Guidelines for re-establishing grey partridges through releasing

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Background

In the UK, numbers of grey partridges have declined by over 80% during the last 25 years, and in many parts of the country the species has become locally extinct. Concerns over the magnitude of the decline led the UK Government to place the species on the short list of the UK Biodiversity Action Plan (BAP) for which the Game & Wildlife Conservation Trust was appointed lead partner in 1996. The Grey Partridge Species Action Plan's targets are to restore numbers from 65,000 pairs in 2005 to 90,000 pairs nationally by 2010, and to expand its 1990 range. Over the past 40 years, we have identified the reasons behind the decline of the grey partridge and devised a range of effective techniques for reversing its decline (see Royston project in Part 1.1, page 4). **The present guidelines provide specific advice to assist the recovery of the grey partridge where numbers have fallen below self-sustainable levels or where it no longer exists.**

The guidelines are based on our research between 2004 and 2006, when we investigated the best methods of re-establishing grey partridges through releasing, in areas where they have either almost or entirely disappeared, and where a suitable environment has been restored. The main points of this research were:

- We worked on 26 sites split between East Anglia and southern England, and followed the fates and breeding success of 2,023 released grey partridges, of which 131 were radio-tagged (at one site per region).
- We compared five different releasing techniques (bantam-reared and artificially-reared fostered juveniles, unfostered juveniles, family groups released in late autumn, and pairs released in spring).
- For the first six months after release, the survival of fostered birds was highest (20%) with no differences found between bantam-reared and artificially-reared juveniles, followed by autumn coveys (10%), spring pairs (9%) and unfostered juveniles (7%).
- For birds that managed to survive the first six months, the re-sighting rate after the next six months was much higher (36%), giving evidence of their adaptation to the wild.
- Of the birds that survived to the breeding season, on average 89% remained within 1.5 kilometres of the release site, indicating good site fidelity.
- The breeding success of released birds that survived until autumn averaged 49% for fostered birds, 31% for autumn coveys, 24% for spring pairs and 0% for unfostered juveniles.
- Brood sizes of released birds did not differ from those produced by wild birds in the same areas in autumn.
- Breeding success in southern England was roughly half what it was in East Anglia, probably because of less intensive predator management.

Our guidelines have been produced using the findings above combined with over 30 years of grey partridge research and practical experience. Through them, we seek to promote best practice in grey partridge re-establishment attempts, in line with the internationally accepted *Guidelines for re-introductions* produced by the International Union for Conservation of Nature (IUCN) and its Species Survival Commission (SSC), the *Guidelines for the re-introduction of galliformes for conservation purposes* of the IUCN/SSC galliform specialist groups and our summary of the IUCN/SSC guidelines (see page 18 for more information). The techniques described in this document fulfil all legal requirements and are set out in two main parts: the first describes re-establishment procedures, the second rearing procedures.

UK change in grey partridge numbers

(according to annual surveys of the British Trust for Ornithology)

Period	Change
1980-2005	-82%
1995-2005	-39%
2000-2005	-12%

Source: Baillie et al. 2007. Breeding Birds in the Wider Countryside: their conservation status 2007. (www.bto.org/birdtrends)

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Part one

Guidelines for grey partridge re-establishment

1.1. Is releasing appropriate?

The successful re-establishment of grey partridges through releasing is a serious affair. Grey partridge re-establishment efforts are lengthy, labour-intensive and expensive operations with no guarantee of success.

When is releasing appropriate as a means of re-establishing grey partridges on a piece of land? We know from our Grey Partridge Recovery Project at Royston, in Hertfordshire that, from a starting density of 2.9 pairs/km², it is possible to exceed 18 pairs/km² in five years with the correct management (see our leaflet *The grey partridge recovery project* for more information). As a result, our first guideline is:

'Where grey partridges are *still present* (over two pairs/km² on at least 4km² or 400 hectares), *releasing is inappropriate*.'

Where grey partridges are still present (over two pairs/km² on at least 4km² or 400 hectares), releasing is inappropriate. Instead, partridge recovery can and should be brought about solely through habitat improvements and predator management. Over the past 30 years, our research has provided practical recommendations addressing nesting, brood-rearing and over-winter habitats, together with food and predator management. Taken together, this is the strategy that has been so effective at Royston.

By inference, releasing is appropriate only where there are no or very few grey partridges still present (under two pairs/km² on at least 4km² or 400 hectares). Even where it is appropriate, we cannot over stress that releasing is only one component along the way to re-establishing grey partridges successfully. The same issues of habitat improvement, food and predator management apply as above. These **must** be addressed and detailed **advice sought** before re-establishment through releases is attempted. Attempts to re-establish birds in areas of unsuitable habitat contravene IUCN guidelines, and will fail and discredit the practice.

The first step towards re-establishing grey partridges on a piece of land must therefore be a systematic count to determine the number present, and hence the density. We strongly recommend joining our free Partridge Count Scheme (see box) for advice on how to count grey partridges effectively.

In the following three sections, we review the measures that are crucially important to have in place for re-establishment, whether it is through recovery of grey partridges that are already present or through releasing where they are not.

Partridge Count Scheme

Join the Partridge Count Scheme (PCS) and be part of one of the largest farmer-led monitoring schemes in Europe. It provides free feedback on your count data to highlight where management may be improved. PCS members have seen a 38% increase in pairs since 2000 to 2005 compared with an ongoing national decline of 12%.

For further information or to join, please contact us on 01425 651066, or email partridgecountscheme@gct.org.uk

1.2. Measures needed for re-establishment

1. Improve habitat

- Providing the right types and amounts of habitat is the most important factor affecting the chances of grey partridge re-establishment being successful. It is essential to have well-established over-winter and spring cover, nesting, brood-rearing and foraging cover. For detailed information on how to achieve these measures please consult our grey partridge fact sheets *Providing nesting cover, Providing brood-rearing cover* and *Providing winter cover and food for wild grey partridges* (see page 17 for all recommended reading material).

- Habitat requirements for the birds need to be met on an area of at least 4km² (400 hectares). It therefore will be essential, in most cases, to work together with neighbouring farms.

- Note that having had good partridge numbers in the past is no guide to the current suitability of land for grey partridges. Major habitat changes, such as woodland planting, may mean that the land is no longer suitable.

2. Manage predators

- Manage predators of grey partridge adults and nests (foxes, feral cats, stoats, weasels, rats, crows and magpies), especially foxes. See our fact sheet *Using predation control to increase wild grey partridges.*

- Intensify predator management from February to June as this is the time when grey partridges suffer the highest losses to predation.

3. Provide feeders

- Install one to two feeders per (potential) pair. Be prepared to keep them topped up from the time of release through to the end of May to minimise dispersal and aid settlement of pairs. Once the birds have settled, adjust the location of the feeders accordingly.

- When feeders are in use, control any rats that are attracted to them. Position the feeders carefully so that partridges are not easy prey for raptors. For more information see our fact sheet *Late winter and spring feeding of pheasants and partridges.* Although feeders have not been shown scientifically to increase the breeding success of grey partridges, they seem to help hold the birds over winter and provide a focal point when they are establishing their spring territories. The presence of partridges close to feeders also makes it easier to count them in spring.

Beetle banks flanked by foraging cover provide excellent grey partridge habitat.

Below L-R: Habitat improvements such as flower-rich field boundaries, predator management, such as snaring, and feeding are all needed for successful grey partridge re-establishment.

Counting after release is essential to monitor re-establishment success. © Glyn Howells

1.3. Where grey partridges are still present
(over two pairs/km² on at least 4km² or 400 hectares)

1. Do NOT release any birds

- Releasing may in fact be counter-productive, as the release of reared stock may have negative effects on the breeding success of local wild stock.

2. Proceed as demonstrated at Royston

- Improve habitat and intensify predator management (see Part 1.2).

- If you have not already done so, stop shooting grey partridges as soon as numbers are below 20 birds/km² in the autumn. During driven redleg shoots, take special measures to avoid shooting greys (eg. using whistles to forewarn guns when coveys of greys are flushed).

- Provide feeders (see Part 1.2). At Royston a feeder was provided every 100 metres along field margins and beetle banks.

- Reduce disturbance (leisure and shooting) especially where grey partridge numbers have fallen below four pairs/km². Place signs along bridleways and footpaths asking people to keep dogs on leads (see page 17). If you shoot redlegs, we also recommend not having more than two drives within the core grey partridge area per season, because flushing grey partridges too many times exacerbates the risk of them moving away to neighbouring farms.

To reduce disturbance caused by leisure activities, inform the public about your conservation efforts.

3. Monitor success

- Count your birds in spring and autumn and send your data to our Partridge Count Scheme. Keep records of how many birds you have and where you see most of them. The area where you encounter most grey partridges should be considered your core area. It is there where the most effort should be put into habitat improvements, predator management, feeding and disturbance reduction.

4. Adjust strategy on basis of monitoring

- By participating in the Partridge Count Scheme, you will receive feedback based on your counts that will highlight where management can be improved. Adjust your grey partridge recovery strategy accordingly.

- If you are unsure what to do, ask your local GWCT advisor for assistance, or contact us on 01425 651013.

Conservation headlands provide excellent foraging cover for grey partridge chicks after hatching.

1.4. Where there are none or very few grey partridges still present

(under two pairs/km^2 on at least 4km^2 or 400 hectares)

1. Before release, make sure that all suitable measures are in place

- Improve habitat, intensify predator management, stop shooting grey partridges, provide feeders and minimise disturbance (see Part 1.2 & 1.3). Never release birds into unsuitable habitat, as all grey partridge releasing projects that have done so in the past have failed.

2. Organise suitable release stock

- Translocated wild birds will perform best. However, they must be sourced from a viable natural population (at a density of at least 25 birds/km^2 in autumn) in comparable habitat, and no more than 10% of the autumn stock should be taken so that the donor population isn't damaged. Trapping should be carried out during the open season (1 September to 1 February in Great Britain, 1 October to 31 January in Northern Ireland). The transport of wild-caught birds requires special attention to minimise stress and injury (see page 11), and trapped birds should have water and food available at all times. A source area close to the release site would be the best option.

- If wild birds aren't available for translocation, reared birds need to be used. Parent-reared birds should be favoured, followed by bantam or artificially-reared ones from a reputable source, preferably from a non-domesticated lineage. The breeding stock may be from continental Europe, though not from Ireland or Finland, where the genetic strain is different.

3. Release birds to build fostering stock

- Translocate wild pairs in January or release reared family groups in October/November. To increase the chances of success, translocate at least 10 pairs at a time (the more the better). If no wild birds are available, a minimum of 10 reared family groups consisting of two adult birds and 10-15 juveniles should be released within an area of 4km^2 (for more details on how to rear family groups see page 16). Experience suggests that coveys should be released close enough to make them aware of each other, but distant enough to prevent merging (approximately 400 metres apart should work in most cases). All released birds should be fitted with plastic colour split rings, ideally one particular colour per year duplicated on each leg as insurance against ring loss. This will allow identification of the released birds during monitoring or when shot, which provides important information on project success.

Each released individual should be ringed. The best colour rings to use are white, yellow and red, and the inner diameter of the rings should be 6mm.

At our Grey Partridge Recovery Project at Royston, we provide two feeders per spring pair.

Juveniles that lose their foster parents have a very slim chance of survival, especially where grey partridge numbers are low. © Alexis de la Serre

4. Monitor in subsequent spring (see Part 1.3)

A - If at least 15% of released birds are seen again.

- Foster five to 10 groups of captive-reared juveniles aged five to eight weeks (10-15 juveniles per group) to barren wild-living pairs (ie. local wild stock or re-established birds), individuals or barren groups in August (for more details on how to rear juveniles for fostering see Part 2.2, page 14). Do not try to foster to a wild brood, even if your juveniles seem to be the same age, as this will definitely fail. Do not attempt to foster juveniles before they are five weeks old, because young juveniles that lose contact with their foster parents will die. If you try to foster juveniles that are older than eight weeks, they are likely to reject their foster parents and disperse.

- Release another batch of 10 reared family groups in October/November (see page 7).

- Monitor in autumn and spring (see page 6).

- Intensify management where you find most birds, as this is the area with the highest potential (core area).

- Repeat until the newly-established population is self-sustainable. This will probably take at least five years.

B - If, despite your best efforts, you have not seen more than 15% of released birds again.

- Identify the cause of the losses, address the problem and start again. If the problem is not obvious, ask a GWCT advisor for assistance or contact us on 01425 651013.

Where habitat and predation management prior to release are ignored, predation can reduce grey partridges to a handful of individuals within a few weeks. © Markus Jenny

1.5. Tips and tricks - releasing

General code of practice

- Never release birds into unsuitable habitat.

- Never release sick or unhealthy-looking birds. If in doubt seek your local veterinary surgeon's advice.

- Aim for best quality. Best quality birds are wild birds, followed by parent-reared birds (reared and hatched by captive grey partridge parents), then bantam-reared birds and artificially-reared birds (eggs hatched in an incubator and kept in groups of no more than 17 individuals).

- Never release tame birds.

- Always provide food, water, grit and shelter in release pens (for more details see page 12).

Fostering

Tip 1. Never release the juveniles if there is no sign of a foster parent as they stand very little chance of survival.

- Before moving your juveniles to the release site, identify the location of free-living barren birds.

- Place your release pen (an A-frame or a framed pen that can be easily lifted and moved, see Appendix) together with just three to five juveniles, where you have seen or where you suspect barren adults. Always provide food, water and shelter and check daily.

- Once a barren bird, pair or group has approached the juveniles and seems to be keen to adopt them, add the remaining juveniles to the release pen.

Tip 2. Make sure the foster parents are keen to adopt the juveniles. If there is no bond, the juveniles will most probably die and all your efforts will be for nothing.

- Once you notice at least one adult bird around your release pen, watch from a vehicle at a safe distance. Keen adults will try to find a way into the pen and 'talk' to the juveniles. The juveniles in turn will respond by calling. If you observe such behaviour, leave the birds alone and come back the next day.

(Above and below): Wild barren grey partridges are usually very keen to adopt juveniles.

If fostered correctly, juveniles and foster parents will bond immediately after the juveniles have been released. © Markus Jenny

Grey partridges released in family groups stand a much better chance of survival than birds released in large, un-bonded flocks. © Markus Jenny

- If the adult birds are still present around the pen the next day, all the evidence suggests that they are ready for fostering.

Tip 3. Do not disturb the covey during release as this causes panic and the separation of covey members.

- Ideally, open the pen door with a cord from a distance of at least 20 metres. If that is not possible, open the door by hand and walk away from the pen without disturbing the birds.

- Watch the juveniles leaving the pen, or the adult(s) entering the pen, from at least 20 metres away and always inside a vehicle. Be patient as the birds may take several minutes to realise that the door is open.

- If you need to approach the opened pen, do it in a vehicle and not on foot.

Family groups (coveys)

Tip 1. The release-pen should be placed near cover to reduce the chance of dispersal.

- Ideal cover would be, for example, a maize or kale game cover strip, which is not driven during the shooting season, next to a rape field or any other large holding crop. Other cover and holding crops may be suitable according to geographic location.

Family groups should be released near holding and escape cover, such as a rape field next to a hedge.

You need a licence to be able to catch wild grey partridge pairs legally. Contact the GWCT for further advice. © James Swan

- The release pen should be easy to assemble and large enough to hold up to 19 birds (see Appendix). A standard redleg partridge release pen with a soft netted top is fine.

Tip 2. A covey should not be left in the release pen for more than one week. Within good habitat, the acclimatisation period seems to have little or no influence on dispersal.

- Keeping the birds in the pen for longer than really necessary increases the risk of injury, disease and predation.

- Coveys can be released in one go.

Tip 3. Do not disturb covey during release as this causes panic and the separation of covey-members.

- See Tip 3 under Fostering in Part 1.5 (page 10).

Translocated adults

Tip 1. Keep wild birds in captivity for as short a time as possible to reduce the chance of injury.

- Wild birds captured for translocation should be kept in a covered crate or in a cube-shaped cardboard box with air holes to minimise injury and so they can be released the next day. Wild birds kept in A-frames or any other wire-meshed pens are highly likely to injure themselves (for more details see the *Guidelines for the re-introduction of galliformes for conservation purposes*, see page 18).

Translocated wild birds should be released directly into the wild to reduce risk of injury.

Tip 2. Release translocated birds directly into the wild. Choose the location and day for release carefully to reduce separation between birds.

- Immediate release (ie. directly into the wild without being held in a pen) will be necessary in most cases, unless it is possible to build a pen large enough (approximately 3 x 8-metres with soft netted top per group) to minimise injury. Birds should be kept and released in the same groups (pairs or coveys) as those in which they were caught. They should preferably be released into dense cover (such as a well-vegetated hedge bottom or a game crop) on a calm day to reduce the risk of birds flying off in different directions.

Part two

Guidelines on rearing grey partridges for releasing

2.1. Husbandry practices

Pens

- The standard pen consists of four 10-foot (3.3 metre) sections made of chicken wire and covered with a net. However, for better nesting results use a 10 x 20-foot pen as discussed further below. Each section should have a board approximately one-foot (33cm) wide along the bottom to reduce feather damage, limit the birds' view and prevent chicks from being lost through the wire mesh. Make sure that there are no holes and gaps. Any projection (nails, loose wire) must be removed to avoid damaging the birds.

- Pen sections should be placed onto a one-foot wide membrane strip (eg. damp-proof membrane) to help prevent the birds digging around the edge of the pen.

- Each bird must have sufficient access to food, clean water, grit and shelter from wind and rain at all times (a one-foot deep board along one side of the pen and one-foot off the ground will provide both shelter and a view point). The pen should also include brashings (deciduous and conifer) and areas of longer grass for cover and nesting and some grit (eg. builders' sharp sand).

- An electric fence around the pen(s) will help to prevent predation by foxes. Bait boxes and tunnel traps should be sited around the pen to keep rats, stoats and weasels at bay.

Food

- Chicks during the first two weeks of age should be fed commercial partridge crumb rations.

- Poults: feed the same as chicks, but with increasing amounts of a ground feed mixture (ie. mix of wild seeds, topped with pellets/crumbs).

- Adults: ground feed or a pellet mixture and access to growing grass/herbs which will allow adaptation to natural food. If the ground inside the pen becomes too worn, move the birds onto fresh ground.

- Use the same type of feeder to feed release stock as used for feeding 'wild' birds during the last few weeks before release, allowing the release stock to adapt.

Parasites

- Parasites (especially gapeworms and coccidiosis) can be the most frequent cause of death when rearing partridges. Chicks are especially vulnerable.

- Move pens every year onto fresh ground.

- Adults should be treated for worms at six-weekly intervals using a top dressing of Flubenvet Intermediate.

- At all times remain vigilant for gapes as it will kill young poults very quickly – gaping or snicking is easily over-looked, as birds (when disturbed) often mask symptoms. Watching birds from a distance with a good pair of binoculars is worthwhile.

- If signs of illness persist or you are uncertain as to the cause, seek a diagnosis from a veterinary surgeon.

- Prior to release treat all birds with Flubenvet Intermediate for seven days.

Behaviour

Birds for release should be kept as wild as possible, as tame birds are very vulnerable to predation. Therefore, place pens at a quiet site out of view and visit them only as much as necessary. Ideally change food and water after dark.

Source of rearing stock

- Rearing stock should ideally be as closely related to wild birds as possible. Therefore, the best option would be to start breeding stock from wild eggs, collected from over-mown nests. If this is not an option, get stock from a reputable source and ask about their origin and pedigree. When rearing for release, keep stock as genetically diverse as possible. Ideally do not release offspring of the same pair in the same area more than once.

Good-quality released stock will soon learn to recognise different predators. © Markus Jenny

Bantam-reared grey partridges ready to be fostered to wild birds.

Parent-reared grey partridge chicks.

2.2. Tips and tricks - rearing for release

Parent-reared birds (ie. grey partridge juveniles hatched and reared by a pair of grey partridges) should be favoured, followed by bantam or artificially-reared ones. If used for fostering, leave the parent birds with a minimum of two juveniles. Use them, for example, to keep your breeding stock going.

Parent rearing

Parent-reared birds can either be used for autumn release of entire family groups or for fostering juveniles to barren wild pairs.

Tip 1. Obtain pairs from a mixed-sex flock kept over winter.

- Over-winter a mixed-sex flock of greys in a large holding pen until mid-March (for 100 birds use a 120 x 80-foot pen). The holding pen must contain plenty of sight barriers and other structures (eg. brashings) to offer shelter and minimise feather pecking and aggression. The holding pen should be divided into several sections (connected with doors or pop holes) including 10 x 10-foot pens in the corners. Allow 'natural' pairing in spring as this improves partner bond. Pairs tend to settle in the 10 x 10-foot pen sections where they can easily be caught.

- Transfer established pairs to fresh 20 x 10-foot pens in March.

Tip 2. Keep pairs in 20 x 10-foot pens, divided into two halves and connected with a pop hole or door.

- One half of the pen should consist of short grass, a feeder, grit and a drinker, whereas the other half should be old tussocky grass including brashings for nesting cover.

- Ensure that parasites are controlled during this time. Allowing infection in adult birds merely seeds the pen for the infection of vulnerable chicks at a later date.

Tip 3. Minimise disturbance.

- Once the hen is sitting tight, do not disturb her. Only check her water and food.

- On average the chicks will hatch after 23 days.

Tip 4. Once the chicks have hatched, provide adequate food and water.

- The first two weeks after hatching are the most crucial ones and parasites are usually the main cause of chick loss. Discuss parasite control with your vet.

Pens for parent rearing should contain old grass for nesting cover and short grass for foraging and sun-bathing.

- In addition to the partridge crumbs and ground feed mixture, try to provide natural food such as ant pupae (eggs). An upturned plant pot, for example, is likely to attract an ant's nest where ants are present. Remove the pot when the chicks arrive to allow the birds access to the nest.

Rearing under bantams

Tip 1. House broody bantams in a fully enclosed 3 x 6-foot wooden ark, attached to a 10 x 10-foot mown-grass pen.

- The ark should have a covered 3 x 3-foot nesting area and a 3 x 3-foot grass run.

- The ark should be connected with the pen through a pop hole.

Tip 2. Let a broody bantam incubate the partridge eggs herself, or incubate the eggs artificially for 21 days and return under the bantam for the last two to three days before hatching.

- Allow the bantam to continue sitting on artificial eggs.

- After 21 days swap the artificial eggs with the incubated partridge eggs, allowing the bantam to hatch her 'own' chicks. Additionally, a small sample of eggs can be hatched in the incubator to supplement any hatch failures in individual broods immediately after hatching.

Partridge chicks hatched in an incubator.

- Following hatching, the broods should be retained for up to seven days within the ark's enclosed nesting area, depending on the prevailing weather conditions.

- After one week, release the family group into the whole ark.

- When they are sufficiently grown, and during good weather conditions, allow the birds access to the larger grass pen.

Artificial rearing

Obtain chicks from a game farm, for example, and rear them using standard brooder house methods (see our *Green guide for rearing*).

Tip 1. Allow poults to form a sibling bond.

- At an age of five weeks, catch up coveys of 13-17 individuals from the main group and hold them separately in a 10 x 10-foot pen for one week to allow the poults to form a bond. Make sure that their appropriate release age coincides with early August (see Part 1).

20 x 10-foot pens used to keep autumn coveys at our rearing field in Fordingbridge.

Family groups for autumn release

Ideally, release parent-reared juveniles together with their natural parents (see also parent-rearing). Alternatively, either rear the chicks artificially and then foster them to their natural parents, or create an unrelated family group using bantam or artificially-reared juveniles fostered to an ex-laying or captive barren pair.

If the family group is created artificially

Tip 1. Keep adult pairs in a divided 20 x 10-foot pen until fostering time.

- Keep the adult pair in one side of the pen as this helps maintain a low parasite level in the remaining side where the chicks will be placed.

- Replace the eggs of the grey partridge female with dummy eggs to ensure that she remains broody. Incubate and hatch the partridge eggs either artificially or under a bantam.

Tip 2. Foster poults at an age of three weeks to a barren captive-held pair.

- As fostering time approaches (early July to mid-August, with earlier dates preferred), add 13-17 poults to the side of the 20 x 10-foot pen that has not been in use so far. Do this in the early morning on a sunny day, ideally during a spell of settled weather with no cold nights or rain forecast to allow final hardening of the poults. Allow the poults an hour or two to settle into their new pen before lifting the pop hole dividing the two pens, allowing adults and chicks to mingle. Observe birds discretely from a distance, as some aggression from one or both adult birds may occur. There is no telling when and if this is going to happen, and in most cases aggressive behaviour settles within an hour or two.

- If aggressive behaviour of adults is overt, it is usually from one of the two, but rarely both. Separate the aggressive bird by moving it to the half of the pen opposite the one where it was originally kept, and leave the chicks with the other adult in the other half. Moving the aggressive adult to the half of the pen it has not previously used reduces its territorial behaviour. In 99% of cases the chicks will calm down with the tolerant adult. Allow the separated adult to merge with the fostered group after 24 hours. By that time, it will usually have lost its aggressive behaviour.

Tip 3. Keep the fostered family in captivity until early October.

- Allow the fostered group to use both parts of the 20 x 10-foot pen until ready for release.

- Release the covey as described in section 1.5 (see page 10).

A well-bonded family group reared in captivity and released in autumn will behave like a wild covey and stay together as a family unit.
© Markus Jenny

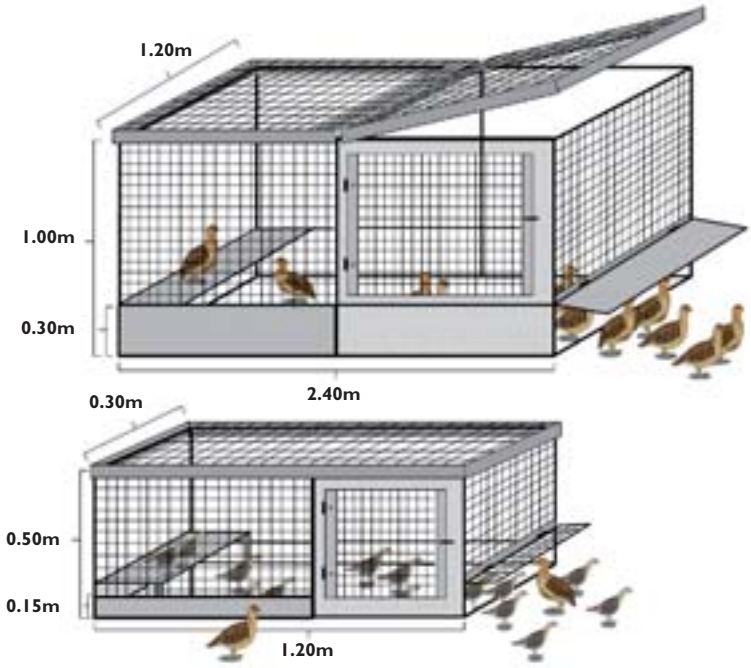
Appendix

A family group release pen as shown below consists of six side sections plus a foldable roof section. The three back sections, as well as the three front ones, can be left cable-tied permanently as they fold together. The side walls should consist of chicken wire, as should the roof. If the pen is left for more than a day at the release site, we recommend placing a piece of wire mesh folded in half (30cm wide) under each side, which stops predators from digging into the pen. The fold should face into the pen to prevent damage to the birds' feet from the cut edges.

A fostering pen should ideally be small enough to be transported in one piece on a pick-up truck or trailer. This allows more flexibility if it becomes necessary to move the chicks, for instance, in case of non-adoption. The flap through which the juveniles are to be released should be made of wire mesh. This increases the likelihood that barren birds and juveniles start bonding through the mesh while juveniles are still captive.

Figure 1

Schematic graph of suitable release pens (please note that graphs are not drawn to scale). (Top) Autumn covey release pen, (bottom) fostering pen.



Contact

If you have any questions concerning the procedures described in these guidelines or seek advice on where to source grey partridges for release, please contact your local advisor or call our headquarters in Fordingbridge on 01425 651013.

The Project

- The research project on which these guidelines are based has been funded by the Game & Wildlife Conservation Trust, the Duke of Westminster Research Fellowship and the Payne-Gallwey Charitable Trust.
- We are grateful for the support of our members and also of owners and keepers who helped during fieldwork.
- Project management: Dr Nicholas Aebischer, Deputy Director of Research.
- Veterinary advice: Dr Chris Davis.
- Research Project Officers: Dr Francis Buner, Dr Stephen Browne, Dr Des Purdy.
- Written by Dr Francis Buner.

Publications

- *The grey partridge recovery project*
- *Providing nesting cover*
- *Providing brood-rearing cover*
- *Providing winter cover and food*
- *Using predation control to increase wild grey partridges*
- *Green guide for rearing*
- *Disturbance signs*

All can be downloaded at www.gct.org.uk/partridge or contact us on 01425 651013.

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For more information, please contact: 01425 651013.

Summary of IUCN guidelines on re-introductions

Releases of individuals into areas where they have occurred previously (re-introductions) have become an increasingly popular conservation method to restore locally extinct species. In an attempt to impose some order into what could become chaos, the World Conservation Union (IUCN) devised a set of guidelines in 1995.

Introduction

- Re-introductions are always lengthy, complex and expensive.

Feasibility

- The species must be shown to have been previously present in the region.
- After re-establishment the species should be self-maintaining.
- There needs to be a sound knowledge of the species' natural history.
- There should be an understanding of the likely ecological effects.
- The re-introduction should be modelled to predict its outcome.
- A Population Viability Analysis should be done.

Appropriateness

- Suitable sites with good habitat within the former range must exist.
- The cause of the original extinction must be identified and eliminated.

Provenance

- Re-introduced animals should be of the same or similar genetic stock.
- Re-introduced animals must not endanger the status of source populations.
- Re-introduced animals should be free of pathogens and screened by a vet.
- Re-introduced animals from captive stock must have been appropriately reared.
- Captive stock must be able to adapt behaviourally.

Socio-economic

- The project should have long-term financial and political support.
- There should be a cost-benefit analysis for the local human population.
- Local attitudes should be assessed as re-introductions should have local support.
- There needs to be Government support.
- Risks to life and property need to be assessed and accepted.

Releasing

- Pre and post-release monitoring is needed.
- There needs to be a proper release strategy with veterinary supervision.
- There needs to be a public relations programme.
- There should be a scientific evaluation that is later published.

Re-introduction guidelines

- *Guidelines for re-introductions* (www.kew.org/conservation/RSGguidelines.html)
- *Guidelines for the re-introduction of galliformes for conservation purposes* (www.pheasant.org.uk)

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