

Great Bustard LIFE+ Technical Working Group

No. 2 – From hatching to release; effects on condition and survival

Wednesday 6th July 2011

25 attendees



PRESENTATIONS

- **The Great Bustard Project**

Eggs can be exposed to low or high temperatures before collection, and there is no way of collecting eggs at the optimum stage of incubation. However, hatch rate has always been good, reaching 85% in 2011. The quality of released birds is a more substantial concern; mortality due to foxes or collisions might be exacerbated by poor feather condition. Post release, there is no moult until late spring. Causes of poor feather condition may include:

- Diet, particularly high protein content. No one knows what represents a balanced diet for great bustards. It is difficult to ensure correct methods at the field station, and to ensure all birds receive what they require. Males and older birds are likely to dominate the food bowl. Some birds appear to be growing too quickly.
- Transport to the UK takes two days, during which time birds will not be feeding well. This may cause stress bars.
- Abrasion of feathers due to rubbing against netting has been a problem in Russia. This year the pens have straight sided netting and the pen size has doubled.

As a rule, hard release techniques have been used, with no supplementary feeding, although oil seed rape grown at the release site should provide all the birds need. Soft pens were used in 2010 for some birds, with no sign of differences in behaviour or survival.

- **The Crane Project**

Eggs are taken at a late stage of incubation then transported to be reared in the UK. They spend the first 28 days alone, taking accompanied exercise for 30 minutes per day from days 10-28 with a suited person the cranes learn to trust. This is when limited natural foraging starts. Young chicks are fed mainly on crane pellets, with a gradual

introduction of wheat and maize to the diet. From weeks 4-10, socialisation starts, with one hour per day of exercise, and from weeks 10-14 the birds spend 24 hours in the exercise area, where they are introduced to wooden decoys and an auto-feeder, to teach them to associate the two. During this period predator and human aversion training takes place, with a suited person playing alarm calls and taking avoidance actions to an unsuited person and a fox-like dog. Before release, various tracking devices are attached. All birds have colour rings, most have leg mounted radio transmitters, some have leg mounted satellite tags and some have GPS backpacks. The birds then spend three weeks in aviaries within the larger release enclosure, to anchor them at the site before release.

Survival from the first year has been very good. Of 21 released, three have been lost. One flew into wires, one lacked wild behaviour and one went missing, but its rings were later found.

- **Brandenburg Great Bustard Project**

Clutches have been brought to the project by local farmers since the 1970s, but disturbances by farmers have fallen. Now early clutches are taken systematically, because nearly all will be lost to predators, mainly foxes, and females will produce more eggs. A decision tree is followed, based on likelihood of success, to determine whether later clutches should be taken. Clutches are also produced by females in captivity.

Chicks have an area of 300m² for their first four weeks, then 3000m². They were released at about eight weeks until 2008. The project had problems with birds being too tame and too naïve. Up to 50 can be released each year, and of these under 30% are alive the next spring. Predation is mainly by white-tailed eagles, whose population has grown dramatically in the last 50 years.

In 2008, the decision was taken to postpone release time, keeping birds in a roofed enclosure for two months where birds were fed. Birds became stronger but tamer, and the predation problem was not solved.

From 2009, the technique was improved. Oil seed rape was grown inside and outside the enclosure, attracting wild birds to integrate with released birds. Birds were given guided walks, encouraging them to exercise pre-release. Human contact was minimised, and all people coming into contact with the bustards wore the same clothing. Perhaps most importantly, the release site with a high white-tailed eagle

population was no longer used. Predation was much lower in 2009/10, but cold winters meant mortality remained high.

Birds are marked with a single coloured metal ring. Some females wear necklace radio transmitters, and some males have tail mounted radio transmitters. Harness mounted transmitters are not used.

OPEN DISCUSSIONS

- **Diet and rearing of young birds; effects on condition**

One key problem is that chicks often grow too quickly, causing problems such as angel wing in the first few weeks and poor condition at release. For cranes, growth curves exist and chicks are weighed daily to try to ensure they are growing at the right speed. Weight gain data for bustard chicks is being collected this year. Data from last year suggests a consistent 10-20% increase per day, which is too fast and implies overfeeding, particularly an excess of protein. There is no information on how quickly wild birds grow, or how much they might eat, and such information would be difficult to collect. In Australia, a stock of tame females is used to foster chicks, controlling what the chicks ate assuming an ample supply. Another difficulty is calcium – cranes had problems with leg growth last year and joints this year. Sweep-netting in Russia was suggested, to provide a wide variety of insects as an experiment to see which the chicks choose to eat. However, this may cause problems with biosecurity.

Growth stages can be seen and compared in captive and wild birds. Males grow more quickly than females. It was suggested to investigate feather development, which is closely correlated to weight, to plot information and gain growth curves for bustards.

Would it be better to move eggs rather than chicks? It was suggested that as a trial next year, there is one import of eggs, of a reasonably consistent age, and one of chicks, with two sets of paperwork. This would require extra resources in the UK, but with quarantine out of the way much earlier for eggs, release of hatched chicks could also be much earlier. It would also be easier to control the diet of chicks in the UK. Quarantine, in walled enclosures for 30 days at a crucial stage in development physically and behaviourally, appears to be a major weak point, and addressing this matter could therefore be a big step forward.

- **Transport and grouping of young birds; methods and effects**

Birds are grouped by size, bringing together young males and older females, which is an unnatural grouping. Same sex groupings would be more natural and a step forward. As a rule in reintroductions, released cohorts that replicate normal family size work best, otherwise bullying or subservience may be an issue. This is now widely accepted in avian work and should be tried if possible. In Russia, chicks are kept in two large groups once they have reached a certain age, then divided by size for transport. A method is needed to keep birds in smaller, single-sex groups from fledging to hatching.

The timing of quarantine in the UK can pose problems for feather condition, as birds will be moulting. Interruptions to growth, such as might be caused by transportation, will cause stress marks. In the first year of the project, younger chicks were moved, but mortality during the journey was much higher, making it a non-viable alternative. Transporting birds later would lead to a winter release, which would not be acceptable. In all release programs, birds should be released as soon as possible after their natural fledge date, as the early learning period is critical. The most sensitive time for learning is from hatching to the end of quarantine.

- **The importance of learning – fox naivety**

Fox predation of released birds is mainly nocturnal, taking place during reasonable weather, with no evidence that birds are waterlogged. Fox density around Salisbury Plain is at a similar level to the rest of southern England, although not subject to local depressions due to control. It is possible that the condition of the birds is the problem, and the fox is just the end point.

The natural roost site of great bustards, and the proper reaction of bustards to predators, is not known. It is thought that they roost in the middle of fields. Predator avoidance strategies could be active, by using different sites or choosing fox-free places, or passive, relying on taking action when something happens. PTT data show substantial movements between 6pm, midnight and 6am in the winter when all are dark – this may be due to disturbance, but it may be that they are active at night. Birds can be seen feeding on moonlit nights, but on the other hand birds followed until dusk will tend to be at the same place until dawn. It was suggested that small, cheap GPS units could be used to investigate nocturnal movements more accurately and record events up to the point of mortality.

Roost sites could be manipulated using decoys, or a fake parent as with the crane project. However, we are not even sure what we should teach them. Not possible to assess the effect of predator training of cranes, but they have shown appropriate

behaviour to foxes in daytime. Only one attempt at predator training bustards has been made – there is a fear that it could cause them to injure themselves before release.

- **Quarantine and release; design and methods**

The quarantine facility this year is bigger, with less netting and therefore hopefully less abrasion. Monitoring of birds in quarantine shows that they can leap into the roof on occasions. Windows have been incorporated in quarantine to give birds a view. Same-sex groupings will be adopted this year. Rearing birds – especially open country birds – within walls can cause them sensory problems, but the quarantine must have solid walls, netting is insufficient.

In 2010, supplementary feeding, along with a plot of oil seed rape and plastic decoys, was used in the release pen, giving a focus to released birds and encouraging sociability to hold small groups together. This also attracts adult birds. The technique works with cranes, but bustards are nowhere near as social. Decoys have never been used outside the pen.

- **Marking, bird condition and predator attraction**

In the first year of the crane project, no deaths have been attributed to equipment. Backpacks favoured in Germany, leg-mounted equipment in USA. Not everyone likes either method, but they have found both to be acceptable. Solar powered satellite tags work well, providing one fix per day in winter and four in summer. To download information from GPS data-loggers, it is necessary to get within 500m.

This year, the great bustard project has nine PTTs, with eight more possibly coming. There will also be 12-15 radio transmitters, on necklaces for females and backpacks for males. All will be wing-tagged, using black tags to reduce contrast between the tag and the wing. PG recommended use of GPS data-loggers, to provide lots of data quite cheaply. Could be equally interesting putting trackers on foxes, as their activities will be landscape specific.

There has been no known mortality caused by leg rings used on great bustards in Germany. One problem is that clumps of snow can freeze around the ring. The Brandenburg project is more afraid of the dangers of backpack use. In the UK, there is no statistical difference between survival of birds with or without backpacks. Birds do grow significantly after release, so fitting a backpack is problematic.

- **Summary and suggestions raised (PG)**

Diet

- Important to ensure that the fittest chicks possible are brought here
- Rearing of hatched chicks should be calibrated with diet and growth of wild chicks
- Information on diet in the wild should be collected from a wide variety of sources
- Daily photographs of key plumage features should be taken at Diakovka to provide information for growth curves

Eggs

- An experimental import should be carried out of some eggs (as well as chicks) next year

Transport

- Does not appear to be a big problem, but look to minimise abrasion
- Maintain same-sex groupings of birds before, during and after transportation

Predators

- Look harder at current data, the information we have about surviving birds
- Seek a better understanding of predation by focusing on it during the current release period
- GPS data-loggers collect data every 30 seconds, this information would be extremely helpful when the units are recovered from corpses

Quarantine

- This may have a significant impact on the development of the chicks, possibly affecting survival. Possible measures to ameliorate this include:
 - Improving awareness of surroundings (larger windows?)
 - Reducing the number of birds per unit and having single sex units
 - Importing eggs, since the 30 days in quarantine would be from hatch date rather than later in their development