

Conservation of Indian Gazelle or Chinkara through community support in Thar Desert of Rajasthan, India



Project Technical Report

Project Investigator

Dr. Sumit Dookia



2009

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Copy can be obtained from:

Dr. Sumit Dookia

1-A- 43

Kudi Bhagtasani Housing Board,

Jodhpur-342005, Rajasthan,

India

Email: sdookia_gazelle@rediffmail.com

The Rufford Maurice Laing Foundation

5th Floor Babmaes House,

2 Babmaes Street,

Landon

SW1Y 6RD

Email: josh@rufford.org

www.ruffordsmallgrants.org

Ecology and Rural Development Society®

C-123, Krishna Nagar, Pali Road

Jodhpur-342005

Rajasthan

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Summary

The Indian Gazelle or Chinkara is threatened at global level and under severe pressure from the habitat loss at ground level. The changed land use pattern and due to increasing human population, mechanised agriculture and hunting by locals, it is now threatened to local extinction at various localities. The assessment of the published research papers and reports by various researchers on chinkara density in western Rajasthan revealed that a sharp decline of 38% was noticed from 2002 to 2009. The cause of such a catastrophic decline is a loss of its habitat.

The present project was a continuation of already initiated with the support of Rufford Small Grant Foundation, UK, with the objective to conserve the remaining population with the support of local communities and conservation of its habitat through community participation. The local communities, *i.e.*, Bishnoi, Jat and other likeminded communities dominant this area, and supports wildlife conservation through their ethical and religious credence. For this a long term conservation project was initiated; to conserve the last largest population cluster in the western Rajasthan, India; with the support of local communities.

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Project Background

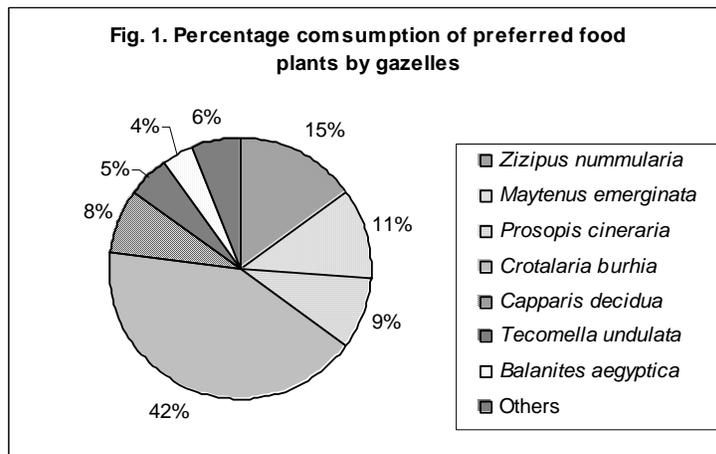
Indian gazelle or Chinkara (*Gazella bennettii*), a globally threatened ungulate, once widely distributed antelope in India, now facing threat due to increasing human population, mechanised agriculture and hunting by locals. A long term conservation project was initiated; to conserve the last largest population cluster in the western Rajasthan, India; with the support of local communities. Capacity building and empowerment of community through workshops at various localities for pastorals, villagers and students was main theme for seeking long lasting conservation support from locals. The present study aims to conserve remaining populations through community participation.

A. Project area

The project was started in the adjoining area of Jodhpur, Nagaur and Bikaner districts of western Rajasthan. This area falls in the arid region, and received less than 300 mm rain annually. The vegetation of study area was dominated by *Leptadina-Calotropis-Crotalaria-Teprosia* type, whereas

herbs are present only during short spell of rainy reason. The area supports more than 60-70% of the global population of Indian Gazelle or Chinkara. The local communities, *i.e.*, Bishnoi, Jat and other likeminded

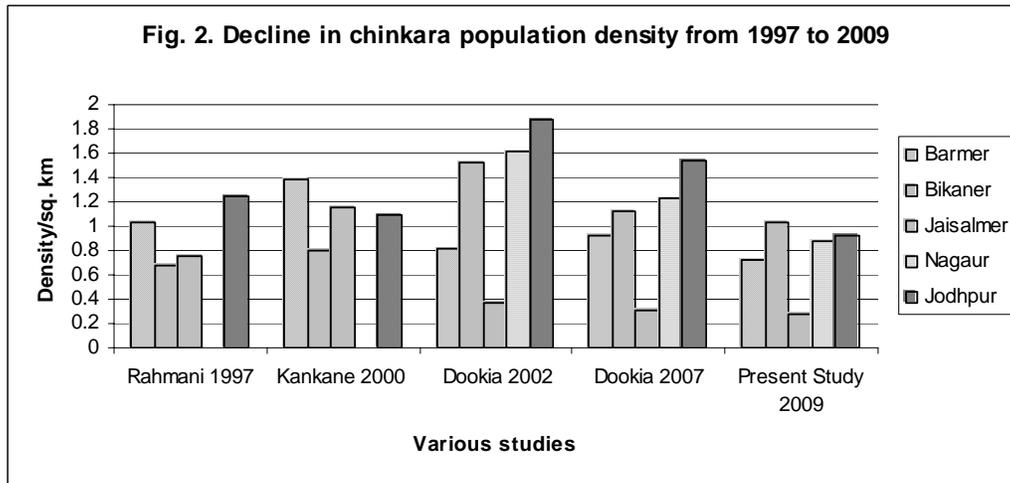
communities dominate this area, and supports wildlife conservation through their ethical and religious credence.



B. The population decline

A comparative study of the published research paper and reports available on chinkara population was carried out. The data from five high chinkara density areas was chosen for this study, namely Barmer, Bikaner, Jaisalmer, Nagaur and Jodhpur. The result shows a catastrophic decline in the population over a period of 7 years (from 2002 to 2009).

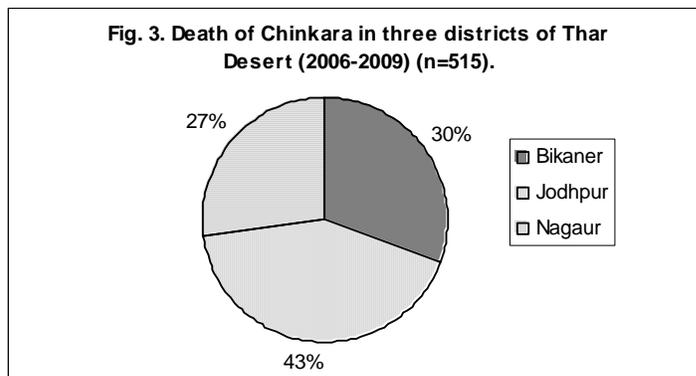
The first study by Rahmani (1997) revealed that its density was 0.74/km², whereas Kankane (2000) reported a slight increasing trend with 0.89/km² and Dookia (2002) reported 1.24/km² highest density after a three year repeated survey in these districts. Again Dookia (2007) reported 1.03/km² and this study revealed 0.76/km², a sharp decline of 38% as compare to 2002 (Fig. 2).



The reason behind this decline were also assessed and found that habitat loss is the major attribute, where as poaching and predation by feral dogs near village complex were also contributing significantly. Now it’s a high time for policy makers and conservation professionals to think for the commonest animal western Rajasthan is turning very uncommon at various localities. Attempts for the restoration of habitat and declaration of a network of Community as well as Conservation Areas with legal notification under the Wildlife (Protection) Act, 1972 is a urgent requisite for long term conservation of the Chinkara-the state animals of Rajasthan.

C. About the animal and its habit and habitat

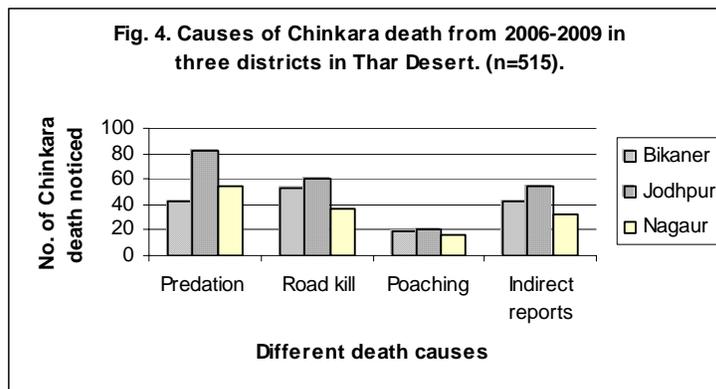
Chinkara or Indian gazelle is a small, slender and beautiful common antelope, found in a variety of habitats from



plains to scrub desert sandy areas. This animal is characterised by its sandy or tawny

colour, poorly expressed flank stripes and pygal stripes, hairy build and horns which are, in male, straight with tips slightly out turned with prominent rings but in female, comparatively horns are shorter (Groves, 1985). Its preferred habitat is open bare plains or low rocky hills or sandy hills or a barren country to richly cultivated and alluvial plains. It mainly consumes four plants, namely *Crotalaria burbia* (42%), *Zizipus nummularia* (15%), *Maytenus emerginata* (11%) and *Prosopis cineraria* (9%), all these constitute about 77% of gazelles total dietary requirements. They intake all parts of these plants in different seasons.

This study was initiated in three districts, where chinkara density was recorded highest in the entire desert landscape, namely Bikaner, Jodhpur and Nagaur in Rajasthan. Data on chinkara death



was also collected with the help of trained volunteers and from forest department, between 2006-2009 total 515 chinkara death was noticed (Fig. 3). The highest 43% death was reported from Jodhpur and lowest from Nagaur distt. Along with this, various death causes were listed among them predation by feral dogs, road accident and poaching was ranked highest where as killing was natural predators was very low (Fig. 4).

Indian Gazelle is placed in schedule I of the Indian Wildlife Protection Act (1972), and “Lower Risk/Conservation Dependant” of the IUCN Red Data List (2008). The changed land use pattern and due to increasing human population, mechanised agriculture and hunting by locals, it is now threatened to local extinction at various localities.

Project timeline

This project was sanction by the funding agency in April 2008 and started on 1st May 2008 for a period of one year, *i.e.*, 30st April 2008. The entire project was completed in four different phases with the support of local level trained volunteers.

Phase I- Monitoring of cluster populations was done with the help of trained volunteers at five different clusters. It was initiated in the May 2008 to Nov. 2008. But these populations are still under observation and any major change, if occur, will be recorded.

Phase II- Volunteers training was started in May 2008; all these volunteers were already trained in the Ist RSG Project. This year they were given more intensive subjective knowledge to record any changes in the surrounding population.

Phase III- Meeting with local communities and government liaison was a main objective of this project. It was given prime attention to work closely with the local communities as well as



government institutions for long term conservation action plan. A series of local workshop was organised at *choppal* (Village centre, where all elderly people regularly sit and talk about the village and its surrounding), nearby schools and also major community meeting were targeted to attend. By this we come closer to the local governance and locals happily accepted us.

Phase IV- Network creation and anti-poaching activities was initiated this year more seriously as we were regularly receiving poaching news of Chinkara. Our awareness program was also focused for anti-poaching activities.



Major activities of the project -

1. Monitoring of identified cluster populations:

Seasonal population counting at all the locations, and decline in the density was noticed at all sites. This was mainly attributed by the habitat loss and constant competition with the livestock. Four major population clusters (Table 1) were selected for long term population dynamics study.

The encounter rate estimation was done by road transects. These road transects were done with the help of four wheeler and two wheeler. Herd size, sex of the animal, number of fawn, and habitat was recorded.

Table 1. Name of Population Clusters

Name of Cluster	Size of area	Habitat	No. of herds	Herd size	No. of total Chinkara	Sex ratio (Male: Female)
Guda Bishnoian-Khejarli cluster (Jodhpur distt.)	50 sq. km.	Fallow agriculture fields	33	Min. 3 to max. 13	221	1: 2.4
Rotu cluster (Nagaur distt.)	60 sq. km.	Fallow agriculture fields	24	Min. 2 to Max. 15	185	1: 2.8
Dhawa-Doli Cluster (Jodhpur-Barmer distt.)	50 sq. km.	Fallow agriculture fields	17	Min. 2 to Max. 8	83	1: 1.7
Lohawat area (Jodhpur distt.)	70 sq. km.	Fallow agriculture fields	54	Min. 3 to Max. 11	339	1: 1.9

The sex ratio of all the encountered Chinkara was also recorded and interestingly it was vary from place to place. The sex ratio was overall biased toward females and ranged from 1: 1.19 at Lohawat area to 1: 2.8 at Rotu area.

2. Population dynamics study:

The population dynamics study was done at four clusters (Table 1) in two districts namely Jodhpur and Nagaur. The major changes, if any, were recorded with the help of volunteers. The larger herd size was noticed in Rotu area of Nagaur distt., with a herd of 15 individuals. A smallest herd of only two Chinkara (male and female) was also recorded from the same area.

a. Guda Bishnoian-Khejarli area (Jodhpur distt.)

This was a village intermixed with hamlets type of area. The habitat was dominant by single cropping agriculture fields. For the study, we have selected 50 sq. km area to get

any changes, if any, occurs in a long term basis. It supports total 33 herds with 221 Chinkara found in a group size of min. 3 to max. 13 individuals/herd (Fig. 5).

b. Rotu area (Nagaur distt.)

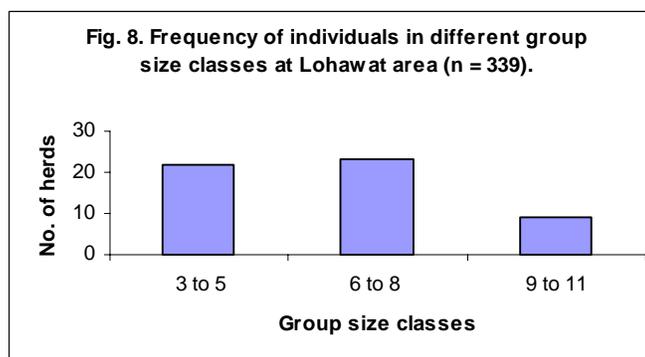
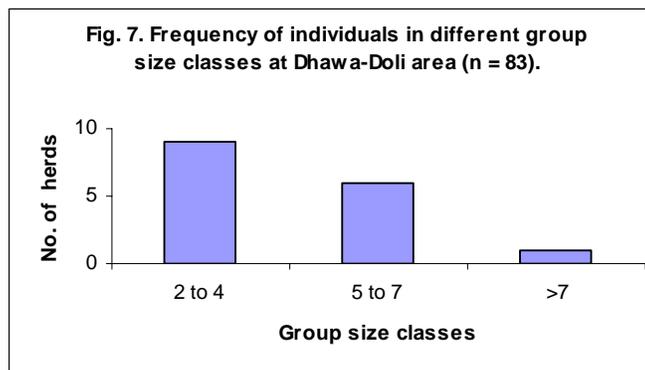
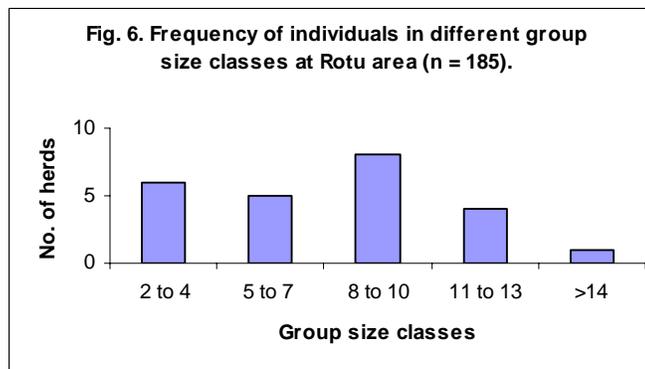
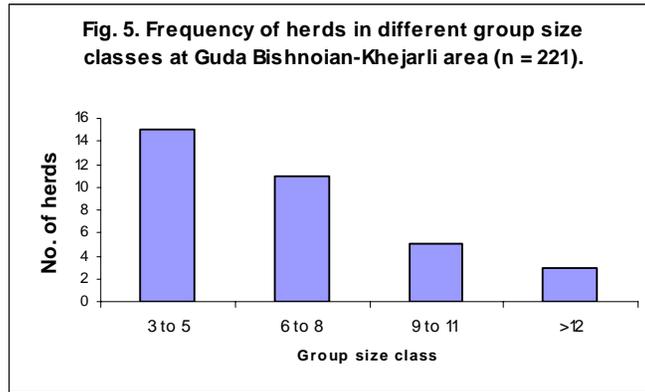
This is also a single cropping agriculture field area with human settlements. We have selected 60 sq. km. area for the study and it supports 24 herds with 185 Chinkara found in group size of min. 2 to max. 15 individuals/herd (Fig. 6.).

c. Dhawa-Doli area (Jodhpur-Barmer distt.)

The habitat of this area was predominantly fellow agriculture fields, with small patches of village common fellow lands. The major plant composition was xerophytes. For the present study, we have selected 17 herds (n = 83), residing in the 50 sq. km. area with a group size of min. 2 to max. 8 individuals/herd (Fig. 7.).

d. Lohawat area (Jodhpur distt.)

The habitat of this area was supported by sand dune complex. The vegetation was predominantly supported by *Leptadina-Calotropis-Calligonum*



type with *Ziziphus nummularia* as unequally distributed in between. A total of 70 sq. km. area was selected for present study with 54 herds (n = 339) was residing in it. The group size was min. 3 and max. 11 individuals/herd (Fig. 8).

3. Network of volunteers for anti-poaching activities:

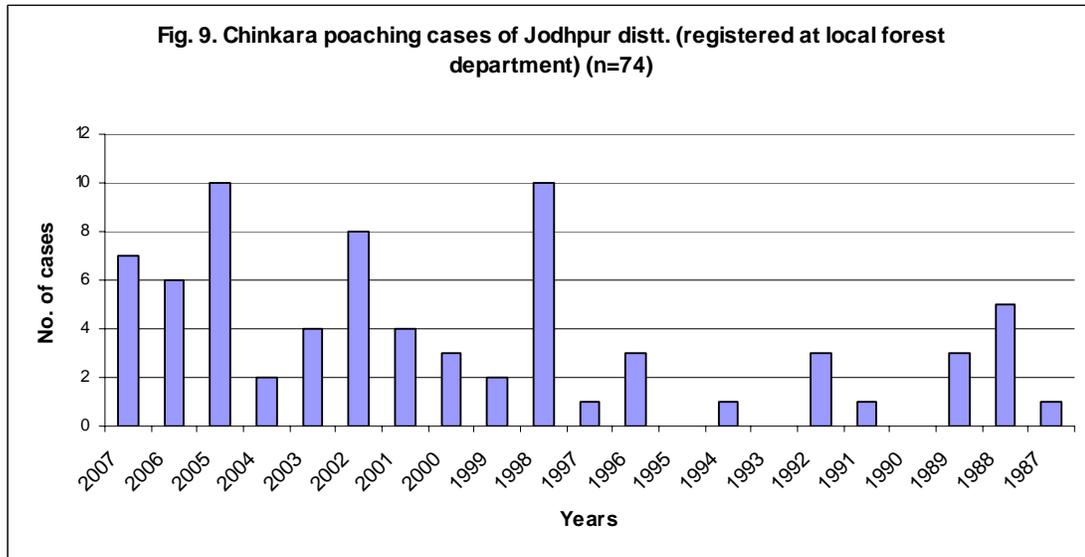
During project duration, we have trained more than 80 volunteers, including school children, college student, community representatives, etc. through a capacity building workshop, which was organised with the collaboration of local NGO, University and a National level NGO. All these volunteers were



trained with all the steps for combating poaching and other habitat destructive activities.

Data on Chinkara poaching was also collected from the local forest department (Fig. 9). The intensity of poaching is increased a decade ago.

This is a picture of just one such district, whereas similar trained was noticed in other two districts.



4. Local level awareness workshops:

Addressing any conservation related project will be incomplete without the awareness program for locals. During this project, such workshops was organised for students, researchers and field biologist for disseminate the conservation awareness message in community. The wall hanging banners with the name of funding agency was placed in the background of the workshop venue. We received overwhelming support from the school administrations and local governing bodies for conducting such workshop. Through this we reached more then 1000 new school children ranged from class 5th to 12th in the chinkara inhabiting areas. These



enthusiast children supports our all volunteers and anti poaching team through out the project area.

Success stories:

Case study 1. Submission of proposal for Conservation Reserve at Sunda Mata Hills, Jalore Distt. Rajasthan, India.

The Sunda Mata Hills range forest area is situated in Jalore district, Rajasthan. This area supports large number of wild animals, including Leopard as top carnivore along with Sloth bear, Hyaena, Jackal, Jungle cat, Bluebull, Chinkara etc. This site was selected by the state forest department, and an inventory for all the mammals and birds was done by us, with the support of locals and submitted to higher authorities. We are also assisting the forest department in liaison with locals for their active support. This was a step forward for creating this area as Conservation Reserve as per the Wildlife (Protection) Act, 1972 with amendment 2005.

Case study 2. Meeting at Guda Bishnoian (Jodhpur distt.) for seeking community support for declaration of Community Reserve.

The Guda Bishnoian area is merely 12 km away from Jodhpur city, and harbouring highest number of wildlife diversity as well as good number of Chinkara. The principal investigator (PI) is working for Chinkara conservation in this village cluster since 1999. The trend of Chinkara population is also studied and found that the population is declining. The main cause attributed was habitat loss, because of the expansion of Jodhpur city toward this village. The local communities are mainly Bishnoi and Raika in this region. This along with few surrounding village is an urgent need to develop as



Community Reserve for long lasting protection of all wildlife thriving here.

We are closely working with all the local communities in this area, and successfully organised three meeting with people of different age group. Also four school level

awareness campaign was organised. A total of 500+ students, ranging from class 6th to 12th were our main attention to educate them for our project. A short feasibility study was also done and submitted to the state forest department for a step forward to developing this as Community Conservation area as per the Wildlife (Protection) Act, 1972.

Case study 3. Liaison with state government for Rotu Community Reserve at Rotu, Nagaur, Rajasthan.

The Rotu village is about 65 km from the Nagaur district headquarter. This region is supporting a highest number of Chinkara heads in the nearby area and also in the north-eastern side in its distributional limit and makes it as an island population cluster. For long term survival of Chinkara in Nagaur area, we have to protect this area first. The Principal Investigator is working in this region since 1999 and receiving community support at various levels. The Bishnois are the dominating community here and the Chinkara population is considered very sacred. Our project team submitted a request cum feasibility document at the Wildlife Department of State Forest Department. Forest department is willing to support for declaration of Community Conservation Area. Now we are again working with the government for developing a complete document for minimum requirement to declare an area under the Wildlife (Protection) Act, 1972 as Community Conservation Area (CCA).

Case study 4. Ground data collection for Gogelao Enclosure (Nagaur distt.) for declaration of Conservation Reserve.

This area was a private land of Pitti (Jain community) of Nagaur city. A total of 714 hectare area was given way back, to the state forest department to develop a pasture land for local flora and fauna. Since then forest department is constantly developing and practicing plantation projects as well as *Gauchar* (pasture land). This area harbours more then 200 Chinkara heads, and having a highest density of Chinkara in any particular area. The PI is doing research on



Chinkara population since 1999 and found that this is more or less stable population. This area is holding amazingly very high population density of Chinkara (about 23-28

chinkara/km²). We have documented all the mammals, birds and reptiles of this area, along with plant species. This is under way to submit in state forest department. This area has great potential and can get developed a Conservation Area under the Wildlife (Protection) Act, 1972.

Community Conservation Area

This term was comes under the “Wild Life Protection Amendment Act, 1972 as amended in 2003” in India. According to this many tribal communities and other traditional forest dwelling communities living in close proximity to and dependent on their immediate ecosystem for their survival, have a rich history of living in harmony with their surroundings, could be declared as a Community Conservation Area, after their concern.

Community Conserved Areas (CCAs) can be defined as natural or modified eco-systems (with minimal to substantial human influence) – providing significant biodiversity, ecological services and cultural values; voluntarily conserved by indigenous people or other local communities through customary laws or other effective means. These CCAs have their own institutions and relevant rules and codes that are site specific and depend on the nature of the environment, the nature of the community and other local social, political and economical factors.

* Incorporated after Legislation briefing note **‘Indian Laws, Policies and Action Plans Relevant to Community Conserved Areas’** by Kalpavriksh Organization.
www.kalpavriksh.org

Way ahead:

The Chinkara population is declining at large, whereas also successfully breeding at certain localities. The project is planned in such a way that we are doing population dynamics study as well as also working close with locals and government for covering these areas under the protected area network of India. This year we had successfully carried study at four blocks and also submitted relevant document to the state forest department. Now our role comes in the main theme, as for declaration of such areas under the CCA category of the Wildlife (Protection) Act, 1972; government must work through us and needs to get proper permission from the locals of these villages. During the end of the present project we concluded for focus on few objectives to work further for coming years. These are as follows:

1. To gain the confidence of the locals for declaration of CCA's, we have to work closely with more local meetings. An area of 300 to 500 sq. km. is must to protect any big ranging species, for this a set of village cluster is required. This may be of 10-20 villages with 1 or 2 as core village for targeted Chinkara population.
2. To continues population dynamics studies in all these villages, and any major change, if occur, needs to address separately.
3. Habitat suitability study of Chinkara, around these clusters for finding any corridor between these targeted areas.
4. To further strengthening of anti-poaching team, which was built under the present project.
5. Assistance in the set-up of community level "Rescue Centre" in the Chinkara dominated areas, for treating injured and orphan Chinkara as well as other wild animals.
6. Tracking and monitoring of camps of poaching communities, with the help of volunteers and state forest department. Along with this, attempts will also start to change mind set in of these people for turning them into main stream of the society.

Conclusion:

This is a second project, and we have started achieving some success at this stage. This year collaboration with the local NGO “Ecology and Rural Development Society” was done to strengthen the project team. This NGO is also working on similar issues and helps us in organising various workshops for seeking public support.

The population of Chinkara is declining at large, but through our constant approach at certain areas, the population at these places is constant. Under cover anti-poaching team is also working hard to combat with every clue of possible poaching incident. We have successfully helped to give information to the enforcement agencies and spread awareness about anti-poaching. The project is also highlighted in the national level environment magazine “*Teera Green*” with the objectives and activities along with name of principal investigator. We also assisted to the state forest department for various issues related to the Chinkara and other wild species. The principal investigator is also nominated by the Chief Conservator of Forest (CCF), Wildlife Division, Jodhpur as a wildlife expert for proposed Sundha Mata Conservation Reserve and Ramdeora Conservation Area.

The Conservation of any wild species is a long term process and we are successfully working in the right direction, through protection of habitat as well as the core population in the western Rajasthan.

Recommendations:

The project worked closely with the local communities and enforcement agencies. We have targeted our awareness program at various stakeholder level and liaison with forest department.

1. The awareness about the various laws and acts of Wildlife (Protection) Act, 1972, in the local community is lacking. Proper sensitization regarding the pros and cons of such could divert them from poaching.
2. A proper rehabilitation strategy is a must for various tribal communities actively engaged in poaching, as these tribes do not change their profession even after repetitive confiscation also.
3. Wildlife conservation and its importance is must to teach the school children. The awareness from such level could give better result. Curriculum of environment studies should include more chapters on the local wildlife, rather the national and international issues.
4. Educational tours in the nearby wildlife refuge can be fruitful to teach easily.

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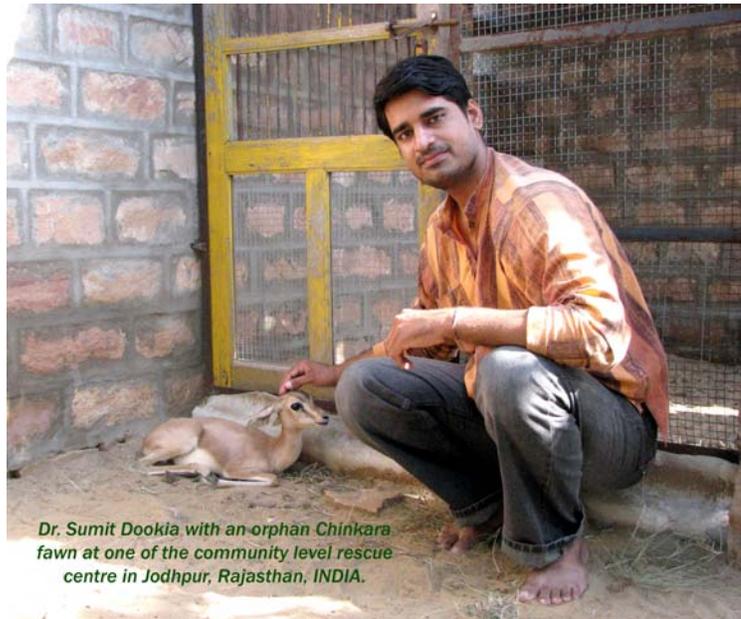
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About the Investigator

Dr. Sumit Dookia, Principal Investigator of this project is working in the Thar Desert on endangered fauna since 1999. His doctoral work was on the Ecology of Indian Gazelle/Chinkara (*Gazella bennettii*) from this area, and awarded University Research Scholarship from J. N. V. University, Jodhpur, Rajasthan, for the same. He also worked with Desert Regional Station, Zoological Survey of India, Jodhpur on Faunal diversity of Thar Desert, and assigned to



Dr. Sumit Dookia with an orphan Chinkara fawn at one of the community level rescue centre in Jodhpur, Rajasthan, INDIA.

work on Avian and Mammalian diversity of this region. During his doctoral work, he comes close to the local communities and starts working with them for the conservation of desert wildlife. He also worked in Satpura-Maikal landscape, particularly in Kanha, Pench and Satpura Tiger Reserve in Madhya Pradesh with Project Tiger Directorate, New Delhi and Wildlife Institute of India, Dehradun and with Bombay Natural History Society for Bird-Hazard studies for Indian Air Force. Currently working as a Secretary of Ecology and Rural Development Society with a theme of “Conservation through Community Participation”. He has Masters degree in Zoology and holds a long term vision for conserving natural habitat with the involvement of local communities, various government and non-government organizations.

