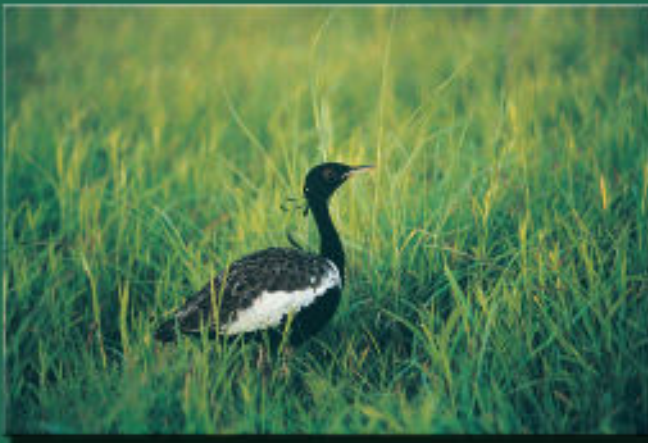


NEED TO START PROJECT BUSTARDS





Grasslands harbour some of the most threatened species of India. However, they are under represented in the protected area network. Grasslands are also important for the livestock wealth of India. It is necessary to develop and implement grasslands management and grazing policy. This can be developed under the Project Bustards.



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Poaching of tigers and threats of de-notification of legally protected wildlife habitats have dominated the media so much recently that slow disappearance of other endangered wild animals has been overlooked. Not many know that the Great Indian Bustard *Ardeotis nigriceps*, and the Lesser Florican *Sypheotides indica*, endemic to the Indian subcontinent, are now on the brink of extinction. The Great Indian Bustard is not only locally extinct from almost 90% of its former range, it has also disappeared even from the three wildlife sanctuaries declared 25 years ago for its protection. While hunting and habitat destruction resulted in near extinction of these magnificent birds of the Indian grasslands, mismanagement of habitat, sentimental protection of certain problem animals, insecure and confusing tenurial systems, apathy and ignoring of scientific advice now exacerbates the threats faced by these species.



ASAD RAHMANI

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ASAD RAHMANI

All Indian bustard species are dependent on grasslands

Both Project Tiger and Project Elephant have shown that by identifying an indicator species and focussing attention on it and its habitat, a substantial part of our natural ecosystems which benefit an array of threatened species can be protected. Bustard species can be considered as indicators of grassland ecosystems and by conserving the bustards and their habitats, a very large number of species dependent on healthy grasslands will also be protected. Keeping in view that these magnificent birds are now on the verge of extinction, there is an urgent need to launch Project Bustards and immediately provide all the necessary inputs at the highest level to ensure their survival. Project Bustards should be launched on the same lines as Project Tiger and Project Elephant by the Government of India to save all the four Bustard species namely, the Great Indian Bustard, the Bengal Florican, the Lesser Florican and the migratory Houbara Bustard (Macqeen's) from imminent extinction, and their habitats.

There has been in the recent past a move to involve local communities in natural resource management, through the Joint Forest Management (JFM) programme. However, JFM is restricted only to forest areas and does not extend to grasslands. Whenever wildlife protection is considered, the focus is invariably on some forested habitats that needs protection from felling of trees or removal of encroachment or other human use. Despite the fact that some of India's most endangered wildlife inhabit grasslands, wetlands, coasts, rivers, and rural landscapes, these rarely find a place in conservation priority. Nearly 40 percent of our wildlife being present outside protected areas, there is an urgent need to look beyond protected areas and at larger landscapes. Landscape level planning would involve local communities and this in itself could provide the much needed new paradigm of wildlife conservation in India.

Indian Bustards

Four species of bustards occur in India:

- | | |
|---|----------|
| 1. Great Indian Bustard <i>Ardeotis nigriceps</i> | Resident |
| 2. Lesser Florican <i>Sypheotides indica</i> | Resident |
| 3. Bengal Florican <i>Houbaropsis bengalensis</i> | Resident |
| 4. Houbara <i>Chlamydotis undulata</i> | Migrant |

Although all the four species of bustards have been given the highest degree of protection by placing them in Schedule I of the Indian Wild Life (Protection) Act 1972, their numbers continue to decline at an alarming rate. The three resident species are the most threatened bustards of the 22 species found in the world. Although the Great Indian Bustard is found in small numbers in Pakistan, the Lesser Florican in Pakistan and Nepal, and the Bengal Florican in Nepal, Vietnam and Cambodia, the chances of their long term survival can be made possible only if India plays a proactive role to protect these globally endangered species.

Brief description of the Indian bustards

Great Indian Bustard

The Great Indian Bustard is a large handsome bird of the short grass plains of the Indian subcontinent. Formerly it was widely distributed from Punjab and West Bengal in the North to Tamil Nadu in the South, and Sind (in Pakistan) in the west to Orissa in the east. It was always found in the grassy plains, some times overgrazed by livestock or wild herbivores, and strictly avoided hilly and forest regions (Ali & Ripley 1987, Rahmani 1989). It shares its short grass plains with Blackbuck *Antelope cervicapra*, Chinkara *Gazella bennettii*, Nilgai *Boselephus tragocamelus*, Grey Wolf *Canis lupus*, Indian Fox *Vulpes bengalensis*, Red Fox *Vulpes vulpes*, Golden Jackal *Canis aureus*, Wild Cat *Felis chaus* and a large number of bird and reptiles species.

The main stronghold of the Great Indian Bustard was the Thar desert in the northwest and Deccan tableland of the Peninsula. Spread of agriculture, overgrazing and destruction of the grasslands by livestock and hunting have resulted in drastic decline in their numbers. Presently it is confined to a handful of pockets in six states of India i.e., Rajasthan, Madhya Pradesh, Gujarat, Maharashtra, Andhra



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The Great Indian Bustard is one of rarest bustards of the world. Probably less than five hundred are left

Pradesh and Karnataka. In the mid 1980s, the total population was estimated to be between 1500 to 2000 with Rajasthan possibly having half of the estimated numbers. However, since 1990s surveys have revealed that numbers have declined further, especially in Madhya Pradesh, Andhra Pradesh,



ISAAC KEHIMKAR

The Blackbuck is the common inhabitant of the semi-arid grasslands. It will greatly benefit from Project Bustards

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Karnataka and Rajasthan. All the six states had taken various conservation measures and nine existing or recently created sanctuaries contain or used to have the Great Indian Bustard.

Most of the bustard sanctuaries or closed areas (e.g. Karera, Nannaj, Rollapadu, Sonkhaliya and Sorson) were established in revenue land, that included private agricultural areas or common grazing lands. Respective state governments ignored the 'settlements of rights' proceedings in all these sanctuaries which left them with virtually no control over the land. Therefore it was not easy to protect the habitat or to do any habitat improvement because in most of the cases the land was not under the control of the Forest Department who were in charge of managing these protected areas. Habitat alteration by expansion of agriculture or by human settlements, development of roads or canals, spread of industries etc is still going on and it is feared that unless immediate measures are taken, some of the sanctuaries like Ghatigaon would totally lose their bustard populations in another 2-3 years. Karera, Sorson and Rannibennur have already lost all their bustards.

Recent studies on the Great Indian Bustard reveal that habitat protection, and development of core areas for bustard breeding in a large multiple-use area could help in increasing bustard population. As the bustard live in marginal agriculture areas, support from the local people is absolutely necessary for any long-term conservation planning. In sanctuaries such as Karera, where core areas could not be protected gradual decline in the bustard population have occurred, which lead to localised extinction.

The Great Indian Bustard and the Lesser Florican are ideal species to be protected under the concept of

Community Reserve or Conservation Reserve, suggested under the recently amended Wild Life (Protection) Act, 1972. There are also possibilities of taking recourse to various provisions of the Environment (Protection) Act, 1986, by restricting certain activities in bustard habitats without displacing or disturbing the human populations.

Lesser Florican

Earlier the Lesser Florican *Sypheotides indica* was one of the common 'game' birds of the Indian grasslands, especially in Gujarat, Rajasthan, Madhya Pradesh, Maharashtra and Karnataka. It was found in almost the whole country from Punjab to Tamil Nadu, and up to West Bengal in the east. Now, perhaps less than 2,500 Lesser Florican survive in the whole world, making it one of the most endangered birds of India (Sankaran *et al.* 1992, Sankaran 2000, BirdLife International 2001). Like the Great Indian Bustard, its habitat has also shrunk by more than 90%.

The Lesser Florican is a monsoon breeder and with the commencement of rains, it is seen in the protected fodder producing grasslands known as *beed*, *vidi*, *rakhal* or *jod* of Gujarat, eastern Rajasthan, western Madhya Pradesh, northern Maharashtra and parts of Andhra Pradesh. Sometimes it is seen in crop fields of millet, sorghum, maize, etc, which can be considered as pseudo-grasslands.

Being a monsoon breeder, it changes its breeding grounds depending upon the monsoonal conditions, which makes its conservation difficult. Owing to its somewhat unpredictable movement, seemingly influenced more by the monsoons than anything else, it is not easy to protect the Lesser Florican in a few sanctuaries as it may not visit these sanctuaries at all or visit in small numbers if the rainfall is not favourable.

A network of fodder producing grasslands is required throughout its breeding range, thus serving the dual purpose of ensuring fodder security to agrarian communities as well as providing optimal habitats during the monsoons for the Lesser Florican and other grassland species to breed in.

As the Lesser Florican is a monsoon breeder, the conservation of this species and protection of natural fodder (grass) are compatible because by the time the grass is ready for harvesting, the main breeding period of the florican is over. By delaying grass cutting by a week or leaving a small patch of



The Lesser Florican is totally dependent on semi-arid grasslands for breeding and foraging



ASAD RAHMANI

Development of grasslands and their proper utilisation will greatly benefit rural communities

the grassland uncut, pre-fledged chicks of the floricans and other species such as francolins and quails can also be saved. However, before specific prescription can be given for their protection, long term studies and planning have to be undertaken.

Presently, there are only two existing Lesser Florican sanctuaries in India – Sailana and Sardarpur, both in Madhya Pradesh. However, Florican and grassland development could be integrated, especially in states like Gujarat and Rajasthan where livestock husbandry is a major occupation of the rural people and there is tremendous demand for natural fodder. Many of the grass *vidis* of Saurashtra, particularly non-reserved *vidis* which are at present in bad shape due to overgrazing and general neglect could be saved under the rural development schemes. By protecting these grass *vidis*, the major breeding grounds for the Lesser Florican also get protection.

Bengal Florican

The Bengal Florican *Houbaropsis bengalensis* inhabits the tall, wet *terai* grasslands of Nepal, Uttar Pradesh, West Bengal, Assam and Arunachal Pradesh. Its number has declined everywhere because of the disappearance of grassland habitat, except in protected areas such as Dudwa National Park in Uttar Pradesh, Jaldapara in West Bengal, Manas, Kaziranga and Orang in Assam, and D’Ering Sanctuary in Arunachal Pradesh. Its total global population could be between 400 to 500 individuals (Rahmani *et al.* 1991). During the last 15 years since populations of the Bengal Florican have been monitored, in some areas (e.g. Dudwa, Kaziranga, Chitwan) the numbers have been stable while in



ASAD RAHMANI

Sustainable utilisation of Terai grasslands will greatly benefit with Bengal Florican and the rural communities

others (e.g. Manas, Orang, D’Ering) they have gone down, mainly because of poaching and habitat changes.



RAVI SANKARAN

The Bengal Florican is totally dependant on the Terai grasslands

Although, the Bengal Florican was legally protected only in 1985, its habitat has been under protection (in certain pockets only) for a long time to protect more conspicuous species such as the One-horned Indian Rhinoceros, Tiger, Swamp Deer, Asian Elephant, Pygmy Hog, Hispid Hare, and Wild Buffalo. The longterm survival of the Bengal Florican is dependent on proper management of the *terai* grasslands; this primarily revolves around the timing of the annual grass burn. Late burning will affect breeding success of the Bengal Florican, and harrowing of grasslands is a dangerous management practice that can lead to change in grassland composition as well as affect species such as the Hispid Hare. In some of these sanctuaries, for example Manas and Orang, the grassland is adequately

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managed with timely burning and harvesting but in others areas, tall grasses have covered most of the areas, thus decreasing the available habitat for the Bengal Florican. To make the existing sanctuaries more suitable, the Forest Department has to give a little more emphasis to the habitat requirement for the Bengal Florican which essentially requires timely grass burn and no harrowing and ploughing of grasslands.

Houbara or MacQueen's Bustard

The Houbara or MacQueen's bustard *Chlamydotis macqueeni* is a winter migrant mainly to Rajasthan and Gujarat. It is the main quarry of Arab falconers and large numbers are killed every year in Pakistan. While it is a protected species in India, and Arab falconers are not allowed, however, poaching is quite common as it is considered good to eat. In winter, rich hunters from big cities make regular sorties to the Thar desert in search of the Houbara, Chinkara and Sandgrouse and also kill Great Indian Bustard if they find one.

Despite the fact that the Thar desert covers nearly 9 percent of the geographical area, there are very few protected in this ecosystem. Moreover, the Indira Gandhi Nahar Project (IGNP), earlier known as the Rajasthan Canal, is bringing major ecological and demographic changes in the main habitat of the Houbara.

Among all the sanctuaries where Houbara is positively seen only Velavadar National Park in



Houbara Bustard is one of the most widespread bustards of the world but everywhere it is persecuted by hunters

Gujarat is fully under the control of the Forest Department, but it is very small (only 36 sq. km). The Desert National Park in Jaisalmer which was developed with the major objective to protect the desert flora and fauna is now threatened with a plan to develop a feeder channel of the Indira Gandhi Nahar Project from Mohangarh to Gadra Road which will bisect the Park. The Narayan Sarovar Chinkara Sanctuary in Gujarat is already partially denotified for the establishment of cement factories. In the light of these facts, there is an urgent need to identify and protect more areas before they are irreplaceably lost. The Houbara and the Great Indian Bustard are excellent indicator species to mobilize attention for the protection of the desert ecosystem.

Some suggested special research projects

- Studies on the movement patterns of the Great Indian Bustard and the Bengal Florican by satellite tracking methods (till now small PTT to fit Lesser Florican has not been developed)
- Impact of dry season burning of the grassland on the breeding success of the Bengal Florican
- Role of undisturbed grasslands on the breeding success of the Great Indian Bustard and the Lesser Florican
- Impact of pesticides on the food of the Indian bustards and other grassland species
- Impact of Blackbuck, Wolf and Indian Fox on the breeding success of the Great Indian Bustard
- Landscape approach of conservation keeping bustard/florican as flagship species
- Direct and indirect benefits to rural people and poverty alleviation by bustard/florican conservation and consequent improvement of grassland resources
- Benefits and economics of organic farming versus chemical farming



Bustards as flagship species

Like the tiger is considered the ‘spirit of Indian forests’, similarly the majestic Great Indian Bustard, the Lesser Florican and the Bengal Florican are indicators of the health of grassland ecosystems of the Indian plains. All three species forage, shelter, display and breed in grasslands and their absence is the first warning signal that the quality of the grassland is deteriorating. The reverse is also true. In the semi-arid grasslands of Maharashtra as soon as grassland patches are restored, the bustards return, and if given a chance, start flourishing. The Lesser florican is so dependent on undisturbed grasslands, especially for breeding, that it is inconceivable to think that it can survive without them.

Ecological importance of grasslands

Grasses are considered to be the most evolved species of plants. They are remarkable as they have short life cycle yet a long life i.e. take a short time from germination to reach maturity. Unlike trees, when cut, grasses sprout back almost instantaneously. They are capable of supporting or converting into incredibly huge amounts of biomass. They also support a rich and diverse variety of fauna. They are efficient in absorbing rain water and play a vital role in water retention and hydrology of an area.

Legal protection to grasslands

The grasslands are the most neglected, and least protected ecosystems in India. They remain unprotected unless they are notified as Protected



ASAD RAHMANI

Despite the fact that India has nearly 20% of the world's livestock, we still do not have a grassland management and grazing policy

Areas under the Wild Life (Protection) Act, 1972 or notified as Protected or Reserve Forest under the Indian Forest Act, 1927. Most of the States have excluded the grasslands and have not identified them as “deemed forest” by the State Expert Committee’s pursuant to the landmark order dated 12.12.1996 in the Forest Matter (T. N. Godavarman Thriumalpad Vs. Union of India and others in W.P. (C) No. 202/95). As per the said order of 12.12.1996, word ‘forest’ should be given a wide and liberal interpretation. Excluding grasslands and including lands only with tree cover as ‘forest’ is against the letter and spirit of the said order thereby denying the protection under the Forest (Conservation) Act, 1980. The grassland should also be treated as ‘forest land’ for the purposes of the Forest Conservation Act and restrictions on diversion of such lands for non-forest use should be applicable to these critical ecosystems as well.

The central government should invoke the provisions of the Articles 251 and 254 of the Constitution to direct state governments to instruct Revenue Departments not to divert any grassland identified in the landscape for bustard/florican protection. Such areas can be declared as community or conservation reserves where the dual purpose of bustard conservation and fodder and grazing requirements of agrarian and pastoral communities can be met. Some areas can be identified as Ecologically Fragile Zones under Section-5 of the Environment Protection Act, 1986. There should be some legal and social protection of these grasslands from invasion of nomadic graziers, especially during the bustard/florican breeding period.

Applicability of the provisions of the Environment (Protection) Act, 1986

Section 3 of the Environment Protection Act, 1986 empowers the Central Government to take all such measures as is deemed necessary or expedient for the purpose of protecting and improving the quality of the environment. Environment is defined under Section 2A to include “water, air and land and the inter-relationship which exist among and between water, air and land, and human beings,

other living creatures, plants, micro-organism and property”.

Section 3(3) empowers the Central Government to constitute an authority for exercising the powers and functions under Section 5 of the Act.

Section 5 of the Act empowers the Central Government in the exercise of its powers and performance of its functions under the Act to issue directions in writing to any person, officer or any authority and such person, officer or authority shall be bound to comply with such directions.

By issuing an appropriate notifications under

Section 5 of the Environment (Protection) Act, 1986, the Central Government can constitute and declare Ecological Sensitive Areas or zones for the better protection of the environment and in particular with respect to the bustard habitat. In case such a notification is issued there would be no need to acquire land or shift people, as has been done in the case of Matheran and Mount Abu areas. This procedure has a clear advantage over declaration of national parks and sanctuaries under the Wild Life (Protection), Act 1972 which in any case is inimical to the conservation of bustards.

Landscape approach to conservation

Despite the fact that eight sanctuaries were established during 1980s to protect the Great Indian Bustard (Rahmani & Manakadan 1988) and two sanctuaries were established exclusively for the Lesser Florican (Sailana in Ratlam and Sardarpura in Dhar districts) (Sankaran *et al.* 1992), the status of these birds has further deteriorated mainly because of habitat changes. The Great Indian Bustard has become extinct in Karera Bustard Sanctuary, while 2-4 survive in Ghatigaon Bustard Sanctuary and probably none in Sorsan Area of Rajasthan. Similarly, the grasslands of Sailana, so vital for the survival of the Lesser Florican, have been ploughed over. Most of the floricans now survive in private grass *bheeds* or *vidis*, which are fast disappearing due to change in land use patterns. At the same time, the grassland habitat near Dahod has not changed mainly because of the commercial harvest of the grass that gives good returns to the Forest Department (Natrajan & Rahmani 1997).

Even if we are able to save small patches of grasslands here and there, it cannot guarantee long-term survival of bustards or floricans. We may be able to save relict populations, but they will be always in danger of extinction. If we have to revive their numbers, a totally new approach of landscape conservation has to come into play. Actually, it is not correct to call it a new approach because landscape conservation in the form of sustainable cropping system, *goucher*, *uran*, *bheeds*, and village or community forests, private and temple forest was in practice in India for hundreds of years. It is only in recent years

that owing to human population pressures and wrong land use policies of the government that such a time-tested systems have broken down.

Despite the fact that India has one of the largest livestock populations in the world, with an estimated 540 million heads, we do not have a grazing or grassland policy! There is no sound management plan for the development of pasture land and protection of existing grasslands, some of which are unique and harbour rich fauna. We have not even fully documented the value of these grasslands in terms of their biological diversity. The famous Sewan grasslands of Jaisalmer and Bikaner, and the Banni grassland of Kutch have been neglected, resulting in over-grazing, spread of invasive species such as *Prosopis chilensis* and conversion to agricultural crops with dubious results.



ASAD RAHMANI

Terai grassland are habitat of nearly 50 endangered species of birds, mammals, reptiles, amphibians and plants



ASAD RAHMANI

Although Chinkara is widely distributed in the desert regions and other parts of India, it is vulnerable to poaching and diseases

The importance of rotational or seasonal grazing, some control on free ranging animals, total protection of select grassland plots to serve as nucleus for seed bank, secure tenure for pastoralists (both resident and nomadic) over pastures, and genetic improvement of livestock (using indigenous breeds, not exotics ones) have not been taken in to consideration in animal husbandry programmes of the country. In our country, only livestock is considered as wealth, not the grasslands on which this livestock depends nor the traditional knowledge that helps maintain this livestock! Interestingly, protection of fodder producing natural grasslands greatly helps in the protection of many endangered bird species such as the Great Indian Bustard and the Lesser Florican because these birds breed during the monsoon when such grasslands should be protected to allow the grass to grow. These grasslands should also be kept free from exotic weeds. Similarly, timely burning or harvesting of the *terai* grasslands is necessary for the protection of the Bengal Florican and many associated endangered species.

In Maharashtra, in the late 1970s, a large number of plantation and grassland plots were developed under the Drought-Prone-Areas-Programme (DPAP). The main aim of DPAP was to take conservation measures for the protection of over-used land which was suffering from severe overgrazing and soil erosion. The DPAP not only helped in achieving its aim in certain areas but it also resulted in restoration of wildlife, especially the Great Indian Bustard, Blackbuck and Grey Wolf. In other words, bustard conservation is nothing but sustainable utilization of our grasslands, for the benefit of livestock, pastoral villagers and wildlife.

Grazing Policy

Grasslands are not managed as an ecosystem in their own right by the Forest Department whose interest lies mainly in trees, nor by the Agriculture Department who are interested in agriculture crops, nor the Animal Husbandry department who are concerned with livestock but not the grass on which the livestock depends. Grasslands are the 'common'

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lands of the community and while there have been robust traditional institutions ensuring their sustainable management in the past, today due to take-over by government or breakdown of traditional institutions they are the responsibility of none. They are the most productive ecosystems in the Indian Subcontinent, but they belong to all, are controlled by none, and they have no godfathers. Indeed they are often looked at as 'wastelands' on which tree plantations have to be done, or which can be easily diverted for other uses. Such diversions put even more pressure on adjoining ecosystems for grazing and fodder removal, resulting in a cascading chain of degradation. The lack of clear tenure to local communities, confused land records between the Revenue and Forest departments, and other such issues of land rights and responsibilities also compound the problem.

According to reports of the Wildlife Institute of India (WII), less than 1% of the grasslands come under the Protected Area Network. Most of which are in the Trans-Himalayan and Himalayan regions. With

a livestock population of more than 540 million and growing, the grasslands are under tremendous biotic pressures, mainly grazing and conversion to other uses. Presence of such a huge livestock population and dependence of the rural population on it, proves that protection, restoration and sustainable use of grasslands are important policy and ecological imperatives. Besides, providing habitat, shelter, and food, both to livestock and wildlife, the grasslands also serve as important catchment for rivers, streams, reservoirs, dams, check-dams and village ponds. In short, grasslands with natural vegetative cover greatly help in the water regime and hydrological cycle. Therefore, it is imperative to recognize the ecological, hydrological, economic and sociological role of grasslands as a source of survival for millions of livestock and rural people, as protector of soil, water, rare wildlife species and biodiversity in general.

Unfortunately, in our country we do not have a well-defined grazing policy. The free-roaming animals have access to every possible habitat. It is



ASAD RAHMANI

Protection of Rhinoceros and its tall, wet grassland habitat has greatly benefitted many grassland dependent species, such as the endangered Bengal Florican, Swamp Francolin, Hog Deer, Swamp Deer, Pygmy Hog, snakes, amphibians and plant



ANWARUDDIN CHOUDHARY

The highly endangered Pygmy Hog will greatly benefit by the protection of highland wet grasslands of Assam. Presently they are reported only from the grasslands of Manas Tiger Reserve but they can be reintroduced to other areas after proper management of grasslands

estimated that almost half of 329 million hectare land mass of India is degraded. Massive afforestation under the Social Forestry Schemes and Wasteland Development Board is being undertaken at a very high cost. However, owing to uncontrolled grazing, administrative neglect and short-sighted planning, many of these plantations fail. Creation of these "forests", ostensibly to supply fuel wood and fodder

on a sustainable basis to local communities, costs between Rs 5,000 to Rs 10,000 per hectare, depending upon local conditions, to plant and maintain for the first three years (Vohra 1987). As the cost of planting millions of hectares is too prohibitive, a greater emphasis should be given for natural regeneration of grass cover. We need to develop a National Grazing and Grassland Policy.



ASAD RAHMANI



ASAD RAHMANI

Hog Deer (left) and Swamp Deer (right) need scientifically managed grasslands for their survival. Their grassland habitat can be improved under Project Bustards

Conservation Breeding of Indian Bustards

There is a popular misconception that captive breeding of bustards is very difficult and therefore should not be attempted. However, this is not true at least in the case of the Great Indian Bustard and MacQueen's or Houbara Bustard. Related species such as the Australian Bustard *Ardeotis australis* and Kori Bustard *Ardeotis kori* have been successfully bred. Similarly, attempts are going on in the National Wildlife Research Centre, Taif, Saudi Arabia to breed Arabian Bustard *Ardeotis arabs*. Raising 'abandoned' or rescued chicks of the Great Indian Bustard is also not difficult as was proved by successfully raising of three chicks to adulthood in Rollapadu during the last 20 years. Similarly, large-scale captive breeding of the Houbara Bustards (*Chlamydotis undulata* and *Chlamydotis macqueeni*) is going on in the National Wildlife Research Centre, Taif,

National Avian Research Centre, United Arab Emirates, and many other centres in the Middle East and North Africa. Recently, a Bengal Florican chick was raised from two abandoned eggs found by villagers near Manas Tiger Reserve, Assam.

In the 1970s and 1980s, attempt were made by the Rajasthan Forest Department to breed Great Indian Bustard in Bikaner and Jodhpur zoos but the approach was not very scientific as these birds were kept in very disturbed and noisy conditions. Nevertheless, there is no reason why conservation breeding of at least the Great Indian Bustard and the Lesser Florican should not be attempted again. However, this should be done purely on a scientific basis with an expert in-charge of this programme. This conservation breeding programme should be for at least 15 years, with clear mandate, protocol, mission and aim.



Photo courtesy: Mr. Y.D. Sharma



The grasslands are the most under-represented ecosystems in the protected area network in our country. Studies conducted by the Wildlife Institute of India, Salim Ali Centre for Ornithology and Natural History and by the Bombay Natural History Society have identified many potential areas which could be developed as sanctuaries, or community conservation areas. Additionally, many existing sanctuaries need expansion to make them more viable and/or need active habitat and human management. As these existing/potential sanctuaries occur in different states, the degree of management and protection varies from area to area depending upon the interest and inclination of the state governments.

There are many reasons to have a nationally coordinated conservation project for the Indian bustards and their habitats.

1) **Need for cooperation:** Each state is taking its own course of action to conserve bustards without knowing what the other states are doing. There is no cooperation among the states even though the bustards and floricans may be moving from one state to another. In some cases, officials of one state do not even know that the same bustard species is found in other states also!

2) **Publicity:** After the initial enthusiasm to protect bustard species in the 1980s, presently there is practically no interest to protect them as a result of which most of the bustard sanctuaries are neglected

Protected Areas to get greater benefit from Project Bustards	
States	Name of national park/sanctuary
Rajasthan	Desert NP, Talchapper, Gajner
Gujarat	Desert Wildlife Sanctuary, Narayan Sarovar, Lala and Naliya, Wild Ass Sanctuary, Velavador, Dahod grasslands
Madhya Pradesh	Sailana, Sardarpur, Ghatigaon
Maharashtra	Bustard Sanctuary, Rehukuri
Karnataka	Rannibennur
Andhra Pradesh	Rollapadu
Uttar Pradesh	Dudwa, Katerniaghat, Kishenpur, Sohagi-Barwa
Bihar	Valmiki Tiger Reserve
West Bengal	Jaldapara, Gorumara
Assam	Manas, Kaziranga, Pobitora, Laokhowa, Burachapori, Orang, Sonai-Rupai
Arunachal Pradesh	D'Ering Memorial Sanctuary

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There is a great need of environmental education especially among children in all the bustard areas

(e.g. Karera, Ghatigaon, Sardarpur, Sailana) or their habitat is not taken care off (e.g. Kishanpur, Lagga-Bagga, Orang). There is a need to do publicity within the Forest Department.

3) **Sponsorship:** Establishment and maintenance of some of the bustard and lesser florican sanctuaries were mainly due to active interest taken by individuals. Once such individuals retired or were shifted to other departments, conservation of these species received a set back.

4) **Research and implementation of findings:** Little work has been done on the ecology and behaviour of the bustards, except for the studies done by the Bombay Natural History Society. Bustard populations need constant monitoring. Moreover, changes in habitats of some of the sanctuaries are taking place so fast that by the time the results are published, the situation is completely different. Worse, there is no authority or mechanism presently in existence to supervise the follow-up action on the recommendations of scientific studies.

5) **Need for clear records and establishment of rights and responsibilities:** Over much of India's pasture lands, there is no clarity on who has what rights and responsibilities. There is a need for a nationally coordinated process of establishing clear tenorial rights to pastoral communities and populations, along with clearly defined responsibilities for conservation and sustainable use, and specific responsibilities of the relevant departments to ensure such conservation and sustainable use. Such a system needs to be built into a sharply focused policy and programme on pastures, grazing, and livestock.

6) **Long-term plan:** There is no proper long-term

planning to protect the bustard habitats (except perhaps in the Bengal florican areas). As the bustards live in agriculturally marginal areas, which are not easy to manage, a greater administrative, community and scientific inputs are required to keep the habitat suitable for bustards. These multiple-use habitats can be protected and maintained only with the cooperation of local people, through building on their own traditional knowledge and practices regarding grasslands and livestock, and through providing secure tenure to local pastoral populations combined with responsibilities for conservation.

Taking into consideration all these factors, the Government of India should be encouraged to start '**Project Bustards**' on the lines of Project Tiger and Project Elephant, with the following objectives:



For sustainable utilisation of national resources, we need to learn from the traditional wisdom present all over the country



P. JEGANATHAN

During the last 20 years, three chicks of Great Indian Bustard have been raised in Rollapadu, Andhra Pradesh

1. *To immediately constitute a Task Force for the purpose of establishing Project Bustards on the lines of Project Tiger and Project Elephant which should submit its report within six months to the Ministry of Environment and Forests, Government of India.*
2. *To conserve all the four species of bustards in India, along with the involvement of local communities living in and around the identified bustard and floricans habitats.*
3. *To strictly protect the habitat and all the four species of bustards and their associated species in India.*
4. *To establish interstate cooperation among the Range States to provide protection of the habitat and the birds.*
5. *To identify areas which could be declared as bustard sanctuaries, Conservation Reserves or Community Reserves as envisaged in the Wild Life (Protection) Act, 1972 and the declaration of Ecological Sensitive Zones under the Environment (Protection) Act, 1986.*
6. *To provide necessary financial, management and scientific inputs required to protect the habitat within and outside the protected areas and all the bustards species.*
7. *To plan and implement, with the involvement and consent of state governments and local communities, landscape level strategies for grassland management, both within and outside biodiversity/wildlife reserves.*
8. *To provide necessary financial, management and scientific inputs required to protect the habitat within and outside the protected areas and all the bustards species.*
9. *To start a long term Conservation Breeding Programme at least for the Great Indian Bustard.*
10. *To produce educational material in local languages on grassland ecosystems and bustards for publicity in schools, colleges, and sanctuaries.*
11. *To initiate discussions on and finalize a National Grazing and Grassland Policy in which bustard conservation is centrally integrated.*

Ecosystems and Habitats to benefit from Project Bustard

Habitats/Ecosystems	States
Dry Grasslands	Rajasthan, Gujarat, Punjab and Haryana
Hot Desert	Rajasthan, Gujarat, Punjab and Haryana
Tropical short grass plains	Rajasthan, Gujarat, Madhya Pradesh, Maharashtra Andhra Pradesh, Karnataka
Wet grasslands	Uttar Pradesh, Bihar, West Bengal, Assam, Arunachal Pradesh

NEED TO START PROJECT BUSTARDS



ZAFAR-UJ ISLAM

BNHS campaign for *Godawan* protection in the Thar Desert received overwhelming support



ASAD RAHMANI

Existing Great Indian Bustard sanctuaries

State	Name	Size (sq km)	Approx. No. of bustards	Major threats of the habitat
Rajasthan	Desert N.P.	3162	50-100	Development of irrigation facilities and habitat modification
	Sonkhaliya	17	20-30	Administrative neglect, Agriculture expansion
	Sorson	40	Extinct	Administrative neglect, Resentment of villagers due to crop damage by Blackbuck
M. P.	Karera	202	Extinct	Over grazing, expansion of agriculture, growing resentment against crop damage by Blackbuck, and completely ignoring scientific advice on the management of the Sanctuary
	Ghatigaon	512	1-2	Administrative neglect, mismanagement of habitat and completely ignoring scientific advice on the management of the Sanctuary
Maharashtra	Bustard	8496	50-60	Urbanization, and growing resentment against crop damage by Blackbuck
Karnataka	Rannibennur	123	Extinct?	Overgrazing and habitat modification
A. P.	Rollapadu	6*	20-30	Growing resentment against crop damage by Blackbuck, mismanagement of habitat, poaching when the bustards outside the sanctuary
Gujarat	Bhatiya	2*	Extinct ?	Administrative neglect and over-grazing
	Naliya	3*	25-30	Land colonization

*and including surrounding areas



COURTESY: NATIONAL AVIAN RESEARCH CENTRE

Houbara Bustard has been successfully bred in many countries in the Middle East to augment the wild population

Important Bird Areas to benefit from Project Bustards

Great Indian Bustard

State	Site Name	District
Andhra Pradesh	Rollapadu Wildlife Sanctuary	Kurnool
Gujarat	Banni Grassland and Chhari Dhand	Kutch
Gujarat	Naliya grasslands	Kutch
Karnataka	Ranebennur Blackbuck Sanctuary	Dharwad
Maharashtra	Bustard Sanctuary	Solapur, Ahmednagar
Maharashtra	Ozar, Wani and adjoining grasslands	Nashik
Madhya Pradesh	Ghatigaon Bustard Sanctuary	Gwalior
Rajasthan	Desert National Park	Jaisalmer and Barmer
Rajasthan	Diyatra	Bikaner
Rajasthan	Khichan	Jodhpur
Rajasthan	Sonkhilya	Ajmer

Lesser Florican

State	Site Name	District
Andhra Pradesh	Rollapadu Wildlife Sanctuary	Kurnool
Gujarat	Banni Grassland and Chhari Dhand	Kutch
Gujarat	Bhal Area	
Gujarat	Gir National Park & Wildlife Sanctuary	Junagadh (NP) Junagadh & Amreli (WLS)
Gujarat	Naliya grasslands	Kutch
Gujarat	Rampura Grassland	Dahod
Gujarat	Velavadar Blackbuck N P	Bhavnagar
Maharashtra	Gangapur Dam and Grassland	Nashik
Maharashtra	Jawaharlal Nehru Bustard Sanctuary	Solapur, Ahmednagar
Maharashtra	Ozar, Wani and adjoining grasslands	Nashik
Madhya Pradesh	Kanha National Park	Mandla & Balaghat
Madhya Pradesh	Sailana Kharmor Sanctuary	Ratlam
Madhya Pradesh	Sardarpur Wildlife Sanctuary	Dhar
Rajasthan	Gagwana Arain, Mangliyawas, Ramsar, Goyal, Ratakot and Bandar	Ajmer
Rajasthan	Sonkhilya	Ajmer
Uttar Pradesh	Dudwa National Park	Lakhimpur-Kheri



ZAFARJUL ISLAM

Species such as Swamp Francolin would greatly benefit by Project Bustards

Bengal Florican

State	Site Name	District
Arunachal Pradesh	D'Ering Memorial Wildlife Sanctuary	East Siang & Dibang Valley
Arunachal Pradesh	Dibang Reserve Forest & adjacent areas	Lower Dibang Valley
Arunachal Pradesh	Chapories of Loti River	Lohit
Assam	Barnodi Wildlife Sanctuary	Darrang
Assam	Deobali Jalah	Nagaon
Assam	Dibru-Saikhowa National Park & Kobo	
	Chapori - Amarpur Chapori-Maguri-Motapung Beels	Tinsukia & Dibrugarh
Assam	Kaziranga National Park	Golaghat/Nagaon/Sonitpur
Assam	Laokhowa and Burhachapori Sanctuaries	Sonitpur (Burha.) and Nagaon (Lao.)
Assam	Majuli	Jorhat
Assam	Manas National Park	Barpeta, Kokrajhar, Bongigaon
Assam	Nameri National Park	Sonitpur
Assam	Orang National Park	Darrang And Sonitpur
Assam	Pabitora Wildlife Sanctuary	Morigaon
Assam	Ripu Chirang Rf	Kokrajhar
Assam	Sonai-Rupa Wildlife Sanctuary	Darrang
Assam	Subansiri (Subansiri Reserve Forest), Lakhimpur (Dulung RF)	Dhemaji
Uttar Pradesh	Dudwa National Park	Lakhimpur Kheri
Uttar Pradesh	Katerniaghat Sanctuary	Behraich
Uttar Pradesh	Kishanpur Wildlife Sanctuary	Lakhimpur Kheri
Uttar Pradesh	Lagga- Bagga Reserve Forest	Pilibhit
West Bengal	Gorumara National Park	Jalpaiguri
West Bengal	Jaldapara Wildlife Sanctuary	Jalpaiguri

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NEED TO START PROJECT BUSTARDS

Species to benefit through better habitat protection under the Project Bustards		
Species	Schedule of WPA	Habitat
Blackbuck <i>Antelope cervicapra</i>	I	Short grass plains
Chinkara <i>Gazella bennettii</i>	I	Desert, Open scrub
Brow-antlered Deer <i>Cervus eldi</i>	I	Wet grassland
Swamp Deer <i>Cervus duvauceli</i>	I	Wet grassland
Hog Deer <i>Axis porcinus</i>	III	Wet grassland
Caracal <i>Caracal caracal</i>	I	Desert and Grassland
Desert Cat <i>Felis libyca</i>	I	Desert
Jungle Cat <i>Felis chaus</i>	II	Desert, Scrub jungle
Desert Fox <i>Vulpes vulpes</i>	II	Desert
Indian Fox <i>Vulpes bengalensis</i>	II	Desert and Grassland
Hispid Hare <i>Caprolagus hispidus</i>	I	Wet grassland
Wild Ass <i>Equus khur</i>	I	Desert
Grey Wolf <i>Canis lupus</i>	I	Desert and Grassland
Golden Jackal <i>Canis aureus</i>	II	Desert and Grassland
Pygmy Hog <i>Sus salwaianus</i>	I	Wet grassland
One-horned Rhinoceros <i>Rhinoceros unicornis</i>	I	Wet grassland
Wild Buffalo <i>Bubalus bubalis</i>	I	Wet grassland, Forest
Agra Monitor Lizard <i>Varanus griseus</i>	I	Desert and Grassland
Spiny-tailed Lizard <i>Uromastix hardwickii</i>	II	Desert and Grassland
Great Indian Bustard <i>Ardeotis nigriceps</i>	I	Desert and Grassland
Lesser Florican <i>Sypheotides indica</i>	I	Grassland
Bengal Florican <i>Houbaropsis bengalensis</i>	I	Wet grassland
Houbara <i>Chlamydotis macqueeni</i>	I	Desert
Swamp Francolin <i>Francolinus gularis</i>	IV	Wet grassland
Laggar Falcon <i>Falco jugger</i>	I	Desert and Grassland
Saker Falcon <i>Falco cherrug</i>	I	Desert and Grassland
Peregrine Falcon <i>Falco peregrinus</i>	I	Desert and Grassland
Red-headed Falcon <i>Falco chicquera</i>	I	Desert and Grassland
Lesser Kestrel <i>Falco naumanni</i>	IV	Desert and Grassland
Tawny Eagle <i>Aquila rapax</i>	IV	Desert and Grassland
Steppe Eagle <i>Aquila nipalensis</i>	IV	Desert and Grassland
Imperial Eagle <i>Aquila heliaca</i>	IV	Desert and Grassland
Lesser Spotted Eagle <i>Aquila pomarina</i>	IV	Desert and Grassland
Common Buzzard <i>Buteo buteo</i>	IV	Desert and Grassland
Long-legged Buzzard <i>Buteo rufinus</i>	IV	Desert and Grassland
Upland Buzzard <i>Buteo hemilasius</i>	IV	Desert and Grassland
All species of Harriers <i>Circus</i> spp.	IV	Desert and Grassland
Short-toed Snake Eagle <i>Circaetus gallicus</i>	IV	Desert and Grassland
Red-headed Vulture <i>Sarcogyps calvus</i>	IV	Desert and Grassland
White-backed Vulture <i>Gyps bengalensis</i>	I	Desert and Grassland
Long-billed Vulture <i>Gyps indicus</i>	I	Desert and Grassland
Slender-billed Vulture <i>Gyps tenuirostris</i>	I	Desert and Grassland
Eurasian Griffon <i>Gyps fulvus</i>	IV	Desert and Grassland
Egyptian Vulture <i>Neophron percnopterus</i>	IV	Desert and Grassland
Lesser Adjutant <i>Leptoptilos javanicus</i>	IV	Wet grassland
Greater Adjutant <i>Leptoptilos dubius</i>	IV	Wet grassland
Jerdon's Babbler <i>Chrysomma altirostre</i>	IV	Wet grassland
Black-breasted Parrotbill <i>Paradoxornis flavirostris</i>	IV	Wet grassland
Marsh Babbler <i>Pellorneum palustre</i>	IV	Wet grassland
Finn's Baya <i>Ploceus megarhynchus</i>	IV	Wet grassland

IUCN Resolution (CGR.REC033) passed in November, 2004

- Recognizing that the Great Indian Bustard *Ardeotis nigricaps* is perhaps the most endangered member of the bustard family in the world;
 - Noting that historically, the Great Indian Bustard was widely distributed in and and semi-arid grasslands of India and Pakistan;
 - Further Noting that presently the total number could be as low as 500 individuals;
 - Recalling that if effective conservation measures are not taken urgently, the Great Indian Bustard will be extinct in another 5-10 years time;
 - Further Recalling that poaching and habitat deterioration are the two main causes for the drastic decline of the Great Indian Bustard;
 - Acknowledging that Great Indian Bustard is legally protected in India and Pakistan;
 - Further Acknowledging that BirdLife International has included the Great Indian Bustard in the "Endangered" category in its Red Data Book, mainly because of drastic and continuing decline in its population;
 - Noting that the Government of India has taken some measures to protect bustard habitat by establishing sanctuaries but these measures are not adequate;
 - Further Noting that the Great Indian Bustard lives at low density and depends on a wider landscape, with short-grass plains, low-intensity agriculture and traditional livestock grazing, hence it can not be conserved effectively in few small sanctuaries;
 - Aware of the fact that movement patterns and ecology of the Great Indian Bustard are not fully known and unless movement patterns and landscape use are studied, planning effective long-term conservation measures is not possible; and
 - Also Aware that along with the Great Indian Bustard, the Lesser Florican (*Sypheotides indicus*) and the Bengal Florican (*Houbaropsis bengalensis*) are also endangered, and the migratory population of the Houbara Bustard (*Chlamydotis macqueeni*) is threatened by poaching and habitat destruction;
- The World Conservation Congress at its 3rd session in Bangkok, Thailand, 17-25 November 2004:
1. **CALLS** on the Governments of India and Pakistan to take all measures necessary to protect the Great Indian Bustard, including establishment of large sanctuaries/ community conservation areas at the landscape level and effectively curtailing poaching;
 2. **REQUESTS** the Government of India to start Project Bustard, following the pattern employed with Project Tiger and Project Elephant, to protect all species of Indian bustards and their habitats;
 3. **URGES** the Governments of India and Pakistan to give special attention to the protection and sustainable utilization of grasslands by curtailing conversion of grasslands and for agricultural use and preventing overgrazing; and
 4. **PROPOSES** that movement patterns and ecology of the Great Indian Bustard, and other Indian bustards, should be studied urgently by using modern methods such as telemetry and radio tracking.

Sponsors of Resolution

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