

**MEMORANDUM OF UNDERSTANDING THE MIDDLE-EUROPEAN
POPULATION OF THE GREAT BUSTARD**

GERMAN NATIONAL REPORT 2008

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

NGO "Foerdereverein Grosstrappenschutz e. V." (e. V. = registered society)
Ministerium für Landwirtschaft und Umwelt Sachsen-Anhalt (Ministry for Agriculture and Environment Saxony-Anhalt)
Landesamt für Umweltschutz Sachsen-Anhalt, Staatliche Vogelschutzwarte (Saxony-Anhalt State Bird Conservation Centre)

Reports submitted to date:

First: 2004 (1990-2003)
Second: 2008 (this one)

Period covered by this report

01.01.2004 – 31.12.2007

Memorandum in effect in country since:

September 2002

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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?

Yes No

A work programme is existent in the federal state of Brandenburg but not in the state of Saxony-Anhalt which is responsible for about 20 % of the German population. There is no national work programme since the legal responsibility for nature conservation 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
<input type="checkbox"/> Fully (>75%) <input checked="" type="checkbox"/> High (50-75%) <input type="checkbox"/> Medium (10-49%) <input type="checkbox"/> Low (<10%) <input type="checkbox"/> None <input type="checkbox"/> Not applicable ¹	<input checked="" type="checkbox"/> Fully (>75%) <input type="checkbox"/> High (50-75%) <input type="checkbox"/> Medium (10-49%) <input type="checkbox"/> Low (<10%) <input type="checkbox"/> None <input type="checkbox"/> 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).
- Both of the SPAs in Brandenburg are nature conservation areas under 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, extensive farming practices and maintenance/improvement of the habitat suitability,
- Promotion of extensive farming (agri-environmental schemes, organic farming),
- Predation management,
- Reinforcement programme,
- Public awareness campaigns,
- Monitoring of and scientific investigations on Great Bustards and their habitat in the framework of the running extensification programme.

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

Where are the remaining gaps?

- So far there are lacking solutions for the problem of high predation pressure on clutches, juveniles and adults in the three Great Bustard SPAs.
- The SPA “Fiener Bruch” is not yet adequately protected and managed. For the Brandenburg part a management plan is in preparation. In the Saxony-Anhalt part there is no management plan existing or planned, no staff and no special agri-environmental scheme. Monitoring and a limited amount of conservation measures there are carried out by the NGO “Foerderverein Grosstrappenschutz e. V.”

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

Yes No Not applicable²

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.
- Mainly inside SPAs birds play a considerable role in landscape planning (roads, windmills etc.). Whereas designated Great Bustard SPAs are respected in this context, flyways between these and areas where bustards are absent at the moment are not so. At best they may take benefit from side-effects of conservation measures and planning in favour of other species (e. g. resting cranes). The wind-energy - plan for the region Havelland-Flaeming with the remaining three Great Bustard areas, flyways between and potential sites, too, did not mention the Memorandum of Understanding.

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 the 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 their abundance significantly decreased since 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%)

Little (<10%) There is only a small (unknown) percentage of breeding attempts outside conservation areas.

- Not at all
- Not applicable¹

Are recently (over the last 20 years) abandoned Great Bustard breeding habitats mapped in your country?

Yes No Not applicable¹

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

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

- Common extensification schemes (agricultural 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? Yes No Not applicable¹

Is there any aspect of the existing legislation on impact assessment that limits its effective application to prevent fragmentation of Great Bustard habitats? Yes No Not applicable¹

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 the conservation areas. At present, there are two potential hazards to the bustard population:
 - 1) a highway planned across the corridor between the SPAs “Belziger Landschaftswiesen” and “Fiener Bruch” which is regularly used by a considerable number of bustards (about 50 % of the German population),
 - 2) wind-farms built and planned within the flyways between all three Great Bustard areas.

Have there been any such projects implemented in any Great Bustard habitat in your country since signing this Memorandum of Understanding? Yes No Not applicable¹

- “Yes”, if flyways are considered as part of the habitat.
- An earlier “accident” was described in the last report, already: Despite existing environmental impact assessment twenty wind mills were built very close to the SPA "Fiener Bruch" within a regular wintering site and occasional breeding area in 2003.

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

Monitoring was and is still carried out at the wind-farm near the SPA “Fiener Bruch”. Carcass monitoring under the windmills proved that several bird species collided with the windmills but so far no single bustard. In the course of the monitoring of the bustards’ behaviour it turned out that the wind-farm plus an area of about 1000 m around the wind-farm is avoided by the bustards. Very rarely 1-2 single females were seen inside the wind-farm – possibly birds that used to breed in this area till 2003 as shown by a nest and a female with offspring in 2003.

2. Prevention of hunting, disturbance and other threats

2.1 Hunting.

Is Great Bustard afforded strict legal protection in your country? 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 have a year-round closed 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).
- No additional restrictions in Saxony-Anhalt.

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:

- Fully (>75%)
 Most (50-75%)
 Some (10-49%)
 Little (<10%)
 Not at all
 Not applicable¹

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?

Brandenburg:

- 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 outside the conservation areas.

Saxony-Anhalt:

- Access forbidden in a 143 ha nature conservation area,
- Unsuccessful attempts to guide air traffic.

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%)
 Most (50-75%)
 Some (10-49%)
 Little (<10%)
 Not at all
 Not applicable¹

2.3.1 Prevention of predation.

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

- During the last decade predation more and more became 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 in 5 areas of altogether 75 ha in size that are fenced-off to exclude larger ground predators.

What are the main predator species?

- Eggs: fox and raven, to a lesser extent badger and racoon-dog, possibly 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, to a lesser extent White-tailed Eagles the abundance of which is increasing resulting in more encounters with bustards.

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

- Intensive hunting of foxes and neozoons forced by incentives over ten years proved to be unsuccessful in terms of the number of foxes present and predation pressure on clutches and juveniles; possibly successful considering female mortality but data insufficient.
- After ceasing financial support in 2002 fox hunting markedly decreased (further subsidy for racoon-dog hunting is granted by the NGO "Foerdereverein Grosstrappenschutz" for scientific reasons).
- Professional hunting is supposed to be more successful than recreational hunting under the present legal circumstances.
- Fencing of areas 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 and mutual disturbances between females due to their high abundance.
- 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.
- First attempts to condition taste aversion of ravens by prepared eggs failed due to the lack of an optimal agent and other negative impact factors. Additionally there are legal limitations.
- Unsolved problem: losses of juveniles after releasing into the wild by attacks of White-tailed Eagles.

How effective were these measures?

- Effective (predation reduced by more than 50%)
- Partially effective (predation reduced by 10–49%, enclosures being most successful)
- Less effective (predation reduced by less than 10%)
- Not applicable¹

2.3.2 Adoption of measures for power lines.

What is the significance of collision with power lines in your country?

- Altogether 9 casualties since 1990.

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

- Several wires are underground meanwhile.
- Current attempts to get energy companies more active in laying wires under ground (20 kV) and marking wires (110-380 kV) in the wider bustard range (the latter so far without success).
- No measures in Saxony-Anhalt.

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

- about 80 %

How effective were these measures?

- Effective (collision with power lines reduced by more than 50%)
 Partially effective (collision with power lines reduced by 10–49%)
 Ineffective (collision with power lines reduced by less than 10%)
 Not applicable¹

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 400 ha due to building the wind-farm in Zitz at the border to the SPA “Fiener Bruch”,
- About 2000 ha wind industry in the Jueterbog area which is irregularly used by bustards (last observation: 4 females in March 2008).
- The western part of the SPA “Fiener Bruch” (state of Saxony-Anhalt) was subject of a LIFE project in the 1990s but nearly completely returned to conventional farming afterwards.
- The SPA “Zerbster Land”, a former stronghold of Great Bustards in Saxony-Anhalt, is completely unsuitable for breeding bustards meanwhile due to intensive agriculture.

What is the size of the populations affected?

- In total 18-20 individuals for the first three factors mentioned above.
- The last breeding attempt in the SPA “Zerbster Land” was in the early 1990s, so no population was affected after signing the MoU.

Were these habitat losses compensated? Yes Partially No Not applicable¹

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,
 - erection of two fox-free enclosures (13 and 16 ha) as a refuge for free-living females in the framework of the predation management strategy.

Were these measures effective? Yes Partially No Not applicable¹

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) and in winter (rape). Chances of breeding success are better due to reduced disturbances by farming measures. Regarding the breeding success, these positive results are more or less neutralised by high predation pressure.
- Compensation of the barricade effect 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? 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 sole right to acquire carcasses in their own hunting area.
- The right to acquire carcasses enables unchecked manipulation beyond legality (e. g. hunters are obliged to kill injured game incl. threatened species).
- Due to the lack of official control there is no imagination if or not this is actually a problem.

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.
- An official permit of the conservation authority is necessary (if not the authority itself is running the programme as in Germany) and additionally permissions of the hunters in every hunting area involved.
- In Germany, disturbed clutches and early clutches usually doomed to fail due to predation are taken for artificial incubation and reinforcement of the population (see below).

4. Recovery measures

4.1 Captive breeding* in emergency situations.

Is captive breeding playing any role in Great Bustard conservation in your country? 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 from
 - broods that are disturbed, mainly by farming measures,
 - clutches without chance of success (e. g. near fox dens or ravens' nests),
 - early clutches usually doomed to fail due to predation as revealed by the running monitoring scheme.
- Taking the eggs strictly follows a system of decision criteria in each case.
- The captive breeding station 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 captive breeding programme is carried out by 5 persons.

4.2 Reintroduction.

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

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

4.3 Monitoring of the success of release programmes.

Are captive reared birds released in your country? 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?

- Releasing birds from the captive breeding programme delayed the population decline in the 1980s and 1990s, saved the species from extinction and has been contributing to the positive population trend for the last ten years.

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

- Monitoring data proved that most of the birds show normal behaviour patterns and are able to survive, to adapt in their release-areas and to breed there later on. There is no evidence that insemination rates of these birds are lower than in wild birds.
- Annual survival rates until the next spring varied between 18 and 53 % 1998-2007 with an average of 32 %.
- Whereas the breeding success is mainly limited by ground predators, the survival of released birds is more dependent on birds of prey.
- During the last decade White-tailed Eagles more and more appeared as predators of released bustards accounting for at least 51 % and possibly >60 % of the mortality (telemetry data). Today's White-tailed Eagle population in Germany is threefold that of 1990; so the probability of encounters has been markedly increasing.
- The presence of eagles not only causes direct losses of individuals but also hinders the integration of juveniles into the wild population since wild birds try to escape the eagles to remote areas whereas the released birds are unable to do that efficiently. Additionally, the groups of juveniles themselves are disrupted if eagles are steadily present.

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

Effective (the survival is about the same as of the wild ones)

Partially effective (the survival rate is lower than 75% of the wild birds)

Ineffective (the survival is less than 25% of wild birds)

Not applicable³

5. Cross-border conservation measure

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

Yes No Not applicable⁴

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 "Foerderverein Großtrappenschutz" were described in the last report (see also this report 6.2.1).
- Afterwards there was more informal interchange with partners abroad than concrete 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?

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?

- All (>75%)
 Most (50-75%)
 Some (10-49%)
 Little (<10%)
 None
 Not applicable¹

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

Breeding/resident population only. Population size in winter 2007/08: _____ Non-breeding population (on passage, wintering)

No. of adult males: 34

No. of adult males: _____

No. of females: 64

No. of females: _____

No. immature males: 6 (out of 2007)

No. immature males: _____

Trend: Declined by ___% over the last 10 years
 Stable
 Increased by 86 % over the last 10 years

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?

- Yes Partially No Not applicable¹

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" only, standing in for the other areas. The monitoring comprises

- plant communities at control plots,
- selected invertebrate groups (species, activity), for other groups merely sporadic samples,
- small mammals (abundance, Barn Owl pellets),
- breeding birds (control plots for common breeding birds, complete censuses of rare birds).

Additional (indirect) data are given by analyses of stomach contents of bustards found dead: abundance and availability of invertebrates.

BLOCK, B., P. BLOCK, W. JASCHKE, B. LITZBARSKI, H. LITZBARSKI & S. PETRICK (1993):

Komplexer Artenschutz durch extensive Landwirtschaft im Rahmen des Schutzprojektes "Großtrappe". Natur u. Landschaft **68**: 565-576.

LITZBARSKI, H., W. JASCHKE & A. SCHÖPS (1993):

Zur ökologischen Wertigkeit von Ackerbrachen. Natursch. Landschaftspfl. Brandenburg **3**: 26-30.

LITZBARSKI, H. & D. EICHSTÄDT (1993):

Naturschutz und Landwirtschaft im Großtrappenschongebiet Buckow, Kreis Rathenow. Natursch. Landschaftspfl. Brandenburg **2**: 37-45.

LITZBARSKI, H. (1995):

Extensive Landnutzung, Landschaftspflege und -gestaltung im Schutzprojekt "Großtrappe". In SCHWÖPPE, W. & TERLUTTER, H. (Hrsg.): NATURA 2000 - Gibt es Zukunftsperspektiven für Naturwerte in der europäischen Kulturlandschaft?: 93-103.

⁵ Only for countries where the species occurs regularly.

- JASCHKE, W. (1996):
Zum Vorkommen und Schutz gefährdeter Ackerwildkräuter auf Ackerbrachen im NSG Havelländisches Luch unter besonderer Berücksichtigung der Gattung *Filago*. Verh. Bot. Ver. Berlin u. Brandenb **129**: 113-120.
- LITZBARSKI, B. & H. LITZBARSKI (1996):
Zur Situation der Großtrappe *Otis tarda* in Deutschland. Vogelwelt **117**: 213-224.
- LITZBARSKI, B. & H. LITZBARSKI (1996):
Der Einfluß von Habitatstruktur und Entomofauna auf die Kükenaufzucht bei der Großtrappe (*Otis tarda* L., 1758). Natursch. Landschaftspf. Brandenburg **5**: 59-64.
- PETRICK, S. (1996):
Zur Brutplatzwahl der Großtrappe (*Otis tarda* L., 1758) im Land Brandenburg. Natursch. Landschaftspf. Brandenburg **5**: 99-102.
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Zu faunistischen Veränderungen auf ehemaligem Saatgrasland im NSG Havelländisches Luch. Natursch. Landschaftspf. Brandenburg **7**: 236-239.
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Das Europäische Vogelschutzgebiet (SPA) Belziger Landschaftswiesen. Natursch. Landschaftspf. Brandenburg **7**: 182-184.
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- RYSLAVY, T. & T. BICH (1999):
Das Fiener Bruch - eine schützenswerte Kulturlandschaft. Natursch. Landschaftspf. Brandenburg **8**: 4-12.
- JASCHKE, W. (2001):
Zur Bedeutung von „Streuwiesen“ - Diskussionsbeitrag zur Notwendigkeit konsequenter Grünlandextensivierung (im NSG Havelländisches Luch). Natursch. Landschaftspf. Brandenb. **10**: 92-98.
- PÜRCKHAUER, C. (2002):
Monitoring zur Entwicklung der Vegetation und der Arthropodenfauna im Rahmen von Extensivierungsmaßnahmen auf Ersatzflächen des ICE-Projektes im NSG Havelländisches Luch. Abschlussbericht der Untersuchungen 1997-2002. Förderverein Großtrappenschutz, unpubl.
- HAASE, P., B. LITZBARSKI, H. LITZBARSKI & RYSLAVY, T. (2005):
Das Europäische Vogelschutzgebiet (SPA) Unteres Rhinluch / Dreetzer See, Havelländisches Luch und Belziger Landschaftswiesen. Natursch. Landschaftspf. Brandenburg **14**: 82-85.
- RYSLAVY, T. & T. BICH (2005):
Das Europäische Vogelschutzgebiet (SPA) Fiener Bruch. Natursch. Landschaftspf. Brandenburg **14**: 134-136.

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 (width and amount) and biodiversity in total.
- Small mammals (as a part of biodiversity) take benefit, too, and seem to be more abundant in extensively used grassland than in conventionally used one. 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.
- There is urgent need for habitat management in Saxony-Anhalt.

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

- See above.
- In order to better understand the predation mechanisms and to cope with these more efficiently in the future, two whole-German conferences were carried out the results of which are published: FLADE, M., V. DIERSCHKE & T. LANGGEMACH (eds.) (2005): Prädation und der Schutz bodenbrütender Vogelarten. Vogelwelt **126**: 259-384.
- Further research addressing the role of small mammals and the influence of certain agricultural practices on their populations is running, however, there is urgent need to strengthen these efforts.

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?

Yes No Not applicable¹

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

- Hungary & Slovakia (1990s): support of artificial insemination and breeding,
- Spain (1990-1993): basic research with recommendations for conservation and management
- Russia, lower Volga-region (1998-2000): basic research, survey of population size and structure, risk assessment (land use, power lines, hunting schemes, oil industry), support of conservation, management and public awareness, satellite-tracking to identify migration routes and wintering areas and to initiate conservation measures there,
- Ukraine (2000-2002): identifying wintering areas of the Volga population, survey of wintering population including risk assessment (hunting, power lines), supporting public awareness; (2002-2003): population survey including breeding performance and risk assessment (LITZBARSKI, H. & H. WATZKE (eds.) (2007): Great Bustards in Russia and Ukraine. Bustard Studies **6**),
- Mongolia (2001-2004): survey of population size and structure, breeding performance mainly for conservation and management reasons.

What can be learned from these studies?

- Bustard friendly habitats essentially need low intensity farming practices.
- Habitats modified by human land-use bear higher attractiveness 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 wind breaks.

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 management but also in coping with the predation issue. Therefore, 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 Partially No Not applicable¹

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.

LANGGEMACH, T. (1997):

Stromschlag oder Leitungsanflug? - Erfahrungen mit Großvogelopfern in Brandenburg. Vogel u. Umwelt **9** (Sonderheft: Vögel und Freileitungen): 167-176.

LANGGEMACH, T. & W. BÖHMER (1997):

Gefährdung und Schutz von Großvögeln an Freileitungen in Brandenburg. Natursch. Landschaftspf. Brandenb. **6**: 82-89.

LANGGEMACH, T. (1999):

Vogelverluste durch Erntebindgarn - ein kaum bekanntes Problem. Otis **7**: 56-69.

RYSLAVY, T. & T. BICH (2001):

Großtrappenverlust im Europäischen Vogelschutzgebiet Fiener Bruch. Natursch. Landschaftspf. Brandenburg **10**: 180-181.

LANGGEMACH, T., P. SÖMMER, B. BLOCK & T. DÜRR (in press):

Langzeituntersuchungen zu den Verlustursachen bei Greifvögeln, Eulen und anderen Vogelarten in Brandenburg. Populationsökologie Greifvogel- und Eulenarten **6**: ...

What can be learned from these studies?

- In juveniles radio-tracking provides a good data base (cf. 4.3). So far, there is no experience with radio-tracking adults in Germany.
- Mortality in juveniles is mainly caused by predators. However, after November there are hardly any further losses due to predation and the numbers usually remain stable over the winter.
- Problems of adults are related to 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.
- However, about 70-80 % of adult birds and juvenile males after their first winter disappear without being found. Mainly in females in many years there is a striking difference between spring and autumn numbers possibly caused by losses on the nest due to predation or farming measures.
- There is an increasing number of losses of wild bustards (adults and juveniles) due to White-tailed eagle attacks.

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.
- From 2008 on back-pack transmitters are used that have a longer life-span (5-6 years) and therefore are still active in older age and during the first broods in females.
- Catching adults for fitting radio-transmitters is not planned due to potential risks of the catching methods.

6.2.3 Investigation of factors limiting breeding success.

Are the factors limiting breeding success in core populations understood in your country?

Yes Partially No Not applicable⁶

⁶ Only for breeding countries.

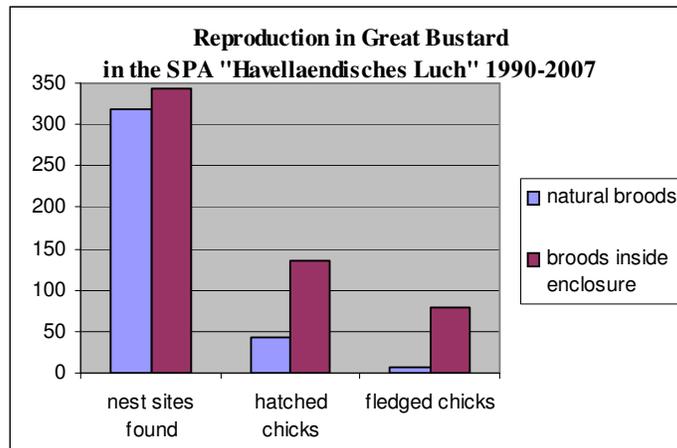
Please, provide a list of on-going and completed studies with references if results are already published
 LITZBARSKI, B. & H. (1999): Zur Fortpflanzungsbiologie der Großtrappe (*Otis tarda* L.) in Brandenburg. *Otis* **7**: 122-133.

LITZBARSKI, B. & H. (in press): Untersuchungen zum Bruterfolg des Kiebitz (*Vanellus vanellus*) im Havelland – ein Beitrag zur Prädation im Lebensraum der Großtrappen. *Otis* **15**.

Predation overview for Germany in FLADE, M., V. DIERSCHKE & T. LANGGEMACH (eds.)(2005): Prädation und der Schutz bodenbrütender Vogelarten. *Vogelwelt* **126**: 259-384.

What can be learned from these studies?

- The breeding success in the German Great Bustard population is much too 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 losses of clutches. The share of mammals is most often between 70 and 80 % of the losses.
- There is evidence that also ravens and carrion crows cause losses of broods, however the balance is much better in fenced, fox-free areas (see fig.).



- In juveniles studies on several ground-breeding bird species showed a bias towards birds of prey and corvids; however, mammals still account for a great percentage of losses.
- 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?

Yes Partially No Not applicable¹

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 and are out of control then (except observation and ringing data by chance).

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 late summer / autumn. Likewise, there is lacking knowledge of the whereabouts of many 1st and 2nd year males. Both result in lacking knowledge on potential hazards in this period.
- From 2008 on, in released birds back-pack transmitters are used that have a longer life-span (5-6 years) and may mark groups of birds in this way.
- Catching adults for fitting radio-transmitters is not planned due to potential risks of the catching methods.

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 No Not applicable¹

- 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? Yes No Not applicable¹

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

- For cross-boundary collaboration see 6.2.1
- Additionally there are regular contacts with the British re-introduction project.
- About four persons from the staff are more or less regularly in contact to one or more Great Bustard projects abroad.
- Newly obtained experiences are discussed in the staff and afterwards involved in the conservation strategy if regarded as helpful.

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 and exhibitions,
- Visitor centres in the SPAs “Havellaendisches Luch” and “Belziger Landschaftswiesen”,
- Guided tours for the public,
- Measures in the state of Saxony-Anhalt mainly on a private or NGO basis.

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

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

- Lacking support by conservation authorities and politicians in the federal state of Saxony-Anhalt.

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 Partially No Not applicable¹

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

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

How effective were these measures?

- 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 applicable¹

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	Local	Critical for the SPA "Fiener Bruch" that is not yet sufficiently covered by management measures, and for areas outside the SPAs
Losses of eggs and chicks	Critical	A PVA showed that the probability of survival completely depends on the areas fenced-off.
Predation	Critical	Offspring outside fenced areas near Zero (6 chicks fledged between 1990 and 2007)
Collision with powerlines	Low	9 birds found since 1990
Human disturbance	Local	Mainly outside conservation areas; sometimes disturbances inside due to air traffic
Pesticides	Local	Toxicological findings did not reveal any problem (LITZBARSKI, B. 1997: Zum Pestizidgehalt in Eiern, Küken und erwachsenen Tieren der Großtrappe Otis tarda. Natursch. Landschaftspf. Brandenburg 5: 107-112) but food chain might be affected outside conservation areas.
Illegal hunting	Unknown	Last illegal hunting became evident >20 years ago.
Others (specify)	Low	Sometimes bustards get entangled in baler-twine with casualties in some cases

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.