SANCTUARIES & NATIONAL PARKS OF GUJARAT

Wildlife Sanctuaries and National Parks of Gujarat

सत्यमेव जयते

SANCTUARIES—NATIONAL PARKS
GUJARAT

WILD LIFE MANAGEMENT IN GUJARAT

When Gujarat State was carved out in the year 1960 from the bigger bilingual State it had only one sanctuary in the Gir Forest. However, in 1983, the State has an enviable Wild life wing within the Forest Department. A separate wing was established in 1970 and is headed by a full-fledged Chief Conservator of Forests, who is also the Chief Wild Life Warden of the State.

The State is endowed with some of the rarest wild life in the country : Asiatic lion, Indian, Wildass, Great Indian Bustard to name a few.

The high concern of the Forest Department for the rich fauna (40 species of mammals and 425 of birds) was reflected in formation of 10 wild life sanctuaries and 4 national parks. Total area under these reserves comes to 7,555 sq. km. of land area of which about 4,200 sq. km. is in the reserved forest area. Thus 20 per cent of the total forest area is under wild life reserves which is above the national average and equalised by few States in the country.

Here again the innovative genius of the Department is revealed in the formation of the country's first Marine National Park and Marine Wild life sanctuary in the Gulf of Kachchh.

Gujarat is the First State in the country to establish a nature education sanctuary to inculcate love and understanding for nature and wild life in the minds of school children 60 kms. away from Rajkot, on Gondal-Jasdan-Ahmedabad Highway, Hingolgadh Nature Education Sanctuary has been established. Here the school children receive such training through nature education camps organised by the State Forest Department.

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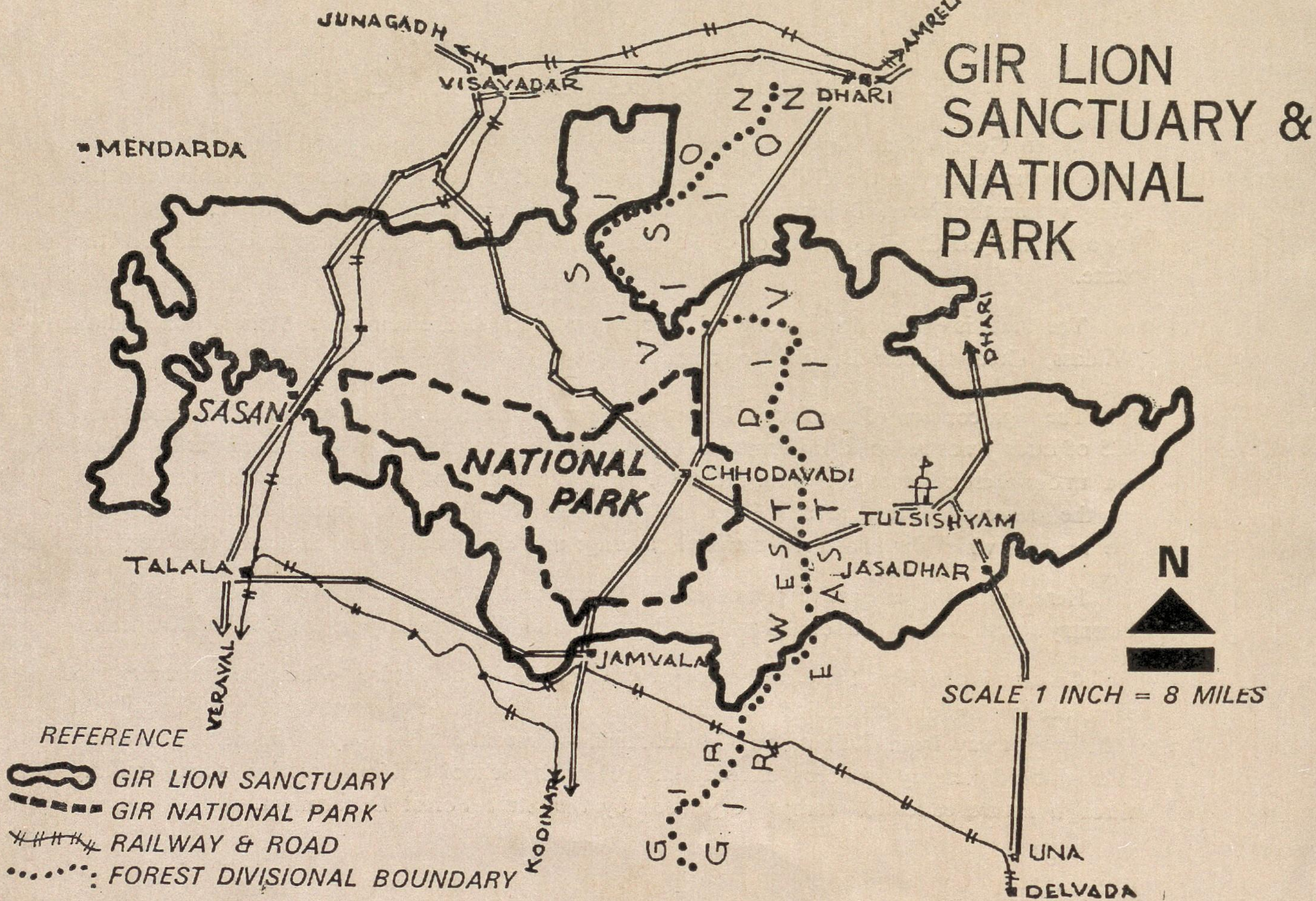
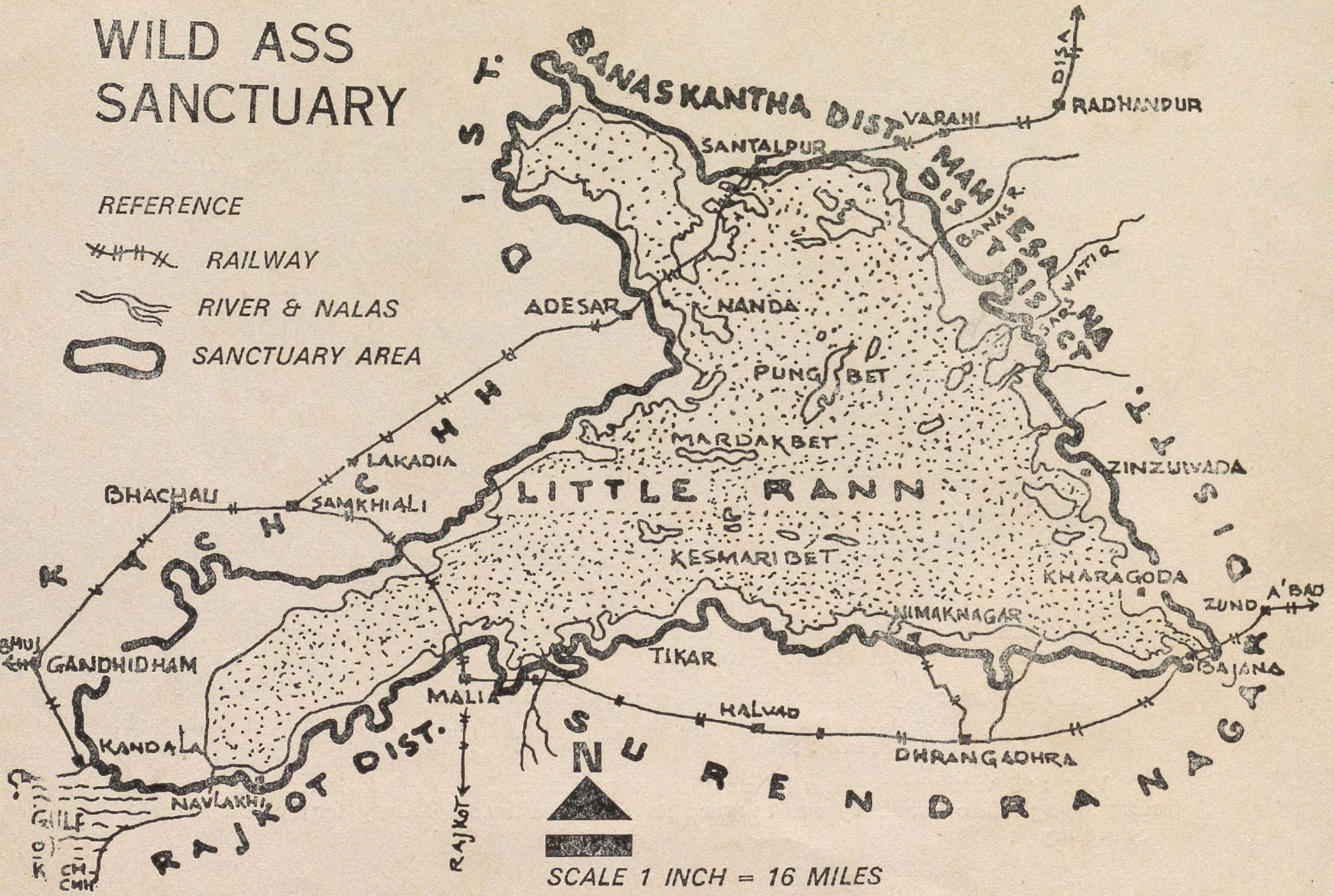

GIR LION
SANCTUARY &
NATIONAL
PARK
JUNAGADH
AMRELI
VISAVADAR
DHARI
MENDARDA
SASAN
NATIONAL PARK
CHHODAVADI
TULSISHYAM
DHARI
JASADHAR
TALALA
JAMVALA
VERAVAL
KODINAR
UNA
DELVADA
N
SCALE 1 INCH = 8 MILES
SOUTH DIVISION
WEST DIVISION
EAST DIVISION
GIR
GIR
REFERENCE
GIR LION SANCTUARY
GIR NATIONAL PARK
RAILWAY & ROAD
FOREST DIVISIONAL BOUNDARY

&

GIR LION NATIONAL PARK

Location :	Junagadh District, 64 Km. from Junagadh or 32 Km. from Veraval.	
Area :	1412 Sq. Km.	
Wildlife :	Indian Lion Panthers, Black buck, Fourhorned antelope, deers, sambars, Wild boar, Crocodile and a variety of birds.	
Nearest Airport	Rajkot	: 166 Km.
	Keshod Airport	: 86 Km.
Railway :	Veraval Station	: 32 Km.
	Sasan Gir	: 0 Km.
Best Season :	Between January-May	
Accommodation :	Forest Guest House at Sasan with full catering facilities. ITDC forest lodge is also available at Sasan.	
Other facilities :	Vehicles are available for visit to sanctuary at moderate rates Guides and Library available. Entertainment by wildlife films and slide shows.	
Enquiry :	Sanctuary Superintendent, Gir Lion Sanctuary, Sasan Phone : 60. Conservator of Forests, Wild life Circle, Sardarbag, Junagadh, Phone : 910.	

Visit and view the majestic Indian Lion in its natural habitate and last abode in natural surrounding. The Sanctuary was awarded its First Chairman's Trophy for the Best Managed Sanctuary in 1976.


WILD ASS SANCTUARY
REFERENCE
RAILWAY
RIVER & NALAS
SANCTUARY AREA
BANASKANTHA DIST.
RADHANDUR
DISA
VARAHI
SANTALPUR
MAHESANA DIST.
MAHESANA DISTRICT
BANAS R.
SARASWATI R.
ADESAR
NANDA
PUNG BET
MARDAK BET
LITTLE RANN
KESMARI BET
ZINZUWADA
KHARAGODA
ZUND
A'BAD
NIMAKNAGAR
BAJANA
TIKAR
HALVAD
DHRANGADHRA
MALIA
KACHCHH DIST.
LAKADIA
BHACHAU
SAMKHIALI
BHUJ
GANDHIDHAM
KANDALA
NAVLAKHI
GULF OF KACHCHH
RAJKOT DIST.
RAJKOT
SURENDRANAGAR DIST.
N
SCALE 1 INCH = 16 MILES

WILD ASS SANCTUARY

Location :	Surendranagar / Kutch District 65 Km. from Surendranagar towards Halwad. Little Runn of Kachchh.
Area :	4954 Sq. Km.
Wild Life :	Indian Wild Ass. Panther, Black buck, Blue bull, Wolves, Jackals, Wild boar and Birds.
Nearest Airport :	Rajkot Airport : 140 Km.
Railway Station :	Halvad Railway station : 5 Km.
Best Season :	February-May
Accommodation :	Government Rest House at Dhrangadhra with facilities for catering.
Other facilities :	
Enquiry :	Sanctuary Superintendent, Wild Ass Sanctuary, Dhrangadhra, District Surendranagar Phone Dhrangadhra. OR Conservator of Forests, Wild Life Circle, Sardarbag, Junagdh (Phone : 910)

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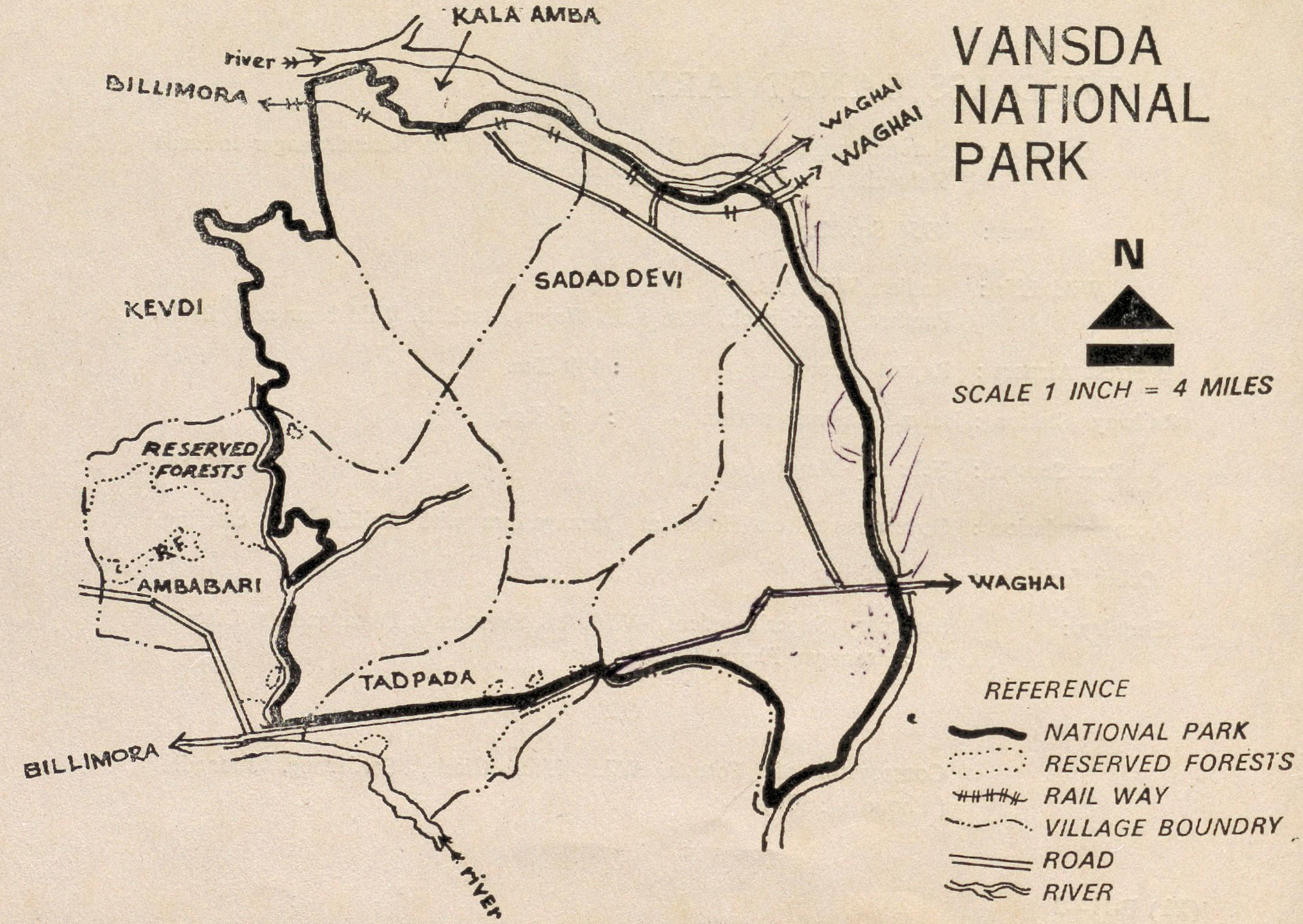

VANSDA
NATIONAL
PARK
KALA AMBA
river
BILLIMORA
WAGHAI
WAGHAI
N
SCALE 1 INCH = 4 MILES
SADAD DEVI
KEVDI
RESERVED
FORESTS
R.F.
AMBABARI
WAGHAI
TADPADA
BILLIMORA
river
REFERENCE
NATIONAL PARK
RESERVED FORESTS
RAIL WAY
VILLAGE BOUNDRY
ROAD
RIVER

VANSDA NATIONAL PARK

Location : Valsad District about 40 Kms. from Billimora.

Area : 7 Sq. Km.

Wild Life : Tiger, Panther, Wild boar, Hyaena, Sambar, Four horned antelope etc.

Nearest Airport : Bombay : 320 Kms.

Vadodara : 200 Kms.

Railway Station : Billimora : 40 Kms.

Best Season : November-February

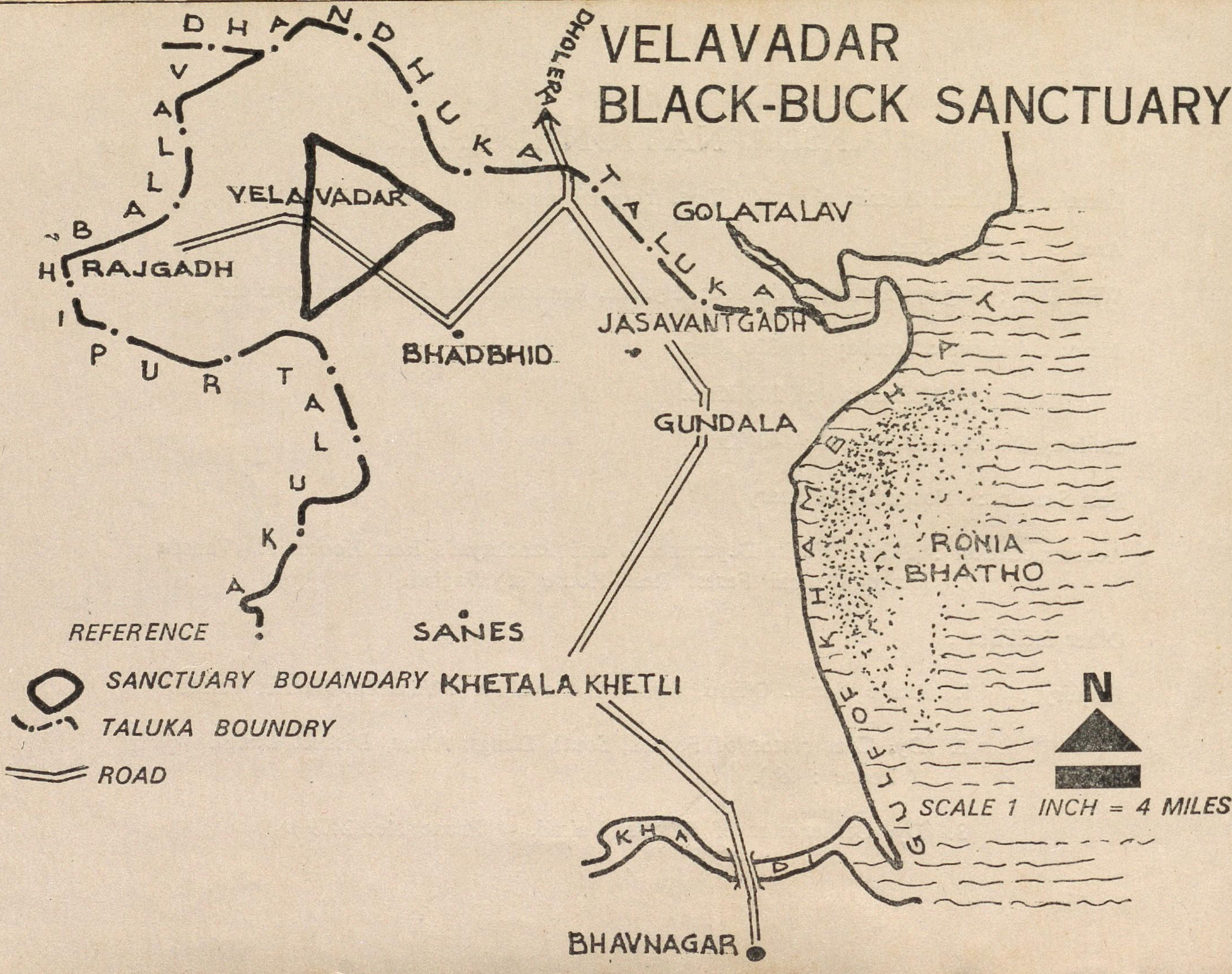
Accommodation : Public Works Department's and Panchayat's Rest Houses at Vansda and Waghai Forest Rest House at Waghai.

Other facilities :

Enquiry :

1. Range Forest Officer, Vansda National Park, Vansada, District Valsad.
2. Dy. Conservator of Forests, South Dangs, Ahwa, District Dangs. (Phone : 46).
3. Dy. Conservator of Forests, Valsad. (Phone No. 2419).

VELAVADAR BLACK-BUCK SANCTUARY



VELAVADAR BLACK BUCK NATIONAL PARK

Location	: Bhavnagar District 65 Km. from Bhavnagar on Vallabhipur Road. Between Ahmedabad Bhavnagar.
Area	: 18 Sq. Km.
Wildlife	: Black bucks, wolf.
Nearest Airport	: Bhavnagar Airport 65 Km.
Railway Station	: Bhavnagar Railway Station 65 Km.
Best Season	: November-May
Accommodation	: A tourist lodge is situated near the National Park, Catering facilities are available if intimatated in advance.
Other facilities	: Circuit house at Bhavnagar.
Enquiry	: Range Forest Officer, Velavadar, Black Buck National Park, At Velavadar. P. O. Vallabhipur, District Bhavnagar.

Deputy Conservator of Forests, Bhavnagar Division, Bhavnagar (Phone 24644).

OR

Conservator of Forest 5, Wild Life Circle, Sardarbag, Junagadh (Phone : 910).

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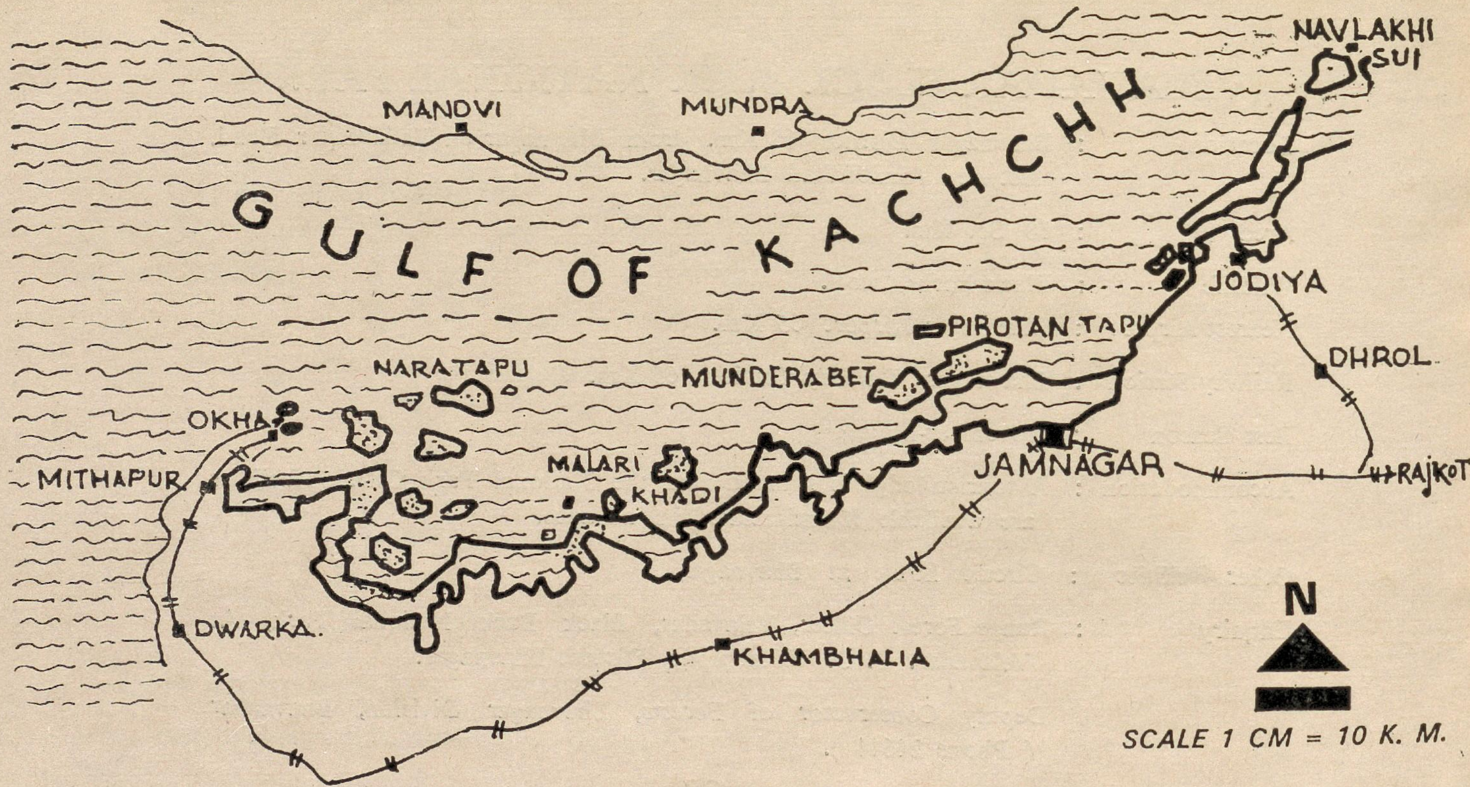


REFERENCE

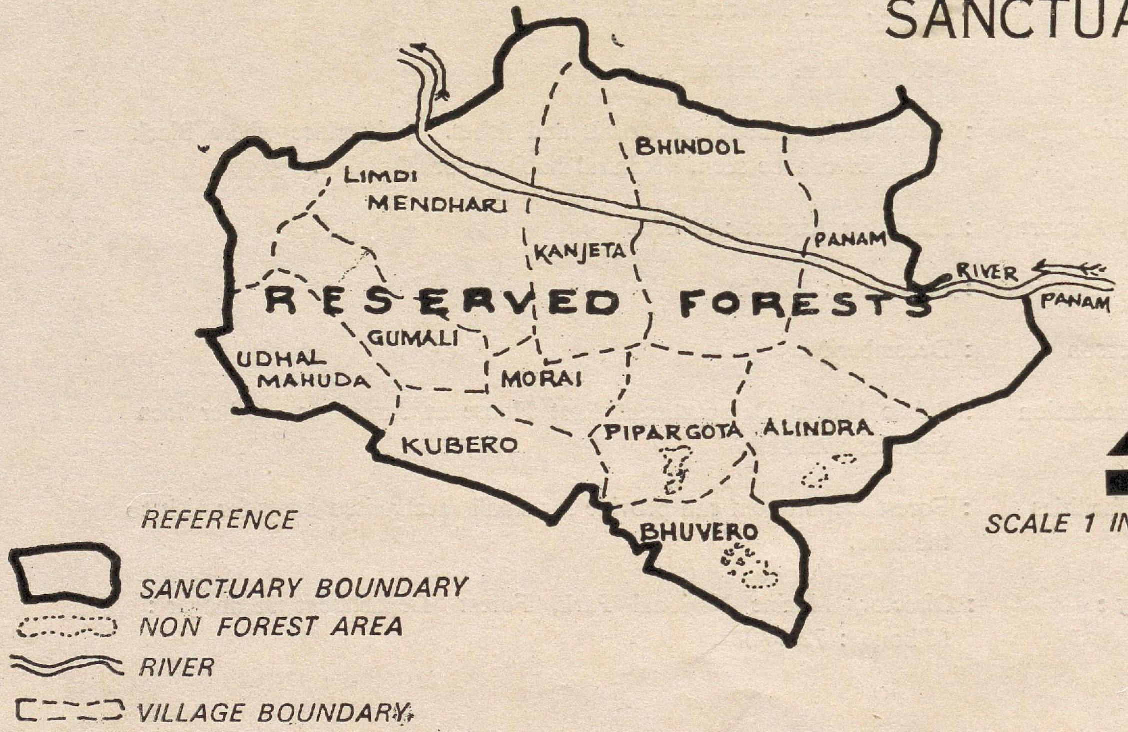
MARINE SANCTUARY AREA
MARINE NATIONAL PARK
RAIL WAY

MARINE SANCTUARY & NATIONAL PARK

MARINE NATIONAL PARK / SANCTUARY

Location	: Jamnagar District Along the coast in Gulf of Kachchh from Jodia to Okha.
Area	: 163 Sq. Km. National Park. 458 Sq. Km. Sanctuary.
Wild Life	: The area is famous for Corals and fishes. Only place where Black Cornalia can be seen. Natural habitat for Dolphin.
Nearest Airport	: Jamnagar Airport : 30 Km.
Railway Satation	: Jamnagar : 30 Km.
Best Season	: December-May
Accommodation	: Public Works Dempartment Rest House at Jamnagar. Other local facilities available.
Other facilities	: Forest Department can provide for small mechanised boats for visit to the area.
Enquiry :	: Director, Marine National Park, Forest Department Jamnagar : (Phone : 72077).

RATAN MAHAL SLOTH BEAR SANCTUARY



SCALE 1 INCH = 4 MILES

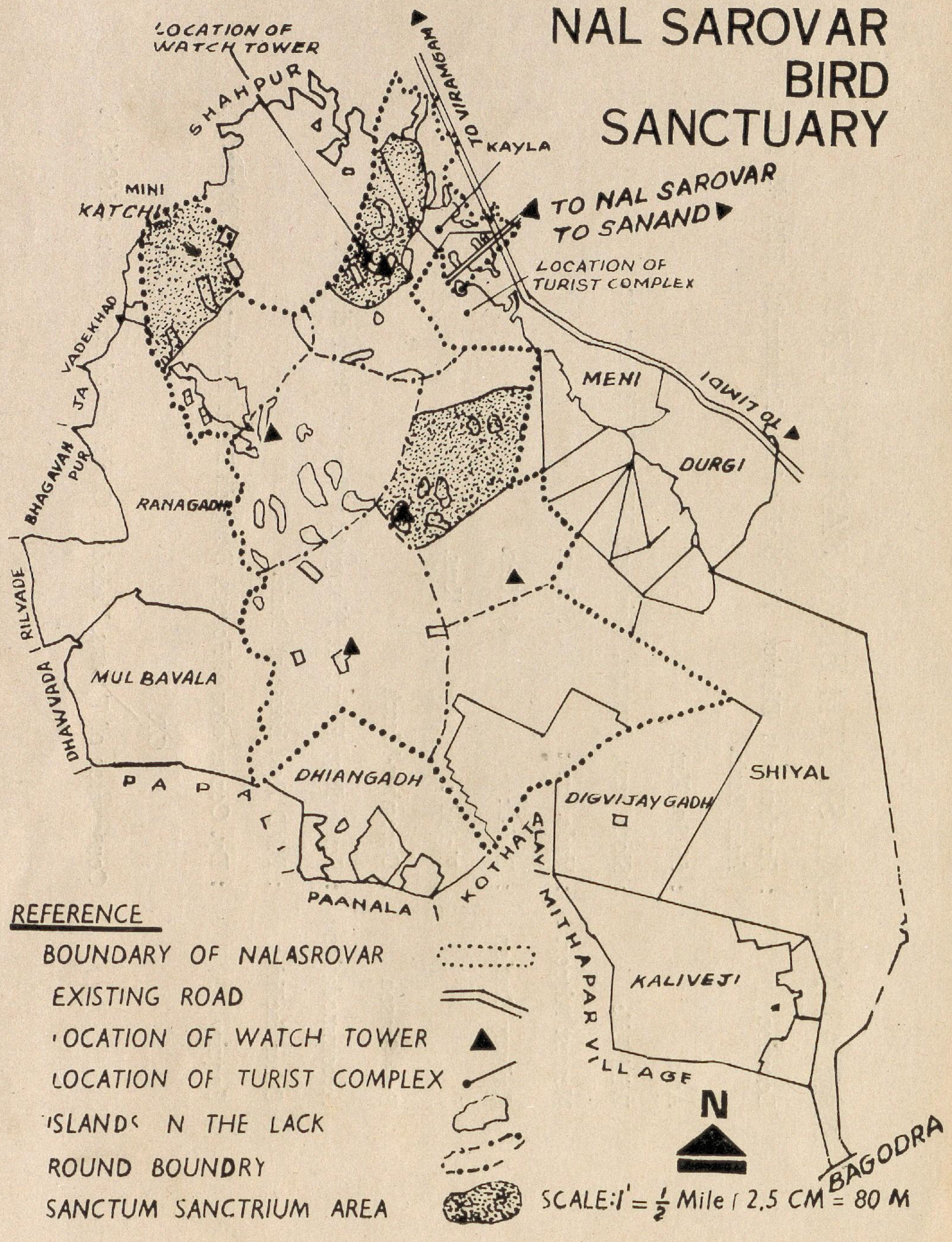
RATANMAHAL SLOTH BEAR SANCTUARY

Location	: Panchmahals District, Limkheda taluka, Ratanmahal Hills 45 Kms. from Baria.	
Area	: 56 Sq. Km.	
Wild Life	: Sloth bear, Panther, Chinkara, Nilgai, Wild boar etc.	
Nearest Airport !	: Vadodara :	115 Kms.
Railway Station	: Baria :	45 Kms.
	Piplod :	8 Kms.
Best Season	: December-March	
Accommodation	: Small Rest House at Pipargota village in Baria division.	
Other facilities	: PWD Rest house at Baria.	
Enquiry	: Dy. Conservator of Forests, Devgadh Baria, Panchmahals, (Phone:25).	

OR

Conservator of Forests, Vadodara Circle, Vadodara (Phone : 55945(0).)

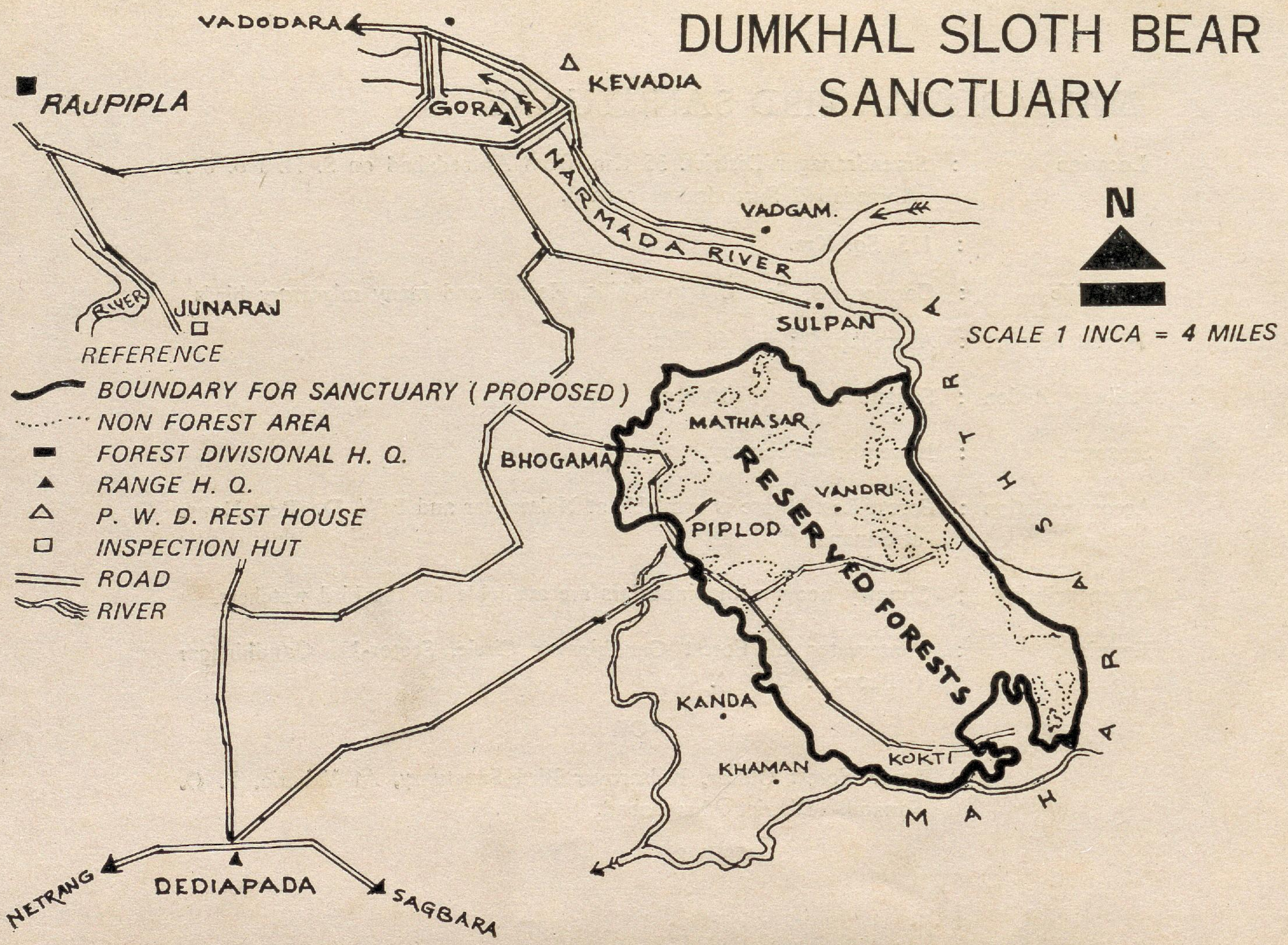
NAL SAROVAR BIRD SANCTUARY



NALSARGOVAR BIRD SANCTUARY

Location	:	Surendranagar District. 35 Km. from Ahmedabad on S. H. No. 8 A Ahmedabad Surendranagar road.
Area	:	115 Sq. Km.
Wild Life	:	Cormorants, Egrets, Spoon bills, Herons and many migratory birds
Narest Airport	:	Ahmedabad : 64 Km.
Railway Station	:	Sanand : 10 Km.
Season	:	November—February.
Accommodation	:	Forest Rest House is available at Nalsarovar and P W. D. Rest House at Sanand.
Other facilities	:	Country boats with binoculars are available for the bird watchers.
Enquiry	:	Conservator of Forest Gandhinagar Circle, Sector-19, Gandhinagar (Phone : 2554). OR Range Forest Officer, Nalsarovar Bird Sanctuary, At Vekaria, P. O. Sanand, District Ahmedabad.

DUMKHAL SLOTH BEAR SANCTUARY

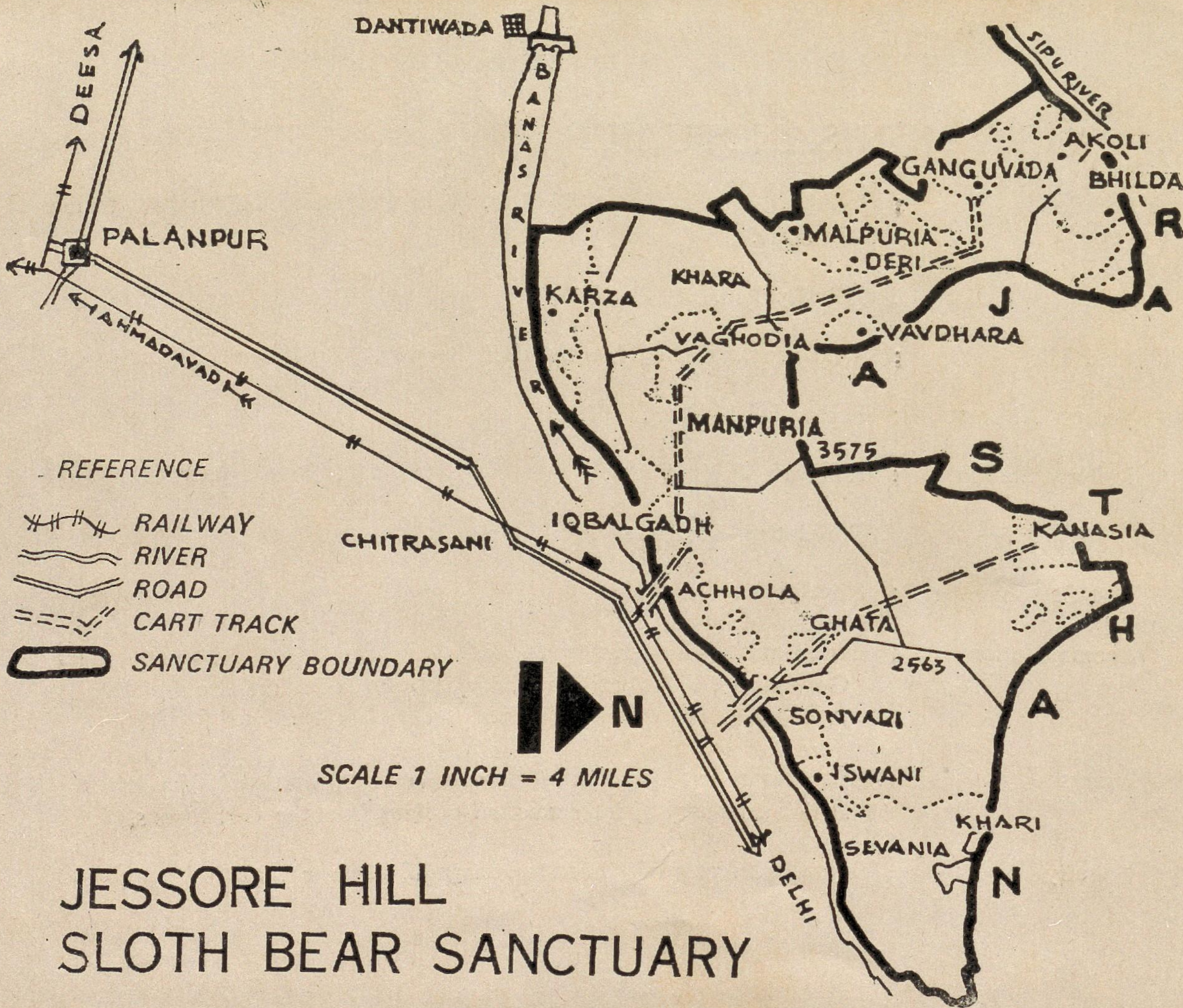


DUMKHAL SLOTH BEAR SANCTUARY

Location	:	Bharuch District, Dediapada Taluka.
Area	:	151 Sq. Km.
Wild Life	:	Sloth bear, Panther, Sambar, Fourhorned antelope Hyaena, and many varieties of birds.
Nearest Airport	:	Vadodara— 125 Kms.
Railway Station	:	Ankleshwar— 60 Kms.
Best Season	:	November to March.
Accommodation	:	Dediapada 30 Kms. P. W. D. and Panchayat Rest House are there.
Other facilities	:	
Enquiry	:	Deputy Conservator of Forests : Rajpipla East, Rajpipla District Bharuch, Phone No. 13.

BARDA LION SANCTUARY

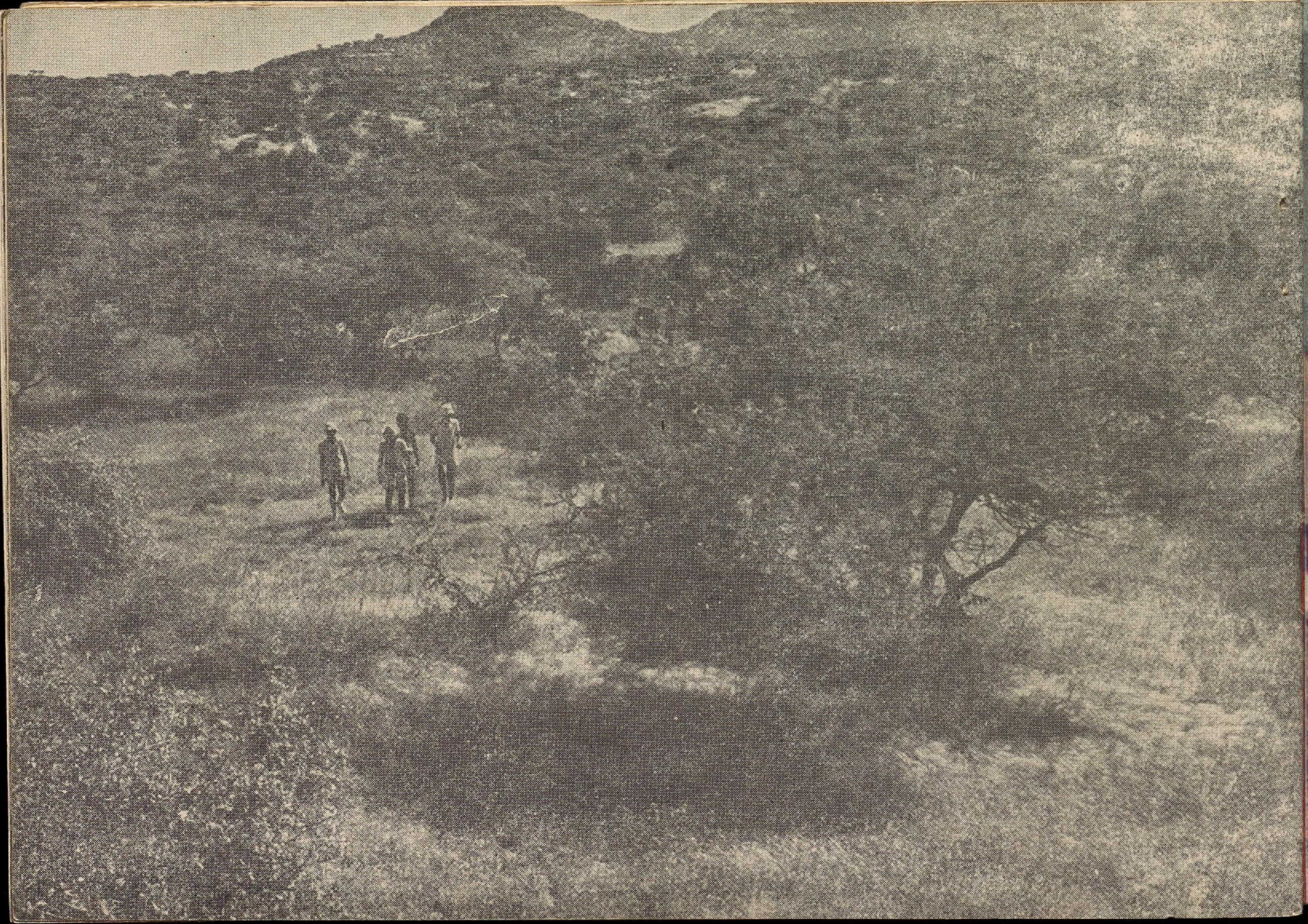
Location	:	Junagadh District about 14 kms. from Porbandar and 0 kms. from Ranavav.
Area	:	192. Sq. Km.
Wild Life	:	Wild boar, Panther, Spotted deer, Sambar, Nilgai, Monkey.
Nearest Airport	:	Porbandar 14 Kms.
Railway Station	:	Ranavav—0 Kms. Porbandar—14 Kms.
Best Season	:	November to March.
Accommodation	:	Government Guest-House at Ranavav Panchayat Rest-house and Government Villas at Porbandar, Private Villas are also available at Porbandar.
Remarks	:	This sanctuary has no lions at present but it is proposed to develop it as lion sanctuary by int roduction of lions from the Gir. forests.
Enquiry	:	Dy. Conservator of Forests, Junagadh. (Phone : 100).

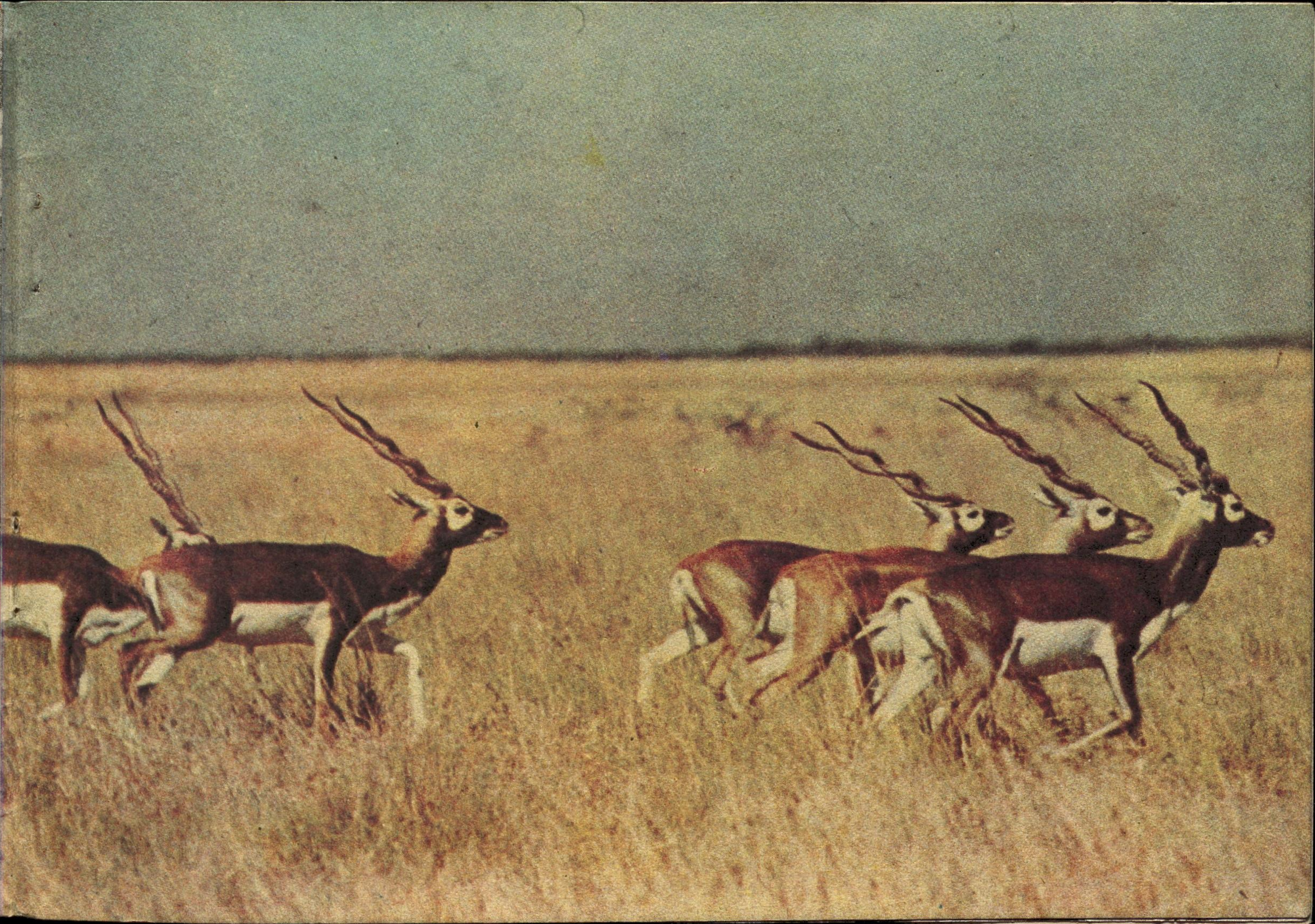


JESSORE HILL SLOTH BEAR SANCTUARY

JESSORE SLOTH BEAR SANCTUARY

Location	:	Banaskantha District 45 Kms. Palanpur.
Area	:	181.89 Sq. Km.
Wild Life	:	Sloth bear, Panther, Sambar, Nilgai, Wild boar, Porupine, varieties of birds.
Nearest Airport	:	Ahmedabad 190 Kms.
Railway Station	:	Palanpur—45 Kms. Iqbalgadh—8 Kms.
Best Season	:	December—February
Accommodation	:	1. Amirgadh P. W. D Store at 10 Kms. 2. Dantiwada Irrigation Inspection Bungalow and Balaram Holiday Home both at 20 Kms. from Jessore.
Enquiry	:	Deputy Conservator of Forests : Banaskantha Division, Palanpur (Phone : 2543).



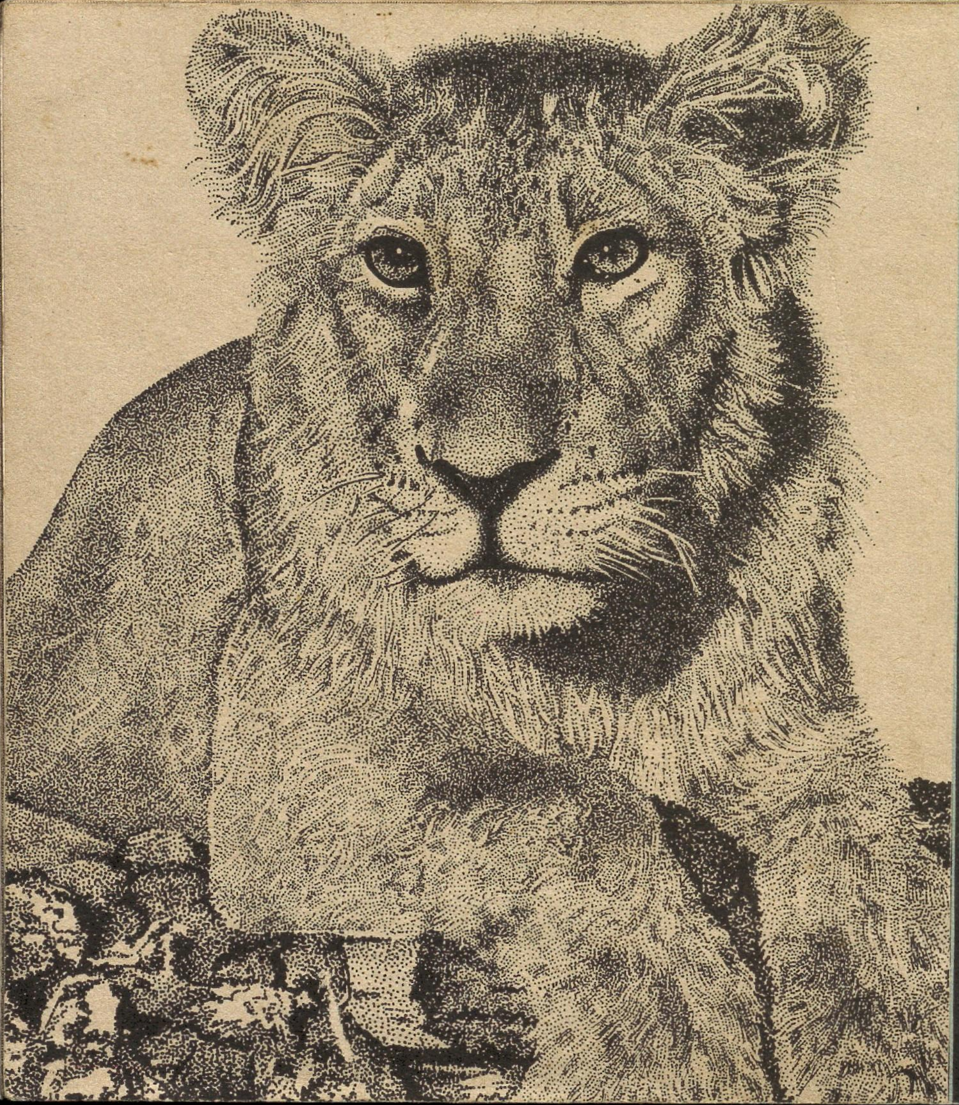


HINGOLGADH NATURE EDUCATION SANCTUARY

Location	:	Rajkot district, Motisar Vidi area 10 Kms. away from Jasdan.
Area	:	6.54 Sq. Kms.
Wild Life	:	Migratory birds like, Kunj, Flamingo and many more.
Nearest Airport	:	Rajkot : 80 Kms.
Railway Station	:	Rajkot : 80 Kms.
		Jasdan : 10 Kms.
Best Season	:	November to March
Accommodation	:	P. W. D. Rest House (Small) at Jasdan.
Remarks	:	This sanctuary is specially created for imparting nature education school children by holding nature education camps. An old fort belonging to the erstwhile princely State of Jasdan is also one of the main attraction for the camps.
Enquiry	:	Dy. Conservator of Forests, Jamnagar (Phone : 6844).

Issued by Wild Life Wing
Gujarat Forest Department
October 1984.

COVER PRINTED AT GOVT. PHOTO LITHO PRESS, AHMEDABAD



FOREST DEPARTMENT
GOVERNMENT OF GUJARAT

Bz 9/5/04 PA10

Flamingo rescue mission abandoned

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United News of India
Ahmedabad, May 8

FOREST officials have called off a mission to rescue perishing flamingo chicks in the Great Rann of Kutch after concluding that the deaths were a natural phenomenon.

"This decision to abandon the rescue mission, launched a few days back, has been taken by the forest department after detailed consultations with veterinary experts, orinthologists, former forest department officials and after observations of the rescue team which visited the bird's breeding site in Kutch," State Chief Conservator of Forests (Wildlife), Pradeep Khanna, told UNI.

The forest department had sent its rescue team to the region after reports of mass deaths of flamingo chicks. The team headed by Khanna had visited the breeding colony.

"From our observations during the visit, it can be concluded that the deaths are a pretty natural phenomenon and there is no need to press the alarm button," Khanna said.

"The chicks that are born late tend to suffer and the mortality rate of such chicks is also on the higher side. But we did not find any evidence of mass death of flamingo chicks as reported earlier," he said.

"During our visit we saw about 400-500 adult flamingos, still there, with their young ones. The team did rescue four flamingo chicks during the visit. But we finally decided to abandon the mission because we did not wish to create any further disturbance in the area and scare the birds which generally breed in seclusion."

"Some of those young chicks, which have been left behind by the parent birds, are old enough to fend for themselves."

Flamingoes breed as never before in Little Rann

TOI 14/10/98

By Shyam Parekh
The Times of India News Service

AHMEDABAD: Braving the cyclone that annihilated thousands of their species earlier this June, the Lesser Flamingoes (Phoeniconaias minor) are now multiplying as never before, having successfully built about 30,000 nesting mounds in the salt pans of the Little Rann of Kutch. The breeding boom has surprised even conservationists and raised hopes about the survival of these endangered birds.

Lesser Flamingoes have hitherto been known to breed only in the watery expanses of the Greater Rann of Kutch (Flamingo City), along with the Greater Flamingoes. This is considered to be the world's largest flamingo colony.

In recent years, their colonies have been sighted on the Kutch coastline at Cherwari near Surajbari bridge. However, the entire colony — along with thousands of birds, eggs, chicks and nesting mounds — was destroyed during the June 9 cyclone which hit Kandla port, leaving naturalists in doubt about the future of these birds.

Zeroing in on the location of the new colony, Gujarat Environmental Education and Research (GEER) Foundation director H.S. Singh told this newspaper: "It's about 20 km from the Wachchhraj Solanki Bet (Islet), west of Jalandhar Bet in the Little Rann."

Devji Dhamecha of Dhrangadhra Prakruti Mandal, Dhrangadhra (dist Surendranagar), which works for the protection of the Wild Ass Sanctuary in the Little Rann, also told *The Times of India*: "A 5,000 to 7,000-odd strong flock of birds was seen in 29 salt pans in the sanctuary area which has been declared a world heritage site. We also saw roughly 35,000 chicks, about 25,000 eggs and nearly 70,000 pairs of birds."

He said the nesting activity of the Lesser Flamingoes was last seen on a large scale in 1973 in the Greater Rann, but never here on such a massive scale. "The breeding season of these birds is usually June through July, but here it's been August through September. Previously, ornithologists made notes of two breeding sites in the area, not exceeding 1,000 mounds, in 1993 and 1995."

It was also observed that some of the birds, which were probably in a hurry to lay eggs, had laid them on the bunds of the salt pans.

Describing the Lesser Flamingoes, senior lecturer in the zoology department of Gujarat University, ornithologist Rishad Pravez, said they are usually between 90 to 105 cm tall and survive on Artemia Salina, a small shrimp found in the saline desert waters or in salt pans. Now, being a resident species of India, they are distributed elsewhere in the country and concentrated near the salt lakes, including Chilika in Orissa, Sambhar in Rajasthan and Point Calimere in Tamil Nadu. Their colonies, he added, had been earlier reported from the salt lakes of east Africa as well.

Dr Pravez, who has seen a maximum of 288 mounds in the Little Rann since 1986, said, "The design of this colony is spectacular. The salt pan bund acts as a wall, preventing chicks from running away. The mounds are in linear or parallel rows. We saw flocks of 6,000 and more chicks. Their courtship must have started in early July, followed by nest building. The first report of breeding was received on August 24. The chicks take about 70 days to fly."

Commenting on the shift in the location of the breeding ground, Dr Singh said, "In the '70s, Salim Ali had reported a group nesting here, but this was very small. They prefer widespread shallow water up to one foot deep and make their nests up to 40 cm high from the mud, so that the chicks get enough food right from the mounds. We've seen about 30,000 mounds in an area of 2.5 sq km."

Eng PA10

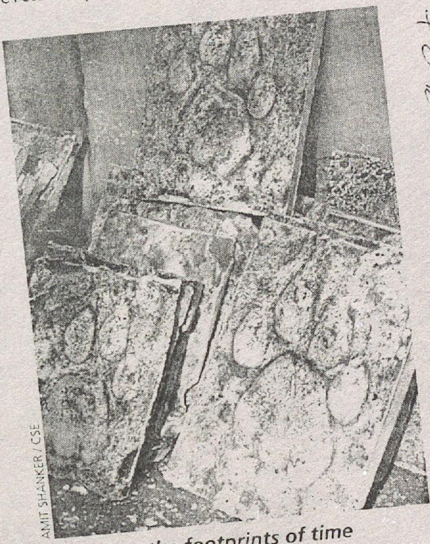
NEWS

Extinct!

Roar of the tigers will not be heard in Gujarat any more

THE Tiger Census of 2001 has revealed that the majestic tigers found in Gujarat from Valsad to Banaskantha are now extinct. After the pug marks of the tiger recorded in 1997 census, the forest department authorities have not sighted any tiger for the last four years. Habitat crunch in Gujarat has trigerred the decline of tiger population. The 2001 census showed that the tigers have not even strayed into Gujarat from Madhya

Down to Earth



AMIT SHANKER / CSE

Cast into the footprints of time

Pradesh or Rajasthan forests in the last four years.

In 1992-93, the census had recorded pug marks of five tigers and in the 1997 census pug mark of only one tiger was recorded. "Three out of eight sub species of tigers are extinct. Now the only place to see a tiger in Gujarat is zoo or museum," said a forest official.

INDIAN EXPRESS
FEB 3,2001

Meet on wetlands held

EXPRESS NEWS SERVICE

RAJKOT, FEB 2: The Gujarat Vigyan Parishad Environment Education Centre at Kotak Science College in Rajkot today organised a programme to mark World Wetland Day, 2001. The objective of the programme was the importance of wetlands and the need to set up a centre for wetland studies in Saurashtra-Kutch region.

The slogan for the programme was "Wetland World A World To Discover" and people were encouraged to launch a State-wide and nation-wide campaign to highlight the importance and use of wetlands.

Dr Paresh Pandya, a member of the GVP, said wetlands, which help in flood control, groundwater replenishment, shoreline stabilisation, storm protection, sediment and nutrient retention, climate change mitigation, water purification, reservoirs of biodiversity, resisting earthquakes and recharging groundwater, should be increased. They are also invaluable as repositories of many unique varieties of flora and fauna.

The GVP said Gujarat has a special place in the country's wetland-based protected areas (PAs). This is because seven of all protected areas in the State are wetland-based, including Great Rann of Kutch, Little Rann of Kutch, Nalsarovar, Thol Lake, Khijadia Lake, Porbandar Lake and the Marine National Park. They cover about 1,35,502 sq km, which is about 77.2 per cent of the total protected area in the state, Pandya said.

In order to conserve conserve wetlands we should save water whenever and wherever possible, avoid discharging domestic waste water to natural water ways, stop dumping garbage in wetland areas, try to use environment friendly products and reduce use of pesticides, herbicides and excessive fertilisers, Pandya said.

201/Oct 76 Nathist ✓ Guj PAV34 ✓ 2

Jungles of Panchtantra to come alive in Gujarat SAJID SHAIKH

VADODARA: The jungles of the famed 'Panchtantra' are about to come alive in Gujarat. And along with them all those 'once upon a time stories'. Stories that spoke of the pristine forests and its wild dwellers -- the lion king, red-faced monkeys, smart.No folklore this, the state forest department indeed wants to bring back the jungles describe the 'Panchtantra'.

In what seems to be the most ambitious plan ever drawn up by a government agency, the state forest department has developed a Rs 200-crore management plan for as many as 21 forest sanctuaries and four national parks including the Gir and Black Buck national park in Gujarat. The plan was recently approved by a high-level committee of experts and will be implemented soon.

"The thrust of this plan is on wildlife, conservation of bio-diversity or the habitat for wildlife," deputy chi conservator of forest M M Sharma told TNN.He said earlier projects on forests had not focused specifically on wildlife. "Here we are focussing on wild animals. Everything else revolves around them. We would like to manage the forests in such a way that it becomes more conducive for wildlife, their population increases and that the endangered species are protected," Sharma said.

He said the objective was to restore the former glory of forests. "We want to bring back to present day forests the image that the 'Panchtantra' conjures for us. A jungle full of birds and animals having abundant foliage making their home more comfortable to live in," Sharma observed.

He dubbed the management plan as a work of excellence that had contributions from some of the finest experts from the Wildlife Institute of India, the Central government, the National Institute of Oceanography, academicians as well as the international principles and practices of forest management. "Besides our own indigeno management systems we have also adopted from foreign literature especially the studies on wild animals like lions, sloth bears etc," Sharma said.

Preliminary drafts for the management of the Wild Ass Sanctuary, Ratanmahal Sloth Bear Sanctuary, Narayan Sarovar Chinkara Sanctuary and the Kutch Desert Sanctuary have already been prepared. Also, about 21 senior rank forest officers have taken the tasks of putting the management plan comprehensively in the form of a voluminous study report on individual sanctuaries and national parks.

"The management plan is in context of the wildlife. It is the wild animals living in forest that we are focussing on. Once upon a time when the forests were rich, these wild beasts were found in huge numbers. Gradual as the forest cover depleted, their numbers shrunk. We want to reverse this trend. Make forests thick and let wildlif flourish," conservator of forests, wildlife circle Vadodara R N Tripathi said. He said help of local NGOs and volunteers would be taken to implement the management plans.

"A part of this management plan is devoted to the development schemes of forest. It has laid down the way to minimise man-animal confrontation, reduce the dependency on forest resources of villages falling in forest limit and reduce the negative impacts on bio-diversity," Tripathi said.

Gujarat

PAV

From: <NALINM@aol.com>
To: Natural History of South Asia - General discussion and research <nathistory-india@lists.Princeton.EDU>
Subject: Re: Tigers officially extinct in Gujarat

Tigers officially extinct in Gujarat

TIMES OF INDIA, NOV 5, 2001

Tigers' roar silenced in Gujarat

ADODARA: Its official. The roar of the majestic tiger has been silenced forever in the state. If census reports of 1992-93 and 1997 had raised hopes that these Scheduled-I animals might still be lurking in some parts of Gujarat, the recently-concluded Tiger Census of 2001 has made official, what forest officials and wildlife enthusiasts were loath to admit.

Tigers - found in abundance in Gujarat from Valsad to Banaskantha till the 1950s - are now extinct. Four years after the 1997 census, that recorded pug marks of a tiger, the forest department has not come across any tiger sightings.

Forest department officials admitted that their hopes — slim as they were — to come across tigers during the 2001 census had been dashed. "Tigers are now extinct from Gujarat", they said ruefully.

Speaking to Times News Network, a senior official said: "Its disappointing but not surprising. There has been a gradual loss of tiger habitat in Gujarat. The 2001 census shows that they have not even strayed into Gujarat from neighbouring states during last four years.".

The 1997 census had recorded the presence of one tiger, while the 1992-93 census had recorded pug marks of five tigers.

State forest department documents say between December 1991 and January 1992 ne tiger was killed on the Rajasthan border in North Gujarat. In both 1992-93 and 1997 census, the tigers had strayed into Gujarat from Madhya Pradesh and Rajasthan forests.

"The survey of areas, where there was probability of tiger presence, only led to disappointment. Residents here still talk of having seen a tiger. But we did not come across any scientific evidence to corroborate their claims", the official said.

Oral as well as recorded history mentions that Moghul emperors, rulers of Gujarat sultanate and princely states like Baroda hunted tigers for years. "There are eight sub-species of tigers of which three are already extinct. In India, the tigers belong to the Royal Bengal sub-species. Sadly, now the only places to see a tiger in Gujarat are zoos and museums", the official said.

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Rs 2,000 cr worth forest land scam rocks Gujarat
SHYAM PAREKH / TIMES NEWS NETWORK[WEDNESDAY, FEBRUARY 12, 2003 03:57:07 AM
]AHMEDABAD: The Gujarat forest department has unearthed the biggest land scam in the state, estimated at over Rs 2,000 crores. It involves encroachment of over 60,000 acres of land belonging to sanctuaries, reserved forests and protected forest areas in the districts of Vadodara, Bharuch and Panchamahals.

This is believed to be the tip of the iceberg, as much larger forest areas in Surat, Junagadh, Kutch and other circles have reportedly been encroached upon. The details, however, have been kept under wraps by the concerned officials.

Confidential reports having complete details about the encroachments in Vadodara Circle, comprising three districts, have been handed over to the principal chief conservator of forests in the state, the forests and environment secretary and forests minister Mangubhai Patel.

Highly placed sources in the forest department told the Times News Network that all the conservators were asked by the state government last year to submit reports on encroachment of forest lands in their areas. Although thousands of acres have been encroached upon, the reports sent by the officials said there had been no encroachment in their areas.

The only exception was Vadodara circle which carried out exhaustive surveys of encroachments and submitted reports that made the forest department nervous.

The officials found that a large number of people in Vadodara circle have been given certificates for regularisation of cultivation without verification. As the lands have not been demarcated even after regularisation, farmers keep expanding the area under cultivation.

PA-10 Cgs ✓ 40 (3)

State's prey-predator balance disturbed; animal attacks rise / ROBIN DAVID
TIMES NEWS NETWORK[WEDNESDAY, MAY 21, 2003 12:09:28 AM]

VADODARA: Any ecological system has to strike a delicate balance between carnivorous and herbivorous animals to flourish. As wild life experts put it, predators need herbivores for food and also control their population as a byproduct.

This is considered ideal condition for a forest. Gujarat however is facing a unique problem as this balance has been badly disturbed. If there are many leopards in the Vadodara forest circle, there are not many ungulates for them to prey on. The result is there has been a substantial increase in the number of leopard attacks on both cattle and humans in the districts of Vadodara, Dahod and the Panchmahals. On the other hand, there has been an almost exponential increase in the number of black bucks in Kadi region and wild asses in the Small Rann of Kutch as there are no predators here to control them in their region.

"The sanctuaries of Gir and Velavadar are the only two places in the state where the prey-predator relationship has not been affected," says conservator of forests Vadodara Circle HS Singh. "Everywhere else this balance has been lost. As a result, there is increasing interaction between predators like leopard and man on the one hand, and the burgeoning black bucks regularly destroy standing crop in north Gujarat."

Leopards have in fact become a major concern for the Vadodara forest circle as their number has gone up from only 170 in 1993 to as many as 322 in 2002. Gujarat has about 1,000 leopards. "In return there are hardly any deer or wild boar left in the region to support these predators," Singh adds. "This has not affected leopard population because they are extremely adaptable animals who don't need dense forest to survive."

Not surprisingly, man and cattle have borne the brunt of this imbalance. Since 1995 leopards have killed 37 people, injured 652 persons and killed nothing less than 1,708 livestock. The year 2001-2002 was the worst year in which four persons were killed, and 379 livestock killed.

The wild ass population of the Small Rann of Kutch and the black bucks of Kadi have the problem in reverse. Because there are no predators here, these two species are breeding freely. From a population of just 1,576 in 1977, there are nothing less than 26,000 black bucks in Gujarat today. Wild asses have gone from barely 700 at one point to more than 3,000 today. And blue bulls have doubled their population from about 40,000 in 1995 to 80,000 in 2003. But they are not breeding in the forests of the Vadodara circle where they are needed to feed the hungry leopards. "In north Gujarat, people themselves have conserved the black buck," says Gujarat Ecology Society ecologist, Dr Diwakar Sharma. "People there consider the animal sacred and will attack anyone who kills a black buck." Sharma adds that the tribals of the Panchmahals have been hunters and gatherers depending heavily on the ungulates for food, resulting in the shortage.

"Gujarat's forests used to be one continuous stretch from Dangs to the Panchmahals until industrialisation and urbanisation took place," says Gujarat World Wildlife Fund director Smita Pradhan.

The Indian EXPRESS
PUNE ■ WEDNESDAY ■ SEPTEMBER 5, 2001

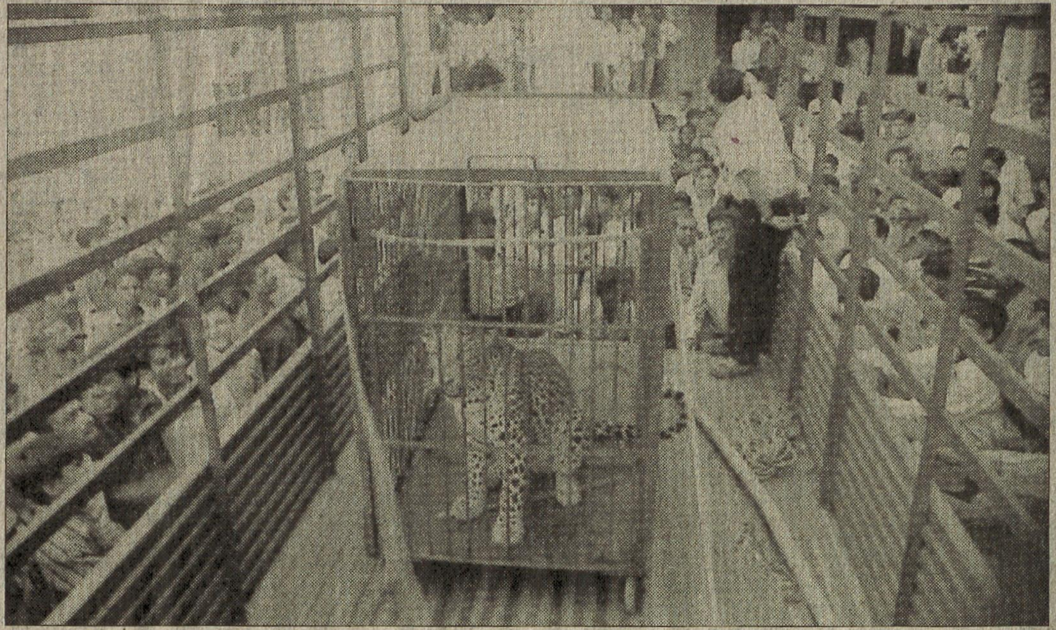
GUJARAT HUMANS ENCROACH INTO PANTHERS' HABITAT, INVITE TROUBLE

There is a panther in the kitchen

Luckily, wildlife authorities have a plan that may drive it back to where it really belongs, says ROHIT BHAN

❑ *Early this year, a panther strayed out of the Jambughoda forest in Panchmahals, and after trekking 45 kms, walked into a shut-down private hospital building on the outskirts of Vadodara. After a fortnight-long cat and mouse game, the wildlife officials manage to trap the panther and send it back to the forests.*

❑ *More recently, another panther wandered out of the forest area in Savli taluka in Vadodara in search of food. After a week-long search, the panther was found dead on the outskirts of a village. Though wildlife officials claim the panther died of illness, it's being said the panther was actually killed by the frightened villagers.*



The panther that strayed into a Vadodara hospital. *Express photo by Bhupendra Rana*

THE panther population in the forest areas of Central and South Gujarat is beginning to stretch its limbs. A shortage of water and food and increasing encroachment of forest areas is making the animal slink into human habitation. Not surprisingly, incidents of man killing animal are on the rise.

It isn't as if the big cat's population has been soaring — unlike, say elephants in Assam or peacocks in Rajasthan. The panthers are scattered over four major wildlife sanctuaries and a national park in Central and South Gujarat — while Jambughoda, Ratanmahal and Surpaneshwar sanctuaries fall in Central Gujarat, Poorna sanctuary and Bansda National Park fall in South Gujarat. Besides, the dense forest areas of Panchmahals form a formidable green cover in the region.

Yet, say wildlife authorities, the number of panthers hasn't crossed 200 over the last ten years. "It is common knowledge that tribals in the forests are generally meat eaters and are known to hunt herbivorous animals. The herbivorous population over the years has gone down considerably, and this has affected the carnivores as well," says S K Mehta, Deputy Conservator of Forest, Wildlife Division.

The rise in human encroachment has also increased the possibilities of man-animal conflict. Officials say there are about 30 villages with a population of 25,000 in and around Jambughoda sanctuary. "It is but natural that there would be a clash with the large number of humans there," says Mehta.

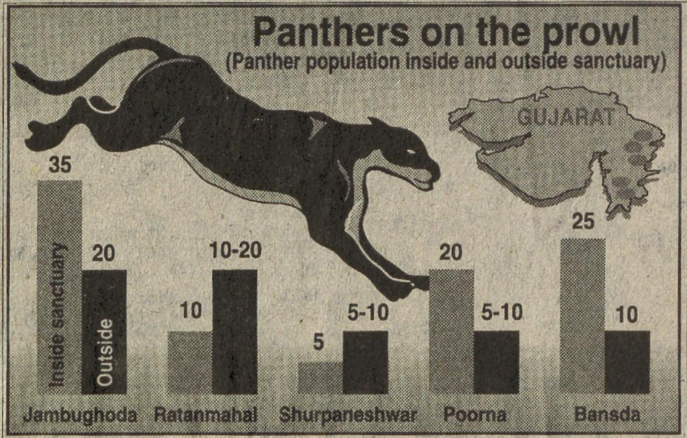
It's a repeat at Poorna in Dangs, where the tribal population in and around the sanctuary has grown over the years. A shortage of water has also caused panthers to stray beyond their habitat. Though this year's rainfall was satisfactory, the water holes inside the forest haven't filled up adequately. "During the drought, we fill the water points inside with the help of water tankers, but we hardly have any such provision for the forest areas. When the water points get dry, chances are the animal will come out for alternatives," says an officer.

Fortunately, there's a plan in place that may reduce the conflict. The Gujarat government has, for the first time, approved a 10-year comprehensive management plan for national parks and sanctuaries in the Central and South Gujarat region. Drawn up on the lines of the Gir sanctuary scheme, the plan will be implemented from January 2002.

The plan has been formulated by a joint team of forest officials from the state and Centre, say sources. It involves eco development in and around sanctuaries and the conservation of bio-diversity which hope to minimise human intervention in the forest area.

"We have noticed that villagers venture into the forest areas along with their cattle for fodder. We are planning to have fodder stalls in the villages so that the cattle don't need to enter the forest areas," says Mehta. The government also hopes to increase the stock of herbivorous animals. "We will focus on preserving the herbivorous population. We will initiate an education programme among tribals to try and dissuade them from hunting," says a forest official. Plantation activities will also be initiated.

As always, the forest department could face a problem of finances. "If the funds are not forthcoming, we would face a lot of problems and the essence of the plan could be lost," says a senior forest officer based in Gandhinagar.



IE Graphics/B.K. SHARMA

The Indian **EXPRESS**
PUNE ■ THURSDAY ■ NOVEMBER 8, 2001

8/11/01

Watch it: There's a blackbuck in the field

Blackbuck are on an unabated rampage in Mehsana's field, even as the Forest Department watches on. STAVAN DESAI reports

THE Mehsana district in north Gujarat has a wildlife problem — of plenty. Blackbuck on the rampage have destroyed crops worth crores of rupees, and the state Forest Department hasn't been able to come up with one idea that has stuck.

The 6,000-odd blackbuck found around a cluster of 35 villages in western Mehsana rampage through crops, destroying cotton, wheat, and millets. And while farmers complain, the forest department has come up with three plans to check the blackbuck menace — all of which have failed to make any meaningful intervention.

According to records, 12-15 blackbuck migrated to the area in 1975. Since then, the antelope have multiplied, what with easily availability of food from the fields and religious sentiment preventing farmers from killing them. The forest department counted 1,481 blackbuck in the area in 1989. This grew to 2,204 in 1994, and 5,520 in 1997. Last year's census counted 6,437 blackbuck in 700 acres including the 35 villages.

"Initially we overlooked the destruction of crops by blackbuck," said Vasudev Mori. "But over the years, it has proved costly."

Farmers estimate they lose Rs 2.34 crore worth of crop to blackbuck every year. They have even tried to change crops, hoping the antelope will leave the fields alone.

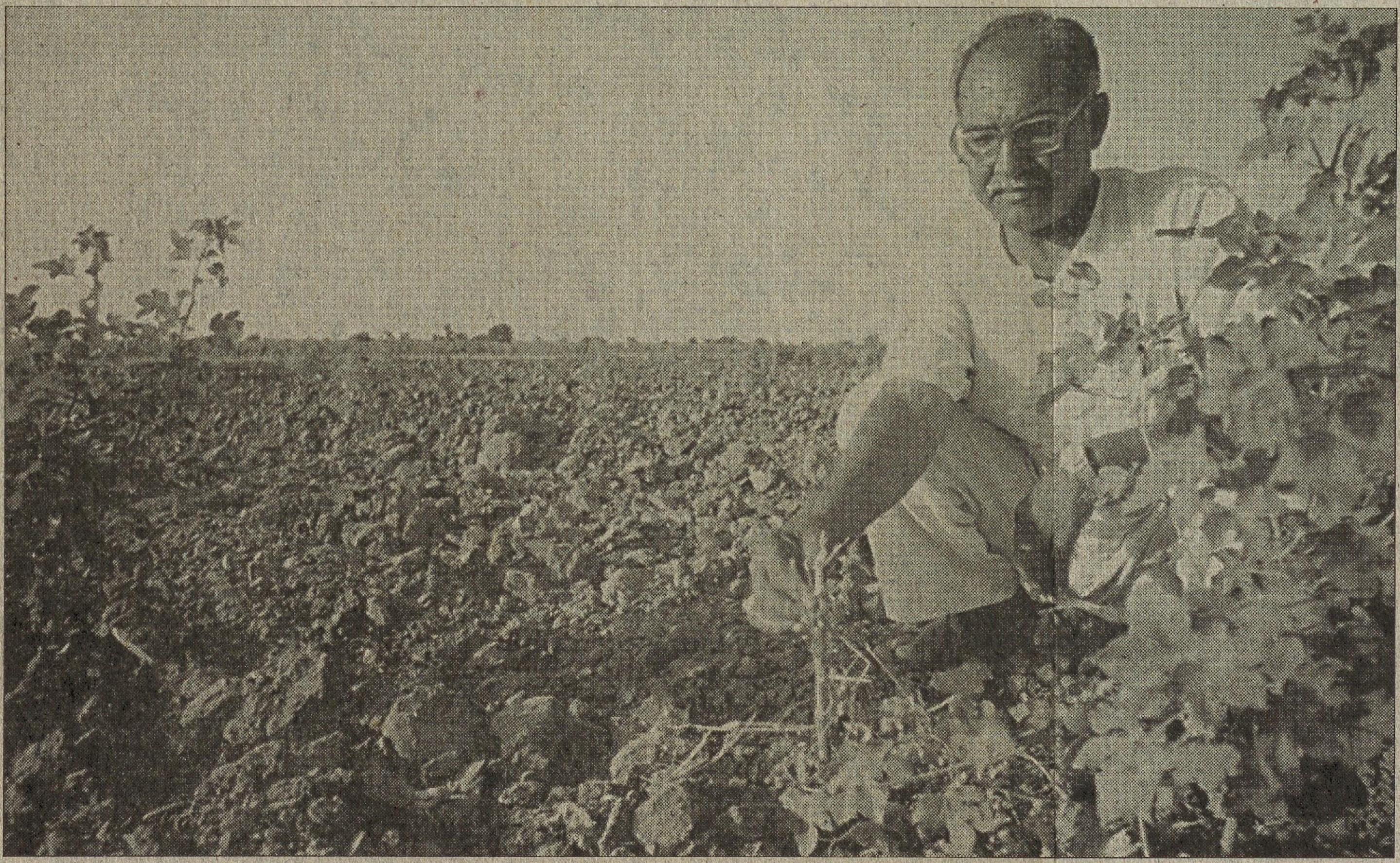
Tribhovan Lohar said, "I stopped growing cotton because blackbuck attack cotton fields. But they don't seem to spare even jowar. I have to harvest my jowar well before it ripens, or blackbuck will leave nothing. Most of my harvest I am able to sell only as fodder."

The farmers tried to grow pulses, but blackbuck do not spare that either. For the last six years farmers haven't grown pulses. On repeated representations from farmers, the state Forest Department devised three grand plans to tackle the problem. In March 1999 the department drew up a plan to relocate the antelopes. The blackbuck were to be rounded up into enclosures and then moved from there to sanctuaries such as the Velavadar National Park and Ratanmahal Wildlife Sanctuary.

"While executing the plan, we overlooked the presence of pariah dogs. This is what actually came in our way," said Bharat Pathak, conservator (wildlife circle), Junagadh. Pariah dogs came barking in packs, scattering blackbuck hither and tither, making it impossible to get them into enclosures. Said a forest officer who worked on the project, "We could pen only six blackbuck." The result is on record: all six died of shock. The plan was shelved.

Within six months, the department came up with another idea to translocate the antelope: tranquillise them. But an experienced forest official from West Bengal consulted for the project said it was impractical to tranquillise so many animals spread over such a wide expanse. He refused to have anything to do with the project, since moving tranquilised blackbuck could also lead to their death.

Ashok Kumar, director of the Wildlife Trust of India, said, "Ungulates like spotted deer have been translocated before, but such projects need to be handled well.



Vasudev Mori's cotton field was trampled upon by blackbuck. *Express photo by Javed Raja*

IE Map/B.K. Sharma

The 6,000-odd blackbuck around Mehsana harass over 35 villages, destroying crops like cotton, wheat and millets. Mehsana's farmers say they lose Rs 2.34 crore worth of crop to blackbuck every year. They have even tried to change crops, hoping the antelope will leave the fields alone

The animals are very sensitive. They may die during tranquilisation or transportation. And social forestry staff, who were involved in the Mehsana project, are not the ones trained to handle such a project."

Kumar also said translocating all the blackbuck was impossible; and translocating only some of them would not solve the problem. Thus, the idea of translocation was dropped.

Instead the Forest Department thought of developing a safari park near Charol village in the same district. Some 200 hectares were to be fenced and the blackbuck to be driven in.

But the Rs 2.95 crore project could not be executed. None of the panchayats that initially promised to give up land for the safari park did so.

"None of the villages have still allocated the required land for the purpose. This is because the village wastelands are the only source of fodder for domestic cattle," said P.P. Vyas, mamlatdar of Kadi taluka.

Then the forest department came up with yet another idea: help the farmers fence their fields. The fencing was to cost Rs 180 per metre, half of which was to be borne by the farmers. But just one farmer enrolled for the project. The market price for fencing is Rs 75 per metre, and the farmers are too poor to afford even that.

Mori asked, "Why should we pay more to the government? Most of us can't even afford the cost of fencing offered by private parties."

Added Haribhai Patel, who has a six acre plot, "Even the Rs 5 per metre thorn-fencing is too expensive for me." Some farmers have even stopped sowing for summer. During summer, grass and other vegetation does not grow, so blackbuck make particular target of fields.

The forest department's own report says in Visatpura town alone, there used to be seven oil mills and many cotton ginning units. Not a single mill or ginning unit operates now: there simply isn't cotton to gin and cottonseed to press for oil.

Hundreds of farmers like Mori throw up their hands in frustration and watch helplessly as blackbuck stampede through their crop and their livelihood, not to forget their dreams; their hopes further dashed by a forest department that hasn't been able to find a way out-yet.

30

Monsoon failure, human interference, pollution proving bane of sanctuaries

Gujarat sanctuaries head for crisis

JANYALA SREENIVAS
AHMEDABAD, DEC 28

IE 29/12/2000

GUJARAT'S wildlife sanctuaries and parks are heading towards a major crisis with severe drought conditions for the second successive year and growing human interference, loss of habitat, pollution and industrial development on the periphery of water bodies.

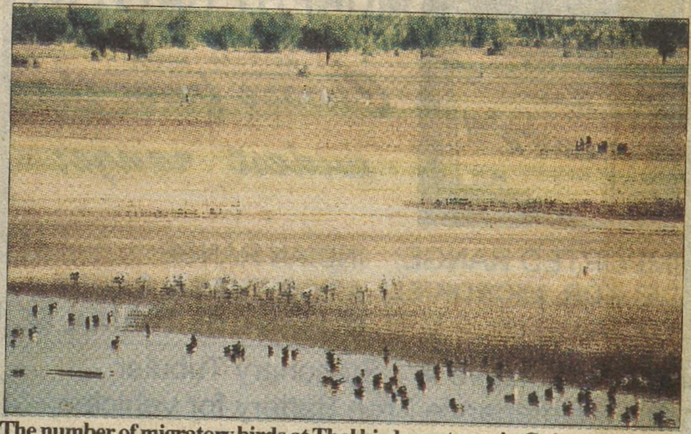
Various sanctuaries and water bodies are slowly turning into barren patches due to failed monsoon and the winter visitors have shied away from these nesting and roosting sites.

At the Thol sanctuary near here, the water level in the seven km-wide bird sanctuary is less than a foot deep. Even this water has shrunk to the middle of the lake and lies in small poodles. Says Kandarp Kadju, an avid bird-watcher who frequents the place: "There is hardly any fish in the water."

Tractors plough menacingly through the area where winter birds should have been roosting. The pollution caused by diesel pump sets set up to draw water for irrigation has been deterring migratory birds.

According to sources in the forest department, although about 700 hectares of Thol was declared a sanctuary in 1988, farmers who were cultivating this piece of land have neither been resettled nor has land been provided to them elsewhere. So they continue to grow crops in the lake area.

Although no scientific survey has been conducted, the forest department says the number of migratory birds has come down this year. "Only Nal Sarovar, which has good water, has birds coming this year. Elsewhere, dry lakes mean no birds," chief wildlife warden G.A. Patel said.



The number of migratory birds at Thol bird sanctuary in Gujarat has declined due to increasing farming and human presence besides shortage of water. *Express photo by Harsh Shah.*

Shrinking sanctuaries are facing further danger from mushrooming human habitations. Be it the Thol bird sanctuary, the lion sanctuary at Sasan-Gir, the black buck sanctuary at Velavadar in Bhavnagar or the marine national park in Jamnagar, there is tremendous pressure on the flora and fauna from humans.

In more than a dozen wildlife and bird sanctuaries, conservation is taking a superficial meaning because proper human resettlement has not been done. So the same

CONTINUED ON PAGE 4

habitat is shared by wildlife and man. This, despite a Supreme Court ruling asking all sanctuaries to complete resettlement process of forest dwellers by October 1998 outside the sanctuaries at any cost.

In Sasan-Gir, human population within the sanctuary has crossed 5,000. This includes 500 maldhari families, 14 forest settlement villages besides 20,000 livestock. "The growing population is resulting in degeneration of ecosystem and destruction of habitat and decline in prey base besides nipping in the bud the Gir management project," says deputy conservator of forests (Sasan) B.P. Pati.

"Cultivable land near the sanctuary has increased by 300 per cent over the last five years. What is worrying is the slow encroachment that is taking place due to this. Also, a change in crop pattern from groundnut and millet to sugarcane and mango orchids is posing a problem because leopards, lions and other big wildlife foray into them frequently, which is risky. That large human population presence is also leading to increasing man-animal conflict," Pati says.

The forest department in spite of being aware of the negative effects of the pressure of human population is helpless as its rehabilitation project, jointly with the revenue department has fallen flat on its face. Admits Forest Minister Kanjibhai Patel: "The biggest challenge to our sanctuaries is from the increasing human population around them and its accompanying problems."

"The problem has definitely gained alarming proportions now. Resettlement projects are failing and the people who have been allotted land elsewhere in lieu of that in the sanctuaries are returning within a few months. They are unhappy for a variety of reasons. Primarily they don't want to leave the place where they have been living for years. We cannot stop them from cultivating because it is their livelihood. Still, we are working out other alternatives with the revenue department which handles this," Kanjibhai told *The Indian Express*.

Chief conservator of forests G.A. Patel says "settlement survey" has not yet been conducted. "Sanctuaries have been declared but settlement surveys have never been carried out. So you cannot stop encroachment. Besides, encroachments near or in protected area are being regularised so we have no powers."

In Velavadar, increasing agriculture land is destroying the 55-km "ecological zone" between Bhavnagar and Velavadar which is home for a large population of black buck. "Foreseeing that farming is spreading its tentacles right up to the 34 sq km Velavadar National Park, the forest department has built a fence around this small sanctuary to stop encroachments," says assistant conservator of forest L.N. Jadeja.

Marine life in the Marine National Park in Jamnagar is breathing hard for life thanks to oil spills and pollution on the coast.

Industrial development near the sanctuaries is taking its toll. If oil puddles caused by ONGC wells near Thol bird sanctuary create unpleasant grounds, a number of industries that has mushroomed on the Jamnagar coast cause pollution. Industrial development in Junagadh and Veraval has meant that the five state highways which criss-cross the Gir sanctuary are full of traffic causing noise and air pollution.

The situation is the same in the Khijadia bird sanctuary in Jamnagar where salt works are coming up; at Nal Sarovar near Ahmedabad and Narayan Sarovar in Kutch where the presence of a large number of pilgrims discourages birds.

"It is like a double-edged sword. When they were not sanctuaries they were pillaged and degraded. Now by giving permission to selective industries you are allowing it to continue," fumes G.A. Patel.

PS/NV

A GROUP OF ENVIRONMENT PROTECTION

NATURE CLUB OF SABAR

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पिय भाईश्री आशीष अेवम् पंकज

बहुत समयसे जे.पी.अे.अेम. अपडेट पतिका उपलब्ध नही हुई है शायद आपके मेईलींग लिस्ट फिरसे अेकबार देखकर हमारा नाम न होतो उसमे डाल दिया जाय.

नेचर कलब ओफ साबर, पर्यावरण जागृतता और संरक्षण करनेकी तरह तरहकी पवृत्तिया करते है, जीसमें पर्यावरण शिक्षण शिबीर, समूह चर्चा, पदर्शन, रेली, शेरी नाटक, केसस्टडी, पर्यावरण कानून पर छोटे कलबके साथ सलाह और सहाय, विकाससे होनेवाले पर्यावरण पर संभवित नूकसान के बारेमे लोगोके साथ खुली चर्चा, उच्च कक्षा तक पर्यावरण बचानेके लीये निवेदन, लेटर केम्पेईन, विज्ञापनके माध्यमसे पर्यावरण संरक्षण और जागृतता, अदालतमे याचिका दाखिल करना ईत्यादी पवृत्तिया रही है हमारी कलब कहीसे आर्थिक सहाय लीये बीनाही सारा कार्य करती है. और ईस पवृत्तिया और अन्य खर्च निकालनेके लीये पर्यावरण शिक्षण शिबीरके माध्यमसे आर्थिक जोगवाई कर रहे है. और यह पवृत्तिया करीब दस से अधिक सालसे चल रही है. हम करीब पांचसे अधीक सालसे शहरी यूवको, किशोरो और अन्य लोगो के लीये पर्यावरण शिबीर या पर्वतिय शिबीरका आयोजन करते है. हर साल नियमीत रूप से गिरनार या गीर अभ्यारणमे पकृति शिक्षण शिबीरका आयोजन करते है ईसी साल भी, हमारी कलब की तरफसे दीसेम्बर माहमे गीर जंगलमें अेक शिबीर का आयोजन कीया है ईसका सरकयुलर मे भेज रहा हु वन विभागसे शिबीर करनेकी मान्यताके लीये तारीख अभी तक नही आयी है ईसी लीये तारीखको छोड कर यह सरकयुलर अगर आप जे.पी.अे.अेम. अपडेट या अन्य कोई पत्रिकामे दे, अेसी बिनती है और आप या आपकी तरफसे ईस शिबीरमे उपस्थित रहेनेका आमंत्रण है.

गुजरातके जूनागढ जील्लेमें गीरनार (की चोटीपर) अनामत जंगलमे सूचित रोप वे बनानेका पोजेकट जो गुजरात सरकारके पवासन निगमका था उस पर हमारी कलबने गुजरातकी माननीय वडी अदालतमे अेक याचिका दाखील की थी. ईसपर कोर्टने और सरकारने यह माना हुआ हैकी अधीकसे अधीक डोलीवाले अपनी मजदूरी खो रहे है, और उन्हे वैकल्पिक रोजगारी देनेका कूछ आयोजन सरकार करेगी अेसा बचन अदालतके सामने दीया है ईसी बातको अेक सालसे अधीक समय हुआ है कीन्तु सरकारने अभी तक आगे कोई कार्यवाही नही की है, अगर यह योजना होतीहै तोभी ईस अनामत जंगलमे करीब ६०,००० से अधीक बडे पेड कटने वाले है और जैविक वैविध्यताका सीर्फ नाम रटने वाली सरकार और ईको डेवलपमेन्ट जैसी योजना ध्वारा गरीब और सदीओ से रहने वाले मालधारीको जबरजस्ती जंगलबाहर करके पवासन योजनाको बढावा देती है ईसी मुद्दे पर नेचर कबल ओफ साबरने सामाजिक, आर्थिक और अेनवायर्मेन्टल ईम्पेकट अेसेसमेन्ट करनेका सोचा हुआ है अभीतक पर्यावरण अेवम् वन मंत्रालयने योजनाके अंर्तगत कोई अभ्यास कीये बीनाही योजनाको मंजूरी दी है. और जंगल जमीनको डी नोटीफाईड की गई है. चूनावके बाद नयी सरकार बनेगी और विकासके काम (?) पर शायद अगता देनेकी सोच से ईस योजनाको पाध्यान्य मिल शकता है

तरुन भारत संध अलवर मे आशीष भाईसे खनन के बारेमे कूछ बात हूई थी की आप राष्टीयस्तर पर अेक माईनींगका सर्वे कर रहे है गुजरातमे यह सर्वे करनेके लीये हमे रस है अत् आप जलदीसे जलदी ईसकी सारी जानकारी भेजीये. सर्वे करनेमे या राष्टीयस्तर पर अेक फोरम बनानेका आयोजनकी बात कर रहे थे उसकी आगे क्या कार्यवाही हूई ? मूफे उसकी माहिती देनेवाले थे उस विषय पर आपकी तरफसे जानकारी अवश्य भेजीये.
मध्य गीरमे अेक धार्मिक टस्ट (कनकाई के मंदीरकी) ध्वारा धर्मशाला बांधनेके लीये कलबने और अेक याचिका गुजरात हाई कोर्टमे अभी चल रही है.

Manish Vaidya

(मनीष वैद्य)

PA Update 22

NV
Did you send him the format etc
AC

NV
PS

✓32

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Return SOPs for update

GEER FOUNDATION

GUJARAT ECOLOGICAL EDUCATION & RESEARCH FOUNDATION

Tel. No. 02712-21385
Fax. No. 02712-41128

No. WLP/1/B- 7203 of 2000-2001 DATE: 3 /03/2001

To,
KALPAVRIKSH
Apt.5, Shri Dutta Krupa
908 Deccan Gymkhana,
Pune-411 004

Sub: Presentation and deliberation on status paper- Wildlife Protected Area Network in Gujarat- A Critical Review and Recommendations.

Sir,

GEER Foundation has prepared a status paper on - Wildlife Protected Area Network in Gujarat- A Critical Review and Recommendations, after extensive field survey and study. This is a sincere piece of work, which has been completed after careful consideration of all the aspects. Recommendations in this report would be of immense use for preparing biodiversity conservation strategy and also for effective and purposeful management of Protected Areas in the state. Attempt has been made in this paper to reduce gaps, short coming and resolve issues of the networks of protected areas in the state. I know that acceptance and implementation of the recommendation has to go through long process but this appears to be one of the best alternatives for long term conservation and sustainable development of the state.

You are requested to go through the report and send your observation/comments to the Foundation before 20.03.2001.

It has been decided to make presentation of the paper on World Forestry Day- 21st March, 2001 at GEER Foundation. After presentation of the paper, the content and recommendations will be deliberated at length. I request you to participate in the presentation as follows. Your contribution to the subject would be of immense use to improve and also to finalise the paper.

Date : **21st March, 2001 Wednesday**
~~**Time :** **3.00p.m.**~~
Venue : **Conference Hall**
GEER Foundation, Indroda Park
Gandhinagar-382 009

With regards

Yours sincerely,

21/3/2001

(H. S. Singh)
Director
GEER Foundation
Indroda Park, Sector-9
Gandhinagar-382 009

H. S. Singh, Director, GEER Foundation

WILDLIFE PROTECTED AREA NETWORK IN GUJARAT STATE

A Critical Review and Recommendations

An exercise to explore a long term future biodiversity conservation strategy by identifying representative natural areas in all land regions for constituting a network of effective and viable Protected Areas in Gujarat State with an overall objective of sustainable conservation and development of the eco-spaces and effective management of the network of the PAs.

CONTENTS

WILDLIFE PROTECTED AREA NETWORK IN GUJARAT

A Critical Review and Recommendations

INTRODUCTION

According to the World Conservation Monitoring Centre (WCMC) and the United Nations Environment Programme (UNEP), there are some 44,000 Protected Areas in the world that cover an area of 13.6 million sq. km or 10.1% total land area of the earth, an astonishingly large extent, larger in fact than the area of China and India combined (WCPA-2000). Developing countries have established 41.8% of this total (over 18,400 sites), covering approximately 7.6% (7.7 million sq. km) of the land surface. These Protected Areas (PAs) represent the future hope for biodiversity reserves. This great achievement of the 20th century and a priceless inheritance for the 21st century will be challenged as never before by a series of threats, which world conservation communities and protected area organisations will have to face.

The network of PAs in India now comprises 89 national parks and 482 wildlife sanctuaries (Total 571 PAs), covering an area of over 15.4 million ha (4.7% of the total geographical area). This network is spread over all the bio-geographic zones and biotic provinces of the country, including marine, estuarine and mangroves. The National Committee on Wetlands, Mangroves and Coral Reefs selected 20 inland wetlands, including six sites of the Ramsar Convention (1971) for intensive conservation. The committee has also identified 15 mangrove and 4 coral reef areas for conservation and management. the Nalsarovar Bird Sanctuary, mangroves and the coral reefs in the Gulf of Kutch of Gujarat State have been included in the above list as areas of important wetlands in the country.

The Biosphere Reserve Programme in India is a pioneering effort at pursuing the increasingly difficult yet urgent task of conserving ecological diversity under mounting pressures. Twelve Biosphere Reserves (Total area of 53108 sq. km) have been set up so far and a few more are under consideration. Efforts are being made to set up Biosphere Reserve in the Little Rann of Kutch in Gujarat State.

The area under wildlife sanctuaries and national parks in India was comparable with the world's average of Protected Areas in the 1980s. The World's conservation communities progressed quickly in the 1990's as more and more areas were included in PAs whereas this was slowed down in India due to political and public resistance. After 1990, a few parks and sanctuaries were constituted, but several important ecological units could not be included in the PAs. At present (beginning of the 21st century), the percentage of geographical area under PAs in India is even less than half of the world's average.

After constitution of the State, the Government realised the depleting status of the wildlife and became alive to the problem of wildlife conservation. The formation of wildlife sanctuaries began in 1965, when part of the Gir forest was notified as the Gir Lion Sanctuary. The year 1970 is regarded as the cut-off year in the history of nature conservation in India. Wildlife had reached its lowest ebb by then and at the same time the full implication of this devastation began to be felt. Originally two National Parks and five sanctuaries were formed in the State prior to 1980 for protecting target species but more and more attention was paid during the last two decades. The interval from 1970 to 1990 is considered to be a period of serious attempt by the Government for preservation of wild life resources when more areas were notified as sanctuaries and national parks. A seminar on the "Approaches to Conservation Strategy in Gujarat" was held at Sasan in 1981.This was inaugurated by the then Prime Minister of India, Mrs. Indira Gandhi. This seminar formulated guidelines for programmes of environment and wildlife conservation in the State.

Since constitution of the first sanctuary in the Gir forests, a total of 21 sanctuaries and 4 national parks have been created by the end of the millennium. The growth of the Protected Area Network in India and Gujarat has been worked out in Table-1 and Table-2.

Table-1 Growth of PAs Network in India and Gujarat

Year	No. of PAs in India	No. of PAs in Gujarat
1970	65	2
1975	101	4
1980	194	10
1985	298	15
1990	488	22
2000	571	25

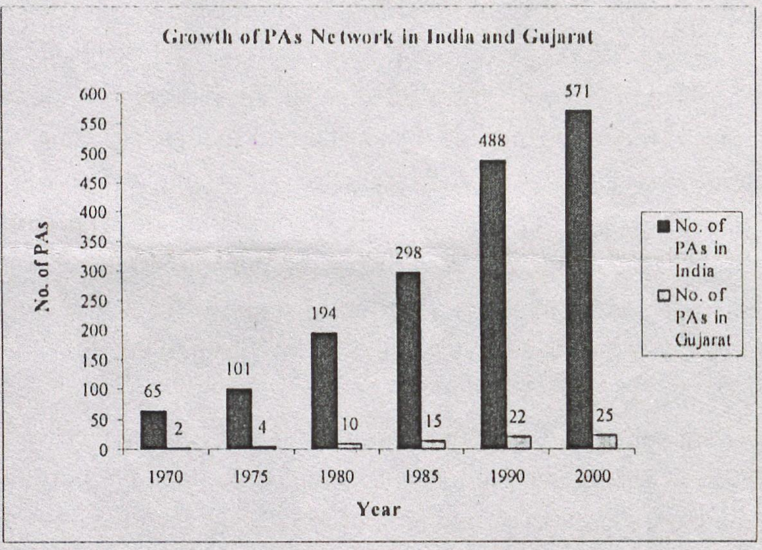


Table-2 Progress of declaration of Protected Areas in Gujarat

Year	Sanctuary		National Park		Total	
	No.	Area in sq. km	No.	Area in sq. km	No.	Area in sq. km
Before 1965	-	-	-	-	-	-
1965	1	1265.0	-	-	1	1265.0
1970	2	1380.0	0	0.0	2	1380.0
1975	3	6220.9	1	140.040	4	6361.4
1980	7	6873.0	3	298.9	10	7171.8
1985	11	7703.6	4	479.7	15	8183.3
1990	18	16129.5	4	479.7	22	16609.2
1995	21	16422.7	4	479.0	25	16902.4
2000	21	16422.7	4	479.7	25	16902.4

Contribution of the wildlife conservation programmes has been substantial and the experience gained during these years has been of immense use for future. Wildlife conservation and management programmes have paid rich dividends during the recent past, especially for the conservation of some of the important mammalian species.

Table-3 Population growth of major species

Lion	From 177 (1968)	to	304 in 1995 and 310-320 in 2000 in Gir
Leopard	From 498 (1984)	to	803 in1997 in the State
Chital	From about 4,100 (1969)	to	32,100 in 1995 and 45,230 in 1999 in Gir
Sambar	From about 600 (1969)	to	1800-2000 in 1995 in Gir
Blackbuck	From 1,576 (1977)	to	13,250 in 1994 and above 24550 in 2,000 in the State
Wild ass	From 720 (1976)	to	2,800-2900 in 1999 in the Wild Ass Sanctuary
Bluebull	From a few thousand before 1980	to	41,700 in 1995 and over 60,000 in 2000 in the State

The sloth bear was on the verge of extermination from Gujarat, but further decline of the population was halted by the conservation efforts. The protection of habitats in Jessore, Ambaji-Balaram, and Ratanmahals helped in the recovery of the species. The Wildlife (Protection) Act, 1972 was implemented satisfactorily in the State; poaching of wildlife was reduced to a considerable extent. Inspite of these efforts, the scenario is quite different for other wildlife like tiger, wild dog, caracal, desert cat, desert fox, great Indian bustard and several other species, which are on the verge of extermination, as a result of fragmentation and loss of habitat.

OBJECTIVES

The overall objective of this report has been to prepare a wildlife protection area network to cover the range of biodiversity in the different land regions of the state. This has been evolved in the following stages for recommending conservation strategies in Gujarat.

(i) A critical examination of the report of the WII, Dehradun on the Wildlife Protected Area Network in India as well as in Gujarat.

(ii) Land region classification in Gujarat on the basis of the geomorphological features and ecological characteristics.

(iii) Review of the existing network of protected areas in the state, its weaknesses and gaps in distribution.

(iv) A critical evaluation of the ecological and the biological values of the natural areas with respect to their representativeness, uniqueness and their support to endemic, rare and threatened species.

(v) An assessment of the public acceptability and the feasibility of a long term management of the PAs.

PLANNING WILDLIFE PROTECTED AREA NETWORK IN INDIA

The Wildlife Institute of India (WII), Dehradun made a critical review of the Network of Protected Areas in the country in 1988-89 and published a report in two volumes on planning a protected area network in India. An executive summary of the report was published in the year 2000 (Rodgers *et al.*, 2000). This report was prepared on the basis of the biogeographical classification and the biological and management considerations. The report also critically examines the existing and proposed protected area network in Gujarat State.

For preparing the report, the following four levels of planning units were used by the WII, Dehradun viz. (a) The Biogeographical Zone; (b) The Biotic Province; (c) The Land Region and (d) The Biome. On the basis of this, Rodgers and Panwar (1988) recognised 10 biogeographic zones and 26 biotic provinces in India. Of this, four biogeographic zones and five biotic provinces fall in Gujarat State. This classification is compatible with other zoo-geographic and phyto-geographic classifications of India. Although, this classification has proved to be useful for planning a network of PAs at the national level, it needs to be tested at the state level by considering the land regions/sub-biotic provinces and ecosystems.

The review of the proposed planning of the network of PAs in the country in the year 2000 has been mentioned in Table-3. Although, the proposed area under the network of PAs is far below the world average (10.1% of the total land's geographical area), the network will enable a better distribution of the PAs with lesser gaps in the protection of biogeographic zones, biomes and species, and there will be fewer spatial or geographic gaps in the pattern of the PA coverage.

Sikkim (28.9%), Goa (20.4%), Himachal Pradesh (12.9%), and Arunachal Pradesh (11.4%) are the best covered states under sanctuaries and nations parks, having higher percentage of geographical area in PAs than Gujarat. It has been mentioned in the report that the high figure for Gujarat is influenced by the two large PAs of low status. While reviewing the network of PAs in Gujarat, the WII, Dehradun has recommended that a part of the area of the Wild Ass Sanctuary, the Kutch Desert Wildlife Sanctuary, the Narayan Sarovar Sanctuary, the Gir Wildlife Sanctuary and the Nalsarovar Sanctuary should be upgraded and seven new sanctuaries should be created. Changes in area under the PAs have been recommended and mentioned in the Table-4.

Table-4 Proposed Protected Area Network in Gujarat by WII, Dehradun (area in sq. km)

PA category	Existing Protected Areas			Proposed Protected Areas		
	No.	Area	% of geographic area	No.	Area	% of geographical area
National Parks	4	479.67	0.24	8	4,555.67	2.32
Wildlife Sanctuaries	21	16,422.71	8.38	28	11,670.29	5.95
Total	**25**	**16,902.38**	**8.62**	**36**	**16,225.96**	**8.27**

LAND REGIONS OR SUB-BIOTIC PROVINCES

As discussed in this report, Rodgers and Panwar (1988) classified the regions of Gujarat into the following biotic provinces.

1. Biogeographic Zone – 3 The Desert; Biotic Province-3A Kutch
2. Biogeographic Zone – 4 The Semi-arid; Biotic Province-4B Gujarat Rajputana
3. Biogeographic Zone – 5 The Western Ghats; Biotic Province-5A Malabar Plains
4. Biogeographic Zone – 5 The Western Ghats; Biotic Province-5B Western Ghat Mountains
5. Biogeographic Zone – 8 The Western Ghats; Biotic Province-8B The West Coast

The classification of Land Regions in Table-7 is compatible with the geographical and geo-physiographic types. Also, they are ecologically distinct. For example, the Banni, the Rann and the Kutch Plateau in biotic province-3A Kutch have distinct geomorphological characteristics, resulting into a different set of biotic communities. Similarly, the Saurashtra Plateau is different from the main land Gujarat. Within Saurashtra, the Bhal is not comparable with the Saurashtra plateau.

There are different landforms within a biotic province. On the basis of landforms and geomorphological features, the biotic provinces have been classified into different land regions (may be called sub-biotic provinces) as given in Table-7 & Table-8. The biomes like the forests types, the grasslands and the wetlands etc., have been classified in the land regions. For the purpose of this exercise, the five biotic provinces have been further classified into sixteen sub-biotic provinces or land regions. Normally the area falling in a region having an altitudinal range greater than 150 m above mean sea level is considered as part of a hill system. The distribution of Land Regions is given in the map as well as in Table-7 & Table-8, which will be useful for the planning network of PAs in Gujarat.

It may be logical to divide Saurashtra into two land regions- Gir, Girnar and the Barda region and the Central-Eastern Saurashtra Plateau, but they are clubbed together due to similarity in their topography and ecological features. The Aravallis, the Malwa Hills, the Satpura Hills and the Western Ghat Mountains have different geological formations as well as ecological and climatic features. Thus, they are classified into different land regions. The dry plains in North Gujarat derive material from the Aravallis and support different sets of biotic communities. Based on the climatic condition and their origin, the plains in Gujarat have been classified into three land regions. Similarly, the geomorphological characteristics of the Gujarat Coast provided a basis in this case for classifying it into four distinct coast regions.

The recommendations mention that the size of the two sanctuaries in the Rann should be marginally reduced to a manageable level. On the other hand, it has been recommended that seven more protected areas should be declared to make a fair distribution in the different land regions. Seven ecological units have been covered under both-national parks and wildlife sanctuaries in the network of additional proposed PAs in the state. The review report of the WII, Dehradun suggested modification in the network of PAs in Gujarat State as mentioned in Table-5 and Table-6.

The report mentioned that the area and the status of other sanctuaries should not be changed and hence they have not been included in Table-6. After considering various aspects, the report recommended that the number of national parks should be increased from four to eight and their areas from 479.67 sq. km to 4555.67 sq. km. On the other hand, the total area of the sanctuaries has been proposed to be reduced by 4752.42 sq., with an increase in their number from 23 to 30.

Table-3 Proposed Protected Area Network in India (area in sq. km)

PA category	Existing Protected Areas			Proposed Protected Areas		
	No.	Area	% of geographic area	No.	Area	% of geographic area
National Parks	89	37,340	1.14	160	54,910	1.67
Wildlife Sanctuaries	482	1,16,600	3.55	698	1,32,280	4.02
Total	**571**	**1,53,940**	**4.69**	**858**	**1,87,190**	**5.69**

Table-5 List of existing and proposed national parks in Gujarat (area in sq. km)

Existing National Park		Proposed National Park		Difference
Name	Area	Name	Area	
Gir National Park	258.71	Gir National Park	699.71	(+) 441.00
Velavadar National Park	34.08	Velavadar National Park	34.08	-
Vansda National Park	23.99	Vansda National Park	23.99	-
Marine National Park	162.89	Marine National Park	162.89	-
Narayan Sarovar National Park	-	Narayan Sarovar National Park	100.00	(+) 100.00
Wild Ass National Park	-	Wild Ass National Park	1000.00	(+) 1000.00
Kutch Desert National Park	-	Kutch Desert National Park	2500.00	(+) 2500.00
Nal Sarovar National Park	-	Nal Sarovar National Park	35.00	(+) 35.00
Total National Parks=4	**479.67**	**Total National Parks=8**	**4555.67**	**(+) 4076.00**

Table-6 List of proposed sanctuaries in Gujarat (Area in sq. km)

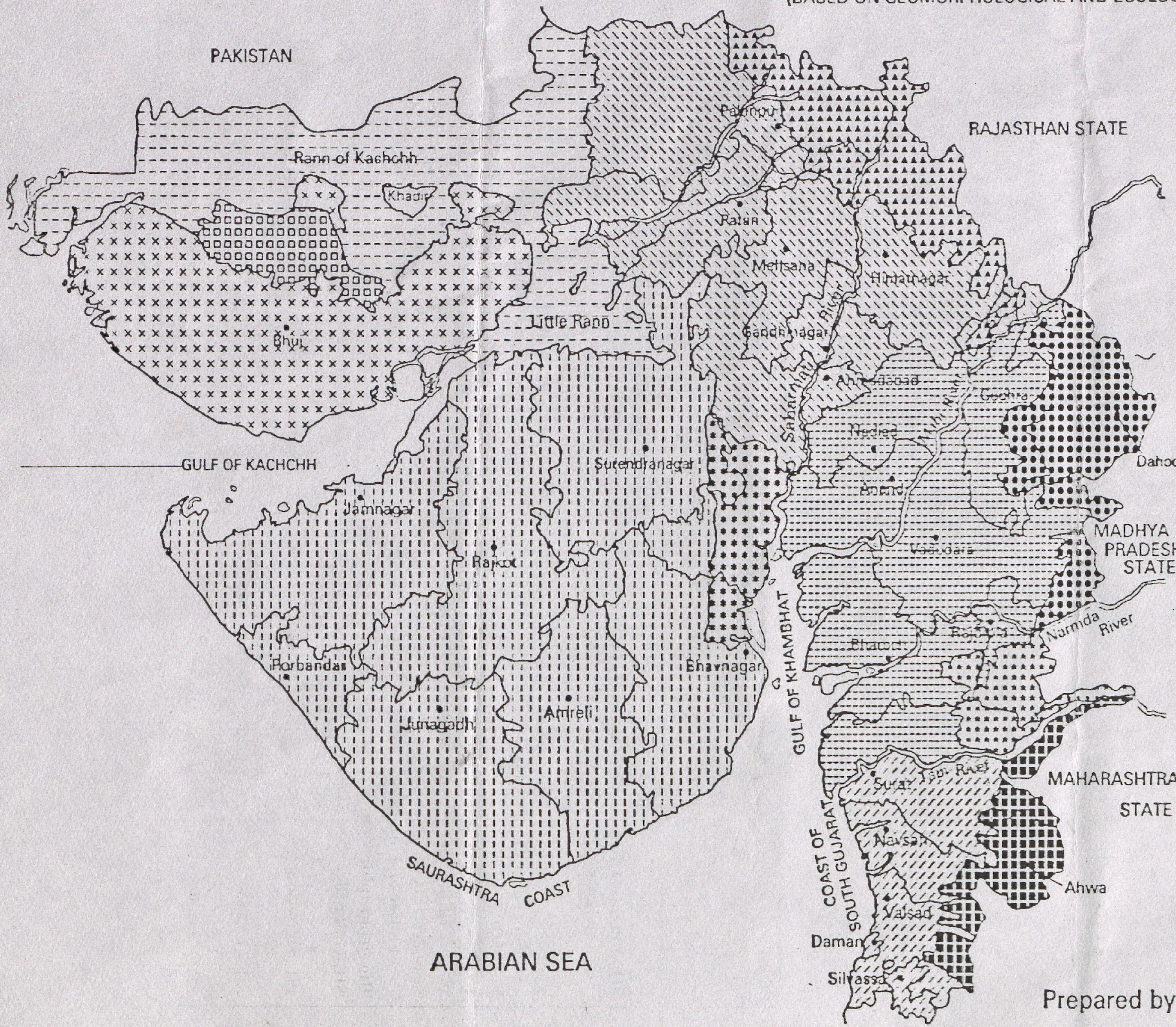
Sr. No.	Name	Existing area	Proposed area	Difference
1.	Kutch Desert Wildlife Sanctuary	7506.22	5006.22	(-) 2500.00
2.	Narayan Sarovar Wildlife Sanctuary	444.23	344.23	(-) 100.00
3.	Wild Ass Sanctuary	4953.70	2953.70	(-) 2000.00
4.	Gir Wildlife Sanctuary	1153.42	712.00	(-) 441.42
5.	Banni Wildlife Sanctuary	-	20.00	(+) 20.00
6.	Mandvi Wildlife Sanctuary	-	20.00	(+) 20.00
7.	Girnar Wildlife Sanctuary	-	77.00	(+) 77.00
8.	Surendrapura Wildlife Sanctuary	-	2.00	(+) 2.00
9.	Cambay Wildlife Sanctuary	-	20.00	(+) 20.00
10.	Wetland Wildlife Sanctuary	-	100.00	(+) 100.00
11.	Kori Creek	-	50.00	(+) 50.00
	Total	**14057.57**	**9305.15**	**(-) 4752.42**

Table-7 Distribution of Biotic and Sub-biotic Provinces – Land Regions in Gujarat

Sub-biotic Provinces/ Land Regions	District/Area	Ecosystem Types
Bio-geographic Zone – 3 The Indian Desert : Biotic Province – 3A Kutch		
$3A_1$-Kutch Plateau (2,3452 sq. km)	Part of Kutch (Kutch main land)	Desert thorn forest, *Euphorbia* scrubs, *Zizyphus* scrubs, *Acacia senegal* forests, *A. nilotica* forest, *Salvadora* scrub, dry grassland, *Prosopis* scrub, inland wetlands and dry dreams.
$3A_2$-Banni (2,900 sq. km)	Part of Kutch (Banni grassland)	Grasslands, herbaceous cover *(Suaeda* sp.), *Prosopis* scrub, marsh vegetation, inland wetlands, saline blanks
$3A_3$.Rann (19,300 sq. km)	Part of Kutch (Rann of Kutch)	The Rann, Rann saline scrub, saline grassland, *Prosopis* scrub, *Suaeda* cover, marsh vegetation, wetlands, creek, *bets*
Bio-geographic Zone – 4 The Semi-arid : Biotic Province - 4B Gujarat-Rajwada		
$4B_1$-Saurashtra Plateau (63,119 sq. km)	Surendranagar, Rajkot, Jamnagar, Porbandar, Amreli, Junagadh and Bhavnagar	Tropical dry deciduous forests- dry teak, dry savannah, *Euphorbia* scrub, dry grassland, *Boswellia* forest, Babul *(A. nilotica)* forest, dry tropical riverine forest, Khair *(A. catechu)* forest, *A. senegal* forest, *Zizyphus* forest, grasslands *(vidis)*, dams and seasonal streams.
$4B_2$-Bhal (3,220 sq. km)	Vallabhipur (Bhavnagar), Limbdi (Surendranagar), Dhandhuka and Dholera (Ahmedabad)	Depositional saline plains with grassland, saline mudflats, *Suaeda* cover, saline-alkaline scrub, *Prosopis* shrubland and creeks
$4B_3$-Arravalli Hills (6,850 sq. km)	Hills in Sabarkantha and Banaskantha	Dry teak, dry deciduous mixed, *Boswellia* forests, riverine forests, *Anogeissus* forests, *Butea* forests, dry bamboo brakes, dry deciduous scrub, *Aegle* forest, *Zizyphus* scrub, Khair *(A. catechu)* forest, *Butea monosperma* forest, rocky hills, seasonal rivers and small dams.
$4B_4$-Plains in North Gujarat-Arid Lands (31,468 sq. km)	Mehsana, Patan, Gandhinagar, A'bad and plains of Banaskantha and Sabarkantha	Agriculture land , wasteland, wetlands (ponds, lakes and jheels), dry rivers, ravine forest, rocky hills
$4B_5$-Plains in Central Gujarat (26,813 sq. km)	Kheda, Anand and plains in Vadodara, Bharuch and Godhra.	Wetlands (lakes and ponds), dry deciduous scrub, *Acacia nilotica* forests, seasonal, perennial rivers, paddy fields, canal system and agricultural lands.
$4B_6$-Malwa Plateau (5,041 sq. km)	Dahod and hills in Godhra, Vadodara districts	Semi-moist deciduous forest, dry mixed deciduous, dry and semi-dry teak forest, riverine forests, bamboo brakes, dry deciduous scrub grassland, medium and minor dams, and seasonal streams.
$4B_7$-Satpura Hills (2,645 sq. km)	Hills between Tapti and Narmada in Bharuch and Narmada districts	Moist deciduous forests, secondary deciduous forest, dry deciduous forests, moderate dry teak, mixed forests, bamboo brakes, riverine forests, dams, perennial springs and rivers.
Bio-geographic Zone – 5 The Western Ghats: Biotic Province - 5A The Malabar Plains		
Malabar Plains (6,750 sq. km)	Plains in Surat, Navasari, and Valsad	Agriculture field, wetland (ponds), perennial rivers wastelands, and paddy fields.
Bio-geographic Zone – 5 The Western Ghats: Biotic Province - 5B The Mountains		
Western Ghat Mountains-Sahyadri Hills (4,466 sq. km)	Hills in Valsad, Navasari, and Dangs.	Moist deciduous forests, moist teak forest, moderate moist teak forests, secondary deciduous forest, bamboo brakes and riverine forests and perennial streams.
Bio-geographic Zone – 8 The Coast: Biotic Province - 8B The West Coast		
$8B_1$-Gulf of Kutch (7,300 sq. km)	Kutch, Jamnagar and Rajkot	Mangroves, coral reefs, mudflats, island system, estuaries, algal bed, sandy beach, island ecosystem
$8B_2$-Saurashtra Coast	Porbandar, Junagadh, Amreli and Bhavnagar	Sandy beach, rocky beach, mudflats in patches and coastal forests.
$8B_3$-Gulf of Khambhat (6,350 sq. km)	Bhavnagar, A'bad, Kheda and Bharuch	Mudflats (extensive), *Bets*, scrub mangroves, creeks, marsh vegetation and estuaries.
$8B_4$-Coast of South Gujarat	Surat and Valsad	Estuaries, creeks, sandy beach, rocky area, mangroves, mudflats and marsh vegetation.

PROPOSED SUB-BIOTIC PROVINCES OF BIOGEOGRAPHICAL ZONES IN GUJARAT

(BASED ON GEOMORPHOLOGICAL AND ECOLOGICAL CHARACTERISTICS)



Legend

3A1	Kutch Plateau	23,452
3A2	Banni	02,900
3A3	Rann	19,300
4B1	Saurashtra Plateau	63,119
4B2	Bhal	03,220
4B3	Aravallis	06,850
4B4	Plains in Arid-Zone (NorthGujarat)	31,468
4B5	Plains in Cental Gujarat	26,813
4B6	Malwa Plateau	05,041
4B7	Satpuda Hills	02,645
5A	Malabar Plains	06,750
5B	Western Ghat Mountains	04,466
8B1	Gulf of Kutch	—
8B2	Saurashtra Coast	—
8B3	Gulf of Khambhat	—
8B4	Coast of South Gujarat	—
	Total Area	1,96,024

Prepared by GEER Foundation, Gandhinagar

REVIEW OF EXISTING NETWORK OF PROTECTED AREAS

This review is primarily concerned with the distribution of PAs in the land regions, their biological values and the management considerations. The objective of protected area planning within the land region framework has been to ensure that atleast one protected area covers a representative range of ecosystems in each land region or sub-biotic province. No ecosystem type should remain unrepresented in the network of PAs. Sometimes, an area demands conservation under the PAs, but circumstances and public opinions do not permit appropriate management and hence such areas have not been considered for PAs.

The existing management of PAs has been critically reviewed in this background and the history of their constitution has been studied. It has been found that the existing network of 25 PAs in the State have atleast one of following backgrounds for their constitution.

(i) Many PAs like Velavadar, Hingolgadh, Gir, Ratanmahals and Vansda were hunting grounds or wildlife reserves of ex-princely states and members of their families or wildlife lovers influenced the authorities to identify for the declaring them as national parks and sanctuaries.

(ii) Remnant population of magnificent wildlife like the wild ass, the blackbuck, the sloth bear and the great Indian bustard forced authorities to consider these areas for the declaration of PAs.

(iii) Eminent naturalists or scientists guided the authorities to send proposals to the Government for constituting the PA.

It is true that the majority of biomes has already been covered under the network of PAs, however, some of the less important, but unique and biodiversity rich areas remain unrepresented. Also, distribution of area under the PAs is not uniform, as some of the land regions do not have any national park or sanctuary. This makes a strong case to review the existing network of PAs to remove any short comings and gaps for the long term conservation of the biodiversity.

Except for the Biotic Province-3A: Kutch Desert, the other biogeographic zones have an area less than the national average and far below the world average under national parks and sanctuaries. 28.3% of the total geographical area of Kutch is under sanctuaries, whereas the other two biogeographic zones namely; 4-The Gujarat-Rajwada (Semi arid Zone) and 5-The Western Ghats have 2.4% and 1.6% respectively of their geographic area under the PAs. Imbalance appears to be more severe when this analysis is carried out in the provinces and land regions. 64.6% of the total area of the Rann of Kutch is under two large sanctuaries. Out of the sixteen land regions, only four have an adequate area (above national average) in national parks and sanctuaries. Six land regions have an inadequate (poor coverage under the PAs), whereas the other six land regions do not have any PA to conserve their biodiversity.

Banni, the largest grassland in India, and the wetlands therein are unique to the country. Similarly, the Vijaynagar forest in the Aravallis is the best in the land regions and supports rich floral and faunal diversity. Some wetlands in the plains and estuaries of South Gujarat are also important. The distribution of land areas in different land regions and the percentage of their total geographic area have been given in Table-8 to have an overview of the existing status.

The Great Rann, one of the largest sanctuaries in the country, is a PA on paper where the management is ineffective. This wildlife sanctuary along with the Wild Ass Sanctuary pushes Gujarat State into the category of states having the maximum contribution to the PA network in India. The ground reality is quite different in the state as the entire Gujarat, except for the Rann has very poor coverage under the wildlife protected areas. This needs to be rationalised and the network of PAs should be redesigned within the existing framework of the PAs.

Table-8 Protected Area coverage in the Land Regions in Gujarat State (Area in sq. km)

Sub-biotic Provinces/ Land Region	District/Area	Geographic Area	Area of Existing PAs	Area of Proposed PAs
Bio-geographic Zone – 3 The Indian Desert : Biotic Province – 3A Kutch				
$3A_1$-Kutch Plateau	Part of Kutch (Kutch main land)	23,452	446.2 (1.9%)	474.2 (2.0%)
$3A_2$-Banni	Part of Kutch (Banni grassland)	2,900	-	200.0 (6.9%)
$3A_3$-Rann	Part of Kutch (Rann of Kutch)	19,300	12,460 (64.6%)	9,500 (49.2%)
Total		**45,652**	**12,906.2 (28.3%)**	**10,174.2 (22.3%)**
Bio-geographic Zone – 4 The Semi-arid : Biotic Province – 4B Gujarat-Rajwada				
$4B_1$-Saurashtra Plateau	Surendranagar, Rajkot, Jamnagar, Porbandar, Amreli, Junagadh and Bhavnagar	63,119	1,675.0 (2.7%)	2,030.0 (3.2%)
$4B_2$-Bhal	Vallabhipur (Bhavnagar), Limbdi (Surendranagar), Dhandhuka (Ahmedabad)	3,220	34.1 (1.1%)	55.0 (1.1%)
$4B_3$-Aravalli Hills	Hills in Sabarkantha and Banaskantha	6,850	722.8 (10.6%)	722.8 (10.6%)
$4B_4$-Plains in North Gujarat-Arid Land	Mehsana, Patan, Gandhinagar, Ahmedabad and plains of Banaskantha and Sabarkantha	31,468	127.8 (0.4%)	127.8 (0.4%)
$4B_5$-Plains in Central Gujarat	Kheda, Anand and hills of Vadodara, plains of Bharuch, Godhra.	26,813	-	4.0 (0.1%)
$4B_6$-Malwa Plateau	Dahod and hills in Godhra, Dahod, Vadodara districts	5,041	186.0 (3.7%)	260.4 (3.7%)
$4B_7$-Satpuda Hills	Hills between Tapti and Narmada in Bharuch and Narmada districts	2,645	607.7 (23.0%)	607.7 (23.0%)
Total		**139,156**	**3,353.3 (2.4%)**	**3809.5 (2.7%)**
Bio-geographic Zone – 5 The Western Ghats: Biotic Province – 5A The Malabar Plains				
Malabar Plains	Plains in Surat, Navasari, and Valsad	6,750	-	-
Bio-geographic Zone – 5 The Western Ghats: Biotic Province – 5B The Mountains				
Western Ghat, Mountains - Sahyadri Hills	Hills in Valsad, Navasari, and Dangs.	4,466	184.8 (4.1%)	308.4 (6.9%)
Bio-geographic Zone – 8 The Coast: Biotic Province – 8B The West Coast				
$8B_1$-Gulf of Kutch	Kutch, Jamnagar and Rajkot	7,300	457.9 (6.2%)	540.0 (7.4%)
$8B_2$-Saurashtra Coast	Porbandar, Junagadh, Amreli and Bhavnagar	NA	-	-
$8B_3$-Gulf of Khambhat	Bhavnagar, A'bad, Kheda and Bharuch	6,350	-	100.0 (1.6%)
$8B_4$-Coast of South Gujarat	Surat and Valsad	NA	-	20.0

PROPOSED NETWORK OF PROTECTED AREAS

Majority of the natural areas in the region have been modified, leaving a few pockets of natural forests, grasslands and wetlands. In the background of this fact, we do not have enough choices. Within the limited choices of natural areas, it is essential to test sites under the following criteria.

(i) Ecological and biological values of the area.
(ii) Uniqueness of the site with respect to biodiversity richness, and support to endemic and threatened species.
(iii) Representativeness of the site in the land regions.
(iv) Even distribution of the PAs in all biotic provinces and land regions or reduction of the gaps in distribution of PAs in the land region.
(v) People's acceptability and feasibility of a long term management.

In background of the facts discussed in this paper, it is necessary to critically examine the network of existing PAs and, in turn, necessary action should be initiated to identify some of the important areas to expand the existing PAs or to declare new wildlife sanctuaries. After considering the various factors, including public acceptability and viability of the future management for the long term conservation of biodiversity, the following measures have been recommended.

A. Retionalising the boundaries and sizes of PAs

(i) Kutch plateau is locked at its land side by the two large PAs in the Rann of Kutch. It is necessary to re-align the boundaries of the Wild Ass Sanctuary and the Kutch Desert Wildlife Sanctuary by reducing their sizes marginally to accommodate the needs of the people so that they are managed effectively in the future.

(ii) The intertidal zone from Jodiya to Okha (almost the entire coast of Jamnagar in the Gulf of Kutch) is in the Marine Sanctuary, leaving no passage to the Gulf. This region has become important for industrial development. It has become difficult to block the economic development as refineries, ports and harbours have been constructed and will use this area for development. Under the circumstances, the authorities were forced to manipulate and distort the legal provisions to favour the industries. To summarise the present scenario, it is now a known fact that the entire coast of the sanctuary cannot be managed under the existing provisions of the law. Also, this brings distortion in the administration and a negative impact on the management. In the background of this fact, conservationists have to accept and concede to certain ground realities, which need not be discussed in this report. Thus, managing a major part of the Marine Protection Area effectively is better than retaining the entire area under the sanctuary without adequate conservation measures in most of the areas. It is recommended that an opening should be created for the development of industries and jettys. Thus, an area of about 25 sq. km of the sanctuary at an appropriate site should be denotified and *Bets* outside the PA (about 120 sq. km) should be included in the Marine National Park to provide effective protection to the majority of the ecologically superior marine habitats with an overall increase in the size of the MPA.

(iii) Area coverage under the PAs in the Aravallis is adequate, but the distribution is not proper. Balaram-Ambaji has honey comb pattern of existing villages and cultivation. It is not possible to manage this sanctuary effectively in its present form under the Wildlife Protection Act (1972). On the other hand, the best forest area in the Arravallis, supporting a rich biodiversity in the Sabarkantha district, has not been included in the PA. Thus, the size of the Balaram-Ambaji Sanctuary should be reduced and an equivalent area in the Vijaynagar taluka of Sabarkantha district should be identified for a wildlife sanctuary.

(iv) There is a compact grassland, covering over 50 sq. km in Abdasa taluka (Naliya) near the Lala Great Indian Bustard Sanctuary. This is an unique habitat, which supports all the three bustards in Gujarat. The present size of the Great Indian Bustard Sanctuary (only 2 sq. km) is inadequate and non-viable. The size of this PA should be increased by more than 25 sq. km

(v) Ratanmahals Wildlife Sanctuary, is an important biological unit, is very small. The surrounding forests of Ratanmahals are good, and deserve to be included in the sanctuary. Also, the area coverage under PAs in the Malwa Plateau is inadequate. The Conservator of Forest, Vadodara Circle, has already submitted a proposal to include the adjoining forest areas in Chhota Udepur and Baria forest divisions into the sanctuary. Thus, this sanctuary should be expanded to almost two to three times its present size.

(vi) The Forest cover in the Western Ghats is very good, but the areas under the PAs are very less. The two PAs viz. the Vansda National Park and the Purna Wildlife Sanctuary cover only 4.1% of the total area of the biotic province. Thus, the size of the two PAs should be increased and corridors should be developed to manage them under a large conservation unit. .

B. Strengthening the Gir Conservation Area

(vii) Corridors between PAs are important to maintain genetic flow and also to plan long term conservation strategies. It is not possible to develop corridors between all PAs due to intensive land use by the people, but some of the PAs can be connected. Gir Protected Area is connected with its satellite areas in Junagadh, Amreli and Bhavnagar, which support the lions. These corridors along with the satellite areas should be developed under a Larger Gir Conservation Area.

(viii) The lion population is on the increase and animals have migrated to Girnar, Mitiyala, the coastal forests, Hippavadle and the neighbouring areas in Bhavnagar district. It is difficult to expand the Gir Wildlife Sanctuary beyond certain limit. At the most, about 150 sq. km of the area, adjoining the sanctuary, may be added to the sanctuary. The

Paniya wildlife Sanctuary is an integral part of the Gir Conservation Unit. This should be merged with the Gir Wildlife Sanctuary. Mitiyala and Girnar have become important lion habitats and hence they must be notified as part of the sanctuary.

(ix) An area of about 240 sq. km in the Savarkundla taluka of Amreli district and the Mahuva taluka of Bhavnagar district is a compact block, which is now rehabilitated by lions. At present, over half a dozen lions stay in this area. This *Savannah* type of vegetation may turn out to be an alternative habitat for the lion. This area, along with corridors connecting Gir may be developed as a potential habitat for the lion. An area of about 60 sq. km in this block is reserved forest *(vidis)* and the rest of the area is managed as *vidis* by private owners and trusts. Thus, a compact block of the reserved *vidi* should be declared as a sanctuary to strengthen the wildlife conservation activities with a target of managing the entire block as lion habitat. Also, corridors between Mitiyala and this area should be developed.

C. Declaring new PAs

(x) A small fraction (5% to 10%) of the Banni, an unique grassland, should be identified as a PA by covering important wetlands to conserve the representative biotic communities. Chhari-Dhundh (about 60 sq. km) is an important wetland of international significance. This area was proposed and has been accepted by the Government of India for declaration of a Ramsar site. Thus, this area along with other adjoining areas of the Banni should be declared as the Banni Wildlife Sanctuary.

(xi) Central Gujarat and the Malabar Plains do not have forests or natural areas. Most of the area in this region are used for cultivation, but there are some important wetlands, which require protection. Thus, atleast one wetland in each of these regions should be identified for constituting a sanctuary. The Kanewal lake and the Pariaej lake in Kheda districts are outstanding sites for birds. Also, they have high conservation significance for the resident and the migratory birds. Either both the wetlands or atleast one of them in the region should be declared as a bird sanctuary.

(xii) Estuaries, mudflats, *Bets* and the scrub mangroves in the Gulf of Khambhat are good sites for flamingos, waders, crabs and some other marinelife. The estuary of the Mahi, Roniyo *Bet* and its neighbouring areas and the Piram *Bet* qualify being for declared as a PAs. Gulf of Khambhat is not as good as the Gulf of Kutch, however it is different from the other coasts. It has been proposed to select one of these areas, preferably the area of the Mahi estuary, for declaration as marine sanctuary.

(xiii) Some of estuaries like the Purna estuary, the Ambica estuary, and the Tapi estuary in South Gujarat have good mangroves and they have the potential to be declared as an outstanding coastal wetland conservation area. There is no PA in this coastal zone. Thus, one of them should be identified and demarcated as a marine sanctuary. The Tapi estuary is a good area, which supports some of the threatened species of mangroves but it is near an industrial establishment. At present, the Purna estuary supports an area of 800 ha under mangroves, which can be expanded to about 1400 ha under the tidal forests. Thus an area, preferably the Purna estuary, of about 2000 ha, can be identified as a marine sanctuary on the coast of South Gujarat.

(xiv) The Western mangroves or the Indus deltaic mangroves in and around the Kori creek area are the best in the state, which is an important fish and prawn breeding ground. Dolphins are frequently seen in these creeks. The mangrove cover in this region is about 700 sq. km, which extends further into Pakistan. A large compact block of mangrove swamps on both sides of the border should be protected under a PA. This area has complete protection from the biotic pressures as the BSF regulates movement of people and fishermen. Without being a sanctuary, the area enjoys the full protection but an area of about 200 sq. km in this region may be declared as a sanctuary to accord it an ecological importance.

(xv) The Amipur tank in Porbandar qualifies as per the Ramsar Criteria. This wetland is ecologically superior to the Porbandar Bird Sanctuary for the migratory birds, especially for the cranes, the flamingos and other waterfowl. It is necessary to accord high protection measures for this wetland, especially in the winter. There are several important sites, but all have not been examined critically for this exercise, as a majority of the representative areas have already been discussed in the proposed sites.

D. Denotifying PA

(xvi) The Gaga Great Indian Bustard Sanctuary is very small and fragmented into two parts at different corners of the Gaga village. Dr. Salim Ali reported the Great Indian Bustard before the declaration of the sanctuary. At present, the Great Indian Bustards does not occur in this area and the habitat has become degraded as a result of *Prosopis* invasion. This has become a very inferior area and it is not manageable under the law. It has become desirable to denotify this area in favour of other good sites.

(xvii)The Porbandar Bird Sanctuary provides protection to a part of the lake against other uses, but the area is relatively an important for birds as well as other wildlife. There are several sites in the Porbandar district, which are ecologically superior, supporting a good population of resident and migratory birds. This may be reviewed and critically examined before taking a final decision.

E. Strengthening and developing corridors

(xviii) In a new concept of eco-space management for sustainable development of the region, the PAs should be conserved as core areas with an adequate corridors between them. The network of PAs in the state has to be planned and managed within the framework of this concept. Jessore, Balaram-Ambaji and Vijaynagar forests are connected by loose corridors and these should be strengthened. Similarly, Ratanmahal and Jambughoda sanctuaries should be connected by effective corridors. The Purna Sanctuary and the Vansda National Park have forests connecting them, but they are shrinking. It is essential to strengthen these corridors so that the two PAs become part of one large conservation unit.

CONCLUSION

The network of existing PAs in the state does not cover all the land regions (sub-biotic provinces). Of the sixteen land region, four land regions have an adequate area under the PA, whereas six land regions have an inadequate cover; less than the national average. On the other hand, the other six land regions do not have any national parks and sanctuaries. Also, the size and extent of some of the PAs was debated, leaving no scope for effective management till the pending issues are resolved. This makes a strong case to review the existing network of PAs to remove any short comings and brides the gaps for a long term conservation of biodiversity.

The proposed network of PAs in this exercise concludes that the area of national parks may be increased from 449.7 sq. km to 2,277.8 sq. km, by covering core areas of some the sanctuaries. On the other hand, the total area of the sanctuaries should be reduced from 16,422.7 sq. km to 12,833.46 sq. km by deleting less important and unmanageable areas. In the recommendations, the number of national parks is proposed to be increased from 4 to 8 and sanctuaries from 23 to 30 with a marginal reduction in the total areas of the PAs.

It appears in this report that the total area of PAs in the state is proposed to be reduced by 1,791.2 sq. km, although ground realities are different. An ecologically inferior area of about 3,000 sq. km of the two large sanctuaries in the Rann of Kutch is difficult to manage as PAs under the existing laws. The excess size of the PAs and the prevailing conflicts make it difficult to manage them effectively and hence reduction of the size has been recommended in favour of better management of the major part of the PAs, which have high ecological values.

The proposed expansion of some of the PAs and the constitution of seven new PAs by covering biodiversity rich areas will certainly improve the overall conservation status in the State. This reduces gaps in the distribution of the PAs in different land regions and also improves the effectiveness of network of PAs to cover almost all the representative ecosystems.

Implementation of the recommendations will achieve two main objectives- an improved and effective conservation of the biodiversity in the state and wider public acceptability as a result of removing some of the obstacles for key development activities and reducing hardship of the local people. This is certainly a sincere effort to provide adequate protection to the biodiversity along with desirable development of the state in the new millenium.

Table-9A Existing and proposed National Parks in Gujarat (Size in sq. km)

Sr. No.	Name of the park	Existing Size	Proposed Size	Change
1.	Gir National Park	258.71	699.71	(+) 441.00
2.	Marine National Park	162.89	280.00	(+) 117.11
3.	Blackbuck National Park (Velavadar National Park)	34.08	34.08	-
4.	Vansda National Park	23.99	28.96	(+) 4.97
5.	Little Rann National Park	-	1000.00	(+) 1000.00
6.	Nalsarovar National Park	-	35.00	(+) 35.00
7.	Shoolpaneshwar National Park	-	200.00	(+) 200.00
	Total National Parks=7	**479.67**	**2277.75**	**(+) 1798.08**

Table-10 Existing and proposed wildlife sanctuaries in Gujarat (Size in sq. km)

S. No.	Name of the wildlife sanctuaries	Existing Size	Proposed Size	Change
1.	Narayan Sarovar Wildlife Sanctuary	444.23	444.23	-
2.	Lala Great Indian Bustard Sanctuary	2.03	30.03	(+) 28.00
3.	Great Rann Wildlife Sanctuary	7506.22	5500.00	(-) 2006.22
4.	Wild Ass Sanctuary (Little Rann Wildlife Sanctuary)	4953.70	3000.00	(-) 1953.70
5.	Gir Wildlife Sanctuary	1153.42	902.05	(251.37)
6.	Paniya Wildlife Sanctuary (merge with Gir)	39.63	-	(-) 39.63
7.	Barda Wildlife Sanctuary	192.31	192.31	-
8.	Rampara Wildlife Sanctuary	15.01	35.01	(+) 20.00
9.	Hingolgadh Nature Education Sanctuary	6.54	6.54	-
10.	Porbandar Bird Sanctuary	0.09	0.09	-
11.	Gaga Great Indian Bustard Sanctuary (denotify)	3.33	-	(-) 3.33
12.	Khijadia Bird Sanctuary	6.05	6.05	-
13.	Jessore Wildlife Sanctuary	180.66	180.66	-
14.	Balaram-Ambaji Wildlife Sanctuary	542.08	432.08	(-) 110.00
15.	Nalsarovar Bird Sanctuary	120.82	85.82	(-) 35.00
16.	Thol Lake Bird Sanctuary	6.99	6.99	-
17.	Ratanmahal Wildlife Sanctuary	55.65	130.65	(+) 75.00
18.	Jambughoda Wildlife Sanctuary	130.38	130.38	-
19.	Shoolpaneshwar Wildlife Sanctuary	607.70	407.70	(-) 200.00
20.	Purna Wildlife Sanctuary	160.84	242.44	(+) 81.60
21.	Marine Wildlife Sanctuary	295.03	270.03	(-) 25.00
22.	Velavadar Wildlife Sanctuary	-	20.00	(+) 20.00
23.	Banni Wildlife Sanctuary	-	200.00	(+) 200.00
24.	Vijaynagar Wildlife Sanctuary	-	110.00	(+) 110.00
25.	Vansda Wildlife Sanctuary	-	37.00	(+) 37.00
26.	Mitiyala Wildlife Sanctuary	-	19.40	(+) 19.40
27.	Hippavadle Wildlife Sanctuary	-	20.00	(+) 20.00
28.	Girnar Wildlife Sanctuary	-	150.00	(+) 150.00
29.	Purna Estuary (Marine) Wildlife Sanctuary	-	20.00	(+) 20.00
30.	Kanvel Lake Bird Sanctuary	-	4.00	(+) 4.00
31.	Mahi Estuary Marine Sanctuary	-	50.00	(+) 50.00
32.	Kori (Mangroves) Marine Sanctuary	-	200.00	(+) 200.00
	Total of Wildlife Sanctuaries=29	**16422.71**	**12833.46**	**(-) 3589.25**

Summary of existing and proposed protected areas (PAs)

	National Park			Wildlife Sanctuary			Total (Protected Areas)		
	No.	Area (Ha.)	% of geographical area	No.	Area (Ha.)	% of geographical area	No.	Area (Ha.)	% of geographical area
Existing PA	4	47967	0.24	21	1642271	8.38	25	1690238	8.62
Proposed PA	8	227775	1.16	30	1283346	6.55	38	1511121	7.71
Changes	+4	(+) 179808	(+) 0.92	+9	(-) 358925	(-)1.83	+13	(-)179117	(-) 0.91

Table-11 Existing and proposed Protected Areas in Gujarat

Bio-types	District	Existing Protected Areas	Size	Proposed Protected Area	Sq. km	Sq. km
Biotic Province - The Indian Desert – 3A Kutch						
$3A_1$-Kutch Plateau	Kutch	1. Narayan Sarovar WS	444.2	1. Narayan Sarovar WS	444.2	-
		2. Lala Great Indian Bustard Sanctuary	2.0	2. Lala Great Indian Bustard Sanctuary	30.0	(+) 28.0
$3A_2$-Banni	Kutch	-	-	3. Banni Wildlife WS (covering important wetlands)	200.0	(+) 200.0
$3A_3$-Rann	Kutch	1. Great Rann WS	7506.2	4. Great Rann WS	5500.0	(-) 2006.2
		2. Wild Ass Sanctuary	4953.7	5. Little Rann WS	3000.0	(-) 1953.7
				6. Little Rann NP	1000.0	(+) 1000.0
		4	**12906.1**	**6**	**10174.2**	**(-) 2731.9**
Biotic Province - The semi-arid: 4B Gujarat-Rajwada						
$4B_1$-Saurashtra	Junagadh	1. Gir National Park	258.7	1. Gir National Park	699.7	(+) 441.0
	Junagadh/Amreli	2. Gir WS	1153.4	2. Gir WS	902.1	(-) 251.3
	Amreli	3. Pania WS	39.6	Merge with Gir WS	-	(-) 39.6
				3. Mitiyala WS	19.4	(+) 19.4
				4. Hippavadle WS	20.0	(+)20.0
				5. Girnar WS	150.0	(+) 150.0
		3	**1451.7**	**5**	**1791.2**	**(+) 339.5**
	Porbandar/Jamnagar	4. Barda WS	192.3	6. Barda WS	192.3	-
	Rajkot	5. Rampara WS	15.0	7. Rampara WS	35.0	(+) 20.0
	Rajkot	6. Hingolgadh Nature Education Sanctuary	6.5	8. Hingolgadh Nature Education Sanctuary	6.5	-
	Porbandar	7. Porbandar BS	0.1	9. Porbandar BS	0.1	-
	Jamnagar	8. Gaga Great Indian Bustard Sanctuary	3.3	Denotify	-	(-) 3.3
	Jamnagar	9. Khijadia BS	6.1	10. Khijadia BS	6.1	
		9	**1674.5**	**10**	**2030.7**	**(+) 356.2**
$4B_2$-Bhal	Bhavnagar	1. Blackbuck National Park	34.1	1. Velavadar National Park	55.0	(+) 20.9
$4B_3$-Arravalli Hills	Banaskantha	1. Jessore WS	180.7	1. Jessore WS	180.7	-
		2. Balaram-Ambaji WS	542.1	2. Balaram-Ambaji WS	432.1	(-) 110.0
	Sabarkantha	-		3. Vijaynagar WS	110.0	(+) 110.0
		3	**756.9**	**4**	**777.8**	**(+) 20.9**
$4B_4$-Plains in Gujarat	A'bad/Sur'nagar	Nalsarovar BS	120.8	1. Nalsarovar BS	120.8	-
	Mehsana	Thol lake BS	7.0	2. Thol lake BS	7.0	-
		2	**127.8**	**2**	**127.8**	-

$4B_5$-Plains in Central Gujarat		1. Kanewal Lake BS	-	1. Kanewal Lake BS	4.0	(+) 4.0
$4B_6$-Malwa	Dahod	1. Ratanmahals WS	55.6	1. Ratanmahals WS	130.0	(+) 74.4
Plateau-Hills	Godhra	2. Jambughoda WS	130.4	2. Jambughoda WS	130.4	-
		2	**186.0**	**2**	**260.4**	**(+)74.4**
$4B_7$-Satpuda	Narmada	Shoolpaneshwar Wildlife Sanctuary	607.7	Shoolpaneshwar WS	407.7	(-)200.00
				Shoolpaneshwar NP	200.00	(+) 200.00
		1	**607.7**	**2**	**607.7**	**-**
5A Western Ghats-Malabar Plains- Navasari/Surat/Valsad		Navsari/Surat/Valsad	-	-	-	-
5B Western Ghats-Navsari Mountains		1. Vansda National Park	24.0	1. Vansda NP	29.0	(+) 5.0
				2. Vansda WS	37.0	(+) 37.0
	Dangs	2. Purna WS	160.8	3. Purna WS	242.4	(+)81.6
		2	**184.8**	**3**	**308.4**	**(+) 123.6**
8A West Coast						
$8A_1$-Gulf of Kutch	Jamnagar	1. Marine NP	162.9	1. Marine NP	280.0	(+) 117.1
		2. Marine Sanctuary	295.0	2. Marine Sanctuary	270.0	(-) 25.0
				3. Kori Marine Sanctuary	200.00	(+) 200.0
$8A_2$-Saurashtra Coast	Porbandar, Jamnagar, Amreli, Junagadh	-	-	-	-	-
$8A_3$-Gulf of Khambhat	Bhavnagar, A'bad, Kheda and Bharuch	-	-	3. Mahi Estuary Marine Sanctuary	50.0	(+) 50.0
$8A_4$-Coast of south Gujarat	Surat and Valsad	-	-	4. Purna Estuary WS	20.00	(+)20.00
		2	**457.9**	**5**	**820.0**	**(+) 362.1**
Grand Total		**25**	**16902.4**	**32**	**15111.2**	**(-) 1791.2**

Ph & Fax : 573113

To

Dr. Ashish Kothari,

Herewith I am enclosing you a xerox for Kalpavriksh and update news. I'm advocating in our regional language and writer in Phulchhab daily news papers.

Pl. send me some

-2-

literature on wetlands. we have celebrated 2nd feb. 2000, as a world wetland day and Memorandom to collector, Municipal commi ssioner & cheif wildlife conservator.

o'k, bye.

Dr. Pandya
Paresh.

To Dr. Ashish Kothari
KALPAVRIKSH - PUNE

Gujarat Vigyan Parishad
Dr. Paresh B. Pandya

SUMMARY

Gujarat coast measures about 1650 sq. km, which is the **longest coastline** amongst the maritime states of India. Varieties of resources in vast sea water of Gujarat, covering two lakh sq. km area of the EEZ and 1.5 lakh sq. km area of continental shelf, are important for the overall development (Shah, 1997). Mangroves, coral reefs, estuaries, mudflats, algal beds and marsh vegetation support treasures of marine life including variety of fishes. Among all coastal states of India, Gujarat has maximum area under marine influence (coastal wetlands), which was estimated between 25100 and 28500 sq. km. State of Gujarat is unique in India as **62.3% of total coastal wetlands** of the country is comprised by the coastal wetlands found in the State (SAC, 1992 and Garg *et al*, 1998).

The **climate** of the Gulf of Kutch is dry whereas it is moderate to moist in South Gujarat. Average annual rainfall of about 400 mm in Kutch, 450 mm to 600 mm in Saurashtra and 800 mm to 2000 mm in South Gujarat was recorded. There is no perennial river in dry region, except Narmada and Tapti in South Gujarat. Discharge of rainwater through rivers is reduced due to construction of network of dams.

Gujarat coast has broadly been divided into **five regions**; (i) the Rann of Kutch, (ii) the Gulf of Kutch, (iii) the Saurashtra Coast, (iv) the Gulf of Khambhat, and (v) the South Gujarat Coast. To protect areas of conservation importance, the State Government has notified four Protected Areas viz., Marine National Park and Sanctuary, Jamnagar, Khijadia Bird Sanctuary, Wild Ass Sanctuary (Little Rann) and Kutch Desert Wildlife Sanctuary (Great Rann). These **protected areas** cover total 12994 sq. km to conserve mangroves, corals, marinelife, water birds, wild ass, chinkara, lesser cats, foxes, wolf and varieties of desert biota occuring in the Gulf and the two Ranns. Marine National Park in the Gulf of Kutch in Jamnagar was declared to conserve coral reefs, mangroves and marine life therein.

Gujarat State has notified a total area of 1324.4 sq. km in Kutch, Jamnagar and Rajkot districts in the Gulf of Kutch as mangrove forests, locally calls **'Cher'**. Mangrove forest covering an area of 991 sq. km in the State as per remote sensing study stand second after West Bengal (FSI, 1997). GEER Foundation made an independent study in 1999 by using IRS LISS III data of 1998 and interpreted forest cover on scale of 1:50,000. This provided accurate estimate of **mangrove cover,** which was assessed to be 930.4 sq. km (450.6 sq. km dense mangroves + 479.9sq. km sparse mangroves).

Mangrove cover was estimated about 727.4 sq. km in Kutch, 141.4 sq. km in Jamnagar, 5.6 sq. km in Rajkot, 15.2 sq. km in Bhavnagar, 14.7 sq. km in Bharuch, 14.2 sq. km in Surat and 10.3 sq. km in Valsad. As per the FSI estimates, mangroves increased consistently in Gujarat from about 397 sq. km in 1991 to about 991 sq. km in 1997. 20 out of 42 bets in the Marine National Park support mangroves.

Western mangroves, known as **Indus deltaic mangroves** in Abdasa and Lakhapat taluka are largest tidal forest in Gujarat. Best mangroves in Gujarat State are found in Kori, Laki Akri, Medi Jakhau and Pir Senai. Good mangroves also occur on *Bets* of the Marine National Park. Pirotan, Kalubhar, Dedeka-Mundeka, Bhaider, Bhensbid, Chhad, Zindra, Noru, Chank and Dhani *Bets* are partially fringed along and at mouth of creeks with good mangroves. Coast of Jodia, Khijadia, Navabandar and Sachana are also fringed with thick cover of mangroves. In Saurashtra, Gulf of Khambhat and Coast of South Gujarat have mangroves in small patches. They are found in Porbandar, Ghogha Jetty, Bhavnagar, Ronia *Bet*, Alia *Bet,* Ubharath, Khetalwada, Hazira and Narvad at mouth of Auranga River.

Avicennia officinalis, A. marina and *A. alba* **colonise** intertidal mudflats and progress slowly in seawards. Tidal current is limiting factor for *Rhizophora, Ceriops* and *Aegiceras* and hence they grow in sheltered zone, especially along creeks, where impact of tidal currents is low. *Rhizophora*

grows normally at mouth of small creeks on the *Bets* in the Marine National Park. Unlike forests in Sundarbans and Andman, large area of hypersaline mudflats is seen between mangrove live and main land. Due to hypersalinity, no vegetation grows in such land. Difference of mudflat level between seaward and landward mangrove lines was recorded to be about 190 cm.

There is a small patch (0.7 ha) of **land-locked mangroves** (*Avicennia marina*) at Shravan Kavadiya which is located at about 40 km in north-east direction of Bhuj. Most of the tall trees were damaged in cyclone in 1998 but 36 partially damaged or top-broken trees are still surviving at the site. Average height of standing trees (dead and live) was measured about 18.5 m whereas average girth was about 240 cm. At present, this unique inland mangrove patch is an evidence of the ancient shoreline and may prove a historical evidence for geo-morphological change in the region.

Top height of *Avicennia* trees in forest of Jamnagar were measured between 3 m to 5 m, although majority of Cher forest has height between 2m to 3m. Most of old trees were damaged during cyclone which had height about 6.0 m to 8.0 m. Tree height in western mangroves ranged from 0.75 m to 10.0 m. Trees of Medi Post were taller with a mean height of 3.7 m and shorter at Jakhau with mean height of 2.2 m. Height classes in range of 1.6 m to 3.0 m were more in number in all forests in western mangroves (GUIDE, 1999). Height of tall/dominant trees along Siyadinar near Jakhau was measured about 5.3 m (varying from 4.om to 6.9m).

Tallest trees with height of upto 10.0 m were measured at Carissod creek. Good number of trees in the height class of 6.0 m to 7.5 m was measured in Kori creek. Mean GBH in the western mangroves was estimated from 31 cm at Mundra to 37 cm at Medi. Maximum GBH of 2.25 m was recorded at Laki creek (GUIDE, 1999). **Stump and stem study** revealed that *Avicennia marina* attains height of 4.9 m and girth at stump of about 31 cm in 20 years at Pirotan. In western mangroves a tree attains average girth of 71 cm at stump in 50 years. Study also revealed that growth of *Avicennia* stagnates during winter and extreme summer as four rings was formed every year unlike two rings (one summer and other winter growth) in trees.

Average height of mature tree of *Rhizophora* was estimated to be 3 to 5 m. whereas *Ceriops* and *Aegiceras* remain shrubby in this area. Average height of *Ceriops* was measured between 1.1 m and 1.3 m, although one tree had a height of 2.9 m at Pirotan. Similarly, *Aegiceras* remains dwarf in the Gulf with height of about 1.0 m to 1.5 m.

Mangroves in Kutch district were managed under Protection cum Improvement Working Circle in the past. Ruthless cutting and grazing by camels was permitted till beginning of conservation forestry. Maximum damage to Cher forest was done during drought periods. **Degradation** process was controlled after declaration of the Marine National Park but again continued during drought in 1987. About 103.3 sq. km of mangroves has been leased out to the 21 Salt Industries in Jamnagar. Similarly, salt industries in Rajkot, Kutch and Bhavnagar caused considerable damage to mangroves. Records of the Forest Department provide some information on destruction of mangroves in notified areas but such records are not available for other areas which had mangroves in the past. With development of industries, refineries, ports and jettys along the coast of Gulf of Kutch, mangroves in the region are now threatened. Damage to mangroves has been regularly reported due to minor oil spills in the Gulf. Ship breaking industries at Sachana and other sites also bring negative impact on the tidal forests. Large scale damage to mangroves in the Marine National Park, Jamnagar and western mangroves in the Kutch was seen after cyclones that occurred in 1998 and 1999. Mangrove trees died due to deposition of layers of sand and mud on pnuematophores or exposure of roots or uprooting of trees. Most of old trees growing on the *Bets* were damaged during the cyclone. Cyclone that occurred in May 1999 caused devastating impact on western mangroves, especially forest in and around Kori creek. Local fishermen informed that almost half of the mangrove forest is damaged in the region and loss of mangroves on some *Bet* facing direct water current was complete.

Paresh B. Pandya

Good mangroves of the world are found in tropical coastal line between 25^0N to 25^0S latitude. Climate is major factor, which decides **composition** and nature of mangroves. Peak growth of mangroves occurs between below 21^0C and 27^0C and leaf production ceases below 15^0C and above 35^0C (Hutching *et al*, 1987). The Gulf of Kutch finds both extreme temperatures reducing photosynthesis in winter and extreme summer.

Mangroves of Gujarat are of semi arid region where **precipitation and evapo-transpiration** ratio was recorded between 0.3 to 0.5. Tidal amplitude in the Gulf of Kutch varies from 3.0 to 6.0 m whereas it is very high in the Gulf of Khambhat, exceeding 10.0 m. Water salinity in mangrove creek normally varies from 37 ppt to 44 ppt in the Gulf of Kutch and still high salinity was found in the salinas. Low rainfall, extreme temperature, salinity and tidal amplitude are limiting factors for development of good quality of mangroves in Gujarat.

The **main species** found in Gujarat are *Avicennia marina* var. *acutissima, A. officinalis, A. alba, Rhizophora mucronata, Ceriops tagal, Aegiceras corniculatum* and *Sonneratia opetala,* although *Bruguiera gymnorhiza* was also recorded. Mangrove forests along coasts are dominated by *Avicennia* species. *Avicennia officinalis, A. marina* and *A. alba* are important species that occurs in all mangrove areas. Tree population of *A. marina* is maximum which is followed by *A. alba* and *A. officinalis*. *Avicennia* marina colonise area very fast once disturbance factors are removed. This is main reason that the most of coastal mudflats are now regenerated by three species of *Avicennia*. *Rhizophora, Ceriops, Aegiceras* do not occur anywhere in Gujarat at present except on the *Bets* of the Marine National Park. *Rhizophora mucronata* occur in small patches on Pirotan, Bhaider, Noru, and Chank, near Bhensbid and Dedeka-Mundeka. Scattered trees of this species also occur on other *Bets*. *Ceriops tagal* constitute pure patches on Chhad, Zindra, and Pirotan, Near Bhensbid, Kalubhar, Bhaider, Noru and Chank. Total area under *Rhizophora* may not be more than 20-30 ha in the Gulf, although area under *Ceriops* would be more than 100 ha. Scattered plants of *Aegiceras corniculatum* occur on the *Bets* with small population.

Floral diversity and height of mangrove forest decreases as one moves from equatorial region to north and south. Diversity of mangroves in Gujarat is poor, compare to other mangroves of the country. 13 core mangrove species have been recorded in the West Coast of India (Singh *et al*, 1985). Total 9 species belonging to 6 genera have been recorded in Gujarat and two of them are now not seen in the Gulf, probably they have become rare or extinct. Kothari (1991) mentioned that in addition to above nine species, *Rhizophora apiculata, Acanthus ilicifolius* and *Bruguiera cylindrica* also occurred in Gujarat but these were not reported during recent past. Among species recorded in Gujarat, *Rhizophora, Ceriops, Sonneratia opetala* and *Aegiceras* are threatened with low population and poor regeneration.

Micro-organism, algae, plants like *Suaeda fruticosa, Aeluropus lagopoides* and *Salvadora persica,* invertebrates including crustaceans, gastropods, molluscs, prawns, fishes, amphibians and reptiles, birds, mammals like jackal, jungle cats, rodents are important **community components** of mangroves in the Gulf. Over dozen species of water fowl like Grey Heron, Pond Heron, Large Egret, Indian Reef Heron, Darter, Purple Heron, Indian Sag, and Ibis do nesting in large scale on mangroves trees. Total 2273 pair of birds was counted on next in mangroves in the Marine National Park during 1987 to 1989. Birds of prey like Brahminy kites, Ospreys, Harriers use mangroves for resting and feeding in mangrove swamp. Some of them like Osprey use mangroves for nesting. Prawn fishery is attributed to mangroves in the Gulf. Crabs are extra ordinarily abundant in mangrove swamps in both the Gulfs.

Ecological and economic **values** of mangroves are recognised the world over. Fringe mangroves function as stabiliser of sediment and protect shoreland from erosion. Thick cover of mangroves attenuate velocity of winds and cyclone and reduces the impact of damage on the landwards. This also control salty winds and protects vegetation in the landward. Mangroves play crucial role for conservation of marine life as mangrove swamps are considered nursery and shelter ground for prawns, fishes, birds and other marine life. Mangroves trap silts and protect coral reefs from destruction. Mangroves play an important role in the **pathways** of certain key elements such as nitrogen, phosphorous and sulfur, particularly in trapping nutrient carried down from catchment areas by rivers and converting them into organic compounds, which then enter food chains. Out of total catch of 7.7 lakh in Gujarat, **fish catch** including prawns, crabs etc. in the Gulf of Kutch was estimated at 8600 tonnes. Diversity of life in mangrove ecosystem has become an issue of global concern during recent years. Thus, conservation of mangrove ecosystem is essential to protect many species from extinction.

Wood of mangrove tree is excellent fuel wood and also used as small **timber** and fishing rods. Bark and leaves of some mangrove species are used for **medicines.** Leaves and fruits of *Avicennia* are very important as **fodder** of livestock. Bark and other parts of some species of mangroves are used for preparation of medicines. Mangrove forests have great potential for development of **tourism.**

Over 13000 ha the Forest Department from first five-year plan to the year 1998-99 has **afforested** area of intertidal zone. Seed sowing of *Avicennia* and also seedling plantation was done as part of mangrove regeneration programme. As per remote sensing study about **600 to 700 sq. km** area in intertidal zone can be transformed into mangrove forests through afforestation, making **total mangrove cover of about 1600 sq. km** in Gujarat. Also, sparse mangrove area can be enriched by planting suitable species. *Rhizophora* and *Ceriops* are also planted in Jamnagar. Species, which have been exterminated from the mangroves of Gujarat, should be regenerated to restore the diversity of mangrove forest. *Sonneratia apetala* has been exterminated from the most of mangrove forests, except a small patch in the estuary of Tapti. This should be planted to save the species from extinction. Similarly, *Bruguiera gymnorrhiza* should also be planted at suitable sites to restore the species in the mangroves of Gujarat. Interior area in the Gulf of Khambhat needs to be afforested by **aerial seed sowing.**

To achieve the target of **mangrove development**, it is necessary to develop an organisation so that strategy evolved for conservation of marinelife and mangrove ecosystem is implemented properly. Fishermen and coastal villagers have direct stake in this programme and their involvement is necessary to develop mangroves in the intertidal zone. There is need to continue research programme on the subject. Appropriate **institutional arrangement** with suitable protection strategy and silvicultural model will make sustainable development of mangrove possible in the area. All partners, including staff and fishermen need to be educated and trained to make this programme successful.

Forest Deptt., Department of Fisheries, Maritime Board, Kandla Port trust, Salt Industries, Refineries, Thermal Power Industry, Cement Industry, Coast Guard, Navy and Department of Custom etc. are main users of the coastal zone. Each of them has sectoral approach to maximize their benefits. It is necessary to develop a forum by involving all sectors and local people to improve understanding for rational use of coastal resources to achieve the goal of **sustainable development.** Mangrove development through involvement of all concerned groups, especially fishermen and local people will be a desirable step in this direction.

Dr. Paresh B. Pandya
'Gujarat Vigyan Parishad'

Dr. Pandya Paresh

NEED FOR ESTABLISHING CENTRE FOR WETLAND STUDIES IN GUJARAT STATE

Gujarat is internationally known as land of Asiatic lion but wetlands in the state (coastal wetlands and inland wetlands) also need to be given importance as they have unique status and support one of the largest populations of waterfowl in winter. The two Rann (Great and Little Rann of Kutch) are magnificent, incomparable and wonderful land in the world and categorized as different biomes, not occurring anywhere else on this planet.

Wetlands form a part of rich natural heritage of Gujarat State. It is one of the richest states as far as wetland habitats are concerned. About 63 per cent of the country's wetland areas occur in Gujarat State and thus the State has very high responsibility of conserving these globally threatened habitats and their biota.

Of the total geographical area of Gujarat, wetlands cover 2.7 million ha. Of the total wetland area, inland wetlands cover 21000 ha (7.8%) and coastal wetlands cover 2.5 million ha (92.3%). Thus, the State is endowed with both, inland and coastal wetlands. Inland and coastal wetlands in the State are both, of natural and man-made types. As per a recent remote sensing based survey, the State has 424 natural and 407 man-made wetlands (excluding small waterbodies), totaling 1419 wetlands encompassing about 2.7 million ha. All the wetlands, which occur in the State, have water that is fresh, brackish or saline flowing or stationary of either permanent or temporary nature. In short, the State's wetlands have very high diversity apart from high number and extent.

The State has special place in the country's wetland-based Protected Areas. This is because, seven of all the PAs in the State are wetland-based. These are the Great Rann of Kutch, the Little Rann of Kutch, Nalsarovar, Thol lake, Khijadia lake, Porbandar lake and the Marine National Park. The seven Wetland Protected Areas cover 13052 sq. km which is about 77.2% of total Protected Area of the State. These protected wetlands have one or the other peculiarities apart from their rich flora and fauna. As the Great and the Little Ranns are flooded with both, tidal water from the Arabian Sea and rain water run-off from the main land; Khijadia represents an assemblage of coastal brackish and saline lagoons and marshes, salt pans and freshwater lake; Nalsarovar exhibits conversion of freshwater into brackish waters under climatic and edaphic factors; Porbandar lake is a man-made irrigation reservoir being utilized for waterfowl conservation and the Marine National Park is the first marine park in the country.

It is interesting to know that the seasonal wetland of the Little Rann has been a proposed Biosphere Reserve of the country and Nalsarovar - a proposed Ramser site. Nalsarovar is presently a notified wetland of the country as per the declaration of Ministry of Environment and Forests, Government of India.

All these wetlands support innumerable forms of flora and fauna. Some of these forms are threatened. The threatened mammals, birds and reptiles of the wetlands of the State include Dugong, Common Dolphin, Common otter, Asiatic Wild Ass, Dalmatian Pelican, Indian Darter, Ferruginous duck, India Sarus Crane, Black-necked Stork, Indian Skimmer, Osprey, Marbled teal, Lesser Flamingo and water Monitor. *Nelumbo nucifera* and *Cyperus dwarkensis* are examples of threatened plants in the State, of which the latter is restricted to the seacoast of Dwarka in the entire country.

Gujarat is famous nationally and internationally for its high waterfowl diversity and population. The protected and unprotected wetlands including hundreds of village ponds and irrigation reservoirs of the State provide shelter to lakhs of migratory and resident grebes, ducks, coot, waders (or sherebirds), herons, egrets, storks, cranes, etc. especially during winter. The State has special place in waterfowl heritage of the country from following viewpoints:

- The part of the Great Rann of Kutch near Panchham Island supports the oldest and the largest breeding colony of the Greater Flamingo in the country.
- A part of the Little Rann of Kutch has been recently found proving nesting site for thousands of Lesser Flamingos.(About 70,000 birds nested in 1998 in the Little Rann)
- The State is amongst the few stronghold states of the country for migratory Common crane and Demoiselle crane and the resident Sarus crane. The latest population estimates by the wetlands International for the Sarus crane in South Asia has been 8000-10000 individually. Of these around 1700-1800 individually occur in Gujarat State as per the survey carried out by GEER Foundation between 1997 and 1999. One fourth of total population of Common and Demoiselle crane occur in Gujarat during winter.
- The Ranns, the Gulf of Kutch and/or the Gulf of Cambay fall on the migration routes of migratory waterfowl visiting parts of South Asia (including India) every year. In fact Gujarat is located on Central Asia-India flyway and thus provides opportunity to see a variety of large numbers of migratory waterfowl.

Apart from the rich and unique waterfowl heritage, the State has rich heritage of mangroves in the districts of Kutch, Jamnagar and Bhavnagar. Gujarat supports the second largest area of mangroves (990 sq. km) after Sundarbans in India. The coastal areas of the State near Gulf of Kutch also support coral reefs. Studies pertaining to wetlands and waterfowl have always remained thrust areas of research of GEER Foundation. Wetland ecosystems and waterfowl of the Little Rann of Kutch, part of the Great Rann of Kutch and Nalsarovar lake have been studied by GEER Foundation through remote sensing technique and field surveys. The wetland ecosystem of the Great Rann of Kutch, Khijadia mudflats and Thol Lake are under study. We emphasis land use land cover survey/monitoring using remote sensing data, water quality analysis, vegetation study as also species inventorying, population monitoring, habitat utilization preferences and threats of/to wetland-dependent birds (waterfowl and terrestrial birds). In addition, wherever possible, we try to study invertebrates and mammals in/around wetlands. You may get idea about scope of our studies from the project reports already published.

In addition to such ecosystem-based studies, the Foundation has recently concentrated on an endangered Indian Sarus Crane *(Grus antigone antigone)*. A study was conducted from August 1997 to November 1999 to know current status of the sarus crane in Gujarat State (one of the stronghold states in India for the cranes). Studies on population monitoring, distribution pattern, nesting and threats of/to the cranes were emphasised. The Foundation is also going to conduct surveys on Demoiselle crane and Common cranes shortly. These cranes immigrate to the State in lakhs every year during winter.

Considering the emphasis, which the Foundation has been laying, on wetland and waterfowl research and high potential for wetland and waterfowl research/education in Gujarat State, the Foundation has been considering to establish Wetland Research & Education Cell (WREC) or Centre for Wetland Studies for achieving the below mentioned objectives.

- habitat monitoring and mapping of wetlands using satellite remote sensing technique and GIS;
- species inventorying, population monitoring, habitat utilization study, breeding study, ringing and threat investigation for waterfowl;
- studies on invertebrates, fish, reptiles and mammals dependant on wetlands, (wherever need arises and the expertise is available), studies related with socio-economic dependency on wetlands and impact of man on wetlands, in Gujarat State;
- long-term research and conservation of near threatened/ vulnerable/ endangered waterfowl species like the Dalmatian pelican, Indian skimmer, Ferruginous duck, Darter, Lesser flamingo, Spoon bill, Black-necked stork, Harriers, etc.
- awareness building and education for wetlands and waterfowl conservation through English and local (Gujarati) languages.

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'Gujarat Vigyan Parishad'

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SKY FOREST YOUTH CLUB - KESHOD.

C/o. Vaibhav Book Store,
Station Road,
Keshod - 362 220. INDIA

(Reg. No. F/9 : Guj - 433 U 104 JND)
Ph. (02871) 37687

Date:21-9-2002

To,
HON'BLE FOREST MINISTER
Minister of Environment & Forest CGO Com.
NEW DELHI.

PAVING OF THE GIRNAR PARIKRAMMA ROUTE

As per the news in the newspapers dated 10-9-2002, the Gujarat government has decided to undertake macadamization and tar paving of the Girnar PARIKRAMMA route.

Mt. Girnar is a rich and varied house of plant life. This area also shelters approximately 18 Asiatic Lions, 25 Panthers & many harbivourious animals and plenty of beautiful birds. In fact, considering the extent and multiplicity of the flora and fauna in this region, one feels that it should be decalared a santuary.

If the above mentioned road is surfaced with tar, then the numbers as well as the speed of motrised vehicles will increase substantially. This will disturb the wild life and may cause accidents involving animals. Also formatisation of road in this wild area will cause a marked restrictions in the free movements of wild animals. In short, above type of decision will cause an untold harm to this beautiful and screne wild area. Loss of this heritage will be a loss for ever.

It is a heart felt request that no such harmful short sighted and self-serving steps be taken in the government.

Yours Sincerely

GOVIND VEKARIA
Secretary
S.F.Y.C. - KESHOD.
Ph. (0286) 72132

REVTUBHA RAIJADA
President
S.F.Y.C. - KESHOD.
Ph. (02871) 34529

Copy to...

HON'BLE SHRI ATALBIHARI BAJAPAI
Prime Minister of India
10, Janpath NEW DELHI.

HON'BLE FOREST MINISTER
Minister of Environment & Forest
Sachivalya, Gandhinagar, GUJARAT.

HON'BLE SHRI
C.C.F. (wildlife)
Forest Department, Block No. 14,
Dr. Jivraj Mehta Bhavan, Old Sachivalya,
Gandhinagar, GUJARAT.

PRESEDENT
SKY FOREST YOUTH CLUB
C/o. Vaibhav Book Store, KESHOD.
Ph. (02871) 37687

SMT. MENAKA GANDHI
Minister for Social Justice.
Shastri Bhavan,
NEW DELHI - 110001.

HON'BLE INSP. GENERAL OF FOREST
Ministry of Environment & Forest
4th Floor, Paryavaran Bhavan,
CGO Com, Pragati Nagar,
NEW DELHI.

HON'BLE SHRI
C.F. (NORMAL)
Sardar Baug, Junagadh.
GUJARAT.

HON'BLE SHRI BALEJA SHAHEB
Dy. Conservator of Forest (NORMAL)
Sardar Baug, Junagadh. GUJARAT.

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Date:21-9-2002

Representatives of nature lover organisations from all over **GUJARAT** met in Keshod on 14-9-2002 to chock out the strategies to be adopted for opposing the decisions taken by the Guj. Govrnment regarding the paving of the **GIRNAR PARIKRAMMA** Route. They have unanimously signed a memorandum regarding the same which is enclosed with this letter. If the governmnent dose not give sutable possitive response, it has been decided by these representatives to undertake rallies, protest fast and various mass awarness programmes.

List of the present representatives of organizations & theirs signatures are attached here with.