

BUSTARD SANCTUARY KARERA : PROBLEMS AND REMEDIES

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Introduction

Created in the year 1981 for the conservation of the Great Indian Bustard (*Ardeotis nigriceps*) Bustard Sanctuary Karera is presently facing many problems of varied nature. The sanctuary has no forest land. 202.21 km² of the area of the sanctuary between Mahuar and Sindh rivers is mostly flat with gentle undulations. There are a few completely eroded hills situated inside the sanctuary. Out of 202.21 km² of land, 55.55 km² is revenue land and rest is owned by Bhumiswamis. Situated inside the sanctuary are 32 revenue villages presently having a total human and cattle population of 33156 and 42907 respectively. Various villages inside the Sanctuary are shown in Fig. 1.

The Flora

Zizyphus rotundifolia is the most remarkable component of the flora. Few natural trees found in the area are *Acacia lucophloea*, *Butea frondosa*, *Azadirachta indica*, *Ficus religiosa*, *Ficus bengalensis*, *Mangifera indica*, *Diospyros melanoxylon*, *Tamarindus indica*, *Dalbergia sissoo*, *Heteropogon contortus*, *Cynodon dactylon*, *Andropogon pumilus*, *Pennisetum pedicellatum*, *Melanocenchris jaguemontii*, *Aristida* spp, *Eragrostis* spp. are the common

grasses met with in the area.

The Fauna

In addition to Great Indian Bustard, Black-buck, Chinkara and 4-horned Antelope are major components of fauna. Jackal, Fox, Mongoose, Peafowls and monitor lizard are common. Hare is abundant, Wolf is occasionally seen. Hyaena, Porcupine and Jungle-cat are very rare. Large population of Black-bucks is a remarkable feature.

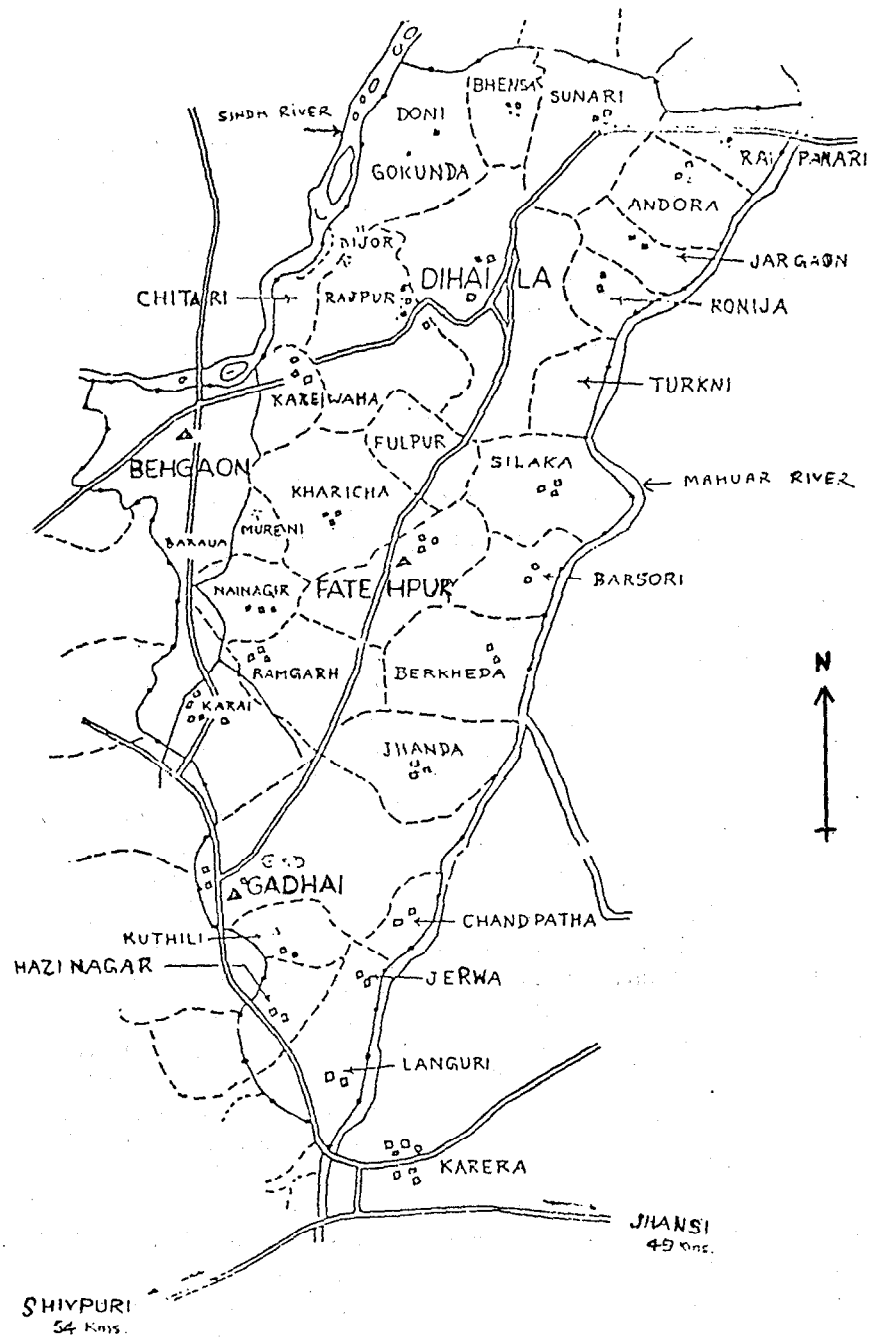
The Dihaila Jheel forms an important feature of the Sanctuary which attracts more than one lakh birds in a good monsoon year. The area of this Jheel which is rainfed is 440.5 ha. It is so important a Jheel that it deserves to be notified as a wetland of international importance (Rahmani, 1987).

Problems

Various management problems in Bustard Sanctuary Karera can be grouped in two categories.

- (A) Problems relating to Bustard conservation
- (B) Problems relating to protection and development of Dihaila Jheel.

Fig. 1



Map showing the villages inside the Sanctuary

(A) Problems Relating to Bustard Conservation

Various problems which have become inhibitory in the conservation of Bustard have been identified as here under.

1. *Destruction of Habitat* : The 202.21 km² of Sanctuary area is comprised of 55.55 km² of revenue land and rest of private land. The details of area in various villages are given in Table 1. The Sanctuary area, having no forest land, is exposed to a number of factors adversely affecting Bustard habitat and its population. These various factors are enumerated below.

(a) *Increasing Cultivation* : Fallow land and revenue land by way of encroachments is increasingly being taken under plough. This agricultural expansion is destroying the nesting sites of the Bustard as well as *Zizyphus rotundifolia* bushes. Its leaves are favourite food of Black-bucks, its drupes are eaten by Bustard. Thus food and shelter both are being effected by expansion of agriculture.

(b) *Increasing Human and Cattle Population* : The total human and cattle population of the villages inside the Sanctuary is 33156 and 42907 respectively. The village-wise human and cattle population is given in Table 2. The increasing population has resulted in more movement of people and more expansion of agriculture damaging the habitat.

(c) *Increasing Number of Wells* : As the water table in the area is high, the wells are being dug in large numbers near crop fields, for irrigation purposes. It results in shrinking of Bustard habitat.

(2) *Increase in Black-buck Population* : In

the year 1981, when the Sanctuary was declared, the number of Black-buck was only 100 to 150. In the year 1993 the number of Black-bucks has been estimated to be 3777. Alarming increase in number of Black-bucks has posed a serious problem for farmers as well as for those concerned with management of Sanctuary.

Started in the year 1985, the problem of raiding by Black-bucks has become very acute. A survey conducted by the author in 1989 investigates that lentil (*Lens esculenta*) is the most damaged crop which is followed by mustard (*Brassica campestris*), taramira (*Eruca sativa*) and gram (*Cicer arietinum*) respectively. The wheat (*Triticum vulgare*) is the least damaged crop. The Black-buck damage problem resulting from increase in number of Black-bucks has given rise to many factors inimical to Bustard conservation. (Sharma, 1994). There is now a competition amongst Black-buck and Bustard for area use as Black-bucks have occupied the same areas which were being used by Bustard. Keeping dogs for crop protection causes disturbance. Construction of huts near crop fields for crop protection during night is a common practice.

This also adversely affects foraging activity of the Bustard. the Black-bucks which remain in nesting areas of Bustard in the breeding season may become most dangerous factor affecting the successful breeding of the Bustard. Due to damage to the their crops villagers are turning hostile to the concept of Bustard conservation.

(3) *Increase in Fox Population* : Protection of wild animals inside the sanctuary area has resulted in the increase in Fox population. Foxes predate upon Bustard eggs and chicks.

Table 1
Details of area of various villages of Karera Sanctuary

Village	Total Area of Villages (ha.)				
	Area of Village proper	Area owned by Bhumi swamis	Government Land (except Forest Land)	Forest Land	Total Land
Languri	1.703	199.248	298.392	-	499.343
Hajinagar	4.787	203.398	31.959	-	240.144
Jerwa	0.690	90.559	124.390	-	215.639
Kuthili	-	270.900	79.974	-	287.874
Gadhai	1.591	972.469	293.226	-	1267.286
Jhanda	7.494	937.859	267.779	-	1213.152
Karahi	6.000	837.000	210.000	-	1053.000
Ramgarha	3.575	373.931	341.444	-	718.950
Berkhera	4.659	516.045	313.500	-	834.184
Nainagir	8.653	403.963	130.684	-	543.300
Fetehpur	4.860	689.126	187.099	-	881.085
Barsori	2.161	365.884	91.992	-	460.037
Behgawan	3.000	729.000	296.000	-	1028.000
Mudeni	1.000	175.000	75.000	-	251.000
Baraua	2.000	180.000	38.000	-	220.000
Karawa	1.000	260.000	95.000	-	356.000
Chitahri	2.472	213.903	71.350	-	287.725
Rajpur	7.174	666.020	205.973	-	879.167
Raipahari	0.439	156.993	77.441	-	234.873
Andora	7.556	454.159	206.623	-	668.338
Jargawan Sani	3.593	339.956	115.132	-	458.681
Ronija	6.636	611.365	155.835	-	773.836
Dihaila	9.135	1204.665	427.723	-	1641.513
Turkani	-	288.152	111.310	-	399.462
Bhensa	3.156	279.962	102.723	-	382.685
Doni	5.626	394.191	153.575	-	553.428
Gokanda	4.219	367.688	254.673	-	626.580
Beejor	-	94.683	24.844	-	119.527
Sunari	18.000	703.000	97.000	-	818.000
Phoolpur-Karera	-	226.265	159.126	-	358.391
Kharicha	10.481	696.575	331.070	-	1038.126
Silra	2.766	693.851	187.099	-	884.716
Total	135.442	14532.800	5555.956	-	20221.042

Table 2
Human and Cattle population

Village	No. of Families	Human Population	Cattle population					Total
			Cow	Bullock	Buffalo	Sheep/Goat	Others	
Languri	85	738	280	205	95	325	70	975
Hajinagar	160	1241	410	225	119	719	190	1663
Jerwa	66	462	220	149	80	275	35	759
Kuthili	-	-	-	-	-	-	-	-
Gadhai	336	2190	432	619	281	373	36	1741
Jhanda	245	1518	267	423	188	425	-	1303
Karahi	375	2628	222	231	291	195	759	1798
Ramgarha	125	1000	200	300	250	1200	100	2050
Berkhera	148	1138	349	362	179	472	-	1362
Nainagir	125	950	100	-	150	1000	100	1350
Fatehpur	269	1168	610	560	215	1255	15	2655
Barsori	55	342	125	142	62	150	-	439
Behgawan	150	1569	345	336	116	288	-	1085
Mudeni	42	361	104	81	99	360	-	644
Baraua	64	535	107	144	91	136	-	478
Karawa	52	473	105	104	79	211	-	499
Chitahri	30	569	125	70	96	212	-	503
Rajpur	130	1100	207	180	153	56	34	630
Raipahari	20	150	10	40	15	20	-	85
Andora	60	300	200	120	125	175	-	620
Jargawan Sani	106	588	375	170	160	225	15	945
Ronija	273	1820	830	520	412	680	25	2467
Dihaila	425	4100	1200	900	700	3250	70	6120
Turkani	-	-	-	-	-	-	-	-
Bhensa	98	750	150	200	115	250	27	742
Doni	188	1500	672	300	173	740	-	6120
Gokanda	86	445	209	200	100	483	15	1007
Beejor	4	46	5	15	10	30	-	-
Sunari	463	3500	500	300	450	175	50	1475
Phoolpur-Karera	-	-	-	-	-	-	-	-
Kharicha	475	1188	505	560	202	3070	-	4337
Silra	129	787	940	340	480	1560	-	3320
Total	4584	33156	9804	7781	5491	18290	1541	42907

(4) *Change in crop pattern* : In comparison to damage to wheat (*Triticum vulgare*), the damage by Black-buck is more to gram (*Cicer arietinum*) and taramira (*Eruca sativa*). As a result, the farmers have started growing more of wheat (*Triticum vulgare*). This has been especially noticed in Dihaila, Rajpur and Kharicha villages situated near Turkani, the most important area for Bustard as well as for Black-buck. In winters, when insect population is low, gram and taramira constitute the only palatable diet for Bustard. This change in crop pattern has forced the Bustard to leave the Sanctuary area in search of food. The Bustards have been observed outside the Sanctuary area near Kalipahari, Indergarh, Naraua, Nayagaon, Dabarbhat, Dabarali, Chhitipur, Ghugsi, Gwalia, Dhamdholi, Chhitri, Kheraghat, Kakardha, Samoha, Radhapur and Surajpur villages.

As is clear from above the various factors are adversely affecting Bustard population.

(B) Problems relating to protection and development of Dihaila Jheel

The management of Dihaila Jheel so important for migratory birds is no less problematic. The area of this Jheel which is an irrigation tank is 440.500 ha; out of which 135.472 ha land is Government revenue land and rest 305.028 ha land is privately owned. As there is no forest land, it is not possible to carry out developmental activities in the Jheel in favour of migratory birds. Presently, there is no control on use of water. Grazing pressure is heavy inside the Dihaila Jheel. In the catchment area of this Jheel are situated eroded hills which have become a cause of siltation of this Jheel.

Remedies

The following remedial measures are suggested.

(1) *Acquisition of Land* : The revenue land 55.55 km² inside the Sanctuary must be immediately transferred to Forest Department and declared as protected forest. Land acquisition in important Bustard and Black-buck areas like Turkani, Behgawan, Kareiwaha Silra, Kharicha and Berkhera is essential. Acquisition of 15 km² of land in these areas will serve the purpose of protecting nesting sites of Bustard. These steps are also essential for stopping encroachments for expansion of agriculture and preserving the *Zizyphus rotundifolia* which is an important food plant for Black-buck. Land acquisition is necessary for developing habitat in favour of Bustard and for solving the problem of Black-bucks. For protection and development of Dihaila Jheel also, acquisition of private land (305.02 ha) inside the Jheel is a must. Thus acquisition of land is essential not only for protection and development of Bustard habitat but for protection and development of Dihaila Jheel as well.

(2) *Extension of Sanctuary Area* : Out of the villages where Bustard have been observed outside the Sanctuary area, those adjoining the Sanctuary must be included in the sanctuary by way of extending Sanctuary towards Narwar.

(3) *Manipulation of Habitat* : Habitat improvement by way of manipulation is advocated in the following ways :

(a) Growing of ber (*Zizyphus rotundifolia*) by seed sowing will help in maintaining the peculiar ecosystem of the area.

(b) Growing of gram (*Cicer arietinum*) and taramira (*Eruca sativa*) which constitute the only palatable diet for the Bustard in winters. In order to give relief to farmers from Black-buck depredations on cultivated crops gram (*Cicer arietinum*) was raised departmentally over an area of 11.5 ha, 19.00 ha, and 8.1 in the year 1990-91, 1991-92 and 1992-93 respectively. Incidentally it was observed that gram (*Cicer arietinum*) attracted Bustards which were frequently observed inside or near these fields during winter season. It is therefore, advocated to grow gram (*Cicer arietinum*) and taramira (*Eruca sativa*) over an area of 50 ha in Bustard areas every year for which Revenue Department does not normally object. Thus this practice can be continued even before the transfer of revenue land to the Sanctuary management.

(c) *Construction of Bustard enclosures* : For providing undisturbed nesting sites, Bustard enclosures using chain link fence and G.I. pipes are proposed to be constructed in important Bustard areas. Proposed sites for Bustard enclosures are shown in Fig 2.

(d) *Control on use of water of Dihaila Jheel* : Irrigation facility from Dihaila Jheel may be continued but control on use of water is advocated to prevent wastage of water. For this repairs of bund and sluice gate has to be done.

(e) *Development of Heronries around Dihaila Jheel* : If trees for nesting are provided species like egrets, herons, spoonbill, storks, darter will start breeding in Dihaila Jheel. These species do not breed here at present for want of nesting trees.

(f) *Treatment of catchment area of Dihaila Jheel*: Treatment of eroded hills, especially Kharicha hill (125.44 ha) which forms the

main catchment area of Dihaila Jheel, should be taken up. This treatment will prevent silting of Dihaila Jheel.

(4) *Control of Grazing* : Control on Grazing in Bustard areas and Dihaila Jheel is advocated. In Bustard areas grazing should be banned in breeding season i.e. March to July. In this season grazing may be allowed in Dihaila Jheel as it dries up in summer. From August to February grazing should be banned in Dihaila Jheel.

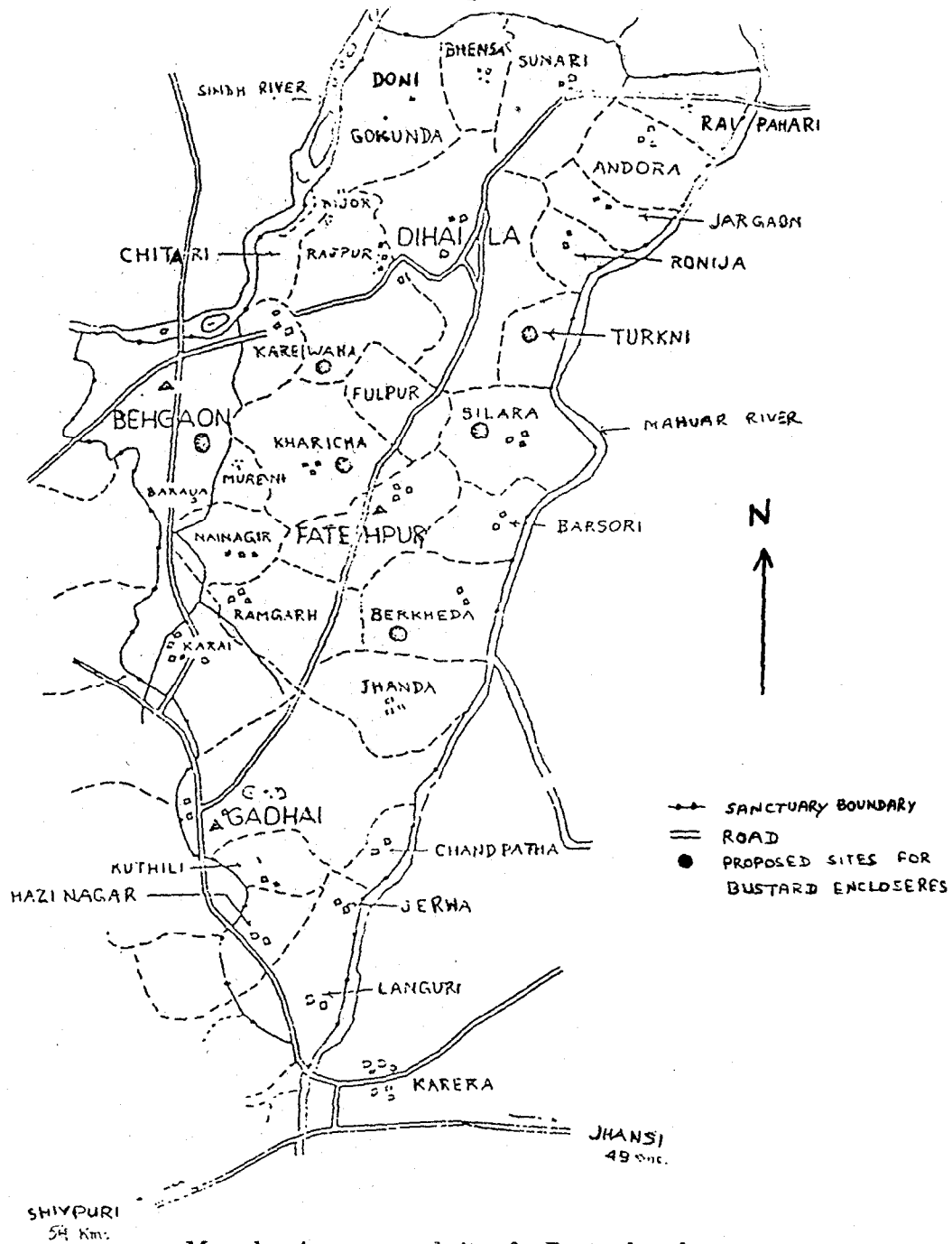
(5) *Solving the problem of Crop Raiding by Black-buck* : The translocation of Black-buck to other areas is not possible. Almost all the methods to catch Black-bucks for translocation to some other suitable area have been tried but no success achieved. To minimise crop damage, the maximum possible number of Black-buck is proposed to be brought inside enclosure constructed using chain link fence and G.I. pipe in important Black-buck areas. Inside these enclosures crops like gram (*Cicer arietinum*) should be raised for use of Black-bucks and drinking water facility should be provided. Proposed sites for Black-buck enclosure are shown in Fig. 3.

(6) *Carrying out ecodevelopment works*: Keeping in mind the need and activities of the people living inside the Sanctuary following ecodevelopment works are suggested to be taken up. Ecodevelopment activities are necessary for getting cooperation of villagers and thereby in protection of the Sanctuary area.

(a) *Establishment of Gobar gas plants*: At least 5 gobar gas plants should be established in each village on individual basis.

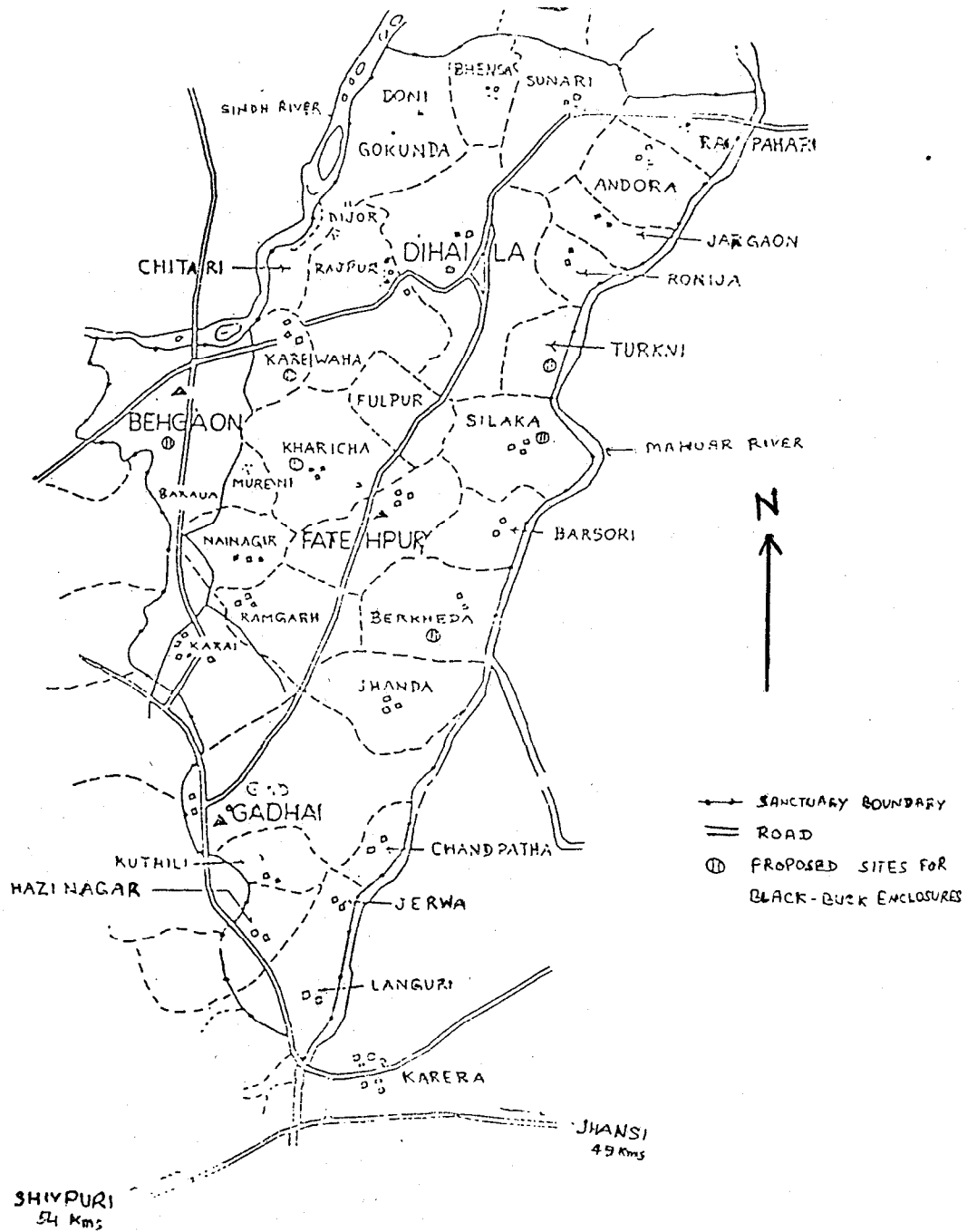
(b) *Veterinary care / Cattle-breed Improvement and Stall Feeding* : A large

Fig. 2



Map showing proposed sites for Bustard enclosures

Fig. 3



Map showing proposed sites for Black-buck enclosures

number of uneconomic cattle maintained by villagers inside the Sanctuary is to be discouraged and small number of high milk yielding cows and strong bulls capable of pulling the bullock cart is to be encouraged. The high milk yielding cattle will have to be stall fed for profitable cattle rearing and dairying. It is therefore proposed to undertake an extensive breeding programme by artificial insemination. The cross bred cows will have to be provided with good veterinary care to ensure checking of diseases and keeping them in economically viable position.

(e) *Lift Irrigation* : Lift irrigation facilities to the villages situated near Mahuar and Sindh rivers should be provided.

(d) *Crop Insurance* : In view of the Black-buck damage to crops, it is advisable to get the farmers crops insured through G.I.C. or any other insurance company with Forest Department contributing a part of premium as a goodwill gesture. The compensation of damage to crops by Black-buck may be made to the owner after making a survey of the damage by the concerned insurance company team.

(e) *Growing of crops like gram (Cicer arietinus)* : The practice of departmental cultivation of gram (*Cicer arietinum*) for use by Black-bucks should be continued till Black-buck problem is completely solved. It

has been unequivocally proved that such a practice provides relief to farmers.

Discussion

Zizyphus rotundifolia ecosystem is facing many problems which are to be attended to urgently. In this area having no forest land, destruction of habitat is taking place by way of agricultural expansion, cattle grazing, human needs and activities and digging of wells. Increase in number of Black-bucks has added many factors including hostility of villagers and change in crop pattern, inhibitory for Bustard conservation. Predators like Fox are no less a problem. Development of Dihaila Jheel is not possible as the land of Jheel and its catchment area is not under the control of Forest Department. In order to mitigate these problems remedial measures such as acquisition of land, extension of sanctuary area, habitat manipulation for its development, construction of Bustard enclosures, Dihaila Jheel catchment area treatment, solving the problem of Black-buck depredation on crops, control on use of water of Dihaila Jheel, development of heronries around Dihaila Jheel, control on grazing and carrying out ecodevelopment works are suggested to be adopted immediately. These measures are essential for bringing Karera Sanctuary with its unique ecosystem out of danger.

SUMMARY

Bustard Sanctuary, Karera, has no forest land. Situated inside the sanctuary are 32 revenue villages having a total human and cattle population of 33,156 and 42,907 respectively. This Bustard habitat which is also well known now for its Black-buck problem and famous Dihaila Jheel deserves proper attention to save it along with its *Zizyphus rotundifolia* ecosystem. The present paper highlights various problems and suggests remedial measures needed urgently to mitigate these problems. Tackling of these problems immediately is essential in order to bring Bustard Sanctuary, Karera, out of danger.

करेरा अभयारण्य - समस्याएं और समाधान

आर०डी० शर्मा

सारांश

सारंग अभयारण्य करेरा में, जिसमें अभयारण्य के अन्दर कोई वन क्षेत्र नहीं है, 32 गाँव बसे हुए हैं जिनमें मानव और पशुओं की संख्या क्रमशः 33,156 और 42,907 है। इस सारंग प्राकृतावास पर, जो अब अपनी कृष्णसार समस्या और दिहायला झील के कारण विख्यात हो चुका है, अपनी जिजीफस रोटुण्डिफोलिया परिस्थिति-संहति बचाने के लिए समुचित ध्यान दिये जाने की आवश्यकता है। प्रस्तुत अभिपत्र में विविध समस्याओं पर प्रकाश डाला गया है और उनको घटाने के लिए तत्काल आवश्यक सुधारात्मक उपाय सुझाए गए हैं। इन समस्याओं से तत्काल निबटना अभयारण्य को खतरे से बाहर निकालने के लिए बेहद जरूरी है।

References

- Rahamani, A.R., B. Bhusan and Eric D. Cunha (1985). Threat to Karera Bustard Sanctuary : recommendations for conservation. B.N.H.S. *Technical Report* No. 6/85 Endgd sp., August.
- Rahmani, A.R. (1987). Dihaila jheel conservation strategies. B.N.H.S. *Technical Report* No. 12.
- Sharma, R.D. (1994). Black buck damage - As a problem for Sanctuary Management in Bustard Sanctuary, Karera. *Indian Forester*, **120** (10) : 924-928.
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