MEMORANDUM OF UNDERSTANING THE MIDDLE-EUROPEAN POPULATION OF THE GREAT BUSTARD

GERMAN NATIONAL REPORT 2013

GENERAL INFORMATION

Agency or institution responsible for the preparation of this report

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List any other agencies, institutions, or NGOs that have provided input

Society for the Protection of the Great Bustard / Foerderverein Grosstrappenschutz e. V. (e. V. = registered society)

Reports submitted to date:
First: 2004 (1990-2003)
Second: 2008 (2004-2007)
Third: 2013 (2008-2012, this one)

Period covered by this report
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Memorandum in effect in country since:
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Designated Focal Point (and full contact details):

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PART I. GENERAL

This questionnaire follows the structure and numbering of the Action Plan annexed to the Memorandum of Understanding to make it easier to read the relevant action points before the form is filled in. In some cases, however, sub-actions were not listed separately for the sake of simplicity and to avoid duplications. They should however be taken into consideration when answering the questions.

0. National work programme

Is there a national work programme or action plan already in place in your country for the Great Bustard pursuant to Paragraph 4(g) of the Memorandum of Understanding?

X Yes ☐ No

A work programme is existent in the federal state of Brandenburg but not in the state of Saxony-Anhalt which is home to about 30 % of the German population. There is no *national* work programme since the legal responsibility for nature conservation in Germany is on the federal state level.

1. Habitat protection

1.1 Designation of protected areas.

To what extent are the display, breeding, stop-over and wintering sites covered by protected areas?

Designation of protected areas under national law	Classification of Special Protection Areas according to the requirements of Art.4.1 of the EC Birds Directive
☐ Fully (>75%) X High (50-75%) ☐ Medium (10-49%) ☐ Low (<10%) ☐ None ☐ Not applicable[1]	X Fully (>75%) ☐ High (50-75%) ☐ Medium (10-49%) ☐ Low (<10%) ☐ None ☐ Not applicable

There are three SPAs with vital bustard populations:

- "Havellaendisches Luch" (5,611 ha),
- "Belziger Landschaftswiesen" (4,461 ha), both in the state of Brandenburg,
- "Fiener Bruch" in Brandenburg (6,338 ha) and Saxony-Anhalt (3,667 ha).
- The two first mentioned SPAs in Brandenburg are nature conservation areas according to national law whereas there are only 143 ha designated in the "Fiener Bruch" in Saxony-Anhalt.

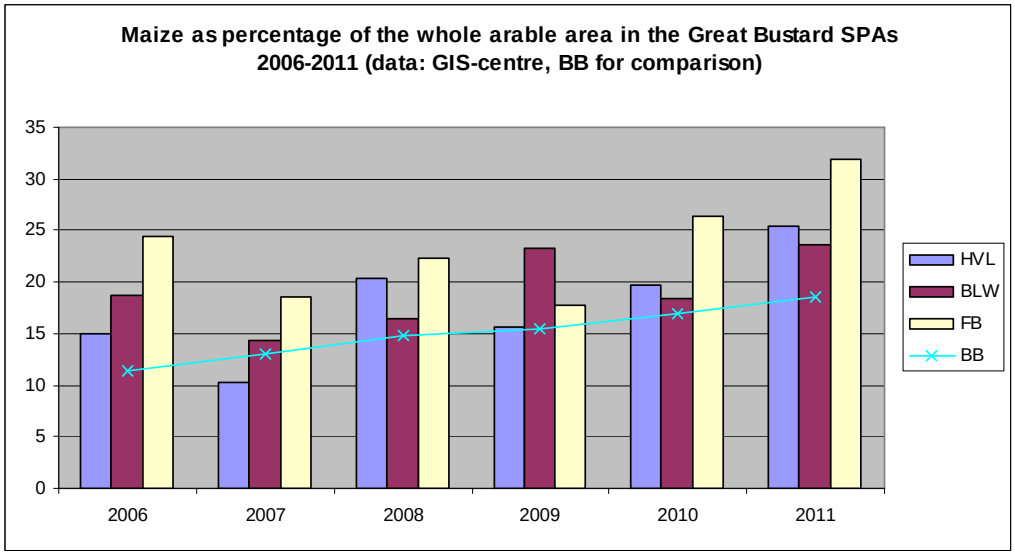
What measures were taken to ensure the adequate protection of the species and its habitat at these sites?

- Designation of nature conservation areas ("Naturschutzgebiet") under national law with regulations focussing on avoidance of disturbances, bustard-friendly farming practices and maintenance/improvement of the habitat suitability,
- Promotion of extensive farming (agri-environmental schemes, organic farming),
- Removal of windbreaks as fragmenting structures,
- Predation management,
- Reinforcement programme,
- Public awareness campaigns,
- Monitoring of and scientific investigations on Great Bustards and their habitat in the framework of the running landscape management.

[1] The species occurs only irregularly, no regular stop-over or wintering sites identified.

Where are the remaining gaps?

- Inside and outside the conservation areas there is a dramatic increase in maize growing. Trigger of this development is the German energy strategy. An analysis for Brandenburg showed that the three bustard areas are even above average (fig. 1). So far, there is no way to control this development at least in SPA in order to save their biodiversity.



- Still, solutions for the problem of high predation pressure on clutches, juveniles and adults are lacking. Obviously, the running conservation measures support not only the target species but their opponents as well. The interrelations are not yet fully understood.
- The SPA "Fiener Bruch" is not yet adequately protected and managed. Only a small percentage of the area is managed in a bustard-friendly way. For both the Brandenburg and Saxony-Anhalt part a management plan is existent as a first step for bustard-friendlier management. However, implementation will be difficult as two large milk cattle companies are just investing in more intensive milk production.

Are currently unoccupied, but potential breeding habitats identified in your country?

X Yes ☐ No ☐ Not applicable[2]

If yes, please explain how these areas are protected or managed to enable the re-establishment of Great Bustard.

- In a few areas which still might be suitable for Great Bustards (SPA Rhin-Havelluch) there are agri-environmental schemes for meadow birds running.
- Inside the Great Bustard SPAs there are areas not used due to windbreaks. Several of these were removed with remarkable success – areas were re-used, an old display site was reactivated, several breeding attempts there (not a real "re-establishment" but worth mentioning here).

[2] Countries *outside* of the historic (beginning of 20th Century) breeding range of the species.

1.2 Measures taken to ensure the maintenance of Great Bustard habitats outside of protected areas.
Please describe what measures have been taken to maintain land-use practices beneficial for Great Bustard outside of protected areas (e.g., set-aside and extensification schemes, cultivation of alfalfa and oilseed rape for winter, maintenance of rotational grazing, etc.).

- No bustard specific measures, but extensification schemes (agricultural programmes of the Brandenburg State following Directive EC 1698/2005) are existent outside Great Bustard areas as well.
- Set asides (EC regional closing downs) used to be welcome as potential breeding sites and stepping-stones outside conservation areas but nearly completely disappeared after abolition by EC decisions in October 2007.
- In a few cases winter rape cultivation was supported when there was a lack in the usual winter areas.

To what extent do these measures, combined with site protection, cover the national population?
☐ Fully (>75%)
☐ Most (50-75%)
☐ Some (10-49%)
X Little (<10%) There is only a small (unknown) percentage of breeding attempts outside conservation areas.
☐ Not at all
☐ Not applicable[1]

Are recently (over the last 20 years) abandoned Great Bustard breeding habitats mapped in your country?
X Yes ☐ No ☐ Not applicable[1]

What habitat management measures have been taken to encourage the return of Great Bustard?

- Common extensification schemes (agri-environmental programmes of the Brandenburg State following Directive EC 1698/2005) but no bustard specific measures.
- There seem to be no current cases of re-settling of abandoned areas and re-establishment of vanished leks without re-introduction programmes, world-wide. Thus, it is questionable if "encouraging the return of Great Bustard" is an applicable approach.

If there were any measures taken, please provide information on their impact.

1.3 Measures taken to avoid fragmentation of Great Bustard habitats.
Are new projects potentially causing fragmentation of the species' habitat (such as construction of highways and railways, irrigation, planting of shelterbelts, afforestation, power lines, etc.) subject to environmental impact assessment in your country? X Yes ☐ No ☐ Not applicable[1]

Is there any aspect of the existing legislation on impact assessment that limits its effective application to prevent fragmentation of Great Bustard habitats? X Yes ☐ No ☐ Not applicable[1]

If yes, please provide details.

- EIA takes mainly conservation areas and their surroundings into account. However, there are very limited chances to consider fly-ways between conservation areas. Most hazardous is the current wind energy plan for the Havelland-Flaeming region holding the major part of the German bustard population. There are several new wind-energy areas on important bustard flyways planned. This would predictably lead to barrier effects with all ecological consequences.
- Cf. SCHWANDNER, J. & T. LANGGEMACH (2011): Wie viel Lebensraum bleibt der Großtrappe (*Otis tarda*)? Infrastruktur und Lebensraumpotenzial im westlichen Brandenburg. Ber. Vogelschutz **47/48:** 193-206.

Have there been any such projects implemented in any Great Bustard habitat in your country since signing this Memorandum of Understanding? X Yes ☐ No ☐ Not applicable[1]

- An earlier "accident" was described in the first report, already: Despite existing environmental impact assessment twenty wind mills were built in the IBA ST013 "Fiener Bruch" (later SPA) within a regular wintering and occasional breeding site in 2003.
- After that still "yes", if flyways are considered as part of the habitat.

Please, give details and describe the outcome of impact monitoring if available.

- The wind farm area in the SPA "Fiener Bruch" incl. a buffer of mostly > 1.000 m is still avoided by bustards.
- So far, no bustards collided, one uncertain case only.
- The flyway to a former breeding and wintering area south-west of the SPA "Belziger Landschaftswiesen" is nearly completely cut by a belt of > 90 wind mills. With growing number of wind mills the number of bustard observations beyond the barrier went down to zero.

2. Prevention of hunting, disturbance and other threats

2.1 Hunting.

Is Great Bustard afforded strict legal protection in your country? X Yes ☐ No

Please, give details of any hunting restrictions imposed for the benefit of Great Bustard including those on timing of hunting and game management activities.

- Great Bustards belong to game birds but without hunting season.
- Some additional hunting restrictions came into force after safeguarding SPAs by national law as nature conservation areas in Brandenburg (e. g. restricted bird hunting, restricted hunting around display sites).
- Only limited restrictions in the SPA "Fiener Bruch" as there is only a small nature conservation area according to national law (143 ha) in Saxony-Anhalt: Hunting is completely forbidden there between 01 March and 31 July.

Please, indicate to what extent these measures ensure the protection of the national Great Bustard population?
The national population is covered by restrictions on hunting to prevent hunting-related disturbance:

X Fully (>75%)
☐ Most (50-75%)
☐ Some (10-49%)
☐ Little (<10%)
☐ Not at all
☐ Not applicable[1]

2.2 Prevention of disturbance.

What measures have been taken to prevent disturbance of Great Bustard in your country, including both breeding birds and single individuals or small flocks on migration?

- Guiding system for the public (observation towers, closing of ways through and around the core areas),
- Attempts to guide air traffic (military and leisure), predominantly successful,
- Measures to prevent disturbances due to farming,
- Awareness campaigns for the public,
- Inspections within the SPAs by members of the conservation staff and rangers from the nature parks the SPAs are situated in,
- No special measures outsides the conservation areas.

Please, indicate to what extent these measures have ensured the protection of the national population.
The national population is covered by restrictions on other activities causing disturbance:
☐ Fully (>75%)
X Most (50-75%)
☐ Some (10-49%)
☐ Little (<10%)
☐ Not at all
☐ Not applicable[1]

2.3.1 Prevention of predation.
What is the significance of predation to Great Bustard in your country?

- Predation is the major problem within the German Great Bustard project as revealed by intensive field observation, thermo-loggers in substitutive species (mainly lapwing) and radio-tracking of captive-reared birds after releasing.
- Despite well developing habitat structure and sufficient nutritional basis there are nearly no successful broods in the field, except of five areas of altogether 75 ha that are fenced-off to exclude larger ground predators.

What are the main predator species?

- Eggs: fox and raven, to a lesser extent racoon-dog, possibly badger, smaller mustelids and racoon,
- Juveniles: fox, sometimes White-tailed Eagle and Goshawk, possibly mustelids,
- Hand-raised juveniles after releasing: White-tailed Eagle, fox and Goshwak; possibly mustelids,
- Adults: fox, White-tailed Eagles (increasing population and increasing activity in agricultural areas).

What measures have been taken to control predators in areas where Great Bustard occurs regularly?

- Intensified hunting of foxes and neozoons forced by incentives over 15 years proved to be unsuccessful in terms of the predation pressure on clutches and juveniles; possibly successful considering female mortality but data insufficient.
- Professional hunting is supposed to be more successful than recreational hunting under the present legal framework.
- Fencing of five areas each 10-20 ha in size for breeding of wild (!) females proved to be successful and is the major source of offspring at present. Negative side-effects are stress, mutual disturbances between females due to their high abundance, and even attacks to chicks of other females.
- Scaring of ravens from breeding-sites in core areas and enclosures showed some limited success but is time-consuming and requires steadily new approaches.
- After the release of captive-reared bustards single Goshawks are caught at the release sites and translocated to other regions.
- Hand-reared juveniles are threatened by White-tailed Eagles post release. This is tackled in two ways: 1) optimal rearing and release methodology in order to release fit and healthy birds well prepared for their future environment, 2) diversionary feeding of eagles in the release period remote from the release site.

How effective were these measures?
☐ Effective (predation reduced by more than 50%)
X Partially effective (predation reduced by 10–49%, enclosures being most successful)
☐ Less effective (predation reduced by less than 10%)
☐ Not applicable[1]

2.3.2 Adoption of measures for power lines.
What is the significance of collision with power lines in your country?

- Altogether 5 casualties in the period covered by this report, and 12 since 2001.

What proactive and corrective measures have been taken to reduce the mortality caused by existing power lines in your country?

- Several medium voltage lines are underground meanwhile.
- Six kilometres of a 220-kV-line in the SPA "Havellaendisches Luch" have been marked with bird diverters (spirals).

What is the size of the populations affected by these corrective measures?

- about 60 %

How effective were these measures?

☐ Effective (collision with power lines reduced by more than 50%)
X Partially effective (collision with power lines reduced by 10–49%)
☐ Ineffective (collision with power lines reduced by less than 10%)
☐ Not applicable[1]

2.3.3 Compensatory measures.

What is the size (in hectares) of Great Bustard habitat lost or degraded for any reasons since the Memorandum of Understanding entered into effect (1 June 2001)?

- About 450 ha due to the wind farm in Zitz in the SPA "Fiener Bruch" (since 2003),
- More than 5.000 ha of wind farms are situated on flyways and former bustard areas which were still used occasionally. Barrier effects for an additional 10.000 ha which ceased to be breeding areas before wind farm erection but are now even lost as wintering areas.
- Maize cultivation area inside the Great Bustard SPAs increased by 460 ha since 2006 (mainly energetic use).

What is the size of the populations affected?

- More or less the whole population is affected.

Were these habitat losses compensated? ☐ Yes X Partially ☐ No ☐ Not applicable[1]

If yes, please explain how.

- Altogether three wind-farms in Brandenburg were compensated by
  - extensification of 50 ha grassland and 20 ha arable land,
  - purchase of 42 ha agricultural area for conservation reasons,
  - building of two fox-free enclosures (13 and 16 ha) as a refuge for free-living females in the framework of the predation management strategy.
- There are no compensation measures for maize as maize cultivation is considered as agriculture according to the rules. If more maize is grown for energetic use merely habitat loss due to the biomass factory is compensated but not habitat lost by maize cultivation even if high nature value farmland gets lost.

Were these measures effective? ☐ Yes X Partially ☐ No ☐ Not applicable[1]

Please, give details on the effectiveness or explain why they were not effective if that is the case.

- Extensification result in better food supply during the breeding season (arthropods).
- Chances of breeding success are better due to reduced disturbances by farming measures. Regarding breeding success, these positive results are more or less neutralised by high predation pressure.
- Fox-free enclosures are the strongholds of reproduction.
- Compensation of barrier effects within the flyways is impossible.

3. Possession and trade

Is collection of Great Bustard eggs or chicks, the possession of and trade in the birds and their eggs prohibited in your country? X Yes ☐ No

How are these restrictions enforced? What are the remaining shortcomings, if any?

- The Great Bustard belongs to the species under the hunting law (additionally to conservation law).
- In contrast to conservation law, hunters have the exclusive right to acquire carcasses of game animals in their own hunting area.
- This enables unchecked manipulation beyond legality. E. g. hunters are obliged to kill injured game incl. threatened species which happened to a male bustard in one strange case that has not been solved completely (December 2010).

Please indicate if any exemption is granted or not all of these activities are prohibited.

- Exemptions are granted within the frame-work of the running conservation programme, e. g. for taking first clutches for artificial incubation and reinforcement (cf. 4.1!); permit from the hunting side is necessary, too.

4. Recovery measures

4.1 Captive breeding* in emergency situations.

Is captive breeding playing any role in Great Bustard conservation in your country? X Yes ☐ No

Please, describe the measures, staff and facilities involved and how these operations comply with the IUCN criteria on reintroductions.

- Eggs from the wild are taken for artificial incubation and later population reinforcement from
  - broods in emergency situations, mainly by farming measures,
  - clutches without chance of success (e. g. near fox dens or ravens' nests),
  - clutches in the early vegetation period because of high predation pressure on these (nearly zero, monitoring data).
- Taking the eggs strictly follows a system of decision criteria in each case.
- The hatchery and rearing centre is part of the Brandenburg State Bird Conservation Centre in Buckow/ Nennhausen.
- After hatching the chicks are hand-reared and released into the wild in summer/autumn (both in the states of Brandenburg and Saxony-Anhalt).
- The whole reinforcement programme is carried out by 6 persons.

4.2 Reintroduction.

Have there been any measures taken to reintroduce the species in your country? ☐ Yes X No

If yes, please describe the progress. If there was any feasibility study carried out, please summarize its conclusions.

* In effect, "captive breeding" should be read as "captive rearing" according to current practices.

4.3 Monitoring of the success of release programmes.

Are captive reared birds released in your country? X Yes ☐ No

If yes, please summarize the experience with release programmes in your country. What is the survival rate of released birds? What is the breeding performance of released birds?

- Reinforcement delayed the population decline in the 1980s and 1990s, saved the species from extinction and has been contributing to the positive population trend during the last 15 years.
- Annual survival rates of released birds until next spring varied between 7.1 and 59.1 % in the reporting period with an average of 29.8 % and increasing tendency. These are minimal values since single birds might have been overlooked.
- Monitoring data proved that most of the released birds show normal behaviour and are soon integrated into the free-ranging population. As members of the leks they breed as soon as they are fertile, and there is no evidence that insemination rates of these birds are lower than in wild birds.
- The survival of released birds is mainly influenced by White-tailed Eagle predation but adaptive management reduced mortality due to eagles during the last three years.
- Due to their markedly increased abundance and steady presence in the bustard areas, White-tailed Eagles may become increasingly a problem for the free-ranging population. Even the current shift of the sex-ratio towards females seems to be forced by eagles as they killed several males.

What is the overall assessment of release programmes based on the survival of released birds one year after release?

X Effective (the survival is about the same as in wild-born chicks)
☐ Partially effective (the survival rate is lower than 75% of the wild birds)
☐ Ineffective (the survival is less than 25% of wild birds)
☐ Not applicable[3]

5. Cross-border conservation measure

Has your country undertaken any cross-border conservation measures with neighbouring countries?

☐ Yes ☐ No X Not applicable[4]

Please, give details of your country's collaboration with neighbouring countries on national surveys, research, monitoring and conservation activities for Great Bustard. Especially, list any measures taken to harmonise legal instruments protecting Great Bustard and its habitats, as well as funding you have provided to Great Bustard for particular conservation actions in other Range States.

- The German population is completely isolated.
- International activities mainly by the Great Bustard Society ("Foerderverein Großtrappenschutz") were described in the first report.
- Afterwards there was more informal interchange with partners abroad than joint projects, e. g. with the British re-introduction project.

6. Monitoring and research

6.1.1 Monitoring of population size and population trends.

Are the breeding, migratory or wintering Great Bustard populations monitored in your country?

X Yes ☐ No

[3] No release is taking place in the country.
[4] For countries which do not have any transboundary population.

What proportion of the national population is monitored?
X All (>75%)
☐ Most (50-75%)
☐ Some (10-49%)
☐ Little (<10%)
☐ None
☐ Not applicable[1]

What is the size and trend in the national population?[5]

Breeding/resident population only. Population size in spring 2012:
No. of males: 47
No. of females: 76

Trend: ☐ Declined by __% over the last 10 years
☐ Stable
X Increased by 116 % since 1997 and 16 % within the reporting period.

Non-breeding population (on passage, wintering)

No. of adult males: _____
No. of females: _____
No. immature males: _____

Trend: ☐ Declined by __% over the last 10 years
☐ Stable
☐ Increased by __% over the last 10 years

For countries where the species occurs only occasionally, please give the details of known observations within the reporting period:

6.1.2 Monitoring of the effects of habitat management.
Is the effect of habitat conservation measures monitored in your country?
X Yes ☐ Partially ☐ No ☐ Not applicable[1]

Please, provide a list of on-going and completed studies with references if results are already published.

- Habitat monitoring is carried out in the SPA "Havellaendisches Luch" and "Fiener Bruch". The monitoring comprises
  - plant communities at control plots,
  - selected invertebrate groups (species, activity), for other groups merely sporadic samples,
  - arthropode biomass (sweep nets, ground traps),
  - small mammals (abundance, Barn Owl pellets),
  - breeding birds (control plots for common breeding birds, complete censuses of rare birds).
- Indirect data result from stomach analyses of bustards found dead: abundance and availability of invertebrates.
- For references see 2008 report.

[5] Only for countries where the species occurs regularly.

What can be learned from these studies?

- Declining levels of nutrients in the landscape (mainly potassium, phosphorus, nitrogen) result in increasing species richness in plants and invertebrates, and a better vegetation structure.
- Extensification and habitat management work well regarding habitat structure, nutritional basis for the bustards, and biodiversity in total.
- Structures necessary for bustards are far from those under usual agricultural business. Therefore, there is absolute need for habitat improvement in areas unmanaged so far, mainly in the SPA "Fiener Bruch".
- Small mammals (as a part of biodiversity) seem to be more abundant in extensively than conventionally used grassland. Therefore, predation pressure which is a general problem for ground-breeding birds in large parts of Germany might be additionally boosted in conservation areas. The resulting conflict is not yet solved.

What are the remaining gaps and what measures will your country do to address these gaps?

- Further research addressing the role of small mammals and the influence of certain agricultural practices and AEM on their populations is necessary.

6.2.1 Comparative ecological studies.

Have there been any comparative studies carried out on the population dynamics, habitat requirements, effects of habitat changes and causes of decline in your country in collaboration with other Range States?

X Yes ☐ No ☐ Not applicable[1]

Please, provide a list of on-going and completed studies with references if results are already published

- See 2008 report!

What can be learned from these studies?

- Bustard-friendly habitats essentially need low intensity farming practices.
- Habitats modified by human land-use are more attractive for Great Bustards than natural steppe habitats.
- Breeding densities of bustard populations are highest in fallow or extensively used arable land.
- Fallow-land is most attractive and suitable for Great Bustards in the first one or two years.
- Stable or increasing populations with sustainable reproduction rates exist only in landscapes with low predation pressure.
- Predation management by professional hunters may be an alternative land-use approach and can markedly raise bustard populations.
- German bustard habitats are not as wide and open as in other regions. Consequently, measures were taken to improve this habitat feature, mainly by cutting poplar windbreaks.
- Losses of migratory birds mainly caused by power lines and hunting

What are the remaining gaps where the Memorandum of Understanding could assist?

- Predation pressure evidently is a problem for a lot of ground-breeding bird species in central Europe. The Great Bustard could be used as a flagship species not only in habitat but also predation management. This should be addressed by comparative scientific studies to better understand the phenomenon and its environmental context but also by joint practical attempts to solve the existing problems.
- Since rabies vaccination is at least a part of the problem it should be legitimate to take chemical or biological methods of fertility control into consideration in the framework of predation management.

6.2.2 Studies on mortality factors.
Are the causes of Great Bustard mortality understood in your country?

☐ Yes X Partially ☐ No ☐ Not applicable[1]

Please, provide a list of on-going and completed studies with references if results are already published.

- Running Great Bustard monitoring scheme in combination with a Brandenburg state monitoring on reasons of mortality in large bird species (incl. post-mortem investigations).
- Post-release monitoring of captive-reared juveniles incl. colour-ringing and radio-tracking.
- Power-line and wind-farm surveys.
- latest paper: LANGGEMACH, T., P. SÖMMER, B. BLOCK & T. DÜRR (2009): Langzeituntersuchungen zu den Verlustursachen bei Greifvögeln, Eulen und anderen Vogelarten in Brandenburg. Populationsökologie Greifvogel- und Eulenarten **6:** 27-46.
- For more references see report 2008!

What can be learned from these studies?

- In juveniles radio-tracking provides a good data base (cf. 4.3).
- Mortality in juveniles is mainly caused by predators. After November, the numbers usually remain stable over the winter.
- Main problems for adults are power-lines and baler-twine. Both have been addressed by several conservation and awareness campaigns. So far, there are no bustard casualties known at wind-farms.
- About 70-80 % of adult birds and juvenile males after their first winter disappear without being found. Mainly in females there is often a striking difference between spring and autumn numbers possibly caused by predation on the nest or farming measures.
- Mortality by White-tailed Eagles is an increasing problem for wild bustards (adults and juveniles).

What are the remaining gaps and what measures will your country do to address these gaps?

- Adult mortality is not yet sufficiently understood (see above).
- Losses of broods and breeding females due to agriculture may be sometimes concealed by the farmers.
- Continuing monitoring and research will give answers to open questions in the future (e. g. first two females got a satellite transmitter - one adult, one last-year bird).

6.2.3 Investigation of factors limiting breeding success.
Are the factors limiting breeding success in core populations understood in your country?

☐ Yes X Partially ☐ No ☐ Not applicable[6]

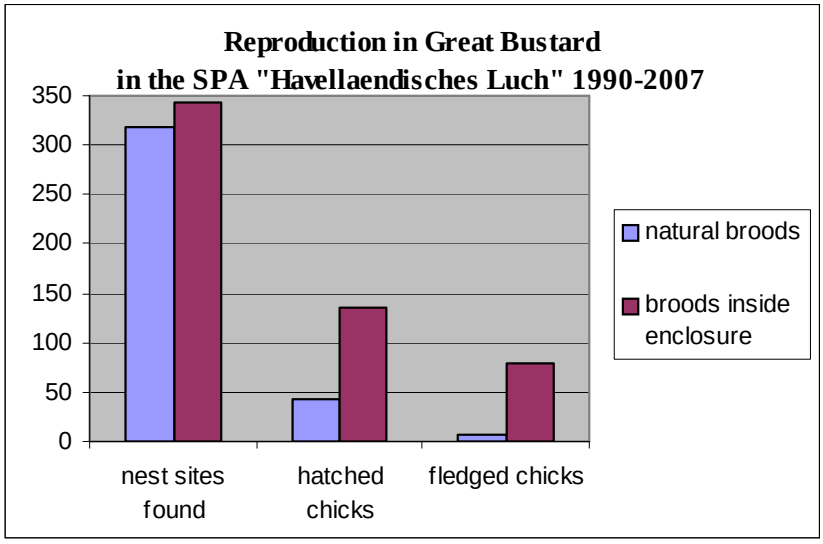
Please, provide a list of on-going and completed studies with references if results are already published

- LITZBARSKI, B. & H. (1999): Zur Fortpflanzungsbiologie der Großtrappe (*Otis tarda* L.) in Brandenburg. Otis **7:** 122-133.
- LITZBARSKI, B. & H. (2008): Untersuchungen zum Bruterfolg des Kiebitz (*Vanellus vanellus*) im Havelland – ein Beitrag zur Prädation im Lebensraum der Großtrappen. Otis **15**: 77-88.
- Predation overview for Germany in FLADE, M., V. DIERSCHKE & T. LANGGEMACH (eds.) (2005): Prädation und der Schutz bodenbrütender Vogelarten. Vogelwelt **126:** 259-384.

[6] Only for breeding countries.

What can be learned from these studies?

- The breeding success in the German Great Bustard population is much to low for a long-term survival.
- The main limiting factor is predation – in Great Bustards as well as in a lot of other ground-breeding bird species.
- In most studies on ground-breeding birds, predatory mammals account for the majority of lost clutches (most often between 70 and 80 %). Juveniles are threatened by a mixture of mammals and birds.
- Fox-free areas that are fenced-off proved to be successful source habitats (see fig.) even if Ravens and Hooded Crows cause losses of broods there.



- The current success of predatory mammals is not only a result of rabies vaccination.
- Predation has to be considered in the context of a variety of environmental factors.

What are the remaining gaps and what measures are you going to take to address these gaps?

- So far, the details of the current success of predator species are not fully understood.
- The role of small mammals and the influence of different farming practices on small mammal populations are insufficiently understood.
- Predation and its environmental implications have to be addressed by further studies.
- There is urgent need in basic research on non-lethal control of predators, mainly foxes and neozoons (chemical fertility control, conditioned taste aversion etc.). Parallel to that, ethical discussion about this kind of wildlife management has to be continued.

6.2.4 Studies on migration.

Were there any studies on migration routes and wintering places carried out in your country?

X Yes ☐ Partially ☐ No ☐ Not applicable[1]

Where are the key sites and what is the size of the population they support?

- Wintering places of the resident population usually are inside or near the three breeding areas, hardly more than 10-20 km away (data obtained by observation, radio-tracking and colour-ringing).
- Mainly male birds in the 2nd calendar year disperse over larger distances. Due to colour ringing, some are reported after chance observations.
- There were two consecutive winter flights 2009/10 and 2010/11 after a long interval without such (since 1986). German bustards flew to western Germany, Belgium and The Netherlands. New considerations about climate change show that the period of warm winters might be over possibly leading to more winter flights in the future (cf. FLADE, M. 2012: Voegel und die übersehene Klimawende: Wenn Prognose auf Wirklichkeit trifft. Vogelwarte **50:** 267-269).

Do you have any knowledge about the origin of these birds supported by ringing or other marking methods?

- Yes, in the majority of cases.
- Identification of the birds by colour-rings and radio-transmitters.
- Monitoring over the whole year (and not on census days only) allows classification of flocks in many cases even without ring identification.

What are the remaining gaps and what measures will your country do to address these gaps?

- Flocks of adults sometimes disappear in summer / early autumn. Likewise, there is lacking knowledge of the whereabouts of many 1st and 2nd year males; the same is true for birds flying westwards during harsh winters. This results in lacking knowledge on potential hazards in the respective periods and locations.
- Back-pack transmitters with a longer life-span (2008, 2009) should face these gaps but were connected with reduced survival of the marked birds. This is contradictory to Spanish results which may be explained by the fact that in Spain wild-born chicks are marked, in Germany however hand-reared birds.
- There is hope that the ornithological information network will further improve (e. g. by the internet forum "Ornitho.de" introduced in 2011) leading to more and quicker reports of birds away from the known bustard areas.

7. Training of staff working in conservation bodies

Is there any mechanism in place in your country to share information on biological characteristics and living requirements of Great Bustard, legal matters, census techniques and management practices to personnel working regularly with the species? ☐ Yes X No ☐ Not applicable[1]

- Not relevant, since the staff is more or less stable for many years.

If yes, please describe it.

Have personnel dealing with Great Bustard participated in any exchange programme in other Range States?
X Yes ☐ No ☐ Not applicable[1]

If yes, please give details on number of staff involved, country visited and how the lessons were applied in your country.

- Some of the staff are more or less regularly in contact to Great Bustard projects abroad, e. g. the Russian project or the re-introduction project in England.
- Newly obtained experiences are discussed in the staff and afterwards involved in the conservation strategy if regarded as helpful.
- For cross-boundary collaboration see also 2008 report (6.2.1)!

8. Increasing awareness of the need to protect Great Bustards and their habitat

What measures have been taken to increase the awareness about the protection needs of the species and its habitat in your country since signing the Memorandum of Understanding?

- Intensive collaboration with farmers and hunters,
- Contacts to politicians and stakeholders of land-users,
- Awareness campaigns via the media, exhibitions, leaflets and brochures,
- Visitor centres in all three Great Bustard areas,
- Guided tours for the public, observation towers.

Do farmers, shepherds, political decision makers and local and regional authorities support Great Bustard conservation? ☐ Yes X Partially ☐ No

What are the remaining gaps or problems and how are you going to address them?

- Energy crop cultivation is much better subsidized than AEM and thus much more attractive. Awareness campaigns cannot solve this conflict.
- Filling local people with enthusiasm is much more difficult than guests that come from far away.

9. Economic measures

Have there been any initiatives taken to develop economic activities that are in line with the conservation requirements of Great Bustard in your country?

☐ Yes X Partially ☐ No ☐ Not applicable[1]

What percentage of the population is covered in total by these measures?

☐ All (>75%)
X Most (50-75%)
☐ Some (10-49%)
☐ Little (<10%)
☐ None
☐ Not applicable

How effective were these measures?

X Effective (more than 50% of the targeted area is managed according to the species' needs)
☐ Partially effective (10–49% of the targeted area is managed according to the species' needs)
☐ Ineffective (less than 10% according to the species' needs)
☐ Not applicable[1]

10. Threats

Please, fill in the table below on main threats to the species in your country. Use the threat scores categories below to quantify their significance at national level. Please, provide an explanation on what basis you have assigned the threat score and preferably provide reference. Add additional lines, if necessary.

Threat scores:

Critical:	a factor causing or likely to cause **very rapid declines** (>30% over 10 years).
High:	a factor causing or likely to cause **rapid declines** (20-30% over 10 years).
Medium:	a factor causing or likely to cause relatively **slow, but significant, declines** (10-20% over 10 years.
Low:	a factor causing or likely to cause **fluctuations.**
Local:	a factor causing local declines but likely to cause **negligible declines at population level.**
Unknown:	a factor that is likely to affect the species but it is unknown to what extent.

Threat name	Threat score	Explanation and reference
Habitat loss	High	Increasing cultivation of maize as energy crop. Loss of areas outside the SPAs, mainly by wind mills on migration routes.
Losses of eggs and chicks	Critical	The probability of survival of the population completely depends on the areas fenced-off and reinforcement.
Predation	Critical	Offspring outside fenced areas near Zero (9 chicks fledged between 1990 and 2012). Adult male mortality due to White-tailed Eagles could become critical as well in the future.
Collision with powerlines	Medium	12 birds found since 2001
Human disturbance	Local	Mainly outside conservation areas; sometimes disturbances inside due to air traffic
Pesticides	Unknown	Toxicological findings did not reveal any problem (LITZBARSKI, B. 1997: Zum Pestizidgehalt in Eiern, Küken und erwachsenen Tieren der Großtrappe *Otis tarda*. Natursch. Landschaftspfl. Brandenburg **5:** 107-112) but food chain might be affected outside conservation areas.
Illegal hunting	Unknown	One case in 2010 (after an interval of >20 years).
Others (specify)	Low	Sometimes bustards get entangled in baler-twine with leading to injury and death.

PART II. COUNTRY-SPECIFIC ACTIONS

Please report on the implementation of the country-specific actions listed for your country in Part II of the Action Plan and provide information if that is not already covered by your answers under Part I. Please describe not only the measures taken but also their impact on Great Bustard or its habitat in the context of the objectives of the Memorandum of Understanding and the Action Plan. Where you have already answered on country-specific actions in Part I, please only add a reference to the relevant answer here.