

Wildlife and Countryside Act 1981 (as amended)

Licences to kill/take birds/mammals (non-piscivorous)



Note: This report may be disclosed in response to Freedom of Information requests.

Technical Assessment of Application

Summary of Application and Decision

Case reference	2016-24804-SPM-WLM	Purpose	Preventing damage to livestock
Species Common buzzard (Buteo buteo)			

Brief Description of Application

This is an application from [redacted] for a licence to permit common buzzards to be shot to protect pheasant poults and red-legged partridges. The applicants consider buzzard predation of game birds to be having a serious impact on the profitability of the shoot. Non-lethal methods of preventing the problem have been tried and are considered to have been unsuccessful at solving the problem.

Recommendation Recommend Licence	Action Permitted: To shoot birds Reason for refusal: N/A Date for reconsideration: N/A
Adviser Name: [redacted]	Date of Report: 28/07/2016

Application Details

1. Applicant

Title	[redacted]	Forename/Initials	[redacted]	Surname	[redacted]
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2. Site Details

Address [redacted]	Describe precise location Seven pheasant release pens: [redacted]
Grid Reference	[redacted]

	Partridges are released in an area of the estate centred on [REDACTED]
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Ownership of Site

Land is owned by the [REDACTED]

Technical Assessment

3. Assessment Details

Type of Assessment	Site Visit	Date of Assessment	20 July 2016
Risk Level	High	Sensitivity Level	3

Risk Assessment

Site visit carried out on 20 July 2016 by [REDACTED] (Wildlife Management Adviser [REDACTED] and [REDACTED] (Wildlife Management Adviser [REDACTED]) to gain a better understanding of the problem and to examine measures already in place to try and reduce it. Potentially sensitive as this is a species that is not normally subject to lethal control for this purpose.

Persons Interviewed (if other than applicant)

Name	Address (if not as 2 or on application)	Role	Telephone Number
[REDACTED]		Head gamekeeper	[REDACTED]

4. Background Information

[REDACTED]

A similar licence application was received from [REDACTED]. The proposal on that occasion was to shoot buzzards with a high-powered rifle, fitted with a sound modifier, targeting only buzzards that had been seen to kill a poult. The licence application was refused with a decision letter from Natural England dated 7 November 2012 stating the following reasons:

1. Insufficient evidence of serious damage – evidence was dismissed as anecdotal and Natural England was not convinced the level of predation was sufficient to be considered serious damage. The letter especially points to the lack of bag returns presented with the application.
2. Effectiveness of proposed measures – Natural England was not convinced that targeting problem birds would work as they considered there to be no evidence that it was only certain birds causing the problem. It was stated that any birds shot would soon be replaced by other birds attracted by the large number of pheasants and partridges.
3. Use of non-lethal techniques – other measures were suggested such as rides being in sinuous curves rather than straight lines to reduce flight lines, creating scalloped edges to rides to locate hoppers, diversionary feeding and delaying the release of poults until they are at least 7-8 weeks old.
4. Lack of supporting evidence such as records of buzzard numbers and behaviour, shoot returns and details of non-lethal measures.

Since the 2012 application there has been a Judicial Review in the High Court of the way Natural England handled another buzzard application [REDACTED] leading to new internal guidance in May 2016 – *Internal Guidance Note SD/IGN/2016/001 – Licensing lethal control of birds to prevent serious damage* (in this instance, to livestock). This application has been assessed in accordance with this new internal guidance.

5. Evaluation

The IGN identifies four licensing principles which need to be met before a licence can be issued. These are:

- Principle 1: All other reasonable non-lethal solutions have been tried and/or shown to be ineffective.
- Principle 2: There is a genuine problem/need.
- Principle 3: There are no satisfactory alternatives.
- Principle 4: The licensed action will be effective at resolving the problem and the action is proportionate to the problem. Wherever possible, humane methods of lethal control are used.

In addition, there is an implicit principle that Natural England should consider the implications for the conservation of the species.

Principle 1: All other reasonable non-lethal solutions have been tried and/or shown to be ineffective.

The applicant stated, in the application and during the site visit, that many preventative measures had been tried over the years. These included using scarecrows in the pens, hanging CDs, bags and ribbons, improving cover for the pheasants by sowing artichokes in the pens, supplementary feeding (to provide an alternative food supply for the buzzards), and playing a radio. For the partridges, plenty of cover crops have been sown and rabbit proof fencing has been removed to allow partridges to escape into hedge bottoms. The age at which the birds are released has been increased so that the birds are better able to fend for themselves. In the technical assessment report for the 2012 application, the assessing Wildlife Adviser noted that gas guns and flashing lights had been tried on the Estate, although neither of these were mentioned by the applicant.

During the site visit there were no visible scaring devices and ██████ explained that none of them had worked for more than a couple of hours and he had therefore stopped using them. The Wildlife Adviser had seen them during his two visits in 2012 but ██████ said he had stopped using them some time later as they had required a lot of time and had no obvious benefit. He pointed out that when the scaring devices had been removed there had been no increase in predation. Scaring is, however, carried out through human presence. High seats are located around each pen where people can sit out early morning and evenings to disturb hunting buzzards by human presence at times when predation is worse.

For scaring devices to be effective it would be necessary to try a range of different tactics and to change them regularly e.g. moving scarecrows, swapping between lasers, ribbons, CDs, gas guns etc so that the buzzards don't become habituated to them. Given the number and size of pens on the estate (7 pens in excess of 21 ha), in addition to the even larger partridge release area, this requires a great deal of time and, if found to make no difference to the rate of predation, it seems reasonable that these measures have been abandoned. Some of the measures used on fisheries to deter piscivorous birds, such as shooting to scare, rockets, starter pistols etc, are not suitable around a pheasant release pen where they would frighten the pheasants as much as the buzzards. If tried on the estate away from the pens it wouldn't help to keep buzzards away from the pens.

Diversionsary feeding is still used but ██████ is not convinced of its value. Buzzards are fed away from the poults and any kills, rearing losses, squirrel etc are put outside of the pens to try to get the buzzards to take carrion instead of killing game birds. If a buzzard is disturbed on a kill the carcass is left in situ in the hope that the buzzard will return to finish it rather than making a fresh kill. However, he believes that the buzzards prefer a fresh kill. ██████ also had an interesting observation in relation to diversionsary feeding and ravens which is relevant to his observation about buzzards not really taking an interest in the carrion:

“we did a similar experiment with our raven population to try to reduce their predation of leverets whilst they were feeding young. Feed was placed out for the ravens which they readily fed on. The amount of time we observed ravens working the fields for leverets reduced to virtually zero. Trail cameras over the feed in this instance showed only once did a buzzard visit the site as compared to several hundred pictures of up to 5 ravens at a time feeding” (email to ██████, 15 July 2016).

This indicates that buzzards appeared not to want to feed on the easily available food put out for the ravens and would seem to confirm ██████ observations about buzzards not wanting to eat carrion when there is fresher food available.

Other factors that can affect buzzard predation rates include the timing of release into the pens, the age of the birds when they are released, the number of birds released and the stocking density (Parrott, D., *Impacts and management of common buzzards Buteo buteo at pheasant Phasianus colchicus release pens in the UK: a review*. Eur J Wildl Res (2015) <http://link.springer.com/article/10.1007/s10344-014-0893-1>). The number of birds released and stocking density are discussed under Principle 2. Predation of birds released in June and July, as they are at [REDACTED] is higher than birds released in August and September. This may just be because the birds are exposed to predators for a shorter time before they are shot. BASC advise waiting until birds are 7 to 8 weeks of age to reduce vulnerability to predators. At [REDACTED] the birds are 7 to 8.5 weeks old when released which is the latest they can be kept as they start feather pecking if kept in their rearing pens for longer. So the age of release is in accordance with industry guidance but the time of the release cannot be controlled due to the need to release them when overcrowding in the rearing pens becomes an issue.

[REDACTED] has stated that increasing the age at which partridges are released has reduced predation slightly although it has not stopped it and he considers the level of predation is still high as evidenced by the number of partridge carcasses found and the poor return rates. Another measure to reduce predation of partridges was to remove rabbit fencing from around young hedges planted on restored land. [REDACTED] had observed that buzzards were able to drive the partridges into the fences making it difficult for them to escape. Removing the fences has allowed partridges to get into the hedge bottoms to escape danger.

Removal of perches is sometimes recommended as a way of reducing avian predation. However, the pens at [REDACTED] are within or adjacent to woodlands with an almost infinite number of perches. Consideration could be given to putting spikes on the top of fence posts around the pens, especially where the pens are outside of the woods, but this alone is unlikely to solve the problem.

The main activity undertaken to reduce predation is to provide good cover within the release pens. GWCT guidance (*Pheasant release pen construction* - http://www.gwct.org.uk/media/208820/pheasant_release_pen_construction.pdf) indicates there should be roughly one-third each of open sunny areas, shrubby ground cover and roosting trees. During the site visit [REDACTED] took us to all seven pheasant release pens as well as the area of the estate where partridges are released and the following is an assessment of each area.

1. [REDACTED]
The pen is located at the northern end of a mixed plantation and totals approximately [REDACTED] hectares. It is one of only two pens on the estate to be entirely within woodland. The woodland consisted of pines, ash, sycamore and birch with a good understorey of mainly elder with some hawthorn and hazel. Ground cover is mostly common nettle with open areas provided by a long curving ride. To the north of the wood was a maize cover crop into which the birds would be released. Food is spread in the rides and water is provided in drinkers along the edges of the rides. Woodland extends to the south and east of the pen while the land to the west and north is arable. There appeared to be a high amount of cover in the woodland which is likely to provide good protection from avian predators. The open sunny areas would have been less than one-third of the total area but this ought not to affect buzzard predation. Fences appeared to be good, where examined, and conformed with GWCT guidance. [REDACTED] poults have been released in this pen in 2016.
2. [REDACTED]
This pen consisted of a large open area of sown artichokes extending into the broadleaved woodland to its south and east. The total area of the pen is [REDACTED] and is the largest pen on the estate with [REDACTED] poults being released into it this summer. The land to the north was arable but the pen was otherwise enclosed by broadleaved woodland. The woodland, like the majority on the estate, was ash and sycamore dominated with occasional beech and birch and an understorey of elder and hawthorn. The poults were found within the rides through the artichokes. Where nettles had grown up along the edges of the rides, potentially blocking access to the cover in the artichokes, the nettles had been sprayed off. Tunnels could be seen where poults clearly took cover among the artichokes. The artichokes were approximately 1.5 metres tall with an entirely closed canopy. The rides were laid out in a grid pattern meaning they were straight and predatory birds could therefore have a good line of flight along the rides. One recommendation from the last visit was that the rides could be curved or scalloped margins could be created for feeders in the edge of the rides. However, the pheasants have their feed spread along the rides and they are not fed in hoppers so the creation of scalloped edges would not make a difference to where the pheasants feed. There is possibly scope to get the applicant to curve the rides but we would need to check how practicable this would be for the farmer to sow the crop in this way. The reason for the straight rides was it made it easier to shoot muntjac and this would need to be considered too. Drinkers were situated next to the edge of the artichokes so birds were close to cover when using them. Fences appeared to be good, where seen, and conformed with GWCT guidance on the construction of pens. Deciding the proportion of trees to shrub to open area was difficult due to the unusual nature of the pen but crucially there appeared to be a good amount of cover for birds, both in the woodland

and cropped areas. There was a large area of maize next to the pen into which the birds could find cover once released from the pen.

3. [REDACTED] has an open area which is one-third maize and two-thirds artichokes, surrounded on three sides by mainly broadleaved woodland, with arable land to the north. The pen extends into the woodland to the south of the cropped area. This woodland is mainly broadleaved although there was occasional larch, most of which appeared to have blown over. This was probably the poorest woodland habitat of any of the pens with few shrubs and patchy ground cover in the form of common nettle and dog's mercury. However, this was compensated for by the large amount of cover provided outside of the wood. All of the poults were within the artichokes and this is where they apparently spend their days, returning only to the woodland to roost at night. Fences, where seen, appeared to be good and conformed with GWCT guidance. Although the woodland habitat was less good than elsewhere, the pheasants still had access to good cover during the day when they are most vulnerable to buzzard predation. The pen was [REDACTED] and this year had [REDACTED] poults.
4. [REDACTED]
This pen was entirely within woodland which was fairly young (I would estimate 15 years) and still quite dense and shrubby with the trees being little taller than the understorey. The trees were mainly ash and sycamore with hazel. There was thick, tall cover of nettles on the ground. Open space was provided in the rides and this is where a lot of the pheasants were seen although others could be seen throughout the wood. As in the other pens the drinkers had been placed along the edges of the rides. I would consider the cover here to be very good and it should provide excellent protection from buzzards. The pen was [REDACTED] with [REDACTED] poults released in 2016. There was almost certainly less than one-third open space in this pen but this should not affect buzzard predation, if anything it should make it harder for buzzards to prey on the poults. There was no sign that the low level of open space was causing the pheasant to concentrate in a smaller part of the pen as they also seemed to be happy wandering among the nettles. The fencing appeared good and conformed with GWCT guidance.
5. [REDACTED]
This pen consisted of [REDACTED] of maize next to a narrow belt of broadleaved trees and sheep grazed pasture. This was the least wooded of the pens and was similar to the other open areas, having wide rides among the crops where the pheasants were fed and watered. The fence appeared good and conformed with GWCT guidance. [REDACTED] poults have been released in this pen this summer.
6. [REDACTED]
This [REDACTED] ha pen included maize and artichokes with an area of ash dominated woodland to its east. The woodland had a dense understorey of elder, much of it smothered in old man's beard with common nettle ground cover. There were long sinuous rides through the wood, providing open areas. The maize and artichokes were similar to those seen elsewhere. The pen seemed to provide good cover in both the open area and the woodland and the fencing seemed good and should provide good protection from mammalian predators. Like the other pens with sown crops within them it was difficult to assess the relative amounts of trees, shrub and open space but there appeared to be no shortage of cover from avian predators. [REDACTED] poults have been released in this pen in 2016.
7. [REDACTED]
This pen included a small area of maize [REDACTED] ha) and some broadleaved woodland, totalling 1 hectare. The woodland was ash and sycamore dominated with a very good shrub layer which was mainly elder. The poults had only just been released into this pen and they were mainly loafing around under shrubs or close to drinkers. The pen has recently been extended and therefore had new fencing which appeared good and appeared to conform to GWCT guidance on pen construction. [REDACTED] poults have been released into this pen in 2016. The cover was good in both the wood and the cropped area and should provide good protection from avian predators.
8. Partridge release areas
Red-legged partridges are released into smaller portable release pens which are situated in game cover crops. Each partridge pen usually holds less than [REDACTED] birds which are released in September when the surrounding cereal crops have been harvested. This discourages the partridges from straying. The partridges are trickle released over a two to three week period. The pens are located in about 14 hectares of cover crops which are grown in strips within arable fields. The partridge release area generally has larger fields and fewer hedges than other parts of the estate which also encourages the birds to stay in the areas they are released. [REDACTED] had observed that buzzards were often able to take partridges by herding them up against rabbit fences where they couldn't escape. The rabbit fences were intended to protect newly planted hedgerows on restored mineral workings so, as the hedges had matured, the fences had been

removed so partridges could escape into the bottom of the hedges. He has also seen partridges taken by buzzards on the wing. Game cover crops in these areas were diverse and included a range of cereals and broadleaved plants. There were many strips and the partridges should have plenty of cover. At the time of the visit the partridges had not yet been released but about [REDACTED] should be released in September 2016. Feeding hoppers were situated alongside the game crops or hedges.

Pen	Size (ha)	No. of poults	Stocking density (poults/ha of release pen)
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

The above table shows the stocking densities in each of the pens for 2016. The number of birds released is lower this year than previously because of disappointing fertility rates of the bought in eggs. Stocking densities have been even higher in previous years when more gamebirds have been successfully reared. There is some evidence that predation of pheasants may be higher where stocking rates are higher (Parrott, D. Op. cit. (2015)) although actual figures are not given to show what constitutes a high stocking rate. Contradictory evidence can be also be found (in Kenward, Hall, Walls and Hodder (2001) *Factors affecting predation by buzzards on released pheasants*. In Journal of Applied Ecology <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2664.2001.00636.x/full>). Kenward et al report that in large game pens, the highest rate of predation was found where less birds were released and they suggest increasing release numbers to reduce predation. 2008 guidance from the GWCT recommend stocking rates of between 700 and 1000 poults per hectare of release pen. However, this appears to be mainly aimed at preserving botanical diversity which isn't relevant here. Given the lack of a recommended stocking rate for preventing buzzard predation we can look at typical stocking rates in the UK. There are apparently documented cases of 8000 poults per ha with a mean of 1800 poults per hectare (<http://www.gwct.org.uk/game/research/species/pheasant/releasing-for-shooting-in-lowland-habitats/>). Where stocking rates exceed the GWCT guidance (e.g. [REDACTED] and also most of the others in previous years) they have been below the UK mean density so it would not appear that the pens were over stocked. The poults also appeared to have ample space when observed during the site visit.

A final point from Parrott (2015) was that pens that extend out of woods into open areas tend to suffer higher predation. This was quoting some research from 1976 and no further details are given so it is not clear if this refers to pens like the ones at [REDACTED] where the part outside of the woodland has a sown cover crop, or whether the area outside of the wood perhaps had some other sort of ground cover such as grass or bare ground. Without this detail it is not possible to assess the significance of this information with respect to this licence application.

Principle 2: There is a genuine problem/need.

[REDACTED] was asked by Natural England to provide data to demonstrate the level of damage suffered by the shoot. The applicant's predecessor, [REDACTED], had not kept good records and bag returns were not kept until the 2011-12 season. I have modified the column showing the number of pheasants lost to take into account birds rounded up at the end of the season to form the following year's breeding stock.

NOTE: THE APPLICANT HAS ASKED THAT THE INFORMATION IN THE TABLE BELOW AND ALL OF THE FINANCIAL INFORMATION IN THIS SECTION BE TREATED AS CONFIDENTIAL AND HAS REQUESTED THAT IT BE REDACTED IN THE EVENT OF THIS REPORT BEING RELEASED UNDER AN FOI REQUEST.

Year	Pheasants released	Pheasants shot	Percentage return	Partridges Released	Partridges Shot	Percentage return	pheasants lost	partridges lost
2011-12	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2012-13	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2013-14	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2014-15	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2015-16	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

*adjusted for an assumed average of 1340 birds rounded up at end of the season, this figure provided by [REDACTED] (email to [REDACTED] dated 21/7/16).

The industry average for pheasants shot, based on the National Gamebag Census, is 40% although this may be an over estimate as it includes wild birds and birds released on other estates (Game and Wildlife Conservation Trust <http://www.gwct.org.uk/game/research/species/pheasant/releasing-for-shooting-in-lowland-habitats/>). At the time of writing it has not been possible to ascertain whether the 40% typical return rate also applies to partridges but in the absence of any other evidence this figure has also been assumed as the norm for partridges. The return rate for pheasants at [REDACTED] has varied between 26% and 28.3% in the past five seasons which is significantly below this national average. For partridges, the returns are much better - between 36% and 47.8% - although in two of the five years for which records are available, the returns did not make 40%.

Of course there are many other causes of game bird mortality including other predators, disease and road casualties plus some birds may stray from where they were released on to neighbouring properties and some presumably avoid getting shot and become feral. It is worth examining the significance of each of these factors at [REDACTED] as it helps inform the contribution of buzzard predation to the high levels of game birds lost.

Predator control

The main predator is the fox. The release of partridges is delayed until the majority of the harvest has been taken. With the crops removed, the Estate are able to clear the ground of foxes to reduce predation of gamebirds. Release takes place over a period of a couple of weeks. During this time one or both of the keepers will be lamping virtually every night. Intensive lamping continues throughout the main partridge shooting period (October and November). Any specific problem foxes that cannot be dealt with through lamping are targeted with night vision, snares or fox drives. An investment has been made in "some of the best night vision and thermal imagery available". Snares located in tramlines in cereal crops are especially effective and lines of snares are also set in woodlands. In the spring the keepers clear the estate of all litters of fox cubs. The pens are all surrounded by electric fencing which is checked nightly and the estate have never had a fox break into a pen. The shoot also tends to keep birds in the pens for as long as possible so they are protected from foxes for a maximum amount of time.

Corvids are trapped with Larsen traps and cage traps are used to catch mustelids.

Disease

Pen mortality due to disease is considered relatively low and the applicant has stated that this is demonstrated by the low drug usage post seven weeks of age. One sick poult was seen during the site visit (out of probably several thousand birds) and this bird had to be despatched. However, there was no evidence that this was part of a significant problem and all other birds seen appeared alert, active and healthy. The provision of large areas of artichokes in the pens encourages the birds to spread out and helps to prevent disease transmission.

Strays

Due to the layout of the estate there are substantial amounts of 'dead ground' around the outsides of the main release area. There are few 'lead away' walls and hedges and there is also a ring of footpaths around the same area. It was noted during the site visit that the areas of the estate away from the pheasant pens were very open. The applicant stated that footpath users, invariably with dogs, helped to discourage birds from wandering. The release pens also include large areas of open ground sown with a cover crop. This allows the birds to be held in the pens for a long period of time which results in them becoming hefted onto the areas where they've been released. These factors combined lead the applicant to believe that losses from straying are almost nil.

Roadkill

There are no main roads close to the release sites and access to the release sites is gated so no vehicles can get close to where the birds are. It is therefore considered that roadkill is not a significant problem.

The applicant states that the Estate lose [REDACTED] 0 (5%) partridges and [REDACTED] (5%) pheasants annually. These figures have been calculated from observed carcasses. Kills are seen and found on a daily basis. In an email to Natural England, [REDACTED] states that he picked up [REDACTED] kills on the first day of putting poults into [REDACTED]. This was considered extreme but two to three birds per pen per day is considered normal. This equates to up to [REDACTED] kills per week which can continue for six to eight weeks depending on the weather. (In wet weather buzzards apparently switch to worms with 20 to 30 buzzards sometimes seen feeding in the wetter fields. This tends to reduce gamebird predation.) This could add up to losses between [REDACTED] pheasants which is just slightly lower than the [REDACTED] quoted in the application. However, this is just the pheasants found and [REDACTED] speculates that the numbers found are just a small proportion of those killed as some carcasses may be removed from the pens and eaten elsewhere.

No further details have been given about how partridge losses have been calculated but the partridges are not kept in open release pens and are released over a larger area. Partridge carcasses are therefore more difficult to find and

calculating losses is harder.

Research suggests that typical gamebird losses to buzzards are 1% to 2% with 5% being exceptional (one in thirty shoots may suffer this level of loss with an even smaller number suffering losses of up to 10%) (Parrott, D. Op. Cit. (2015) mentioned in the abstract). The applicants are therefore suggesting that the losses they are suffering are not just above the norm but exceptional. It is likely that the birds found in the pens will have been killed by buzzards – the pens are proofed against mammalian predators and buzzards are the most numerous and most likely avian predators. [REDACTED] has started taking photographs of carcasses as a record of losses. During the site visit only one fresh kill was observed but feathers could be seen elsewhere where carcasses had been cleared up. In 2012 the Wildlife Adviser was shown 24 pheasant poul carcasses in varying stages of decay. Losses of gamebirds tend to be higher where more than [REDACTED] birds are released into a pen. The large numbers of birds released into large pens combined with a potentially high density of buzzards mean that a figure of 5% is plausible at [REDACTED]

The presence of buzzard nests does not relate to levels of buzzard predation and the presence of buzzard nests alone is not enough to demonstrate there is a genuine problem (Kenward et al, Op Cit. 2001). However, it is useful to have some idea of the number of buzzards on the estate, apart from anything it will allow us to better understand the impact of removing some birds from the population. [REDACTED] stated in his application that there are approximately 28 breeding pairs of buzzards on the Estate and that thermals containing 20 or 30 individuals have been seen. This figure was apparently arrived at by a count of nests and birds. However, [REDACTED] appeared not to be aware that buzzards generally have more than one nest so it's not clear how accurate the count of 28 pairs is. The 2012 technical assessment reported that a thermal with fourteen buzzards was noted by the Wildlife Adviser during the site visit, as well as other buzzards elsewhere. During the site visit of 20 July 2016 at least twelve buzzards were seen. To see how likely a population of 28 breeding pairs is, the limited amount of available research on population densities was looked at. Buzzards are territorial and the territories are determined by the availability of nest sites and not the availability of food. Buzzards are apparently willing to commute to favourable hunting grounds outside of their territories. Territory size seem to be variable and figures between 0.22 pairs per km² and 1.8 pairs per km² have been quoted (in <http://www.cheshireandwirralbirdatlas.org/species/buzzard-breeding.htm>) depending on the quality of the habitat. This would equate to between 4 and 35 pairs on an Estate the size of [REDACTED] but most of the studies mentioned in this report are old and, of course, the buzzard population has grown since. As the population has grown buzzards have tended to nest closer together, maintaining smaller territories. 2001 figures for [REDACTED] (quoted in the above paper), probably the closest of the study sites to [REDACTED] geographically and in habitat, showed 1.1 pairs per km² which would equate to 21 pairs on an estate the size of [REDACTED]. So although there is some doubt over how the buzzard population has been calculated, the figure is not necessarily unrealistic. Given an average of 2 fledged young per pen there could be well over 50 juveniles added to the population from July onwards, just as the gamebirds are due to be released.

The estate normally rear their own stock and pen filling takes place from the last week in June until the third week in July. Stocking levels are fairly constant from year to year but slight variations occur according to how well pheasant lay, hatch and then rear. Because the estate rears their own birds they have not found it easy to produce figures showing the cost of stocking the pens. If poults of the same strain and age were to be purchased they would apparently cost [REDACTED] per poult. This year the stock has been imported as eggs from the USA. This has added an extra [REDACTED] to the cost of a poult. There seems to have been a low rate of fertility and a disappointing proportion of eggs have hatched this year so stocking rates have been lower than normal and costs will be higher.

Birds are offered for sale this year at [REDACTED] per bird plus VAT. The cost in 2015-16 was [REDACTED] per bird plus VAT.

The cost of [REDACTED] lost poults would be between [REDACTED] if you just take the cost of purchasing the poults. The total costs of the shoot, however, were £256,000 in 2015-16. With [REDACTED] birds shot the cost per bird was [REDACTED] (or [REDACTED] if you exclude the [REDACTED] birds shot in house which were therefore not paid for). At [REDACTED] per bird the total cost of the buzzard predated birds would be [REDACTED]. The lost shooting value of these birds at [REDACTED] would be [REDACTED] assuming all of them would have been shot by paying customers (which is admittedly unlikely given other causes of mortality).

Principle 3: There are no satisfactory alternatives.

Possible alternatives to lethal control include destroying nests and eggs, to try and discourage breeding buzzards from building their nests close to the rearing pens, translocating buzzards and taking adult birds into captivity.

In 2013 Natural England issued a licence to destroy nests and eggs [REDACTED] [REDACTED] did not consider this a success as the birds built new nests nearby. In any case, it is the wrong time of year to try this. This option could help in future if the aim of a licence were to reduce the buzzard population but at present the aim is to remove problem birds. This is therefore not considered a satisfactory alternative in this instance.

Taking adult birds into captivity is, in conservation terms, no different to shooting them although it may be more acceptable to some people as it does not involve lethal action. The obvious drawback is that there is a limit to the number of falconers who will want wild caught buzzards. However, it may be a solution for a small number of birds. A Wildlife Adviser contacted the British Falconers Club to see if anyone could be found who would be keen to take wild captured buzzards. One falconer was initially interested in taking two to three but was going to be on holiday for three weeks at the crucial time. Unfortunately, this option could not be pursued on this occasion.

Capturing birds and releasing them elsewhere would be problematic. Buzzards are territorial and as a common species there are unlikely to be free territories in which to release them.

Shooting a few buzzards to enhance scaring was considered and ruled out due to the likelihood of causing stress to the pheasant poults as this would require the use of auditory scarers in the release pens.

Shooting buzzards to reduce the buzzard population was considered and ruled out as it is unlikely to be successful as the dead buzzards are likely to be quickly replaced by 'surplus' buzzards from the surrounding area.

Targeting problem buzzards by only shooting individuals seen feeding on gamebird carcasses would appear to be the best method, as this is highly targeted and based upon visual and tangible evidence of predation.

A range of other non-lethal measures have been discussed above (under Principle 1). Most of these have been tried and appear not to have been effective at this site. There may be a minor benefit in putting spikes on fence posts in the open parts of the pheasant release pens but this is unlikely to have more than a minor benefit given the number of perches within the nearby woodlands. As previously discussed, it may be possible to make the rides in the cover crops curved which could make it harder for buzzards to hunt.

As previously mentioned, smaller releases of less than [REDACTED] birds suffer less buzzard predation. Pheasants are currently released into seven pens with [REDACTED] poults released in each. It would not be possible to reduce pen sizes so that only [REDACTED] or less pheasants were released as this would involve going from seven to more than [REDACTED] small pens.

Principle 4: The licensed action will be effective at resolving the problem and the action is proportionate to the problem. Wherever possible, humane methods of lethal control are used.

The applicant has asked for a licence to shoot twelve buzzards. The proposal is to target particular problem buzzards in pheasant release pens, and from the partridge release area, using a high powered rifle as the buzzards feed on a kill.

Evidence for whether there are problem buzzards that target gamebirds more than other buzzards appears to be limited although there does appear to be evidence that some buzzards frequent pheasant pens more than others. The applicant certainly believes there are buzzards that target game birds more than others and feels that their removal could provide respite for the gamebirds during a vulnerable period, the theory being it would take time for other buzzards to replace them and/or adapt their behaviour to also start targeting gamebirds ahead of other prey. In the USA licences are apparently issued under similar circumstances and are believed to potentially contribute to solving conflicts (Parrott, 2015). In the UK the method of taking two buzzards into captivity where they were predating on free range hens appears to have worked in the recent past. The approach of removing specific problem buzzards through lethal means or capture appears to be relatively novel in the UK as most similar licences are issued with the aim of enhancing scaring. Enhancing scaring would not be appropriate in this case due to the likely stress that would be caused to the gamebirds.

Assuming there are problem buzzards that can be targeted by only shooting individuals that are feeding on a kill, there appears to be a reasonable likelihood of successfully reducing predation. The vulnerable period for the released birds is considered to be from the last week in June, when pheasant release begins, until the end of September, so licenced activity should be restricted to this period. By the time any licence were issued much of this time will have passed so I would not recommend issuing a licence to shoot the full twelve asked for. If three buzzards can be captured alive then I would suggest a maximum of five to be shot. Otherwise, I would recommend that eight are shot. This would potentially allow at least one buzzard to be killed/taken from each of the release pens and the partridge release area although I would not limit it in this way but would allow the applicant to target activity where most required.

Implications for the conservation of the species.

See Section 7 below.

6. Consultations

Is the proposed site on or near a designated site (NNR, SSSI, SPA, SAC etc)? Yes

Where the proposal might impact on a designated site, have you consulted Natural England colleagues? N/A

For SPAs and SACs, is an Appropriate Assessment necessary? N/A

Reason for Consultation and Summary of Response

[REDACTED]

Colleague/body Consulted	Date of Consultation	Date Response Received
N/A	N/A	N/A

7. Consideration of Conservation Factors

BTO figures show 67,000 pairs of common buzzards in the UK in the summer (2009 figures) with additional birds wintering here. It is currently the UK's most common raptor. There are 510-700,000 pairs in Europe of which 11% breed in Britain. The European population has shown a moderate increase over the past 25 to 30 years although the BTO/JNCC Breeding Birds of the Wider Countryside data reports a 132% increase in the UK between 1993 and 2008 with a spread into central and eastern areas where they had previously been scarce. The Common Bird Census for 1998-2008 reports an 85% increase in population. There does not appear to be any recent data on the status of the species in [REDACTED] other than the [REDACTED] brief description of the species as "common".

Buzzards are not currently of conservation concern and are therefore green listed.

Lethal control and/or removal into captivity of a small number of buzzards is unlikely to impact on the buzzard population. Approximately 75% of juvenile buzzards fail to survive to adulthood and the most likely cause of death is starvation. It is likely that any shot birds will be replaced by juveniles that might otherwise have starved. Licences are already given to shoot buzzards to preserve air safety and many buzzards are illegally killed. However, consideration may need to be given into the cumulative impacts of several similar licence applications in the same area should other applications be received in the future.

8. Disease Considerations

Is the proposed action likely to present a disease risk to wildlife, domestic animals or people? No
If "yes", a Disease Risk Assessment (DRA) is required for this case. Consult the SOP for guidance.

Consideration of Disease Risk:

Lethal control of buzzards should not present any disease risk.

If buzzards are trapped and taken into captivity there is a risk of spreading disease as birds may be transported to other parts of the country or brought into close contact with other captive birds. It would be the responsibility of the falconer accepting the birds to have veterinary checks carried out.

9. Licensing Criteria

Is there clear evidence that the species in question is causing or is likely to cause serious damage?	Yes
Are there other evident causes of the serious damage?	No
Where appropriate <ul style="list-style-type: none"> • have non-lethal methods been used? • have they been found to be ineffective or impractical and not just difficult to implement? 	Yes Yes
Is there any other satisfactory solution?	No
Will the proposed action contribute to preventing the damage?	Yes
For birds on Sch 2, Part 1 of the Wildlife and Countryside Act 1981 (the quarry list) only, are there good reasons why action could not have been taken in the open season?	N/A

Conclusion

10. Conclusions and Justification for Recommendation

The application has been assessed in accordance with Internal Guidance Note SD/2016/001 which, as previously mentioned, gives four tests that should be met before a licence is issued:

Principle 1: All other reasonable non-lethal solutions have been tried and/or shown to be ineffective.

The main current non-lethal solution tried is to provide good cover in the release pens. The proportion of open areas to shrubs and trees within the wooded sections of the pens is not necessarily in line with Game and Wildlife Conservation Trust (GWCT) guidance but the approach taken, with sown cover crops adjacent to woodland and forming part of the pen, is relatively novel and more than makes up for the reduced ground cover. The GWCT guidance appears to relate more to woodland pens and so does not really apply in this case. The crucial thing is that the poult have good access to cover when they are released into the pens. Those that are predated are surprised when loafing in the open spaces, which they require for their welfare, and are unable to make cover even though it is never more than a couple of metres away. An improvement could be made to the cover crops by making the rides curved rather than straight to make it more difficult for the buzzards to hunt along them. Visual scaring techniques have been used over time, but the applicant was unable to find a method which worked for more than a few hours so these have been discontinued. He reported seeing buzzards entering pens by flying through barrier tape within days of it being erected. High seats are present on the edges of the pens where people sit out in the early mornings to scare away hunting buzzards. Diversionary feeding is used although the applicant is sceptical about its effectiveness due to his observation that the buzzards seem to prefer a fresh kill to carrion. Birds are released as late as possible and at an age recommended by the British Association of Shooting and Conservation (BASC). The stocking densities within the pens appear to be comfortably below the national mean and the majority of birds appeared healthy and the pens did not appear crowded. A reasonable level of non-lethal solutions have been tried over time, and have either not worked or have only been partially successful. The range of activities that have been tried are at least as good as for most similar licence applications and discussion with the applicant indicates that he seems to have a thoughtful approach to the problem, looking at novel ways of managing the habitat within the pens.

Principle 2: There is a genuine problem/need.

The applicants have provided data proving that bag returns for pheasants are well below the national average (less than 30% compared to the national average of 40%). While foxes are acknowledged as the main predator, they mostly do their damage once the gamebirds have been released and they cannot be responsible for losses in the pens from which they are excluded. In any case, fox control appears to be intensive and there is little more that can be done in that respect. Strays, road kill and disease also do not appear to contribute significantly to high loss rates. The applicant has estimated that approximately 5% of pheasant poults and 5% of partridges are killed by buzzards. This is based on numbers of observed carcasses. We only have the applicant's word for the number of carcasses found and record keeping could be improved (e.g. keeping a daily diary record of carcasses found) to

make the evidence more robust. Signs of kills were seen within the pens during the visit and the numbers of observed carcasses seemed plausible given the high number of poults in the pens and a potentially high buzzard population. There may be other factors that partly contribute to the high losses, such as the large numbers of birds released, but on the balance of probabilities it seems that buzzards are causing significant damage to the shoot with major cost implications for the enterprise.

It also appears likely that buzzards predate heavily on partridges. This is based on observations by the applicant of buzzards taking partridges and also carcasses being found. However, the bag returns are better for partridges than they are for pheasants. Here we have a gap in our evidence as it has not been established whether 40% is also the norm for partridges as it is with pheasants. If we assume that it is, then three years out of five the estate have managed to return more than that number, while failing to do so in two years. Even if the national average of partridge are returned, damage could still be significant if it equates to 5% of birds released as claimed by the applicant.

Principle 3: There are no satisfactory alternatives.

A range of alternatives have been tried which are considered to have failed or have only been partially successful (as described above).

Other options considered for this application include destroying eggs and nests (not an option at this time of the year), translocation (buzzards are territorial and as a common bird it is likely to be impossible to find a vacant territory where the landowner is happy to receive buzzards). Other options include capturing birds and taking them into captivity for use by falconers. The option to take some birds into captivity was explored but the individual who would have taken any birds trapped is not in the UK during the first 3 weeks of the licence so therefore this option has been ruled out for now.

Shooting a few buzzards to enhance scaring was considered and ruled out due to the likelihood of causing stress to the pheasant poults as this would require the use of auditory scarers in the release pens.

Shooting buzzards to reduce the buzzard population was considered and ruled out as it is unlikely to be successful as the dead buzzards are likely to be quickly replaced by 'surplus' buzzards from the surrounding area.

Targeting problem buzzards by only shooting individuals seen feeding on gamebird carcasses would appear to be the best method, as this is highly targeted and based upon visual and tangible evidence of predation.

Principle 4: The licensed action will be effective at resolving the problem and the action is proportionate to the problem. Wherever possible, humane methods of lethal control are used.

Evidence on the likely success of the proposed method of removing problem buzzards is thin but then it is a relatively novel method as most similar licences (e.g. for piscivorous birds) are issued to kill birds to enhance scaring. What is uncertain is whether there are individual problem buzzards that target gamebirds more than is usual, in which case killing them (when they are seen feeding upon birds) would be effective, or would the shot birds quickly be replaced by other birds that are equally likely to predate on gamebirds? The limited evidence there is suggests there is a reasonable chance the method will work and the relative lack of evidence should not be a factor in deciding against it given the lack of research carried out. This licence should therefore be used to try to gather evidence which might help inform any future applications (from this estate and elsewhere).

Conservation of the species

Buzzards are a common species and shooting a small number is unlikely to have any impact on the population. Buzzards that are removed are likely to be quickly replaced by 'surplus' buzzards in the surrounding areas.

Proposed options

It is recommended that a licence be issued, with immediate effect, to permit up to eight buzzards to be shot with a high powered rifle when predating on pheasants within the pheasant release pens and partridge release area. Although the evidence of significant damage in the partridge release area is not as convincing as for the pheasant release pens it is felt that not allowing shooting in the partridge release area could cause buzzards to be displaced from the pheasant pens and focus their attention on the partridges. I have avoided recommending a higher number of buzzards to be killed as we are already a considerable way into the vulnerable period for the gamebirds to suffer avian predation. Due to the novel method employed and the high sensitivity of controlling raptors to protect gamebirds I would advise a compliance check before the licence expires at the end of September. This will also afford an opportunity to gauge the applicant's view of the success, or otherwise, of the methods employed.

I would also suggest that the applicant be required to improve record keeping e.g. keeping a daily diary of

gamebird carcasses found in the release pens, which might show the effectiveness of removing problem birds (i.e. if there is an immediate drop in predation in a particular pen when a buzzard is shot there). Photographs of crop content could be taken as well.

Habitat improvements that could be made include create curved rides in the artichokes and putting spikes on fence posts.

11. Attachments

None
