So great was the problem that several farmers in the area requested our services.

Over these two years only a record of the total crows killed was kept; I have therefore made estimate (as best I can) as to how many were killed on what ground.

	A	B	C	D	TOTAL
2012	32	22	23	-	77
2013	68	47	43	8	166
2014	15	16	10	-	41
					284

Notes
1. the estimate figures are slightly distorted by the fact that more traps were used on XXXXXX elsewhere.
2. approx. 5% of the total crows killed, were shot;
3. over the years very few magpies seen ; 4 shot 2013
4. we have never killed jackdaws.
5. there is one rookery on XXXXXX; at the farmer's request we cull approx.40 young p.a.
6. year 2014 is in all probability about --- 'normal'.

SECTION 12
We found that the clam traps were best used alongside the Larsens.

0267
Would like to see the results of the survey please. After being a keeper all my life and feeling that we are being restricted in doing our jobs at every corner it would be nice to see a few positives from your efforts.

0270
Without the use of the corvid traps our wading birds would suffer. It allows us to use these traps where shooting would not always be a possibility. We have seen a rise in Lapwing etc.

0274
These are a fantastic tool for reducing overall corvids. I only wish there was a way of catching more of the 'trap shy' birds that 'visit' the traps but never enter. These non territorial birds are a real problem.

0284
The songbird population on one of my farms had fallen to the point where none were in the area. Since using effective trapping and shooting to reduce corvid numbers the songbird population has returned to a decent level. It's about having an even balance in numbers.

Conservation.

Also animal and human foodstuffs were at risk. No longer as the risks have been reduced.

0285
The first year we caught nearly 100 magpies and we lent our trap to a farmer's wife neighbour who dumped cracked eggs and she caught about 100 as well. That was about 30 years ago. Since then the number caught has declined dramatically following closure of the farm for sale to a builder.

My contacts for a decoy have mostly gone and the plague of magpies has also mostly gone. So far I have not caught any this year but then I have not been able to get a decoy either.

0290
In the spring of each year we would lose a lot of our songbird and gamebird eggs and young to corvids without the use of traps and shooting.

I get calls from people each year that don't do field sports asking for help as corvids are raiding nests in their gardens.

Also get calls from farmers as their crops are under attack each year form hordes of black corvids.

0292
The existing general licence is a sufficient control for the correct use of corvid trapping. The legitimate use of control of corvids is an important practice for responsible land managers. To maintain a diverse and healthy abundance of all ground nesting bird species.

0299
I am registered with Police Scotland for using corvid traps. The main challenge is interference of traps by the public who have no appreciation of their use and benefits to songbirds, waders as well as gamebirds.

0301
This is a very efficient and targeted means of controlling corvids and any further restrictions on their use would make it nearly impossible to control them when needed.

0304
I think that there is enough regulation in place for the users of these traps. More should be done to prevent interference by members of the public who seem to think that they know better than the legitimate users.

0306
I notice that there is no form of shelter for the birds in your illustration of the multi-catch ladder/funnel trap.

A member of the public reported me to the police as there was no shelter in my trap. I was ordered by the “Police Wildlife Officer” to insert a shelter to comply with the rules.

0309
I feel the use of Larsen and other legal corvid traps are a valuable conservation tool to aid the song/game and other bird populations.

0311
Some householders distressed by actions of magpies on songbird nests (eggs and young birds). They state survival of these birds increases markedly after removal of magpies. Traps essential for control of corvids versus wild game birds as well as reared.

0313
Larsen traps are only practical means of regulation vermin birds in town.

0314
Larsen traps are not being used at XXXXXX Reserve in 2014 due to reduction in predator numbers, reduced catch rated over recent years and welfare concern for call birds.

0317
To counter trap shyness it is important to have a big range of trap types available. Success of each type varies from year to year. Baits need to be varied too. Corvid trapping can work well in spring and early summer. It is ineffective in this part of Scotland during winter months, even when there is snow cover.

0321
The separate description of Hooded and Carrion Crows is misleading. They are different races of one species and in our area they interbreed readily so the grey “hood” is prominent or just a weak feature.

[NB – this respondent reported bags of 4 hooded crows and 14 carrion crows in a typical year.]

There is now good circumstantial evidence of trap shyness in corvids. In some years (or parts of year) it can range from impossible trapping to very easy. It is therefore very important to maximise the choice of traps for keepers to use and also to develop new trapping systems to cope with very cunning corvids.

Species: Jays are increasing and readily caught in egg baited traps. They need to be controlled along with rooks and jackdaws which predate on eggs, specially in dry weather.

0323
We have had a definite increase in songbird and thrush/blackbird numbers in recent years after keeping magpies and jackdaws to a minimum. Also keeping jackdaws down in springtime frees up the owl and kestrel boxes for their proper occupants!

0325
I feel that I have helped the small bird population to survive because prior to using a Larsen trap I felt that the nests of these small birds were being systematically robbed by the magpies and I feel that I have made a difference by trapping the magpies.

0327
I use my trap in my private garden but also set it up in friends premises where there is a magpie problem – with songbird molesting. There is a noticeable improvement in numbers of small birds after trapping of magpies.

0330
An effective and humane method of controlling corvid species, absolutely vital to protect <u>all</u> species of wild birds.

0332
Ravens are a bigger problem.

0341
The rise in corvid numbers has been steady over the years and matched by the decline in waders, songbirds and wild game birds. No grey partridges left of breeding game birds.

The [???] on trapping are [???] and [???] benefit the growth in corvid populations. [unreadable text]

The cost benefit analysis of corvid trapping on a small farm does not stack up and I think that this may be my last year.

0343
In the area where we trap in conjunction with others there has been a dramatic increases in song birds with the decrease in magpies.

On Colonsay there was a noticeable improvement in the chough and corncrake numbers after the removal of hooded crows. Over a 3-4 year period 7 or 8 years ago, I caught 758 hooded crows and the difference to all small species of birds and those mentioned above was very noticeable. As I am now 86 years old I am only catching hooded crows in my croft land during lambing and I only caught 6 so far this year. My neighbour also managed to catch 12 so far and the decline of the crows is noticeable.

0344
The corvid family are excellent omnivores. They are general predators and eat just about anything. Have excellent eyesight so shooting as a method of control is almost useless especially near regular food sources such as open laying pens. Shooting on the ground at

long range on open ground is sometimes responsible but after one or two shots the corvids become very wary and move out to extreme range. So the use of regularly inspected traps is essential to the wise and sensible use of farmland. The aim is always to control numbers at sensible levels. It isn't to exterminate.

0349
Larsen type traps allow non target species to be released.

0352
Two of my favourite farmbirds are the lapwing and oystercatcher. However they consistently fail to breed successfully because of unrelenting pressure from corvids, gulls and buzzards.

0357
Curlews are in decline in this area. Lapwings have been decimated. Without being able to trap the situation would be even worse as ground nesting birds would be wiped out. There are now very few snipe left.

0359
Although you are asking in question 8 to be percific in all cases of corvid control, all bird species benefit.

0360
They are a very valuable tool for carrying out my work.

0364
The Larsen trap plays an important role in the control of corvids which benefits all types of wildlife.

0365
I am worried that the General Licence will be withdrawn or require target species to be "frightened off" before being controlled in the future.

Magpies have spread their range into this area in last 10-15 years and now reaching considerable numbers, but it is difficult to obtain decoys.

0366
I feel the traps mentioned in the survey have an important role in the conservation of game birds and song birds.

0367
I think they are a very good way of controlling corvids as they are working when I don't have time to be sitting out waiting with a gun.

0368
I am considering buying a multi-catch trap as any dead sheep or lamb has its eyes picked out as soon as daylight comes. Lambs can have their eye picked out if they are not dead.

I am happy with General Licences as it lets me set traps if I want to without any bother.

0369
These traps are an essential part of our arsenal when it comes to conserving <u>all</u> types of wildlife and livestock. There needs to be no more rules and regulations by jobsworths, leave us to get on with corvid management, as with everything in life well-meaning idiots make things worse.

Less notice also needs to be taken of RSPB and other political pressure groups who are only interested in their own income and not the birds they are supposed to protect. I am also deeply suspicious of SNH's motives when these questionnaires etc come knowing the underlying thought process of such organisations. You say you want to make things better but it will be the usual slippery slope to more regulations, paperwork, interference and general unhelpfulness. Your record when it comes to common sense and successful habitat and species management is poor to say the least. I live in hope but not expectation that your organisation will become less political and more accountable.

0371
The bureaucracy of your 'regulation' does nothing to encourage the objective of protecting the crofter's stock in difficult country.

They deal with their problems in the best way they can, knowing that the Estate Owners will support them to the best of their ability.

0373
Providing shelter for captive birds, whilst required by law, can put other birds off coming into the trap, unless well camouflaged.

0378
The use of corvid traps is a very important tool to the gamekeeper and farmer. At a very important time of year when not only gamebirds but wading birds come inland to pair up and nest. Corvid traps when worked properly can also help the farmer when grain is sown and when vegetables are planted. Also near to harvest when the grain sometimes goes flat due to weather. So I would urge all keepers and farmers to use corvid traps to the full.

0381
I consider Larsen traps to be absolutely essential in controlling predators in my garden. Since using these and alone with habitat management in my garden bird count has increased threefold and the number of species seen has doubled in the last five years.

0382
I only use wooden Larsen traps and borrow a Larsen Mate from neighbour to aid catching a decoy bird early on. I am certificated and identified on all my traps – they are at times interfered with by the general public i.e. set off/damaged.

The right to roam is the bane of my life living so close to built up area by irresponsible dog owners wandering all over the woods.

Corvid control mainly hooded crow and magpie make a considerable difference to our shoot numbers.

0383
Control of corvids is essential for the breeding success of songbirds, waders, and wild game birds. The Larsen trap does this effectively and humanely. Regulation of the Larsen trap is perfect and needs no modification.

0386
Corvid traps are a great asset regards the type of work I undertake both at Symington House, Symington and Langlees House at Biggar.

In the past 20 years I have had great success with the trap as both estates have natural roosts for corvids that gather in large numbers from autumn through winter.

However, 2014 has been the worst experience trapping corvids I can remember. Badgers are digging under the cages to eat the bait and causing the trap door to shut. It's quite soul destroying.

0391
Larsen traps are a very useful tool in controlling carrion crow. But I prefer shooting out all nests which farmers etc should be encouraged to do. The carrion crow in the area is very numerous and destroys a great amount of nest and chicks. The General Public should be made aware of the damage they do.

0395
I would like to stress how important I think corvid traps are for controlling hooded/carrion cows in our area. Since I started working here 2010 we have killed approx. 110 hooded/carrion crows with the use of corvid traps which I think has had a huge benefit on the local gamebird populations, especially black grouse. Our neighbours are XXXXXX and XXXXXX who have all reported good numbers of black game recently and the only change has been our estate's undertaking of vermin control in the last 4 years whereas previously the estate was unkeepered for 25 years. I believe that the regulation of these traps is already at a very high standard and there is no need for further regulation. They are invaluable tools to the gamekeepering profession, allowing you to do other jobs at a very busy time of year while they 'work away' on their own. 75% of the crows we kill are caught in corvid traps so their use to us is especially important.

0396
The General Licence is too restrictive.

Trapping in an inaccessible location where it is not possible to remove traps when not set and return them for 2 or 3 days later to restart. Not practical to padlock every chamber on a Larsen trap.

Restrictions on baiting unnecessary.

Would make sense to allow use of jackdaws as decoys in Larsen traps.

Trapping on SSSI where it is clear that predation is too heavy for existing populations of waders to continue (lapwings have disappeared in last 5 years; oystercatcher declining) – curlew and redshank numbers steady.

Takes too much time and resourced and current programme will not be continued after SRPP funding stops. Although may trap elsewhere or farm on smaller scale.

Also involved in grey squirrel trapping – restrictions much less onerous.

See attached sheet for context and further comment.

[On separate sheet:]

We are small farmers with hill grazing, arable and a low lying SSSI but no employees. We have been trapping and shooting corvids on the farm to preserve wildlife for the last 15 years or so. The SSSI is habitat for waders and nesting area for oyster catcher, curlew and red shank and until very recently for lapwing. It is lightly grazed to provide habitat for waders. It is very difficult to access taking 6-8 man hours per trip and we manage around 30 trips per year. It had strong populations of lapwing, oyster catcher, curlew and red shank. The farming methods have not changed for more than 20 years due to its remote location but in the last 5 years the lap wing have disappeared and this year oyster catcher numbers are sharply

down. Curlew and red shank seem to be holding up. It is clear that the decline in numbers is due to very heavy predation not only from carrion crows and the packs of 20- 30 jackdaws that fly over and settle round nesting sites but protected predators such as herons (there is a heronry of at least 20 herons), kestrel, buzzard, and marsh harrier. There are also mink.

The point of our trapping programme has been to help breeding waders. We have been trapping as part of an SRDP scheme and we stop once the scheme stops at the end of this year. We cannot sustain the investment in man hours to continue in the face of our lack of success especially as this is a busy time on the farm. The scheme has limited the predator control that we have been able to do elsewhere on the farm.

I do not understand why the general licence has to be so restrictive (and more restrictive than guidelines for trapping mammals). If we do not control predator numbers we will not have biodiversity and it is clear that wader populations are already critically low. We will continue trapping around the farm in easier locations on a smaller scale. It would be great if we felt that what we were doing was supported by all those who promote and try to protect birds in Scotland. As the predator populations of carrion crows, jackdaws, buzzards, kestrels, sparrow hawks etc. increase it seems very unlikely that species such as waders that used to be common (when predator populations were effectively controlled) will survive in any numbers.

0399
Q8 states to tick one group only but I would have ticked all the boxes as I have seen over the years waders and other birds being persecuted by corvid birds. This is one reason why I trap them to help protect young birds and nests of eggs which are all vulnerable.

0407
The present system works well. I do not want any more bureaucratic requirements.

0408
Effect monitoring of raptor bi-catch, especially buzzard, goshawk, sparrowhawk and eagle spp, and red kite.

Also the banning of Larsen mate or Clam trap, which operation can injure non-target species, especially raptor legs and wings.

0410
Your description of Larsen Mate in the picture is a Clam trap, the Larsen Pod in the picture is not.

0413
I feel it is a must to keep corvids under control, for the purpose of farm livestock and birds nests, both eggs and chicks. If traps are used correctly it's a must we are able to keep using them, through licences.

0417
No more restrictions imposed on trapping

0420
Traps regularly interfered with by public. Decoys let out.

0421
Material the trap is made of has an influence on success, we find. Wood is preferred over metal.

Pegging of Larsen Mate & Clam traps I can understand. Pegging of large heavy Larsen traps does not make much sense.

0422
Trapping in one year does not eliminate the problem as my Figures show. An annual cull gives breeding birds a bit of a chance to get a brood away.

I do intend to build a few ladder type traps in the near future.

The General Licence is essential to enable us to improve wild bird numbers and protect lambs.

I feel it should be mandatory for all those receiving habitat funding to trap predating corvids.

0423
I printed my licence off when we were first asked to do so but the sun faded it quite quickly and I had no idea where to get another copy from so do not have a licence on my Larsen trap now.

0427
I find the Larsen traps are invaluable to our little estate/farm to help protect the ground nesting birds we have had a good few lapwings hatch this year and curlews/oystercatchers. We tend not to use the multicatch traps a lot as we don't have a lot of crows to affect us. Thank you. PS If I can be any help just give me a call.

0429
This year, I have not used my trap. I only use it to preserve the song birds from magpies. I do not like disposing of the magpies! Good luck with the project.

0432
By using these traps I have seen a huge increase in wild bird population. I am seeing a big increase in raven numbers and these birds are beginning to have a terrible effect on all of our wildlife.

0433
No more red tape!

0435
Corvid traps provide an efficient method of pest control which is considerably more effective than shooting. They are particularly useful for landowners who can't devote long hours to pest control through shooting. Properly managed and monitored they provide a humane means of control. They permit safe release of non-target species and allow selective culling.

0437
People should be educated not to interfere or destroy licensed traps. My traps carry a sign informing that they are legal and licensed. I have even had SPCA officials appear and tell me my traps are illegal. Yet they are licensed by the police all contain fresh drinking water and food. I have even seen a SPCA official destroy a Larsen trap (empty). Police could not help because I had no witnesses.

0442
Feel there should be more control of these carried out, to help to protect our songbirds, and our wild game species.

0450
Although not yet successful in the two years I have been using my Larsen and ladder trap I think they are a good tool and I have had excellent results previously.

I have watched 2 magpies and a pair of crows work their way through a spinney outside our home in the last 5 days – very sad for the song birds – they don't have much habitat as we humans have ripped it out – the least we can do is to give them some help where we can.

0452
No other comment, but glad to help in any way!

The vermin control is a good thing to do to help control crows, foxes, etc.

0456
I only set the trap when feeding pigs becomes a problem toward the back end of the year when other food becomes scarce. It's mainly a congregation of young opportunity feeders. Hooded crows at lambing time, but again it's only certain birds that are a problem.

0457
It would be helpful if the public had a better understanding of why pest species are trapped. Keepers in this area regularly have traps interfered with despite information about trapping being displayed on notices on the traps.

0462
General public's lack of understanding of what is a legal trap. Legal signs attached to all traps seems to make little difference to interference.

0465
The other main reason for corvid control is carried out for the protection of upland waders and also to stop the jackdaws from spreading disease to the poultry kept on the estate.

If this survey is used in anyway to shorten the months that we can catch corvids this will be yet another blow to the upland waders populations.

As you see we use most months of the year to control them. This is to stop a build up for the following spring.

0466
I can understand the need to identify the owner of a trap in open land (moorland, farmland, woods, etc) but it seems ridiculous to me that this should apply to house gardens, surely the owner is the house owner!

Under Q11: 325 magpies in last 20 years.

0468
Have stopped using traps as decoys do die and with all placing of traps recorded we are scared we get something wrong and our single farm payment comes under threat. We should be able to use them as good management practice. A good lamb with its tongue pecked out or a ewe with both eyes pecked out is not fair!

0469
When we first used Larsen traps we caught ~140 carrion crows in yr 1. This went down to ~ 60 in year 2. We now only put out 2 or 3 traps and for a short time due to time constraints. However I cannot help think that a bounty on crow wings (say £10/set) would totally change our control of them and would be cheaper than paying lots of scientists/rangers, etc!!

0475
Corvid traps are an essential tool in a keepers arsenal, when used properly, within the law and rules, of the general licence.

0479
Re Q8 waders and other birds benefit to quite a large extent from corvid control and although the protection of gamebirds is priority waders and other birds I feel are equally deserving of protection.

I feel that as things stand the sporting industry has done more than enough to appease the various bodies that show great interest but very little practical knowledge of how and why practitioners of pest control carry out the various aspects of day to day work. Any further restrictions I feel would have a detrimental effect on our ability to carry out our duties and the wildlife and other birds and mammals that inhabit our workplace.

0498
Notes on Corvid Trapping:

1) I initially started trapping corvids in Larsen traps around 1990. I was managing a salmon smolt farm on the outskirts of ####### which had a fair amount of un-grazed land which had 6 pairs of lapwing, 2 pairs of curlew, 1 pair of ringed plover and 1 pair of redshank. The first year that I was there not a single chick fledged, all nests were preyed upon by carrion crows at the egg stage. In the second year I placed a Larsen trap at either end of the site (2 traps) and killed 84 carrion crows. Not a single nest was predated. I continued this during the breeding season for the next 3 years with the same results. Because both traps were visible from my house I could study in some depth the way in which they worked. As new birds moved in and tried to become dominant and nest in the area or use the area for hunting their time was completely taken up by mobbing the decoy crow and/or getting caught.

2) An interesting observation I have since made while using multi-catch crow cage traps with a funnel is that when the roof is completely chicken mesh there are no buzzards caught. I have seen buzzards sitting on the edges and on the uprights of the traps but have never caught one. As soon as a perch was made on the edge of the funnel then buzzards were caught and some several times.

3) I have no idea why there is a trend in upland areas for very large multi catch traps. The only reason I can imagine is that they are intended to catch large raptors like golden eagles. I have found no difference in the catching success of smaller cage traps 8' x 8' and 6’ high to larger traps 12' x 12' and 7' high.

4) I have also noticed that some of these multi catch traps are built in woodland. These traps are most certainly designed to catch raptors. I have had very little success in trapping corvids in woodland as they are extremely wary and like to be able to see around a trap in the open before venturing near one. I have however had great success in trapping buzzards for ringing purposes in woodland and I'm quite sure the same would apply for goshawk.

5) I have often had to shut down multi catch traps due to ”trap happy" buzzards being trapped several times. The problem with this is that the sear on the buzzards becomes badly injured due to them flying against the chicken mesh. If this was left to continue then the bird would definitely become seriously injured.

6) Regarding the use of the clam trap I think that the safety of the corvid when caught must be taken into account. If a carrion crow is caught in such a confined space and is there

until the next visit perhaps for 22 or 23 hours with no food water or shelter, or space to open its wings then this is inhumane. It must be remembered that this could be in pouring rain, frost, snow or blazing sunshine.

7) I would request that if clam traps are to be permanently licensed then a clause should be inserted into the general licence regarding the strength of spring used (perhaps closing strength in Kgs) , the checking frequency should be increased to every 4 hours and nothing should be used to keep the trap permanently shut.

8) I would also like you to be aware that using a clam trap on top of a Larsen trap decoy compartment is in effect a Swedish Goshawk Trap. I think that combining a clam trap with a decoy should be completely forbidden.

0503
I am trying to protect wild game and waders. To only allow one to be listed is daft. By controlling one you are helping many species.

I used to use a multi-catch ladder, but despite its isolated position the decoys have regularly been let out, so is no longer used. Because of its size it is not practical to move on my own.
Because of work – lambing etc I do not have time for Larsens in April, though shoot a few. My keepering takes place when I am going round the sheep – checking tunnel traps and snares.

0506
Publicity to explain the necessity of these traps to general public would be useful, i.e. to stop interference!

1452
General licence and the use of corvid traps is a vital tool for Land Managers all over the country.

1456
I have only used a calling bird once since using the trap and have only captured 2 Carrion crows (one of which was used as a calling bird) in totality. I had no success this year but a local farmer shot 2 Carrion crows on my land on 31st May 2014 and destroyed their nest. The trap is not in use at present as I do not want any juvenile crows to starve in their nest as a result of me trapping the adult crows but I will use it again at the end of the year and into 2015.

Apologies for not replying via the hard copy but the return date had passed when I came to completing it. Thank you for the opportunity to respond via an alternative manner.

1464
This return relates to my own trapping and covers my owned and rented land.

The trapping was started to help curlew and lapwing which were nesting but being harried by crows and consequently not breeding. The trapping has helped the survival of young birds.
This year, within the area trapped, there have been nesting gadwall, which are unusual in the area. Other unusual species include cuckoo and occasional records of nightjar.

I remain convinced that making it more onerous to trap crows would simply reduce the effort put in to their control, with the net effect that they eliminate the ground nesting birds etc. Any legal trap can be reset to be an illegal trap, and therefore it is the use rather than the trap which is illegal.

1466
Larsen traps are an essential tool in the armoury to protect wild Scotland.

1469
We have noticed an increase in human intervention i.e. decoys being released from Larsen traps, etc.

1472
I have used traps of all kinds for around 50 years, both to catch corvids and to catch up birds in aviaries to avoid stressing them. I have used countless variations of all the trap types in your survey, and have never ONCE had a bird or animal become injured by being partially caught – that just does not happen in practice.

Non-target catch over that period, which covers 50 years of use and thousands of target species, has been two buzzards (both young), three sparrowhawks (all hens), two domestic cats and one blackbird. All were released unharmed.

1473
Corvid traps are by far the best way to control corvids and are a very important tool for any wildlife manager, far more successful than shooting.

The general licences are becoming far too complicate(d) and need to be simplified, there is no need for this complication and continual changes.

1474
"Foreigner" Magpie Call Birds have an immediate impact and are infinitely more successful as a means of attraction of the Magpie to the Larsen Trap but can be extremely difficult to source.

Any assistance in this respect or temporary permission to trap outwith the designated areas would undoubtedly help to resolve this issue.

1476
I have not used my Larsen trap since 2012.

Magpies are becoming prolific in our neighbourhood to the detriment of other birds. They also cause a lot of noise, particularly at dawn.

1478
I do not use traps at the moment because of the amount of damage we received to our Larsen and ladder traps by members of the public who were walking through the fields where we trap and run a syndicate shoot from. We now as a syndicate control Corvids by shooting several times a year. We may look at using traps again in the future.

1479
I find Larsen traps a highly effective method of crow control and have never caught an unintended species in 20years of use.

1484
2011-local gamekeeper set a Larsen trap because of fledgling depredation. 2 crows caught on the first day, which he took away.

Larsen trap bought and set for several months during that year, but only 2 blackbirds were caught early on- and immediately released, of course.

No more birds of any kind trapped during 2011 and the trap has not been used since.

No more depredation of small birds has occurred since, but the trap is kept in reserve.

1486
This is the first year trapping so have only used the Larsen in the garden.

1487
Trapping Corvids under general licence is a necessary and legal activity especially given the explosion of numbers seen in peri-urban areas.

More education and support should be given to people operating traps as at present it is often difficult to operate traps without fear of damage, destruction or call birds release from members of the general public who are ill-informed and acting illegally by doing so.

These acts are carried out with impunity and are rarely reported due to the lack of follow-up. Protection of our dwindling song bird and native game species populations is dependant on this control and despite the image of it being self serving to the individual trap operator it serves a much wider purpose.

I personally started an on-line "call bird register" in order to enable effective sharing of live call birds during the trapping season. A national version of this would be an invaluable tool and show some public and outwardly visible support to the work that is going on.

1489
In 2010 I built and deployed a top funnel entry multi-catch trap on my rural property because we were inundated with rooks and crows which destroyed my bird feeders, fouled all areas of our garden and decimated the song bird population the year before. The trap was highly effective and reduced the rook population to a smaller number. In 2011 I donated it to the nature reserve near Newburgh in the NE of Scotland.

In 2011 the Clam Trap was very successful for trapping rooks and crows using an artificial nest of mass and broken hen's eggs as bait. Ten rooks and ten crows were all cleanly trapped without any injury and thirteen magpies were caught in Larsen traps that year too. Owing to severe knee pain in 2012 into 2013 which resulted in a complete knee replacement in May that year I did not deploy any traps at all. My mobility was severely affected as following the operation I had an infection in the prosthesis and operation site resulting in an extended recovery time.

Whenever possible, I offer captured magpies to gamekeepers and other Larsen trap operators in the Aberdeenshire area before humanely dispatching them.

I normally cease trapping when the numbers of corvids has been reduced and there are no magpies to raid the nests for the eggs and fledglings of the song birds.

1492
Many of these questions demand multiple answers and yet you have restricted answers to one. Many of these seemingly simple questions do in fact require quite complex answers. In the absence of a proper food chain where there are "Natural" checks and balances against one species becoming so dominant that it either wipes out or severely limits the populations of its prey our aim is to control the numbers of the predators at the same time as providing food water and shelter for the rest. The 3 legged stool is I hope alive and well in the country that I control. That applies to all the species including corvids and the other major predators. It is I think what you would call "Conservation through wise use".

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