

NATIONAL REPORT
ON THE IMPLEMENTATION OF THE GREAT BUSTARD (*OTIS TARDA*) MOU
IN HUNGARY
(2001-2004)

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1. Habitat protection

1.1 Designation of protected areas.

Most of the leks and breeding areas are legally protected, however a significant extent of the habitats, mostly arable lands important for the Great Bustard, are not included in the traditional protected area system. The extent of protected Great Bustard habitats vary regionally. In the Kiskunság region, one of the strongholds of the species, the protected areas cover almost the whole area of natural habitats, but in other regions, like in the Bihar only 24% is protected, and in the Kisalföld the habitat is not protected legally. Regarding protected areas nature conservation provisions are identified in management plans. The plan documentation includes 3 phases, from which the so-called “C” documentation identifies obligations, restrictions and prohibitions for the given protected area. This documentation in a form of ministerial decree even has legal effect.

Besides protected areas Natura 2000 sites also have been designated. This network, together with the protected areas, covers almost the whole distribution area of the Great Bustard in Hungary – including agricultural lands as well.

Large non-protected areas used by the Great Bustard fall under the scope of the Environmentally Sensitive Areas scheme (see 1.2) that on one hand creates a possibility to draw contracts with farmers and thus ensure Great Bustard friendly farming, and on the other hand gives certain powers to national park directorates to control farming even in areas not covered by contracts (e.g. the change of land use from grassland to arable land is subject to approval by the national park directorate).

1.2 Measures taken to ensure the maintenance of Great Bustard habitats outside of protected areas.

Since the Great Bustard has adapted to agricultural lands in the last decades, the maintenance of these habitats using farming methods containing environmental and nature conservation aspects is inevitable in bustard protection.

The maintenance of habitats outside the protected areas is mostly realized in the ESA (Environmentally Sensitive Areas) system. The ESA scheme was established in 2002 aiming to promote environmental friendly agricultural activities. In this system the farmers voluntarily make a contract with the state, and upon realizing the management and technological prescriptions laid down in the contract, they receive annual compensation payment for the loss of yield and other income due to restrictions. In the first two years of the ESA program pilot project areas have been selected, and designated for the protection of strictly protected bird species, five of them particularly for the Great Bustard. The total selected area is 276 845 hectares at present, from this 31 429 hectare land gained subsidies in 2003.

The project titles regarding Great Bustard conservation are 1) arable farming with bustard protection and 2) alfalfa with bustard protection which contain management prescriptions –*inter alia*– as follows:

- crop rotation (with determined plant ratios)
- set-aside
- conservation of existing alleys, forest belts, aged trees

- restrictions in the use of fertilizers, herbicides and fungicides
- prohibition of the use of highly toxic pesticides
- prohibition of soil loosening, amelioration, draining and irrigation activities
- restricted cutting (determined harvesting periods, methods and techniques)
- application of game deterring chain during harvesting
- protective zone around the nests
- reporting on the discovery of nests
- determined ploughing measures in areas with fire risk.

1.3 Measures taken to avoid fragmentation of Great Bustard habitats.

Habitat fragmentation is not a serious problem in Hungary. Most of the Great Bustard habitats are situated in protected areas.

Activities like construction of motorways, highways, railways, public roads longer than 10 km, 220 kV power lines longer than 15 km are subject to obligatory detailed environmental impact assessment. Other activities, like redistribution of land property (in case of protected areas, ecological corridors or lands larger than 300 ha), alteration of intensive agricultural land-use, melioration, establishment of animal husbandry facilities in certain cases, construction of 120 kV power lines, and 2 MW windturbines (200 kW in protected areas) may be subject to an EIA – upon the decision of the environmental authority.

No cases are known where an activity / establishment would have threatened the Great Bustard, and the nature conservation aspects were not taken into consideration.

2. Prevention of hunting, disturbance and other threats

2.1 Hunting.

The hunting of Great Bustard has been prohibited since 1970 in Hungary- the year the species gained legal protected status. Before this date hunting for cocks was allowed in springtime.

2.2 Prevention of disturbance.

The most serious disturbance is caused by different agricultural works in or nearby Great Bustard habitats. In case of protected areas the management plans determine the management provisions and restrictions, in ESA habitats the contract lays down the precise management practices. The individuals are mostly exposed to disturbance during breeding / nesting time. To prevent this row cultivation cannot be done after 1st May, the first cutting of alfalfa must be done till April 25th, and the second cannot be done earlier than June 15th. The cutting must be done from the center of the field outwards, and protective zones should be maintained around discovered nests.

The hunting of Roe Deer in the Great Bustard habitats in May is controlled.

In protected areas according to the management plans it is not allowed for ecotourism to go close to the display sites or to the breeding sites, and horseback-riding nearby is also prohibited. Taking photographs on Great Bustard at their breeding habitats is only rarely allowed.

It was not allowed to enlarge and improve the abandoned military airport in Great Bustard habitat in the Kiskunság National Park (Bankovics 1993).

2.3.1 Prevention of predation.

Predation is one of the most important factors threatening the Great Bustard populations in Hungary. Main predator species are the Red Fox (*Vulpes vulpes*), the Hooded Crow (*Corvus corone cornix*), the Badger (*Meles meles*) and domestic animals like feral dogs and feral cats. The main predator is the Red Fox, whose population has increased significantly due to immunization programs against rabies. Hunting – with the help of gamekeepers - controls them. The population of Hooded Crow is also showing an increasing trend. Besides hunting F2 superselective poison injected in eggs is also used against them.

The deletion of Badger from the protected species list in 2001 makes prevention of its predation possible. Possibly the Magpie (*Pica pica*) and the Steppe Polecat (*Mustela eversmanni*) are also predators of the bustard, however this requires further research.

2.3.2 Adoption of measures for power lines.

There have been a few cases of power line collision of Great Bustard individuals in Hungary. Though the number of detected mortality is low, it is difficult to estimate the significance of the problem – due to the lack of capacity in monitoring the hundreds of kilometers of power lines and to the quick removal of carcasses by predators. The mortality caused by power lines is presumed to be of relevance among the threats of Great Bustards – especially in the migratory (vagrancy) period.

Direct measures taken in order to reduce mortality included burial of the most dangerous sections of electric power lines in the ground and their hiding by shelterbelts in some hazardous places. However this method can only be used for medium-voltage transmission lines and it is very costly, therefore, only a few 10 kilometers of power lines have been laid underground until present.

The indirect measures taken aim to minimize disturbance flushing the birds and potentially leading to collision. One example for these indirect measures is the prohibition of Roe Buck hunting in the courtship season.

2.3.3 Compensatory measures.

Great Bustard habitat loss has occurred in a small extension around the villages Kiskunlacháza, Dömsöd and Bugyi in the Kiskunság (outside and even inside the Kiskunság National Park) by gravel mining. These habitat losses have not been compensated yet.

3. Possession and trade

The Great Bustard is a strictly protected species in Hungary. According to Act no. LIII of 1996 on Nature Conservation in Hungary, collection, capture, killing, possession, training, exchange or sale and purchase of any individual is prohibited. Authorization shall only be granted out of nature conservation or other public interest. No exemption is granted. Some individuals are kept in captivity in Dévaványa Great Bustard Rescue Station and some in zoos in Hungary. No specimen is in private possession.

The enforcement bodies are the rangers of national park directorates.

Activities like breeding in captivity, supplementing of any population with individuals from foreign populations, the artificial exchange of genetic matter, the reintroduction or introduction and the export, import or transport of any individual are subject to authorization of the Ministry of Environment and Water.

4. Recovery measures

4.1 Captive breeding in emergency situations.

At present no captive breeding operation exists in Hungary.

Studies have been carried out on artificial breeding of Great Bustard since 1992 (Mödlinger et al, 2000). A research center had been established and was maintained by the Szent István University in Sződ holding approximately 10 individuals – all gained from rescued nests. Mixed sex groups, held between 1992-1995, did not produce fertile eggs. In 1996 a technique for artificial insemination was developed for the species. Though the egg number was doubled, the majority of the eggs had a low shape index causing high mortality of embryos. The six females laid 36 eggs of which 13 were fertile and two of them hatched. The breeding program was cancelled due to failure to achieve the expected positive results and due to accidental death of birds by predation.

4.2 Reintroduction.

No artificial reintroduction occurred, but there are abandoned areas that were managed in a manner appropriate for the Great Bustard in the future. Due to the population increase there are some areas, mostly in the Kiskunság National Park, which have been reoccupied naturally in recent times.

4.3 Monitoring of the success of release programs.

In 1978 a Great Bustard Rescue Station was established at Dévaványa. Its main goal was to collect the clutches from endangered nests situated in agricultural fields, incubate them artificially, then rear the chicks in captivity and release the young birds in early autumn - mostly in September - to the wild. Primarily the plan was to realize a 2nd generation repatriation – with establishing a parental stock from the bringing up of the saved chicks (1st generation) and releasing their offspring (2nd generation) into the wild population. Since a stable reproductive breeding stock could not be realized, the repatriation of the captive born (1st generation) birds became the practice. Firstly this was a voluntary repatriation, when the birds flew outside the fence after being able to fly. However these birds were vulnerable and were often predated, mainly by Red Foxes. The causes were twofold: the partial development of natural escaping instinct and the low possibility to join into wild flocks.

This experience led to the recognition that the emphasis should be put rather on in situ conservation activities.

Beside this the co-ordinated repatriation method gained support from the 90's.

A new method was established in 2003 by fencing around a 400 ha large area. This way the main predators like foxes –being one of the biggest threats – are closed out, but otherwise the bustards can live in a natural environment and become wild birds. Since the bustard nests are inside the fenced area the chick mortality will possibly decline. As the first experiences have shown (second season) the wild Great Bustards occupy this area continuously. Unfortunately, a high proportion of the birds released into the enclosed pen died of unclear reasons in 2003.

5. Cross-border conservation measure

Cross-border Great Bustard conservation program exists around the Austrian-Hungarian-Slovakian border for the common population found in these three countries. The society called Pannonische Gesellschaft für Grosstrappenschutz was established with the members keeping contact on a daily basis. Joint efforts include synchronic censuses and the sharing of experience on habitat management. In severe winters, such as in 2002-2003, when several Great Bustard subpopulations migrated off, Hungary tried to establish contact with conservationists in countries in the potential wintering range. Unfortunately, no Great Bustards were observed in those countries and/or we have received no response.

6. Monitoring and research

6.1.1 Monitoring of population size and population trends.

In Hungary seven topographically separated “subpopulations” exist as follows (Kiskunság, Dévaványa area, Hortobágy, Kisalföld, Bihar, Dél-Borsod, Hevesi-sík) and some sporadic habitats - with a few observed birds - like Sárrétt, Körösetétlen, Baks. The experts of the Great Bustard Working Group helped by other rangers of the national park directorates and NGOs make synchronic counts generally every year in early April. These censuses have been carried out since 1991. In the last years there also have been winter censuses in January.

In 1970, at the time of the species gaining legal protection, the national population size was at around 2 700 specimens. It increased to 3 600 specimens by 1978, but since the 80s there has been a permanent decrease. The severe winters of 1984 and 1985 caused a significant decrease of 500 specimens each. Recently a moderate increase is experienced at some subpopulations (Kiskunság, Hortobágy) mainly due to nature conservation efforts and agri-environmental schemes.

The results of national synchronic censuses by regions
1991-2003

Region/year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Kisalföld	53	49	56	60	57	80	93	86	111	89	99	106	114
Kiskunság	255	272	252	311	275	362	324	304	381	381	405	444	487
Hevesi sík	27	20	25	47	42	41	41	32	31	33	26	25	20
Borsod	50	18	20	17	22	17	11	23	12	16	15	22	22
Bihar	56	112	96	24	150	137	102	118	81	94	108	109	100
Hortobágy	160	169	88	122	139	116	147	96	92	110	92	115	115
Sárrét	242	222	335	340	378	436	370	333	318	337	370	363	337
Small populations	32	43	31	*	30	34	21	53	1	46	43	16	17
Total in Hungary	875	905	903	1021	1093	1223	1109	1045	1027	1106	1158	1200	1212

Source: Program for the protection of Great Bustard (*Otis tarda*) in Hungary, 2003

6.1.2 Monitoring of the effects of habitat management.

The management works carried out in a certain area in a given year and their results are summarized by the relevant nature conservation rangers at the regular Great Bustard Working Group meetings organized twice a year. All the management practices in different areas are discussed by the meeting and the future steps are decided.

In the experimental agricultural year of 2002/2003 permanent monitoring was carried out in the frame of the ESA system. The goal was to examine whether the Great Bustard finds more advantageous habitat conditions on the supported areas, due to consolidated farming methods, or not. The components were the monitoring of habitat preference, of population size by synchronic censuses, of nests and of plant culture preference. The two areas showing the highest number of Great Bustard individuals were within the ESA system, however drawing conclusions from this fact would be too early yet.

Monitoring of the number of individuals / plant cultures / month shows that the most preferred plant cultures are the rape, the cereals and the grass (birds used them by 15-15% at least). The alfalfa and the fallow can be of similar importance. By monitoring the monthly change of preference in plant cultures the degree of threat of different agricultural activities can be estimated and in future proportional crop rotation can be identified / altered.

6.2.1 Comparative ecological studies.

After establishing the Kiskunság National Park in 1975 regular Great Bustard management work was carried out. The relations between management practices, habitat and nutrient choice and population dynamics was studied, and as a result new management methods were established in the following years. As a consequence the bustard stock from the beginning population size of 150 birds showed a slow increase and in ten years it exceeded 200 individuals. The 2004 spring count was 442. The study of this population continued and the results were published (Bankovics 1996 and 1997).

Population studies were also carried out in Devaványa (Demeter 1995) and in the Kisalföld Region. Latter studies also discuss the role of vegetation in the distribution and reproductive biology of the Great Bustard (Farágó 1987) and the effects of hard winters on the Great Bustard population (Farágó 1990). Comparative studies include the following: Farágó, S., Ena, V., és Martínez, A. (1987): Comparison of the state of the Great Bustard stocks in Hungary and Spain In: Farágó, S. (ed.): Proceedings of the CIC Great Bustard Symposium in Budapest, on June 2nd 1987.: 51-63.

Comparative studies in collaboration with other Range States do not exist.

6.2.2 Promotion of studies on mortality factors.

Studies were carried out on mortality factors regarding the reproductive phase (see next point). The mortality factors of adult birds were not studied in detail. There are sporadic records of collision with power lines, of migration loss and of some cases of predators.

6.2.3 Investigation of factors limiting breeding success.

Detailed studies were carried out on the reproduction model of the Great Bustard (Faragó 1992). It was identified that the factors influencing fertility and population density are: first nest mortality (35%), embryo mortality (10%), chick mortality (50%) which result in 0.77 chick grown up /nest, 2nd nest mortality (50%), 2nd nest embryo mortality (50%), 2nd nest chick mortality (50%), which result in 0.29 chick grown up / nest.

According to the study in a Hungarian Great Bustard population a hen can raise an average of 0.60 chick annually. This rate is only enough for population stagnancy, but not for the increase. The main mortality factors are intensive agriculture and predation. With regard to the upper reproduction parameters, the lifetime of the population is 14.6 years.

6.2.4 Studies on migration.

Migration has not yet been studied in detail, but data exist as follows.

The Hungarian Great Bustard subpopulations are partial migrants, which means that they do not migrate every winter and when migrating not the whole population migrates.

The subpopulation existing in the Eastern part of the country migrates more regularly, because of the colder winter, to the South-Southwest. The Kiskunság subpopulation, (in the middle of the country) as it was shown in the last severe winters, remains in its breeding ground in winter or sometimes migrates a little bit West inside the country. When the population migrates outside the country their migration routes are in the direction of the Balkans and the Apennine peninsula. One Hungarian ringed bird was recovered from Albania in 1991 and small groups of birds regularly occur in Croatia. The migration period usually lasts between December and middle April. The potential wintering grounds are in the different countries of the Balkans and in Italy.

The birds remaining in the breeding ground in Hungary usually concentrate in large flocks, sometimes more than 200 birds gather on the available preferred feeding grounds mostly on rape fields.

Migration always causes damages to the population due to hunting and to collision with power lines. (The severe winter of 2003 required extra winter activities such as removing of snow cover both by snowploughs and hand, extra fodder-crop (alfalfa, rape) distribution and an extra guard had to be hired.)

7. Training of staff working in conservation bodies

There is a "Great Bustard Conservation Working Group" in Hungary existing from the early 1990s. The members of this group (about 25 experts) work mostly for the nature conservation authorities in the country. These experts are informed and trained during the regular meetings of the Working Group, held twice a year.

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

Birdlife Hungary has a Great Bustard Action Program, which includes awareness raising activity as well. The members of the local groups of Birdlife Hungary call on farmers working in Great Bustard areas, have a talk with them on the importance of Great Bustard protection and give them guidance on the necessary actions to be taken – e.g. when finding a nest. These living personal relationships between local inhabitants and local nature conservationists are very important in the awareness raising and changing of attitude towards Great Bustard protection. The people concerned get brochures containing information on the protection needs, what they have to do when finding a nest, cutting, grazing etc.

The main target group, the tractor-drivers and other machine operators get stickers with the relevant phone numbers – which they have to call immediately when finding a nest. Data sheets are also distributed among local people (shepherds, farmers, hunters, land-owners, villagers). In case of finding a nest and reporting it, they get a retrospective financial contribution – used as an incentive. Beside this, articles are published in agricultural and other local magazines, and posters are placed out on public domain information boards, in mayor's offices, in gardening shops, in pubs etc. The attitude of the concerned target group is favorable. It can be noted that generally it is easier to make an agreement with larger land-owners, than those farming on small, few hectare plots.

9. Economic measures

Economic measures for the conservation of Great Bustard comprise the measures implemented under the Environmentally Sensitive Areas scheme (see under 1.2.) and the compensation paid to farmers for reporting and saving Great Bustard nests (see 8.). Nearly 75% of the Hungarian population is covered by the ESA scheme, however the actually affected population size is smaller. State nature conservation aims to purchase the most important sites for Great Bustard (leks, breeding and wintering sites). This is one of the biggest priorities in the land purchase scheme carried out by national park directorates.

10. Threats

The conservation status of the Great Bustard has not changed in Hungary over the last ten years. It is a strictly protected species and it is among the six bird species in Hungary which have the highest nature conservation value.

According to the conservation practices, the main threats are as follows:

1. – agricultural works carried out mainly in alfalfa fields (disturbance of nests and chicks).
2. – predation, mainly by Red Fox (*Vulpes vulpes*), corvids (chiefly Hooded Crow) and stray feral carnivores – (disturbance of nests, chicks and probably the females).
3. - intensification of agriculture (decline of extensive farming practices, such as grazing, high inputs of chemicals, leading to direct poisoning and loss of food basis, irrigation, higher level of disturbance).
4. - losses caused by hard winters (migration and starvation)
5. - adverse climatic conditions during the breeding period (high rainfall).
6. - unfavorable crop rotation, decrease of winter crops and rape.
7. - loss of habitat due to infrastructure development (roads, tracks, power lines), afforestation.
8. - disturbance (chamomile pickers, roe deer hunting, ecotourism, horse-riding, military activities).

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