Conservation of Otis tarda in Hungary

Layman's Report
Basic data of the project

Beneficiary: Kiskunság National Park Directorate

Partners:
Bükk National Park Directorate
Fertő-Hanság National Park Directorate
Hortobágy National Park Directorate
Körös-Maros National Park Directorate
MME BirdLife Hungary
Tiszatáj Public Foundation
Bihar Public Foundation
ÉMÁSZ Net Ltd.
University of West-Hungary

Co-financier:
Ministry of Environment and Water

Project code: LIFE04/NAT/HU/000109
Total budget: 4,349,471 euro
EU contribution: 44.35%

The LIFE Nature fund of the European Union is a financial instrument for supporting conservational projects on Natura 2000 sites, that contribute to the EU's goal of halting the loss of biodiversity.

'Natura 2000 - Europe's nature for you'

Natura 2000 is an ecological network of protected areas in the territory of EU. Actions of recent project have been implemented on 9 Special Protection Areas (SPAs) designated for the protection of endangered bird species including the great bustard.
The main objective of the LIFE Nature project 'Conservation of Otis tarda in Hungary' was to increase the in-situ protection of this globally threatened species in Hungary and thus reach a 10% population growth in the four years of the project. The Kiskunság National Park Directorate coordinated the project as beneficiary, and besides them all nine partners actively contributed to the proper implementation of project’s actions since project commencement in 2004.

There have been nine project sites identified in the project as the most important great bustard sites in Hungary, all of them included in the Natura 2000 network as SPAs. Land purchase, habitat restoration and habitat management takes place at almost all sites to provide undisturbed territories for the bustards.

Although bustard conservation in Hungary has a history of many decades, there was a great need for the project supported by the LIFE Nature fund of EU and the Ministry of Environment and Water, since the Hungarian Great Bustard (Otis tarda) population has decreased significantly in the past few decades. The main cause of this decrease is the expansion of intensive agriculture production, but migration losses also played a crucial role in the collapse of the population. In order to stop this negative trend the necessity of a project coordinated on national level was understood and the project itself was created.
The Great Bustard is the heaviest flying bird species in Europe, the weight of old cocks can even reach 16 kilograms. The male bustard’s breast, the lower parts of its neck’s side, and the small coverts are russet, while the head and the upper parts of the neck are bluish-grey. From the gape long, bristle-like whiskers stretch backwards. Hens have significantly smaller body with a weight of 4 to 6 kg, and their colours seem to be paler. Bustards have long, massive legs, with only three fingers, which refers to their walking and running life-style.

The breeding season of great bustard starts in the end of March with an extremely spectacular mating ceremony. During display males inflate their neck, raise their tail feathers and turn their wings inside-out, so that they turn into a huge white ball visible from a bigger distance, which draws the attention of hens as well. The nesting begins in mid-April and usually lasts till the end of May, when the hen lays her 2–3 eggs into a simple pit in soil.

After 25–28 days the chicks hatch and leave the nest immediately, however the hen feeds them for about two weeks. In the beginning they only feed on small invertebrate animals, later they eat green plants, seeds of weeds and grains, insects, small rodents, just like the adult birds. In winter, when thick layer of snow covers the fields, the birds have no other choice but to migrate, if they can not reach their food.
Great Bustards are typical birds of continental grasslands of temperate climate, but their populations also inhabit arable fields. Its distribution ranges from Morocco through Russia to the estuary of Amur River, and this huge area is inhabited by 2 subspecies. In our continent its formerly continuous habitat is fragmented, and from most of the countries of Western Europe – except from Spain and Portugal – is extinct. Recently beside the strong population of the Iberian Peninsula significant populations of Great Bustard can only be found in Germany and Austria.

While in the beginning of the 20th century a spatially continuous great bustard population inhabited the Carpathian Basin, it had remarkably been decreased during the past decades, and by the beginning of the 90s the number of individuals have dropped under 1000. Although the main cause of this decrease is the expansion of intensive agriculture production, losses during its partial migration was also a serious factor in the collapse of the population.

Most important Hungarian populations remained in the Dunavölgyi-sík, in the surroundings of Dévaványa, the Bihari-sík, the Hortobágy and the Mosoni-sík. Thanks to the experiences of decades of bustard conservation work and the recent LIFE program the 1400 individuals, which can be found in Hungary today makes the strongest population in Central Europe, which is the result of the slow increasing in the last few years.
Long term subsistence of great bustard’s habitats can be ensured by the land purchase of conservation organisations. In the framework of the project four national park directorates and two public foundations for nature conservation have purchased nearly 2000 hectares of land in 8 different project areas. All parcels purchased are part of the Natura 2000 network, as SPAs and consist of the display, nesting and wintering sites and their buffer zones of key importance for bustards. As these areas are decisively significant for the survival of great bustards it is outstandingly important to keep these sites totally undisturbed in the most critical breeding season. Any disturbance during display can lead to the fail of mating, thus to laying infertile eggs. Furthermore, hens disturbed while sitting on their eggs will abandon their nest as a rule. On the purchased lands in order to avoid these unwanted effects habitat management activities have been fitted to the bustards’ life cycle, thus contribute to the growing and expansion of the populations.

Although the implementation of the action took much more time than it was envisaged, the 650 contracts signed indicate the work done, and is a real success since nearly 2000 hectares of land – 118 hectares more than it was planned originally – is managed by conservation organisations now for the benefit of bustards.
In order to increase the Hungarian Great Bustard population arable land have been converted into grasslands and alfalfa fields were created on the parcels purchased from LIFE sources, thus resulting habitat improvement on important bustard sites. Grasslands have been restored on five project sites on 573 hectares altogether, using the seeds of native grass species primarily of local origin. Characteristic species were used like Festuca pseudovina seeded mostly on display sites of male bustards and the taller Dactylis glomerata, ideal dominant grass of the breeding sites. The semi-natural grassland created this way was managed by mowing in the first year, while from the second year on it also could be grazed, most importantly by cattle and sheep. This extensive management allows the strengthening of tussocks, repression of weed species, and inhabitation of native grass species present in the surrounding areas, thus a favourable vegetation structure could be formed and the biodiversity enhanced.

Alfalfa was established on 268 hectares, since it is one of the most preferred habitat of the bustards. It is both an ideal breeding site and a perfect feeding place due to its rich insect fauna. Great Bustard males also use alfalfa fields as display grounds in the spring, while in winter large flocks of bustards gather and feed on them.
In the framework of the project habitat management has been carried out on the 8 project areas involved in land purchase. Beside establishing alfalfa stands and restoration of grasslands cultivation of crops optimal for great bustard was also applied. The main point of view was however, that conservation concerns should always be given the highest priority, so extensive cultivation methods were preferred at all sites. In the breeding season there were no works carried out on the managed fields, which contributed to the tranquillity of the breeding populations.

During the four years of the project 2584 hectares of grassland have been managed by grazing and mowing following the end of nesting period. Grazing results more favourable habitat structure and enhancement of biodiversity.

Fallow cultivation had been carried out on 1848 hectares in all at 7 sites. According to our experiences fallow is one of the most preferred habitats of the bustards, where no works are done until crushing or mowing in the end of summer. In the same time they are excellent nesting and feeding sites.

In order to ensure winter food for great bustards, rape was sown on an area of 311 hectares altogether, while other cultures such as winter cereals also used by bustards were sown on 354 hectares.
Great Bustards are resident birds in Hungary, as they stay in their favoured sites even in winter time. However, severe weather conditions, like deep snow or ice crust cover, especially if it comes in early winter, can force bustards to leave their traditional wintering sites and migrate outside of the Carpathian basin, to Italy or even to the Balkans. Such movements usually have a negative effect on the Hungarian Great Bustard population due to heavy migration losses.

To prevent these losses the most important task is to provide sufficient winter food source for the flocks, which is primarily being the green leaves of the winter rape. As part of recurring management implemented 311 hectares of rape were seeded at four project areas. Although food availability at bustard habitats is important, after heavy snowfalls the accessibility of food must also be ensured. Thick snow is cleared away with the use of snowploughs purchased for the Kiskunság and Borsodi Mezőség project sites, but local farmers also co-operate in these emergency situations at all project sites.

This activity helps to prevent winter migration to a certain extent, while on the other hand contributes to the well being of bustards and they can start the breeding season in better physical condition.
The general use of mechanized plant cultivation technologies is the most important threatening factor for the nests of Great Bustards in Hungary, as well as in almost every part of its distribution range. Hence one of the main tasks of regional Great Bustard officers was the in situ protection of endangered nests. Special efforts were made proactively to explore nesting hens, so that the appropriate protection measures could be realized prior to the start of actual agricultural work potentially endangering both the female and the clutch in the breeding season. During the whole project period we have documented 629 breeds, and we could ensure the most effective, preventive protection in more than a half of the cases.

Stickers with the contacts of bustard officers of the particular site on them were put on agricultural machines, and farmers were duly informed about the measures to be done in case a nest is found. As a result, experts were contacted and informed in due time, so they could act immediately and decide on spot, which protection measures to apply.

The more and more prevalent use of the wild deterrent chain – a row of chains in front of the mowing machine – serves directly the protection of eggs, nestlings and the brood hen, and exemplifies the good cooperation established with farmers in the whole distribution area of the Great Bustard in Hungary.

*Mowing can cause the destruction of nests, death of females and chicks*
Despite of all preventive actions executed in the 4 vegetation periods of the project, the exact locality of altogether 294 nests became known all over the country, since they have been found during agricultural activities, which meant a potential danger for 515 eggs.

In one portion of nests discovered mostly in the course of agricultural works, which thus became endangered, chicks could hatch successfully on the spot thanks to the expertly made in situ actions (such as creating buffer zones around the nests, leaving an appropriately sized patch of uncultivated land).

Eggs that were particularly endangered by spraying, disk ing or eventually grazing were transported temporarily to safe incubators in order to prevent egg predation, which occurs more frequently in disturbed nests.

Meanwhile, hens were kept on their nests having them sit on fake wooden eggs. Just before hatching the real eggs were placed back to their original nests, while their mother was away for feeding, so the nestlings could grow up in their natural habitat raised by their mother, which is apparently the best way of individual protection.

Eggs from nests perished for various reasons were transported to the Great Bustard Rescue Station of Dévaványa, and after artificial incubation chicks were prepared to separate life and their integration to wild flocks was provided.
Like in many countries of Europe, one of the main causes of adult bustard mortality in Hungary is the collision with power lines. It usually happens in bad weather conditions with poor visibility (fog, dusk, storm) when birds are unable to observe the linear establishment across their flyway. Since bustards are relatively heavy and have a low ability to manoeuvre they collide with the power line and usually die on the spot immediately. Burying the most dangerous sections of medium voltage power lines underground is the final solution to the problem.

In the Borsodi Mezőség project site an 11 kilometre long section of power line have been changed to an underground cable with the contribution of Émász Net Ltd., the electric company of the area. The burying has a positive effect both for the local bustard population and for other Natura 2000 species for designation, like Imperial Eagle, Saker, Red-footed Falcon or the Roller. As a side effect of the works the landscape has also been changed, poles vanished, obstacles in view disappeared.

Marking power lines with special tools is another solution to the problem, although only a temporary one. We have purchased 1400 pieces of firefly, which is in fact a plastic blank covered with reflective prisms. As it spins around in winds it reflects light and thus draws the attention of birds to the lines, which can then fly over it and avoid collision.
To be able to determine the exact size of the Great Bustard population in Hungary the method so called ‘Great Bustard Census’ has been used at all known habitat of the species. In practice, after the exploring survey to detect the presence of bustards, birds were counted by experts at each location in the same time. The best places to count are the displaying and wintering sites, which provide the most accurate data as birds can be found concentrated on them. Repeated censuses one week later help to avoid counting mistakes due to the circumstances of observation. During the project period altogether 12 censuses have been carried out in Hungary on the whole distribution area of Great Bustard. According to this the Hungarian Great Bustard population increased from 1254 to 1397 individuals, which means a 11.4% growth of the entire Hungarian population during the projects 4 years.

The successful implementation of the counts in several locations in the same time could have been thanked to the experts working directly in the project, to national park rangers and officers and to the numerous volunteers involved.

The monitoring of the West-Pannonian population took place monthly with the participation of all countries involved like Austria, Hungary and Slovakia.
Population monitoring
The Hungarian population of Great Bustard has been monitored continuously during the 4 years of the project at all 9 project areas. The monitoring was co-ordinated by the University of West-Hungary (UWH), and the field observations has been carried out by the regional Great Bustard conservation officers. On the same preserve zones used for habitat and predator monitoring, all the Great Bustard observations have been also recorded during the standard weekly visits. Apart from this, during the regular visits, every sighting of the species has been collected in Geographical Information System for the whole range in Hungary.

According to the monitoring protocol, which has been elaborated right at the beginning of the project, each observation point contains the most important attributes, like date, number of birds, age and sex, and the geographical co-ordinates. The geographical database established by the Monitoring Centre (UWH), contains about 10,000 Great Bustard observation records by the end of the project. Above recording all the observations, the most important factors of breeding and mortality has been also monitored, like the location of endangered nests and dead birds found, which information determined the reproductive rate of the Great Bustard.
The species, and the study could have been successfully used for indicating the effects of the habitat management works carried out during the LIFE project. The predator populations of birds and mammals have been monitored in the same preserve zones as well. Next to recording the locations of reproductive sites (nests and burrows) of the most endangering predators, all observed individuals have been also recorded during the standard weekly visits. Analysing the predator monitoring database and the bag dynamics of the hunting associations from the same area, the importance of each predator population could have been established.

**Habitat and predator monitoring**

A standard habitat and predator monitoring has been carried out in preserve zones at all nine project sites, which gave representative information about the whole distribution area of the Great Bustard in Hungary. The habitat monitoring has been completed three times a year, representing the most important changes of landscape, and being synchronised with the most characteristic management works, so it happened once in spring, late summer and winter. These maps and the Great Bustard observations gave a great opportunity to find out the annual habitat use of the species, and the study could have been successfully used for indicating the effects of the habitat management works carried out during the LIFE project. The predator populations of birds and mammals have been monitored in the same preserve zones as well. Next to recording the locations of reproductive sites (nests and burrows) of the most endangering predators, all observed individuals have been also recorded during the standard weekly visits. Analysing the predator monitoring database and the bag dynamics of the hunting associations from the same area, the importance of each predator population could have been established.
Farmers and hunters informed

To achieve the proposed goal of the project, it was necessary to establish a tight co-operation with local farmers and hunting societies, the two target groups being directly involved in the great bustard conservation measures. Among the regular field meetings and everyday discussions, a total number of 96 farmers’ meetings and 14 hunters’ meetings were organized on the nine project sites during the project period. On the meetings besides the introduction of the LIFE project and the Natura 2000 network the documentary films produced for the two groups were also presented.

As the successful breeding of the great bustard is mostly endangered by the mechanized agriculture, we primarily made efforts to inform comprehensively the main target group, the farmers. At the meetings we introduced them the real effects of different crops and that of the applied technology on great bustards, and called their attention to the most important interventions to protect great bustard clutches in case a nest is found during their everyday activity. The leaflets and stickers targeting the farmers have also been disseminated at these occasions.

The members of the hunting societies could share their field experiences, get a regular feedback, and could get familiar with the great bustard conservation aspects of the planning and implementation of normal hunting activities.
very popular, and it have been broadcast several times on national and local TV channels providing the opportunity to inform the widest group of people about the project. It have also been selected for public show at national and international nature film festivals, and awarded with Best Prizes in Hungary and France.

The project’s homepage at www.tuzok.hu operates since February 2006, informing visitors about the program and results of Hungarian bustard conservation in Hungarian and English languages. Dissemination products (leaflets, poster, information boards) and the pictures of the travelling exhibition can also be viewed on the site. The latter have been presented in 21 venues showing photos on the bustards and on project activities.

General public
A high priority task during the whole project term was to introduce the LIFE program for the conservation of the great bustards and its results to the general public. The start-up press conference was held in Kecskemét, in the House of Nature in November 2004 with the participation of the minister of environment, Miklós Persányi. Media representatives could also get acquainted with the objectives of the project on a field trip specially organised for them, and they could also have a glance on the bustards of the Kiskunság. There have been 88 articles published and 33 radio and TV interviews broadcast about project achievements in the 4 years of the project. The half an hour film produced for the general public is
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