

Guidelines for successful gamebird and songbird feeding





Guidelines for sustainable gamebird feeding

Background

Modern farming methods mean that there is often not enough natural food left in the countryside in late winter and early spring (February-April) for game and other wildlife. Therefore supplementary feeding has become a widespread management tool for wild and released gamebirds, as well as farmland songbirds.

Research conducted by the Game & Wildlife Conservation Trust (GWCT) has shown that winter feeding: 1) Keeps gamebirds in good body condition; 2) Increases breeding success in pheasants; 3) Reduces the dispersal of gamebirds in late winter and; 4) Improves shooting returns; 5) Increases breeding densities of songbirds. As a result of our research, winter supplementary feeding is now included in the ELS (Entry Level Stewardship), HLS (Higher Level Stewardship) and CS (Countryside Stewardship) environmental schemes in England.

However, if feeding is not accompanied by appropriate control of pest species, 'un-welcome' species, including nest predators such as rodents and corvids (e.g. crows and magpies), are likely to be attracted which may jeopardise the beneficial effects for the main target species.

Hence, the aim of these guidelines is to provide best practice advice on supplementary feeding to benefit gamebirds and songbirds.

FEEDING BENEFITS

These guidelines address how feeding can benefit pheasants and partridges (the most common gamebirds in Great Britain and Europe) and songbirds of conservation interest. It also explains ways to reduce the use of feeders by non-target species such as corvids, pigeons, rats, squirrels, badgers and deer.

The key points of this research are:

- We studied the use of 259 feeders by wildlife using camera traps during early and late winter in 2012 and 2013, taking over 160,000 photographs.
- We worked on three farms in southern England where pheasants, grey and red-legged partridges were present and feeding was part of the existing game management programme.
- We used a feeder model consisting of a spiral feed dispenser attached to the bottom of a drum, suspended within a cylindrical iron armature clad with wire sheep netting.



In spring, well-managed feeders help grey partridge pairs to establish their breeding territories.



A grey partridge brood and tree sparrows at a feeder set during the breeding season specifically for wild partridges. © Peter Pal Hajas

- Feeders were studied using a paired feeder experiment, whereby one feeder was set in cover along a hedgerow and another in a straight line at a distance of 40 metres in the open of the adjacent field (winter wheat or rape). We then removed the feeder from the hedgerow in a different experiment to assess whether this increased the visits of wildlife at feeders that were placed away from hedgerows.
- We changed the location of each feeder from its original location to evaluate how long it took gamebirds, songbirds and rodents to find the new feeder location. Additionally, we set rook carcasses as 'scarecrows' on the top of feeders to assess their effectiveness in deterring other corvids.
- The majority of feeders (95%) were used by gamebirds and songbirds as intended but other species, ie. 'non-targets', appeared in 54% of photographs and consumed 67% of the grain provided.
- Gamebirds, songbirds and rodents preferred feeders along hedgerows, whereas a higher number of corvids were photographed at feeders in open fields. Compared with paired feeders, the use of feeders that were set only in the open away from hedges did not increase significantly.
- Gamebirds and songbirds located new feeders within one to three days, whereas rodents needed two to four days. The change of location did not stop either mice or rats visiting feeders, but it prevented them from becoming established beneath the feeders.
- Rook carcasses used as scarecrows reduced the number of corvids visiting feeders by 55%, but they also reduced songbird numbers by 83%, without affecting gamebirds.

PRACTICAL RESEARCH

These guidelines are based on previous research, practical experience and a recent study that investigated the use of feeders by wildlife (Sánchez-García, Buner & Aebischer, 2015, *Journal of Wildlife Management*, 79:832-845).



Pheasants and red-legged partridges are the most common gamebirds in Britain to benefit from winter feeding.



Part one

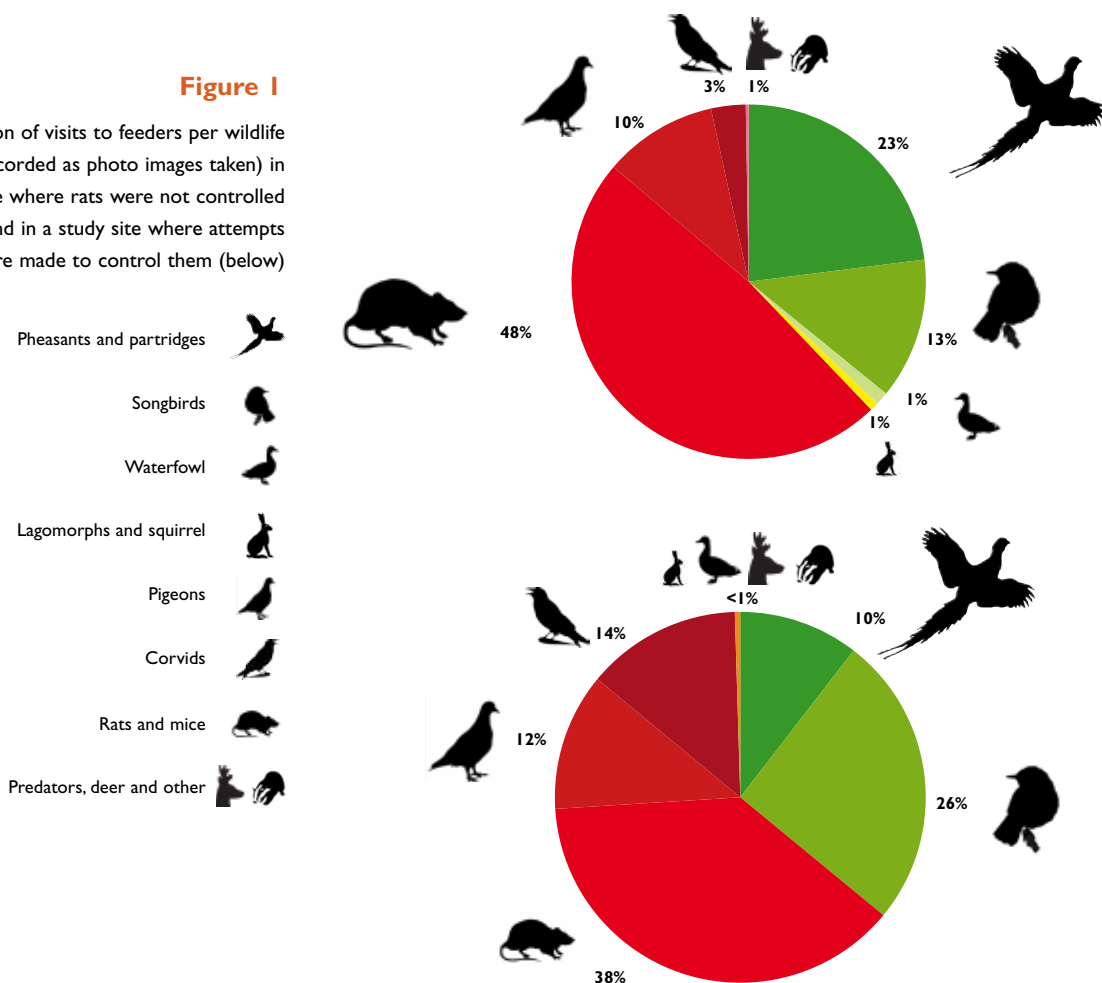
General feeding, planning and management

1.1 'Target' and 'non-target' species

On British lowland farmland, feeding aims to benefit partridges and pheasants on shoots, but also seed-eating farmland birds, especially those of conservation concern.

Figure 1

Proportion of visits to feeders per wildlife group (recorded as photo images taken) in a study site where rats were not controlled (above), and in a study site where attempts were made to control them (below)



1.2. What to feed

1. If the main target is gamebirds feed wheat

Advantages compared with other available feed

- Wheat is easily available on farms or available at reasonable prices.
- Wheat is readily eaten by gamebirds.
- Wheat provides a balanced amount of carbohydrate (60-75%), protein (13-15%) and a moderate amount of fat (1.5-2.5%), when compared with maize (9% protein and 3-5% fat).
- Several songbirds of conservation concern such as yellowhammers, corn buntings and sparrows will feed on wheat.

Comment: Wheat is not a substitute for other natural food required to fulfil all the nutritional needs of wild birds (including calcium, some amino-acids and proteins). Birds obtain this from feeding on green plant material, weed seeds and invertebrates.

2. If the main target is gamebirds and songbirds

A: If you are in ELS/HLS/CS agreements:

A mixture of wheat and other smaller seeds should be provided. In the ELS, the food must be a mixture of wheat, oilseed rape, red millet, white millet and canary seed, and in the current CS scheme the feed mixture will be specified in each agreement. Be aware that grants are available from January to March on farms already providing wild bird cover.

B: If you are not in an agreement:

Use wheat if the main management aim is gamebirds, yellowhammers and corn buntings. If also targeting other seed-eating songbirds of conservation concern, use a similar seed mix as described above, and remember that smaller seeds need to be provided using feeders specifically designed for this purpose (see Figure 4, page 13). Some songbirds prefer to feed on the ground, so also broadcast some seeds and grain on farm tracks and in wild bird covers.



Feed wheat if you are targeting gamebirds like grey partridges and songbirds like yellowhammers.



Figure 2

The 10 most frequent visitors at feeders at our three lowland English farmland study sites were (in descending order): (1) pheasant, (2) wood pigeon, (3) wood and yellow-necked mouse, (4) brown rat, (5) dunnock, (6) grey partridge, (7) blackbird, (8) red-legged partridge, (9) yellowhammer and (10) rook

1.3. How to feed



Hopper feeders can store grain during prolonged periods of time which reduces manpower compared with hand-spreading.



Spreading food by hand or by automatic spinners allows any location to be reached.

A. Hopper feeder

Advantages compared with spreading

- Stores grain for prolonged periods of time.
- Keeps the food dry and clean.
- Reduces manpower.
- Reduces risk of non-target species feeding on the grain.
- Facilitates spring monitoring of gamebirds.

Disadvantages

- When not managed properly, can attract rats and other pests.
- If not moved frequently, may spread disease.
- Can be stolen or vandalised.

B. Broadcasting

Broadcasting can be done by hand or by automatic 'spinners' along tracks, hedgerows or rides. Food must be broadcast regularly to guarantee constant and predictable food availability during the whole winter period.

Advantages

- Any type of food can be spread.
- Almost any location can be reached.
- Ideal during: 1) Harsh weather ('cold spells') when extra food might be needed suddenly or; 2) During prolonged periods of heavy snowfall when feeders may not be accessible.

Disadvantages

- More labour-intensive compared with hoppers as feeding needs to take place more regularly to guarantee a constant food supply.
- It is impossible to avoid attracting 'non-target' species.

1.4. Where to feed

Location

Choosing the right location for feeding is one of the most important factors to ensure its success.

- Ensure permanent access with a vehicle to transport the grain to the feeders during the whole feeding-period.
- Place feeders where target species will find them.

Place feeders for pheasants along woodland rides.





Distance to cover

1. Where rats are controlled

- Place the feeder within or alongside cover such as a hedgerow, woodland or game crop. This helps to reduce winter mortality because suitable escape cover will be nearby. However, our research has demonstrated that this location also favours rats, which may lead to significant problems if they are not controlled.

2. Where rats are not controlled

- Place the feeder in open fields, 40 metres away from permanent cover because rats will not use them there (but gamebirds and songbirds will). Ideally, crop height should not be above 15-20 centimetres.

Feeders placed near suitable winter escape cover may reduce mortality among gamebirds and songbirds from predators, but if placed near permanent structures, rats must be controlled.

Figure 3

The feeder location should be adapted depending on the control of rats conducted at the feeding site (note the non-intrusive wildlife-recording cameras in both pictures)

If rats are controlled near feeders, place close to cover



If rats are not controlled near feeders, place in open locations





A covey of radio-tagged grey partridges close to a feeder during a snowy winter, when feeding is needed the most.

Feeding strategy

The location of feeders depends on the time of year as the behaviour of gamebirds and songbirds changes between seasons.

1. Strategy on a shoot

A. During the shooting season (October to the end of January)

Wild game

- Pheasants: at the winter holding areas where driven or walked-up shooting takes place.
- Partridges: near or in suitable winter cover where partridges are present across the farm, in particular at flushing points.

Reared game

- Pheasants and partridges: close to the pens during the initial release phase and at the winter holding areas (if different from release pen location) before and during the shooting season.

B. After the shooting season (February to April/May)

- Feeders should be placed within known or suitable breeding territories of gamebirds, such as hedgerows for partridges and woodland edges for pheasants.
- Feeders may also encourage target species to settle in suitable breeding territories where they were absent before.

2. Strategy on a farm without shooting interest

- As a rule of thumb, place feeders within known territories of farmland birds from December to March.

BE PREPARED FOR SNOW

Farmland birds are very sensitive to snow, especially prolonged periods of deep snow and frost, when access to natural food resources may be difficult. They are also more prone to predation from raptors, as they become easily visible in the snow. If your area often receives snow, set feeders before the arrival of 'cold spells' to allow the birds to familiarise themselves with their locations. Make sure feeders are always topped up. Failing to do so may result in high losses. Make sure that the majority of feeders are set where they can also be accessed during heavy snow fall, when gamebirds and songbirds will need them the most.





1.5. How many feeders?

Wild shoots

Pheasants

During late winter and spring, at least one feeder per territorial cock. During the shooting season, one for every 15-20 birds.

Partridges

At least one feeder per covey or pair, more in areas with high densities of birds (>10 pairs/100 hectares or four pairs/100 acres). In any case, we recommend a minimum of 10 feeders per 100 hectares.

Reared shoots

Around the pens, one feeder for every 20 birds released, at least 10 metres apart to reduce competition.

Songbirds

One feeder in known territories of targeted songbirds. If you are in a CS agreement, feeders must not supply more than 10% of the total amount of food provided in feeding stations.

A high feeder density does not always mean better feeding – few bird species need that many feeders.

CAMERA TRAP EVALUATION

We recommend using camera traps to identify which species are using feeders, especially when you suspect that non-target species are around. As a rule of thumb, feeding is successful when after two to three days of camera trapping at least 50% of photos depict target species and fewer than 2% depict rats (kill the rats if they are present).

1.6. Monitoring the impacts of feeding

Feeding is successful if:

- You observe target species nearby or at feeders.
- Numbers of your target species have increased around feeding areas.
- You achieve good shooting returns and increase productivity of wild game and songbirds.

Feeding is not successful if:

- You hardly ever see target species nearby or at feeders.
- You observe rat holes at the feeding sites.
- You observe regular signs of predation around the feeding sites.
- You find feeders damaged, broken or knocked over by wildlife.
- The gamebird surveys (when possible also songbirds) indicate no increase in the number of your target species.

If despite all your efforts, feeding is not meeting your aims and targets, the feeding strategy needs re-adjusting. From our experience, the most common pitfalls in feeding are:

- The number of non-target species present has been underestimated.
- The wrong feeder type was chosen (see Part 3, page 13).
- You do not provide enough food constantly.
- Rats have not been controlled successfully (see page 12).

If any of the above is the case: **Please ask a GWCT advisor for assistance or contact us on 01425 651013.**

COST AWARENESS

- Feeding involves considerable amounts of time and money – do not underestimate them.
- The cost of feeding not only includes the feeders, but also nozzles, excluders, grain and manpower.
- For reared pheasants it has been calculated that feeding represents 20-30% of the total cost of looking after the birds from release until the end of the shooting season.



Part two

PARTRIDGE COUNT SCHEME

The PCS is a free and voluntary scheme run by the GWCT since 1933 to collect information on the annual abundance and breeding success of grey partridges. If you are a farmer, landowner, game or other land-manager who wants to improve wild grey partridge numbers, please join the scheme. For more information or to sign up go to www.gwct.org.uk/partridge.



Choose feeder locations close enough to tracks but away from disturbance.

2.1. Tips and tricks

Hygiene and husbandry

Tip 1. Ensure a constant supply of good-quality food

- Ensure that you are using clean and dry food to avoid the spread of disease.
- Make sure that all feeders provide a constant grain supply and never run out of grain for more than two days (maximum).

Location

Tip 2. Choose a location that is easy to reach and away from regular disturbance

- Feeders need to be close enough to tracks where driving is possible to allow regular checks and top-ups.
- Keep feeders away from roads and public footpaths to avoid vandalism and disturbance.
- Avoid fields with livestock.

Tip 3. Move your feeders regularly

- We strongly recommend changing the location of feeders regularly to reduce rats becoming established around feeders and prevent disease and parasites.
- Move feeders up to 20 metres away from the previous location every seven to 10 days but stay within 50 metres from the original location. If gamebirds and songbirds know the feeding sites, they will use them within one to three days.
- Spread a small amount of grain around new locations to encourage target species to use feeders.
- To facilitate the change of feeder location, we recommend feeders with a maximum 35-40 litre capacity (see Part 3).

Tip 4. Adjust your strategy based on gamebird behaviour

- For gamebirds, the observation of partridge pairs and territorial pheasants in late winter to early spring is the best indicator that feeders should be moved from the winter to the spring position (see 1.4).
- Avoid moving feeders from winter to breeding sites during or immediately before harsh weather.



Tip 5. Adapt the frequency of your visits to your circumstances

- This will depend on factors such as the number of feeders, their capacity, weather conditions and the expected grain consumption. For example, when using the same feeder type, the food provided at the release pens will be consumed more quickly than food provided for wild game.
- From our practical experience, we recommend checking each feeder every seven to 10 days.

Place feeders where you know your target species will use them. © David Mason

Number of feeders

Tip 6. To decide how many feeders are needed, use the number of released birds in reared shoots and your gamebird surveys in wild shoots (see 1.5)

Tip 7. It is always better to maintain fewer feeders that are well managed, rather than many feeders that are poorly managed

Monitor use

Tip 8. Evaluation of non-target use through camera traps

Non-target species can take a significant amount of food and may also predate target-species. Through camera traps it is relatively easy to detect nocturnal species such as rodents, deer and badgers (we recommend reading our free guidelines *Camera traps for game and other wildlife* www.gwct.org.uk/cameratraps).

- Set one camera per feeder monitored (minimum three to four feeders), covering as much of the managed area as possible.
- Download photos and count the number of photos depicting target and non-target species, which will provide the ratio between the two groups.
- If a camera took a large number of photos, select just two to three days' worth of recording, preferably from the second or third day from when recording began.

Tip 9. Measure the grain consumed

In both reared and wild shoots, keeping a record of the amount of grain provided helps you to judge how much grain has been eaten across weeks, seasons and between years. It also allows you to detect spikes of grain consumption that could correspond to outbreaks of rats (see Tips 10 & 11).

- Use a bucket of 5-10 kilogrammes as your 'unit of measure'.
- Count and record the number of buckets needed to fill all the feeders.

BIG FARMLAND BIRD COUNT

The Big Farmland Bird Count highlights the good work that farmers and gamekeepers are doing to help to reverse the decline in farmland bird numbers. The annual count records the effect of any conservation work on their land. To find out more go to www.gwct.org.uk/bfbc.



Use a bucket of 5-10 kg as your 'unit of measure'.



Rat control around feeding areas

Tip 10. Indirect control of rats

- Use hoppers designed to reduce the food available for rats (see Part 3).
- Set feeders in open fields if appropriate (see 1.4, page 7).
- If broadcasting, only provide small amounts of food at a time. The amount provided will depend on the number of birds eating it by the end of the day.
- Change the location of feeders every seven to 10 days if possible, which helps to prevent rats becoming permanently established.

Tip 11. Direct control of rats

- Move feeders to sites where tunnel traps are set, preferably along hedgerows and field margins. Set two excluder sticks at both entrances to the tunnel to reduce the chance of catching non-target species.
- Use rodenticide at the active rat burrows rather than bait boxes. Push the poison down the hole and seal it, checking regularly to see whether the hole has been re-opened.



Training is compulsory if you use rodenticides at active rat holes away from farm buildings.

In the UK, training is now required for anyone intending to control rats with professional rodenticides away from farm buildings. We recommend attending our rat control course for gamekeepers (see box).

For wild shoots

Identify target and non-target species

Tip 12. Conduct surveys, counts and use camera traps

- In autumn and late winter-early spring, count gamebirds up to three hours after dawn and three hours before dusk. When counting grey partridges in lowland, a three-hour session allows enough time to count about 500 acres (250 ha) using a four-wheel drive. If you are not familiar with counting gamebirds, we recommend that you join our Partridge Count Scheme and Big Farmland Count (see pages 10/11) for expert advice.
- Use camera traps to detect nocturnal species (see Tip 8).

RODENTICIDE TRAINING

We have joined forces with the Campaign for Responsible Rodenticide Use (CRRU) and BASIS Registration Ltd to offer a rodenticide training course which will include the necessary certification for successful candidates to go on buying and using professional rodenticides after a product authorisation change on 1 July 2016. For more information, please contact our Advisory team by email advisory@gwct.org.uk or 01425 651013.

Excluder sticks set in a tunnel trap to reduce non-target captures.





Part three

How to build a feeder

3.1. The feeder drum

Tip 1. Materials

- We prefer hard plastic as it does not rust and reduces the effects of moisture on the grain, providing a better temperature insulation. The advantage of metal drums is that they cannot be chewed by rats and squirrels.

Tip 2. Capacity

- We recommend feeders with a capacity of 30-40 litres whenever possible, as they are easy to move (see 2.1, Tip 3).

3.2. The nozzle

Tip 3. Materials

- Metal is recommended for all nozzles as mammals will chew and damage ones made from other materials.

Tip 4. Which type?

- Spirals ensure that the grain is easily seen and taken by gamebirds and songbirds, and the latter may use them as a perch whilst feeding.
- When rats cannot be controlled properly, slots on the bottom of the drum can be used instead (though it can be difficult for songbirds to get the grain).
- An 'anti-rat' system can be used when targeting gamebirds and songbirds in farmland (see Figure 4).

Figure 4

(Top to bottom, L-R) Different nozzles on feeders: spiral; slots; and port with 'anti-rat' system



3.3. The frame and excluders

The frame holds the feeder and the excluders aim to reduce the use by 'non-target' species.

Tip 5. Whatever the frame and excluders used, feeders need to be easy to move so that they can be repositioned frequently in a different location.

Tip 6. The feeder structure has to be robust. Choose metal materials for the frame and the excluders.

Tip 7. The frame has to be pushed into the ground. For a firm anchorage, we recommend using a cylindrical iron armature clad with wire sheep netting of a height of 0.9m and a diameter of 60 centimetres (mesh size 20 x 20 centimetres).



(Top). The drum must be attached to the frame and well fixed to the ground otherwise it will be easily knocked over by wildlife, especially deer (see photos below).



(Bottom). Nailed feeders may be useful in farms with high deer density (left), but we recommend a movable well-framed feeder with excluders, if possible (right).





3.4. Specifications for gamebirds and songbirds

Tip 8. The food needs to be visible

- Whatever the type of nozzle used, ensure that birds can see the grain. Although they will be familiar with feeders, the sight of the grain will stimulate feeding behaviour. Therefore, scatter some grain below the feeder whenever it is set at a new location.

Tip 9. Nozzle height

- With gamebirds, be careful with the height of the nozzle as partridges may not reach feeders easily that are targeting pheasants (see Figure 4).

Tip 10. What if I don't want to encourage pheasants?

- A mesh of 12 x 12 centimetres will discourage pheasants as they will struggle to reach the nozzle.

Figure 5

Different feeder heights for pheasants, partridges and songbirds

High: pheasants



Height: 40-45cm (16-18")

Low: pheasants & partridges



20-25cm (8-9")

Songbirds



Around one metre above ground



3.5. Specifications to deter non-target species

Rats need controlling as they can take a lot of grain and also predate nests in the spring.

Rats and squirrels

A vast amount of grain can be taken by rats and squirrels, which may also predate nests of game and other birds in spring. We have not been able to develop a completely 'rodent-resistant feeder' yet, but there are ways to reduce the use by these species.

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Go to www.gwct.org.uk/courses or contact our Advisory Service by email advisory@gwct.org.uk or call 01425 651013.

Tip 11. Use slots of 0.5 x 2 centimetres on the bottom of the drum instead of a spiral

Tip 12. Hang the bottom of the nozzle at a height of 40-45 centimetres, but be aware that it would be accessible only to pheasants

Tip 13. Be aware that frames and wire mesh aiming to reduce the use by corvids, pigeons, deer and badgers can be used by rats and squirrels to reach the nozzle, as they can climb on it easily (see below). Therefore, be on top of your rat and squirrel control during the winter



Recommended nozzle and height to deter rats and squirrels. However, where frames are used, rats are likely to use them to reach the grain, regardless of how high the nozzle is set.



(Left) Corvids can visit feeders frequently.



Dead corvids used as 'scarecrows' reduces the number of unwanted corvid visits, but can also deter songbirds.

Corvids

Tip 14. Scarecrows

- The use of dead rooks as scarecrows is the only method that we have tested to reduce the use of feeders by corvids. It works, but also reduces the number of songbird visits.

Badgers, deer and cattle

Tip 15. Location

- Avoid locations close to badger setts and do not place feeders in fields with cattle.

Tip 16. Structure

- In the case of deer trying to knock the feeder over (mainly fallow and red deer), anchor it into the ground with a long metal peg or set it on a tripod heavy enough to cope with the weight. But don't forget to move it every seven to 10 days.

Tip 17. Excluder

- A wire mesh with a size from 12 x 12 centimetres to 20 x 20 centimetres wrapped round the frame as an excluder will discourage deer and badgers. However, it will not prevent badgers from swiping the nozzle, unless the feeder is well anchored.



A mesh with a size from 12 x 12 centimetres to 20 x 20 centimetres will discourage deer and badgers.

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The Game & Wildlife Conservation Trust

For over 80 years our scientists have been researching why species like the grey partridge, water vole, corn bunting and black grouse have declined. We are continually developing practical measures to reverse these declines.

Our aim is simple - a thriving countryside rich in game and other wildlife.

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